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VOL. 16 No. 1 January 7, 1966

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All correspondence pertaining to additions, deletions and changes of addresses for the mailing list for this report should be sent to:

Service Operations Division
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Volume 16 January 7, 1966 Number 1

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

SPOTTED ALFALFA APHID continues heavy and damaging to alfalfa in Oklahoma. (p. 3).

CABBAGE LOOPER required some controls on lettuce in Arizona. (p. 4).

GREEN PEACH APHID heavy on spinach in Dorchester County, Maryland. (p. 4).

SPECIAL REPORTS

Boll Weevil Hibernation Surveys in North and South Carolina, Tennessee, Alabama, Mississippi, Louisiana and Texas - Fall 1965. (pp. 9-12). Substantial reductions in number of weevils entering hibernation noted in several areas, but increased in north central North Carolina; Morgan County, Alabama; and north delta of Mississippi. A considerable increase occurred in hill section of Mississippi.

Southwestern Corn Borer Population Surveys in Mississippi. (p. 8).

Status of the Screw-worm in the Southwest. (p. 7).

The Use of the Name Udea. (p. 5).

A New Distribution Record for the Beet Armyworm. (p. 5). Entomologists encouraged to be alert for occurrence of this pest in Eastern States.

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NOTE: Beginning in this issue, changes in names of insects are in accordance with the new list of "Common Names of Insects" as approved by The Entomological Society of America and issued December 1965.

Reports in this issue are for week ending December 31, 1965, unless otherwise indicated.

WEATHER BUREAU'S 30-DAY OUTLOOK

JANUARY 1966

The Weather Bureau's 30-day outlook for January calls for temperatures to average above seasonal normals across the southern half of the Nation except for near normal in California and in South Atlantic Coastal States. Below normal averages are expected in the northern border States from the west coast to the western Great Lakes and also in New England. Near normal temperatures are indicated in unspecified areas. Precipitation is expected to exceed normal over most areas west of the Continental Divide, as well as over the northern Plains and the upper Mississippi Valley. Subnormal precipitation totals are called for over the South including the southern Plains, while near normal precipitation is in prospect in unspecified areas.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING JANUARY 3

Highlights: (1) End of 1965 mild in most areas but cold week in Montana-North Dakota zone. (2) Heavy precipitation West Coast and lower Ohio Valley area. (3) Two major storms, Great Lakes area.

TEMPERATURE: Most areas from the central and southern Rockies eastward averaged 6° to 12° above normal. The west coast was cool while frigid Arctic air over northeastern Montana and parts of North Dakota held weekly average temperatures at 6° to 16° below normal. Two deep Lows moving northeastward through the Minnesota-Wisconsin area on Friday and Sunday brought strong warming to the Mississippi Valley and eastward. Temperatures reached the 60's in Iowa on December 30 and along the Lake Erie and Lake Ontario shores on December 31. On January 1 and 2, cool air swept southeastward to the gulf and Georgia coasts, but still left weekly means well above normal.

PRECIPITATION: Amounts were insignificant from South Dakota southward to western Texas and from northern Florida to the Carolina coast. Two to four inches fell on most of the west coast including Los Angeles where more than 4 inches caused additional damage by mudslides and washouts in northern sections. In Arizona, this was the 4th consecutive week of substantial to heavy precipitation as rain and melting snow caused flooding of the Gila and Salt Rivers. Early damage estimates were well over $1 million. Moderate precipitation in most western mountains added to the snowpack and in the Cascades snow depths ranged up to 100 inches above 4,000 feet. Substantial rains came to the Mississippi and Ohio Valleys with more than 4 inches from northern Arkansas to southern Indiana. The Northeast received helpful rains. Although snowfall and snow cover were above the usual in much of the western third, areas east of the Rockies were generally deficient. Near blizzards occurred in Idaho and parts of Montana and Wyoming. Snow cover increased in the extreme northern Plains and the Lake Superior region continued to have above normal amounts. However, from South Dakota and Iowa southward and eastward, snow was notable for its lack in early January. Even mountain areas had very little snow from Pennsylvania southward. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - OKLAHOMA - Counts per linear foot ranged 1-25 in wheat checked in Noble, Garfield, Major and Logan Counties; 5-12 in wheat and oats in Tillman County; 6-40 per linear foot in wheat in Carter and Marshall Counties. Reported light to moderate in Cleveland County. (Okla. Coop. Sur.). ARKANSAS - First specimens of season noted during past 10 days in northwest; numbers relatively low. (Ark. Ins. Sur., Dec. 24).

GRAIN APHIDS - OKLAHOMA - Rhopalosiphum maidis present in most fields in Noble, Garfield, Major and Logan Counties; 2-60 per linear foot. Most common aphid reported in wheat this period. R. padi present in most fields checked in Noble, Garfield, Major and Logan Counties; 1-60 per linear foot. (Okla. Coop. Sur.). ARKANSAS - Macrosiphum avenae numbers very low. (Ark. Ins. Sur., Dec. 24).

A BERMUDAGRASS MITE (Aceria neocynodonis) - OKLAHOMA - Heavy on Bermuda grass in greenhouse in Stillwater, Payne County. Infested grass recently brought in from unspecified location. (Okla. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Light in alfalfa near Lovington, Lea County, and at Carlsbad, Eddy County. (Kloepfer). OKLAHOMA - Moderate in Cleveland County alfalfa. (Okla. Coop. Sur.). ARKANSAS - Active but relatively low. (Ark. Ins. Sur., Dec. 24).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Continues heavy and damaging alfalfa in Lincoln County. (Okla. Coop. Sur.). ARKANSAS - Numbers continue low. (Ark. Ins. Sur., Dec. 24).

FALSE CELERY LEAF TIER (Udea profundalis*) - CALIFORNIA - Larvae increasing in alfalfa. Species adapting to alfalfa. (Calif. Crop and Livestock Rpt. Serv.).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Numbers decreased in Yuma County alfalfa. (Ariz. Coop. Sur.).

FRUIT INSECTS

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - Increasing problem on peach trees at Gainesville, Alachua County, and in Monticello area, Jefferson County. (Phillips).

MEXICAN FRUIT FLY (Anastrepha ludens) - Prior to 1964, repeated pesticide applications were made along the Mexico-California border to keep A. ludens from becoming established in California and Baja California, Mexico. In 1964, a sterile male release technique developed by ARS scientists eliminated the need for the annual chemical control program. The flies are reared at the ARS laboratory at Mexico City and sterilized by immersing the pupae in a chemosterilant solution. Plant Pest Control personnel release only the sterilized adult males. Prior to release, they are permanently marked with a colored lacquer to make it possible to distinguish them from the wild male flies. Traps are employed throughout the release areas to determine overflooding ratios. To date, releases have been made in three areas, Tijuana, Ensenada and Tecate, Mexico. (PPC). No native or sterile marked A. ludens were trapped in Baja California during the period December 26, 1965, to January 1, 1966. Last native A. ludens trapped in Baja California October 26, 1965; last release of sterile male flies made November 17, 1965. It is felt that this season's sterile release program in Baja California, concluded in November 1965, was entirely successful in ridding the area of all introduced or incipient infestations of A. ludens. (PPC Mex. Reg.)

PECAN CARPENTERWORM (Cossula magnifica) - ALABAMA - Numerous tunnels and several larvae noted in intertrunk area of 30-40 year-old pecan trees cut in Lee County. (McQueen).

* See statement on page 5, this issue.

TRUCK CROP INSECTS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Counts high enough for controls in some lettuce fields. (Ariz. Coop. Sur.).

TOMATO PINWORM (Keiferia lycopersicella) - CALIFORNIA - Medium in tomato plantings at Fresno, Fresno County. (Cal. Coop. Rpt.).

GREEN PEACH APHID (Myzus persicae) - MARYLAND - Heavy over 200 acres of spinach near Vienna, Dorchester County. (U. Md., Ent. Dept.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphs and adults injuring wrapper lettuce leaves in Yuma area, Yuma County. (Ariz. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - VIRGINIA - Two new infestations reported in Charlottesville District. Damage noted in numerous spots in Nottoway, Prince Edward, Buckingham, Amelia and Lunenburg Counties; few spots noted in Charlotte and Appomattox Counties. Damage to Virginia and shortleaf pines noted in Campbell County tract. (Va. Div. For., Nov. Rpt.).

BARK BEETLES (Dendroctonus spp.) - VIRGINIA - Recorded on 2 tracts of shortleaf pine in Mecklenburg County. Noted in shortleaf, Virginia and white pine in single locations in Campbell, Franklin and Patrick Counties. (Va. Div. For., Nov. Rpt.).

WHITE-PINE WEEVIL (Pissodes strobi) - VIRGINIA - Damage evident on 4-acre pine planting in Greene County. (Va. Div. For., Nov. Rpt.).

WHITE-PINE APHID (Cinara strobi) - MARYLAND - Eggs and some live individuals observed on white pine at College Park, Prince Georges County. (U. Md., Ent. Dept.).

A CONIFER APHID (Cinara tujafilina) - OKLAHOMA - Continues heavy in many areas. (Okla. Coop. Sur.).

COCCIDS - FLORIDA - Ceroplastes floridensis severely damaging 20 of 100 pyracantha in nursery at Macclenny, Baker County. (Collins, Dec. 17). CALIFORNIA - Aspidiotus camelliae locally heavy on pachysandra and euonymus in Napa, Napa County. (Cal. Coop. Rpt.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Larvae locally heavy on dichondra at Davis, Yolo County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period contained Aedes sollicitans, Aedes vexans, Culex pipiens quinquefasciatus, Culex restuans, Culex salinarius and Culiseta inornata. Culex salinarius and Culiseta inornata were predominant in light trap collections. (Stokes).

BOT FLIES (Gasterophilus spp.) - OKLAHOMA - Large numbers of larvae present in horses treated in Noble County. (Okla. Coop. Sur.).

CHICKEN BODY LOUSE (Menacanthus stramineus) - ARKANSAS - Heavier than normal in northwest section (Ark. Ins. Sur.).

STORED-PRODUCT INSECTS

RICE WEEVIL (Sitophilus oryzae)- ALABAMA - This species and Sitotroga cerealella widespread in corn entering storage on farms in Morgan County. (McQueen).

POTATO TUBERWORM (Phthorimaea operculella) - VIRGINIA - Larvae and pupae present in most stored potatoes at Spotsylvania County location. Few adults observed. (Isakson, Dec. 22). See CEIR 15(48):1294 for new genus designation.

MISCELLANEOUS INSECTS

OLEANDER SCALE (Aspidiotus hederae) - FLORIDA - All stages heavily infesting stems, leaves and fruit in some areas of a Monticello tung orchard. (Miller, Dillon, Dec. 14).

The Use of the Name Udea

Opinion 536 of the International Commission on Zoological Nomenclature states that the name Oeobia Hübner is suppressed under the Plenary Powers for the purposes of the Law of Priority but not for the Law of Homonymy. Therefore, we shall use the generic name Udea Guenée instead of Oeobia.

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A New Distribution Record for the Beet Armyworm, Spodoptera exigua (Hübner). (Lepidoptera: Noctuidae)

Larvae of Spodoptera exigua (Hübner) were collected by Gilberto Gallo on cotton leaves in La Calera, Managua, Nicaragua, on September 17 and 22, 1965. The reared adults were sent to me for identification by Alvaro Sequeira D., Head of Pestes Agricolas Department MAG., Ministerio de Agricultura y Ganaderia, Managua, Nicaragua. To my knowledge the species was not previously known to occur south of Mexico and this collection is a new record for Nicaragua and indicates that the species is extending its range to the south. In the United States the species has spread eastward and has reached Florida and Ohio in recent years. Entomologists in South and North Carolina should watch for the species to move northward from Georgia. A larva from Geranium cuttings from a greenhouse in Clayton, New Jersey, was identified as this species in 1962 by Mr. Hahn Capps, but to my knowledge there are no records of this species occurring in the wild in that State.

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LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA Gainesville 12/28			BL						2								1							
GEORGIA Tifton 12/22-29	32-68	0.10	BL							0	0							0	0					
SOUTH CAROLINA Charleston 12/20-26	32-68	0.03	BL	7			0		4	0	0					0	0	0	0	4		0	0	

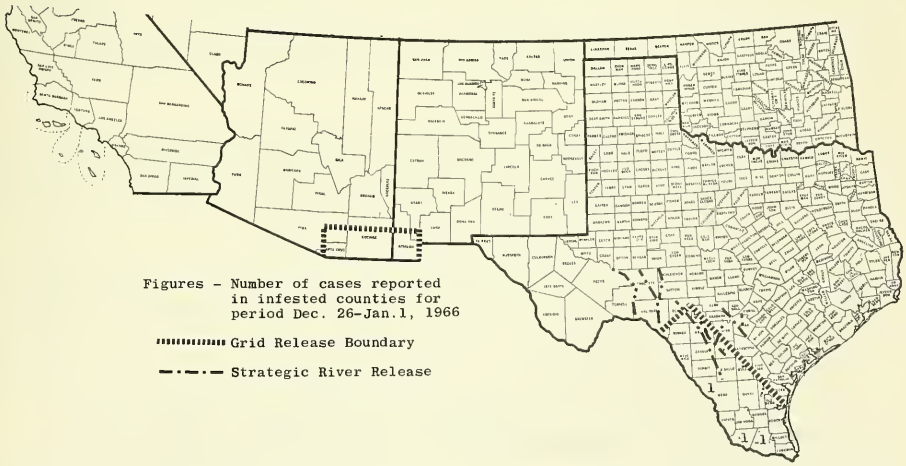
STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

During the period December 26, 1965, to January 1, 1966, a total of 3 cases was reported in the Southwestern Eradication Area; 1 each from Webb, Starr and Hidalgo Counties, TEXAS. The Republic of Mexico reported 48 cases as follows by State: Nuevo Leon 1, Chihuahua 2, Sonora 3, Tamaulipas 38, Territorio sur de Baja California 4. Sterile screw-worm flies released: Texas 21,238,250, New Mexico 1,280,000, Arizona 7,680,000, Mexico 48,500,800.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
	Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).					
1964	0	0	16	16	0.00	0.00
1965	0	0	45	45	0.00	0.00
1966	3	3	23	23	13.04	13.04
	Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*					
1965	49	49	14	14	350.00	350.00
1966	51	51	19	19	268.42	268.42

Feasibility Survey - During this period 187 cases were identified in Mexico south of the Barrier Zone as follows: Chiapas 6, Morelos 19, Durango 1, Puebla 8, Zacatecas 8, Jalisco 4, Nayarit 4, Guerrero 8, Hidalgo 1, Michoacan 6, Veracruz 40, San Luis Potosi 3, Oaxaca 7, Sinaloa 8, Guanajuato 5, Yucatan 49.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



Southwestern Corn Borer Population Surveys in Mississippi

C. A. Henderson and W. A. Douglas 1/

Southwestern corn borer (Zeadiatraea grandiosella (Dyar)) population surveys were conducted in April each year from 1962 to 1965. The purpose of these surveys was to determine the borer potential at the beginning of the corn growing season.

The corn fields surveyed contained undisturbed stalks or stubble from the previous year's crop. Approximately 1/100 acre per field taken at 5 locations constituted the size of the sampled area.

Procedure and Results: All the stalks at each sample site were dug or pulled up, split with a knife and examined for southwestern corn borer larvae. Table 1 gives the number of fields surveyed, the live and dead borer forms and percentage of winter survival.

Table 1. Southwestern corn borer survey in northwest Mississippi in April 1962 to 1965.

Year	No. fields surveyed	Number of borer forms per acre			Percent winter survival
		Larvae		Live pupae	
		Live	Dead		
1962	18	900	900	11	50.3
1963	8	188	450	12	30.8
1964	19	863	800	0	51.9
1965	29	376	690	0	35.3
Average	18.5	581.7	710.0	5.8	42.1

1/ Entomology Research Division, Agricultural Research Service, USDA, State College, Mississippi. In cooperation with the Mississippi Agricultural Experiment Station.

Boll Weevil Hibernation Surveys in North and South Carolina, Tennessee, Alabama, Mississippi, Louisiana and Texas - Fall 1965

The fall collections of surface ground (woods) trash samples (two square yards per sample) have been completed in 7 Southern States by State and Federal agencies to determine the number of boll weevil (Anthonomus grandis) adults that went into hibernation. A total of 3 samples was collected at each location in the Carolinas, Alabama, Mississippi, Louisiana and Texas; 20 samples were taken in McNairy County, Tennessee. In North and South Carolina, 30 locations were sampled in each area, with the number of counties per area from which samples were taken varying from 3 to 6. In Alabama, the 1965 collections represent the second hibernation survey conducted in that State in recent years. Three samples were taken from each of 10 farms in Morgan (north), 10 farms in Henry (southeast), 4 farms in Dallas (central) and 4 farms in Tuscaloosa (west) Counties. These 4 counties represent a wide variation of climatic conditions within the State. A total of 84 samples was taken. In Bibb County, Alabama, not included in the 1964 survey, 6 samples were taken from 2 farms. In Mississippi, collections have been made in 4 counties in each of 4 areas of the State from the fall of 1956 through the fall of 1964; however, beginning with the 1965 fall survey, collections will be made in only 2 counties in each of the 4 areas. It is anticipated that the number of samples collected in the reduced survey will continue to provide very good information on the status of boll weevil hibernation in all parts of the State. A total of 40 locations was sampled in northeastern Louisiana; 10 each in Tensas and East Carroll Parishes and 20 in Madison Parish. In Texas, 75 samples were taken, with either 6 or 7 locations being sampled in each of 4 counties.

Average counts (live weevils per acre) exceeded those of the fall of 1964 in the Coastal Plain of South and North Carolina; north central North Carolina; McNairy County, Tennessee; Morgan County, Alabama; and in the South Delta, North Delta and Hill Section areas of Mississippi. Counts were approximately the same in central Texas as they were in 1964, and lower in all other areas included in the survey except in the Piedmont of North and South Carolina which was not included in the 1964 survey.

In Florence County, South Carolina, the number of weevils per acre (17,754) is one of the highest on record and is 2.3 times the average for the 23 years that such examinations have been made. This is the sixth consecutive year in which over 10,000 weevils per acre have been found during fall examinations in this county.

In Tennessee, McNairy County was chosen for the survey in that State because it usually represents the heaviest infestations found in the southern tier of counties. The other southern counties usually support only slightly lower infestations than McNairy County. The number of weevils per acre was 1,211 compared with 807 in 1964, 1,089 in 1963, 3,633 in 1962 and 3,025 in 1961.

In Alabama, the State average of 4,037 weevils entering hibernation in 1965 is slightly lower than the average of 4,596 for 1964 (Bibb County not included in State average); however, it is significant that the number of weevils entering hibernation in Morgan County (the most northern sampling area) was approximately 3 times as heavy as in 1964. Sample collections in Henry County were made in November prior to a killing frost and cotton in the fields was heavily infested with live weevils. This may account for lower numbers being found in these samples; however, lower numbers are usually found in fall surface trash counts in the extreme southern portion of the State compared with the central area.

In Mississippi, the State average was 7,325 live weevils per acre found in ground trash examinations, compared with 4,545 in 1964, 3,010 in 1963, 6,213 in 1962 and 8,403 in 1961.

The average number of boll weevils per acre in the tri-parish area of northeast Louisiana was 3,349 compared with 5,874 in 1964. The average by parish was 2,017 in Madison, 8,312 in East Carroll and 1,049 in Tensas. During the past 11 falls that these records have been made in the tri-parish area, the number of weevils per acre has ranged from 2,017 to 13,442 and averaged 5,506 in Madison Parish; 5,165 to 13,235 and averaged 8,806 in East Carroll Parish; and 0 to 17,593 and averaged 6,397 in Tensas Parish. During the past 30 years that similar records have been made in Madison Parish, there have been only 7 years in which fewer weevils per acre have been found than the 2,017 found in 1965. Frost occurred the last 7 days of October with a low of 29 degrees being recorded on October 25. Because of dry weather throughout the summer and fall, the stalks in most fields near trash collecting areas had been destroyed and in some instances plowed under. The trash collected was very dry and was ideal for running through separating screens.

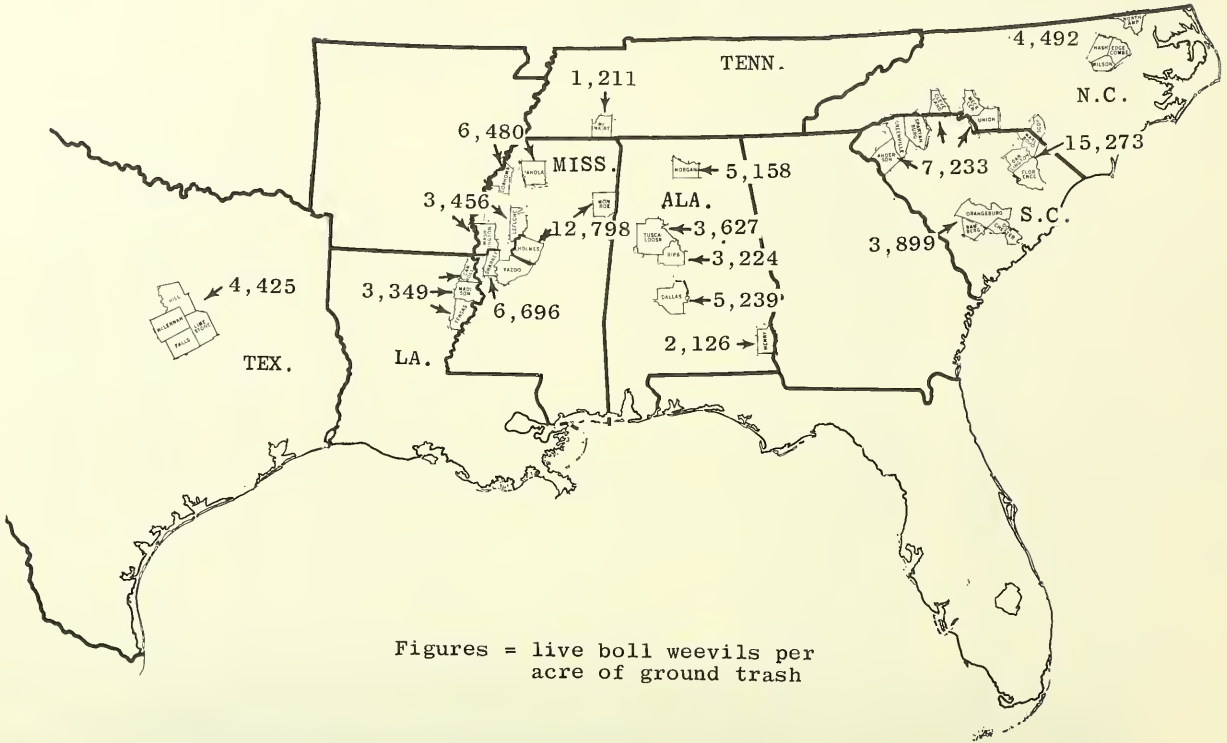
The area average of 4,425 boll weevils per acre in the fall of 1965 in central Texas compares with averages of 4,406 in 1964, 517 in 1963, 1,781 in 1962, and 4,114 in 1961. More boll weevils entered hibernation in the fall of 1965 than in any year since 1960; however, there was only a slight increase over 1964. Heavy rains in the spring delayed planting which resulted in a considerable acreage of late-planted cotton. Above normal rainfall during September, October and November delayed harvest, stalk destruction and cleanup on many farms. Heavy infestations of weevils built up in these fields and moved into hibernation. (H. M. Taft, A. R. Hopkins, J. H. Locke, H. F. McQueen et al., T. R. Pfrimmer, T. C. Cleveland, C. B. Cowan).

See table and map on following two pages.

BOLL WEEVIL HIBERNATION SURVEYS - FALL 1965

Area (County and State)	Number of Weevils Per Acre 1964	1965
NORTH AND SOUTH CAROLINA		
South Central South Carolina (Orangeburg, Bamberg and Dorchester Counties)	7,663	3,899
Coastal Plain of South and North Carolina (Florence, Darlington and Marlboro Counties, S. C.; Scotland County, N. C.)	15,192	15,273
Piedmont of South and North Carolina (Anderson, Greenville, and Spartanburg Counties, S. C.; Mecklenburg, Cleveland and Union Counties, N. C.)	---	7,233
North Central North Carolina (Nash, Wilson, Edgecombe and Northampton Counties)	3,315	4,492
TENNESSEE		
McNairy County	807	1,211
ALABAMA		
Henry County	2,821	2,126
Dallas County	6,650	5,239
Tuscaloosa County	7,061	3,627
Morgan County	1,854	5,158
Bibb County	---	3,224
MISSISSIPPI		
South Delta (Sharkey and Yazoo Counties)	6,236	6,696
Central Delta (Washington and Leflore Counties)	5,361	3,456
North Delta (Coahoma and Panola Counties)	3,546	6,480
Hill Section (Holmes and Monroe Counties)	3,036	12,798
LOUISIANA		
Northeastern (East Carroll, Madison and Tensas Parishes)	5,875	3,349
TEXAS		
Central (Falls, Hill, Limestone and McLennan Counties)	4,406	4,425

BOLL WEEVIL HIBERNATION SURVEYS - FALL 1965



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Volume 16 January 14, 1966 Number 2

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

General abundance of EUROPEAN CORN BORER in 1965 in North Central States lower on the average than in 1964. Largest single reduction was in southeast Missouri. Populations more than doubled in Maryland and Delaware. Special status report on pages 21-27.

GREENBUG necessitated some spraying in Oklahoma. ENGLISH GRAIN APHID present in all wheat checked in southwest Oklahoma and an APHID (Rhopalosiphum padi) increased on oats in same area. SPOTTED ALFALFA APHID damaging alfalfa in additional areas of Oklahoma, and first CLOVER LEAF WEEVIL larvae of season noted in overwintering alfalfa in that State. (p. 15).

CALIFORNIA RED SCALE heavy on citrus in areas of California and Arizona. CABBAGE LOOPER heavily damaged some lettuce in Arizona. (p. 16).

PINK BOLLWORM larva found in gin trash from field near Colorado River in Gila Valley of Arizona; most western larval find to date in county. (p. 16).

DETECTION

A BOLL WEEVIL (Anthonomus grandis complex) reported for first time in California; 4 larvae taken from green cotton boll in Winterhaven, Imperial County. Spread of Anthonomus sp. in Yuma County, Arizona, indicated. (p. 16). An ICHNEUMON WASP (Pachysomoides stupidus) reported for first time in Maryland. (p. 19).

New county records include: A WEEVIL (Hypera brunneipennis) in Tulare County, California, (p. 15); 5 ARMORED SCALES in Gilcrist and Dixie Counties, Florida, (p. 17).

CORRECTIONS

See page 19.

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 20).

Reports in this issue are for week ending January 7, unless otherwise indicated.

WEATHER OF THE WEEK ENDING JANUARY 10

HIGHLIGHTS: (1) Coldest weather of season most of East Half. Mild northern Rocky Mountains. (2) Winter storms Minnesota to New England. (3) Dry, except Pacific Northwest, gulf coast to New England.

TEMPERATURE: Bitterly cold, dry, Arctic air poured across the Canadian border bringing the coldest weather of the season to many areas over the eastern half of the Nation. Temperatures over some Eastern States dropped from 5° above normal the first half of the week to 10° to 15° below normal during the latter half. Numerous stations in northern Missouri registered subzero temperatures on Friday and Saturday. Portions of North Dakota remained below zero for 3 days; on Friday, the maximum temperatures at Fargo, North Dakota, and Minneapolis, Minnestoa, were -18° and -2°, respectively. In northeastern Montana and northwestern North Dakota, this was the second very cold week. By the weekend, the cold wave had reached the Gulf of Mexico and New Orleans, Louisiana, registered 29° Sunday morning. However, mild temperatures returned to parts of the central Great Plains on Saturday. Temperatures in eastern Colorado, western Kansas, and southeastern Wyoming climbed into the 60's on Saturday afternoon. Denver registered 65° Saturday afternoon when the maxima at Evansville, Indiana, was only 25°. Because the cold air spread southward about midweek, the weekly average temperatures east of the Rockies were mostly within 3° to 6° of normal. Meanwhile, warm Pacific air masses persisted over Wyoming and the Pacific Northwest yielding average temperatures 6° to 10° above normal over wide areas. The contrast across the Continental Divide in Montana was striking; Missoula averaged 34° or 14° above normal while Havre, only about 250 miles northeast of Missoula, averaged -2° or 18° below normal. Only the Florida Peninsula, the western gulf coast, and extreme southern portions of California escaped freezing temperatures during the week.

PRECIPITATION: Precipitation was almost continuous in the Pacific Northwest with rain along the coast and snow at higher elevations. Precipitation totals ranged from 2 to 4 inches along the Washington coast but as high as 5 to 11 inches in parts of coastal Oregon. The heavy rains produced damaging mudslides in the Puget Sound area. Snow accumulated to 150 inches above 4,500 feet in the northern Cascades where snowslides blocked highway passes several times during the week. Outside of the Pacific Northwest, precipitation was light or missing, except for light to heavy amounts southeast of a line from Austin, Texas, to Detroit. Totals of 2 inches or more occurred over most of Georgia and in the New Orleans area. Parts of the Southeast had the best rains since early October. The Northeast drought area received light to moderate precipitation amounts.

STORMS: Rain in the Southeast persisted through Thursday but ended with the arrival of cold air. Active Low centers moved eastward along the northern border during the week and a vigorous Low brought high winds and heavy snow (5 to 15 inches in eastern Massachusetts) to southern New England on Saturday. A new Low over Lake Superior was causing heavy drifting of the snow cover in that area as the week ended. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - ARKANSAS - Numbers low in most small grains in northwest. (Ark. Ins. Sur.). OKLAHOMA - Ranged 1-8 per linear foot in wheat checked in Harmon, Jackson, Tillman, Kiowa, Greer and Comanche Counties; light to moderate in wheat and barley in Kingfisher County. Some spraying done. (Okla. Coop. Sur.). TEXAS - Surveys of small grains negative in local areas of Denton County. (Turney, Meisch).

GRAIN APHIDS - ARKANSAS - Macrosiphum avenae low in small grains in northwest. (Ark. Ins. Sur.). OKLAHOMA - M. avenae present in all wheat checked in southwest; 1-19 per linear foot. Rhopalosiphum padi increased on oats in southwest; 300-500 per linear foot in scattered fields. Ranged 3-125 per linear foot in other fields in area. (Okla. Coop. Sur.).

CHINCH BUG (Blissus leucopterus) - MISSOURI - Survey showed noneconomic infestations in Adair, Schuyler, Marion, Clark and Pike Counties. Moderate numbers of hibernating forms found in Monroe County; averaged 58 per square foot. (Houser).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Present in about 33 percent of wheat checked in southwest; 3-28 per linear foot. Light to moderate in Kingfisher County. (Okla. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Moderate numbers damaging alfalfa in Payne, Kay and Washington Counties. Ranged 30-94 per square foot of crown in Tillman, Jackson and Harmon Counties. (Okla. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARKANSAS - Continues low in northwest. (Ark. Ins. Sur.). OKLAHOMA - Ranged 12-110 per square foot of crown in alfalfa checked in Tillman, Jackson and Harmon Counties; moderate in Kingfisher County. (Okla. Coop. Sur.). NEW MEXICO - Light in alfalfa south of Albuquerque, Bernalillo County; mostly winged adults. (Heninger). ARIZONA - Light to moderate numbers appearing in areas of Yuma County and western Maricopa County. (Ariz. Coop. Sur.).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Additional stems of alfalfa from northeast examined for eggs. Samples taken January 3, 1966, indicated approximately one million eggs per acre; about same as found in samples taken December 7, 1964. (Ark. Ins. Sur.).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - First larvae of season noted in overwintering alfalfa in Harmon County; averaged 25 per square foot of crown. (Okla. Coop. Sur.).

A WEEVIL (Hypera brunneipennis) - CALIFORNIA - Adults very light in Porterville, Tulare County. This is new county record and farthest north species known to occur in State. Also southern limit of range of H. postica in State. (Cal. Coop. Rpt.). ARIZONA - Adults ranged 10-60 per 100 sweeps in alfalfa. Heaviest on Yuma Mesa. Occasional adults found in Buckeye area, Maricopa County. (Ariz. Coop. Sur.).

ALFALFA LOOPER (Autographa californica) - ARIZONA - Scattered in alfalfa in Gila Valley, Yuma County; averaged 15 per 100 sweeps. (Ariz. Coop. Sur.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Infestations scattered in alfalfa in Yuma and Gila Valleys, Yuma County. Averaged 25 per 100 sweeps. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Averaged 0-1 adult per 25 sweeps in Bernalillo County alfalfa. (Heninger).

FRUIT INSECTS

Citrus Insect Situation in Florida - End of December - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 64 percent of groves (norm 67 percent); 49 percent economic (norm 45 percent). Above average and in high range; little change expected in overall population. Infestations will become less severe, especially on fruit, but more groves will have light infestations on both leaves and fruit. Highest districts south, west and north; high on fruit, but not leaves, in east. TEXAS CITRUS MITE (Eutetranychus banksi) infested 39 percent of groves (norm 39 percent); 16 percent economic (norm 16 percent). Normal for yearend and expected to increase slightly. Only scattered infestations will be important. Highest districts west and north. CITRUS RED MITE (Panonychus citri) infested 31 percent of groves (norm 54 percent); 10 percent economic (norm 26 percent). Below normal for yearend. Expected increase will not exceed normal moderate level. All districts low. GLOVER SCALE (Lepidosaphes gloverii) infested 68 percent of groves; 12 percent economic. Above normal; little change expected. Highest district south. PURPLE SCALE (L. beckii) infested 76 percent of groves; 7 percent economic. Population normal; little change expected. Highest district south. YELLOW SCALE (Aonidiella citrina) infested 63 percent of groves; 16 percent economic. Above normal; increase expected. Highest district central. CHAFF SCALE (Parlatoria pergandii) infested 52 percent of groves; 9 percent economic. Below normal; slight increase expected. Highest district south. WHITEFLIES infested 75 percent of groves; 10 percent economic. Larval population above normal and has entered high range. Little change expected. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Heavy on orange trees in grove in McFarland, Kern County. (Cal. Coop. Rpt.). ARIZONA - Heavy on several backyard citrus tree plantings. Surveys initiated to delimit areas of infestations. (Ariz. Coop. Sur.).

PAPAYA FRUIT FLY (Toxotrypana curvicauda) - FLORIDA - Larvae in fruit of papaya at Miami Springs, Dade County. (Hancock).

TRUCK CROP INSECTS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Continues light to moderate in lettuce in Yuma and Maricopa Counties. Few fields heavily damaged. (Ariz. Coop. Sur.).

COTTON INSECTS

WEEVILS (Anthonomus spp.) - CALIFORNIA - Four larvae of A. grandis complex taken from green cotton boll in Winterhaven, Imperial County, by L. W. Ratcliff and O. Angvall. Det. by G. Okumura, verified by D. M. Anderson. Collected December 21, 1965. This is new State record. (Cal. Coop. Rpt.). ARIZONA - Single Anthonomus sp. adult found by field inspection on Yuma Mesa, Yuma County. This is westernmost field find to date. (Ariz. Coop. Sur.).

PINK SCAVENGER CATERPILLAR (Sathrobrota rileyi) - CALIFORNIA - Medium in some cotton bolls in Brawley, Imperial County. (Cal. Coop. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Larva found in gin trash from field near Colorado River in Gila Valley, Yuma County. This is most western larval find in county to date. First larvae in Queen Creek area this year collected from gin trash from western Queen Creek gin. (Ariz. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

CONIFER APHIDS (Cinara spp.) - OKLAHOMA - C. tujafilina extremely heavy on arborvitae in many central and eastern counties; light in Washita County. (Okla. Coop. Sur.). NEW MEXICO - C. tujafilina building up on arborvitae in Las Cruces area, Dona Ana County, and in Albuquerque, Bernalillo County. Honeydew a problem on sidewalks and porches. (Hare, Heninger). Cinara sp. light to moderately heavy on ornamental ponderosa pine plantings in Albuquerque area. (Heninger).

PINE BARK APHIDS (Pineus spp.) - ARKANSAS - Fairly high numbers built up in central area. (Ark. Ins. Sur.).

APHIDS - ALABAMA - Aphis spiraecola adults plentiful on spirea in Lee County; feeding on newly developing flower buds as well as old leaves. Large numbers of eggs present on stems, especially in bark crevices. Macrosiphum rosae adults and young present on all roses checked in same county; 5-25 young per leaf or bud not uncommon. (McQueen). NEW MEXICO - Lachnus salignus moderate to heavy on willows in Tucumcari area, Quay County. (Powell). ARIZONA - Macrosiphoniella sanborni heavy on ornamentals in Yuma area, Yuma County, and in Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

ARMORED SCALES - CALIFORNIA - Hemiberlesia rapax medium on native coyotebush in Tamales Bay State Park at Iverness, Marin County, and heavy on areca palm nursery stock in Pomona, Los Angeles County. Aonidiella aurantii medium on euonymus and light on laurel nursery stocks in Fresno, Fresno County. (Cal. Coop. Rpt.). FLORIDA - Eggs and adults of Ischnaspis longirostris collected on leaves of mahogany in nursery at West Hollywood, Broward County. This is new host record for Florida Division of Plant Industry. (Shirah, Dec. 3, 1964). The following collected by A. E. Graham on December 28 are new county records: Diaspis boisduvalii on Cycas revoluta, D. echinocacti on cactus and Chrysomphalus aonidum on seedling orange in nursery at Fannin Springs, Gilcrist County; Lepidosaphes camelliae on leaves of camellia at Fannin Springs and on same host at Cross City, Dixie County; Fiorinia theae on Euonymus sp. and camellia in nurseries at Cross City and on leaves of camellia in nursery at Fannin Springs. (Fla. Coop. Sur.).

A SOFT SCALE (Pulvinaria sp.) - CALIFORNIA - Heavy on poplar nursery stock in Union City, Alameda County. (Cal. Coop. Rpt.).

FOREST TENT CATERPILLAR (Malacosoma disstria) - TEXAS - Surveys indicated egg masses generally light on oak and ash trees over Fort Worth area, Tarrant County; however, masses moderate to heavy in local areas. (Turney, Meisch).

SEQUOIA PITCH MOTH (Vespamima sequoiae) - CALIFORNIA - Larvae, probably this species, medium in trunk of Monterey pine in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

SPIDER MITES - ALABAMA - Ranged 5-50 per leaf on laurelcherry throughout central area. (McQueen).

TOMATO RUSSET MITE (Aculus lycopersici) - CALIFORNIA - This and Tetranychus sp. medium on native nightshade in Highgrove, Riverside County. (Cal. Coop. Rpt.).

WHITEFLIES - ALABAMA - Nymphs heavy; 5-30 per leaf on all ornamental plantings of gardenia and most Chinese privet examined in Lee County. (McQueen).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - ARKANSAS - Continue nuisance in low areas in eastern section. Mild winter weather contributing factor. (Ark. Ins. Sur.). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period contained Aedes sollicitans, Aedes vexans, Culex salinarius and Culiseta inornata. Larval collections showed increase in floodwater species, due to great amount of

rainfall past 2 weeks. Culex salinarius and Culiseta inornata predominated in light traps. (Stokes).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Light to moderate on cattle in Ottawa and Cleveland Counties. (Okla. Coop. Sur.).

STABLE FLY (Stomoxys calcitrans) - TEXAS - Locally heavy and annoying homeowners in Whitesboro, Grayson County. Peanut hay used as mulch apparently breeding area for infestation. (Turney, Meisch).

CATTLE LICE - ALABAMA - Problems in beef cattle herds beginning in Shelby County; heavy in many herds. (Clark). OKLAHOMA - Moderate on cattle in Stephens County, light in Ottawa and Kingfisher Counties. (Okla. Coop. Sur.). UTAH - Several thousand additional cattle treated for control in scattered localities during past 3 weeks. Some treatments systemics to control cattle grubs also. (Knowlton).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Heavy on hogs in Stephens County. (Okla. Coop. Sur.).

CHICKEN BODY LOUSE (Menacanthus stramineus) - ARKANSAS - Populations in northwest section heavier than normal and troublesome on turkeys. Few inquiries received from turkey growers. Unusual in area. (Ark. Ins. Sur., Dec. 29).

TROPICAL RAT MITE (Ornithonyssus bacoti) - CALIFORNIA - Light in residence at Arlington, Riverside County; heavy and biting occupants in residence at Spring Valley, San Diego County. (Cal. Coop. Rpt., Dec. 31).

HOUSEHOLD AND STRUCTURAL INSECTS

COCKROACHES - ALABAMA - Extreme populations of Blattella germanica reported in several Lee County homes. (McQueen). UTAH - Supella supellectilium infesting apartment at Logan, Cache County; also observed in school dormatory. (Knowlton).

CLOVER MITE (Bryobia praetiosa) - MISSOURI - Nuisance in Adair and Perry Counties. (Peters).

A BILLBUG (Sphenophorus phoeniciensis) - ARIZONA - Some homeowners reporting heavy migrations into homes in some areas of city of Yuma, Yuma County. (Ariz. Coop. Sur.).

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) - UTAH - Infestation found in home at Ogden, Weber County. (Knowlton).

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - ALABAMA - Swarms from 3 homes reported in Auburn, Lee County, during past 10 days; temperatures spring-like for over 15 days. (Ledbetter). MARYLAND - Infesting new home in Baltimore. (U. Md., Ent. Dept.).

STORED-PRODUCT INSECTS

ALMOND MOTH (Cadra cautella) - CALIFORNIA - Larvae medium in stored seed cotton in Old River, Kern County. (Cal. Coop. Rpt.).

A FALSE POWDER-POST BEETLE (Prostephanus truncatus) - TEXAS - Heavy on stored ear corn in Austin County. (Krampitz).

Stored-Product Insects in Alabama - RICE WEEVIL (Sitophilus oryzae) and CONFUSED FLOUR BEETLE (Tribolium confusum) increased considerably in stored grain on farms in east central counties; S. oryzae more noticeable. (Barwood).

BENEFICIAL INSECTS

AN ICHNEUMON WASP (Pachysomoides stupidus) - MARYLAND - Collected at Adelphi, Prince Georges County, November 20, 1965, by D. O. Cordts. Det. by L. M. Walkley. P. stupidus is parasite of Polistes exclamans (a vespid wasp). This is a new State record. Host det. by K. Krombein. (U. Md., Ent. Dept.).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - FLORIDA - Apparently well-established in Monticello area, Jefferson County; 12 positive samples submitted during November from Monticello and areas north and northeast as far as 10 miles. Some properties heavily infested. (Fla. Coop. Sur.).

LIGHT TRAP COLLECTIONS

GEORGIA (Tifton, 12/29/65-1/5/66; temp. 42-73°F.; precip. 0.6 in.; blacklight).— Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

SOUTH CAROLINA (Charleston, 12/27/65-1/2/66; temp. 28-76°F.; precip. 0.07 in.; blacklight) - Pseudaletia unipuncta 10, Spodoptera frugiperda 0, Prodenia ornithogalli 0, Agrotis ipsilon 18, Feltia subterranea 20, Peridroma saucia 0, Heliothis zea 0, H. virescens 0, Manduca sexta 0, M. quinquemaculata 0, Estigmene acrea 0, Trichoplusia ni 0.

CORRECTIONS

CEIR 15(53):1348 - A SUBTERRANEAN TERMITE (Coptotermes vastator Light) - Should read: "... was collected from a building in Honolulu, Honolulu County, ..." It is not known if this insect occurs outside of buildings in Hawaii.

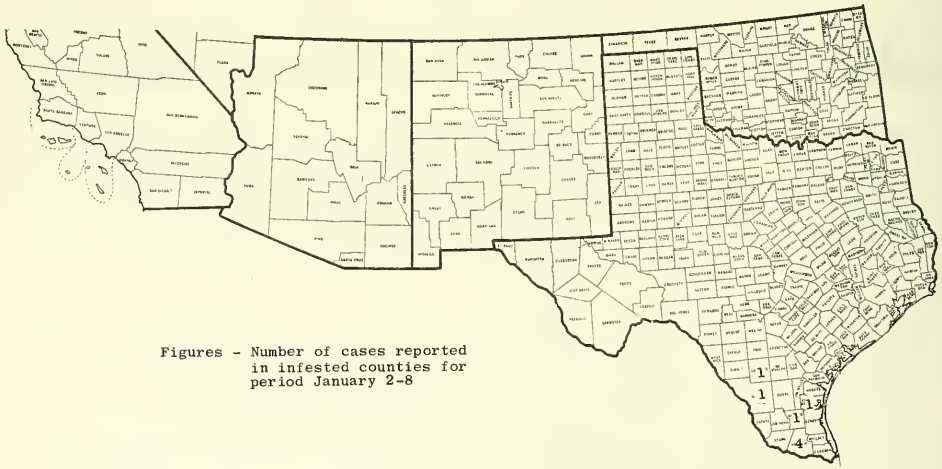
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period January 2-8 a total of 8 cases was reported in the Southwestern Eradication Area; all in TEXAS as follows by county: Hidalgo 4, and 1 each in La Salle, Webb, Kleberg and Brooks. The Republic of Mexico reported 25 cases as follows by State: Sonora 1, Chihuahua 2, Coahuila 1, Tamaulipas 21. Sterile screw-worm flies released: Texas 11,366,250, Arizona 2,000,000, Mexico 80,888,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
	Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).					
1964	0	0	36	52	0.00	0.00
1965	1	1	84	129	1.19	0.77
1966	8	11	29	52	27.58	21.15
	Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*					
1965	37	86	33	47	112.12	182.97
1966	31	89	11	30	103.33	296.66

Feasibility Survey - During this period 212 cases were identified in Mexico south of the Barrier Zone as follows: Veracruz 45, Yucatan 55, Nayarit 5, Puebla 8, Durango 4, Jalisco 9, Morelos 4, Campeche 4, Guerrero 24, Oaxaca 11, Chiapas 5, Michoacan 4, Tabasco 6, San Luis Potosi 7, Hidalgo 2, Sinaloa 5, Queretaro 1, Guanajuato 1, Colima 2, Zacatecas 10.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



Figures - Number of cases reported in infested counties for period January 2-8

STATUS OF THE EUROPEAN CORN BORER IN 1965 [1/]

Introduction: Cooperating agricultural agencies in 16 States reported on surveys conducted in their States to determine the abundance and distribution of European corn borer (Ostrinia nubilalis (Hübner)) in 1965. All survey data, summaries or records of field observations were submitted to Survey and Detection Operations in Hyattsville, Maryland, for final processing. Personnel of Entomology Research Division, Agricultural Research Service, kindly reviewed the material after completion.

The 1965 European corn borer survey was conducted during the late summer and fall of the year. The survey is designed to measure the fall population of European corn borer larvae and is conducted during a time to include a high percentage of late instars, wherever possible. In all cases, except for some minor differences in compiling data, the accepted survey methods were followed. The survey was continued on a district basis whenever possible in 1965. A district is usually a group of counties within a State, in most cases based on Crop Reporting Districts.

New Distribution: European corn borer was reported for the first time from 11 new counties during 1965 according to ARS records; however, these new counties were all in South Carolina, which is already known to be infested. This was twice the number reported the previous year; 5 new counties were reported in 3 States in 1964. This compares with 25 new counties reported in 1963, 4 in 1962, 15 in 1961 and 6 in 1960.

The new counties reported infested in South Carolina in 1965 were Aiken, Allendale, Edgefield, Lexington, Newberry, Orangeburg, Pickens, Richland, Union, Williamsburg and York.

Abundance: The general abundance of European corn borer larvae in the North Central States was lower on the average than in 1964. The number of borers per 100 plants averaged 41 in 1965 compared with 82 in 1964, an overall decrease of 50 percent. The largest single reduction in borer numbers was in southeast Missouri, where the population averaged 745 borers per 100 plants in 1964 compared with 301 in 1965. This was a reduction of 444 borers per 100 plants. Some increases in populations, however, were noted in east-southeast Illinois, south central Indiana, northwest Minnesota, northwest Missouri, southeast Nebraska, northeast South Dakota and a slight increase was found in southwest Wisconsin.

The greatest increase in borer population was in east-southeast Illinois where borers averaged 67 per 100 plants compared with 18 in 1964; this was a 3.5-fold increase in numbers. Overall population levels in Illinois were approximately half those found in 1964 and those in Iowa were approximately one-third those of the same year. There were only 2 districts in the North Central States where counts of over 200 borers per 100 plants were found in 1965. These were Districts I (241) and IX (301) in Missouri. In 7 districts, borer populations were more than 100 per 100 plants, but less than 200. In all other districts in the North Central States, populations were less than 100 borers per 100 plants.

European corn borer populations more than doubled in 2 of the 3 Eastern States reporting. The State average for Delaware was 209 borers per 100 plants and that for Maryland was 117. The greatest increase in Delaware was in Kent County where the population increase was from 65 borers per 100 plants in 1964 to 249 in 1965. Vermont, the only other Eastern State reporting, had an average population of 5 borers per 100 plants. A slight increase in the European corn borer population was noted in Arkansas, especially in the east central district.

1/ Survey data provided by State agricultural agencies. Data compiled and summarized by Survey and Detection Operations, Plant Pest Control Division, Agricultural Research Service, United States Department of Agriculture.

Table 1. Summary by States of European Corn Borer Abundance in Corn, Fall of 1965, Compared with Data for 1964

States	1964			1965			Comparable Districts or Counties Surveyed Both Years		
	No. of Districts Surveyed	Average No. of Borers Per 100 Plants	No. of Counties Surveyed	No. of Districts Surveyed	Average No. of Borers Per 100 Plants	No. of Counties Surveyed	Number	Borers Per 100 Plants 1964	Borers Per 100 Plants 1965
Eastern									
Delaware	1	98	3	1	209	3	1	98	209
Maryland	3	59	21	3	117	21	3	59	117
Total	4		24	4		24			
Average 1/								78	163
North Central									
Illinois	7	96	37	7	50	37	7	96	50
Indiana	12	60	92	12	38	92	12	60	38
Iowa	12	151	99	12	56	99	12	151	56
Kansas	3	93	25	3	48	24	3	93	48
Minnesota	7	31	67	7	22	67	7	31	22
Missouri 2/	8	157	46	8	145	46	8	157	145
Nebraska	7	84	74	7	50	74	7	84	50
North Dakota	1	125	5	1	84	5	1	125	84
Ohio	5	25	33	5	12	33	1	25	12
South Dakota	6	58	35	6	44	35	6	58	44
Wisconsin	9	13	58	9	6	52	9	13	6
Total	77		571	77		564			
Average 1/								82	41
Southern									
Arkansas	4	30	22	4	33	21	4	30	33
Others									
Vermont				1	5	13			
Michigan	1	35	32	1	41	14			

1/ Weighted averages based on districts surveyed.
2/ Figures for 1964 adjusted to include district VII.

Table 2 - European Corn Borer Abundance in Corn, Fall of 1965, Compared with Data for 1964

State (Districts or Counties)	Average Number of Borers Per 100 Plants 1964	1965
Arkansas (Ark. Ins. Sur.)		
Northwest	11	9
North Central	10	13
Northeast	62	43
East Central	37	66
Average	30	33
Delaware (Agr. Expt. Sta.)		
Kent	65	249
New Castle	51	106
Sussex	177	273
Average	98	209
Illinois (Natural History Survey, Ext. Ser.)		
Northwest	183	43
Northeast	90	21
West	133	83
Central	70	42
East	91	30
West-southwest	51	63
East-southeast	18	67
Average	91 (95)1/	50 (51)1/
Indiana (Ext. Ser., Expt. Sta.)		
North-northwest	94	41
North-northcentral	102	54
North-northeast	52	50
Northwest	41	34
North Central	33	15
Northeast	35	18
Southwest	32	23
South Central	12	26
Southeast	40	24
South-southwest	96	62
South-southcentral	119	55
South-southeast	63	48
Average	60	38
Iowa (State Dept. of Agr.; Ext. Ser.; Ent. Dept, Iowa State Univ.; ENT, ARS, USDA)		
District I	165	46
District II	71	19
District III	108	4
District IV	224	42
District V	142	37
District VI	103	68
District VII	174	37
District VIII	135	86
District IX	145	95
District X	208	30
District XI	150	103
District XII	203	108
Average	151	56
Kansas (Ins. Sur.)		
Northeast	135	93
North Central	14	19
East Central	131	31
Average	93	48
Maryland (Agr. Ext. Ser., Ins. Sur.)		
Eastern Shore	81	133
Southern area	48	115
Western and Central areas	49	103
Average	59	117
Michigan (Ins. Sur.)		
Surveyed Counties	35	41
(Survey in 1964 conducted in 32 counties; Survey in 1965 conducted in 14 counties)		

1/ Average based on 36 counties rather than districts

Table 2 - (Continued)

State (Districts or Counties)	Average Number of Borers Per 100 Plants 1964	1965
Minnesota (State Dept. Agr.)		
Northwest	43	55
West Central	52	53
Central	15	8
East Central	8	2
Southwest	62	21
South Central	35	12
Southeast	4	0.4
Average	31	22
Missouri (Ext. Ser., Ins. Sur.)		
District I	125	247
District II	78	180
District III	54	199
District IV	63	74
District V	61	70
District VI	81	52
District VII	50	40
District IX	745	301
Average	157 1/	145
Nebraska (Agr. Expt. Sta., Ext. Ser., Ins. Sur.)		
North	26	1
Northeast	98	20
Central	109	31
East	191	110
South	63	42
Southeast	93	147
Southwest	8	2
Average	84	50
North Dakota (State Dept. Agr.)		
Southeast	125	84
Ohio (Ext. Ser.; ARS, USDA)		
Northwest	49	11
West Central	12	6
Central	8	12
Southwest	25	17
Northeast	31	16
Average	25 (28) 2/	12 (11) 2/
South Dakota (Agr. Expt. Sta., Ext. Ser.)		
North Central	45	32
Northeast	55	117
Central	15	2
East Central	64	41
Southeast	99	67
South Central	69	5
Average	58 3/	44 3/
Vermont (State Dept. Agr.)		
Surveyed counties	--	5
(Survey in 1965 conducted in 13 counties).		
Wisconsin (State Dept. Agr.)		
Northwest	1	6
North Central	13	3
West Central	5	4
Central	17	11
Southwest	6	10
South Central	24	8
Southeast	26	2
East Central	9	6
Northeast	14	6
Average	13	6

1/ Average for 1964 adjusted to include District VII.

2/ Average based on all samples rather than district averages.

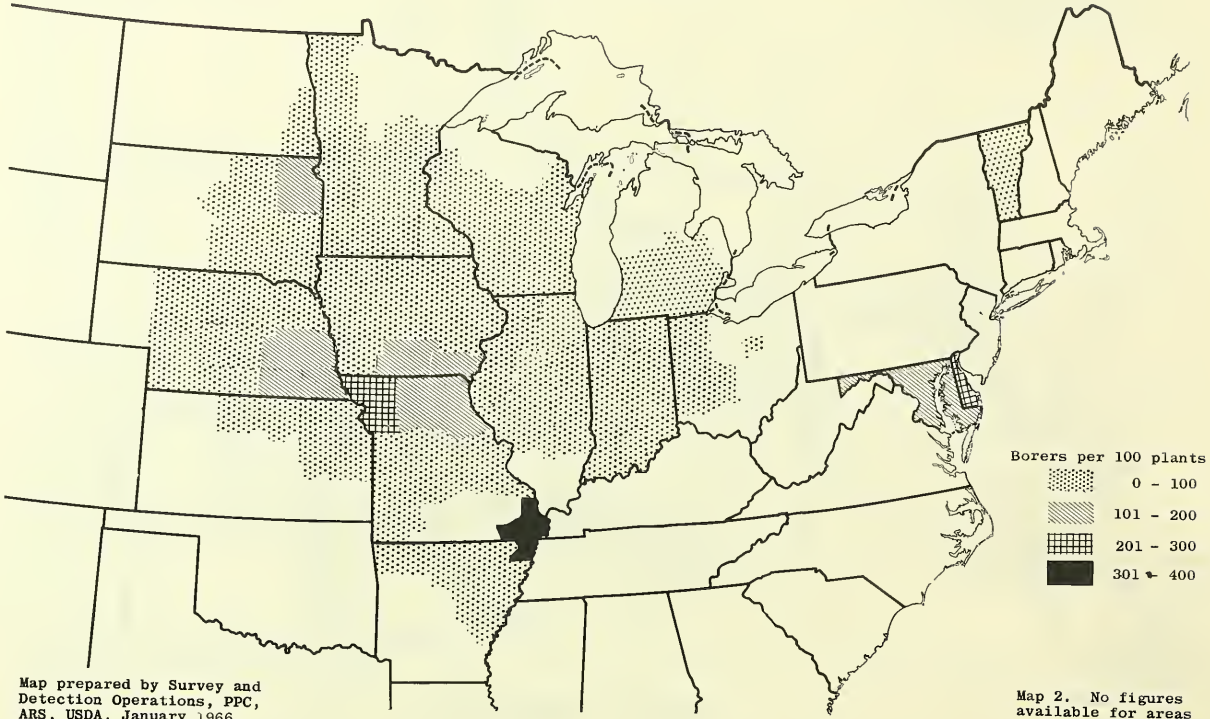
3/ Average based on 35 counties.

EUROPEAN CORN BORER ABUNDANCE
FALL 1965

Map prepared by Survey and Detection Operations, PPC, ARS, USDA, January 1966

Map. 1. Districts surveyed. Average number of borers per 100 stalks based on 1965 surveys. (Comparable figures in Table 2).

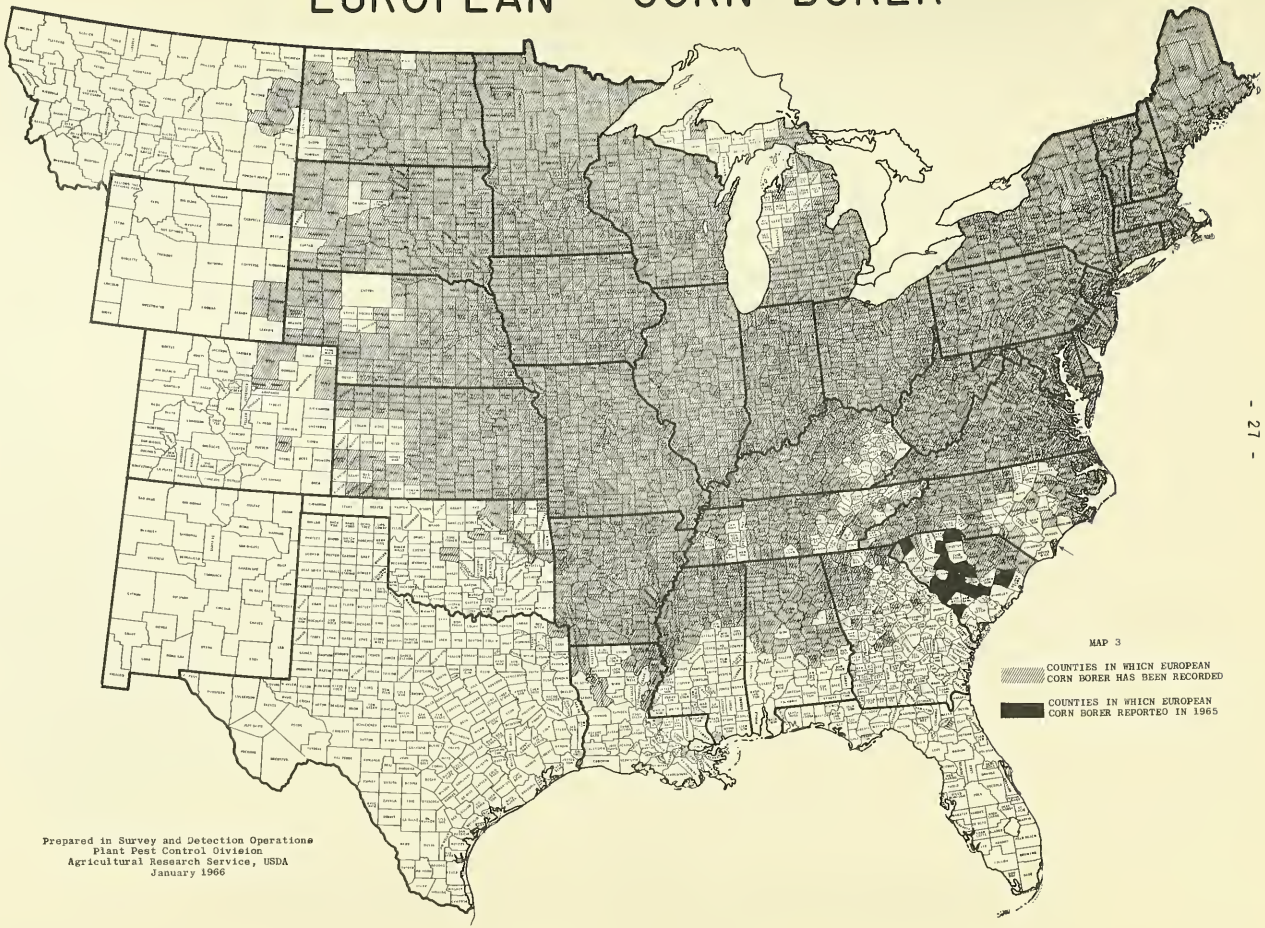
EUROPEAN CORN BORER ABUNDANCE
FALL 1965



Map prepared by Survey and Detection Operations, PPC, ARS, USDA, January 1966.

Map 2. No figures available for areas not shaded.

EUROPEAN CORN BORER



Prepared in Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service, USDA
January 1966

UNITED STATES DEPARTMENT OF AGRICULTURE
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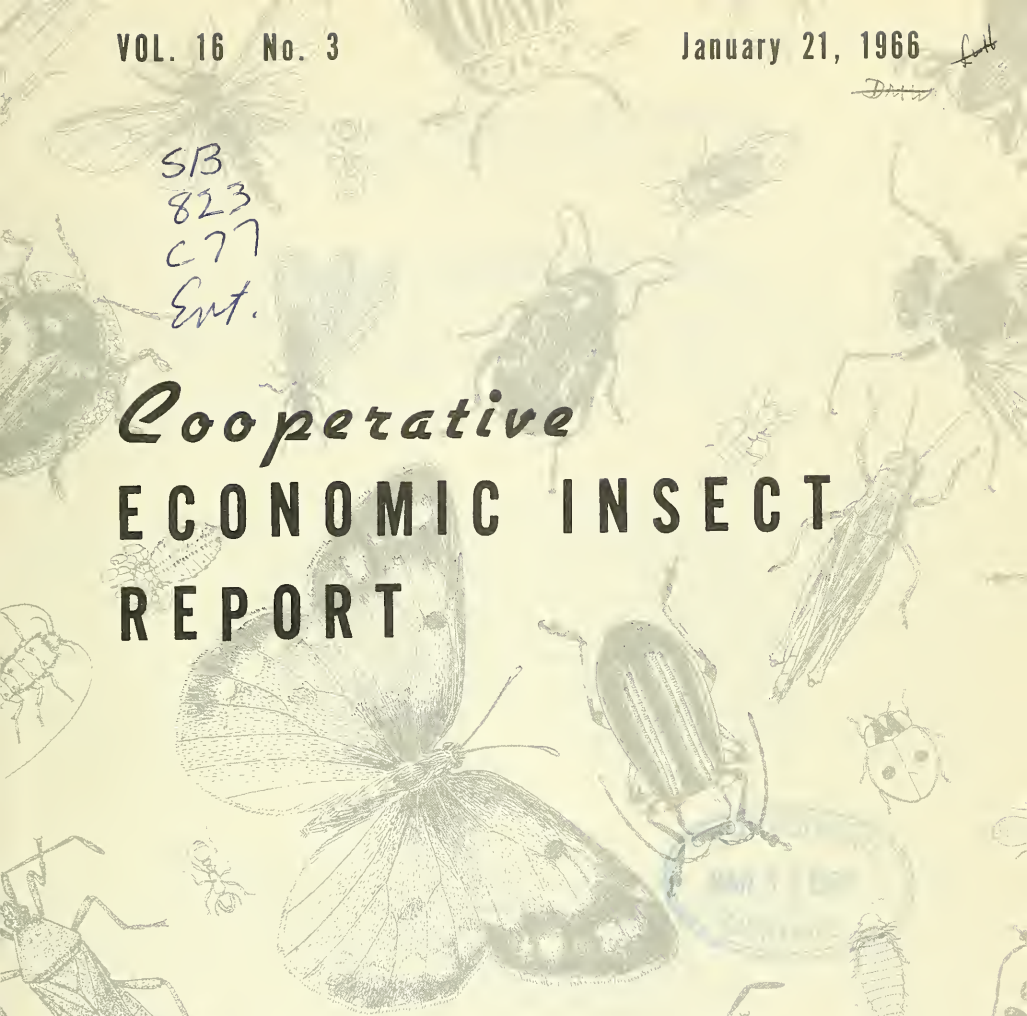
Cooperative ECONOMIC INSECT REPORT



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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

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SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 January 21, 1966 Number 3

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

SPOTTED ALFALFA APHID damaging in more areas of Oklahoma (p. 31)

Second and third larval PINK BOLLWORM finds reported in Bard area of California. Still being found in unopened cotton bolls in Maricopa County, Arizona. (p. 33).

PACIFIC COAST TICK causing paralysis of livestock in same areas of California affected in 1964. (p. 34).

DETECTION

New county records included SOYBEAN CYST NEMATODE (Heterodera glycines)in Ripley County, Missouri, (p. 31), and a MEALYBUG (Pseudococcus microcirculus) in Sacramento County, California, (p. 33).

CORRECTIONS

See page 35.

SPECIAL REPORTS

Reports in this issue are for week ending January 14 unless otherwise indicated.

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-JANUARY TO MID-FEBRUARY

The Weather Bureau's 30-day outlook for mid-January to mid-February calls for temperatures to average below seasonal normals over the eastern half of the Nation. Above normal averages are anticipated west of the Continental Divide as well as in western portions of the northern Plains. Elsewhere near normal temperatures are in prospect. Precipitation is expected to exceed normal in a band extending eastward from the southern Plains across the gulf coast region to the south and middle Atlantic Coast States. Subnormal precipitation is called for west of the Continental Divide and also from the central Plains eastward through the middle Mississippi Valley to the Great Lakes Region and the Ohio Valley. In unspecified areas near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING JANUARY 17

HIGHLIGHTS: (1) Coldest, most wintry week in East; mild West. (2) No precipitation of consequence California to Arkansas and to New England. (3) Heavy snow Lake Michigan and southern Appalachian areas.

TEMPERATURE: Bitter cold continued over the northern Great Plains and spread southward and eastward during the week. Fargo, North Dakota, has registered 0° or lower every day since December 31. Subzero temperatures occurred as far south as western Kansas, northern Illinois, and the higher mountains in Pennsylvania. Most of the Northeast has remained below freezing since Tuesday, January 11. In general, the Northeast averaged 5° to 10° colder than normal and colder than the previous week. Freezing temperatures occurred within a few miles of the gulf coast. Corpus Christi, Texas, registered 32° Saturday morning. Tampa, Florida, registered 43° Sunday morning. Much of the West turned cooler during the week but still averaged above normal. Average temperatures were 6° or more above normal in much of the northern Rocky Mountains and in parts of Kansas. It was the third warmer than normal week in the northern Rockies.

PRECIPITATION: No important precipitation fell over the Southwest from California to Oklahoma. Only light amounts fell over the Ohio River Valley and northeastward to New England. Moderate rains fell over a band from coastal Texas to northern Alabama. Heavy rains came to Georgia and South Carolina with totals generally 1 to 4 inches. Rains which occurred almost daily in the Far Northwest ended Friday and the weekend was sunny. Weekly totals ranged from about 2 inches along the northern portion of the Oregon coast to 5.5 inches in extreme northwestern Washington. Snow occurred daily in the nearby Cascades.

SNOW: Heavy snow fell from eastern Iowa to Lower Michigan with a foot of snow in the Milwaukee-Chicago area and 8 to 10 inches in the Muskegon-Grand Rapids section of Michigan. Six to 10 inches also fell in New York on the eastern lee of Lake Ontario. Heavy snow also fell over the southern Appalachians where some mountain areas received a foot of snow by late Saturday. Depths of 6 inches were common along the eastern slopes of the Appalachians with 4 inches at Richmond, Virginia. Little or no snow fell in the northern Appalachians or in most Rocky Mountain sections. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - TEXAS - Light and widespread in oats in Caldwell, Bastrop and Gonzales Counties. (Boring). OKLAHOMA - Averaged 400 per linear foot in wheat field in Perkins area, Payne County. Ranged 1-28 per linear foot in fields along Cimarron River in Logan, Kingfisher and Payne Counties and 1-10 per linear foot in Washita County. (Okla. Coop. Sur.). ARKANSAS - Continues non-economic in most areas. Numbers somewhat higher in west than in east. (Ark. Ins. Sur.).

GRAIN APHIDS - OKLAHOMA - Macrosiphum avenae ranged 3-10 and Rhopalosiphum padi ranged 1-60 per linear foot in wheat in Logan, Kingfisher and Payne Counties. (Okla. Coop. Sur.). ALABAMA - Unspecified species present in very high numbers in oats in Geneva County. Damage by these pests, diseases and other causes resulting in numerous isolated dead spots in fields. (Reynolds, Gregg). NORTH CAROLINA - Aphids infesting large acreage of small grain in Wake County. (Woodard).

HESSIAN FLY (Mayetiola destructor) - MISSOURI - Puparia reported in early planted wheat in Barry County. Ranged up to 5 per plant in field of Monon variety. In field of Triumph variety, 15 percent of plants infested with 1-2 puparia per plant. (Hubbard, Dec. 4).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Moderate to heavy numbers continue to damage alfalfa in Woods, Major, Blaine and Kingfisher Counties. (Okla. Coop. Sur.). ARKANSAS - Remains low in all areas. (Ark. Ins. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Increasing in alfalfa in Yuma and Maricopa Counties; 1,000 per 100 sweeps. (Ariz. Coop. Sur.). TEXAS - Very light locally on alfalfa in Brazos and Burleson Counties. (Boring). ARKANSAS - Continues low; less than one per square foot in northwest. (Ark. Ins. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Larval numbers decreased in alfalfa in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

ALFALFA LOOPER (Autographa californica) - ARIZONA - Infestations remain unchanged in Yuma County alfalfa. No new hatches observed. (Ariz. Coop. Sur.).

A WEEVIL (Hypera brunneipennis) - ARIZONA - No increase noted past week in alfalfa in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Adults light in Carlsbad area, Eddy County. (Kloepfer, Mathews).

THRIPS - NEW MEXICO - Light in Eddy County alfalfa. (Kloepfer, Mathews).

SOYBEAN CYST NEMATODE (Heterodera glycines) - MISSOURI - Cysts collected in Ripley County determined this species. This is a new county record. (Moorehead, Dec. 4).

FRUIT INSECTS

Quarterly Insect and Mite Outlook in Florida - January through March - This outlook is based on the assumption that weather beyond the period of the current U.S. Weather Bureau's 30-day outlook will be normal. Therefore, the forecast given below cannot be viewed with the same degree of confidence as those in the "Citrus Insect and Disease Summary" usually released twice each month.

CITRUS RUST MITE (Phyllocoptruta oleivora) will continue to occur in majority of groves. Fewer heavy infestations expected. Population will be near normal with about 30 percent of groves developing moderate to heavy infestations. TEXAS CITRUS MITE (Eutetranychus banksi) expected to remain above average but at moderate

level through March, then increase. Moderate to heavy infestations will occur in 10-15 percent of groves. CITRUS RED MITE (Panonychus citri) will remain below average and at low level despite increase expected in February and March. A few scattered infestations will be important. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) expected to be below normal. Will appear in about 8 percent of groves by March; less than 2 percent will have important infestations. GLOVER SCALE (Lepidosaphes gloverii) will continue above average with 10-12 percent of groves moderate to heavy. YELLOW SCALE (Aonidiella citrina) and a SNOW SCALE (Unaspis citri) will appear in more groves. Infestations will be heavier and of spotty occurrence. CHAFF SCALE (Parlatoria pergandii) will gradually increase to normal moderate abundance. WHITEFLIES will be more numerous than average and in high range through March. Most will be larvae and pupae and will be relatively inactive. APHIDS will appear late in February and increase rapidly in March. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CALIFORNIA RED SCALE (Aonidiella aurantii) - ARIZONA - Three additional properties found infested in Yuma County; in same areas reported previous week. (Ariz. Coop. Sur.).

BROWN SOFT SCALE (Coccus hesperidum) - ARIZONA - Infestation detected in Yuma County citrus nursery. Eradication procedures initiated. (Ariz. Coop. Sur.).

SPIREA APHID (Aphis spiraecola) - FLORIDA - Scattered on few of several hundred Valencia orange nursery plants at Pembroke, Polk County. (Schmidt, Jan. 6).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larval and adult collections common in Palm Beach, Broward and Dade Counties first 10 days of January; 2 adults taken in McPhail trap in orange tree in Ft. Pierce, St. Lucie County. (Campbell, Jan. 7). Larvae taken from calamondin more often than other fruit; also taken from guava, kumquat and Surinam cherry. (Fla. Coop. Sur.).

YUMA SPIDER MITE (Eotetranychus yumensis) - ARIZONA - Some controls necessary on young seedling plantings to protect new growth in areas of Yuma County. (Ariz. Coop. Sur.).

HICKORY SHUCKWORM (Laspeyresia caryana) - ALABAMA - Larvae numerous in old pecan shucks under trees throughout State. Weather conditions most favorable for high survivals. (McQueen).

SPIDER MITES (Tetranychus spp.) - CALIFORNIA - Medium on gooseberries in Ramona, San Diego County. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Controls still necessary in lettuce in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

FALSE CELERY LEAF TIER (Udea profundalis) - CALIFORNIA - Larvae infesting lettuce in Fresno County. This is first occurrence of this situation in county. (Cal. Coop. Rpt.).

DIAMONDBACK MOTH (Plutella maculipennis) - NORTH CAROLINA - Larvae and pupae noted in collards in Beaufort County. (Chesnutt).

MELON APHID (Aphis gossypii) - ARIZONA - Scattered infestations building up in Yuma County lettuce. Small flights detected on sticky board traps. (Ariz. Coop. Sur.).

TUMID MITE (Tetranychus tumidus) - FLORIDA - Infesting beans at Homestead, Dade County. (Wolfenbarger, Jan. 6).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Second larva found in Bard area, Imperial County, December 29, 1965; approximately 5 miles from first larval find. Det. by G. Okumura. (PPC). Third larva collected from green cotton boll in Bard January 10, 1966; close to first and second finds. Area received preventive treatment and additional control planning. (Cal. Coop. Rpt.). ARIZONA - Larvae still found in unopened bolls throughout Maricopa County. (Ariz. Coop. Sur.). NEW MEXICO - No live larvae or pupae found in exposed cotton bolls checked in Eddy County. Live pupae found around roots of stalks in same area. (Kloepfer, Mathews). FLORIDA - One larva taken from wild cotton in wooded area at Key Largo, Monroe County. (Creamer, Dec. 30).

TOBACCO STALK BORER (Trichobaris mucorea) - CALIFORNIA - Larvae and adults medium in Jimson-weed in Winterhaven, Imperial County. Larvae from green cotton bolls in same area suspected of being this species. (Cal. Coop. Rpt.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

FLORIDA FERN CATERPILLAR (Callopistria floridensis) - FLORIDA - Severely damaged scattered Boston compacta fern in nursery at Apopka, Orange County. (Musgrove, Jan. 5).

A FLEA BEETLE (Chaetocnema opacula) - CALIFORNIA - Larvae and adults of this species and Gracilaria azaleella locally heavy on azalea in Santa Rosa, Sonoma County. (Cal. Coop. Rpt.).

BLACK VINE WEEVIL (Brachyrhinus sulcatus) - NEW HAMPSHIRE - Adults damaged leaves and flowers of cyclamen in greenhouse at Littleton November 22 to January 10. (Mason, Sutherland).

APHIDS - ALABAMA - Eulachnus spp. and Cinara spp. light on pines in Lee and other central counties. Heavy and annoying in December 1963 and January 1964. Honeydew much less noticeable than in 1963 and 1964. (McQueen). FLORIDA - Control information requested for infestation of Macrosiphoniella sanborni on chrysanthemum in commercial nursery at Lantana, Palm Beach County. (Messec, Long, Jan. 5).

ARMORED SCALES - CALIFORNIA - Nuculaspis californica heavy on 8 pine trees in Santa Ynez, Santa Barbara County. Infestations becoming more prevalent statewide. (Cal. Coop. Rpt.). FLORIDA - Fiorinia theae moderate to severe on 17 of 34 commercial holly at Melbourne, Brevard County. (Levan, Jan. 7). Pseudaulacaspis pentagona severe on stems of 100 California privet plants of 2,000 checked in nursery at Seffner, Hillsborough County. (Simmon, McFarlin, Dec. 29). NORTH CAROLINA - F. theae infesting camellia in Yancey County. (Dillingham, Scott). P. pentagona observed on candytuft in Richmond County. (Flynt, Scott).

A MEALYBUG (Pseudococcus microcirculus) - CALIFORNIA - Light on orchid plants locally in Herald, Sacramento County. This is a new county record. (Cal. Coop. Rpt.).

A TREEHOPPER (Umbonia crassicornis) - FLORIDA - Severely damaged 10 podocarpus at nursery in Ft. Lauderdale, Broward County. (Clinton, Jan. 4). Adults smaller than normal. This new Division of Plant Industry host record, botanically far removed from usual leguminous hosts. (Fla. Coop. Sur.).

DOGWOOD CLUB-GALL MIDGE (Mycodiplosis alternata) - ALABAMA - Galls heavy on native dogwoods transplanted from woods to lawns in cities throughout State. Much heavier in native stands than isolated ornamental plantings. (McQueen).

RED-HEADED PINE SAWFLY (Neodiprion lecontei) - FLORIDA - Severe on localized portions of pine in schoolyard at Apopka, Orange County. (Musgrove, Jan. 5).

SPIDER MITES (Tetranychus spp.) - CALIFORNIA - Medium on New Zealand flax nursery stock in Fullerton, Orange County. (Cal. Coop. Rpt.).

PRIVET MITE (Brevipalpus obovatus) - CALIFORNIA - Medium on privet in San Jacinto, Riverside County. (Cal. Coop. Rpt.).

AN ERIOPHYID MITE (Aculus laevigatae) - CALIFORNIA - Light on leaves of pussy-willow nursery stock in Pomona, Los Angeles County. Usually becomes extremely heavy. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - TEXAS - Culiseta inornata common throughout Jefferson County area; observed in shaded daylight and nighttime flights. Culex salinarius observed flying at lights; Aedes sollicitans common in marsh areas. (Jefferson Co. Mosq. Cont. Comm.; Dec. Rpt., Thompson). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period contained Aedes sollicitans, Aedes vexans, Anopheles crucians, Anopheles punctipennis, Culex pipiens quinquefasciatus, C. restuans, C. salinarius, C. territans and Culiseta inornata. Culex salinarius and Culiseta inornata predominated in light trap collections. Light trap collections showed increase in Aedes sollicitans and Aedes vexans. (Stokes).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Moderate on cattle in Comanche, Cotton and Cleveland Counties; 10-15 per head on calves checked in Noble County. (Okla. Coop. Sur.). NEW MEXICO - Grubs averaged 9.9 (range 0-30) per head near Hillsboro, Sierra County; only 1 animal grub-free of 20 examined. Averaged 17.3 (ranged 3-34) per head at Florida, Socorro County. (Kinzer).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Moderate on hogs checked in Cotton County. (Okla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - Moderate on cattle in Cotton and Washita Counties. (Okla. Coop. Sur.).

CRAB LOUSE (Phthirus pubis) - MARYLAND - Infesting bedding in home at Baltimore. (U. Md., Ent. Dept.).

PACIFIC COAST TICK (Dermacentor occidentalis) - CALIFORNIA - Causing paralysis in livestock. Outbreaks detected in Latrobe, El Dorado County, and in Fillmore, Ventura County. Both herds affected in December. These same areas affected in 1964. (Cal. Coop. Rpt.).

WINTER TICK (Dermacentor albipictus) - CALIFORNIA - Heavy on horses in Pittsburg area, Contra Costa County, first week in January. (E. C. Loomis, Ext. Serv.). NEW MEXICO - Moderate to heavy on range cattle at Hillsboro, Sierra County. (Kinzer).

TICKS - OKLAHOMA - Extensive surveys at deer checkout stations in eastern area indicate populations somewhat heavier than normal on deer. Ixodes scapularis dominant; smaller numbers of Dermacentor albipictus and Amblyomma americanum present. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

BROWN-BANDED COCKROACH (Supella supellectilium) - MARYLAND - Heavy in several rooms of large building at Suitland, Prince Georges County. (U. Md., Ent. Dept.).

BOXELDER BUG (Leptocoris trivittatus) - NORTH CAROLINA - Annoying at Surry County location. (Jackson, Scott).

ARGENTINE ANT (Iridomyrmex humilis) - CALIFORNIA - Heavy in residence in Chico, Butte County. Remained active due to warm weather late in season. (Cal. Coop. Rpt.).

HIDE BEETLE (Dermestes maculatus) - CALIFORNIA - Heavy in turkey brooder house in Turlock, Stanislaus County. Structure being damaged by larvae boring in wood to pupate. (Cal. Coop. Rpt.).

STORED-PRODUCT INSECTS

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) - TEXAS - Heavy locally in stored rice in Brazoria County and stored grain sorghum in Hidalgo County. Approximately 20 percent of rice infested; counts in sorghum averaged 100 per square yard of surface. (Texas Coop. Rpt., Smith, Page).

BROAD-HORNED FLOUR BEETLE (Gnathocerus cornutus) - CALIFORNIA - Larvae and adults of this and Sitophilus oryzae heavy in ground corn in feed store in Gilroy, Santa Clara County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (Hippodamia convergens) - ALABAMA - Numerous adults feeding on aphids in pine trees in Lee County. Mild conditions have existed since December 15. (McQueen).

A BRACONID (Bracon caulicola) - MISSOURI - Specimen taken from larva of Ostrinia nubilalis. Det. by C. F. W. Muesebeck. O. nubilalis larva collected from smartweed (Polygonum sp.) in delta area of southeast section. (Keaster, Nov. 20).

BRACONID WASPS - ALABAMA - Heavily parasitized aphids on collards, turnips, oats and iris in central and southern sections. Continuous adult emergence occurring. (McQueen).

CORRECTIONS

CEIR 15(53):1345 - A BARK BEETLE (Phleosinus cristatus) should read Phloeosinus cristatus).

CEIR 16(2):15 - CHINCH BUG (Blissus leucopterus) - MISSOURI - Change Adair County to read Knox County.

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 1/12; blacklight) - Feltia subterranea 2.

GEORGIA (Tifton, 1/5-12; temp. 29-64°F.; blacklight) - Heliothis zea 0; H. virescens 0; Manduca sexta 0; M. quinquemaculata 0.

SOUTH CAROLINA (Charleston, 1/3-9; temp. 26-73°F.; blacklight) - Pseudaletia unipuncta 4, Spodoptera frugiperda 0, Prodenia ornithogalli 0, Agrotis ipsilon 5, Feltia subterranea 4, Peridroma saucia 0, Heliothis zea 0, H. virescens 0, Manduca sexta 0, M. quinquemaculata 0, Estigmene acrea 0, Trichoplusia ni 0.

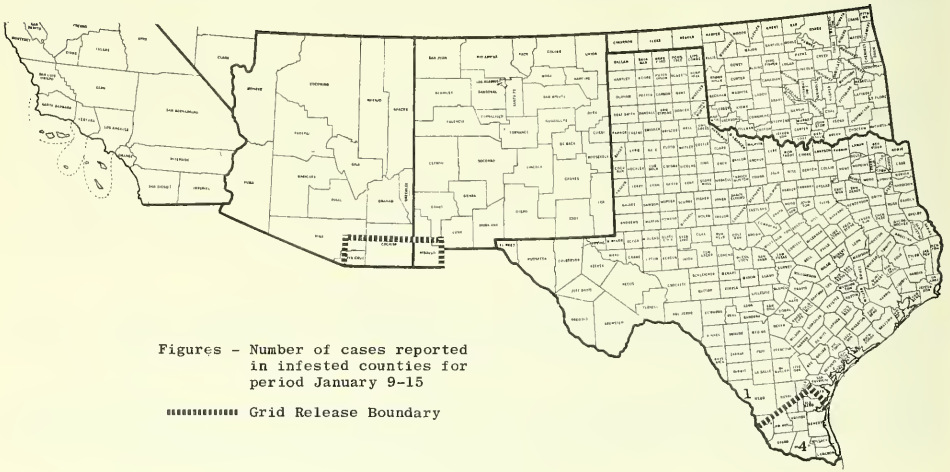
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period January 9-15, a total of 5 cases was reported in the Southwestern Eradication Area; all in TEXAS as follows by county: Hidalgo 4, Webb 1. The Republic of Mexico reported 72 cases as follows by State: Sonora 19, Nuevo Leon 3, Chihuahua 3, Tamaulipas 30, Territorio sur de Baja California 17. Sterile screw-worm flies released: Texas 15,446,250, Arizona 2,000,000, Mexico 65,072,000.

Year	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	0	0	26	108	0.00	0.00
1965	2	3	63	233	3.17	1.28
1966	5	16	37	89	13.51	17.97
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	57	143	61	108	93.44	132.40
1966	77	167	23	53	334.78	315.09

Feasibility Survey - During this period 210 cases were identified in Mexico south of the Barrier Zone as follows: Oaxaca 6, Guerrero 15, Puebla 7, Yucatan 39, Tabasco 19, Chiapas 2, Colima 2, Veracruz 38, Guanajuato 5, Jalisco 4, Sinaloa 4, San Luis Potosi 27, Mexico 2, Queretaro 2, Nayarit 2, Michoacan 3, Durango 5, Morelos 8, Campeche 20, Tlaxcala 0.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



Figures - Number of cases reported in infested counties for period January 9-15

Grid Release Boundary

HAWAII INSECT REPORT

Cereal and Forage Insects - LAWN ARMYWORM (Spodoptera mauritia acronyctoides) light on Tifton grass at Kaenohe, Oahu. Further increase and spread expected with continued favorable weather.

Truck Crop Insects - Population of a STINK BUG (Thyanta accera) remains light on 0.5-acre area at Hickam Air Force Base, Oahu; 2 adults per ten sweeps taken on swollenfinger grass (Chloris inflata). CARMINE MITE (Tetranychus telarius) heavy on eggplant (12 adults per square inch of leaf surface) from Puunene to Kihei, Maui, and heavy on celery, causing severe discoloration and distortion of leaves, at Waimea, Hawaii. CHINESE ROSE BEETLE (Adoretus sinicus) caused heavy damage (25 percent of leaf surface eaten) on pole beans and peanuts from Puunene to Kihei, Maui. A GRASSHOPPER (Atractomorpha ambigua) caused moderate damage to Swiss chard at 2,000 feet elevation at Puunene, Maui. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) light on pole beans, cucumber and tomato in commercial farming areas of Omaopio and Ulupalakua, Maui, and on pole beans from Pukalani to Lahaina, Maui.

Forest, Ornamental and Shade Tree Insects - A PLATASPID BUG (Coptosoma xanthogramma) damaged growing tips and young tendrils of Maunaloa and jade-vine blossoms from Aina Koa to Aiea Heights, Oahu. CHINESE ROSE BEETLE caused heavy defoliation of Pterocarpus indicus at Ala Moana Park, Oahu; 10 trees almost completely denuded.

Insects Affecting Man and Animals - A HALICTID BEE (Halictus sp.) caused considerable annoyance to residents and picnickers throughout Kawaihae and Puako areas, Hawaii.

Household and Structural Insects - Heavy adult populations of a MILLIPED (Trigoniulus lumbricinus) moving in daylight from 2-acre vacant lot to residential areas in Hawaii Kai, Oahu; 9-53 counted near front entrances of 10 homes.

Beneficial Insects - Significant buildup of a CERAMBYCID BEETLE (Plagiohammus spinipennis), stem borer of noxious weed Lantana camara var. aculeata, occurred at Kau, Hawaii; dieback of many branches to ground level noted. Larvae of an ARCTIID MOTH (Selca brunella) light to moderate on terminals and fruits of Melastoma malabathricum (a weed) in Hilo, Hawaii. Noteworthy was rapid spread from original release point. Infested plants observed 3-400 feet from release area. A HISPID BEETLE (Uroplata girardi) - This leaf miner became established in Kukui Paddock, Kau, Hawaii; first released in October 1965 to aid in control of Lantana camara var. aculeata.

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) caused heavy damage to dryland taro and yam plants in Puunene and Kihei, Maui. Two live specimens of BROWN GARDEN SNAIL (Helix aspersa) found at Nawiliwili, Kauai; one specimen inside the terminal fuel storage yard, other on pick-up truck. To date, total of 5 found in area. (Davis, Jan. 8).

Change in Names of Several Spider Mites

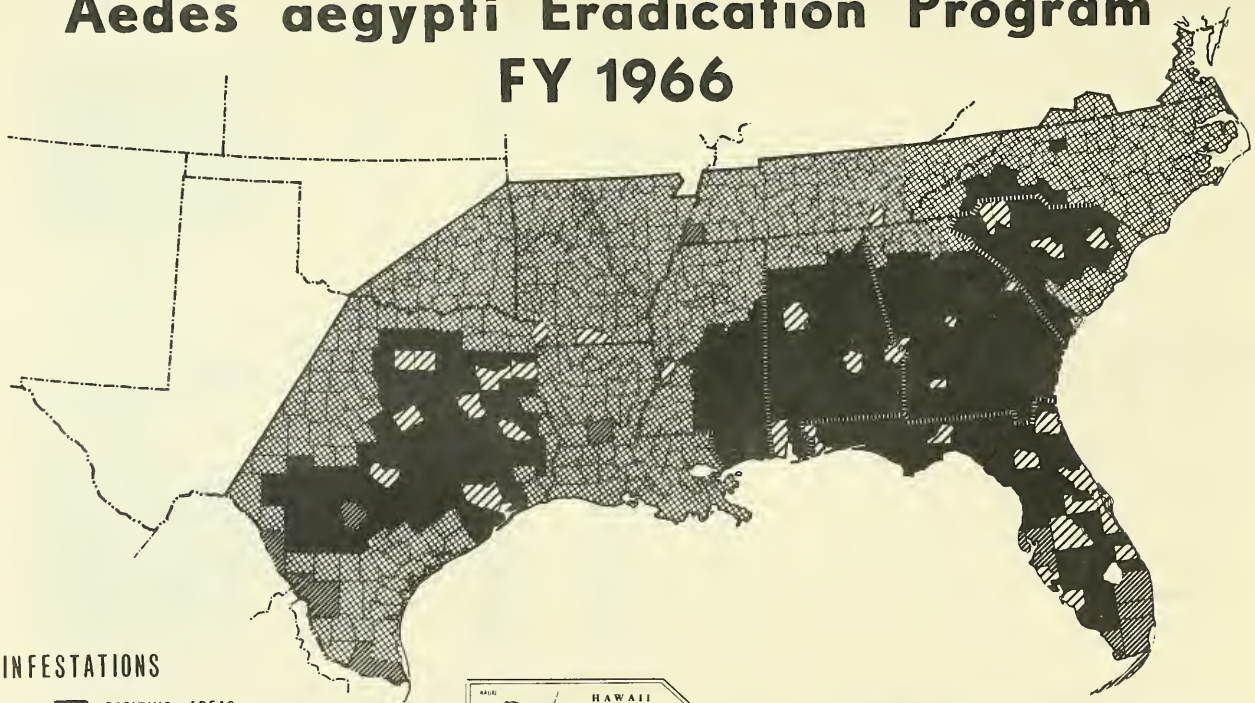
Tetranychus telarius (L.), formerly known as the two-spotted spider mite, is now called the carmine spider mite. Tetranychus urticae Koch, the green species, is called the two-spotted spider mite. This change was made in the recent "Common Names of Insects", published by the Entomological Society of America in December 1965. Another species, T. cinnabarinus (Bdv.), is considered now as a synonym of T. telarius. These changes are in accord with Dr. E. W. Baker, Federal taxonomist in this group. Unless these combinations are followed, notes will be carried in the CEIR as spider mites, Tetranychus spp.

SUMMARY OF THE 1965 PROGRESS REPORT OF THE AEDES AEGYPTI ERADICATION PROGRAM IN THE UNITED STATES

Field operations for the eradication of Aedes aegypti from the United States were begun in 26 locations in 1964 and were greatly expanded in 1965. Significant reductions have been achieved, with a few areas rapidly approaching negativity. In infested areas, the mosquito breeding has been found to be more abundant and more widely distributed throughout both urban and rural areas than was anticipated. An analysis of field operations and surveys conducted throughout the yellow fever receptive area has permitted a more precise definition of the scope of the problem and has more clearly defined the technical and logistical complexities of the operations. The surveys throughout the Mississippi River basin, supplemented by limited field operations, indicate that a large geographical segment of the yellow fever receptive area is either free of infestations or that the mosquito is present in exceedingly small numbers. Research for the development of new or improved methodology is being continued and field programs will be underway in parts of all heavily infested States by the end of Fiscal Year 1966. Despite technical and logistical problems which have tended to defer the anticipated time table for achieving eradication, the results clearly indicate the feasibility of eradication. With continued budgetary support, eradication will be accomplished, the threat of yellow fever eliminated, and concurrent environmental improvements affecting some 40,000,000 people will be achieved. (K. D. Quarterman)

See map on following page.

STATUS of Aedes aegypti Eradication Program FY 1966

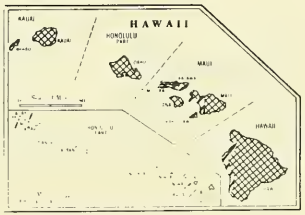


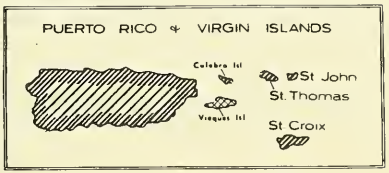
INFESTATIONS

- POSITIVE AREAS
- NEGATIVE OR LIMITED AREAS

OPERATIONAL AREAS

- BEGAN FY 1964
- BEGAN FY 1965-66





U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, Public Health Service, Communicable Disease Center

STORED-GRAIN INSECT SURVEY IN KANSAS - 1965

Survey of farm-stored grain was made during September. Samplings were made at 5 farms in each of 35 counties. Cooperators were L. Brooks, H. R. Gundu Rao and Nellie Price, Kansas State University; G. Ross, C. Guldner, E. Martinez, W. Reading and J. Simpson, Kansas State Board of Agriculture.

Insect	No. Samples infested	No. Samples non-infested	Insects per inf. 1,000 gram sample range	Insects per inf. 1,000 gram sample average	Districts infested NE.	EC.	SE.	NC.	C.	SC.	NW.	WC.	SW.
In Wheat													
Sitophilus zeamais	2	270	1-1	1	-	-	+	-	-	-	-	-	-
Sitophilus oryzae	9	263	1-37	7	-	-	-	-	+	+	+	-	+
Rhyzopertha dominica	92	180	1-151	12	-	-	+	+	+	+	+	+	+
Tribolium confusum	2	270	1-1	1	-	-	-	-	-	+	-	-	-
Tribolium castaneum	68	204	1-88	7	+	-	+	+	+	+	+	+	+
Oryzaephilus surinamensis	157	115	1-157	15	+	+	+	+	+	+	+	+	+
Plodia interpunctella	28	244	1-9	2	+	+	+	+	-	+	+	+	+
Tenebroides mauritanicus	34	238	1-21	5	+	-	+	+	+	+	+	+	+
Sitotroga cerealella	15	257	1-8	2	+	-	+	-	+	+	-	+	+
Cryptolestes ferrugineus	133	139	1-45	7	+	+	+	+	+	+	+	+	+
Mycetophagidae	24	248	1-4	2	+	-	+	+	+	+	+	+	-
Lathridiidae	70	202	1-14	2	+	-	-	+	+	+	+	+	+
Hymenopterous parasites	86	186	1-24	4	-	+	+	+	+	+	+	+	+
Dermestidae	36	236	1-18	2	+	+	+	+	+	+	+	-	+
Latheticus oryzae	5	267	1-9	5	-	-	-	-	+	+	-	+	-
Sitophilus granarius	1	271		1	-	-	+	-	-	-	-	-	-
Number samples per district					9	4	31	29	24	36	36	54	49

25 samples not infested (total 272 samples).

Insect	No. Samples infested	No. Samples non-infested	Insects per inf. 1,000 gram sample range	Insects per inf. 1,000 gram sample average	Districts infested NE.	EC.	SE.	NC.	C.	SC.	NW.	WC.	SW.
In Sorghum													
Sitophilus granarius	1	27		1	-	NS*	+	-	-	-	-	-	NS
Rhyzopertha dominica	9	19	1-24	10	-		+	-	+	-	-	+	
Tribolium castaneum	7	21	1-6	3	+		+	+	-	-	-	+	
Oryzaephilus surinamensis	17	11	1-259	32	+		+	+	+	+	+	+	
Plodia interpunctella	4	24	1-59	19	-		+	-	+	-	+	-	
Tenebroides mauritanicus	5	23	1-3	1	+		+	-	+	-	-	-	
Sitotroga cerealella	1	27		1	-		-	-	-	-	-	+	
Cryptolestes ferrugineus	19	9	1-316	39	+		+	+	+	+	+	+	
Lathridiidae	3	25	1-24	9	-		+	-	-	-	-	+	
Hymenopterous parasites	6	22	1-9	3	+		+	-	-	-	+	+	
Dermestidae	4	24	1-6	2	-		-	-	-	-	-	+	
Number samples per district					4	0	5	2	4	1	4	8	0

1 sample not infested (total 28 samples).

* NS = no samples

Insect	No. Samples infested	No. Samples non-infested	Insects per inf. 1,000 gram sample range	Insects per inf. 1,000 gram sample average	Districts infested NE.	EC.	SE.	NC.	C.	SC.	NW.	WC.	SW.
In Corn													
Sitophilus zeamais	3	22	1-4	2	+	+	+	NS*	NS	NS	-	-	-
Sitophilus oryzae	2	23	1-11	6	-	-	+				-	-	-
Rhyzopertha dominica	1	24		1	-	-	+				-	-	-
Tribolium confusum	1	24		1	-	-	+				-	-	-
Tribolium castaneum	5	20	1-4	2	+	+	+				-	-	-
Oryzaephilus surinamensis	16	9	1-36	8	+	+	+				-	-	+
Plodia interpunctella	3	22	2-6	4	+	-	+				-	-	-
Tenebroides mauritanicus	3	22	1-1	1	-	+	+				-	-	-
Sitotroga cerealella	6	19	1-11	4	+	+	+				-	-	-
Cryptolestes ferrugineus	16	9	1-55	9	+	+	+				-	+	-
Mycetophagidae	3	22	1-1	1	+	-	+				+	-	-
Lathridiidae	9	16	1-14	3	-	+	+				-	-	+
Hymenopterous parasites	8	17	1-89	21	+	+	+				-	-	-
Dermestidae	3	22	2-7	4	-	-	+				-	-	+
Latheticus oryzae	1	24		3	-	-	+				-	-	-
Number of samples per district					7	2	12	0	0	0	1	2	1
In Oats													
Sitophilus oryzae	1	10		1	NS	-	+	NS	NS	NS	NS	-	NS
Rhyzopertha dominica	2	9	1-6	4		-	+					+	
Tribolium castaneum	2	9	1-1	1		-	+					+	
Oryzaephilus surinamensis	6	5	7-47	27		+	+					+	
Tenebroides mauritanicus	3	8	1-3	2		+	+					-	
Sitotroga cerealella	1	10		2		-	+					-	
Cryptolestes ferrugineus	9	2	1-24	7		+	+					+	
Mycetophagidae	2	9	1-1	1		-	+					-	
Lathridiidae	5	6	1-11	4		+	+					-	
Hymenopterous parasites	7	4	1-15	7		+	+					+	
Dermestidae	2	9	1-80	41		-	+					-	
Latheticus oryzae	1	10		6		-	-					+	
Number samples per district					0	1	8	0	0	0	0	2	0

1 sample not infested (total 25 samples).

1 sample not infested (total 11 samples).

* NS = no samples

Insect	No. Samples infested	No. Samples non-infested	Insects per inf. 1,000 gram samples range	Insects per inf. 1,000 gram samples average	Districts infested NE.	EC.	SE.	NC.	C.	SC.	NW.	WC.	SW.
In Barley													
Sitophilus oryzae	3	4	1-6	3	NS*	NS	+	NS	+	-	-	-	NS
Sitophilus granarius	1	6		9			-		+	-	-	-	
Rhyzopertha dominica	3	4	4-11	9			+		+	+	-	+	
Tribolium castaneum	1	6		10			-		-	-	-	+	
Oryzaephilus surinamensis	4	3	1-44	17			+		-	-	+	+	
Plodia interpunctella	1	6		1			-		-	-	+	-	
Tenebroides mauritanicus	1	6		3			-		+	-	-	-	
Sitotroga cerealella	1	6		1			+		-	-	-	-	
Mycetophagidae	1	6		1			+		-	-	-	-	
Lathridiidae	1	6		1			-		-	-	-	+	
Hymenopterous parasites	1	6		1			+		-	-	-	-	
Dermestidae	3	4	1-4	3			+		-	-	+	-	
Number samples per district					0	0	3	0	1	1	1	1	0

1 sample not infested (total of 7 samples).

* NS = no samples

INSECT DETECTION IN THE UNITED STATES - 1965

During the year, 105 new State records appeared in the Cooperative Economic Insect Report. The States which had 5 or more included Hawaii (16), California (9), Delaware (8), Ohio (7), and Illinois, Utah and Washington (5 each). Within this number were included 2 new records for North America, 8 for the United States and 1 for the Eastern United States.

Species	FIRST STATE REPORT State	County	Observed on	CEIR Vol. 15 Page No.
Aceria caryae (Keifer) (pecan leafroll mite)	Georgia	Coweta	pecan	718
Aceria neocynodonis Keifer (Bermudagrass mite)	Oklahoma	Oklahoma	Bermuda grass	59
Aceria tulipae (Keifer) (Wheat curl mite)	Ohio	Wood	corn	1220
Aleurotuberculatus similis Takahashi (a whitefly)	Rhode Island	Washington	holly	369
Allocapnia aurora Ricter (a stonefly)	South Carolina	Oconee	- -	128
Allocapnia recta (Claassen) (a stonefly)	South Carolina	Oconee	- -	128
Alphitobius laevigatus (Fabricius) (a darkling beetle)	Illinois	Vermilion	decomposed soybean meal	347
Amphimallon majalis (Razoumowsky) (European chafer)	Ohio	Cuyahoga	blacklight trap	816
Anomala ausonia Erichson 1/ (a scarab)	New Jersey	Hudson	in flight	247
Aphis heraclella Davis (a celery aphid)	Michigan	Allegan	celery	242
Aphis nerii Fonscolombe (oleander aphid)	Hawaii	Honolulu	oleander	182
Aphis spiraecola Patch (spirea aphid)	Hawaii	Maui	Osteomeles anthyllidifolia	1234
Apion longirostre Olivier (hollyhock weevil)	Utah	Summit	hollyhock	871
Arion ater (Linnaeus) (a slug)	Utah	Wasatch	rose	386
Aspidiotus californicus Coleman - See Nuculaspis californica (Coleman)				
Asterolecanium miliaris robustum Green (a pit scale)	Hawaii	Kauai	bamboo	9

1/ Also a new United States record.

Species	State	County	Observed on	CEIR Vol. 15. Page No.
Bathyplectes curculionis (Thomson) (an ichneumon wasp)	Illinois	Effingham Massac Pulaski	Hypera postica larvae	51
	Missouri	Reynolds	swept from alfalfa	767
Biolysia tristis (Gravenhorst) (an ichneumon wasp)	Illinois	26 southern cos.	swept from alfalfa	491
	Missouri	Boone Reynolds Shannon Platte	- -	767
Brachyrhinus rugosostriatus Goeze (a weevil)	Arizona	Yavapai	side of house	249
Calomycterus setarius Roelofs (a Japanese weevil)	Missouri	Atchison	soybean	749
Carpophilus oculatus Murray (a sap beetle)	Hawaii	Honolulu	seeds	393
Cecidostiba dendroctoni Ashmead (a pteromalid wasp)	Mississippi	Franklin Jefferson	- -	875
Choristoneura houstonana (Grote) (a tortricid moth)	Kansas	Barton	- -	5
	Nebraska	Franklin	juniper	832
Chorizococcus brevicruris McKenzie 1/ (a mealybug)	California	Sacramento	Stapelia sp. Huernia sp.	1191
Coenosopsia prima Malloch (a muscid fly)	Florida	Volusia	McPhail trap	1264
Coptotermes formosanus Shiraki 2/ (Formosan subterranean termite)	Texas	Harris	warehouse	907
Coptotermes vastator Light	Hawaii	Honolulu	in building*	1348
Crematogaster minutissima missouriensis Emery (an ant)	Arkansas	- -	- -	18
Cynaeus angustus (LeConte) (a darkling beetle)	Delaware	New Castle	poultry house	908
Cyrtepistomus castaneus (Roelofs) (Asiatic oak weevil)	Missouri	Phelps	in motel	1191
Diabrotica longicornis (Say) (northern corn rootworm)	Delaware	New Castle	at window	994
Diabrotica undecimpunctata howardi Barber (southern corn rootworm)	Nevada	Clark	alfalfa	1066

1/ Also a new North American record.

2/ Also a new Continental U. S. record.

* See also correction CEIR 16(2):19.

Species	State	County	Observed on	CEIR Vol. 15 Page No.
Elaphidionoides villosus (Fabricius) (= Elaphidion villosum (Fabricius)) (twig pruner)	Delaware	Sussex	maple	1302
Empoasca abrupta DeLong 1/ (western potato leafhopper)	Delaware	New Castle	snapdragon	210
Eriophyes emarginatae Keifer (an eriophyid mite)	Ohio	Hamilton	wildgoose plum	301
Eriophyes gardeniella Keifer 2/	Florida	Pasco	gardenia	210
Eumysia mysiella (Dyar) (a phycitid moth)	California	Kings	sagebrush	171
Feltomyia pisonifolia (Felt) (a gall midge)	Florida	Everglades Nat. Park 3/	Pisonia aculeata	1302
Fenusa pusilla (Lepeletier) (birch leaf miner)	Iowa	Fayette	white birch	870
Graphognathus leucoloma striatus (Buchanan) (a white-fringed beetle)	Maryland	Prince Georges	- -	875
Harrisina metallica Stretch (a grape leaf skeletonizer)	New Mexico	Bernalillo	grapevine	3 231
Hister nomas Erickson (a histerid beetle)	Hawaii	Hawaii	cow dung	524
Hoplocampa testudinea (Klug) (European apple sawfly)	New Hampshire	Rockingham	orchard	857
Hypothenemus pubescens Hopkins (a scolytid beetle)	Hawaii	Maui	Bermuda grass	9
Kalotermes approximatus Snyder (a drywood termite)	North Carolina	Sampson	white oak	1337
Lachnus salignus (Gmelin) (an aphid)	Hawaii	Maui	Osteomeles anthyllidifolia	1074
Languria trifasciata Say (a languriid beetle)	Florida	Dade	grass and weeds	909
Leuctra sp. (a stonefly)	South Carolina	Oconee	- -	128
Limnaecia phragmitella Stainton (a cosmopterigid moth)	Delaware	New Castle	at light	38
Linognathus vituli (Linnaeus) (long-nosed cattle louse)	Hawaii	Kauai	calves	1074

1/ Also a new Eastern United States record.

2/ Also a new United States record.

3/ County not given.

Species	State	County	Observed on	CEIR Vol. 15 Page No.
Malacosoma pluviale (Dyar) (western tent caterpillar)	Rhode Island	Providence	nursery stock	690
Mantis religiosa Linnaeus (European mantid)	Washington	Spokane	- -	1195
Musca autumnalis De Geer (face fly)	Idaho Utah Washington	Latah Cache Whitman	dairy cattle - - Malaise trap	1013 833 910
Mycetaspis personata (Comstock) (an armored scale)	Hawaii	- -	Cordyline terminalis	901
Myrmecina americana Emery (an ant)	California	El Dorado	in litter	108
Myzocallis elegans (Koch) (an aphid)	Utah	Cache	elm	1163
Nalepella tsugifoliae Keifer (an eriophyid mite)	Michigan	Wayne Kalamazoo	Canada hemlock	386
Neopinnaspis harperi McKenzie (an armored scale)	Hawaii	Honolulu	Gouldia terminalis	182
Neurotoma inconspicua (Norton) (plum web-spinning sawfly)	Texas	Montague	peach	734
Nipponorthezia guadalcanalia Morrison 1/ (an ensign scale)	Hawaii	Honolulu	in leaf litter	393
Novomessor cockerelli (Andre) (an ant)	California	San Bernardino	in desert	803
Nuculaspis californica (Coleman) (= Aspidiotus californicus Coleman) (black pine-leaf scale)	North Dakota	La Moure	Mugho pine	797
Oligonychus viridis (Banks) (a spider mite)	Delaware	Sussex	hickory	1011
Orthorhinus klugi Boheman (a weevil)	Hawaii	Hawaii	Acacia koaia	393
Oulema melanopa (Linnaeus) (cereal leaf beetle)	Illinois	Will	wheat	537
Pachylister caffer Erickson (a histerid beetle)	Hawaii	Hawaii	cow dung	524
Panonychus ulmi (Koch) (European red mite)	Colorado	Delta	in orchard	857
Pealius azaleae (Baker & Moles) (azalea whitefly)	Ohio	Lake	Chinese azalea	1337
Pentamerismus taxi (Haller) (a false spider mite)	Illinois	Champaign	yew	1104
Pheidole bicarinata Mayr (an ant)	Arkansas	- -	- -	18

1/ Also a new United States record.

Species	State	County	Observed on	CEIR Vol. 15 Page No.
Pheidole morrisii morrisii Forel	Arkansas	- -	- -	18
Phlegetonia delatrix (Guenée) (a noctuid moth)	Hawaii	Honolulu	at light	704
Phyllophaga tristis (Fabricius) (a May beetle)	Washington	Clark	in soil	836
Phytomyza ranunnculi flavoscutellata Fallén (a leaf miner fly)	California	Modoc	in drop cloth collection	554
Platyedra vilella Zeller (a gelechiid moth)	New Hampshire	Rockingham	hollyhock	1326
Pristiphora erichsonii (Hartig) (larch sawfly)	Oregon	Mount Hood National Forest 1/	western larch	867
Pulvinaria acericola (Walsh & Riley) (a soft scale)	Maryland	Prince Georges	dogwood	905
Pulvinaria ericicola McConnell	Ohio	Portage	azalea	870
Schizonobia sp. 2/ (a spider mite)	California	Orange	squirrel burrow	659
Schizotetranychus lycurus Tuttle & Baker (a spider mite)	Ohio	Putnam	rice cutgrass	1156
Scolytus multistriatus (Marsham) (smaller European elm bark beetle)	Georgia	Fulton	elm	617
Siteroptes graminum (Reuter) (a pyemotid mite)	California	San Diego	carnation	1344
Smicronyx commixtus Dietz (a weevil)	Washington	Kittitas	swept from sugar beet	84
Sphenophorus parvulus Gyllenhal (bluegrass billbug)	Utah	Salt Lake	lawns	1241
Sphenophorus venatus vestitus (Chittenden)	Kansas	Johnson	zoysia grass	1028
Spodoptera litura (Fabricius) 3/ (tobacco and tomato caterpillar)	Hawaii	Honolulu	at light	704
Stephanitis takeyai Drake & Maa (a lace bug)	Rhode Island	Providence	Pieris japonica	1302
Stilpnus anthomyidiperda Viereck (an ichneumon wasp)	California	Ventura	Fannia canicularis pupae	457

1/ County not given.

2/ Also a new Western Hemisphere record.

3/ Also a new Western Hemisphere record; Perl and Hermes Reef only. Species not known to occur on the main islands.

Species	State	County	Observed on	CEIR Vol. 15 Page No.
Taniva albolineana (Kearfott) (spruce needle miner)	Nevada	Washoe	Colorado spruce	1227
Tarsonemus scaurus Ewing (a tarsonemid mite)	Ohio	Wood	corn	1156
Tarsonemus setifer Ewing	Delaware	New Castle	firethorn	946
Temnochila virescens (Fabricius) (a predaceous ostomid beetle)	Delaware	Sussex	in home	457
Tetranychus marianae McGregor (a spider mite)	California	San Bernardino	Solanum sp.	1344
Tetranychus mcdanieli McGregor	New Hampshire	Sullivan	raspberry	863
Therioaphis maculata (Buckton) (spotted alfalfa aphid)	Michigan	Shiawassee	alfalfa	1137
Thyanta accerra (McAtee) (a pentatomid bug)	Hawaii	Honolulu	yard-long beans	1348
Trachymyrmex septentrionalis obscurior (W. M. Wheeler) (an ant)	Arkansas	- -	- -	18
Trechnites insidiosus (Crawford) (an encyrtid wasp)	Oregon	Hood River Jackson	Psylla pyricola nymphs	1127
Vespa crabro germana Christ (giant hornet*)	Indiana	Floyd	from house trailer	1167
Vitacea polistiformis (Harris) (grape root borer)	Alabama	Coffee Lee	grape	104
Xylococculus betulae Pergande (a margarodid scale)	Virginia	Floyd	yellow birch	1268

* Reported as European hornet.

UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Maryland 20782

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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

Volume 16 January 28, 1966 Number 4

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG caused dead spots in some small grains in Kansas; spottedly heavy in wheat in Grady County, Oklahoma. Absence of subfreezing temperatures in Florida favored continued activity of SCALE INSECTS in citrus; not of concern at present, but indicates higher than normal populations later in year. (p. 51).

Detection

PEAR SAWFLY (Hoplocampa brevis), an economic pest of pear, reported in United States for first time. Determined from specimens collected in 1953 in New York. (p. 62). Also reported from Canada. (p. 59). Background report (p. 56). Entomologists should be alert for this insect in pear orchards this coming spring.

A SNAIL (Rumina decollata) reported for the first time in California. (p. 54).

Special Reports

The 1966 outlook for GRASSHOPPERS infesting rangeland in 14 Western States is greater than in 1965, based on the 1965 adult grasshopper survey. Nymphal surveys in the spring will determine the need for control measures. See map following last page.

Highlights of the Occurrence of Insects and Other Arthropods in Canada, 1965. (pp. 58-60).

Interceptions of Special Interest at U. S. Ports of Entry. (pp. 61-62).

Status of the Screw-worm in the Southwest. (p. 55).

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Two new sections, Federal-State Plant Protection Programs and Insect Detection, have been established for the CEIR. Please indicate notes on incoming reports for these sections in order to assure proper placement.

Reports in this issue are for week ending January 21 unless otherwise indicated.

WEATHER OF THE WEEK ENDING JANUARY 24

HIGHLIGHTS: (1) Very cold week, most areas. (2) Heavy snowstorm, East Central and Northeast; first Northeaster in 23 months.

TEMPERATURE: Arctic air which had moved into the area earlier strengthened its grip over most of the Nation during the past week. Most of the Great Plains area averaged 15° to 30° colder than the previous week and 10° to 25° below normal. Breien, North Dakota, registered 42° below zero Friday morning; the weekly average temperature at Williston, North Dakota, was 19° below zero. The cold thrust brought the first major outbreak of Arctic air to Kansas and the coldest weather in 3 years to Texas. The temperature at Dalhart, Texas, dropped to 7° below zero and subfreezing temperatures occurred over the entire State, except the lower Rio Grande Valley. Roswell, New Mexico, registered 16° below zero on Saturday morning. In contrast to other areas, New England averaged 4° to 6° above normal and 6° to 10° warmer than the previous week.

PRECIPITATION: Amounts were light in the Pacific Northwest. Significant precipitation occurred mainly in a belt from New Mexico to Florida and from the southern Appalachians to New England. Snowfall was up to 14 inches in northern New Mexico and 5 to 10 inches in northwestern Texas and parts of Oklahoma. Light to moderate rains fell on the Gulf coast, Florida, and some Atlantic coastal regions. Snowfall was 5 to 10 inches in the southern Appalachians and 10 to 20 inches on both slopes of the northern Appalachians and into parts of New England.

STORMS: An ill-defined low pressure system moved from New Mexico on Tuesday to the Georgia coast by early Saturday. This was followed by northeastward movement and explosive deepening so that a very deep low was over Nantucket, Massachusetts, by late Sunday. Snow accumulated to 18 inches in 24 hours at Buffalo, New York, (a new January record) while Watertown, New York, received 15 inches in 6 hours. High winds drifted the snow and caused damage to powerlines in the New York City area. A tanker was driven aground near the entrance to New York Harbor. This weekend storm was a typical "northeaster" and the first storm of this type since February 1964. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - KANSAS - Counts per linear foot by county as follows: Ranged trace to 50 in Harvey; averaged 20 in Sumner and ranged 20-50 in Sedgwick, except near Wichita where highs of 1,000 plus caused dead spots in fields. (Brooks, Simpson). Trace in Reno. (Harvey). Averaged 10 in Cowley and Chautauqua, except one field at Havana, Chautauqua County, with average of 100. Ranged 50-400 (averaged 200) in Montgomery; trace in Labette; none found in southwestern section of State. (Gates). OKLAHOMA - Ranged 6-25 per linear foot in wheat checked in Tillman and Jackson Counties. Moderate in Kingfisher County and heavy spots noted in Grady County. (Okla. Coop. Sur.). NEW MEXICO - Very light in small grain checked in Curry and Roosevelt Counties. Averaged less than 1 per linear foot. (Nielsen, Elson).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Ranged 2-35 per linear foot in wheat in Jackson and Tillman Counties. (Okla. Coop. Sur.).

ENGLISH GRAIN APHID (Macrosiphum avenae) - FLORIDA - Increased from 45 nymphs to approximately 85 nymphs and adults per 100 sweeps in rye at Gainesville, Alachua County. (Mead).

PEA APHID (Acyrthosiphon pisum) - OKLAHOMA - Moderate in alfalfa in Kingfisher County. (Okla. Coop. Sur.). ARIZONA - Moderate numbers active in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Light, spotted infestations in southern half of State. (N. M. Coop. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Remains moderate in Washington County alfalfa and light in Kingfisher County. (Okla. Coop. Sur.).

LEAFHOPPERS - FLORIDA - Most leafhopper and planthopper species on rye at Gainesville, Alachua County, declined sharply since December 24. Macrosteles fascifrons (six-spotted leafhopper) increased from 2 to 11 per 100 sweeps and Balclutha hebe (a leafhopper) increased to 1 adult per sweep. Cuerna costalis averaged 8 adults per 100 sweeps on bitter blue lupine at Gainesville, a reduction from December 24. (Mead, Jan. 18).

ALFALFA LOOPER (Autographa californica) - CALIFORNIA - Larvae appearing in many alfalfa fields in Fresno County. (Cal. Coop. Rpt.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged 10-25 per linear foot in wheat in Tillman County. (Okla. Coop. Sur.).

FRUIT INSECTS

Citrus Insect Situation in Florida - Mid-January - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 70 percent of groves (norm 67 percent); 52 percent economic (norm 44 percent). Decreasing, especially on fruit, but still above normal and in high range. Further decrease expected. Highest districts south, west and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 38 percent of groves (norm 31 percent); 17 percent economic (norm 10 percent). Moderate but above average for January. Little change expected. Scattered groves will have important infestations. Highest districts west and north. P. oleivora and E. banksi likely to be more abundant and more injurious in young groves than in bearing groves of the type from which data in this report obtained. Very light infestations of SIX-SPOTTED MITE (Eotetranychus sexmaculatus) appeared in 6 percent of groves. Absence of subfreezing temperatures favored continued activity of SCALE INSECTS; not of concern at present but indicates higher than usual populations later in year. Especially true for BLACK SCALE (Saissetia oleae). Warm winter caused crawlers of a SNOW SCALE (Unaspis citri) to be unusually abundant and active. WHITEFLIES decreased but still above normal for January. Further decrease to average level expected. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

APHIDS - MARYLAND - Eggs of undetermined species very heavy on apple tree twigs in orchard near Ellicott City, Howard County. (U. Md., Ent. Dept.).

POLYPHEMUS MOTH (Antheraea polyphemus) - ALABAMA - Several pupae observed on plum trees in home orchard in Geneva County and on apple trees in Lee County. (Reynolds, Bagby, et al).

PUSS CATERPILLAR (Megalopyge opercularis) - ALABAMA - Pupae observed in apple orchard in Lee County. (McQueen).

YELLOW SCALE (Aonidiella citrina) - CALIFORNIA - This and A. aurantii medium locally on orange trees in Vacaville, Solano County. (Cal. Coop. Rpt.).

Citrus Blackfly, Mediterranean Fruit Fly and Mexican Fruit Fly - See Federal-State Plant Protection Programs, pages 60, 61.

TRUCK CROP INSECTS

CABBAGE APHID (Brevicoryne brassicae) - ARIZONA - Damaging numbers in Yuma County. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Controls continue in Yuma County. (Ariz. Coop. Sur.). FLORIDA - Lightly damaging cabbage at Sanford, Seminole County. (Desin).

LEAF MINER FLIES (Liriomyza spp.) - FLORIDA - Lightly damaging celery and cabbage at Sanford, Seminole County. (Desin).

Sweetpotato Weevil - See Federal-State Plant Protection Program, page 61.

COTTON INSECTS

Boll Weevil and Pink Bollworm notes are included in Federal-State Plant Protection notes, page 60.

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

AN ENGRAVER BEETLE (Ips mexicanus) - CALIFORNIA - Larvae and adults heavy locally on Monterey pine in Baywood Park, San Luis Obispo County. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - NEW MEXICO - Very heavy on ponderosa and pinyon pines at shopping center and occasional light infestations in home landscaping in Albuquerque, Bernalillo County. (Heninger).

A CLEARWING MOTH (Synanthedon castaneae) - ALABAMA - Larvae attacking several chestnut trees in Shelby County. Det. by D. M. Weisman. (Ledbetter, Clark).

ARMORED SCALES - CALIFORNIA - Odonaspis penicillata heavy on bamboo in civic center in San Rafael, Marin County. Aonidiella aurantii heavy on Laurus sp. locally in Tracy, San Joaquin County. (Cal. Coop. Rpt.). FLORIDA - Chrysomphalus aonidium damaged leaves of aspidistra in commercial establishment at Gainesville, Alachua County. (Graham, Jan. 13). All stages of Pinnaspis strachani caused severe damage to stems and bark of hibiscus 'Snow Queen' in nursery at Miami, Dade County. (Meyer). NORTH CAROLINA - Pseudaulacaspis pentagona infested ligustrum locally in Anson County. (Mount).

ERIOCOCCID SCALES (Eriococcus spp.) - CALIFORNIA - E. coccineus locally medium on Mammillaria transitra cactus in El Centro, Imperial County. (Cal. Coop. Rpt.). NORTH CAROLINA - E. quercus infesting oak locally in Anson County. (Potter, Mount).

MEALYBUGS - NEW MEXICO - Light to very heavy on tropical plants in greenhouses and stores in Albuquerque area, Bernalillo County. (Heninger). CALIFORNIA - Pseudococcus adonidum medium on New Zealand flax nursery stock in Menlo Park, San Mateo County, and light in Soquel, Santa Cruz County. (Cal. Coop. Rpt.).

AN APHID (Dactynotus ambrosiae) - NEW MEXICO - Aphids, probably this species, moderate to heavy and widespread on iris plants in Albuquerque area, Bernalillo County. (N. M. Coop. Rpt.).

AZALEA WHITEFLY (Pealius azaleae) - ALABAMA - Nymphs heavy on underside of leaves on some old azalea plants in Lee County. (McQueen).

CABBAGE WEBWORM (Hellula rogatalis) - CALIFORNIA - This species, Spodoptera exigua (beet armyworm) and Plutella maculipennis (diamondback moth) light to medium on stock (Matthiola sp.) plants in Bonsall, San Diego County. (Cal. Coop. Rpt.).

DOGWOOD CLUB-GALL MIDGE (Mycodiplosis alternata) - TEXAS - Damaged dogwood trees locally in Harris County. (Hamman).

A SPIDER MITE (Oligonychus platani) - CALIFORNIA - Medium locally on pyracantha in Riverside, Riverside County. (Cal. Coop. Rpt.).

A HAPLOZETID MITE (Peloribates sp.) - CALIFORNIA - Adults heavy on rhododendron in Golden Gate State Park, San Francisco, San Francisco County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period contained Anopheles bradleyi, A. crucians, Aedes sollicitans, A. vexans, Culex pipiens quinquefasciatus, C. restuans, C. salinarius, Culiseta inornata, and Psorophora howardi. Light trap collections decreased; C. inornata predominant species. (Stokes).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Light on beef cattle in Bryan County. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

CLOVER MITE (Bryobia praetiosa) - MARYLAND - Entering homes at several locations in Baltimore and Prince Georges County. (U. Md., Ent. Dept.). VIRGINIA - Extremely abundant around homes in Henry, Brunswick and Botetourt Counties. (Isakson, et al.). ARKANSAS - Collected in new poultry house in Boone County. (Ark. Ins. Sur.).

EUROPEAN EARWIG (Forficula auricularia) - CALIFORNIA - Medium and invading residence in Chico, Butte County. (Cal. Coop. Rpt.).

SPRINGTAILS - OKLAHOMA - Invading homes in Enid, Garfield County; Stillwater, Payne County; Lawton, Comanche County; Oklahoma City, Oklahoma County; and Tulsa, Tulsa County. (Okla. Coop. Sur.).

A DAMPWOOD TERMITE (Zootermopsis nevadensis) - OKLAHOMA - Probably this species taken in wood shipped from Pacific coast to Comanche County. (Okla. Coop. Sur.).

STORED-PRODUCT INSECTS

DERMESTID BEETLES - CALIFORNIA - Trogoderma parabile and Anthrenus sp. infesting dry dog food in feed store in Merced, Merced County. (Cal. Coop. Rpt.).

Khapra Beetle - See Federal-State Plant Protection Programs, page 60.

BENEFICIAL INSECTS

A HISTER BEETLE (Platysoma lecontei) - VIRGINIA - Adults found on spruce and Virginia pine; predaceous on eggs and larvae of wood-boring beetles. (Isakson).

A LADY BEETLE - ALABAMA - Numerous larvae of a small brown species feeding freely on Fiorinia theae on heavily infested old camellia in Lee County. Low temperatures of 20-23° F. apparently have not affected activity. (McQueen).

A MACROCHELID MITE (Macrocheles muscae) - TEXAS - Ranged 6-8 (averaged 2) per fly on heavy, local populations of Stomoxys calcitrans in Grayson County. (Turney, Meisch).

MISCELLANEOUS INSECTS

A SNAIL (Rumina decollata) - CALIFORNIA - Heavy on miscellaneous ground covers on several properties in Riverside, Riverside County. Collected by G. Challet January 13. Det. by T. Kono. This is a new State record. (Cal. Coop. Rpt.). This species apparently thrives in home gardens and uncultivated plots when introduced; it feeds on both vegetable matter and other snails. (PPC).

SOUTHERN LYCTUS BEETLE (Lyctus planicollis) - TEXAS - Probably this species heavy locally and damaging ash lumber in Lavaca County. (Fawcett).

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 1/18; blacklight) - Agrotis ipsilon 1, Feltia subterranea 1.

GEORGIA (Tifton, 1/12-19; temp. 35-64°F.; precip. 2.10 in.; blacklight) - Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

SOUTH CAROLINA (Charleston, 1/10-16; temp. 38-60°F.; precip. 2.03 in.; blacklight)- Pseudaletia unipuncta 3, Spodoptera frugiperda 0, Prodenia ornithogalli 1, Agrotis ipsilon 3, F. subterranea 8, Peridroma saucia 0, H. zea 0, H. virescens 0, Manduca sexta 0, M. quinquemaculata 0, Estigmene acrea 0, Trichoplusia ni 0.

TEXAS (Brownsville, 1/8-14; temp. 42-76°F.; precip. 0.57 in.; 2 blacklight) - A. ipsilon 13, E. acrea 7, F. subterranea 0, H. virescens 0, H. zea 3, Loxostege similalis 0, P. saucia 0, P. ornithogalli 5, M. quinquemaculata 0, M. sexta 0, P. unipuncta 10, Spodoptera exigua 0, S. frugiperda 0, T. ni 2.

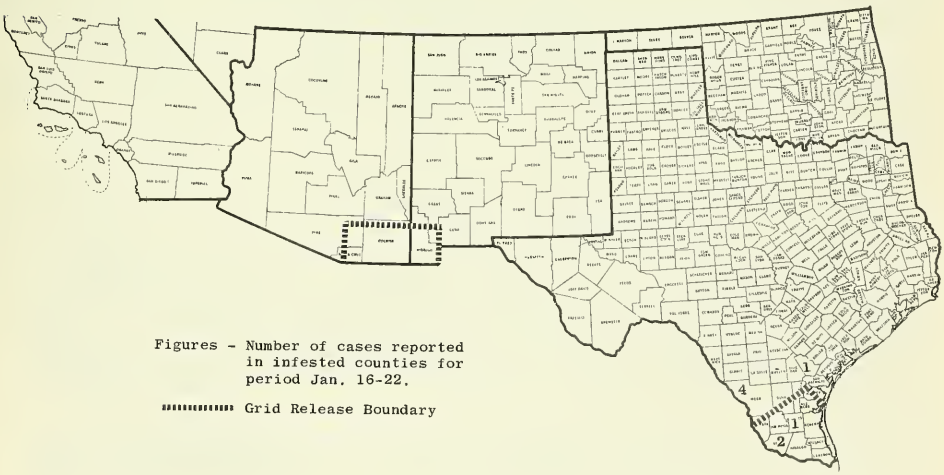
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period January 16-22 a total of 8 cases was reported in the Southwestern Eradication Area; all in TEXAS as follows by county: Bee 1, Brooks 1, Starr 2, Webb 4. The Republic of Mexico reported 72 cases as follows by State: Tamaulipas 26, Sonora 6, Chihuahua 2, Nuevo Leon 2, Territorio sur de Baja California 36. Sterile screw-worm flies released: Texas 16,658,250, Mexico 45,152,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
	Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).					
1964	0	0	30	108	0.00	0.00
1965	0	3	41	233	0.00	1.28
1966	8	24	18	107	44.44	22.42
	Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*					
1965	53	196	28	136	189.28	144.11
1966	79	246	17	70	464.70	351.42

Feasibility Survey - During this period 423 cases were identified in Mexico south of the Barrier Zone as follows: Oaxaca 9, Durango 6, Sinaloa 30, Veracruz 75, Puebla 9, Guerrero 64, Nayarit 16, Michoacan 12, Campeche 11, Zacatecas 8, Mexico 0, Aguascalientes 1, San Luis Potosi 8, Morelos 6, Guanajuato 13, Chiapas 12, Yucatan 83, Hidalgo 3, Tabasco 15, Colima 15, Jalisco 27.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



Figures - Number of cases reported in infested counties for period Jan. 16-22.

Grid Release Boundary

HIGHLIGHTS OF THE OCCURRENCE OF INSECTS AND OTHER ARTHROPODS IN CANADA, 1965

C. Graham MacNay

A generally cool season in Canada, in the west consistently wet and in much of the east at first too dry then too wet, adversely affected the normal development of most agricultural pests. Infestations and damage were, on the whole, much lighter than usual. The following are some of the more important records.

In the interior of British Columbia, GRASSHOPPER infestations were generally moderate. Control measures were necessary only in the Nicola Zone, where approximately 600 acres of rangeland were treated, compared with 1,100 acres in 1964. In Alberta, the area infested was half that of 1964, the major decrease occurring north of the Bow River, and crop damage in the Province by insects, generally, was light. In Saskatchewan, numbers of adult grasshoppers reached the lowest level in 10 years. Cool, wet weather in spring and early summer retarded hatching and nymphal development, and comparable conditions in September adversely affected maturation and oviposition. A fungus, Entomophthora grylli, again aided in reducing populations in most eastern and southern regions of the Province. In general, the outbreak potential for 1966 was greatly reduced. A survey of adult grasshopper abundance revealed that, compared with 1964, populations of economic importance were reduced by 77 percent, with a comparable reduction in the area of infestation. Infestations were light in 220 townships, only 10 were moderately infested and none severely. In Manitoba, adverse weather conditions also greatly reduced numbers in the western part of the Province, and, with conditions ideal for plant growth, damage was negligible. A further reduction in numbers was expected.

In British Columbia, VARIEGATED CUTWORM (Peridroma saucia) occurred in outbreak numbers in the Chilliwack and Agassiz areas. In the Kamloops area, CUTWORM damage was generally light. In the Prairie Provinces, too, little damage occurred. In southern Alberta and west central Saskatchewan, PALE WESTERN CUTWORM (Agrotis orthogonia) lightly damaged some cereal crops. In an area south of Edmonton, Alberta, and in the Saskatoon and North Battleford areas of Saskatchewan, RED-BACKED CUTWORM (Euxoa ochrogaster) caused minor damage. In southeastern Alberta, ARMY CUTWORM (Chorizagrotis auxiliaris) injured some spring wheat and mustard; it was not reported in Saskatchewan. In Manitoba, GLASSY CUTWORM (Crymodes devastator) in an unusual infestation, injured many lawns in Greater Winnipeg. In southwestern Ontario, DARK-SIDED CUTWORM (Euxoa messoria) severely damaged tobacco and strawberry. In the Atlantic Provinces, no damage by ARMYWORM (Pseudaletia unipuncta) was reported, although in 1964 it had occurred in outbreak numbers in the area, and to a lesser extent elsewhere in Eastern Canada.

WHEAT STEM SAWFLY (Cephus cinctus), unusually numerous in the Prairie Provinces in 1964, increased slightly in Alberta, especially southeast of Lethbridge, and, though present in reduced numbers in Saskatchewan, still caused more damage than in several years immediately prior to 1964. In British Columbia, WIREWORMS were less injurious than usual. In southwestern Ontario they attacked tobacco on untreated sod land. In southern Alberta, SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) caused very little damage, even though much less insecticide had been used, and early control measures prevented damage to sugar beets by FLEA BEETLES (Phyllotreta spp.). In northern agricultural areas of Alberta, CABBAGE LOOPER (Trichoplusia ni) and a FLEA BEETLE (Phyllotreta sp., prob. cruciferae), caused widespread damage to rape. In Saskatchewan, SWEETCLOVER WEEVIL (Sitona cylindricollis) was scarce and caused little damage, but in Manitoba large numbers severely damaged seedling sweetclover and, in a few cases, alfalfa. In Saskatchewan, ALFALFA WEEVIL (Hypera postica) was more abundant than in previous 4 years but damage was light. Larvae of PAINTED LADY (Vanessa cardui) infested essentially all sunflower plantings in the Province, about 20,000 acres, but damage was comparatively light. They also fed freely on Canada thistle. In

southwestern Ontario, EUROPEAN CORN BORER (Ostrinia nubilalis) survived the winter in small numbers. Low temperatures were further responsible for a small second generation and damage was correspondingly light. NORTHERN CORN ROOTWORM (Diabrotica longicornis) was very numerous. In plantings where corn had been grown on the same land for several successive years, goosenecked plants were common and lodging was severe. CORN LEAF APHID (Rhopalosiphum maidis) was abundant, especially on late corn, causing some reduction in kernel set. Some late-maturing corn was damaged also by FALL ARMYWORM (Spodoptera frugiperda). In southwestern Quebec, as in Ontario, EUROPEAN CORN BORER occurred in unusually small numbers. In Kent County, Ontario, TOBACCO HORNWORM (Manduca sexta), TOMATO HORNWORM (M. quinquemaculata) and ROOT MAGGOTS (Hylemya spp.) caused little damage to tobacco. In Eastern Ontario, most JUNE BEETLES (Phyllophaga spp.), being mainly in adult stage, caused little damage to grass roots.

In British Columbia, GOLDEN NEMATODE (Heterodera rostochiensis) was found on potatoes in a small area at the southern tip of Vancouver Island. This is the second establishment in Canada, the first being in Newfoundland where it was discovered in 1962. In the lower Fraser Valley, British Columbia, APHIDS on peas, and CABBAGE APHID (Brevicoryne brassicae), IMPORTED CABBAGEWORM (Pieris rapae) and DIAMONDBACK MOTH (Plutella maculipennis) on cabbage, were all less numerous than usual. CABBAGE MAGGOT (Hylemya brassicae) on cruciferous crops continued a major problem, especially in turnips, and CARROT RUST FLY (Psila rosae) was difficult to control. An infestation of GARDEN SYMPHYLAN (Scutigerella immaculata) near Kamloops has persisted since recorded in 1963. In Winnipeg, Manitoba, CABBAGE MAGGOT severely damaged crucifers, and ONION MAGGOT (Hylemya antiqua) was difficult to control. In southwestern Ontario, FLEA BEETLE larvae injured rutabagas in the Guelph area, SUGARBEET ROOT APHID (Pemphigus betae) was common and ONION MAGGOT scarce in Kent County, while in Essex County, FIELD CRICKETS (Gryllus spp.) severely infested canning tomatoes and PEPPER MAGGOT (Zonosemata electa), though abundant from 1960 to 1963, was very scarce, probably because of improved control. In southwestern Quebec, vegetable insects generally were not very injurious. CABBAGE MAGGOT on crucifers and POTATO STEM BORER (Hydroecia micacea) on potato and tomato were fairly numerous, but ONION MAGGOT and PEA APHID (Acyrthosiphon pisum) occurred in numbers well below average. In the Eastern Townships, WHITE GRUBS damaged potatoes on new land. In Nova Scotia, BLACK BLISTER BEETLE (Epicauta pennsylvanica) severely damaged potato foliage near Parrsboro. In Prince Edward Island, damage to turnips by ROOT MAGGOTS and to crucifers generally by CABBAGE LOOPER and IMPORTED CABBAGEWORM was greater than usual, but damage by POTATO INSECTS in general was below average. In Newfoundland, IMPORTED CABBAGEWORM was unusually numerous, indicating developing resistance to DDT, and in central and eastern areas CABBAGE MAGGOT was becoming difficult to control by any means.

In the Okanagan Valley, British Columbia, as a result of severe weather conditions late in 1964 and in the spring of 1965, the tree fruit crop, with the exception of apples, was a failure and a high percentage of fruit trees was killed. An AMBROSIA BEETLE (Anisandrus pyri) and SHOT-HOLE BORER (Scolytus rugulosus) caused increased damage and, in the Creston area, CHERRY FRUIT FLIES (Rhagoletis spp.) were difficult to control. In the lower Fraser Valley, a LEAF ROLLER (Dasystoma salicellum) on blueberry was controlled by helicopter spraying. In the Niagara Peninsula, Ontario, infestations of insects, excepting APHIDS, and of MITES were unusually light on all fruit crops, mainly because of cool weather. EUROPEAN RED MITE (Panonychus ulmi) was more troublesome on apple and pear than on peach and plum, and ORIENTAL FRUIT MOTH (Grapholitha molesta) at its lowest ebb in many years, caused little damage to peach. PEAR SAWFLY (Hoplocampa brevis),* first recorded in the Province near Queenston in 1964, was found to be lightly

* The following is quoted from the 1964 Canada summary. "In Queenston, Ontario, an extensive infestation of a sawfly, believed to be Hoplocampa brevis (Klug), new to North America, was found on pear." This note was not included in CEIR 15(2): 19-21, as determination was not positive at time of publication.

distributed in the eastern half of the Peninsula and causing little damage. In Norfolk County, Ontario, the cool, dry spring precluded late generations of CODLING MOTH (Carpocapsa pomonella) and RED-BANDED LEAF ROLLER (Argyrotaenia velutinana), but EUROPEAN RED MITE, APPLE APHID (Aphis pomi) and APPLE MAGGOT (Rhagoletis pomonella) persisted late in the season. In extreme southwestern Ontario, ORIENTAL FRUIT MOTH caused no commercial damage to peach. Parasitism of the second generation by an ICHNEUMON WASP (Glypta rufiscutellaris) was approximately 75 percent, but for the first time in many years no parasitism by a BRACONID WASP (Macrocentrus ancylivorus) was recorded.

In southwestern Quebec, APPLE APHID and TENT CATERPILLARS (Malacosoma spp.) were more numerous than usual, and APPLE MAGGOT and EUROPEAN RED MITE also required control measures. Minor pests included OYSTERSHELL SCALE (Lepidosaphes ulmi), EYE-SPOTTED BUD MOTH (Spilonota ocellana), FRUIT-TREE LEAF ROLLER (Archips argyrospilus), an APPLE LEAF TIER (Pseudexentera mali) and PLUM CURCULIO (Conotrachelus nenuphar). In Nova Scotia, predator and pest populations in apple orchards were comparable to those of 1964. The use of a certain phosphate insecticide against WINTER MOTH (Operophtera brumata) in some orchards resulted in an increase of phytophagous mites. Pseudexentera mali became more widespread but caused no fruit damage, and FRUIT-TREE LEAF ROLLER was found in only two orchards. Control measures were necessary for CODLING MOTH and, in some orchards, for APPLE MEALYBUG (Phenacoccus aceris). In most orchards EYE-SPOTTED BUD MOTH, APPLE MAGGOT, WINTER MOTH, APPLE SUCKER (Psylla mali), GRAY-BANDED LEAF ROLLER (Argyrotaenia mariana), SOFT SCALES (Lecanium spp.), OYSTERSHELL SCALE and APHIDS required no control.

In most areas of southern British Columbia, snow-pool and floodwater MOSQUITOES were much less abundant than usual. In the Prairie Provinces, after heavy precipitation, common species became extremely abundant and some uncommon species fairly numerous. An increased incidence of western equine encephalitis in horses and humans was associated with the outbreak. ROCKY MOUNTAIN WOOD TICK (Dermacentor andersoni) was well controlled, only one local outbreak occurring in cattle in British Columbia and two in Alberta. BLACK FLIES were very numerous in the Cariboo district, British Columbia, and both CATTLE GRUBS (Hypoderma spp.) and LONG-NOSED CATTLE LOUSE (Linognathus vituli) increased somewhat in the Province. In the Prairie Provinces, SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) was much more abundant than usual during the unusually severe winter. A survey indicated that FACE FLY (Musca autumnalis) was established in southern areas of Manitoba and Saskatchewan and was spreading westward rapidly.

Other occurrences of note included: In Vancover, British Columbia, and in eastern Newfoundland, unusual outbreaks of CRANE FLY adults and larvae; in British Columbia, increased numbers of WASPS and HORNETS, Crambus spp., WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus), VARIED CARPET BEETLE (Anthrenus verbasci) and CARPENTER ANTS (Camponotus spp.), but fewer FLEAS (Ctenocephalides spp.), CLUSTER FLY (Pollenia rudis) and LARDER BEETLE (Dermestes lardarius); in Prince Edward Island, LARDER BEETLE was abundant where hibernating flies were numerous.

INTERCEPTIONS OF SPECIAL INTEREST AT U.S. PORTS OF ENTRY

Some important interceptions that were reported by the Plant Quarantine Division, ARS, USDA, during November 1965, follow. These reports are based on identifications received from Federal taxonomists at the U. S. National Museum during the month, and include any of special interest from recent months that were not previously reported.

GIANT AFRICAN SNAIL (Achatina fulica Bowdich) one time at Boston, Massachusetts.

LEEK MOTH (Acrolepia assectella (Zell.)) 2 times; once each at Boston, Massachusetts, and at New York, New York.

CHINESE ROSE BEETLE (Adoretus sinicus (Burm.)) 5 times, twice in mail and 3 times in air baggage, at Honolulu, Hawaii.

SEED BEETLES (Bruchus spp.) - B. ervi Froel. once in baggage at Boston, Massachusetts. B. signaticollis (Gyll.) (Central European and Mediterranean bruchid pest of lentils) once in air baggage at Boston, and B. tristiculus Fahr. once in air baggage at same location.

A SEED BEETLE (Callosobruchus analis (F.) (a widespread bruchid pest of legumes) once in ship's stores at Tampa, Florida.

MEDITERRANEAN FRUIT FLY (Ceratitis capitata (Wied.)) 28 times; at Honolulu (17), Hawaii; New York (9), New York; and once each at San Francisco and San Pedro, California.

ASIATIC RICE BORER (Chilo suppressalis (Wlk.)) once in baggage at San Francisco, California.

MELON FLY (Dacus cucurbitae Coq.) once in ship's stores at San Francisco.

ORIENTAL FRUIT FLY (Dacus dorsalis Hend.) 12 times; once in mail, once in ship's stores and 10 times in baggage; 10 times at Honolulu, Hawaii, and one time each at San Francisco and San Pedro, California.

A SPRUCE CONE MOTH (Laspeyresia strobilella (L.)) once in cargo of Picea sp. cones at Baltimore, Maryland.

KHAPRA BEETLE (Trogoderma granarium Everts) 101 times; at Baltimore (7), Maryland; Boston (1), Massachusetts; Brownsville (1) and Houston (4), Texas; Charleston (6), South Carolina; Detroit (1), Michigan; Dulles International Airport (2) and Norfolk (24), Virginia; Jacksonville (4) and Tampa (1), Florida; Mobile (1), Alabama; New Orleans (3), Louisiana; New York (21), New York; Philadelphia (9), Pennsylvania; San Diego (1), San Francisco (3) and San Pedro (4), California; Savannah (6), Georgia; Wilmington (1), North Carolina; Seattle (1), Washington.

EUROPEAN CHERRY FRUIT FLY (Rhagoletis cerasi (L.)) 8 times; at John F. Kennedy International Airport (7), New York; San Pedro (1), California.

AN AVOCADO SEED MOTH (Stenoma catenifer (Wlsm.)) 5 times; twice each at Galveston and Laredo, Texas; once at Tampa, Florida.

WHITE GARDEN SNAIL (Theba pisana (Müller)) 45 times (35 alive and 10 dead); at Baltimore (1), Maryland; Charleston (8), South Carolina; Dover (6), Delaware; Duluth (1), Minnesota; John F. Kennedy International Airport (1), New York (11), New York, Milwaukee (1), Wisconsin; New Orleans (12), Louisiana; Philadelphia (1), Pennsylvania; San Juan (1), Puerto Rico; San Pedro (1), California; Savannah (1), Georgia.

FEDERAL-STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - MEXICO - Properties totaling 93 acres in the Juarez, Chihuahua, treatment area of 1963 and 27 properties totaling 1,081 acres in Municipio Villa Ahumada, Chihuahua, inspected with negative results. Surveys in Mexicali, Baja California, and San Luis Rio Colorado, Sonora, valleys negative. (PPC Mex. Reg., Dec. Rpt.).

Boll Weevil Situation in Big Bend Area of Texas

During 1965, infestation in the Presidio area of the Big Bend was the lowest in several years, permitting harvesting of the top crop. Following the treatment program in the Presidio-Ojinaga area, a survey consisting of ground trash and bolls was conducted during the period January 3-6, 1966. In the survey, 100 square yards of surface trash were examined and only one boll weevil was detected. No boll weevils were detected in 31 square yards of cotton plant trash in rows. Four live adult weevils were found in 1,150 bolls examined. (PPC).

A WEEVIL (Anthonomus sp.) - ARIZONA - Two adults found in trash beneath mesquite tree from perimeter of cotton field south of Standfield, Pinal County. (Ariz. Coop. Sur.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Biological Control Zone - Total of 12,803 citrus trees inspected on 128 properties in Municipios Hidalgo, Guemez and Victoria in southern Tamaulipas; 255 trees lightly infested on 37 properties in Municipios Hidalgo and Guemez. Third insecticide application made on 1,731 trees on 32 properties in urban zone of Mainero, Tamaulipas, December 9, 10 and 11. Total of 374,100 parasites captured in Municipios Padilla and Guemes, Tamaulipas. Chemical Control Zone - Total of 58,591 trees on 1,222 properties inspected with negative results in States of Tamaulipas, Nuevo Leon, Sonora and Baja California. (PPC Mex. Reg., Dec. Rpt.).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Adverse weather again restricted operations; however, 22 blocks sprayed in the Sacramento area bringing seasonal total to 153 blocks. At Fresno, Fresno County, 11 blocks covered. Peripheral surveys continue negative. At the present rate eradication spray will be completed well in advance of pupation. (Cal. Coop. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - NORTH CAROLINA - Several small extensions found in Brunswick County. GEORGIA - Reinspection in treated areas showed some mounds in areas treated before 1965; extensions of known infestations found in most counties. Largest extensions in Troup, Rockdale, and Henry Counties. FLORIDA - New infestations found in Jefferson and Washington Counties. ALABAMA - Surveys indicate new infested properties in Blount, Cullman, Etowah, Marion, Morgan, St. Clair, and Walker Counties. MISSISSIPPI - Newly infested area found in Warren County; minor extensions found in several other counties. LOUISIANA - Minor extensions of infested area were found in East Carroll, West Carroll, and Morehouse Parishes; approximately 200 infested acres found in Lincoln Parish. TEXAS - New infestations or reinfestations found in Colorado, Brazoria, Bexar, and Fort Bend Counties. (PPC South. Reg., Dec. Rpt.). ARKANSAS - Surveys in 6 southern and eastern counties, January 10-14, negative. (Ark. Ins. Sur.).

JAPANESE BEETLE (Popillia japonica) - MISSOURI - Treatment completed on approximately 320 acres of turf (730 acres overall) at 4 locations in St. Louis November 29-December 7, 1965. (PPC Cent. Reg.)

KHAPRA BEETLE (Trogoderma granarium) - ARKANSAS - Surveys of 15 properties in 7 counties, January 10-14, negative. (Ark. Ins. Sur.).

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - MEXICO - Surveys in 18 States and one territory negative. (PPC Mex. Reg., Dec. Rpt.).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - Total of 4,376 inspections of 780 traps on 685 properties in States of Baja California and Sonora negative. (PPC Mex., Reg., Dec. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - In Maricopa County 1,110 lint-cleaner inspections yielded 2,692 larvae. One larva found in 562 lint-cleaner inspections in Pinal County, from cotton harvested in Hidden Valley. Larvae readily observed during lint-cleaner inspections in Graham County. In Yuma County, 861 lint-cleaner inspections negative; 30 bushels of gin trash from Mohave County negative. (PPC West. Reg., Dec. Rpt.). OKLAHOMA - Positive finds in lint-cleaner inspections in Beckham, Canadian, Comanche, Custer, Greer, Grady, Harmon, Jackson, Kiowa, McClain, Tillman, and Washington Counties. TEXAS - Lint-cleaner inspection in the Waco district revealed larvae easily found in northern part of the district; especially heavy in parts of Martin and Coleman Counties. LOUISIANA - Larvae recovered in Caddo, De Soto, and Natchintoches Parishes in lint-cleaner inspections. (PPC South. Reg., Dec. Rpt.). MEXICO - Lint-cleaner inspections in southern Tamaulipas and northern Veracruz yielded one specimen in Municipo Altamira, Tamaulipas. Inspection in Matamoros, Tamaulipas, negative. Inspection of 600 bushels of gin trash from 1,629 bales and 652 lint-cleaner inspections in Municipio Mexicali, Baja California, negative. One field in Colonia Tecolote, Bataquez, Mexicali, Baja California, infested. In Municipo San Luis Rio Colorado, Sonora, 4 specimens recovered from 1,356 bushels of gin trash representing 2,415 bales. Field inspections of green bolls yielded 2 larvae. (PPC Mex. Reg., Dec. Rpt.).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - SOUTH CAROLINA - New infested property found in Jasper County. GEORGIA - New infested properties found in Appling and Ware Counties. ALABAMA - New infested properties found in Coffee, Geneva and Washington Counties. MISSISSIPPI - Few new infested properties found in Adams, Jones and Jefferson Davis Counties. LOUISIANA - Inspections were made in 18 parishes; new infested properties were found in Bienville, Caddo, De Soto, Evangeline, Livingston, Natchitoches, Rapides, Sabine, St. Helena, Tangipahoa and Washington Parishes; 116 properties released from regulation in 6 parishes. (PPC South. Reg., Dec. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - FLORIDA - One property in Okaloosa County and 5 in Santa Rosa County found infested. LOUISIANA - Approximately 350 acres infested in vicinity of Monroe Airport, Ouachita Parish. (PPC South. Reg., Dec. Rpt.).

INSECT DETECTION

An Aphid from Crucifers

Aphids collected from Chenopodium album by E. W. Davis near Cowiche, Yakima County, Washington, in 1947, described by George F. Knowlton and Shih Chun Ma as Landisaphis n. gen. davisi n. sp. (Kans. Ent. Soc. J. 22(4):147-148, 1949). Re-examination of aphids collected by B. J. Landis from various species of wild mustards at several locations in eastern Washington from 1951 to 1965 by L. M. Russell, shows them to be L. davisi. Examination of lambsquarters failed to show this aphid present; E. W. Davis reported collections from this host. It is possible Davis swept mixed stand of weeds, or that aphids had wandered to lambsquarters. However, crucifers are preferred, if not sole hosts of L. davisi. (B. J. Landis).

Pear Sawfly (Hoplocampa brevis (Klug)) Reported in United States for First Time

Approximately 20 adults collected in tanglefoot trap by L. W. Boulanger in pear orchard near Newburgh, Orange County, NEW YORK, submitted in July 1953. Doubtfully identified as H. brevis in 1953 by USDA specialists. Specimens were in very poor condition, and the state of European literature at that time did not allow firm identification. Results of recent taxonomic research and fresh examination of original material now confirm identification. However, specimens of H. brevis have not been submitted since 1953 in the United States. (R. H. Foote). The following comments concerning this find were made by Dr. Boulanger of the University of Maine: European apple sawfly was actively broadening its range at this time (1952). As a graduate student studying the life history and control of this pest in New York, considerable time was spent tracking down reports and making trap surveys to confirm occurrence. The pear orchard in question was reported in late 1952 by the grower. Tanglefoot traps were set in the orchard the following spring in trees most heavily infested in 1952. Considerable material was collected. All specimens were submitted for determination in event H. brevis was present. Difficulty in establishing positive identification was due to tanglefoot covering specimens. The infestation was cleared up by intensive spraying; trappings and sweepings in 1954 failed to yield any H. brevis specimens. There was a report of another infestation in an Ulster County orchard in 1954, but it is not known if this report was investigated. (L. W. Boulanger). Specimens believed to be H. brevis were found on pear at Queenston, Ontario, Canada, in 1964. During 1965, establishment of this species on the Niagara Peninsula was confirmed by Dr. H. E. Milliron, Canada Department of Agriculture. A revised article on the economic importance, distribution, description and biology of this pest that originally appeared in CEIR 8(26):573-574, is reproduced on pages 63-64 of this issue. Also see page 57 for note on this pest in Canada in 1965. These are first reports of H. brevis in North America. Detection surveys for this pest should be conducted in New York and other pear-growing areas during 1966. (PPC).

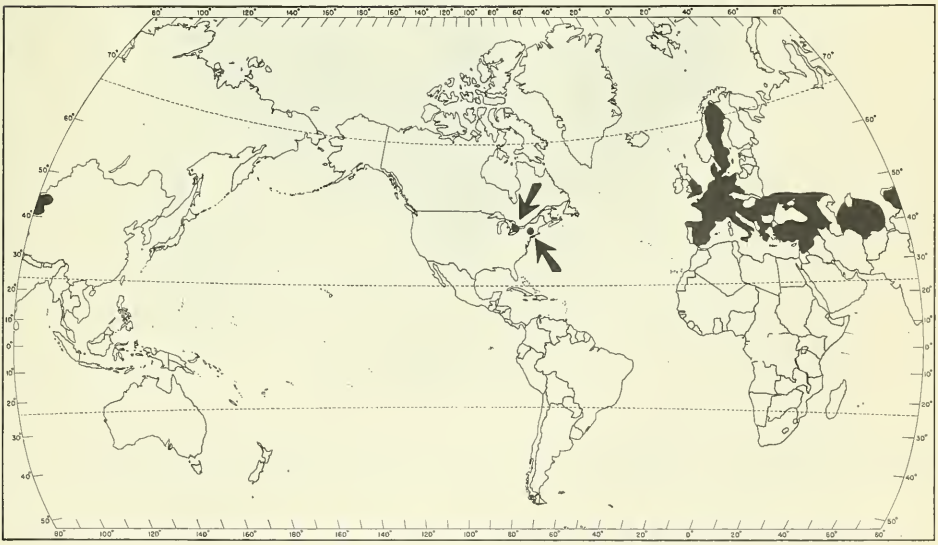
PEAR SAWFLY (Hoplocampa brevis (Klug))

Economic Importance: This tenthredinid is an important pest of pears in many areas of Europe. Although infestations are not consistent from year to year, it is generally considered to be a very harmful species. Populations will remain unnoted for awhile, then suddenly appear in very destructive numbers. In some years as high as 80 percent of the fruits will be attacked but infestations may be highly localized in fruit growing areas. During 1938-39, 60 to 80 percent of the pears were attacked in the Crimea of USSR.

Damage to Pears

Distribution: The species occurs in European USSR, Romania, Greece, Italy, Netherlands, England, France, Yugoslavia, Denmark, Germany, Sweden, Spain, Belgium, Switzerland and Austria in Europe. In Asia it is found in Kazakhstan and Turkestan in the USSR; Turkey and Syria. Specimens collected in 1953 in New York were confirmed in 1965. H. brevis also was confirmed in Canada in 1965.

Hosts: Pear is the major host but plum and apple also are attacked.



General Distribution of Pear Sawfly

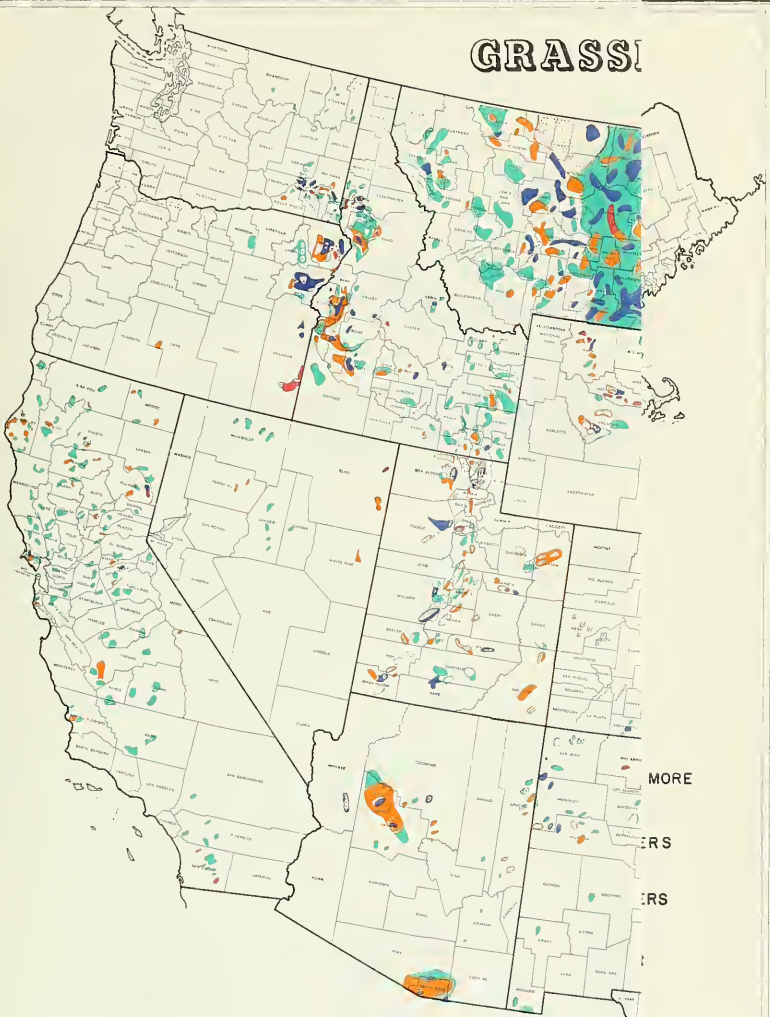
(Tenthredinidae, Hymenoptera)

Life History and Habits: Life history of H. brevis in the Crimea of USSR is as follows: Larvae overwinter in cocoons in the soil, some just below the surface and some at depths down to 8 inches. Pupation occurs in mid-March. The adults appear when pear buds are separating, being present for 8 to 10 days. Reproduction is parthenogenetic. The females contain fully developed eggs upon emergence. Each female deposits from 37 to 40 eggs, singly, on the lower halves of the flower buds. There are usually 4 eggs per bud. Larvae hatch in 6 to 8 days and feed within developing fruits, destroying seeds and migrating from one fruit to another until full-fed. Feeding lasts from 21 to 23 days during which each larva will damage up to 4 fruitlets and pass through five larval instars. In mid-May, the mature larvae drop to the ground, usually in the infested fruitlets, and then enter the soil to overwinter. Some larvae will not pupate the following spring, but will remain dormant until the succeeding year.

Description: Adult is 4-5 mm. in length. Mesonotum brown, spotted black. Stigma light yellow, base brownish. Head and antennae brownish-yellow without black coloring apart from the eyes. Thorax reddish-yellow, mesonotum somewhat darker with dark streaks on the individual sclerites and on the base of the scutum. Metanotum black. Mesonotum densely punctured. Legs yellow, wings hyaline with yellow veins. Dorsal surface of abdomen black, ventral surface yellow. Egg is white and translucent, measuring 0.7 by 0.26 mm. Fifth-instar larva is about 7 to 9 mm. long; head with brown spot on frons, otherwise tan; no conspicuous caudal tergites. The body and legs are pale green and claws brown. There is a slight darkening of the dorsal surface of the anal segment, somewhat less on ninth segment and slightly noticeable on eighth segment. The cocoons are dark brown and rough-coated due to sand particles adhering to surface. They vary in length from 5.9 to 6.2 mm. and in width from 2.9 to 3.3 mm. (Prepared in Plant Pest Survey Section in cooperation with other ARS agencies).

Adult of Hoplocampa brevis

Figures (except map) from Thomas, I. 1936. Ann. Appl. Biol. 23(3):633-639.



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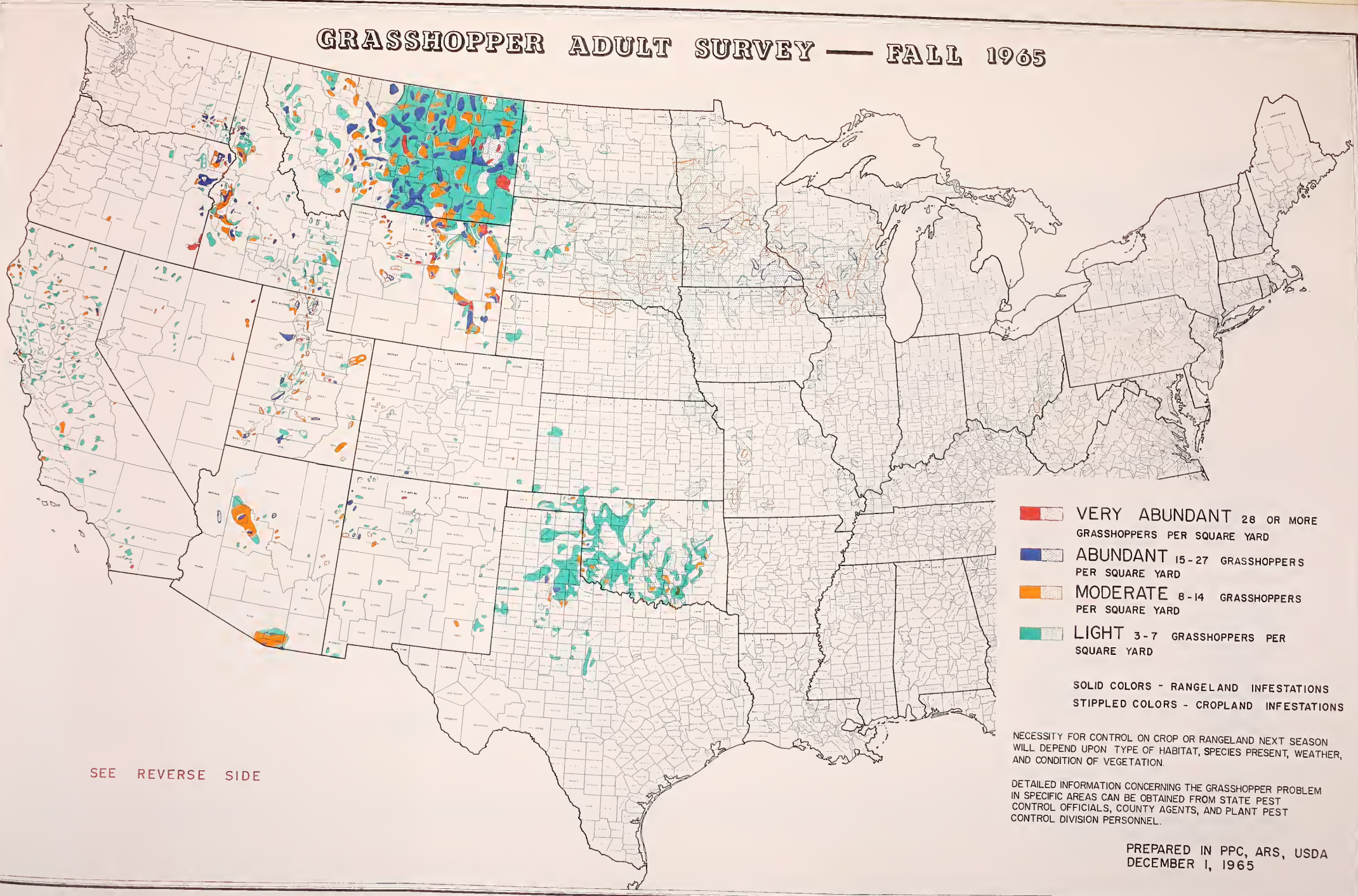
SEE REVERSE SIDE

GRASSHOPPER ADULT SURVEY — FALL 1965



VERY ABUNDANT 28 OR MORE GRASSHOPPERS PER SQUARE YARD

ABUNDANT 15-27 GRASSHOPPERS PER SQUARE YARD

MODERATE 8-14 GRASSHOPPERS PER SQUARE YARD

LIGHT 3-7 GRASSHOPPERS PER SQUARE YARD

SOLID COLORS - RANGELAND INFESTATIONS

STIPPLED COLORS - CROPLAND INFESTATIONS

NECESSITY FOR CONTROL ON CROP OR RANGELAND NEXT SEASON WILL DEPEND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER, AND CONDITION OF VEGETATION.

DETAILED INFORMATION CONCERNING THE GRASSHOPPER PROBLEM IN SPECIFIC AREAS CAN BE OBTAINED FROM STATE PEST CONTROL OFFICIALS, COUNTY AGENTS, AND PLANT PEST CONTROL DIVISION PERSONNEL.

SEE REVERSE SIDE

PREPARED IN PPC, ARS, USDA
DECEMBER 1, 1965

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TO COOPERATORS:

This map is based upon the results of coo
The survey reveals where and how many grasshop
Nymphal surveys, made in the spring, determine
1966.

The infestations in croplands are shown o
technical assistance from Division and State p
and red only), total 16,612,455 acres in 13 We
these areas, infestations may be solid or spot

RANGELAND GRASS

(Moderate

REGION AND STATE	LANDOWNERSHIP - ACRES	
	Private and State	Public Doma
CENTRAL		
So. Dakota	32,250	6,490
WESTERN		
Arizona	1,274,000	537,200
California	125,010	2,000
Idaho	468,280	1,099,000
Montana	7,333,000	1,747,000
Nevada	--	49,900

Figures

The survey was planned and performed by the Pl
State agencies concerned.

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Plant Pest Control Division

TO COOPERATORS:

This map is based upon the results of cooperative grasshopper adult surveys made during the late summer and fall of 1965. The survey reveals where and how many grasshoppers infest an area, and indicates the potential severity of infestations for 1966. Nymphal surveys, made in the spring, determine population densities, and indicate those areas where control may be necessary in 1966.

The infestations in croplands are shown on the map in stippling. Control on those lands will be handled by the farmers with technical assistance from Division and State personnel. The infested range areas, shown on the map in solid colors (orange, blue and red only), total 16,612,455 acres in 13 Western and Midwestern States. Shaded areas on the map are diagrammatic. Within these areas, infestations may be solid or spotted.

RANGELAND GRASSHOPPER INFESTATIONS - ACREAGE BY REGIONS, FALL 1965

(Moderate Populations or Above - Orange, Blue and Red)

REGION AND STATE	LANDOWNERSHIP - ACRES		TOTAL ACRES
	Private and State	Public Domain	
CENTRAL			
So. Dakota	32,250	6,490	38,740
WESTERN			
Arizona	1,274,000	537,200	1,811,200
California	125,010	2,000	127,010
Idaho	468,280	1,099,000	1,567,280
Montana	7,333,000	1,747,000	9,080,000
Nevada	--	49,900	49,900
New Mexico	16,500	15,400	31,900
Oregon	280,700	320,000	600,700
Utah	97,865	117,760	215,625
Washington	246,000	--	246,000
Wyoming	1,970,100	371,900	2,342,000
SOUTHERN			
Oklahoma	342,500	--	342,500
Texas	159,600	--	159,600

The survey was planned and performed by the Plant Pest Control Division, Agricultural Research Service, in cooperation with various State agencies concerned.

GPO 971-930

UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Maryland 20782

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VOL. 16 No. 5 February 4, 1966

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All correspondence pertaining to additions, deletions and changes of addresses for the mailing list for this report should be sent to:

Service Operations Division
Office of Plant and Operations
United States Department of Agriculture
Washington, D. C. 20250

Reports and inquiries pertaining to this release should be mailed to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

Volume 16 February 4, 1966 Number 5

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

Possibility of population "explosion" of SOUTHERN GARDEN LEAFHOPPER during spring or early summer in Hawaii. Subfreezing temperatures throughout much of the Nation greatly reducing insect activity.

Detection

New county records reported were: IMPORTED FIRE ANT (Solenopsis saevissima richteri) in Citrus County, Florida, and FACE FLY (Musca autumnalis) in Carroll and Chariton Counties, Missouri. (p. 71).

Special Reports

Status of Anastrepha suspensa in Florida (p. 72).

Summary of Insect Conditions in Hawaii - 1965 (p. 73-76).

Interceptions of Special Interest at U. S. Ports of Entry. (p. 59).

Status of the Screw-worm in the Southwest (p. 70).

Corrections (p. 71).

Federal-State Plant Protection Programs (p. 71).

Reports in this issue are for week ending January 28 unless otherwise indicated.

WEATHER OF THE WEEK ENDING JANUARY 31

HIGHLIGHTS: (1) Continued very cold east of Rockies, warmer West. (2) Severe blizzard hits East; delayed publication of this bulletin as government offices were closed on Monday.

TEMPERATURE: Very cold weather moved into its third week in the Central and East with average temperatures 15° to 25° below normal over very large areas. Mountain locations in North Carolina reported -29°; Tupelo, Mississippi, -5°; and Pensicola, Florida, 9°. In Florida, freezing temperatures reached the extreme south and temperatures were in the low 20's in central areas early Monday, January 31. On Friday the maximum temperature at International Falls, Minnesota, was -26° and Knoxville, Tennessee, had a Sunday high of 2°. Meanwhile, Pacific air moved into the western third of the Nation bringing clouds, light precipitation, and average temperatures of 3° to 6° above normal at many points.

STORM: One of the worst blizzard storms in two-thirds of a century struck the Appalachians and East Coastal areas during January 29-31. As a low center over the northeastern gulf coast early Saturday moved to the Carolina coast and thence to Delaware, pressure dropped rapidly to 976 millibars; further movement took the center to a point south of Quebec by early Monday. In Virginia and West Virginia snowfall was 12 to 20 inches with winds 34 to 40 mph; in northern Pennsylvania and upstate New York, winds were 35 to 50 mph, with snowfall 20 to 40 inches. Travel and most normal activities came to a hault throughout the affected area. Snowfall was lighter and winds were less strong in the Hudson Valley, New Jersey, and most of New England. Exact comparisons are difficult but storms of comparable intensity occurred in March 1920 and February 1899. Both storms were more intense in coastal areas but probably less severe further inland. The famous blizzard of March 1888 was also worse in coastal areas but the current storm may have been worse at interior locations.

PRECIPITATION: This was the fourth week with substantial amounts in the Southeast and the second week with beneficial falls in the Northeast drought area. Weekly totals were near 2 inches on the gulf coast and from Jacksonville to Delaware along the coast. Moderate falls returned to the Pacific Coast with 0.9 inches as far south as Los Angeles, California. Only light amounts fell from the Sierras to Texas and from the Cascades to the Great Lakes and Ohio.

SNOW COVER: The coldest weather of many years found agricultural areas protected by snow cover over most of the Great Plains, the Great Lakes area, and Northeast. Parts of the cornbelt were bare but snow covered Arkansas and most of the Ohio and Tennessee River Valleys at weekend. Snow accumulations continued to be normal or above throughout most western mountain areas. Plans for a big weekend at all eastern ski resorts were complicated as travel became impossible on Sunday. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graninum) - ARKANSAS - Rather common but not high. Limited survey indicates decline. (Ark. Ins. Sur.). OKLAHOMA - Averaged less than 1 per linear foot in wheat in Perkins area, Payne County; averaged 400 per linear foot in area 2 weeks ago but cold weather killed most. Ranged 10-15 per linear foot in wheat in Garfield County. (Okla. Coop. Sur.).

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARKANSAS - Numbers fairly low; probably declined with cold weather. (Ark. Ins. Sur.).

PEA APHID (Acyrthosiphum pisum) - ARKANSAS - Numbers low, about 1-2 per square foot in vetch. (Ark. Ins. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARKANSAS - None found in limited surveys January 27. (Ark. Ins. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Light (10-15 per linear foot) in wheat checked in Garfield County. (Okla. Coop. Sur.).

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Ranged 10-20 per linear foot in wheat in Garfield County. (Okla. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARKANSAS - First small larvae of season found January 27 in vetch; numbers low. (Ark. Ins. Sur.).

A GRASSHOPPER (Schistocerca vaga) - HAWAII - One female from slender mimosa (Desmanthus virgatus) caught in Nanakuli area, Oahu, during survey to determine range of this potential agricultural pest. Distance from original infestation on Sand Island to Nanakuli is 15 miles. (Hawaii Ins. Rpt.).

FRUIT INSECTS

CITRUS RUST MITE (Phyllocoptruta oleivora) - FLORIDA - Moderate damage to orange leaves at Thonotosassa, Hillsborough County. (Simmons, Jan. 12).

FULLER ROSE BEETLE (Pantomorus godmani) - HAWAII - Causing heavy damage to plum and peach foliage in Waimea. (Hawaii Ins. Rpt.).

TRUCK CROP INSECTS

SOUTHERN GARDEN LEAFHOPPER (Empoasca solana) - HAWAII - Light on spiny amaranth, cowpeas, beans and peanuts in Poipu, Hanapepe and Waimea, Kauai. High in bean plantings at Makaweli and Waimea, Kauai. Wild hosts supported populations of 5-18 per sweep. Mostly nymphs on spiny amaranth. Possibility of population "explosion" in spring or early summer. (Hawaii Ins. Rpt.).

CABBAGE APHID (Brevicoryne brassicae) - HAWAII - This and Pieris rapae (imported cabbageworm), light on broccoli throughout Maui from sea level to 4,000 feet. (Hawaii Ins. Rpt.).

HAWAIIAN BEET WEBWORM (Hymenia recurvalis) - HAWAII - Adults heavy on a weed host (Amaranthus spinosus) in cattle grazing area in Kawaihae. (Hawaii Ins. Rpt.).

A GRASSHOPPER (Atractomorpha ambigua) - HAWAII - Caused moderate to heavy damage to mustard cabbage on Maui. (Hawaii Ins. Rpt.).

A SPIDER MITE (Tetranychus sp.) - HAWAII - Heavy on various garden and commercial crops including potatoes, beans and peppers in Kalaheo and Hanapepe, Kauai. (Hawaii Ins. Rpt.).

SPOTTED GARDEN SLUG (Limax maximus) - HAWAII - Caused moderate damage to cabbage especially at 2,000 to 4,000 feet elevation on island of Maui. (Hawaii Ins. Rpt.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

FULLER ROSE BEETLE (Pantomorus godmani) - HAWAII - Caused moderate damage to leaves and flowers of rose and petals of wild daisies in Waikii, Hawaii. Heavy damage to foliage of willow and rose at Kamuela Inn, Waimea, Hawaii, and moderate damage on Acacia koaia at Kawaihae-uka, Hawaii. (Hawaii Ins. Rpt.).

CHINESE ROSE BEETLE (Adoretus sinicus) - HAWAII - Older leaves of noni (Morinda citrifolia) heavily defoliated by adults at City of Refuge National Park, Hawaii. (Hawaii Ins. Rpt.).

PLATYPOTID BEETLES (Platypus spp.) - FLORIDA - P. compositus and P. flavicornis severely damaged stem of southern magnolia trees in nursery at Glen St. Mary, Baker County. (Collins, Jan. 6).

NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) - MARYLAND - Heavy in American holly on 3 properties in Prince Georges County. (U. Md., Ent. Dept.).

BOXWOOD LEAF MINER (Monarthropalpus buxi) - MARYLAND - Heavy in several boxwood shrubs at Glyndon, Baltimore County. (U. Md., Ent. Dept.).

COCONUT LEAF ROLLER (Hedylepta blackburni) - HAWAII - Larvae heavy on coconut fronds during latter part of 1965 at Mauna Kea Beach Hotel in Kawaihae, Hawaii, subsided. (Hawaii Ins. Rpt.).

A PLATASPID BUG (Coptosoma xanthogramma) - HAWAII - This recently discovered bug light on jade-vine in Pauoa and Pacific Heights area of Honolulu, Oahu. (Hawaii Ins. Rpt.).

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - HAWAII - Heavy on noni at City of Refuge National Park, Hawaii. (Hawaii Ins. Rpt.).

A FALSE SPIDER MITE (Tenuipalpus pacificus) - FLORIDA - Caused moderate to severe damage on leaves of 380 orchid seedlings at Homestead, Dade County. (Knowles, Jan. 21).

INSECTS AFFECTING MAN AND ANIMALS

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Heavy on cattle in Cotton County; light in Choctaw County. (Okla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - Several species heavy on cattle in Choctaw County. (Okla. Coop. Sur.). ALABAMA - Both biting and sucking lice heavier than usual on cattle in Shelby County. Infestations quite irritating. (Clark).

POULTRY MITES - OKLAHOMA - Heavy on poultry in Choctaw County. (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

A SUBTERRANEAN TERMITE (Reticulitermes tibialis) - OKLAHOMA - Swarming in basement in Tulsa, Tulsa County. (Okla. Coop. Sur.).

STORED-PRODUCT INSECTS

CIGARETTE BEETLE (Lasioderma serricorne) - ALABAMA - Heavy in cottonseed meal cake; fumigated to bring adults and larvae under control at warehouse in Atmore, Escambia County. (Lemons).

POTATO TUBERWORM (Phthorimaea operculella) - MARYLAND - Heavy in farm-stored potatoes in Talbot County. (U. Md., Ent. Dept.).

BENEFICIAL INSECTS

A NOCTUID MOTH (Hypena strigata) - HAWAII - Extremely active on Lantana camara var. aculeata in many areas of State; moderately heavy foliar damage on thousands of plants on island of Hawaii noted at Kilauea Volcanoes National Park, Puuanahulu, Halepiula, and from Waiohinu to Kukui Paddock, Kau District. (Hawaii Ins. Rpt.).

A CERAMBYCID BEETLE (Archlagocheirus funestus) - HAWAII - Larvae causing severe damage to acres of prickly pear cactus at Kawaihae-uka, Hawaii. Many plants toppled to ground. (Hawaii Ins. Rpt.).

INTERCEPTIONS OF SPECIAL INTEREST AT U.S. PORTS OF ENTRY

Some important interceptions that were reported by the Plant Quarantine Division, ARS, USDA, during November 1965, follow. These reports are based on identifications received from Federal taxonomists at the U.S. National Museum during the month, and include any of special interest from recent months that were not previously reported.

OAT CYST NEMATODE (Heterodera avenae) 23 times; at Seattle (13), Washington; New York (6), New York; Boston (1) Massachusetts; McGuire Air Force Base (1), New Jersey; San Diego (1) and San Francisco (1), California.

HEMP NETTLE CYST NEMATODE (Heterodera galeopsidis) 2 times from soil with one used automobile and one used tractor intended for entry at Seattle, Washington.

GRASS CYST NEMATODE (Heterodera punctata) 10 times; at New York (4) and John F. Kennedy International Airport (1), New York; McGuire Air Force Base (2), New Jersey; San Francisco (2), California; Boston (1), Massachusetts.

CABBAGE MOTH (Mamestra brassicae (L.)) 5 times in ships' stores; at Baton Rouge (1), Louisiana; Boston (1), Massachusetts; Corpus Christi (1), Texas; and Portland (2), Oregon.

AN OLETHREUTID MOTH (Matsumuraeses phaseoli (Mats.)) 4 times in ships' stores; at Portland (3), Oregon; Seattle (1), Washington.

A WEEVIL (Premnotrypes sp.) 3 times in potatoes in ships' stores; at Philadelphia (2), Pennsylvania; Charleston (1), South Carolina.

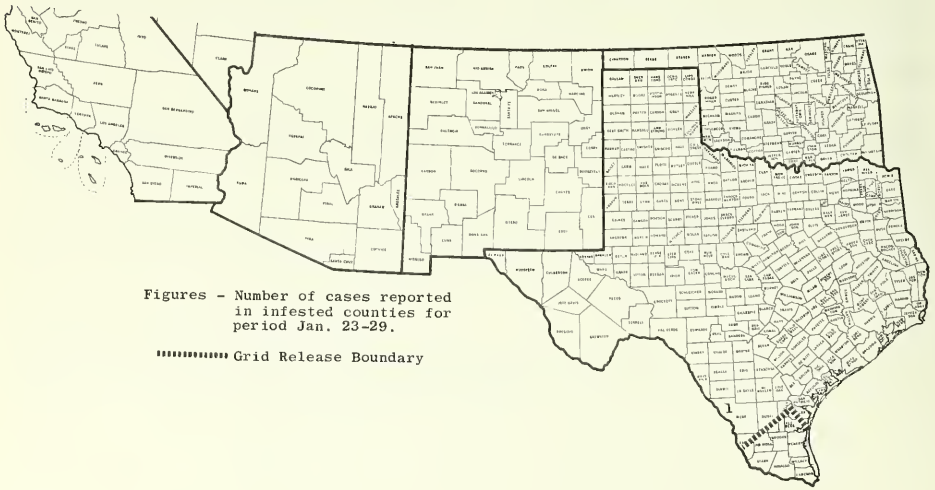
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period January 23-29 the only case reported in the Southwestern Eradication area was in Webb County, TEXAS. The Republic of Mexico reported 48 cases as follows by State: Chihuahua 2, Sonora 11, Coahuila 2, Tamaulipas 14, Nuevo Leon 1, Territorio sur de Baja California 18. Sterile screw-worm flies released: Texas 11,486,250, Mexico 71,420,000.

Year	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	0	0	23	131	0.00	0.00
1965	1	4	54	287	1.85	1.39
1966	1	2	1	108	100.00	23.14
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	24	220	32	168	75.00	130.95
1966	49	295	19	89	257.89	331.46

Feasibility Survey - During this period 204 cases were identified in Mexico south of the Barrier Zone as follows: Nayarit 15, Veracruz 44, Jalisco 8, Guanajuato 5, Yucatan 35, Michoacan 6, Campeche 4, Sinaloa 8, Morelos 2, Chiapas 27, Tabasco 19, Puebla 13, Colima 1, Guerrero 8, Oaxaca 5, San Luis Potosi 3, Durango 1.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



CORRECTIONS

CEIR 16(2):15 - CHINCH BUG (Blissus leucopterus) - MISSOURI - Should read "averaged 581 per square foot."

FACE FLY (Musca autumnalis) - UTAH - Specimens in museum indicate that this species was collected on July 14, 1964 by Dr. D. W. Davis from ultraviolet light trap at Logan, Cache County. Det. by W. J. Hanson. This record indicates that M. autumnalis was in State one year before date given in CEIR 15(30):833 and in CEIR 16(3):46. (Knowlton).

HOLLYHOCK WEEVIL (Apion longirostre) - UTAH - Mounted specimens at Utah State University collected July 12, 1964 at Providence, Cache County, by Dr. Bruce Wadley indicate that this species in State eleven months earlier than reported in CEIR 15(31):871 and CEIR 16(3):43. Damage to hollyhocks noted at that time. (Hanson, Knowlton).

LIGHT TRAP COLLECTIONS

GEORGIA (Tifton, 1/19-26; temp. 28-43°F.: precip. 2.6 in.; blacklight) - Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

TEXAS (Brownsville, 1/22-28; temp. 34-74°F.: precip. 0.51 in. 2 blacklight) - Agrotis ipsilon 9, Feltia subterranea 6, Psuedaletia unipuncta 40.

FEDERAL-STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Mound building presently more widespread than ever before in Shelby County. Growers report that ants congregated in heavy and extremely annoying numbers under corn overnight when crop was hand pulled and thrown into loading piles on ground during fall harvest. Loading of corn into wagons and trucks the following day became a serious problem for field hands. This same condition of large numbers congregating under bales of hay overnight likewise brought serious and annoying problems to field workers during late summer and fall. A county-wide control program by growers is being initiated. (Clark). FLORIDA - Adult stage collected in Citrus County January 26, 1966. This is a new county record. (Racine, Lynch).

INSECT DETECTION

FACE FLY (Musca autumnalis) - MISSOURI - Review of unpublished thesis reveals presence in Carroll and Chariton Counties in 1961. These are new county records. (Houser).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - See Florida note in Federal-State Plant Protection Programs.

STATUS OF *Anastrepha suspensa* IN FLORIDA

A fruit fly *Anastrepha suspensa* (Loew), normally found on the islands of Cuba, Puerto Rico, Hispaniola and Jamaica, was first found in the United States in Key West, Florida, in 1930. Surveys between 1930-37 revealed only 195 adults, 19 of which were taken on the mainland. No larvae were found outside of the Keys. Two additional flies were caught in 1959.

State and Federal investigations of the 1930 infestation included extensive surveys and an attempted eradication program. The program was abandoned in 1936 as being impractical when cooperating workers decided the insect offered no economic threat to citrus on the mainland, as no commercial citrus fruit was ever found infested.

Starting April 27, 1965, large numbers of adults were caught near the Miami International Airport in Miami, in McPhail traps in use for Mediterranean fruit fly surveys. Later surveys revealed as many as 360 adults in a single trap, and during the first three months more than 14,000 flies were caught in Dade County alone.

Following the recent discovery, extensive surveys were inaugurated by State and Federal workers to delimit the infested areas. The principal survey tools were McPhail traps baited with technical borax and cottonseed hydrolysate, and sticky board traps baited with cottonseed hydrolysate and Hy-Case, another protein food lure. Surveys revealed adults were present through December 31, 1965. Infestations were recorded in eight counties: Broward, Dade, Hendry, Indian River, Lee, Martin, Palm Beach and St. Lucie. None was recorded on the Keys or in Monroe County recently.

Careful and extensive observations have been made to evaluate the species' potential as a threat to the citrus and other commercial fruit. There have been no reports of damage to commercial fruit in Florida. The most recent list of recorded hosts is as follows:*Annona cherimola (Jamaica-apple), Annona squamosa (sugar-apple), Averrhoa carambola (carambola), *Carica papaya (papaya), *Carissa grandiflora (Natal-plum), Chrysobalanus icaco (cocoplum), Citrus aurantium (sour orange), Citrus mitis (calamondin), Citrus reticulata (tangerine), Citrus paradisi (grapefruit), Citrus sinensis (sweet orange), Dovyalis hebecarpa (Ceylon-gooseberry), Eriobotrya japonica (loquat), Eugenia uniflora (Surinam-cherry), Fortunella margarita (Nagami kumquat), Malpighia glabra (Barbados-cherry), Mangifera indica (mango), Momordica balsamina (balsam-apple), Pouteria campechiana var. nervosa (egg-fruit), Prunus persica (peach (Ceylon)),* Prunus sp. (wild plum), Psidium cattleianum (cattley guava), Psidium guajava (common guava),*Spondias purpurea (purple mombin), Syzygium jambos (rose-apple), Terminalia catappa (tropical-almond).

If needed, as a defensive measure, tests were made on several thousand acres using low volume malathion applied from the air. These tests confirmed this method as a safe and effective control.

Preliminary research has determined the feasibility of producing adult flies in the event it should become necessary to inaugurate a sterile fly program to control or eradicate this pest.

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* Caged hosts in Florida before 1965

SUMMARY OF INSECT CONDITIONS IN HAWAII - 1965

Submitted by the Hawaiian
Entomological Society 1/

Highlights

Numerous species were reported for the first time in the State during 1965, and some species that became established on certain islands in recent years spread to neighbor islands. Excellent progress in biological control of pests by recently introduced beneficial organisms was noted. Some important pests new to the State included a SUBTERRANEAN TERMITE (Coptotermes vastator), a STINK BUG (Thyanta accerra) and a new species of APHID (Cupressobium maui) 2/. SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) caused moderate to heavy damage to truck crops on the islands of Maui and Hawaii. New infestations of GIANT AFRICAN SNAIL (Achatina fulica) were found on Kauai and Hawaii. Eradication attempts against a GRASSHOPPER (Schistocerca vaga) were discontinued. A WEEVIL (Brachyrhinus cribricollis) was found for first time on Maui and CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) is now established on all major islands. Excellent control of the thrips by predators, especially an ANTHOCORID BUG (Montandoniola moraguesi), was noted throughout the State. A PUNCTURE-VINE STEM WEEVIL (Microlarinus lypriformis) gave excellent control of puncture-vine where released on Kauai, Maui and Oahu.

Cereal and Forage Insects

A BILLBUG (Sphenophorus venatus vestitus) was heavy on Tifton grass in Hilo, Hawaii, and in Waianae, Waipahu and Manoa, Oahu. THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) was heavy and PEA APHID (Acyrthosiphon pisum) was light on alfalfa at Kekaha, Kauai. An outbreak of a PHYCITID MOTH (Cryptoblabes aliena) occurred on sweet corn in experimental plots at Waimanalo Experiment Station, Oahu. SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) caused moderate damage to corn in Waimea, Hawaii. Moderate to heavy outbreaks of LAWN ARMYWORM (Spodoptera mauritia acronyctoides) occurred in Lahaina, Maui; Kapaa, Kauai; and in Kaneohe and Honolulu, Oahu. A SCOLYTID BEETLE (Hypothenemus pubescens), a pest of Bermuda grass first discovered on Maui in 1964, spread to the islands of Hawaii, Kauai and Lanai, and is now established on all major islands. SORGHUM MIDGE (Contarinia sorghicola) was common and important on sorghum varieties at University of Hawaii Agricultural Experiment Stations in Kapaa, Kauai and Makawao, Maui. A BILLBUG, probably Sphenophorus venatus vestitus, destroyed many primary shoots of plant cane on Kauai. This type of damage in field grown cane had not been noted previously. Attempted eradication of a GRASSHOPPER (Schistocerca vaga) on Sand Island, Oahu, was discontinued when surveys revealed the species on weeds near the road leading to Sand Island.

Fruit and Nut Insects

SOUTHERN GREEN STINK BUG caused slight damage to immature macadamia nuts in Kona, Hawaii, but damage ranged up to 23 percent on Oahu. Larvae of an OLETHREUTID MOTH (Cryptophlebia ombrodelta) caused considerable damage to litchi at Lawai, Kauai, with up to 60 percent damage to "nuts" reported by one grower. CHINESE ROSE BEETLE (Adoretus sinicus) was very active from sea level to 2,000 feet throughout Maui with heavy damage noted on Java-plum and apple. ORIENTAL FRUIT FLY (Dacus dorsalis) caused light to moderate damage to papaya, mango and avocado on Oahu.

1/ Compiled by the Entomology Branch, Hawaii State Department of Agriculture, with the cooperation of the Department of Entomology, University of Hawaii; Entomology Department, Hawaiian Sugar Planters' Association; and Plant Pest Control Division, USDA; through the Hawaiian Entomological Society.

2/ Described by Bradley, G. A. 1965. Canad. Ent. 97(6): 668-670. Originally collected in State in 1962.

Sporadic outbreaks of BARNACLE SCALE (Ceroplastes cirripediformis) occurred in passion-fruit plantings and RED-BANDED THRIPS (Selenothrips rubrocinctus) ranged light to moderate on mango trees on Kauai. SPIREA APHID (Aphis spiraecola) was found for the first time in the State at Haleakala Crater on Maui.

Truck Crop Insects

MELON FLY (Dacus cucurbitae) heavily damaged tomatoes and cucurbits at Wailua and Kapaa, Kauai. LEEK MOTH (Acrolepia assectella) was heavy on onions at Lawai and Omao, Kauai. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) appeared in pest proportions on beans, tomatoes and cucumbers at Kalaheo, Lawai and Wailua on Kauai. CHINESE ROSE BEETLE heavily damaged beans throughout Maui, and SOUTHERN GREEN STINK BUG caused moderate to heavy damage to truck crops on Maui and Hawaii. On Maui, southern green stink bugs caused 50-90 percent damage to flower buds of passion-fruit at Keanae and Kahului, while damage to beans in the central part of that island varied 40-50 percent. On Hawaii, heavy populations of this stink bug caused moderate damage to tomatoes in Waiohinu, string beans and cabbage in Hamakua Coast and broccoli in Waimea. A slight buildup of a TARO LEAFHOPPER (Tarophagus proserpina) occurred at Hanapepe and Waimea, Kauai. A STINK BUG (Thyanta accerra) was reported for the first time in the State, being found on truck crops and weeds in Ewa and Hickam Air Force Base.

Forest, Ornamental and Shade Tree Insects

On the island of Hawaii, larvae of an OLETHREUTID MOTH (Crytophlebia ombrodelta) caused moderate to heavy terminal dieback of Indigo suffruticosa, a new host record, and damaged terminal shoots of Cassia occidentalis, in Kona. An ARADID BUG (Mezira membranacea) spread to Hawaii and was found on bark of Ohia trees in Kapoho. Larvae of a native TORTRICID MOTH (Enarmonia sp.) caused considerable dieback of terminal twigs of a rare native tree, Acacia koaia, in Kawaihae, Hawaii. A twig boring WEEVIL (Orthorhinus klugi) was discovered for the first time in the State on A. koaia in Kawaihae, Hawaii. A large APHID (Lachnus salignus) previously known only on the island of Hawaii, was found on Osteomeles anthyllidifolia in Haleakala Crater on Maui. A new species of APHID (Cupressobium maui) was found on Japanese cedar at Mahinahina Koa Grove, also on Maui. A NOCTUID MOTH (Phlegetonia delatrix), new to the State in 1964, was collected at lights at several locations on Ohau. A single specimen of this noctuid was taken in light trap in Hilo, Hawaii, early in 1965, and numerous adults were noted on Vitex trifolia along the shoreline at Mana, Kauai, late in the year. On Ohau, a WEEVIL (Syagrius fulvitarsus) damaged leatherleaf fern at Pauoa Valley, and larvae of a NOCTUID MOTH (Anomis flava), recently established in the State, was found on leaves of hibiscus and Hau in Honolulu, new host records. The eighteenth host of a twig boring SCOLYTID BEETLE (Xylosandrus compactus) was recorded during survey near Barbers Point, Oahu. The new host, Prosopis pallida, known as mesquite, kiawe or algaroba, grows in low coastal areas throughout the State. A TENEBRIONID BEETLE (Gonocephalum seriatum) caused considerable damage to terminal shoots and branches of Acacia melanoxylon at Waimea State Nursery, Hawaii. Although previously reported damaging potato seedlings and Ilima flowers, this is first reported damage to acacia. OLEANDER APHID (Aphis nerii) was found for the first time in the State during 1965 on oleander at Barbers Point, Ohau. Another APHID (Amphorophora vaccinii), previously reported only from Mauna Loa, Hawaii, heavily infested Vaccinium sp., a native plant, on Haleakala, Maui. ORCHID WEEVILS, Orchidophilus aterrimus and O. peregrinator, moderately damaged dendrobium and vanda orchids on Kauai. SOUTHERN GREEN STINK BUG moderately damaged hibiscus and orchids in Lanikai and Waialae-Kahala, Oahu. Two ARMORED SCALES found in the State for the first time during 1965 were Mycetaspis personata on ti leaf in Honolulu, and Neopinnaspis harperi on Gouldia terminalis at Puu Kohahuanui Trail, both on Oahu. A WEEVIL (Brachyrhinus cribricollis), new to the State in 1960, spread to Maui and caused 40 percent damage to chrysanthemum flower buds in Upper Kula.

Insects Affecting Man and Animals

BROWN DOG TICK (Rhipicephalus sanguineus) was troublesome in the Ewa-Barbers Point area, Oahu. Swarms of a VESPID WASP (Polistes sp.) caused residents to complain of annoyance and stings at various locations on Oahu. Large numbers of this wasp were reported from the Kokee Tracking Station, Kauai. MOSQUITO populations, especially Culex pipiens quinquefasciatus and Aedes vexans nocturnus, "exploded" late in the year after heavy rains and flooding. Heavy populations of NORTHERN CATTLE GRUB (Hypoderma bovis) were reported on Maui. New bovine and poultry pests included LONG-NOSED CATTLE LOUSE (Linognathus vituli) on calves at Kipu Ranch, Kauai, and NORTHERN FOWL MITE (Ornithonyssus sylviarum) on chicks at Mokuleia, Oahu. HONEY BEE (Apis mellifera) continued annoying homeowners on Oahu by nesting in double walls.

Household and Structural Insects

FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) and a POWDER-POST TERMITE (Cryptotermes brevis) continued to cause considerable economic loss to many homeowners on Oahu. On Maui, free of C. formosanus prior to 1964, eradication measures are now underway in Wailuku and Waikapu. PACIFIC DAMPWOOD TERMITE (Zootermopsis angusticollis) was found in Douglas-fir lumber in Hilo, Hawaii, and in Honolulu, Oahu. A SUBTERRANEAN TERMITE (Coptotermes vastator) was found for the first time in the State in a building in the Kaimuki section of Honolulu, Oahu. ARGENTINE ANT (Iridomyrmex humilis) was troublesome in dwellings throughout Kauai.

Beneficial Insects

A predaceous ANTHOCORID BUG (Montandoniola moraguesi), introduced from the Philippines in 1964 and released on Oahu and Kauai for control of Gynaikothrips ficorum (Cuban-laurel thrips), spread to Maui, Hawaii and Molokai. Considerable reduction in thrips populations occurred on all 5 islands as a result of predation by M. moraguesi. Two parasites, a TACHINA FLY (Trichopoda pennipes) and a SCELIONID WASP (Telenomus basalis), became established on all major islands and reduced populations of southern green stink bug. A parasitic PTEROMALID WASP (Spalangia endius), introduced from California in 1964 for control of Musca domestica (house fly) was recovered for first time in Ewa, Oahu. In Hanapepe and Waimea, Kauai, a MIRID BUG (Cyrtorhinus fulvus), predaceous on eggs of Tarophagus prosperpina, aided in preventing a heavy buildup of this pest. Two BRACONID WASPS, Bracon n. sp. and Agathis n. sp., were introduced from Texas for control of Ithome concolorella (a Kiawe moth). An impressive buildup of a CERAMBYCID BEETLE (Plagiohammus spinipennis), a stem borer of lantana, occurred at Kukui Paddock, Hawaii, and 2 NOCTUID MOTHS (Hypena strigata and Syngamia haemorrhoidalis) and LANTANA LACE BUG (Teleonemia scrupulosa) controlled lantana in many localities throughout the State. A HISPID BEETLE (Uroplata girardi) was recovered for first time on Oahu at Mt. Tantalus. This lantana leaf mining beetle was introduced from Brazil in 1961 and is well established in Lawai Valley, Kauai. A CECIDOMYIID MIDGE (Zeuxidiplosis giardi) from New Zealand and a KLAMATH-WEED BEETLE (Chrysolina quadrigemina) from California were released on Mt. Hualalai, Hawaii, for control of Hypericum perforatum (Klamath-weed). Both are spreading from original release point and appear very promising. PUNCTURE-VINE WEEVILS (Microlarinus spp.) reduced Tribulus cistoides (a puncture-vine) in West Kauai, and on Maui, 95 percent of this noxious plant was destroyed in Kihei and Puunene. M. lypriformis is the stem-boring species and M. lareynii is the seed-boring species. The range of a HELIODINID MOTH (Schreckensteinia festaliella), introduced from California for control of Rubus sp. (blackberry), was considerably extended in Olina, Maui, and in Kokee, Kauai. A TORTRICID MOTH (Aptoforma sp.), introduced from Mexico for the control of Rubus sp., became established in Olinda, Maui, and subsequently released in Kokee, Kauai. A stem-boring WEEVIL (Apion antiquum) caused 100 percent dieback of Emex australis, a rangeland weed, from Waiakoa to Pukalani, Maui. An ARCTIID MOTH (Selca brunella) from Malaysia was released in Panaewa Forest Reserve, Hawaii, for control of Melastoma malabathricum (Indian-rhododendron). A SCIOMYZID FLY (Sepedon macropus), introduced from Nicaragua for control of Lymnaea ollula (cattle liver fluke snail) in 1958, was very active throughout 1965 on Kauai in all low lying, wet areas, particularly in taro fields.

Miscellaneous Pests

New infestations of GIANT AFRICAN SNAIL (Achatina fulica) were found in Kona, Hawaii, and in Poipu, Kauai, where intensified efforts to eradicate these are in progress. A GEOMETRID MOTH (Cosymbia serrulata), collected at light for the first time in Honolulu, Oahu, and later on Maui and Hawaii during 1964, spread to the island of Kauai in 1965. Larvae of C. serrulata were found feeding on flowers of Prosopis pallida, Acacia farnesiana and Leucaena glauca. Other species reported during 1965, all on Oahu, included a SAP BEETLE (Carpophilus oculatus) in unidentified seeds from various localities; and an ENSIGN SCALE (Nipponorthezia guadalcanalia) from leaf litter on Mt. Tantalus; a CERAMBYCID BEETLE (Phorocantha semipunctata) in widely scattered areas; and a single specimen of a PLATASPID BUG (Coptosoma xanthogramma) at light in Honolulu. C. xanthogramma has since been collected from Ainakoa to Aiea Heights, Honolulu, and found damaging growing tips and young tendrils of Canavalia microcarpa (Maunaloa) and blossoms of Strongylodon macrobotrys (jade-vine).

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PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG damaging small grains in Texas and heavy on wheat in Oklahoma; severe on wheat at one location in Kansas, but below zero temperatures and no snow cover may have deterring effect. (p. 79). GREEN PEACH APHID nymphs medium on leaves of beets in California; extremely early for area. (p. 80). IMPORTED FIRE ANT activity higher than in past years in some Alabama counties; 75 or more hills noted in many open pastures. (p. 83). PACIFIC COAST TICK caused paralysis in cattle herd in California. (p. 82).

Detection

Look for BLACK PARLATORIA SCALE now. (p. 84).

An Ephydrid fly from Sugar Beets. (p. 84).

For new county records see page 84.

Special Reports

Summary of Insect Conditions in the United States - 1965

Status of the Screw-worm in the Southwest. (p. 85).

Hawaiian Insect Report. (p. 86).

Reports in this issue are for week ending February 4 unless otherwise indicated.

WEATHER BUREAU'S 30-DAY OUTLOOK

FEBRUARY

The Weather Bureau's 30-day outlook calls for temperatures to average below seasonal normals over most of the Nation except for near to above normal in the extreme Northeast and in the Pacific Northwest. The most unseasonable cold weather is expected over the southern half of the Nation from the Rockies to the East Coast. Precipitation is expected to exceed normal over most of the Nation except for near to subnormal amounts from the upper and middle Mississippi Valley eastward across the Great Lakes to the Appalachians and also over the Pacific Northwest. North of the South Atlantic and Gulf Coast States an appreciable portion of the precipitation is expected to be in the form of snow.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING FEBRUARY 7

HIGHLIGHTS: (1) Cold east of Divide but warmer by week end. (2) Rains California Coast; snow lower Ohio River Valley; light precipitation elsewhere.

TEMPERATURE: The week ending Sunday, February 6, was the second mild week over the Northwest, the third consecutive cold week from the Rocky Mountains to the Mississippi River, and the fourth cold week east of the Mississippi. The entire Nation, except the Florida Peninsula, averaged warmer than the preceding week. The small increases in weekly mean temperatures over the Southwest brought portions of that area to above normal. Temperatures east of the Divide continued below normal in spite of warming which occurred during the latter part of the week and over the weekend. Subzero temperatures occurred earlier in the week from the Rocky Mountains to the Great Lakes; also over the southern Appalachians. Chattanooga, Tennessee, and Caesars Head, South Carolina, registered 10° below zero on Monday, January 31. Subfreezing temperatures occurred over the South, except the lower Rio Grande Valley and southern Florida, along the coast. Northerly winds and clear skies brought subzero readings to upstate New York and portions of New England on Sunday, February 6. Southerly winds produced a sharp warming over the Great Plains and eastward late in the week and over the weekend. On Sunday, February 6, numerous stations in Texas registered maxima in the 70's and temperatures in the 50's and 60's were common in Kansas and Missouri. The sharp warming trend, so noticeable over the Great Plains had a much smaller effect in the Southeast. In fact, much of Idaho, Montana, and portions of the Dakotas were warmer than the Carolinas Sunday night, February 6.

PRECIPITATION: The great blizzard of 1966 ended in the Northeast after leaving record snow falls and record low temperatures at a number of locations. A snow storm developed over the lower Ohio River Valley and left up to a foot of snow from St. Louis, Missouri, to southern Ohio. The mild temperatures late in the week melted much of this snow. A big storm moved into the Pacific Northwest late in the week. It was accompanied by gale-force winds and heavy rains along the coast. Light snow flurries occurred across the northern and central Great Plains and eastward to the Atlantic with sleet and freezing rains at some locations south of the snow area. A few thunderstorms occurred in the Deep South. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - TEXAS - Damaging small grains in Hopkins and Red River Counties. (Parker). OKLAHOMA - Heavy in wheat in local areas of Mayes County. (Okla. Coop. Sur.). KANSAS - Ranged as high as 200 per linear foot in wheat at agronomy farm in Manhattan, Riley County. Temperature dropped below zero after counts made; no snow cover. (Simpson, Jan. 29).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Light to medium in early barley in Gila Valley, Yuma County, and in western Maricopa County, week ending January 28. Few scattered, light infestations appearing in barley and wheat in Yuma, Maricopa and Pinal Counties. (Ariz. Coop. Sur.). KANSAS - Averaged 75 per linear foot in wheat at agronomy farm in Manhattan, Riley County. Temperature below zero later, no snow cover. (Simpson, Jan. 29).

GRAIN APHIDS - CALIFORNIA - Rhopalosiphum padi complex and Macrosiphum avenae appearing in Fresno County grain. (Cal. Coop. Rpt.).

OMNIVOROUS LOOPER (Sabulodes caberata) - CALIFORNIA - Larvae medium on oats in race track area at Albany, Alameda County. Unusually heavy on shrubs and ground cover in 1965 in several locations. (Cal. Coop. Rpt.).

A BILLBUG (Sphenophorus venatus vestitus) - FLORIDA - Severely damaging Bermuda grass in South Miami, Dade County. (Habeck).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Egg deposition studies in alfalfa on Northeast Branch Experiment Station, Mississippi County, continue. Four stem samples of one square foot each showed average of 350,000 eggs per acre. Samples taken in December 1965 and January 1966 indicated about 1,000,000 eggs per acre. (Ark. Ins. Sur.).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Adults ranged 10-60 per 100 sweeps in Yuma Valley area alfalfa. Averaged 1 larva per terminal in some fields. In Maricopa County, adults remain low; however, egg deposits numerous in Buckeye and Chandler areas and along Baseline Road. (Ariz. Coop. Sur., Jan. 28).

LEAFHOPPERS - FLORIDA - Severe cold at Gainesville, Alachua County, caused reduction in insect numbers. Adults of following species found in 100 sweeps on bitter blue lupine: 5 Cuerna costalis, 1 Macrosteles fascifrons and 1 Diabrotica undecimpunctata howardi. Following species found in 100 sweeps on rye: 1 M. fascifrons adult, 3 Graminella nigrifrons adults and 30 Macrosiphum avenae nymphs. (Mead).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Few scattered, medium to heavy infestations noted in Yuma Valley alfalfa week ending January 28; as high as 4,000 per 100 sweeps. Averaged 200 per 100 sweeps in Roll and upper Yuma Valley areas, 800 per 100 sweeps in Somerton area, Yuma County. Remains light in Pinal and Maricopa Counties. (Ariz. Coop. Sur.). NEW MEXICO - Continued light in alfalfa in northern Eddy and Chaves Counties, week ending January 28. (Kloepfer, Mathews). Light in some fields in Lea County. (Mathews).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Continued light in alfalfa in Maricopa and Pinal Counties. Medium in some Yuma County fields. (Ariz. Coop. Sur.).

FRUIT INSECTS

Citrus Insect Situation in Florida - End of January - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 66 percent of groves (norm 57 percent); 49 percent economic (norm 39 percent). Population still above normal but tending to decrease to moderate level. All districts heavy in at least 5 percent of groves. Highest districts south, west, north. TEXAS CITRUS MITE (Eutetranychus banksi) infested

31 percent of groves (norm 26 percent); 15 percent economic (norm 9 percent). Population slightly above average but at low to moderate level. Less than 6 percent of groves heavy. Highest districts west and north. CITRUS RED MITE (Panonychus citri) infested 32 percent of groves (norm 33 percent); 12 percent economic (norm 10 percent). At low level normal for January in recent years. Less than 5 percent of groves heavy. Highest districts east and west. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) remains at very low level. GLOVER SCALE (Lepidosaphes gloverii) infested 78 percent of groves; 12 percent economic. Population normal; highest district south. PURPLE SCALE (Lepidosaphes beckii) infested 82 percent of groves; 5 percent economic. Population normal; highest district south. YELLOW SCALE (Aonidiella citrina) infested 70 percent of groves; 21 percent economic. Population above average and destructive in scattered groves, mostly in central district. Highest districts central and east. CHAFF SCALE (Parlatoria pergandii) infested 60 percent of groves; 10 percent economic. Population near normal low for January. Highest district south. BLACK SCALE (Saissetia oleae) infested 49 percent of groves; 26 percent economic. Normal for January is 32 percent infested, 14 percent economic. Highest districts central and east. WHITEFLIES infested 64 percent of groves; 4 percent economic. Population near normal; slight increase expected. Highest district east. Major cold spell of January 30-31 unlikely to change pest situation greatly unless cold damage results in severe defoliation and dead wood. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

SIX-SPOTTED MITE (Eotetranychus sexmaculatus) - CALIFORNIA - Medium on citrus locally in San Diego, San Diego County. (Cal. Coop. Rpt., Jan. 28).

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Medium on olive trees in Del Rey, Fresno County. (Cal. Coop. Rpt.).

SAN JOSE SCALE (Aspidiotus perniciosus) - NEW MEXICO - Moderate to heavy and apparently killing Hopa crab apple trees at Farmington, San Juan County. (Heninger).

For Other Fruit Insects, see Federal-State Plant Protection Programs, page 83.

TRUCK CROP INSECTS

FALSE CELERY LEAF TIER (Udea profundalis) - CALIFORNIA - Larvae locally light on table beets and lettuce in San Joaquin and Fresno, Fresno County. (Cal. Coop. Rpt., Jan. 28).

A LEAF ROLLER MOTH (Ptycholoma peritana) - CALIFORNIA - Larvae medium on leaves of table beets in Selma, Fresno County. (Cal. Coop. Rpt.).

A NOCTUID MOTH (Pseudoplusia includens) - TEXAS - Larvae heavy locally on cabbage in Webb County. (Deer, Jan. 28).

GREEN PEACH APHID (Myzus persicae) - CALIFORNIA - Nymphs medium on leaves of table beets in Selma, Fresno County. Populations extremely early in this area. (Cal. Coop. Rpt.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Medium in most sugar beet seed fields in Maricopa County. (Ariz. Coop. Sur.).

SAY STINK BUG (Chlorochroa sayi) - ARIZONA - Light in sugar beet seed fields in Maricopa County. (Ariz. Coop. Sur.).

ONION THRIPS (Thrips tabaci) - ALABAMA - Considerable damage with 5 percent loss of onions on 0.3 acre in Escambia County where populations extremely heavy. All plants affected; reducing sale quality. (Knowled, Hendrix, et al.).

Beet Leafhopper - See Federal-State Plant Protection Programs, page 83.

COTTON INSECTS

PINK SCAVENGER CATERPILLAR (Sathrobrota rileyi) - CALIFORNIA - Light to medium in gin trash collections in Brawley-Holtville-Westmorland areas, Imperial County, week of January 28. Heavy larval numbers recovered from gin trash in Calipatria, Imperial County. (Cal. Coop. Rpt.).

For other Cotton Insect notes, see Federal-State Plant Protection Programs, page 83.

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - ALABAMA - Adults and larvae slightly active along and below ground line in affected pines throughout State. (McQueen).

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - TEXAS - All known multiple-tree infestations controlled by December 20, 1965. (Texas For. Pest Comm.; Dec. Rpt., Williamson).

A CONIFER APHID (Cinara tujafilina) - NEW MEXICO - Widespread and light to moderate on arborvitae in Farmington area, San Juan County. (Heninger). OKLAHOMA - Recent cold weather has not materially reduced infestations on arborvitae in Stillwater area, Payne County. (Okla. Coop. Sur.).

BLACK PINE-LEAF SCALE (Nuculaspis californica) - CALIFORNIA - Medium on white fir trees in Placerville area of El Dorado National Forest. (R. Miller, USFS).

DOGWOOD BORER (Thamnosphecia scitula) - ALABAMA - Larvae in affected dogwood in central part of State slightly active and feeding during warmer periods; not affected by zero temperatures January 29 and 30. Some pupation noted. (McQueen).

A NOCTUID MOTH (Protorthodes rufula) - CALIFORNIA - Larvae of this species and of a crane fly locally heavy in dichondra in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

A NYMPHALID BUTTERFLY (Vanessa sp.) - CALIFORNIA - Larvae heavy on malva in Encinitas, San Diego County. (Cal. Coop. Rpt., Jan. 28).

SCALE INSECTS - FLORIDA - Ceroplastes floridensis moderately damaged 4,500 of 5,000 ixora plants in nursery at Winter Haven, Polk County. (Eisenschenk, Jan. 6). CALIFORNIA - Lecanium persicae heavy on daphne plants in Santa Rosa, Sonoma County. (Cal. Coop. Rpt.). Toumeyella pinicola and Holcocera iceryaeella (a blastobasid moth) heavy on Monterey pine in Vandenburg Air Force Base, Santa Barbara County. (R. Bloomstrom, USFS). Coccus hesperidum and Abgrallaspis cyanophylli heavy on yucca nursery stock in Lodi, San Joaquin County. Phenacoccus defectus and Eriococcus coccineus medium on leaves and roots of sempervivum nursery stock at Lodi. (Cal. Coop. Rpt.).

MEALYBUGS - CALIFORNIA - Pseudococcus adonidum medium on New Zealand-flax nursery stock in Menlo Park, San Mateo County. (Jan. 28). Planococcus citri heavy locally on gold spot croton nursery stock in Redding, Shasta County, and on mimosa nursery stock in Escondido, San Diego County. (Cal. Coop. Rpt.).

A MEALYBUG (Humococcus atriplicis) - CALIFORNIA - Light on roots of Atriplex canescens in Holtville, Imperial County. This is a new county record. (Cal. Coop. Rpt.).

PEA LEAF MINER (Liriomyza bryoniae) - CALIFORNIA - Adults medium on chrysanthemum in Encinitas, San Diego County. (Cal. Coop. Rpt., Jan. 28).

A SPHECID WASP (Ectemnius spiniferus) - CALIFORNIA - Larvae heavy and damaging flowering cherry nursery stock in Lemoore, Kings County. (Cal. Coop. Rpt., Jan. 28).

SPIDER MITES (Tetranychus spp.) - ALABAMA - Adults, nymphs and eggs continue heavy on isolated plantings of roses, laruelcherry, azalea and other ornamentals in Lee County following zero temperatures January 29-30. Damage minor in most instances, but continuing population and multiplication on ornamentals throughout central and southern areas under extreme weather conditions noteworthy. (McQueen). CALIFORNIA - T. marianae medium on nightshade locally in Fullerton, Orange County. This is a new county record. (Cal. Coop. Rpt.).

CARMINE SPIDER MITE (Tetranychus telarius) - CALIFORNIA - Medium on wild nightshade locally in Fullerton, Orange County, and on Ajuga sp. nursery stock in Fresno, Fresno County. (Cal. Coop. Rpt., Jan. 28).

AN ERIOPHYID MITE (Aceria abalis) - CALIFORNIA - Nymphs and adults heavy on California mugwort (Artemisia vulgaris) in Fullerton, Orange County. (Cal. Coop. Rpt., Jan. 28).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control, January 24-28, contained Aedes sollicitans, A. taeniorhynchus, A. vexans, Anopheles quadrimaculatus, Culex restuans, Culex salinarius and Culiseta inornata. Light trap collections decreased due to colder weather. Larval collections during week ending February 4 contained Aedes sollicitans, A. vexans, Anopheles quadrimaculatus, Culex salinarius and Culiseta inornata. Light trap collections showed sharp decrease due to unusually cold and freezing weather. Culiseta inornata predominated in traps. (Stokes).

COMMON CATTLE GRUB (Hypoderma lineatum) - NEW MEXICO - Averaged 6.3 per head in 9 untreated cattle at Clayton, Union County; ranged 0-21 per animal; none found in 2. Averaged 6.6 per head in 20 untreated animals; ranged 0-18 per animal; none in 2. (Kinzer). OKLAHOMA - Ranged 10-15 per head on yearlings, averaged 6 per head on cows in Noble County; moderate in Hughes County. (Okla. Coop. Sur.). UTAH - Hypoderma spp. appearing in Cache County. Treatment underway on dairy and beef cattle throughout county. (Knowlton, Jan. 31).

BROWN DOG TICK (Rhipicephalus sanguineus) - ARIZONA - Continues heavy in Yuma area despite cool weather. (Ariz. Coop. Sur.).

PACIFIC COAST TICK (Dermacentor occidentalis) - CALIFORNIA - Tick paralysis occurred in herd of cattle in Copperopolis-Bear Mountains area, Calaveras County. Treated animals recovered promptly; entire herd of several hundred beef cattle sprayed. (Cal. Coop. Rpt.).

CATTLE LICE - OKLAHOMA - Several species ranged 2-3 per hair part on cows in Noble County. Heavy in Hughes County. (Okla. Coop. Sur.).

TROPICAL RAT MITE (Ornithonyssus bacoti) - CALIFORNIA - Infesting residence and annoying occupants in Carmichael, Sacramento County. (Cal. Coop. Rpt., Jan. 28).

NORTHERN FOWL MITE (Orinthonyssus sylviarum) - ARKANSAS - Locally heavy in Benton County. (Ark. Ins. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

A FIELD CRICKET (Gryllus sp.) - ARIZONA - Recent hatch causing concern to many homeowners in Yuma County. (Ariz. Coop. Sur.).

CLOVER MITE (Bryobia praetiosa) - NEW MEXICO - Light to heavy and very annoying in and around homes and business establishments at Farmington, San Juan County. (N. M. Coop. Rpt.).

STORED-PRODUCT INSECTS

BROWN-SPIDER BEETLE (Ptinus clavipes) - CALIFORNIA - Adults medium in dry yeast in wholesale house in West Sacramento, Yolo County. (Cal. Coop. Rpt., Jan. 28).

CIGARETTE BEETLE (Lasioderma serricorne) - CALIFORNIA - Adults heavy in imported fish meal in Edgemont, Riverside County. (Cal. Coop. Rpt., Jan. 28).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

BEET LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Treatment of overwintering concentrations in breeding grounds of western San Joaquin Valley completed January 19 on 11,000 acres; 97 percent mortality achieved. (Cal. Coop. Rpt.).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Progress good this period; 53 city blocks sprayed in Sacramento, Sacramento County. About 40 percent of area to be treated completed. Approximately one-half of treatment area treated in Fresno, Fresno County. (Cal. Coop. Rpt.).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Four adults taken in Steiner traps January 15-21 in known infested area. Unusual for species to be taken in Steiner traps. Large adult numbers around trees prompted cutting of fruit and recovery of one larva in Temple orange in Palm Beach County commercial grove. A. suspensa collections during last week of January reveal larvae and adults still common. Larvae most abundant in calamondins; also taken in fruits of guava, kumquat, and loquat. All collections from Dade, Palm Beach, and Broward Counties. (Fla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Observations in Macon, Lee and Tallapoosa Counties indicate active populations somewhat higher than in past years; 75 or more hills per acre noted in many open pastures. (Barwood).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Larvae continue to be found on lint cleaner from gins in Queen Creek area. Field inspections in Yuma County revealed 2 larvae in one field in Yuma Valley, 1 larva near Somerton and 7 larvae in Gadsden-San Luis areas. In southern Yuma County to date, 31 larvae found in 17 fields comprising 935 acres. (Ariz. Coop. Sur., Jan. 28). CALIFORNIA - Two separate single larval collections made in gin trash in Bard Valley, Imperial County, during January. (Cal. Coop. Rpt.). NEW MEXICO - Live larvae found in standing stalks and on surface of ground in Chaves and Eddy Counties. In an area near Carlsbad, 17 live larvae found in 9 bolls January 10. Of 24 cocoons collected from cotton roots near Hagerman, Chaves County, 21 larvae alive. Even though temperature dropped to 10 degrees below zero, live larvae still found in seed cotton on ground in field near Artesia, Eddy County. (Judd).

A WEEVIL (Anthonomus sp.) - ARIZONA - Four adults found in an approximate 3-cubic-foot trash collection taken from under mesquite tree in Pinal County. (Ariz. Coop. Sur.).

LIGHT TRAP COLLECTIONS

GEORGIA (Tifton, 1/26-2/3; temp. 10-54°F.; precip. 0.15 in.; blacklight) - Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

(Light trap collections continued on page 84).

SOUTH CAROLINA (Charleston, 1/17-23; temp. 25-52°F.; precip. 1.52 in.; blacklight) - Pseudaletia unipuncta 1, Spodoptera frugiperda 0, Prodenia ornithogalli 2, Agrotis ipsilon 1, Feltia subterranea 0, Peridroma saucia 0, H. zea 0, H. virescens 0, M. sexta 0, M. quinquemaculata 0, Estigmene acrea 0, Trichoplusia ni 0.

TEXAS (Brownsville, 1/29-2/4; temp. 37-71°F.; precip. 0.0 in.; 2 blacklight) - A. ipsilon 24, E. acrea 1, F. subterranea 13, P. ornithogalli 1, P. unipuncta 74.

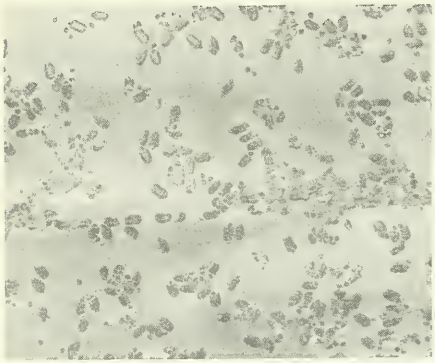
CORRECTIONS

CEIR 16(5):68 - A FALSE SPIDER MITE (Tenuipalpus pacificus) - FLORIDA - Note should read: Caused moderate to severe damage to leaves of 3,800 of 38,000 orchid seedlings at Homestead, Dade County. (Knowles, Jan. 21).

INSECT DETECTION

Look for Black Parlatoria Scale Now

Look in citrus groves and backyard plantings for a flat, black, opaque scale, rectangular to oval in shape, about 1 to 1.5 mm. in length. This scale is prominent on fruit and top side of leaves.



Parlatoria zizyphus (Lucas) prefers citrus; however, there are a few reports of the pest on some other plants. The scale is distributed in Europe, Asia (including Iran, Lebanon, Cyprus), parts of Africa (Morocco, Algeria, Egypt, Ethiopia, Tunisia, Libya, southern Africa) and some other areas. It is not known to occur in the United States. P. zizyphus is one of the major pests of citrus in southern Europe, Tunisia and China; also important in Iran, Libya and Ethiopia. Infestations are difficult to control.

For more details see CEIR 10(8):111-112.

An Ephydrid Fly from Sugar Beets

In 1963, an ephydrid fly, Psilopa leucostoma (Meigen), was reported as a leaf miner of sugar beets in southeastern Washington by B. J. Landis. Since then, this fly was found attacking sugar beets in Oregon in the Milton-Freewater area in 1964 and in the Ontario-Nyssa area in 1965. Also in 1965, this pest was found at Parma and in other beet-producing areas eastward throughout Idaho, and at Tremonton, Utah. (B. J. Landis).

New County Records

A MEALYBUG (Humococcus atriplicis) on roots of Atriplex canescens in Imperial County, California. (p. 81).

A SPIDER MITE (Tetranychus marianae) on nightshade in Orange County, California (p. 82).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period January 30-February 5 no cases were reported in the United States. The Republic of Mexico reported 20 cases as follows by State: Sonora 7, Chihuahua 1, Tamaulipas 4 and Territorio sur de Baja California 8. Sterile screw-worm flies released: Texas 566,250 and Mexico 88,202,000.

Year	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	0	0	27	158	0.00	0.00
1965	0	4	33	320	0.00	1.25
1966	0	25	6	114	0.00	21.92
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	103	323	29	197	355.17	163.95
1966	20	315	9	98	222.22	321.42

Feasibility Survey - During this period 203 cases were identified in Mexico south of the Barrier Zone as follows: Jalisco 23, Colima 6, Yucatan 24, Veracruz 28, Chiapas 16, Puebla 6, Guerrero 19, Michoacan 5, Sinaloa 28, Morelos 2, Oaxaca 11, Nayarit 5, Tabasco 7, San Luis Potosi 4, Queretaro 1, Hidalgo 1, Durango 8, Zacatecas 1, Guanajuato 7, Territorio de Quintana Roo 1.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

HAWAII INSECT REPORT

Fruit Insects - CHINESE ROSE BEETLE (Adoretus sinicus) adults medium to heavy on leaves of Isabella grape (Vitis labrusca) in Waimea and Hanapepe, Kauai. Young terminal leaves also destroyed.

Truck Crop Insects - SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) very light on various crops in Lihue, Hanamaulu and Kapaia, and light on legumes and other crops at Agricultural Experiment Station in Waialua, Kauai. Increasing on weed hosts and vegetable crops in some localities on Oahu. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) medium on older leaves of snap beans and tomato in Waimea Valley, Kauai, and light on tomato and pole bean leaves in Waiakoa, Maui. SOUTHERN GARDEN LEAFHOPPER (Empoasca solana) caused heavy damage to endives and chickory in Waimea, Kauai. Typical "hopperburn" observed on older leaves. MELON APHID (Aphis gossypii) and Liriomyza sp. light on tomato in commercial farms in Kihei, Waiakoa and Olinda, Maui. Larvae of IMPORTED CABBAGEWORM (Pieris rapae) light on head cabbage in Kihei, Waiakoa, and Olinda, Maui. AN APHID (Macrosiphum sp.) light on potato from Kihei to Olinda, Maui.

Forest, Ornamental and Shade Tree Insects - GREENHOUSE ORTHEZIA (Orthezia insignis) heavy on Asystasia coromandeliana from Kihei to Olinda, Maui; severely damaged plants in some areas died. CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) light on leaves of Chinese banyan (Ficus retusa) in scattered areas in Oahu. Heavy infestations of an ARMORED SCALE (tentatively determined Phenacaspis cockerelli) occurred on oleander and coconut leaves in Keauhou and Honaunau, Hawaii; moderate to heavy on oleander leaves in Honolulu and Lanikai, Oahu. HEMISPHERICAL SCALE (Saissetia hemisphaerica) light on midribs of plumeria leaves (7 adults per leaf) and moderate to heavy on terminal parts of stems of paper-gardenia (Ervatamia divaricata) causing malformation of terminal buds in Honolulu, Oahu.

Insects Affecting Man and Animals - Heavy populations of house fly (Musca domestica) reported from Hanapepe, Kauai. Large numbers of a MILICHIID FLY (Milichiella circularis) swarming above sugar cane trash and mill wastes in Kekaha, Kauai. Becomes nuisance due to habit of hovering around moving objects.

Beneficial Insects - Increasing larval activity of an ARCTIID MOTH (Selca brunella) causing heavy damage to flower buds, fruits, leaves, and terminal stems of Indian-rhododendron (Melastoma malabathricum) in Kulani area of Hilo, Hawaii. Larvae noted about one mile from original release point. S. brunella was introduced from Malaysia in 1964 for bio-control of M. malabathricum. Light larval numbers of a TEPHRITID FLY (Tetraeuaresta obscuriventris) feeding on seeds of tropical American elephants-foot (Elephantopus mollis) in Omao and Kalaheo, Kauai; medium in Lawai, Kauai, where seed heads nearing maturity. T. obscuriventris introduced for control of E. mollis. An ANTHOCORID BUG (Montandoniola moraguesi) very active and exerting strong pressure on Cuban-laurel thrips; 1-2 adults and 4-6 nymphs per thrips-infested leaf counted at Makiki Heights, Oahu. (Davis).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965

INTRODUCTION

The summary of insect conditions, beginning in this issue, will be continued in several succeeding issues of the Cooperative Economic Insect Report. This was compiled in Survey and Detection Operations from annual summaries that were submitted by various State and Federal cooperators. A list of the individuals who assisted in assembling data, as well as a summary of the weather for 1965, will appear after the last section of this summary is published. Survey and Detection Operations appreciates the assistance of all individuals who have participated in the preparation of material for the 1965 summary.

CEREAL AND FORAGE INSECTS

GRASSHOPPERS

Highlights:

GRASSHOPPERS may be more of a problem on rangeland in the West and Midwest in 1966 than they were last year. More than 16.6 million acres of rangeland were found infested with economically significant numbers in 13 States during surveys conducted in fall of 1965. This is almost twice the 8.7 million acres infested in these States the previous fall. Although infestations were mostly noneconomic in North Dakota, threatening numbers may occur in a small area in Adams and Golden Valley Counties in 1966. Infestations increased on South Dakota rangeland, where threatening to severe numbers exist in several areas. East of the Missouri River, areas of infestation changed decidedly compared with 1964. Indications are for relatively high and damaging populations in eastern portions of that State in 1966. Although grasshoppers increased in some areas of Minnesota, the general outlook for 1966 is for somewhat lower populations. Cool weather resulted in a late hatch of grasshopper eggs in Wisconsin, and prolonged development which resulted in low adult density; therefore, populations may be low again in 1966. Populations were the lowest in many years in Illinois, were economically unimportant in Indiana and declined in Ohio.

Grasshoppers were of some concern during 1965 in the more western States. Economic rangeland species increased in areas of Washington. In California, grasshoppers posed a threat early in the season but damaging populations failed to develop. Populations were at low levels in Nevada during the year, but in Utah, grasshoppers caused considerable damage to crops and rangeland, conservatively estimated at 2.5 million dollars. No losses occurred in Colorado, but several species caused slight to moderate damage to various crops in northern Wyoming. Damage to crops and rangeland were minimal in Montana due to above normal moisture during the summer months. Grasshoppers were generally heavy over Texas, especially in the Rolling Plains, and populations were heavy in many areas of Oklahoma, where controls were necessary in many sections. Grasshopper populations increased to damaging numbers late in the year in Alabama, with most serious damage occurring to winter clovers in southern and central counties. Grasshoppers were numerous on tobacco in 2 south central counties of Virginia where drought conditions prevailed during the year. Weather conditions during the spring and summer months will have an influence on the development of populations. A map showing the results of the adult survey for 1965 was carried in CEIR 16(4): following page 64.

The GRASSHOPPER fall adult survey for 1965 showed mostly noneconomic infestations over NORTH DAKOTA, with light to threatening infestations indicated in several areas for 1966. Threatening numbers may occur in a small area in Adams and Golden Valley Counties in 1966 also. Localized light infestations occurred during 1965 on rangeland in western North Dakota in Slope, Billings, Golden Valley, McKenzie, Dunn and Williams Counties. Considerable grasshopper damage appeared along cropland margins in eastern areas of the State late in the season. The principal species involved were Melanoplus sanguinipes and M. bivittatus. Areas of threatening to severe grasshopper infestations in SOUTH DAKOTA exist in parts of Roberts, Grant, Day, Brown, Spink, Clark, Beadle, Brule, Jerauld, Sanborn, Aurora, Davison, Hanson, McCook, Lake, Moody, Minnehaha, Gregory, Tripp, Todd, Corson, Dewey and Zeibach Counties. Areas of light to threatening infestations cover most of the remaining portions of those counties east of the Missouri River and approximately half of the land area west of that river. East of the Missouri River, there was a decided change in areas of infestation from 1964 when grasshopper populations were mostly noneconomic to light. Rangeland infestations have increased. A long, cool spring in 1965 resulted in an extended period of grasshopper egg hatch in South Dakota and slowed development. A relatively wet summer minimized grasshopper damage to both crops and rangeland plants. An extended warm period during the fall months resulted in additional feeding by grasshoppers on late crops and continued egg laying. The weather in 1966 will be the key factor regarding damaging grasshopper populations which, by all indications, will be relatively high in eastern areas of South Dakota this year. Grasshopper control in South Dakota during 1965 was affected by chemical and biological means. An estimated 130,000 acres of crops and rangeland, including roadsides, field borders and fields were sprayed with recommended insecticides. In certain areas of the State, particularly the south central section, blister beetle populations, including Epicauta fabricii, E. pennsylvanica and E. maculata were noted. By the end of June, grasshopper populations had built up to economic proportions in the Elk Mountain area of western Custer County, where Ageneotettix deorum was the dominant rangeland species. In other areas of South Dakota, common species present in light to noneconomic numbers included Melanoplus bivittatus, M. differentialis, M. femurrubrum and M. sanguinipes. During surveys conducted in July, 2 additional species noted were Aulocara elliotti and M. packardii.

Light grasshopper populations caused little damage in NEBRASKA during the 1965 season. Some light concentrations, mainly Melanoplus femurrubrum, M. differentialis, M. bivittatus, M. sanguinipes and Phoetaliotes nebrascensis, were found in some portions of northwest, north, northeast and central Nebraska. These infestations occurred in red clover, idle land, legumes and small pastures. An estimated 10,000 acres were treated to protect crops. Grasshopper populations were lighter generally in Nebraska during 1965 than the previous year. In KANSAS, grasshopper populations remained low in most areas, with control measures applied against a few local buildups in southeast and central areas of the State. Melanoplus spp. occurred only in a few small areas in southeast, east central, west central and southwest MISSOURI. Populations were light everywhere except for a small spot in Douglas County, a narrow band from Newton County to Cedar County, and a small area in Henry County which was rated as moderate. Damage was noneconomic throughout Missouri during the 1965 season except in a few fields of corn in areas where numbers were moderate. The principal species in Missouri in 1965 were Melanoplus differentialis, M. femurrubrum and M. sanguinipes.

Grasshopper populations increased in several areas of MINNESOTA despite above normal rainfall and below normal temperatures throughout the 1965 season. Spring egg hatch was later than usual but a brief rainless period resulted in excellent nymphal survival. Cool, wet weather slowed development during the summer. Damage was generally not evident due to lush plant growth. Some late season movement of grasshoppers into corn and soybeans was observed, but severe damage was generally limited to marginal rows. Alfalfa was severely defoliated in occasional fields in numerous counties, but as in the past, infestations were scattered and localized. Areas of very severe infestation occurred only in Dakota and northern Goodhue Counties, and severe infestations occurred mainly in southeastern Minnesota counties. Threatening grasshopper infestations occurred over large areas of

central and west central sections and small areas of threatening populations were noted in a few southwest and northwest counties. Infestations were light generally over the western third of Minnesota and in the southeastern corner. Alfalfa was the primary host and Melanoplus femurrubrum continued to predominate in all areas during 1965. A limited grasshopper egg survey in October showed that only 7 percent of the fields surveyed contained egg numbers as high as adult populations indicated. Cool, wet weather from late August through September probably resulted in low egg deposition, with adult mortality probably being high in most areas at the same time. This would indicate that grasshopper populations in Minnesota in 1966 would be somewhat lower than they were in 1965. Egg hatch and nymphal survival in the spring of 1966, if weather conditions are good, could alter this outlook to some extent, however. In WISCONSIN, late hatching, unusually prolonged development and a low density of adult grasshoppers due to cool weather were significant in 1965. Little damage was noted and egg laying was probably less than normal, indicating a possibility of low grasshopper populations again in 1966. Eggs began hatching in mid-May. Melanoplus sanguinipes appeared first, and late in May nymphs of M. femurrubrum and M. differentalis were observed. M. sanguinipes adults were first observed in mid-June and those of M. bivittatus were noted late the same month. First instar nymphs of M. femurrubrum were common well into July, indicating a prolonged hatch. Adults first appeared in Wisconsin the third week in July, although immatures predominated well into September. Cool weather probably prolonged development so late in the 1965 season. The late maturing of grasshoppers in Wisconsin may have resulted in reduced egg laying; and survey, although not conclusive, indicated that this was true.

Melanoplus spp. populations in ILLINOIS were the lowest in many years. Treatments were applied to a total of 64,570 acres of cropland for control of grasshoppers in the State during 1965, compared with 219,626 acres in 1964, 672,433 acres in 1963 and 1,472,645 acres in 1962. Grasshoppers were not economically important in INDIANA during the 1965 season, and there were no reports of infestations that required control measures. In MICHIGAN, grasshopper adult and nymphal numbers were relatively low during the year. An average of 2 per square yard was recorded for 10 fields surveyed during mid-September in Mecosta, Osceola and Missaukee Counties. In one isolated field, counts as high as 15 per square yard were noted. M. femurrubrum was the dominant grasshopper species found at that time in Michigan. Grasshopper distribution decreased and populations declined in OHIO during 1965 compared with 1964. Counts were less than one per square yard throughout most northern sections of the State during September and October. Highest populations occurred in south and southeast areas, where counts ranged 3-10 per square yard. Melanoplus femurrubrum was estimated to comprise 98 percent of grasshopper field populations in Ohio. M. femurrubrum nymphs were observed in forage, soybeans and stubble in central and south central sections during July and adults were collected in September. M. differentialis was seldom observed, possibly due to early dispersal from hatching sites, although the species was frequently encountered a year ago. Epicauta pennsylvanica was the most common grasshopper predator and was usually observed in older fields of alfalfa and clover.

Grasshoppers were of some concern during the 1965 season in the more western States. Economic species increased greatly in WASHINGTON over the 1964 season in rangeland areas of northern Walla Walla, Columbia and Garfield Counties and in Franklin, Whitman and Asotin Counties. Economic infestations occurred on 246,000 acres during 1965, an increase of 229,000 acres over those infested in 1964. Melanoplus sanguinipes, M. packardii and M. bivittatus were dominant, except in Asotin County where M. femurrubrum appeared to dominate. Grasshopper emergence was earlier than in 1964, with about 50 percent adults being present by July. Damage to rangeland in Washington greatly increased during the 1965 season; however, little cropland was affected, except in northern Columbia and Garfield Counties. Grasshoppers were moderate or above on approximately 500,700 acres in OREGON during 1965, of which 1,050 acres were treated. Populations in western parts of the State were lower than during 1964, but generally higher in eastern and southern areas of the State. Camnula pellucida was the dominant

species in Oregon this season. Adequate rainfall produced abundant vegetation over most of CALIFORNIA in 1965. Early indications were that grasshoppers posed a threat to croplands in the State, but damaging populations failed to develop. Scattered, light populations occurred in areas where these pests were noticeably absent during past 4 years due to a fungus, Entomophthora grylli. Grasshoppers appeared on rangeland in Calaveras County in April and were a problem through the season. Grasshoppers were of concern primarily in northern counties with infestations occurring on range, pasture, grain and alfalfa in Siskiyou County, home gardens in Tehama County, pastures, grapes and walnuts in Amador County; infestations were general and light in Placer County, local on range in Humboldt, Plumas and Sierra Counties, and scattered on pastures in Fresno County. There were no large scale grasshopper control programs in California during 1965, as most control was done by individuals. The only control program in the State was on 1,800 acres of rangeland in Siskiyou County.

Grasshopper populations were at low levels in NEVADA during 1965. The fall adult survey in 1964 indicated potential infestations on 172,000 acres for 1965, but economic populations only developed on 2,500 acres, mostly in Elko County. Populations were composed of Aulocara elliotti, Melanoplus bivittatus, M. packardii, M. sanguinipes and Oedaleonotus enigma. Large numbers of grasshopper adults were killed by fungus in Elko and White Pine Counties during late August and September. The 1965 adult grasshopper survey indicates infestations on 50,640 acres, the lowest in the past few years in Nevada, with major infestations in Churchill, Elko, Pershing and White Pine Counties. Populations of Schistocerca shoshone were heavy on elms in Clark County during the 1965 season. Grasshopper populations were very high and caused considerable damage in UTAH during 1965. The most extensive outbreaks occurred in Sanpete, Box Elder, Juab, Millard, Iron, Utah, Salt Lake, Tooele, Davis and Emery Counties, and generally along the Wasatch Front. Damage to crops and rangeland was conservatively estimated to exceed 2.5 million dollars. This damage would have been more severe except for excellent plant conditions due to abundant spring and summer moisture. The dominant damaging grasshoppers in Utah this season were Melanoplus sanguinipes, Camnula pellucida, Aulocara elliotti, Oedaleonotus enigma, M. bivittatus and M. packardii. Control programs were estimated to have exceeded 600,000 acres sprayed, in addition to which, 1,800 acres were baited in the Howell-Blue Creek area of Box Elder County to protect fall grain. Late, fall surviving grasshoppers were damaging on several thousand acres. The adult fall survey indicated that grasshoppers threaten damage to at least 162,425 acres of cropland and 215,625 acres of rangeland in Utah during 1966.

Grasshoppers caused no losses in any area of COLORADO during 1965. They were of minor importance on alfalfa and present in borders of some fields in the dryland-bean producing area of the southwest. Grasshoppers are expected to be light on pastures and rangeland in Colorado during 1966. Several species of grasshoppers caused slight to moderate damage to alfalfa, grain and corn in northern areas of WYOMING during 1965. Counts averaged 12-15 per square yard in heavily infested fields in Big Horn County and 2-18 in other areas. Much control work was done on cropland in the Lovell area of Big Horn County. First spraying of the season in Wyoming was begun July 6 at Wheatland, Platte County, and the last completed August 15 in the Big Horn Mountains. A total of 339,641 acres was treated in 6 counties and 51,640 acres were treated on the Big Horn National Forest program. Costs in the cooperative program in 6 counties varied considerably due to the necessity of respraying some areas. In Sheridan County areas, 35 percent respray was necessary and over 90 percent respray was required in Converse County areas. Rain was responsible for most of the excessive respray, particularly in Sheridan County. Fall survey indicates that 2,342,000 acres were infested with adults averaging over 7 per square yard compared with 1,156,000 acres found infested in Wyoming in 1964. In MONTANA, the adult grasshopper survey completed in early September showed light to heavy infestations throughout the eastern half of the State. Damage to crops and rangeland during 1965 was minimal because of above normal moisture throughout June, July and part of August.

Grasshoppers were generally heavy over TEXAS, particularly in the Rolling Plains area. These pests were very destructive over the State as a whole, with damage occurring to a wide variety of range plants and cultivated crops. In OKLAHOMA, grasshopper nymphs became active in early April and peak adult activity occurred in mid-June. Populations were heavy in many areas of the State, with controls being necessary in several sections. Ageneotettix deorum, Aulocara elliotti, Phlibostroma quadrimaculatum and Melanoplus bivittatus were the dominant species in western areas of the State. In eastern Oklahoma, M. bivittatus, Hesperotettix speciosus, M. differentialis and Boopedon nubilum were dominant in 1965. First-generation grasshoppers appeared throughout ALABAMA from March 25 through April 25, coinciding with emergence of cotton, corn, grasses, legumes and other crops. Although there was no serious loss of stands or early crop destruction, some ragging of young seedlings and plants followed. There was a continuous and overlapping of generations in Alabama, with considerable foliage feeding on lespedeza, kudzu, grain sorghum, Bermuda grasses, Johnsongrass, hybrid Sudan grasses and other forage crops. The most serious damage caused by grasshoppers was perhaps the destruction or weakening of stands of reseeded clovers in grass sods. Grasshoppers built up in light to heavy numbers from September to frost in November, destroying seedlings of winter clovers in isolated areas before the situation could be recognized. This damage was most serious in the south and central portions of Alabama, especially in the prairie Black Belt cattle area of the western section. Important species in the State in 1965 included Melanoplus femurrubrum, M. differentialis and Schistocerca americana. Grasshoppers were generally light in VIRGINIA during the season, but were more numerous on tobacco in certain areas of Mecklenburg and Brunswick Counties where drought conditions prevailed during 1965.

MORMON CRICKET (Anabrus simplex) populations were at low levels in NEVADA during 1965. Surveys showed that 8,500 acres were infested and that the localities of infestations were the same as in 1964. Most populations were light, scattered and noneconomic, with no control measures being undertaken this season. A survey conducted during July in Lander County indicated a possible upsurge in the Mormon cricket population. Several thousand acres of canyon land in Italian and Cottonwood Canyons were infested with late instars which averaged 6 per square yard. There is a possibility that banding and migration may occur in 1966 and this area in Nevada may pose a threat. Mormon cricket proved no threat to crops or rangelands in UTAH this past year. Numbers were too light to justify controls. Light infestations of this cricket were found in Daggett, Uintah, Millard, Sanpete, Tooele, San Juan and Juab Counties.

SMALL GRAIN INSECTS

Highlights:

Outbreaks of ARMYWORM occurred again in 1965 but apparently they were not so severe as in 1964. However, considerable controls were used, particularly where these outbreaks occurred for the second consecutive year. Armyworm appeared too late for controls in Nevada but FALL ARMYWORM was a problem there, in New Mexico, Texas and on the Eastern Shore of Virginia. In most areas, drought or near drought conditions kept these and other noctuids low, but in western Kansas these weather conditions and ARMY CUTWORM resulted in a noticeable kill of wheat. NOCTUIDS were, as a group, the Nation's greatest agricultural problem. Discovery of CEREAL LEAF BEETLE in Illinois and in additional counties in previously infested States of Michigan, Indiana and Ohio resulted in extensions of the regulated areas. Surveys for this pest in 28 other States have been negative. APHIDS, where weather was favorable, built up to high numbers; parasites apparently were not important factors in reducing populations. Damage by HESSIAN FLY was low to very low in most of the Great Plains.

ARMYWORM (Pseudaletia unipuncta) larval outbreaks occurred for the second consecutive year in areas of southwest MICHIGAN. Approximately 2,300 acres were sprayed in St. Joseph County; aerial and ground sprays were also used in Berrien, Cass and Van Buren Counties. Local infestations occurred in spots in Allegan and Ottawa Counties. Field problems began about June 9 (approximately 9 days later than in 1964). The magnitude of the problem was somewhat less than in 1964. Weather and parasitism by Winthemia quadripustulata (a tachina fly) were considered helpful in reducing damage. Infestations caused considerable damage to small grains in southern INDIANA during May and early June. Larvae averaged 2 per square foot in wheat and barley in areas of Washington, Dubois, Gibson and Knox Counties. A few localized infestations in small grains were noted in the northern third of the State the last half of June. Armyworm was not so abundant in ILLINOIS as in 1964. The highest population recorded in any grain field in 1965 was 14 per linear foot. Few larvae were found in whorls of corn and in oats in the northern section in June. An estimated 60,630 acres of small grain were treated to control armyworm. Moths appeared in blacklight traps in WISCONSIN the night of April 29 in the Madison area. Larvae were found in alfalfa, corn, peas and small grains. Although the cool spring appeared favorable for adults, no significant populations developed. Damage by armyworm was insignificant or at most minor. Populations were also low in MINNESOTA. A few reports of light numbers in barley were noted in the northwest district in late July and a few reports of heavy numbers were recorded in the southeast district. In all cases, noncrop areas were involved.

Armyworm damaged some barley in COLORADO. Large numbers of armyworm larvae invaded alfalfa and oat fields in Goshen and Platte Counties, WYOMING, in mid-July. Damage to oats was quite severe in some instances; some fields required insecticides. Larvae averaged 5.5 per square foot in oats and 0.25 in alfalfa. Heavy populations damaged oats and barley in Morrill, Scotts Bluff, Sheridan, Sioux and Box Butte Counties, NEBRASKA. The remainder of the State had only light infestations. Populations were generally noneconomic in KANSAS. The first moth of the season in MISSOURI was trapped in Pemiscot County April 3. Larvae caused moderate to heavy damage in the southeast to small grains with dense, rank growth. Counts ranged up to 15 per square foot in dense growth and up to 25 in downed areas. Predominance of thin stands of grains over remainder of State was not conducive to armyworm development and little or no damage occurred. Armyworm was lighter in small grains in ARKANSAS than in 1964 and less acreage required controls. Moths were active on warm nights all winter. Moderate to heavy, local populations damaged oats interplanted with vetch in Brazos County, TEXAS; larvae also damaged small grains in the north central area. Armyworm larvae were heavy on wheat in Eureka County, NEVADA, in late August but no treatments were applied since the grain was being harvested. In CALIFORNIA, larvae damaged barley in Orange County, Sudan grass in Merced County and rice in Butte County.

Armyworm damaged small grains in northeastern NORTH CAROLINA in mid-May. Large acreages were infested in Currituck and Camden Counties. One field in the latter county averaged 12 larvae per square foot but this count was higher than average for infested fields of that county. Outbreaks occurred on the Eastern Shore of MARYLAND in late May, where corn, pastures and small grains were injured extensively. Many fields required treatments. Adults were rather abundant in blacklight trap collections by the first week in May in DELAWARE. By early June, larvae caused heavy feeding injury in several areas of western New Castle and Kent Counties. No damage by armyworm was reported in VERMONT during the season. Although light trap collections in the fall of 1964 indicated a heavy population, no outbreak occurred. Armyworm was found only occasionally during the season. In MAINE, small adult flights were recorded in Monmouth in late June and early July. Moderate populations, with damage, occurred in Northport area in mid-July.

FALL ARMYWORM (Spodoptera frugiperda) was heavy as usual in the southern counties of NEVADA. Larvae caused considerable damage to cultivated crops in most areas of NEW MEXICO. This was the only time in the past 8 years that this noctuid has become so general in distribution and caused economic damage in the State. In TEXAS, populations were heavy and widespread as in the past several years; locally heavy damage occurred in most areas of the State but not in outbreak proportions.

Fall armyworm became active in mid-July in OKLAHOMA and also caused some damage to wheat in Bryan County in early November. WHEAT HEAD ARMYWORM (Faronta diffusa) was noted in some Oklahoma areas in May. In KANSAS, fall armyworm was more numerous than usual in early summer when it caused considerable damage and concern. However, populations did not continue and little damage occurred to fall wheat and alfalfa. Infestations in barley and several other crops occurred in September in several OHIO counties. A fall armyworm outbreak occurred on the Eastern Shore of VIRGINIA in late September where it attacked rye; controls were necessary. Small, localized infestations occurred in Providence County, RHODE ISLAND, in mid-August, but a report of an infestation in Newport County could not be confirmed. ARMY CUTWORM (Chorizagrotis auxiliaris) created some problems on grain in MONTANA where yields were reduced. Larvae caused severe damage to seedling wheat near Golva, NORTH DAKOTA, during late May; 60 acres of a 100-acre field were destroyed. In COLORADO, army cutworm damaged wheat and barley and PALE WESTERN CUTWORM (Agrotis orthogonia) damaged wheat. Locally moderate populations of army cutworm were noted in NEBRASKA in April and May. Populations were light to moderate in the spring in KANSAS where numbers were highest in the western half of the State. Army cutworm, in conjunction with an early drought, resulted in a noticeable kill of alfalfa and wheat in some western fields. Light traps in the fall indicate a very minor flight and little concern is expected in the spring of 1966. Army cutworm caused some damage in OKLAHOMA.

CUTWORMS constituted the most serious insect problem of the season in NEW HAMPSHIRE; climbing species were particularly troublesome statewide. Sphaelotis spp., Septis spp. and Euxoa spp. were predominant. CLAY-BACKED CUTWORM (Agrotis gladiaria) was general and severe in some local areas and fields in PENNSYLVANIA. Cutworms as a group were more general and damaging than in past years in CALIFORNIA on cereal and forage crops.

CORN EARWORM (Heliothis zea) activity began in early April in OKLAHOMA; occasionally heavy infestations were found on grain during August. Activity continued until early October. H. zea was not so serious in 1965 as it usually is. SALT-MARSH CATERPILLAR (Estigmene acrea) damaged wheat in northwest Oklahoma from late October to late November. Larvae ranged up to 0.5 per square yard.

Discovery of CEREAL LEAF BEETLE (Oulema melanopus) in additional counties and townships in OHIO required extension of the regulated area; one extension was made in June and another in July. The regulated area includes 51 counties which are regulated in whole or in part. This pest does not appear to be present in large enough numbers to cause economic damage to grains in Ohio. The number of new counties and townships infested in MICHIGAN was considerably fewer than in 1964. However, the infested townships are so scattered that all of southeastern Michigan and the "thumb" area are included in the quarantine of July. Muskegon, Newaygo, Mecosta, Isabella, Midland, Bay, Tuscola and Huron Counties and all counties south are quarantined as well as parts of Oceana, Lake, Osceola, Clare and Arenac Counties. In late April and early May, 249,000 acres were treated in 5 counties. A retreatment about 10 days later in areas where late-emerging beetles were plentiful brought the total acres treated to about 383,000. Cereal leaf beetle extended its range into 9 counties in INDIANA. However, only the New Carlisle area, St. Joseph County, and La Porte County are the sites where heavy populations were present. First adult activity was observed April 16 (approximately 2 weeks later than that of 1964). Peak hatch on wheat occurred May 21-23 and on oats June 7-10. Larvae averaged as high as 4 per stem on oats in New Carlisle in mid-June. Pupation reached 90 percent about May 25 and peak emergence occurred by July 16. By July 23, 75-80 percent of the summer adults went into aestivation; all activity ceased by August 6. This leaf beetle was collected in ILLINOIS for the first time on May 11 in Will County. It was later collected in Kankakee and Vermilion Counties. Aerial treatments were applied in all areas where adults were found; 2,375 acres were treated in Will County, 4,075 acres in Kankakee County and 4,096 acres in Vermilion County. A second treatment to 320 acres was made in Vermilion County and 320 acres in Kankakee County where larvae were found. Surveys were made in WISCONSIN for cereal leaf beetle with negative results.

GREAT BASIN WIREWORM (Ctenicera pruinina) caused more than the usual damage to fall-sown wheat in Sherman County, OREGON, and SUGAR-BEET WIREWORM (Limonius californicus) was more abundant than usual on wheat and corn in Umatilla County. WIREWORMS and SEED-CORN BEETLE (Agonoderus lecontei) were noted on barley in COLORADO. RICE WATER WEEVIL (Lissorhoptrus oryzophilus) developed resistance to insecticides used in ARKANSAS and thus may become a greater problem.

ENGLISH GRAIN APHID (Macrosiphum avenae) reached peak populations in April on small grains in Yuma, Maricopa and Pinal Counties of ARIZONA. Damage was severe in many areas and controls were required. M. avenae and Rhopalosiphum rufiabdominalis were reported on small grains in TEXAS. English grain aphid was of little importance throughout the year in ARKANSAS; it was present in wheat until early May and again in early November in OKLAHOMA but numbers were light in all areas. M. avenae was at noneconomic levels on small grains in KANSAS and was light in wheat in southern NEBRASKA. English grain aphid was noted on wheat and barley in COLORADO. In SOUTH DAKOTA, English grain aphid is usually considered as occurring on small grains only; it was taken from wheat in Clark and Day Counties at the end of June. In mid-July, an aphid tentatively identified as M. avenae, was found in relatively large numbers (2,000-2,500 per 100 sweeps) on alfalfa in Clark and Codington Counties. A heavy flight of M. avenae occurred at Brookings July 28-29. Numbers built up to 30-50 per head on wheat in some eastern NORTH DAKOTA areas during July. Populations were generally low on small grains in MINNESOTA. English grain aphid was detected by April 30 in WISCONSIN where it increased gradually until late May. Populations remained fairly steady until harvest. Red leaf, resulting from transmission by aphids, was very low or appeared too late to affect small grains. This aphid was not economically important in MISSOURI in 1965, but was heavy on barley and wheat on the Eastern Shore of MARYLAND during May.

GREENBUG (Schizaphis graminum) was mostly light in wheat fields of Curry, Roosevelt, Lea, De Baca and Quay Counties, NEW MEXICO, and was noted on barley in COLORADO. Widespread infestations occurred in small grains in northwest and north central TEXAS; however, populations were generally light to moderate. This pest continued to be light in ARKANSAS. Populations of this aphid remained light throughout OKLAHOMA until mid-March; during late March and April, numbers increased but heavy infestations were reached only in certain parts of the southwest. Damage in most areas was light in the spring. Fall activity began in late October. Unusually warm weather until mid-December permitted infestations to increase, especially in sandy areas along the Cimarron River in central Oklahoma where counts up to 120 per linear foot were noted. Greenbug was at noneconomic levels on small grains in KANSAS; low numbers were found in many eastern wheat fields in the fall. This aphid was of little importance in MISSOURI. Greenbug was detected by May 14 in WISCONSIN but populations remained very low. In MINNESOTA, greenbug populations were generally low on small grains and little or no barley yellow dwarf virus was associated with this aphid in 1965. This aphid was present on small grains in NORTH DAKOTA.

CORN LEAF APHID (Rhopalosiphum maidis) caused damage to barley and corn in San Diego, Butte and Fresno Counties, CALIFORNIA. Infestations on grain in NEVADA were heavy and they caused severe damage in southern and central counties. Corn leaf aphid heavily infested grain, causing stunting and yellowing, in Clark County in early March and heavy grain infestations required treatments in some central counties in late June and early July in Nevada. Heavy populations on small grains in ARIZONA during late spring caused considerable damage in Yuma, Maricopa, Pinal, Pima and Graham Counties. Corn leaf aphid was noted on wheat, oats and barley in Mesa, Montrose, Delta and Garfield Counties, COLORADO, and on barley statewide. Light to moderate infestations were found in barley fields of NEW MEXICO in the southern counties during spring and early summer. Several fields were treated at Deming, Luna County, and in northern Dona Ana County. Corn leaf aphid was reported on small grains in TEXAS. In OKLAHOMA, corn leaf aphid was present in light to moderate numbers in wheat during the spring; fall activity began in mid-October. Populations were generally low in MINNESOTA on small grains and present on grains in NORTH DAKOTA.

APPLE GRAIN APHID (Rhopalosiphon fitchii) was heavy on winter wheat and barley in WASHINGTON in Grant County during late October. This aphid was heavy on barley in local areas of Butte and Sacramento Counties, CALIFORNIA. APHIDS in general were pests of cereal and forage crops in that State and they persisted longer into the year than normal. Apple grain aphid was noted on wheat and barley in COLORADO; in Mesa, Montrose, Delta and Garfield Counties it was noted on wheat, oats and barley. WESTERN WHEAT APHID (Brachycolus tritici) was present on barley in the Great Falls area of MONTANA. R. fitchii was present on small grains in NORTH DAKOTA. There were a few fields in west central and northwest MINNESOTA that had relatively high numbers of aphids present just before grain harvest. Damage, although apparent, occurred too late in the season. R. fitchii migrated to grains in May in WISCONSIN. Apple grain aphid was at noneconomic levels on small grains in KANSAS, but another aphid, R. subterraneum, was present in many wheat fields during the fall in both eastern and western sections; populations were very low, however. In OKLAHOMA, Rhopalosiphum padi occurred in light numbers until mid-March; heavy populations developed in wheat in the southwest through late March and in southwest, central and south central areas until mid-April. The first fall activity was noted in late October with light to moderate infestations occurring the remainder of 1965. Both R. fitchii and R. rufiabdominalis were reported on small grains in TEXAS.

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) was first found on small grains in MICHIGAN on May 19 in Monroe, Lenawee, Washtenaw and Ingham Counties. This leafhopper was present very early in the season in MINNESOTA and by May 4 populations were higher than normal. A very low percent of the migrating leafhoppers carried aster yellows virus when they entered the State. Little damage was noted in Minnesota. Numbers ranged from a trace to 2-3 per sweep on small grains in NORTH DAKOTA during most of the season.

CHINCH BUG (Blissus leucopterus) was abundant in some wheat fields in OHIO during July in Logan and Delaware Counties; numerous instances of migration from small grains were reported. Heavy infestations in corn and wheat (mostly corn) occurred in eastern and western INDIANA. A FALSE CHINCH BUG (Nysius sp.) was noted on barley in western and southwestern areas of COLORADO. Light numbers of TARNISHED PLANT BUG (Lygus lineolaris) were noted on wheat in OKLAHOMA during November.

HESSIAN FLY (Mayetiola destructor) damaged a few fields in MICHIGAN; one report of injury to Monon wheat was noted in Berrien County in late June. Field populations of Hessian fly Race B capable of infesting Monon, Redcoat and Reed wheats have increased in size impact over those of 1964 in INDIANA. Samples from 381 certified wheat fields showed 82 percent of the Monon, 92 percent of the Reed and 83 percent of the Redcoat fields infested. Knox 62 wheat, a cultivar resistant to Race B, had only 12 percent of the fields infested. Although the number of Hessian fly infested resistant wheat fields increased over that of 1964, the average infestation for resistant cultivars remained low in Indiana. An annual survey in ILLINOIS showed that 1.28 percent of tillers were infested with 1.5 puparia per 100 plants; this was the lowest population since 1954 in the State. Losses to small grains by Hessian fly were noted in very few fields in MISSOURI; surveys of fall plantings indicated very light infestations. Populations were very low in the fall of 1965 in KANSAS and are expected to remain noneconomic in 1966. Four to five percent of the wheat plants locally in Steele County, NORTH DAKOTA, were found infested in late August. Only a few reports concerning damage were noted in WYOMING; damage to wheat was less than that of 1964. This pest was not so widespread as in 1964 in MONTANA when it appeared in 18 counties, but it was responsible for lower yields of wheat in many areas of the lower tier of counties from Big Horn east to the Dakotas. Spotted infestations occurred throughout the eastern fifth of the State. Hessian fly was found in late September in OREGON infesting volunteer wheat in a field of barley in Linn County.

WHEAT MIDGE (Sitodiplosis mosellana) was a problem in some late seedings of wheat in Roseau County, MINNESOTA. A large adult population of a CECIDOMYIID FLY (Anarete johnsoni) was observed in oat fields in Medina County, TEXAS, but no

damage was noted. A RICE LEAF MINER (Hydrellia griseola) infested most rice-growing areas of CALIFORNIA but not in heavy numbers.

WHEAT STEM MAGGOT (Meromyza americana) reduced some grain yields in MONTANA. It caused only light damage in NEBRASKA wheat fields; damage was 2 percent in some fields in southwest area. Damage could be assessed at the end of June and beginning of July in SOUTH DAKOTA. A field of wheat near Gann Valley, Buffalo County, had 7 percent of the heads damaged; fields in Brule and Charles Mix Counties showed losses of 2 percent of the heads. There was a 3 percent loss in winter wheat in Clay County fields; losses ranged 1-3 percent in rye in Faulk, McPherson and Clark Counties, South Dakota. Wheat stem maggot, and at times STALK BORER (Papaipema nebris), caused whiteheads in grain fields throughout MINNESOTA. Populations of M. americana in small grains were down from those of 1964 although numerous adults were observed in early spring. FIELD CRICKETS (Gryllus spp.) created some problems in MONTANA, with some grain loss attributed to these insects.

BROWN WHEAT MITE (Petrobia latens) reduced grain yields in MONTANA. This mite was first noted in wheat fields of Platte, Goshen and Laramie Counties, WYOMING, in mid-May. Numbers in 1965 were much lower than those found in 1964, ranging 10-25 per linear foot of row. A SPIDER MITE (Tetranychus sp.) was noted in barley in COLORADO. Light populations of P. latens were present in wheat in northwest NEBRASKA. Activity of P. latens began in mid-March in OKLAHOMA and heavy infestations were soon present in the southwest area and in Ellis County. Heavy rains reduced the populations in many areas in mid-April but numbers remained present in isolated areas until mid-May. Populations of this spider mite were noted in the TEXAS Panhandle and some central areas but it was much lighter than in 1964. Other SPIDER MITES caused heavy damage to wheat in Denton and Floyd Counties of Texas. Scattered, spotted infestations of P. latens damaged small grains and alfalfa in NEW MEXICO during the spring in Dona Ana, Sierra, Lea, Eddy, Roosevelt and Curry Counties.

WINTER GRAIN MITE (Penthaleus major) was present in wheat from early January to early April in OKLAHOMA and again from mid-November through December. Numbers ranged up to 100 per linear foot in Major County in early December but most counts were light. This eupodid mite caused considerable damage to small grains in local areas in the north central part of TEXAS; infestations were generally widespread but light.

WHEAT CURL MITE (Aceria tulipae) was found for the first time in the State of OHIO in Wood county. This vector of wheat streak mosaic viruses was present in small numbers in KANSAS and a severe, local infection of the virus was found adjacent to established volunteer fields in the north central district. A potential buildup exists in this instance.

WHEAT STEM SAWFLY (Cephus cinctus) damage became apparent in numerous areas in OHIO in July with damage to wheat reported from 14 counties in the western section. Although 30 percent of the wheat stems were cut in a few fields, damage was light because the stems remained standing. Populations of this stem sawfly were down considerably in NORTH DAKOTA during 1965 and parasitism was very evident.

Other pests of small grains included a DESERT TERMITE (Amitermes sp.) in TEXAS, where damage to oats occurred in Madison County, and a TADPOLE SHRIMP (Triops longicaudatus) in CALIFORNIA where infestations occurred in rice plantings in Butte, Glenn and Sacramento Counties.

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Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 February 18, 1966 Number 7

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREEN PEACH APHID medium to heavy on lettuce in Arizona and required controls in some fields. (p. 99). COMMON CATTLE GRUB heavy in backs of cattle in De Witt County, Texas. (p. 100).

Detection

A MUSCID FLY (Ophyra aenescens) reported for first time in New Hampshire. (p. 101).

For new county and locality records see page 101.

Special Reports

Summary of Insect Conditions in the United States - 1965

Reports in this issue are for week ending February 11 unless otherwise indicated.

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-FEBRUARY TO MID-MARCH 1966

The Weather Bureau's 30-day outlook for mid-February to mid-March calls for temperatures to average below seasonal normals west of the Appalachians with greatest departures in the central and southern Plains. Above normal averages should be confined to the South Atlantic Coastal States while near normal temperatures are anticipated elsewhere. Precipitation is expected to exceed normal east of the Continental Divide except for near normal amounts over western portions of the southern Plains as well as the upper Mississippi Valley and coastal regions of the North Atlantic Coastal States. West of the Divide precipitation is expected to range from above normal over the southern half to subnormal over the Northwest.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING FEBRUARY 14

HIGHLIGHTS: (1) Cold spell ends Central and East; winter returns to West. (2) Tornadoes, thunderstorms, and heavy rains South and East.

TEMPERATURE: Southerly winds brought springtime temperatures to the middle of the Country during the early part of the week. For the first time in more than a month the mercury climbed above freezing in the northern Plains and Great Lakes region. The longest spell of subfreezing readings in Detroit since 1912 was broken. Warm temperatures gradually spread eastward to the Atlantic rapidly melting the snow cover and ending the long cold spell in the South and East. Northern Maine had above normal readings for the fourth consecutive week. As the East warmed, the compensatory nature of the upper air flow brought much below normal temperatures to the West.

PRECIPITATION: During the first half of the week the recent pattern of light precipitation through central portions of the Country was sharply broken by heavy shower activity. Warm, moist air flowing from the gulf caused heavy rains from Louisiana and vicinity to the Canadian border with weekly totals of 4 to 8 inches in much of the South. Strong winds over 50 m.p.h., and hail over an inch in diameter accompanied the thunderstorms in many localities. Southeastern Oklahoma experienced the wettest week in 15 months, and east and central Texas had heavy rains for the fourth consecutive week. Local flooding of streams was common throughout the Midwest.

A low pressure system developed in the gulf and moved along the Appalachians during the weekend. Heavy rains drenched the area that had been hit hard by recent snowstorms. Pennsylvania recorded the wettest week in more than 2 years. Moderate flooding was generally widespread; extreme flooding was common in western North Carolina and eastern Tennessee. Nearly two-thirds of the houses in Rosman, North Carolina, were flooded and some persons were evacuated. Highways in southeastern Kentucky were closed and bridges in Mississippi were washed out because of high water. Damage from wind and rain in Georgia was in excess of $100,000.

Dense fog was prevalent in the Midwest on February 7-8 and in the Middle Atlantic States on February 11-13 as warm air passed over the cold snow cover; visibilities near zero hampered highway driving and halted air traffic. Conditions improved when the snow melted. In contrast to the warmth and heavy rains that spread over

Weather continued on page 102.

CEREAL AND FORAGE INSECTS

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Increased slightly in alfalfa in Maricopa County; unchanged in Yuma County. (Ariz. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARKANSAS - Surveys negative in Miller County alfalfa. (Ark. Ins. Sur.). NEW MEXICO - Very light in alfalfa near Corrales, Sandoval County (Heninger, Kloepfer); also light in Chaves County alfalfa (Mathews).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARKANSAS - Surveys negative in Miller County. (Ark. Ins. Sur.).

THRIPS - NEW MEXICO - Very light to light in Chaves County alfalfa. (N. M. Coop. Rpt.).

A WEEVIL (Hypera brunneipennis) - ARIZONA - No adults found in Yuma County alfalfa; but larvae ranged 20-40 per 100 sweeps. Small numbers of adults in Chandler area. (Ariz. Coop. Sur.).

CLOVER MITE (Bryobia praetiosa) - ARIZONA - Medium to heavy in alfalfa fields on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - ARKANSAS - Surveys negative in various eastern areas. Ranged 15-20 per row foot in field of oats in Johnson County, same as in this field in November 1965. (Ark. Ins. Sur.).

FRUIT INSECTS

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Locally medium on citrus trees in Woodland, Yolo County; heavy on citrus in Arroyo Grande, San Luis Obispo County; medium on oranges in Knights Landing, Yolo County. (Cal. Coop. Rpt.).

OLEANDER SCALE (Aspidiotus hederae) - CALIFORNIA - Light on grapefruit in Roseville, Placer County. (Cal. Coop. Rpt.).

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Heavy on almond nursery stock in Marysville, Butte County. (Cal. Coop. Rpt.).

FLORIDA WAX SCALE (Ceroplastes floridensis) - FLORIDA - Infesting leaves of 70 of 100 avocado trees in nursery at Deerfield Beach, Broward County. (Clinton, Jan. 27).

TRUCK CROP INSECTS

FALSE CELERY LEAF TIER (Udea profundalis) - CALIFORNIA - Larvae damaging radish plantings in Fresno, Fresno County. Radish apparently new host record for this species. (Cal. Coop. Rpt.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Major pest on lettuce in Yuma County. Medium to heavy infestations require controls in many fields. (Ariz. Coop. Sur.).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - FLORIDA - Adults infesting strawberry in Bradford County. (Huggins, Feb. 9).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SCALE INSECTS - FLORIDA - Ceroplastes ceriferus moderate on stems of 1,000 out of 5,000 podocarpus plants at Tampa, Hillsborough County, (Barber, Jan. 19); infesting 100 of 1,000 podocarpus in nursery at Goulds, Dade County, (Knowles, Jan. 21). Pseudaonidia duplex moderately damaged stems of 50 out of 100 pussy willow plants in Tampa nursery. This is new host record for Florida Department of Plant Industry. (Barber, Jan. 18). ALABAMA - Heavy, isolated infestations of Fiorinia theae continue to affect camellias and Burford holly in Henry and Lee Counties. Extreme low temperatures (zero to 10°) apparently not affecting survival. (McQueen). CALIFORNIA - Apsidiotus hederae locally heavy on rhododendrons in in Gridley, Butte County. Asterolecanium arabidis locally heavy on pittosporum in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

WATERLILY APHID (Rhopalosiphum nymphaeae) - FLORIDA - Severely damaged stems and leaves of Dieffenbachia sp. in nursery at Winter Garden, Orange County. (Ware, Feb. 1).

INSECTS AFFECTING MAN AND ANIMALS

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period February 6-12, no cases were reported in the United States. The Republic of Mexico reported 12 cases by State as follows: Territorio sur de Baja California 2, Sonora 4, Chihuahua 2, and Tamaulipas 4. Sterile screw-worm flies released: Texas 10,966,250, Mexico 53,980,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	0	0	37	195	0.00	0.00
1965	0	4	28	348	0.00	1.14
1966	0	25	13	127	0.00	19.68
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	14	337	16	213	87.50	158.21
1966	12	327	11	109	109.09	300.00

Mexico Field Study - No report received for this period. (This was previously titled Feasibility Survey).

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - TEXAS - Heavy in backs of cattle in De Witt County. (Newton).

MOSQUITOES - LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control for period ending February 11 contained Aedes sollicitans, Aedes vexans, Anopheles quadrimaculatus, Culex restuans, Culex salinarius and Culiseta inornata. Light trap collections continued light; Culiseta inornata predominated. (Stokes).

A MUSCID FLY (Ophyra aenescens) - NEW HAMPSHIRE - Breeding in rotting eggs and manure in poultry house in South Wolfeboro, Carroll County, December 29, 1965. Adults entering egg room. Det. by H. C. Huckett. This is a new State record. (Sutherland).

BENEFICIAL INSECTS

A PUNCTURE-VINE SEED WEEVIL (Microlarinus lareynii) - CALIFORNIA - Adults collected from gin trash screenings in desert area and various other locations in State. These hibernating adults indicate species well established and widespread. (Cal. Coop. Rpt.).

LADY BEETLES - NEW MEXICO - Occasional adult noted in Chaves County alfalfa. (Mathews).

INSECT DETECTION

ARGUS TORTOISE BEETLE (Chelymorpha cassidea) - CALIFORNIA - Several specimens collected in Jeffrey pine plantation in Modoc National Forest near Adin in August 1963; determined in January 1966. No host is recorded. Previous records in State consist of single specimen taken at Cedar Pass, Modoc County, in 1959 and possible single specimen taken in this general area in 1954; 1954 specimen forwarded for verification. (Cal. Coop. Rpt.).

A MUSCID FLY (Ophyra aenescens) breeding in poultry house in Carroll County, New Hampshire, December 29, 1965. (see above).

AN ANT (Myrmecina americana) - FLORIDA - Collected in oak duff at Gainesville, Alachua County, October 31, 1965. (O'Berry). This is second Florida Department of Plant Industry record. (Fla. Coop. Sur.).

A DRYWOOD TERMITE (Incisitermes minor) - TEXAS - Collected from driftwood in Harris County. (Simon, Jan. 28). This is a new county record. (PPC).

A SNAIL (Rumina decollata) - CALIFORNIA - Locally medium in La Habra Heights, Los Angeles County. This is new county record, and second record for State. (Cal. Coop. Rpt.).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Treatment and survey continued in Sacramento, Sacramento County, and Fresno, Fresno County, eradication projects. Survey in areas outside known infestations continued. In Sacramento, new light infestation found by grid inspection in Gardenland area; this area separated from Sacramento proper by American River. (Cal. Coop. Rpt.).

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 2/9) - Agrotis ipsilon 3, Pseudaletia unipuncta 2.

GEORGIA (Tifton, 2/2-9; temp. 24-74°F.; precip. zero; blacklight) - Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

SOUTH CAROLINA (Charleston, 1/31-2/6; temp. 21-58°F.; precip. 0.08 in.; blacklight) - Psuedaletia unipuncta 2, Spodoptera frugiperda 0, Prodenia ornithogalli 0, Agrotis ipsilon 2, Feltia subterranea 2, Peridroma saucia 0, Heliothis zea 0, H. virescens 0, Manduca sexta 0, M. quinquemaculata 0, Estigmene acrea 0, Trichoplusia ni 0.

CORRECTIONS

CEIR 16(5):68 - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - HAWAII - should read A WHITEFLY (Dialeurodes kirkaldyi) - HAWAII.

SURVEY AND DETECTION OPERATIONS SCIENTIFIC RECORDS

Records on domestic and foreign insects and related pests are maintained by Survey and Detection Operations in Hyattsville, Maryland. This collection, of over 600,000 entries and 50,000 species, is one of the largest of its kind in the world. The data on a number of species include distribution, host plants, economic importance, parasites and predators, and bionomics. For some species, only a limited amount of material is available.

The records were started in 1921 in the former Bureau of Entomology but data, as far back as 1758, have been included.

Cooperators are invited to make use of this information. Survey and Detection Operations will be glad to answer requests as manpower permits. As the data are filed alphabetically by genus and species, the use of scientific names, when making a request, will facilitate the preparation of answers.

Weather continued from page 98.

most of the Nation, the West and Dakotas experienced typically wintry weather. Heavy snow driven by strong northerly winds crossed the Dakotas and moderate snow fell throughout the Rockies. Also, normal light but frequent rain fell in the Pacific Northwest.

TORNADOES: Oklahoma reported one and Mississippi 4 twisters during the first half of the week in connection with the thunderstorms that graced the Midwest. On Sunday several tornadoes were observed in Georgia, North Carolina, and Virginia ahead of a cold front; one fatality occurred in Statesville, North Carolina. February is normally a month of maximum tornadic activity in the Southeast. (Summary supplied by U. S. Weather Bureau).

HAWAII INSECT REPORT

Cereal and Forage Insects - A GRASSHOPPER (Schistocerca vaga) - A gravid female collected at Nanakuli Fire Station, Oahu. This is second specimen at this location since spread from Sand Island, Oahu.

Fruit Insects - CHINESE ROSE BEETLE (Adoretus sinicus) adults caused light to moderate damage to foliage of Syzygium cumini (Java-plum) in Kekaha, Kauai, and to citrus trees in Kaneohe, Oahu.

Truck Crop Insects - BEAN POD BORER (Maruca testulalis) larvae light to moderate on string beans in Hilo, Hawaii Island. Larvae of a NOCTUID (Chrysodeixis chalcites) moderate and caused noticeable defoliation on tomato plants in Hilo, Hawaii Island. A GRASSHOPPER (Atractomorpha ambigua) caused light damage to white mustard cabbage and radish in Hanapepe and Olokele, Kauai. CHINESE ROSE BEETLE (Adoretus sinicus) adults caused light foliar damage to beans in Kekaha, Kauai, and in Kaneohe, Oahu, and to eggplants in Kekaha. A TARO LEAFHOPPER (Tarophagus proserpina) ranged from trace to light on taro plants in Hanapepe, Kauai. Medium to heavy outbreaks of ONION THRIPS (Thrips tabaci) caused moderate damage to green onion plants in Olokele (Makaweli) Gardens, Kauai.

Forest, Ornamental and Shade Tree Insects - COTTONY-CUSHION SCALE (Icerya purchasi) ranged light to moderate on Ficus benghalensis (Indian banyan) from Lahaina to Olinda, Maui; light on Ficus retusa (Chinese banyan) at Lanikai, Oahu. A CONIFER TWIG APHID (Cinara carolina) light on Pinus taeda (loblolly pine) in Olinda, Maui. AN APHID (Thoracaphis fici) ranged moderate to heavy on Ficus retusa and F. benghalensis from Lahaina to Olinda, Maui. A TWIG-BORING BARK BEETLE (Xylosandrus compactus) very active on Prosopis pallida (mesquite) in Honouliuli, Oahu. Many dead and dying twigs observed over linear mile. First record of X. compactus in this locality. A WHITEFLY (Dialeurodes kirkaldyi) light on Plumeria sp. leaves in Honolulu, Oahu.

Insects Affecting Man and Animals - SOUTHERN HOUSE MOSQUITO (Culex pipens quinquefasciatus) adults light in Honolulu vicinity and in central and northern sections of Oahu; moderate in Waialua and in northeastern and southwestern sections of Oahu.

Beneficial Insects - Eggs, larvae, and adults of A LADY BEETLE (Coelophora pupillata), an aphid predator, very numerous on Ficus benghalensis infested with Thoracaphis fici in Lahaina and Olinda, Maui. A TACHINA FLY (Trichopoda pennipes) - Collections of Nezara viridula var. smaragdula (southern green stink bug) adults from 2 acres in Hilo, Hawaii Island, showed that 100 percent of bugs bore tachina eggs. A NOCTUID MOTH (Hypena strigata) - Larval activity heavy on foliage of Lantana camara var. aculeata in Kukuiula, Lawai-Kai, Numilo and Lawai Valley, Kauai; 50-75 percent of leaf surface eaten. (Hawaii Ins. Rpt.).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 96)

CEREAL AND FORAGE INSECTS (continued)

CORN, SORGHUM AND SUGARCANE INSECTS

Highlights:

EUROPEAN CORN BORER caused generally lighter to much lighter damage to corn in the Nation's Corn Belt. Areas and States on the outer limits of its known distribution and Maryland and Delaware had damaging numbers. Ironically, Massachusetts, the State in which this pest was first discovered in 1917, reported very low populations with no reports of damage. Controls for CORN EARWORM were necessary on sweet corn throughout the Nation and often on field corn, particularly in more southern areas. Other noctuids were more troublesome in northern areas on corn with outbreaks occurring in several States. CORN ROOTWORMS (Diabrotica spp.) caused considerable difficulty. These pests have spread to new areas, show resistance to certain insecticides and built up populations in spite of unfavorable weather. Millions of acres were treated in the Corn Belt. CORN LEAF APHID was the most commonly reported aphid on corn; CORN ROOT APHID was a minor problem locally. Drought conditions in several areas increased the threat of CHINCH BUG damage but most of these failed to develop; the fall survey indicates that chinch bug will not be serious in 1966 in most areas. Planting dates are important in reducing SORGHUM MIDGE attacks.

EUROPEAN CORN BORER (Ostrinia nubilalis) caused considerable damage to field and sweet corn in western and Northwestern ALABAMA. Populations were above normal during most of the season in MARYLAND; in general, corn planted before May 10 was moderately to heavily infested. The spring population of 78 borers per 100 stalks represented an 80 percent survival of overwintering borers in DELAWARE; this was much higher than in the spring of 1964. Pupation of overwintering borers was first noted April 20; first adults occurred in blacklight traps May 3. The State average of 209 borers per 100 corn plants was twice that of 1964. This is the third consecutive year of increase in Delaware; these high infestations were reflected in damage to sweet corn and peppers as well as field corn. European corn borer was light to moderate on sweet corn throughout NEW JERSEY. Infestations were generally low in PENNSYLVANIA but some infestations in the southeast reached 5-6 per stalk. Populations were very low in MASSACHUSETTS, with no reports of damage. European corn borer was general in RHODE ISLAND but the degree of injury was probably related to the efficiency of control procedures. The overall average percent of plants infested in VERMONT was 5.6, an increase over the 4.3 percent in 1964. Light populations and damage were noted in Jonesboro, MAINE, in early July.

The fall European corn borer survey in OHIO indicated that populations were considerably lower than in 1964 in 33 counties. The average population of 11.1 borers per 100 plants was 16.9 less than that of 1964. Estimated losses totaled $589,176, low for Ohio. Activity was noted from April through October. First emergence occurred at the end of May. A few heavily infested fields were noted in Brown, Clermont, Preble and Fairfield Counties, Ohio. First-brood moths appeared in blacklight traps the last week of May in MICHIGAN. Largest collections were made the second and third weeks of June. Statewide injury from first and second-brood larvae was relatively light in field corn. Highest counts, less than 1 per stalk, were noted in Branch and Barry Counties. Population densities were noticeably lower in INDIANA. Statewide, 25.8 percent of plants sampled were

infested. Loss to corn was placed at 1.1 percent. A wet spring in ILLINOIS delayed corn planting but did not arrest European corn borer development. Eggs were laid on corn too small for good borer survival. Strong winds during hatch caused many egg masses and new larvae to drop off corn leaves, resulting in a first-generation population of 3.13 borers per 100 plants, the lowest since surveys for that generation began in 1955. A second generation of 57 borers per 100 plants was the lowest recorded since 1952. Although the State average showed a large decrease, the decrease actually occurred north of a line from Alton to Champaign and in Pulaski and Alexander Counties.

European corn borer populations in WISCONSIN were the lowest recorded in that State; records from 1942 through 1965 show that O. nubilalis has been decreasing slowly since 1945 except in a few unusual years. Pupation began in mid-May, emergence began by early June and egg laying was underway by mid-June. First instars were noted June 25, with some adults present by early August in southern areas. Egg laying began in early August but was extremely light; damage too, was light but some controls were used. Overwintering mortality in MINNESOTA averaged 28 percent in the spring survey, slightly above normal. Cool, wet weather in the spring extending through the season had a marked effect on first and second generations. The first generation was late and light, and second-generation moths appeared late. This, with about 5 weeks of very cool and wet weather in August and September, resulted in extremely low egg laying and borer survival. A few scattered fields had relatively high numbers. During the fall survey in October, only 1-2 fields showed any second generation present. The outlook for 1966 in Minnesota is for lower populations throughout the State. Development of this pyraustid moth was slow in NORTH DAKOTA; the fall population in the southeast was low compared with the past few seasons. Survey showed 64.53 percent of plants infested with 1.08 borers per infested plant, or 84.07 borers per 100 plants inspected. Populations generally decreased in SOUTH DAKOTA; the winter mortality survey conducted in mid-April in 12 southeastern counties showed that average mortality was 54 percent (range 15-90 percent), although the winter was severe. Diadegma punctoria (an ichneumon) and Sympiesis viridula (a eulophid) contributed to mortality of O. nubilalis. First moths were taken in light traps at Brookings on June 22 and by July 2 larval feeding was noted in whorls of corn plants in Clay and other southeastern counties. One week later, second instars detassled 10 percent of the sweet corn in an early field in Hutchinson County. Damage reported the last 2 weeks of July indicated that a few fields had up to 50 percent of the stalks damaged in Charles Mix and other southeast counties; up to 80 percent of the whorls of these plants showed feeding injury. The fall abundance survey from October to mid-November (following killing frost in September) indicated that the average number of borers per 100 stalks declined for the third year. Exceptions were noted in the Deuel-Hamlin County area and along the southern part of the State in Bon Homme, Yankton and Clay Counties. Nearly all damage observed in the field was attributed to first-generation larvae in South Dakota.

European corn borer populations and damage decreased in all sections of NEBRASKA except in the southeast and southern areas where an increase with heavy damage was noted. Peak flights occurred June 11-18 and August 13-20. Damage to corn and sorghum in KANSAS was not severe. Populations, as shown by the fall survey, were very low and somewhat less than those of 1964. Pupation of overwintering forms began about April 10 in southeast MISSOURI; the first moth was taken May 8. First-generation larvae entered stalks about June 12 and the second about July 25. The percent of infested stalks increased 5.2 over the 1964 average of 55.9 percent. The number of borers per 100 stalks decreased 12.2 percent (157.2 percent in 1964). Heaviest damage occurred in Atchison, Holt and Nodaway Counties (northwest), Linn and Randolph Counties (north central), Clark, Knox and Marion Counties (northeast) and Dunklin, New Madrid and Stoddard Counties (southeast). Losses in Missouri were estimated at 10,178,500 bushels. European corn borer increased slightly in ARKANSAS over that of 1964. Overwintering borers averaged 2,679 per acre (2,404 in 1964). O. nubilalis was economic in a few fields only. Borers became numerous in late-planted sorghum heads causing up to 41 percent broken heads. Examination of corn and sorghum in a survey in NEW MEXICO failed to reveal

this pest. See CEIR 16(2):21-27 for status report for fall 1965.

GARDEN WEBWORM (Loxostege similalis) was very abundant in early summer in KANSAS where it damaged sorghum, corn and other crops; populations declined and little additional damage occurred. A PYRAUSTID MOTH (Marasmia trapezalis) caused some damage to sugarcane in FLORIDA.

CORN EARWORM (Heliothis zea) continued as a definite pest of corn in FLORIDA and insecticides were required to minimize damage. It caused light to medium damage to corn in all counties of ALABAMA; sweet corn was heavily attacked. Moderate to heavy infestations in whorls of corn were noted in GEORGIA during the first half of the season. Infestations in corn were medium in VIRGINIA and about normal in MARYLAND. Heavy ear infestations occurred in late August and September in all sections of Maryland. The first adults of the season in DELAWARE were collected in blacklight traps May 26 in Sussex County; by mid-June, 3 per night were taken with young larvae common on early sweet corn. Only light, scattered infestations occurred in MASSACHUSETTS. These were mostly in the eastern area late in the season. In RHODE ISLAND, the degree of local injury was probably related to control efficiency.

Corn earworm was a pest of minor significance in OHIO on corn. A single female taken in blacklight trap on June 4 was the earliest MICHIGAN record for this species. A few larvae were noted in sweet corn before the main influx of moths entered the State. Blacklight trap data showed that the first large-scale flight of the season was delayed until September 21 (an extremely late date). Although too late for major importance on sweet or field corn, early instars were quite common in fields sampled September 30-October 14. Infestations were slightly higher than in 1964 in INDIANA. The fall corn insect survey revealed that statewide, 11.6 percent of the corn plots sampled were infested compared with 9.4 percent in 1964. Heaviest infestations occurred in the southern third of the State where an average of 15.7 percent of the corn examined was infested. This noctuid was not nearly so abundant in ILLINOIS as in 1964; however, 100 percent of the ears was infested in some late corn fields in the southern section in late August and early September. Survey of damage in the southern quarter of the State in September showed only 0.057 percent actual loss to field corn. The first H. zea moths were taken in blacklight traps in mid-June in WISCONSIN; egg laying was noted in late June. Some fields of fresh market sweet corn had up to 30 percent of the ears infested by small larvae. Infestations in canning corn did not exceed 5 percent.

Corn earworm accounted for some loss in corn yields in SOUTH DAKOTA; increasing numbers were found July through September in corn ears. Third to fourth instars were feeding in less than 1 percent of the ears examined by the end of July in Turner County. By mid-September, 20 percent of the cobs in fields in Tripp County and 40 percent in Yankton County were infested. This was one of the major pests of corn in COLORADO. Populations were high in early sweet corn in NEBRASKA in July and moderate numbers caused some damage to field corn in central and southwestern areas. Corn earworm was light in the southeast. In KANSAS, populations were normal with 100 percent infestations in sweet corn at harvest common in the northeast; no severe damage occurred on sorghum owing to late heading of plants. The first moth of the season was taken in Pemiscot County, MISSOURI, April 22. Infestations were noneconomic with damage slightly less than in 1964. It was economic in poorly managed sweet corn in Missouri, with losses about the same as in 1964.

Corn earworm, infested a wide variety of crops in ARKANSAS and was the State's number-one pest. The first moth was taken in a light trap in the southeast March 29, eggs appeared April 6 on crimson clover in the southern area. This pest was moderate to heavy in late-planted milo but milo planted early escaped damage. The highest infestation was 137 larvae in 100 heads on 29 row feet; this is 4.69 per row foot or 60,928 per acre. This is considered economic on milo. Activity began in OKLAHOMA in early April and light to moderate numbers damaged corn and alfalfa during May and June. By late July, moderate numbers were on

corn, grain sorghum and other crops in much of the State. Occasional heavy infestations were found in corn and grain in August. Activity continued until early October. This pest was not so serious in Oklahoma as it usually is, although damage to sweet corn occurred from late May to mid-September. Damage to sweet and field corn occurred over TEXAS. Damage to corn was noticeable in NEW MEXICO and larvae fed in whorls and on ears of field corn in most areas. Heavy corn earworm populations damaged corn in June and July in ARIZONA. Corn earworm was prevalent in corn, sorghum and milo in CALIFORNIA from May through October where it caused considerable damage to stalks as well as heads. Populations were moderately high with damage general to home gardens in UTAH; corn for canning and field corn was also damaged. This pest was present over a large part of MONTANA during the season and caused heavy damage to late maturing sweet corn in Douglas County, OREGON.

FALL ARMYWORM (Spodoptera frugiperda) was general and severe in some local areas and fields in PENNSYLVANIA; development was slow with continued damage to replanted corn noted. This pest was light to moderate on sweet corn in NEW JERSEY and moderately severe on field corn in the northern half of the State. Infestations on late-planted corn were conspicuous but spotty in most sections of MARYLAND, with a few fields over 25 percent infested. This noctuid was light on corn throughout the year in VIRGINIA and light to moderate in the whorls of corn in GEORGIA during the first half of the year. This was a major pest of late corn in most counties of ALABAMA, and attacked sweet corn in most areas.

Fall armyworm was observed in late field corn, sweet corn, sorghum-Sudan grass and other crops in several OHIO counties in September. This pest infested 4-80 percent of the plants and about 4 percent of the ears of late corn (3-4 percent of crop) in southern ILLINOIS. An estimated 21,651 acres were treated. Fall armyworm was slightly lighter in ARKANSAS than in past years; earliest season record occurred on sorghum in early July in southeast. Fall armyworm became active by mid-July in OKLAHOMA and moderate to heavy numbers damaged corn, grain sorghum and broomcorn until late September. This pest was generally light in corn in southeast and central NEBRASKA. Caused moderate damage to a few late-planted fields in southeast counties where populations were higher than in 1964. This pest caused losses to corn in COLORADO. Light to moderate infestations were found in corn fields of Platte County, WYOMING. Slight damage developed on field corn and more severe damage appeared on sweet corn. The first specimens were taken on July 22 and 8 plants in 100 were found infested in most heavily infested fields.

BLACK CUTWORM (Agrotis ipsilon) damaged corn and other crops in MICHIGAN. Economic infestations occurred in corn in localized areas throughout central INDIANA. A 40-acre field in Tippecanoe County was completely destroyed and an adjacent 100 acres required treatment. Infestations were more widely distributed in central Indiana in 1965 than in the past few years. This noctuid was responsible for severe damage to corn in all districts of ILLINOIS; an estimated 265,320 acres of corn were replanted and 411,633 acres were treated after corn emerged in Illinois. Moths appeared in Madison, WISCONSIN, blacklight traps the second week of May. Some damage to field corn occurred in early June. Adults were more numerous in July light trap collections than in July 1964. This indicated a possible outbreak, but no significant damage was reported. This noctuid, as well as others, was commonly found in home gardens in Wisconsin. A. ipsilon was scattered and very localized in southern MINNESOTA. Infestations were much lower than in 1964 but some damaged fields required replanting. Light to moderate infestations occurred in some areas of southeast NEBRASKA and damage to young corn and sorghum necessitated replanting. The first moth of the season in MISSOURI was noted in Pemiscot County April 7. Larvae caused light to heavy stand reduction in corn statewide. Heaviest damage occurred in the northern half of Missouri where stand reduction ranged up to 100 percent in some fields. This cutworm damaged seedling corn in south central KANSAS in early summer and some damage was noted in OKLAHOMA. Larval damage to corn in NEVADA varied from light to heavy in Churchill and Pershing Counties, especially in the latter county in late June and early July. Damage occurred on corn in Kings, Orange, Santa Cruz and San Joaquin

counties, CALIFORNIA.

ARMYWORM (Pseudaletia unipuncta) outbreaks occurred in late May on the Eastern Shore of MARYLAND with extensive damage noted on corn, pastures and small grains. Many fields required teratments. Scattered infestations in seedling corn were noted in Washington, Dubois, Gibson and Knox Counties, INDIANA, during May and June. This pest was not so abundant in ILLINOIS as it was in 1964. During the year, 14,716 acres of corn were treated. Armyworm damaged some corn in MISSOURI and caused considerable damage to corn in COLORADO; it damaged corn in many CALIFORNIA locations and Sudan grass in Merced County.

VARIEGATED CUTWORM (Peridroma saucia) damaged corn throughout much of WASHINGTON and ALFALFA LOOPER (Autographa californica) was unusually abundant and damaging to corn in that State. Larvae, tentatively identified as SORGHUM WEBWORM (Celama sorghiella), damaged a field of sorgho (sorghum X Sudan grass) in Turner County, SOUTH DAKOTA, with controls necessary. Light populations of WESTERN BEAN CUTWORM (Loxagrotis albicosta) caused considerable damage to corn in some central NEBRASKA fields. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) was light in Nebraska and caused very little damage to sorghum in the southwest. Sorghum webworm caused some damage in OKLAHOMA. Sorghum webworm was light to moderate on sorghum in several southern and south central areas of TEXAS. In MISSOURI, yellow-striped armyworm, STALK BORER (Papaipema nebris) and DINGY CUTWORM (Feltia subgothica) damaged corn. P. ornithogalli was found in light numbers in a few MINNESOTA corn fields. This species has been found before in Minnesota but this is considered a rare occurrence. Stalk borer was found in the southern half of Minnesota, with moderate to heavy marginal feeding noted in some fields. GLASSY CUTWORM (Crymodes devastator) injured corn by cutting plants below the soil surface in some fields in MICHIGAN. Both glassy cutworm and CLAY-BACKED CUTWORM (Agrotis gladiaria) damaged young corn in OHIO; the first reports of damage occurred May 17 and continued through most of June. Significant infestations occurred in 16 widespread counties with up to 75 percent of young plants in some fields cut. Clay-backed cutworm and glassy cutworm were general and severe in local areas and fields of PENNSYLVANIA. Development was slow and there was repeated damage to replanted corn. Clay-backed cutworm was especially destructive to young corn planted after sod in several areas of MARYLAND. In MAINE, moderate to heavy numbers of various CUTWORMS caused moderate damage to corn in the central area.

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) larvae caused heavy damage to many corn fields and late sorghums in Maricopa, Pinal, Graham and Cochise Counties, ARIZONA. Peak numbers occurred in July and August. Numbers were low in KANSAS and little damage was reported. Occasionally heavy infestations occurred in corn in southwest and south central OKLAHOMA in late September and early October. In TEXAS, severe damage occurred on experimental corn plots in Hardeman and Hale Counties. Populations were lighter in ARKANSAS than in 1964 but heavier than in 1963. The number of lodged stalks per acre in Arkansas were: 1963 - 180, 1964 - 588 and 1965 - 417. Percentages of stalks lodged for the same years were: 2.2, 8.5 and 6.2. Moths from first-generation larvae were 50 percent emerged in late June in the southeast and moths of second-generation larvae emerged in late July, thus giving rise to a third larval generation in Arkansas. Southwestern corn borer was found in Hardin County, ILLINOIS, bringing the known infested counties of that State to 7. A fall survey in the southern tip of the State revealed that 100 percent of the fields and an average of 9.45 percent of plants were infested in Alexander County. Pulaski County had 85.7 percent of these fields infested (1.29 percent of plants); Massac County had 80 percent of the fields infested (0.67 percent of plants); Union, Johnson, Pope and Hardin Counties had 12.5 to 33.3 percent of the fields infested and 0.08 to 0.33 percent of the plants infested. No infestations were found in Randolph, Jackson, Williamson, Saline and Gallatin Counties. Southwestern corn borer was found for the first time in Dallas and Madison Counties, ALABAMA, and it is now found in 28 counties. Larvae caused considerable damage to field and sweet corn in the western and northwestern sections. SUGARCANE BORER (Diatraea saccharalis) was light on sugarcane at Belle Glade, FLORIDA, apparently the result of biological control by Trichogramma spp. (minute egg parasites). SOUTHERN CORNSTALK BORER

(D. crambidoides) destroyed a 50-acre field of corn in GEORGIA. D. crambidoides caused considerable damage to field and sweet corn in western and northwestern ALABAMA. D. saccharalis was noted on corn in the gulf coast and Rio Grande Valley areas of TEXAS.

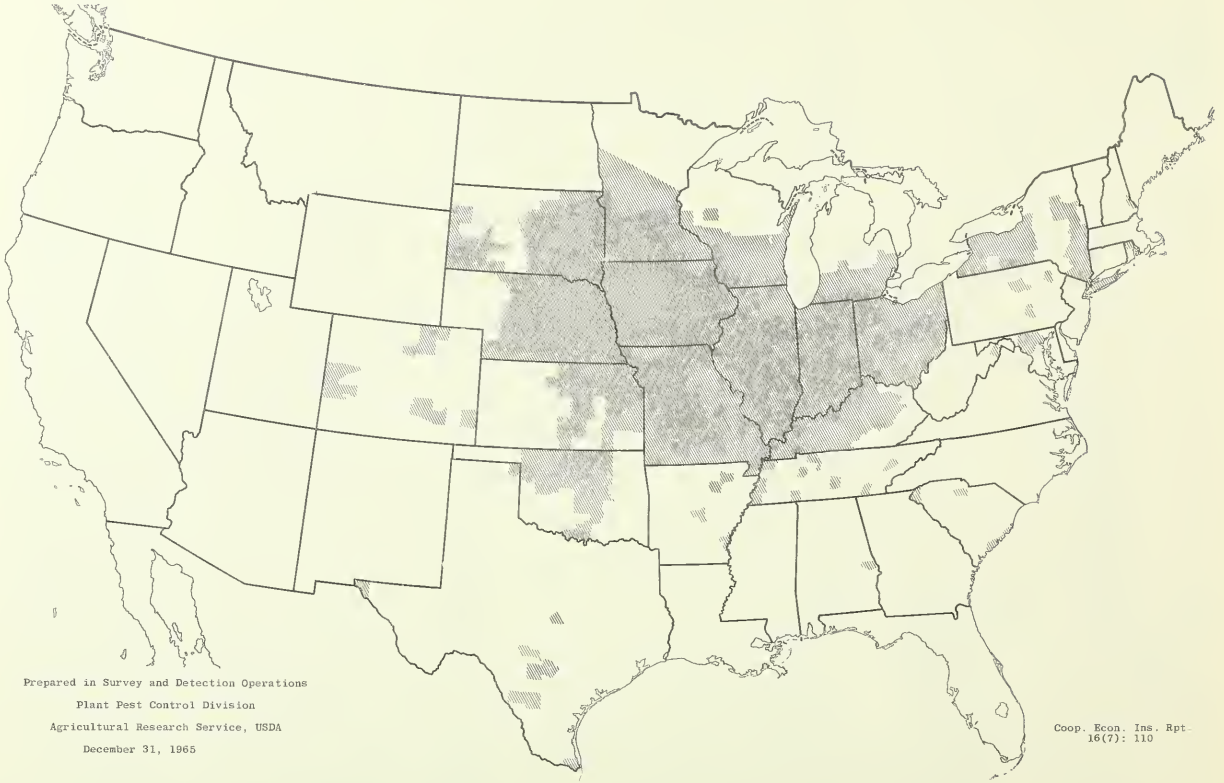
CORN ROOT WEBWORM (Crambus caliginosellus) infested young corn planted after sod in MARYLAND; replanting was necessary in several instances. Economic infestations on young corn occurred in OHIO from late May through mid-June. Activity was general with noticeable infestations occurring in 10 counties. Crambus spp. were a problem on corn following sod but caused only minor lawn damage in Ohio. SALT-MARSH CATERPILLAR (Estigmene acrea) larvae were abundant in ILLINOIS. Up to 10 percent of the ears had damage to silks in the Decatur-Springfield-Lincoln area of central Illinois in July; some fields were treated. A SOD WEBWORM (Thaumatopsis pectinifer) appeared in moderate numbers and damaged some corn fields in Antelope County, NEBRASKA, in June, the first buildup of this crambid moth since 1948. LESSER CORNSTALK BORER (Elasmopalpus lignosellus) was light to moderate but widespread on corn in the Rio Grande Valley of TEXAS.

Eggs of CORN ROOTWORMS (Diabrotica spp.) hatched June 21 in central and southwestern MINNESOTA. Hatch extended over a 6-week period but the peak probably occurred the last week in June and first week of July. Lodging of corn appeared in early July. NORTHERN CORN ROOTWORM (D. longicornis) appeared to hatch and develop ahead of WESTERN CORN ROOTWORM (D. virgifera). The first corn rootworm adults appeared in the central area the week of July 19. It became apparent in July that populations of both D. longicornis and D. virgifera were down in southwestern Minnesota; however, D. longicornis increased in central and southern districts. These observations were confirmed in a survey in August made to determine the percent and population level of these two species in 42 counties in the southern half of the State. The percent of D. virgifera was high only in Rock, Jackson and Watonwan Counties, a reverse of the 1964 observations when this species gradually diminished in numbers in north and east directions. Complete reversals in percentages occurred in Nobles, Murray and Cottonwood Counties where D. longicornis is again dominant. The probable cause of drop in population of western corn rootworm in southwestern Minnesota is believed due to the extremely wet season; increased use of organic phosphates in the area can also be considered a factor. Damaged fields were present throughout the southwest district but damage was less than that of 1964. The number of damaged fields increased in the central and southeast; only D. longicornis is involved in that area of Minnesota. D. virgifera and D. longicornis were the dominant rootworm species in SOUTH DAKOTA in 1965; SOUTHERN CORN ROOTOWRM (D. undecimpunctata howardi) has been implicated least in crop damage in the State. The first rootworm adults of the season were observed in alfalfa in Hutchinson County. From June to mid-October southern corn rootworm adults were taken from various crops including corn, alfalfa and wheat. Observations of mating indicate that the common cross was between male D. longicornis and female D. virgifera. The first corn rootworm adults appeared in the southern tier of counties July 7 and although this date is similar to that of 1964, the main hatch and larval buildup was 10 days later than that of 1964. This was undoubtedly influenced by a cool spring and ultimately led to extended larval feeding with lower concentrations of adults in a field at any one time. At the end of July, heavily infested fields in Bon Homme, Charles Mix, Hutchinson, Turner, Lincoln, Clay, Yankton and McCook Counties had 15-20 per silk. About one million acres of corn were treated for rootworms; better growing season further enhanced yields.

Western corn rootworm was light in COLORADO and few controls were needed. Large numbers of adults of D. virgifera and D. undecimpunctata howardi were found infesting corn in Goshen and Platte Counties with damage comparable to that of 1964. Infested fields ranged 8-12 adults per plant with slight larval feeding. Adults began feeding on silks August 11. Western corn rootworm was present in MONTANA but it was 50 percent controlled along the Yellowstone River near Billings.

Western corn rootworm was the dominant species in NEBRASKA. Indications of increased activity appeared in the central and southwest with decreases noted in the

Distribution of Northern Corn Rootworm



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northeast. Statewide populations appeared lower than in 1964. D. longicornis was dominant in some northeastern counties where some damage was noted; populations were greater and more widespread in that area. D. undecimpunctata howardi populations were widely separated in the southeast, east and central areas and little damage to corn and sorghums was noted although numbers were in general higher and more widespread. In KANSAS, populations of D. undecimpunctata howardi, D. longicornis and D. virgifera were generally lighter than in other years; very little damage occurred. A few fields in extreme northeast Kansas had very high populations and severe lodging occurred; fields had been treated with recommended insecticides. D. virgifera spread into 6 additional counties in MISSOURI during 1965. The first larvae of the season were found in Atchison County June 12. Emergence began about July 17. Damage in Missouri ranged up to 100 percent of plants with 10-95 percent of the plants lodged in untreated fields. Losses in the area infested in 1964 ranged slight to heavy in 1965; no attempt was made to harvest corn in some fields. Southern corn rootworm heavily damaged corn seedlings in local areas of Brazos County, TEXAS.

Corn rootworms caused some damage in fields planted to corn in preceding years in WISCONSIN that had not received preventive soil insecticides. D. longicornis adults emerged in mid-July and continued until mid-August. Populations were high in some fields and fed extensively on corn silks. D. undecimpunctata howardi was generally distributed, often being the only species observed in a field. D. virgifera (first detected in Wisconsin in 1964) was found in Crawford and Vernon Counties as well as in St. Croix County. D. longicornis adults were common in many corn fields of ILLINOIS during July and August. Larvae caused some lodging of corn. A survey for resistant northern corn rootworm conducted in the northern half of the State indicated that resistance is common where fields were planted to corn for several years and soil insecticides were also applied for several years. There was no indication that the general population of D. longicornis over a large area is resistant. D. virgifera was found in 5 additional counties in Illinois; the heaviest population of western corn rootworm was found in Mercer County field with 32 adults per 100 plants.

D. virgifera damage occurred throughout INDIANA. Emergence began by July 10 in the south and by July 23 adults increased to 1-2 per silk. Some fields in east central and southeast sections had 10-15 per silk. Scattered adult infestations were reported in all areas by July 30. Severe windstorms in the northwest in late August caused heavy lodging in infested fields. A slight increase in number of infested fields over that of 1964 was noted in MICHIGAN. Of 70 fields checked in 14 counties, 3 percent harbored moderate infestations; 6 percent were lightly infested. Emergence began in late July in Washtenaw County. A survey in 35 OHIO counties in late August and early September revealed 153 fields (5.5 percent of 2,776 examined) had high populations; adults were found in every field checked, indicating potential high infestations where corn follows corn. The first larval activity occurred in late June, first adults were noted in mid-July; adult activity ceased near the end of September. Southern corn rootworm was insignificant.

Northern corn rootworm was found for the first time in several localities in northern DELAWARE during late August. Adults of northern corn rootworm were not so common on corn silks in central MARYLAND as in previous years; however, southern corn rootworm was responsible for a moderate amount of field corn lodging in Frederick and Carroll Counties. Light infestations of southern corn rootworm were present in corn and peanuts in VIRGINIA but only slight damage resulted. This rootworm was slightly higher in test plots in northeastern NORTH CAROLINA; however, the population was the lowest since 1960.

CORN FLEA BEETLE (Chaetocnema pulicaria) was heavy on young sweet and field corn during May and June in MARYLAND, and heavy on late corn during July and early August. This flea beetle severely attacked young corn in the southern half of PENNSYLVANIA; it was quite heavy in southeast and southwest sections on sweet corn. The first infestations in OHIO were noted on young corn May 10. Infestations continued through August. Significantly heavy infestations were noted in 13 counties representing most of the State. Controls were required in many areas of

southern INDIANA in late May where adults ranged 2-11 per corn plant. Late corn was attacked in Jay County area requiring replanting of several fields in June. Populations in other central areas and in northern areas were light to moderate. Corn flea beetle was rather abundant on late corn in southern ILLINOIS; 5-10 per plant were common. An estimated 35,951 acres were treated for control. This pest damaged corn in MISSOURI but it was of no economic importance in KANSAS; it caused some damage in OKLAHOMA. Unspecified FLEA BEETLES damaged grain sorghum in several central counties of TEXAS.

A WIREWORM (Melanotus communis) caused considerable damage to corn in Camden and Pender Counties, NORTH CAROLINA, during late May. Larvae were very abundant in the Camden County field; some pupation noted there May 27. WIREWORMS damaged some fields of late planted corn in Carroll County, VIRGINIA, in late July. Some young corn was heavily injured in Anne Arundel and Queen Annes Counties, MARYLAND; wireworms were minor in OHIO on corn. Several species of wireworms damaged corn in MISSOURI. A heavy infestation of wireworms destroyed a stand of corn in Hamlin County, SOUTH DAKOTA, in June; low numbers of larvae (1 per hill) damaged corn in Kingsbury County. Wireworms caused some damage to corn in northeast COLORADO. Limonius spp. were responsible for damage to corn in many localities of the Willamette Valley of OREGON.

A WEEVIL (Anacentrinus deplanatus) caused light, local damage to grain sorghum fields in Denton County, TEXAS. Several species of BILLBUGS damaged corn in MISSOURI. MAIZE BILLBUG (Sphenophorus maidis) was a minor corn pest in OHIO. S. callosus infestations were light to heavy in GEORGIA but more severe than in 1964.

Other coleopterous pests of corn reported included SEED-CORN BEETLE (Agonoderus lecontei) in NORTH DAKOTA where a severe infestation was found on newly planted corn in Cass County. This pest also caused some loss to corn in COLORADO. In ILLINOIS, a SAP BEETLE (Glischrochilus quadrisignatus) was very abundant in corn fields attacked by Blissus leucopterus (chinch bug); some fields had 20 or more adults per plant clustered under leaf sheaths with B. leucopterus. SAP BEETLES were corn pests of minor importance in OHIO as was A. lecontei. ROSE CHAFER (Macrodactylus subspinosus) infested a corn field in Lucas County in late June; but this was a minor pest of corn in most of Ohio.

CORN LEAF APHID (Rhopalosiphum maidis) infestations were first noted in field corn in Clermont County, OHIO, July 7; it was found in Auglaize and Highland Counties the following week. This aphid was general over much of the State with a few fields having up to 70 percent of the plants infested. Early infestations prevented ears from filling. CORN ROOT APHID (Anuraphis maidiradicis) was a minor corn pest in Ohio. High populations of R. maidis developed over the entire corn-growing area of MICHIGAN from July 21 until August 2. A high percent of the corn suffering from drought during this period made losses caused by this aphid difficult to measure. Natural control, notably lady beetle adults and larvae, brought about rapid reduction of numbers in mid-August. Statewide in INDIANA, 7.4 percent of the corn plants sampled were severely infested, 23.5 percent were moderately infested and 34.5 percent were lightly infested. Maximum infestations occurred in the northern three-quarters of the State where an average of 74 percent of the corn plants were infested; the average was 36 percent in the southern quarter of Indiana. Corn leaf aphid was very abundant in ILLINOIS. Only trace numbers were noted July 12-13; however, infestations July 19-22 ranged from very small to heavy colonies causing some discoloration of leaves or tassels. Thirty-one percent of the corn plants were infested July 26-29 in the northern section with 100 percent of the plants infested in some fields. An estimated 55,333 acres of corn were treated to control this pest in Illinois.

Corn leaf aphid colonies were first observed in WISCONSIN in early July and were abundant in many areas by late July. As much as 20 percent of plants in some fields had colonies of 500 or more aphids. Populations decreased markedly in early August owing to washoff by rains and dispersal of winged individuals, but before some treatments were made. Populations became extremely low in late August. This aphid caused great concern to many corn growers in MINNESOTA in July. Pop-

ulations were high but barren stalks or reduced ear size did not result. Predators and parasites multiplied slowly due to cool weather but they did exert some control in August. This aphid was relatively common and prevalent in southeastern SOUTH DAKOTA corn fields from July through mid-August. The aphid, although numerous and sometimes present in damaging numbers, was contained by predators. Chemical control was not recommended. At the beginning of July, 50 percent of the cornstalks had 100 to 150 aphids per stalk; one week later this population increased to over 300 per tassel. A heavy flight occurred at Brookings August 3-6. Anuraphis maidiradicis was present in low numbers in southeastern South Dakota from mid-June through July. The highest numbers (25 per stalk) of this aphid were recorded in Hutchinson County where corn-on-corn rotation was practiced.

Corn leaf aphid caused little damage to sorghum in NEBRASKA; light to moderate populations were present on corn in late July and early August. Populations were lighter than in 1964. Light to moderate populations were noted in some areas of central and eastern Nebraska. Corn leaf aphid damaged some corn in MISSOURI. Moderate levels of corn leaf aphid, with some reports of damage to young field corn, were noted in north central KANSAS in early summer. Moderate to heavy numbers with damage were noted on corn and grain sorghums in most areas of OKLAHOMA from mid-May to late August. Corn leaf aphid was economic on sorghum and other crops in COLORADO. Populations were slightly smaller in corn in WYOMING than they were in 1964. The first specimens of the season were taken in Platte County July 22. Fields averaged 15 percent infested in the southeast area and 12-20 percent infested in northern areas. Damage was reported on corn and barley in CALIFORNIA in San Diego, Butte and Fresno Counties.

Corn leaf aphid was common in late summer in RHODE ISLAND. Large populations developed on sweet corn throughout central and eastern MASSACHUSETTS and many growers complained of sooty mold on honeydew. Corn leaf aphid attacked sweet corn in all areas of ALABAMA.

CHINCH BUG (Blissus leucopterus) was present on corn in southeast areas of PENNSYLVANIA. Infestations on peripheral rows of corn became a problem in late June in OHIO and continued through early October. The hot, dry weather encouraged development of high populations; 14 Ohio counties reported significant infestations with some infestations on Sudan grass and sorghum. Heavy infestations occurred in corn from June 20 through July 16 in eastern and western INDIANA. The infestations in western counties were individually more severe but the infestations in eastern counties were more extensive.

The outbreak in east central Indiana was the most severe in 15 years. The fall chinch bug survey indicated that hibernating populations are generally at subeconomic levels; however, 4 out of the 59 bunch grass samples collected from eastern and western Indiana contained light populations (250-500 per square foot) and one sample had a very severe (8,625 per square foot) hibernating population. The very severe infestation occurred near Newport, Vermillion County, and the moderate population near Spartanburg, Randolph County. Lighter populations were found in Benton, Vermillion and Jay Counties, Indiana. Recently hatched nymphs were found in both central and eastern districts of ILLINOIS by June 1. Heavy migrations to marginal rows of corn occurred; treatments were applied. By July 15, late instars and adults varied from none to severe on marginal rows of corn bordering wheat with some corn showing stunting and purpling. Although the first generation was more severe and widespread than in 1964, the second generation failed to develop and there was no damage in August and September. The fall chinch bug survey in Illinois indicated that areas of economic infestation were much smaller and the population considerably lower than in 1964. An estimated 45,184 acres of corn were treated. Chinch bug damaged corn in MISSOURI in 1965. The 1964 chinch bug survey in KANSAS indicated populations would be very low and as expected they remained low throughout the summer. The 1965 survey again resulted in low counts; little trouble is expected in 1966 in Kansas. Damage by chinch bug began in mid-May in OKLAHOMA and continued until late September. Numbers were generally light in all areas except the northeast where moderate to heavy numbers damaged corn and grain sorghum from late May to late August. Populations in TEXAS were similar

to those of 1964; damage was reported over much of the State, particularly the gulf coast region.

RICE STINK BUG (Oebalus pugnax) is of less importance in rice in ARKANSAS with the current good grass control. Adults and nymphs were found at rates of 4,400 and 3,500 respectively in heads of late planted grain sorghum. STINK BUGS damaged sweet corn in all areas of ALABAMA during the season. Peak populations of LYGUS BUGS (Lygus spp.) occurred in sorghum in early June in ARIZONA but they caused little economic damage; moderate amounts of controls were needed.

SORGHUM MIDGE (Contarinia sorghicola) was heavy in milo in Kings County, CALIFORNIA. Heavy numbers on late planted sorghums caused extensive damage and yield losses in Cochise County, ARIZONA; infestations were light in Greenlee and Graham Counties. In TEXAS, infestations were less severe than in 1961, 1962 and 1963; they closely paralleled the 1964 infestation. Late planted fields, as usual, received heavy damage in some areas. The effect of planting dates on sorghum midge infestations showed that sorghum planted April 10 and 30 escaped this gall midge in ARKANSAS while sorghum planted May 20 suffered 50-75 percent damage. A few fields planted mid-June to early July and inspected periodically did not become infested. This fly caused some damage in OKLAHOMA. Sorghum midge was collected in Johnson County, KANSAS, which was the second county record in recent years. CORN BLOTCH LEAF MINER (Agromyza parvicornis) was very common on some corn plants in southern ILLINOIS in early June.

Several species of THRIPS were abundant on young corn in MARYLAND; streaking and silvering of foliage was noted in all sections during May and June.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) severely damaged corn and other crops in eastern WASHINGTON and it was more damaging than usual in western areas because of the hot, dry weather. This spider mite heavily infested sweet corn leaves in the Willamette Valley of OREGON during late September. SPIDER MITES (Tetranychus spp. and/or Oligonychus spp.) were heavy on corn in Churchill County, NEVADA. Infestations were light to medium in Pershing County and generally light in remaining counties. Spider mites were the most numerous pests for the sixth consecutive year in Nevada. Moderate to heavy infestations of Tetranychus spp. were found in sorghum fields of Yuma, Maricopa, Pinal and Graham Counties, ARIZONA; controls were necessary in many fields. Spider mites were not a problem on corn in COLORADO. Tetranychus sp., probably urticae, and BANKS GRASS MITE (Oligonychus pratensis) caused some damage to late corn in southwest KANSAS during mid-August; controls were required. Tetranychus spp. were minor pests of corn in OHIO. Light to moderate populations of Tetranychus spp. were noted on sweet corn throughout NEW JERSEY. Tetranychus spp. severely damaged field corn breeding stock in FLORIDA; some border row plants were killed.

LAWN, PASTURE AND RANGELAND INSECTS

FALL ARMYWORM (Spodoptera frugiperda) was a major pest of lawns in ALABAMA. Outbreaks of ARMYWORM (Pseudaletia unipuncta) occurred on the Eastern Shore of MARYLAND in May where damage to pastures was extensive. This noctuid occasionally damaged pasture grasses in MISSOURI in early June. Larvae of BLACK CUTWORM (Agrotis ipsilon) were found crawling on surface of bentgrass greens in Pawnee County, KANSAS; no damage. A. ipsilon heavily infested golf greens in Clark County, NEVADA, in May. Late fall damage caused by GLASSY CUTWORM (Crymodes devastator) occurred in 3 fields of bluegrass in Linn County, OREGON.

SOD WEBWORMS (Crambus spp.) were common in lawns in RHODE ISLAND but fewer adults were seen in flight than in 1964. Populations were moderate over much of NEW JERSEY except in southern counties where heavy injury occurred on home lawns. These grass moths caused only minor incidents of lawn damage in OHIO. While common in INDIANA, they were not so destructive to lawns as in other recent years;

some controls were necessary in scattered areas. Larvae were troublesome in ILLINOIS lawns in some areas but damage was not nearly so severe as in 1963 and 1964. A large species destroyed large areas of buffalo grass in fairways of a golf course in Pawnee County, KANSAS. Silk tubes covered top of ground where damage was most severe. Larvae were found in tunnels 8-10 inches below soil surface.

RANGE CATERPILLAR (Hemileuca oliviae) caused extensive damage during the fall months in the Farley-Abbott area of Colfax County, NEW MEXICO; each year the area generally infested by this saturniid increases in that county. WESTERN TUSSOCK MOTH (Hemerocampa vetusta) caused heavy damage to bitterbrush in southern Washoe County, NEVADA; however, the infestation was much less than that of 1964. In CALIFORNIA, a PHYCITID MOTH (Eumysia mysiella) infested sagebrush. A PYRAUSTID MOTH (Marasmia trapezalis) caused heavy damage in spots to pasture grasses, particularly Pangolagrass (Digitaria decumbens), in FLORIDA at Belle Glade in late summer. A SKIPPER (probably Hylephia sp.) heavily damaged Coastal and common Bermuda grasses in Henderson, Leon, Rains, Van Zandt and Travis Counties, TEXAS.

HAIRY CHINCH BUG (Blissus hirtus) adults were heavy on a golf course in Westerly, RHODE ISLAND, in early May. CHINCH BUG (B. leucopterus) caused extensive damage to home lawns in central and northern counties of NEW JERSEY; much of the damage during summer months was overlooked by homeowners and attributed to drought injury. Populations reached high proportions during late August and early September but satisfactory control measures could not be applied in many areas due to restrictions placed on use of water. B. leucopterus was a major pest of lawns in ALABAMA. B. insularis continued to be a problem on St. Augustine grass lawns in FLORIDA; commercial spraymen were commonly called upon to provide controls. B. insularis severely damaged St. Augustine grass pastures at Belle Glade, Palm Beach County. B. leucopterus damaged lawns over much of eastern and gulf coast areas of TEXAS.

A SPITTLEBUG (Prosapia bicincta) caused economic damage to recently sprigged pastures of St. Augustine grass at Belle Glade, FLORIDA. GROUND PEARLS caused considerable damage to lawns in ALABAMA. RHODES-GRASS SCALE (Antonina graminis) damaged zoysia and Bermuda grass lawns in most areas of southern ARIZONA during the summer months. A MEALYBUG (Phenacoccus graminosus) infested Avena fatua (wild oat) and Bromus rigidus (ripgut grass) in Yuba County, CALIFORNIA, and Stipa sp. (needlegrass) in Butte County.

A MAY BEETLE (Phyllophaga tristis) was recorded for the first time in WASHINGTON; it was taken at least one thousand miles west of its previous known distribution. This scarab was heavy in Clark County in late May. TEN-LINED JUNE BEETLE (Polyphylla decemlineata) caused extreme damage to 600 acres of irrigated pastures in Grant County, Washington. Larvae of a SCARAB (Cyclocephla sp.) caused medium damage to turf at a golf course in Clark County, NEVADA, in September. In KANSAS, a BILLBUG (Sphenophorus venatus vestitus) was found injuring zoysia turf in the Greater Kansas City area; apparently this weevil successfully overwintered there. Occasional individuals of ORIENTAL BEETLE (Anomala orientalis) are encountered in RHODE ISLAND, but were not an economic problem in 1965 although some grub damage to lawns occurred.

CHLOROPID FLIES were found in damaging numbers on bentgrass golf greens in northeastern KANSAS; feeding caused small yellowing spots and later dead spots to appear in greens. A DESERT TERMITE (Amitermes sp.) was noted on range grasses from a wide area of TEXAS.

BANKS GRASS MITE (Oligonychus pratensis) was light with little damage in northwest NEBRASKA. Infestations and damage were heavy on timothy in Lyon County NEVADA, in late May and June with controls required. This is third consecutive year of heavy populations there. This pest was scattered with moderate damage to Bermuda grass seed fields in Yuma County areas, ARIZONA; some controls necessary. BERMUDAGRASS MITE (Aceria neocynodonis) seriously damaged many Bermuda grass lawns in Yuma, Pinal and Pima Counties. Unless properly controlled, this eriophyid mite can become serious. A SNAIL (Vallonia pulchella) caused some damage to lawns in Multnomah and Lane Counties OREGON during September.

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PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 February 25, 1966 Number 8

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN LEAF APHID appearing in barley in Arizona and New Mexico. (p. 119).

SPOTTED ALFALFA APHID appearing in alfalfa in Arizona. (p. 119).

PEA APHID increasing in alfalfa in Arizona; ranged as high as 2,500 per 100 sweeps in north Gila Valley. (p. 119).

Small ALFALFA WEEVIL larvae found February 11 in Arkansas, and larvae feeding in Tennessee. First reports of larvae this season. (p. 119).

Five additional CALIFORNIA RED SCALE infestations detected in Yuma, Arizona. (p. 120).

WESTERN PINE BEETLE infesting 1,000 acres of ponderosa pine on Stanislaus National Forest, California. Control underway to stem a possible buildup. (p. 121).

EASTERN TENT CATERPILLAR eggs and larvae noted at Gainesville, Florida; first report of season. (p. 121).

Detection

New State records for Hawaii included a CADDISFLY (Cheumatopsyche analis), an ASTEIID FLY (Loewimyia n. sp.) and a PRODOXID MOTH (Tetegicula sp.). New county records from Florida, California, and Georgia. (p. 124).

Special Reports

Preparation of Notes for Cooperative Economic Insect Report. (p. 126).

Summary of Insect Conditions in the United States - 1965

Alfalfa, Clover, Sweetclover and Vetch Insects. (p. 127).
Soybean and Peanut Insects. (p. 138).
Sunflower and Flax Insects. (p. 140).

Distribution of Alfalfa Weevil in the United States. (p. 130).

Reports in this issue are for week ending February 18 unless otherwise indicated.

Contents

WEATHER OF THE WEEK ENDING FEBRUARY 21

HIGHLIGHTS: (1) Winter returns, Midwest and East. (2) Heavy rain Southeast, dry Southwest.

TEMPERATURE: Winter's brief respite ended over most of the Nation during last week as the upper air trough shifted eastward, intensified, and deepened. As a result, the predominantly southerly flow of warm, moist air over the eastern half of the Country gradually gave way to a northerly flow of dry and very cold air. Below zero temperatures were reported in 17 States from the central Rockies to New England when northerly winds pushed an Arctic air mass across the Midwest and East. A new 27-year record at International Falls, Minnesota, was set Friday when the mercury dipped to -44°; also for 6 days temperatures remained at zero or below with a weekly average temperature of -19° which was 27° below normal. In northern New England the strong, cold high pressure system dropped average temperatures about 20° from the previous week as wind-chill conditions ended a 4-week warm spell in that area. Because the influx of frigid air in the Southeast did not arrive until the weekend, that region experienced near to above normal average weekly temperatures. During the latter half of the week, the West warmed as the East cooled. The rising temperature trend, accompanying the eastward movement of the upper air trough, resulted in averages that were about 3° higher than 2 weeks ago in the Great Basin and Southwest.

PRECIPITATION: Moderate to heavy rains fell for the second straight week in the Southeast, although amounts were not as large as for the previous week. Disturbances in the Gulf of Mexico, and along fronts caused intermittent precipitation until skies gradually cleared as the massive high pressure system settled over the area during the weekend. Throughout the Midwest and East, snow flurries fell ahead of and behind the High. Minor storms moved rapidly eastward but lack of moisture caused snowfalls to be relatively light. An exception was western and

Weather continued on page 140.

SPECIAL MIGRATORY INSECTS

GREENBUG (Schizaphis graminum) - OKLAHOMA - Continues heavy in wheat locally in Mayes County. (Okla. Coop. Sur.). KANSAS - Populations in wheat in south central and southeast areas diminished considerably during last 3 weeks as result of below zero temperatures and considerable rain. Ranged 10-30 per linear foot in Sedgwick County fields where counts as high as 1,000 per linear foot January 21. Only an occasional aphid found in Butler, Cowley and Chautauqua Counties. Populations dropped from 400 per linear foot to less than 35 in Montgomery County. (Simpson).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Light infestations appearing in barley in western Maricopa County and in Queen Creek area of county. (Ariz. Coop. Sur.). NEW MEXICO - Very light in barley fields in southern Dona Ana County. (Elson, Campbell).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Small, scattered infestations appearing in alfalfa in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Averaged 4 per linear foot in wheat checked in Jackson County. (Okla. Coop. Sur.). TEXAS - Approximately 10 per 30 sweeps in oats near College Station, Brazos County. (Parker). ARIZONA - Very light numbers detected in small grains in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Averaged 50 per linear foot in wheat in Jackson County; light in Harmon County. (Okla. Coop. Sur.).

THRIPS - NEW MEXICO - Light numbers noted in barley in Dona Ana County. (Elson, Campbell).

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Increasing in alfalfa in Yuma County and in warmer valleys of Maricopa and Pinal Counties. Heaviest in north Gila Valley; ranged as high as 2,500 per 100 sweeps. (Ariz. Coop. Sur.). NEW MEXICO - Light in alfalfa in Bernalillo, Chaves and Dona Ana Counties. (N. M. Coop. Rpt.). TEXAS - Light in alfalfa near College Station, Brazos County; about 50 per 5 sweeps. (Parker).

COWPEA APHID (Aphis craccivora) - TEXAS - Very light in alfalfa near College Station, Brazos County; about 15 per 50 sweeps. (Parker).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Egg deposition studies continue in alfalfa in Mississippi County; data indicate eggs average 1,078,111 per acre. Hatching began second week in February as small larvae found February 11. (Ark. Ins. Sur.). TENNESSEE - Larvae feeding in buds of alfalfa in Henry and Obion Counties. (Johnson).

GREEN CLOVERWORM (Plathypena scabra) - TEXAS - Second-stage larvae light in alfalfa near College Station, Brazos County; approximately 10 per 30 sweeps. (Parker).

COTTON

PINK SCAVENGER CATERPILLAR (Sathrobrota rileyi) - CALIFORNIA - This species and Trichobaris compacta (a weevil) continue medium in gin trash collections in Bard and Brawley, Imperial County. (Cal. Coop. Rpt.).

Pink Bollworm - See Federal-State Plant Protection Programs p. 123.

SUGAR BEETS

FALSE CELERY LEAF TIER (Udea profundalis) - CALIFORNIA - Larvae of this and Ptycholoma peritana (a leaf roller moth) infesting sugar beet plantings yet to be harvested in Fresno County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

PEACH TREE BORER (Sanninoidea exitiosa) - ARKANSAS - Examination of young peach trees February 9 in Johnson County showed average of 32.5 percent of trees in 8 orchards infested. Survey made by checking 20 trees in each orchard, recording number of trees infested; 7 of 8 orchards found infested with 5-17 of 20 trees infested; averaged 7.4 trees. For all orchards, 52 of 160 trees, or 32.5 percent, infested. Due to heavy rain and undesirable working conditions, no attempt made to estimate number of borers per tree. (Ark. Ins. Sur.).

SAN JOSE SCALE (Aspidiotus perniciosus) - OKLAHOMA - Moderate and damaging peach trees in Bryan County. (Okla. Coop. Sur.).

CITRUS

CALIFORNIA RED SCALE (Aonidiella aurantii) - ARIZONA - Five additional infestations detected in city of Yuma; 9 infestations found this year. (Ariz. Coop. Sur.).

OLEANDER SCALE (Aspidiotus hederae) - CALIFORNIA - Locally heavy on lemon foliage in Palo Alto, Santa Clara County. (Cal. Coop. Rpt.).

GENERAL VEGETABLES

ONION MAGGOT (Hylemya antiqua) - CALIFORNIA - Adults medium on shallot plantings in Salinas, Monterey County. (Cal. Coop. Rpt.).

THRIPS - NEW MEXICO - Averaged 1.2 per onion plant in Dona Ana County. (Campbell, Elson).

ORNAMENTALS

GRANULATE CUTWORM (Feltia subterranea) - ARIZONA - Numerous in lawns and around ornamentals in Maricopa County. (Ariz. Coop. Sur.).

APHIDS - ARIZONA - Lachnus salignus heavy on ornamental willows in Phoenix area, Maricopa County. (Ariz. Coop. Sur.). NEW MEXICO - Cinara tujafilina widespread, light to heavy on arborvitae in Albuquerque, Bernalillo County. (Heninger). MISSOURI - Rhopalosiphum maidis troublesome in greenhouse in Portageville. (Keaster).

ARMORED SCALES - CALIFORNIA - Diaspis cocois and Aspidiotus hederae medium on Phoenix palm in Santa Barbara, Santa Barbara County. Parlatoria camelliae locally heavy on camellias in Gridley, Butte County. (Cal. Coop. Rpt.). ARIZONA - Aspidiotus hederae infesting ivy at several locations in Yuma, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Unaspis euonymi light to very heavy on euonymus in Albuquerque, Bernalillo County. (Heninger, Kloepfer). ALABAMA - A scale tentatively identified as Pseudaonidia paeoniae infesting greenhouse camellia plants throughout Birmingham area, Jefferson County. Officials of local camellia society, representing several hundred greenhouse hobbyists, report this is the most severe pest confronting them. Reports indicate species became problem only during last 3-4 years, and controls have been most difficult, if not impossible under greenhouse conditions. (Garrison, Wheeler, et al.). FLORIDA - Diaspis boisduvalii infested leaves of windmill palm (Trachycarpus fortunei) in nursery at

Macclenny, Baker County. (Collins, Jan. 1). Comstockiella sabalis caused moderate damage to 90 percent of Sabal palmetto plants in nursery in Pembroke, Polk County. (Schmidt, Jan. 4). Aspidiotus spinosus infested leaves of Ruscus aculeatus in nursery at Bradenton, Manatee County. (Bickner, Jan. 3). These are new county records. (Fla. Coop. Sur.).

SOFT SCALES - FLORIDA - Saissetia coffeae severely damaged stems of 15 sword-fern (Nephrolepis sp.) plants in nursery at Lockhart, Orange County. (Ware, Feb. 4). CALIFORNIA - Ceroplastes cirripediformis locally medium on gardenias in Rialto, San Bernardino County. (Cal. Coop. Rpt.).

A THRIPS (Baileyothrips arizonensis) - CALIFORNIA - Light on Euphorbia sp. in Glamis, Imperial County. First record for Imperial County. (Cal. Coop. Rpt.).

A HOLLY LEAF MINER (Phytomyza n. sp., in ilicicola complex) - CALIFORNIA - Heavy on Ilex vomitoria cuttings in San Marcos, San Diego County. (Cal. Coop. Rpt.).

SPIDER MITES (Tetranychus spp.) - NEW MEXICO - Medium on carnations in Roswell greenhouse. (Mathews). MISSOURI - Troublesome in greenhouse in Portageville area, southeastern district. (Keaster).

AN ERIOPHYID MITE (Calacarus adornatus) - ALABAMA - Extremely heavy on several young camellia plants in Lee County landscape planting. Some abnormal growth noted on younger leaves. (Cunningham et al.).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - NORTH CAROLINA - Large numbers still present in Yadkin, Forsyth, Davie, Davidson and Iredell Counties despite considerable mortality from cold and woodpeckers. Infestations lower in Catawba, Cleveland, Gaston, Mecklenburg, Cabarrus, Clay, Granville and Vance Counties. (H. J. Green).

WESTERN PINE BEETLE (Dendroctonus brevicomis) - CALIFORNIA - Infesting 1,000 acres of ponderosa pine in the Hunter Creek area, Stanislaus National Forest. Over 100 trees dead. Direct control by sanitation salvage and tree treatment carried out to stem a possible buildup. (Perry, USFS).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - FLORIDA - Eggs and larvae noted on stems and leaves of black cherry (Prunus serotina) at Gainesville, Alachua County. Hatched locally February 12. First record this season. Det. by L. A. Hetrick. (Fla. Coop. Sur.).

PINE BARK APHID (Pineus strobi) - ARKANSAS - Reported numerous on pine in Pulaski County January 8; collected in area and determined February 14. (Ark. Ins. Sur.).

MAN AND ANIMALS

CATTLE GRUBS (Hypoderma spp.) - UTAH - Grubs apparent in more beef cattle in Cache County herds than 2 weeks ago. (Knowlton). KANSAS - Appear quite numerous in most areas and in most types of cattle. (Simpson). OKLAHOMA - H. lineatum averaged 12 per head on cows in Payne County; moderate in Pontotoc County. (Okla. Coop. Sur.). ARKANSAS - H. lineatum averaged 2 per head in untreated check animals in Yell County. (Ark. Ins. Sur.).

MOSQUITOES - LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito control during period ending February 18 contained Anopheles crucians, Culex salinarius, and Culiseta inornata. Light trap collections very low due to cold weather and rain. Culex salinarius and Culiseta inornata dominant. (Stokes). OKLAHOMA - Several Anopheles punctipennis adults noted in Payne County. (Okla. Coop. Sur.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period February 13-19, no cases were reported in the United States. The Republic of Mexico reported 14 cases by State as follows: Territorio sur de Baja California 5, Sonora 9. Sterile screw-worm flies released: Texas 10,806,250 and Mexico 69,223,600.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	0	0	26	221	0.00	0.00
1965	0	4	33	381	0.00	1.04
1966	0	25	17	144	0.00	17.36
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	0	337	7	220	0.00	148.45
1966	14	341	17	122	82.35	279.50

Mexico Field Study - During this period 225 cases were identified in Mexico south of the Barrier Zone as follows: Guerrero 24, Puebla 4, Michoacan 9, Veracruz 35, Oaxaca 6, Sinaloa 27, Guanajuato 3, Hidalgo 1, Yucatan 35, Chiapas 16, San Luis Potosi 3, Campeche 6, Tabasco 16, Nayarit 7, Morelos 6, Jalisco 19, Colima 5, Zacatecas 2, Mexico 1.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

CATTLE LICE - UTAH - Additional 900 cattle treated for control in Garfield County and 100 in Kane County since late fall 1965. (Knowlton, Lindsay). OKLAHOMA - Several species heavy on cattle in Pontotoc County; moderate in Mayes County. (Okla. Coop. Sur.). ALABAMA - Some cattle in Lee County showing indications of increased infestation. Biting and sucking species not reported as serious on cattle throughout most of State as in most years. (Teaque et al.). NORTH CAROLINA - Linognathus vituli, Solenopotes capillatus and Bovicola bovis light to moderate on cattle examined in Robeson and Columbus Counties. (Mount).

LONE STAR TICK (Amblyomma americanum) - ARKANSAS - Averaged 2 per head on cattle checked in Franklin County. Counts made at rear of animals where hair short. (Ark. Ins. Sur.).

HOUSEHOLDS AND STRUCTURES

SOUTHERN FIRE ANT (Solenopsis xyloni) - CALIFORNIA - Medium in buildings and infesting yard in Three Rivers, Tulare County. (Cal. Coop. Rpt.).

SUBTERRANEAN TERMITES (Reticulitermes spp.) - OKLAHOMA - Colonies reported swarming from several areas of State. (Okla. Coop. Sur.).

STORED PRODUCTS

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) - VIRGINIA - Larvae and pupae in popcorn at locations in Winchester, Frederick County, and Suffolk, Nansemond County. (Isakson, Feb. 12).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

PINK BOLLWORM (Pectinophora gossypiella) - NEW MEXICO - Larval counts remain light on lint cleaner glasses in operating gins around Dona Ana County. (Hare). FLORIDA - Larvae infested wild cotton in Monroe County. (Creamer, Feb. 7). Pupa and larva found in wild cotton at Sanibel Island, Lee County. (Josey, Feb. 11).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - Newly infested properties found in 4 GEORGIA counties; inspections negative in 12 other counties. Over 29,300 bushels of sweetpotatoes in curing houses and storage in several counties; all negative except one lot of infested sweetpotatoes in curing house at Cairo, Grady County, Georgia. Surveys in 12 south ALABAMA counties revealed infested properties in 7 counties. Inspections of field and stored sweetpotatoes in 11 MISSISSIPPI counties negative. One infested sweetpotato found in store in Forrest County and 2 newly infested properties found in Jefferson Davis County, Mississippi. One or more newly infested properties found in 10 LOUISIANA parishes; 18 parishes including 441 acres of harvested fields and 5,600 bushels of stored sweetpotatoes inspected. (PPC South. Reg., Jan. Rpt.).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae and adults continue common in southern area even though near freezing or subfreezing temperatures occurred last of January. During second week of February, most recorded from Dade County; few from Broward, Palm Beach and Lee Counties. Larvae taken from fruits of calamondin, kumquat, loquat, egg-fruit, guava and dooryard grapefruit. Four larvae taken from grapefruit at 2 locations in Miami and Miami Springs. (Hancock, Feb. 14). Most adults taken in McPhail traps; 3 adults collected in 3 Steiner traps at Fort Lauderdale, Delray Beach and Miami. (Fla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - Small extensions found in 3 infested counties of SOUTH CAROLINA. Limited extensions found in 7 counties in GEORGIA; number of small mounds found in blocks treated before 1965. Found for the first time in Heard County, Georgia, December 28. Additional infested sites found in 4 counties in FLORIDA. Newly infested properties found in 10 counties in ALABAMA. Additional infestations found in 4 counties in MISSISSIPPI. Extensions of infestations found in 4 parishes in LOUISIANA; very few active mounds in Washington Parish treatment block. New infestations and extensive additional infested acreage found in survey of 4 counties in TEXAS. (PPC South. Reg., Jan. Rpt.).

CORRECTIONS

CEIR 16(6):86, third paragraph - HEMISPHERICAL SCALE (Saissetia hemisphaerica) should read Saissetia coffeae.

CEIR 16(6):95 - APPLE GRAIN APHID (Rhopalosiphon fitchii) should read Rhopalosiphum fitchii. - Line 13 - R. subterraneum should read R. rufiabdominalis.

CEIR 16(7):100 - SCALE INSECTS - CALIFORNIA - Apsidiotus hederae should read Aspidiotus hederae.

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 2/15; blacklight) - Agrotis ipsilon 1, Feltia subterranea 3, Pseudaletia unipuncta 2.

GEORGIA (Tifton, 2/9-16 temp. 41-67°F.; precip. 2.0 in.;blacklight) Heliothis virescens 0, H. zea 0, Manduca quinquemaculata 0, M. sexta 0.

SOUTH CAROLINA (Charleston 2/7-13 temp. 25-72°F.; precip. 0.35 in.; blacklight) P. unipuncta 1, Spodoptera frugiperda 0, Prodenia ornithogalli 1, A. ipsilon 1, F. subterranea 7, Peridroma saucia 1, H. virescens 0, H. zea 0, M. sexta 0, M. quinquemaculata 0, Trichoplusia ni 0.

TEXAS (Brownsville, 2/5-11 temp. 40-76°F.; precip. trace 2 blacklight) A. ipsilon 8, F. subterranea 30, H. zea 6, Prodenia ornithogalli 2, Pseudaletia unipuncta 52, Peridroma saucia 9. (Brownsville, 2/12-18 temp. 45-69°F.; precip. 0.39 in.; 2 blacklight) A. ipsilon 31, F. subterranea 39, H. zea 12, Prodenia ornithogalli 6, Pseudaletia unipuncta 93, Peridromia saucia 34.

INSECT DETECTION

A CADDISFLY (Cheumatopsyche analis) - HAWAII - Seven adults recovered from mosquito light traps on Oahu. Det. by D. G. Denning. This is new State record. (Beardsley). (p. 125).

AN ASTEIID FLY (Loewimyia n. sp.) - HAWAII - Two specimens collected by J. W. Beardsley at Barbers Point, Oahu, December 29, 1965. Det. by D E. Hardy as undescribed species. Confirmed by C. F. Sabrosky. This is new State record. (Hardy). (p. 125).

A PRODOXID MOTH (Tetegicula sp.) - HAWAII - Six larvae found boring in seed pods of Yucca sp. from Hawaii destined for California on May 31, 1965, by T. Abear and J. Graffam. Det. by D. M. Weisman. This is a new State record. (Shiroma). (p. 125).

ARMORED SCALES - FLORIDA - Diaspis boisduvalii infested windmill palm in Baker County (Collins, Jan. 1); Comstockiella sabalis damaged Sabal plametto palms in Polk County (Schmidt, Jan. 4); Aspidiotus spinosus infested leaves of Ruscus aculeatus in Manatee County, (Bickner, Jan. 3). These are new county records. (Fla. Coop. Sur.). (p. 120, 121).

A THRIPS (Baileyothrips arizonensis) - CALIFORNIA - Light on Euphorbia sp. in Glamis, Imperial County. First record for county. (Cal. Coop. Rpt.). (p. 121).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Found for first time in Heard County. (PPC South. Reg., Jan. Rpt.). (p. 123).

A SNAIL (Rumina decollata) - CALIFORNIA - Locally heavy in Costa Mesa, Orange County. This is new county record. Infestations also known in Riverside and Los Angeles Counties. (Cal. Coop. Rpt.).

HAWAII INSECT REPORT

Cereal and Forage Insects - CORN PLANTHOPPER (Peregrinus maidis) light on young corn in backyard gardens and commercial farms in Kula, Waikapu, Wailuku, Waihee and Waiehu, Maui. (Miyahira).

Truck Crop Insects - A STINK BUG (Thyanta accera) light on weeds in Hickam Air Force Base, Oahu, and on weeds and backyard crops in Ewa, Oahu. (Au). A LONG-HORN GRASSHOPPER (Conocephalus saltator) abundant in home gardens in Makaweli, Kauai. (Au). CHINESE ROSE BEETLE (Adoretus sinicus) caused light foliar damage to beans in several localities on Maui. (Miyahira). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) very light on bean and tomato plantings from Waikapu to Waihee, Maui; moderate to heavy on beans and eggplants in Waianae, Oahu; heavy on beans in Waipahu, Oahu. (Miyahira, Au). SPOTTED GARDEN SLUG (Limax maximus) heavy at 3,500 feet elevation on Maui. Controls applied. (Miyahira).

Forest, Ornamental and Shade Tree Insects - AN ARMORED SCALE (Lepidosaphes tuberculata) light to moderate on Cymbidium spp. (orchids) in Glenwood, Hawaii Island; also reported from Volcano area on Cymbidium spp. (Yoshioka, Shiroma). BLACK THREAD SCALE (Ischnaspis longirostris) collected from leaves of Prosopis pallida (mesquite) in Puako, Hawaii Island. This is new host and island record. Det. by J. W. Beardsley. (Davis). FULLER ROSE BEETLE (Pantomorus godmani) caused moderate foliar damage to Eucalyptus spp. near Puu Opae and Makaha Ridge (elevation 1,200-1,800 feet) on island of Kauai. (Au). CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) well under control in most areas. Adults per infested Ficus retusa leaf averaged .02-5 on Maui, .05-9 on Hawaii Island, and .05-12 on Oahu. (Davis).

Beneficial Insects - A HISPID BEETLE (Uroplata girardi) recovered in Kipahoehoe Forest Reserve, Hawaii Island; first released in April 1965 to aid in control of lantana. Larval mines on lantana foliage numerous in Kau, Hawaii Island; adults released in this locality for first time October 22, 1965. This beetle introduced from Brazil in 1961. (Harley).

New State of Hawaii Insect Records - A CADDISFLY (Cheumatopsyche analis) - Seven adults recovered from mosquito light traps in Oahu. Det. by D. G. Denning. (Beardsley).

AN ASTEIID FLY (Loewimyia n. sp.) - Two specimens collected by J. W. Beardsley, at Barber's Point, Oahu, December 29, 1965. Det. by D. E. Hardy, as undescribed species. Confirmed by C. F Sabrosky. (Hardy).

A PRODOXID MOTH (Tetegicula sp.) - Six larvae found boring in seed pods of Yucca sp. from Hawaii destined to California on May 31, 1965, by T. Abear and J. Graffam. Det. by D. M. Wiesman. (Shiroma).

Preparation of Notes for Cooperative Economic Insect Report

Requests have been received relative to the type of information desired for the Cooperative Economic Insect Report and suggestions made for revision in the format.

The report will be reorganized on a principal crop basis. This will simplify present format and make the material more accessible and useful. It is hoped this approach will also stimulate greater participation by pointing out lack of reporting on individual crop problems. Efforts will be made to evaluate and present the information in ways to make it more useful in insect control.

Forecasting statements will be developed wherever field reports support such action. Reporters are encouraged to include this vitally important information in their notes. Emphasis of the Cooperative Economic Insect Report will be on the important insect problems of a regional nature, notes on routine insect occurrence will be kept to a minimum. Routine notes submitted on common insects will be added to the National insect files as warranted, however.

The following guidelines are suggested for preparation of notes. It is realized that all of the information outlined will not be available in each situation, but give the following information when possible.

1. Common (if available) and scientific name of species involved. Stages of insect involved. (If a taxonomic problem exists, it should be noted).

2. Location (definite, recognized area within state, such as region, county or town), date, name of observer or reporter. If note is for period other than current reporting period, give date of observation.

3. Host involved, scope and extent of infestation in number of counties, acres, trees, animals, etc. Also stage of host.

4. Quantitative evaluation of infestation according to recognized survey methods. Where such methods are not available, give numerical data such as number per linear foot, per plant, per sweep or per animal. These data should be based on a representative sampling. An adjectival rating should be accompanied by a numerical rating.

5. Estimation of extent of injury or damage.

6. Comparisons with previous infestations, outlook or predictions for future infestations, unusual influences.

7. Status of natural or applied control.

8. When reporting new State, United States, or North America records, include the above information insofar as applicable, as well as name of taxonomist making determination.

Examples of notes including these data are as follows:

EUROPEAN RED MITE (Panonychus ulmi) - Egg populations have reached point where protective sprays are warranted in 10 percent of apple orchards in Knox County. Counts on June 30 showed 0 to 4.8 live mites per leaf and 0 to 37.6 eggs per leaf. Further increase and spread expected with continued favorable weather. (Jackson, July 2).

EUROPEAN CORN BORER (Ostrinia nubilalis) - Oviposition and hatch practically complete in central counties. Fifty egg masses per 100 stalks in northwest area. In southern counties, all corn 35 inches or taller, 70 to 100 percent infested with 2 to 22 larvae per stalk. Larvae from first to third instar. (Smith).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 115)

CEREAL AND FORAGE INSECTS (continued)

ALFALFA, CLOVER, SWEETCLOVER AND VETCH INSECTS

Highlights:

ALFALFA WEEVIL was again the most important pest of alfalfa in the Nation as it was in 1964. Although it was not reported as new in any State, its range was extended into 109 new counties in 11 States already known to be infested. Damage by this pest ranged from light to heavy in many areas, especially to first and second cuttings of alfalfa, and some dramatic increases in infestations were reported. Control of alfalfa was hindered by the removal of certain chlorinated hydrocarbons with long residuals from spray programs. Economic damage to alfalfa was reported for the first time in Kansas and Indiana. CORN EARWORM was the primary pest of legumes in Arkansas and some damage was reported in Oklahoma and New Mexico, and VARIEGATED CUTWORM, FALL ARMYWORM and GREEN CLOVERWORM caused some damage to alfalfa and clovers. SPOTTED ALFALFA APHID populations were generally lower than in 1964, with little serious damage reported. PEA APHID caused some severe losses to alfalfa in Oregon, populations required treatments in some areas of the Nation and were lower than last year in other areas. THREE-CORNERED ALFALFA HOPPER caused moderate girdling of alfalfa in Arizona and infested this crop over many areas of Texas. POTATO LEAFHOPPER was exceptionally heavy in alfalfa in Vermont, above normal with conspicuous injury in Maryland, and yellowing was evident on this crop in many areas.

ALFALFA WEEVIL (Hypera postica) extended its range in WASHINGTON during 1965 when it was reported from Walla Walla County for the first time. In OREGON, damage was severe to first cuttings of hay in Klamath, Lake, Baker, Crook and Wallowa Counties, and populations were higher in all areas of the State than in 1964. Due to the late spring and consequently late cutting of first crop, damage was much heavier this year in these counties than in 1964. Alfalfa weevil was more of a problem than previous years in CALIFORNIA and was present on alfalfa from February through September. This pest was found for the first time in Butte and Glenn Counties. Alfalfa weevil hatch was uneven in NEVADA, as it was in 1964, resulting in variable and extended larval infestations. Peak larval populations in excess of 200 per sweep and damage occurred in early June in central counties and late June in northern counties. Larval damage was so severe in one Lyon County field that treatment was necessary in mid-April. Larvae, pupae and adults were present in the Hiko area of Lincoln County in October when light damage to alfalfa was apparent. Increased damage resulted in many fields when adverse weather delayed treatments. Damage estimates in loss of tonnage and quality varied 10-25 percent for first and/or second-crop hay. Alfalfa weevil caused extensive and severe damage to first and second-crop alfalfa in UTAH. Large acreages were treated before harvest or as stubble immediately after first-crop harvest. Damage to the second crop was more general this year than usual and growth in untreated fields was often retarded as much as 4-8 weeks. Crop loss in Utah in 1965 often approached or equaled an average of one cutting of alfalfa.

Alfalfa weevil appeared to be more widespread and infestations heavier in alfalfa in Bernalillo and Sandoval Counties, NEW MEXICO, than in past years. Infestations ranged light to heavy in Rio Arriba, Santa Fe and San Juan Counties. This weevil was the major cause of losses to alfalfa in COLORADO which ranged 4-20 percent in various parts of the State. Weather conditions during summer months were conducive to several generations. In northeast Colorado, alfalfa yields were reduced

by 4-15 percent as result of infestations of this weevil and several other alfalfa pests, and H. postica was present on alfalfa in southeastern sections at various economic levels. Losses to alfalfa averaged 3-4 percent in western Colorado, being as high as 8-10 percent in some sections. Most of this loss was attributed to alfalfa weevil. This curculionid was again the most damaging crop pest in WYOMING. Damage to alfalfa was comparable to that noted during 1964 in that regrowth of second crop was most severely damaged in most areas of the State. Adults were first noted in northern Wyoming on April 20 and larvae first found in late May. Larvae increased steadily until late June when an average of 2,850 per 100 sweeps was found in the Big Horn Basin area. Adults first appeared in southern Wyoming on May 28 and larvae were first found in early June. Larval damage was not so severe in the southern area as counts ranged 600-1,450 per 100 sweeps during the most damaging period.

Alfalfa weevil adults averaged 3 per 10 sweeps in alfalfa near Golva, NORTH DAKOTA, which was the first record for Golden Valley County. This weevil increased dramatically in the Black Hills area of SOUTH DAKOTA in 1965. Adults ranged 20-40 per 100 sweeps in Shannon and Fall River Counties the first of May and increased to 75-135 per 100 sweeps 5 weeks later in Lawrence County. At this same time in 1964 adults averaged fewer than 5 per 100 sweeps. Second and third instars ranged up to 155 per 100 sweeps in alfalfa 8-18 inches high by the first of June. Haying was underway in late May and high larval counts in June caused concern for second crop. Severe damage had occurred in unmowed first-crop alfalfa in July where counts had risen to 2,500 second to fifth instars per 100 sweeps. Subsequent development and adult movement from alfalfa markedly reduced counts to 5 adults per 100 sweeps by mid-August. Low numbers of larvae were still present even in mid-September, when counts of 3 per 100 sweeps were found in alfalfa in Pennington, Meade and Lawrence Counties. Control was hindered by the removal of chlorinated hydrocarbons from registration for use against alfalfa weevil. Research on use of short-term insecticides was then increased. Bathyplectes curculionis (an ichneumon wasp) contributed to larval control in the Black Hills area. No newly infested areas were found in South Dakota during 1965. Alfalfa weevil caused some light damage to alfalfa in Keith County, NEBRASKA, and was found for the first time in Hitchcock, Furnas and Dawson Counties. H. postica caused economic damage for the first time in KANSAS during 1965 early in the summer in Finney County.

Alfalfa weevil was found for the first time in 7 counties in ARKANSAS, placing it past the middle of the State in its westward movement. Larvae were active as early as February 15 following 2 warm weeks in the northeast. Eggs and all larval stages were present in the area in late March. No adults of H. postica were found in fall surveys. Alfalfa weevil is widespread in ALABAMA. Damage to alfalfa from 1960 to 1963 resulted in considerable reduction in planted acreage; damage during 1964 and 1965 was heavy to this crop except where good control practices were followed. Infestations in GEORGIA during the first half of 1965 were much more severe than during the 1964 season. Damage to alfalfa in the Piedmont of SOUTH CAROLINA was not so severe as in 1964. Generally, growers applied recommended spring controls in 1965, whereas many did not do so the previous year because of the transition from fall to spring treatment. Egg laying began early in November in South Carolina, a little earlier than usual. There are prospects for high populations in the State during the 1966 season.

First alfalfa weevil larvae of the season in MISSOURI were observed in Pemiscot County March 18. Economic damage to alfalfa occurred only in the delta area and only in a few fields where counts ranged up to 100 per 10 sweeps. Chemical controls were used in the State for the first time in 1965, and this weevil was found for the first time in Ste. Genevieve, Osage, Maries, Phelps, Christian, Douglas, Taney and Ozark Counties. Alfalfa weevil was first noted during the 1965 season in ILLINOIS on April 5 in the southern section, when mating was common, eggs were being laid and a few first instars were present. Adults varied 0-6 and larvae 0-400 per 100 sweeps by April 12-15, with light feeding injury observed on terminal growth of up to 62 percent of stems in Hardin County. Counts per 100 sweeps in alfalfa April 26-29 varied 0-2 adults and 0-800 larvae in the southwest and 0-30 adults and 1-4,500 larvae in southeast section. Up to 85 percent of

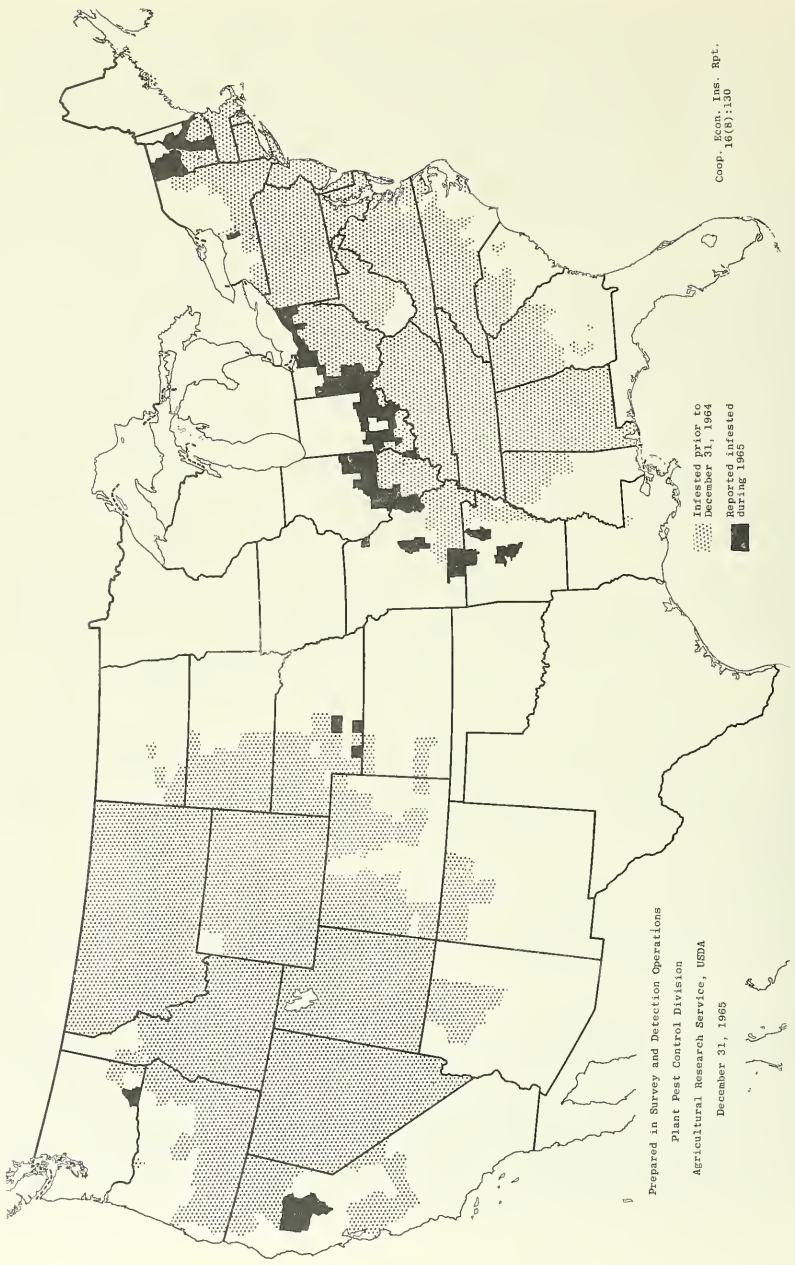
stems showed terminal feeding in Hardin County. Many larvae pupated and a few adults had emerged during this period. Adults varied 0-16 and larvae 0-5,400 per 100 sweeps of alfalfa in the southern third of Illinois May 3-6, but by May 17-20 populations declined rapidly as alfalfa was being cut for hay, thus exposing larvae and pupae to the hot sun. Larvae ranged 0-9 per 100 sweeps in second growth alfalfa in the southern area June 1-10 but no damage was noted. Some adults were killed by fungus and the last larva of the season was found July 25. Although present throughout the season, adults were rather scarce in August and September. Alfalfa weevil was found for the first time in 18 counties of Illinois during 1965.

Alfalfa weevil reached economic proportions for the first time since being found in INDIANA in 1964, with heaviest numbers occurring in Harrison County. Of the 26 counties found infested during 1965, infestations were of economic importance only in Floyd County. Adults ranged 1-10 per 100 sweeps during the spring in newly infested counties, and trace numbers were present from mid-June to the end of the season in Indiana. Several surveys were conducted in MICHIGAN but no alfalfa weevil infestations were found. This weevil was found for the first time in 29 OHIO counties during the year, with only the 11 counties in the northwest corner of the State not known to have this pest present. Young larvae were present in alfalfa by mid-March and damage was reported from many southern counties by mid-April. Reports of heavy infestations were numerous until first cutting or through June. Mass migrations into various other crops occurred in many areas where populations were high. Damage was less severe to second and third cuttings; however, many fields in the southeast section were damaged beyond recovery or completely destroyed. Adults were less numerous through the summer but became more common through the fall, with a few remaining active on warm days as late as December 15. From late March to mid-June, when larvae were feeding, economic infestations were reported in alfalfa in about 35 southern and eastern counties.

Alfalfa weevil was again the most important pest of alfalfa in VIRGINIA, causing considerable concern on first and second cuttings. Infestations were noted earlier than usual in the mountain counties. First larvae of the season in MARYLAND appeared in early April and thereafter caused moderate to heavy injury to unprotected first-growth alfalfa in most sections. Adults and larvae retarded second growth of alfalfa in many fields in central Maryland during late June. Larvae were present and feeding on alfalfa in most areas of DELAWARE by April with heavy injury in some fields as early as April 17. By May, damage was unusually heavy in many fields. Injury to first cuttings of alfalfa was very high in untreated fields and in some fields one application was not sufficient to give control. Alfalfa weevil was extremely damaging to first and second cuttings of alfalfa throughout NEW JERSEY, with as much as 20-40 percent of the total yearly production lost in many areas. Alfalfa weevil continued to be the most serious crop pest in PENNSYLVANIA. In addition to injuring established alfalfa, damage was severe to new spring seedings. After first cutting of alfalfa, migrating adults infested milk houses and homes.

Alfalfa weevil was heavy in RHODE ISLAND in late May and early June where alfalfa was grown this year. First overwintered adults in MASSACHUSETTS were observed in duff April 21, but very few viable overwintering eggs were found. First-generation adults emerged by June 5. First damage was observed May 14 and increased until populations declined in mid-June. Parasites greatly reduced larval numbers late in the season. Very few adults were present in fields in the fall and oviposition was not extensive. Alfalfa weevil represented 99 percent of all beetles and 85 percent of all insects collected on alfalfa in Massachusetts during the 1965 season. Alfalfa weevil continued to advance northward in VERMONT into Franklin County on the west side of the State. Only the 3 most northeastern counties are not known to be infested. Damage to alfalfa was not as great as expected, although as much as 50 percent injury occurred in some fields in the Benson area. The distribution of alfalfa weevil in NEW HAMPSHIRE was extended to all except Carroll and Coos Counties. This insect was readily found in most alfalfa but commercial damage has not yet become significant in New Hampshire.

Distribution of Alfalfa Weevil
(Hypera postica)



CLOVER LEAF WEEVIL (Hypera punctata) was of some significance on forage legumes in OHIO, and populations were low in ILLINOIS, with very little damage. An estimated 4,123 acres were treated in the latter State. Populations were very light in central NEBRASKA and some damage to legumes was observed in MISSOURI. Clover leaf weevil caused some damage in OKLAHOMA and injured crimson and white clovers in ALABAMA. Also in Alabama, LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) damaged crimson and white clovers, being the predominant pest of white clover, with CLOVER HEAD WEEVIL (H. meles) the major pest of crimson clover.

Heavy populations of a WEEVIL (Hypera brunneipennis) caused moderate to heavy damage on alfalfa in Yuma County and areas of Maricopa and Pinal Counties, ARIZONA. Peak populations occurred in late February through mid-April, and although parasites were helpful, chemical controls were necessary in many fields. This weevil damaged alfalfa in Imperial, San Bernardino, Riverside, San Diego and Ventura Counties, CALIFORNIA, and Tulare County was included as the northern limit of this pest in the State during 1965.

CLOVER ROOT CURCULIO (Sitona hispidula) adults were unusually abundant in alfalfa during the spring in New Castle County, DELAWARE. SWEETCLOVER WEEVIL (Sitona cylindricollis) and Sitona scissifrons were light and caused no noticeable economic damage in NEBRASKA.

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) was reported for the first time in NEVADA during the 1965 season, where it was collected in Nye, Lincoln and Clark Counties.

MARGINED BLISTER BEETLE (Epicauta pestifera) and BLACK BLISTER BEETLE (E. pennsylvanica) were of some significance on forage crops in OHIO. Black Blister beetle populations built up slightly in the summer but no damage was reported. A STRIPED BLISTER BEETLE(Epicauta sp.)and ASH-GRAY BLISTER BEETLE (E. fabricii) damaged some legumes in MISSOURI. Blister beetles were of minor concern in ARKANSAS, with the usual spot infestations reported. During early July, Epicauta sp. became numerous in alfalfa in a few locations in northwest Arkansas. Blister beetles appeared in alfalfa in OKLAHOMA in late May but were generally light through August. Moderate to heavy numbers were present in some fields in northeastern Oklahoma during September.

CLOVER STEM BORER (Languria mozardi) was of some significance on forage in OHIO. Adults of a WIREWORM (Ctenicera signaticollis) averaged 15 per 100 sweeps in a clover-alfalfa mixture and 45 per 100 sweeps in a field of alfalfa in Monroe County, ILLINOIS, on May 4. This was a new county record, C. signaticollis having been known previously only from Pope and Jackson Counties. VETCH BRUCHID (Bruchus brachialis) occurred in most all vetch-growing areas of TEXAS, with damage varying light to heavy.

Various LEPIDOPTERA were of some concern on leguminous crops across the Nation. CORN EARWORM (Heliothis zea), as usual, infested a wide range of crops in ARKANSAS and was the primary insect pest in the State. First moths appeared in the southeast on March 29, and first eggs were reported on crimson clover in the southern area April 6. Deposition was high until late April, then declined. Cumulative egg numbers reached 360,000 per acre on crimson clover in southern Arkansas. First pupation occurred May 15 and adults emerged June 5. Moths from first-generation larvae averaged 2,415 per acre. Corn earworm larvae were active in early April in OKLAHOMA and light to moderate numbers damaged alfalfa during May and June. Numbers were moderate on corn and alfalfa in much of the State by late July. Larvae of this noctuid were common in alfalfa in NEW MEXICO where they caused minor damage.

GREEN CLOVERWORM (Plathypena scabra) was common on alfalfa and clover in DELAWARE during mid-June. Larvae were first observed on alfalfa in southern ILLINOIS on April 29, but populations were low throughout the season and no damage was observed. Green cloverworm populations were light on alfalfa from late April to late August in OKLAHOMA, with heavy numbers present in a few areas in mid-September. This noctuid damaged alfalfa in Brazos and Burleson Counties,TEXAS, and

crimson and white clovers in ALABAMA.

VARIEGATED CUTWORM (Peridroma saucia) was fairly widespread on clover and alfalfa in the southern half of ILLINOIS, but populations were generally low. An estimated 2,353 acres were treated. This pest damaged legumes in MISSOURI and moderate numbers damaged some alfalfa in southeast and central NEBRASKA in June and July. Variegated cutworm damaged alfalfa in southeast KANSAS early in the summer, but did not develop beyond this and was not extensive the rest of the year. There was some loss to alfalfa in COLORADO from this pest. In TEXAS, damage to vetch was considerably lighter than in 1964; however, heavy damage did occur in some local areas of the north central sections of the State. Variegated cutworm caused considerable damage to alfalfa plantings in CALIFORNIA.

FALL ARMYWORM (Spodoptera frugiperda) was light on alfalfa throughout VIRGINIA. The pest was more numerous than usual early in the summer in KANSAS, but populations did not continue and there was little damage to alfalfa in the fall. A spot infestation of YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) was observed on alfalfa in northwest ARKANSAS on July 17, when larvae averaged 100 per 100 sweeps. WESTERN YELLOW-STRIPED ARMYWORM (P. praefica) caused moderate damage to alfalfa in Josephine County, OREGON. FORAGE LOOPER (Caenurgina erechtea) was present in very low numbers on forage crops in KANSAS and caused little damage.

ARMY CUTWORM (Chorizagrotis auxiliaris) caused some damage to forage crops in OKLAHOMA, and populations ranged light to moderate during the spring in KANSAS with highest numbers present in the western half of the State. This pest, in conjunction with an early drought, resulted in noticeable kill of alfalfa in some western area fields. Light trap collections during the fall indicated a very minor moth flight and few problems are expected in Kansas in the spring of 1966. Army cutworm was locally moderate during April and May in NEBRASKA, with some damage occurring to alfalfa in central and southwestern areas. Populations were generally lower in the State than usual. Army cutworm caused some losses to alfalfa in COLORADO.

ALFALFA LOOPER (Autographa californica) larvae were present in unusually large numbers during mid-June in alfalfa in the Big Horn Basin area of WYOMING. Counts ranged 75-90 per 100 sweeps with slight to moderate damage noted in more heavily infested fields. Alfalfa looper heavily infested late cuttings of alfalfa in Klamath County, OREGON.

ALFALFA WEBWORM (Loxostege commixtalis) was heavier than during 1964 in Howard County, NEBRASKA, where moderate populations caused general, light damage to alfalfa. GARDEN WEBWORM (L. similalis) was very abundant and damaging to alfalfa during the early summer in KANSAS, but populations declined and little additional damage was reported. Garden webworm caused some damage to legumes in MISSOURI, and was of little importance in ARKANSAS, where a few noneconomic infestations occurred on alfalfa. Infestations of Loxostege spp. were heavy on alfalfa in central and south central OKLAHOMA during May, then decreased and remained light until mid-June. Moderate to heavy numbers damaged alfalfa in all but northwest and Prairie Hills areas of Oklahoma from late June to early October.

ALFALFA CATERPILLAR (Colias eurytheme) was more prevalent on alfalfa in CALIFORNIA than usual, but was of only minor importance on this crop in NEW MEXICO. Light populations caused very little damage to legumes in NEBRASKA, and light numbers were present in most areas of OKLAHOMA from early May to early November. Alfalfa caterpillar caused some damage to alfalfa in ALABAMA.

SPOTTED ALFALFA APHID (Therioaphis maculata) began building up in alfalfa in Eddy and Lea Counties, NEW MEXICO, in January, causing some damage, especially to seedling alfalfa. During the cool spring months effective control was very difficult to obtain in Chaves and Eddy Counties. This aphid was only a minor problem in New Mexico during the summer months. Generally light infestations of spotted alfalfa aphid appeared in alfalfa during the spring in Yuma, Maricopa, Pinal and Graham Counties, ARIZONA, and occasional heavy increases in the Yuma Mesa and

Chandler areas required controls. Heavy, late fall populations occurred in Graham, Cochise, Maricopa and Yuma Counties. Spotted alfalfa aphid was not present in northeastern COLORADO until late fall. In the southeastern part of the State, this pest was present at various economic levels. This aphid was responsible for much of the losses to alfalfa in this part of Colorado, ranging from negligible to 15 percent. Spotted alfalfa aphid, found for the first time in WYOMING in October 1964, was not observed during 1965 until early August in the State. It was reported for the first time this year in Laramie and Platte Counties, with counts averaging 18-40 per 100 sweeps in infested areas. Sexual forms were found for the second year in these areas. Spotted alfalfa aphid was not observed in MONTANA this season.

Spotted alfalfa aphid populations were again below normal in southern and northern counties of NEVADA, but treatments were needed or applied in some central counties in the fall. Populations were generally light over CALIFORNIA, with a few locally medium to heavy infestations observed. In OREGON, only small numbers were noted on alfalfa in Umatilla County in mid-August.

Spotted alfalfa aphid populations in TEXAS were similar to those of 1963 and 1964, with little significant damage. Light populations were present in overwintering alfalfa in most areas of OKLAHOMA during January but cold weather kept numbers low until late April. Numbers increased slowly from May to July. Counts were heavy in some areas of the State during July and August but never more than moderate in other areas. During September, October and November, numbers decreased, but increased again in some areas in December. The highest counts of the season in Oklahoma occurred in the northwest during mid-December. Spotted alfalfa aphid was in general, lighter in ARKANSAS than in 1964, except for relatively high numbers in a dry area in the eastern part of the State in midsummer. Numbers were generally lower in alfalfa over MISSOURI than in 1964 also, with damage to this crop being generally light over the State. Counts averaged 100-500 per 10 sweeps during the season. Spotted alfalfa aphid reached only minor economic levels during the summer in KANSAS. These populations continued into the fall and controls were applied in a few areas. Numbers were high during the spring in southern and central NEBRASKA, but dropped later in the year. Counts up to 15 per sweep developed in the southwest area in late summer but decreased in October. In November, populations of 25 per sweep developed in the eastern area with 50 percent of individuals being oviparous females. Little economic damage to alfalfa occurred in Nebraska. Spotted alfalfa aphid was found for the first time in 9 counties in SOUTH DAKOTA, indicating it now ranges completely across the southern portion of the State. Usual populations averaged 2-4 per sweep, although the highest count of up to 50 per 100 sweeps was recorded in Fall River County. In mid-July, numbers were sufficient on alfalfa underplanted in wheat in Kingsbury County to cause honeydew to be easily visible. The last observation of this aphid this season was made the third week of October, with up to 25 aphids, including sexuals, per 100 sweeps present. No controls were necessary in South Dakota in 1965.

Spotted alfalfa aphid eggs hatched April 22 near Brodhead, WISCONSIN, about a week later than 1964; winged forms were first noted May 7. Populations remained low, except for a brief period of rapid increase in July. Numbers decreased greatly the first week of September and continued into October. Late in October and early in November, a slight increase was noted. Egg laying forms were low in numbers late in the season and some eggs were laid. As no males were noted at this time, there is some question regarding the viability of eggs laid in Wisconsin this season. This aphid was first noted in southern ILLINOIS April 12. It was widespread but populations were low and no damage was observed except in the southern section where some discoloration of alfalfa and dropping of leaves were apparent. Highest populations in Illinois ranged 0-60 per sweep in alfalfa in the southern section July 26-29. Spotted alfalfa aphid was reported for the first time in MICHIGAN during 1965. Specimens collected September 7 in Shiawassee County were determined by L. M. Russell. Subsequent surveys revealed very low populations in a large number of Lower Peninsula counties south of Gratiot and Tuscola Counties. This aphid is not expected to cause major economic losses

to alfalfa in Michigan. Spotted alfalfa aphid was present in noneconomic numbers in OHIO, with a few winged forms being collected in 2 counties in the southwestern corner of the State.

PEA APHID (Acyrthosiphon pisum) was active on seed alfalfa by mid-March in Walla Walla County, WASHINGTON. By mid-May, alates comprised 10 percent of the population. Counts increased 10-fold in late May, and averaged up to 1,000 per sweep in early August. Losses to second and third cuttings of alfalfa hay were severe in eastern Washington. In OREGON, however, populations were variable with no serious damage reported from any area. Pea aphid was present on alfalfa in CALIFORNIA, but was not the problem of former years.

Pea aphid infestations in NEVADA were above the 1963 and 1964 levels, with treatments necessary or applied in southern counties in April and in central and northern counties from April to early September. Parasites and predators increased to high levels in many areas, exerting some control. Some seedling stands of alfalfa were killed in Churchill County in April. In Lyon County, heavy populations caused 5-10 percent loss of second crop hay. Loss estimates varied from negligible to 10 percent in different counties of Nevada. Pea aphid infestations were predominantly light to medium on alfalfa in ARIZONA, with peak populations during early May causing little damage to early spring alfalfa. A late buildup during October and November caused light damage to alfalfa in Cochise, Graham and Maricopa Counties. Heavy populations caused extensive damage to alfalfa in most southeastern counties of NEW MEXICO and in Valencia County, where it seriously retarded growth of first and second cuttings and killed out a number of seedling stands. Abnormally heavy infestations were found in alfalfa in Lea, Chaves, Eddy and Roosevelt Counties. Populations and damage were more severe during 1965 than during the past 5 years in New Mexico.

In COLORADO, pea aphid ranged light to medium with few controls needed on alfalfa in Mesa, Montrose, Delta and Garfield Counties. This aphid was partly responsible for the 4-15 percent reduction in alfalfa yield in northeastern Colorado, and was present at various economic levels in the southeastern area. Populations in WYOMING were slightly lower than those of 1964. First specimens were taken in late April in the southern area and in early May in northern areas. Numbers increased until mid-July, when counts per 100 sweeps averaged 3,250 in the north and 2,300 in the south. Some controls were undertaken in Laramie County where high populations damaged regrowth of second-cutting alfalfa. Pea aphid was reported on alfalfa in many areas of MONTANA and was observed on sweetclover, vetch and some garden plants.

Pea aphid was generally noneconomic in NORTH DAKOTA, but counts of 200-300 per 10 sweeps were noted in alfalfa at a few locations. Populations were extremely high on alfalfa throughout the season in MINNESOTA, with growing conditions ideal and no damage apparent. Predators and parasites were slow to multiply and were generally unsuccessful in reducing populations in the State. Pea aphid was the most common aphid species in alfalfa in SOUTH DAKOTA throughout the growing season. First collections were made May 7 in the western area when up to 1,000 per 100 sweeps were taken. Final samplings on October 22 in Hutchinson County yielded 250 per 100 sweeps. Highest counts on alfalfa were recorded in a Moody County field in late May when more than 10,000 per 100 sweeps were taken. By the first of July counts had dropped to 50 per 100 sweeps in central and south central South Dakota. In Kingsbury County in mid-July, populations had increased to over 6,000 per 100 sweeps. Recommended controls were applied when economic infestations occurred.

Pea aphid populations ranged low to moderate throughout 1965 in NEBRASKA, with little economic damage noted. Populations were about the same as the previous year. The pest was quite plentiful in some areas of KANSAS, but did not warrant controls. Counts ranged up to 3,000 or more per 10 sweeps in alfalfa during May and June, with statewide infestations being approximately the same as in 1964. Damage to alfalfa did not reach economic proportions in MISSOURI in 1965.

Pea aphid was present on overwintering alfalfa but counts remained low until March in OKLAHOMA. Rapid increases during early April resulted in counts of 3,000-6,000 per 10 sweeps being common on alfalfa in many areas by early May. Heavy rains and early cutting reduced numbers in mid-May; decreases continued until infestations disappeared in early July. Fall activity began in mid-September and light numbers were present the remainder of the year. Pea aphid was relatively low in ARKANSAS early in 1965, but increased to 100 per sweep by April. Counts varied from very low to high over the State in the fall, but parasites reduced numbers in November. Pea aphid caused the usual widespread damage to legumes, particularly vetch, in east, north central and central TEXAS.

Very high pea aphid populations in WISCONSIN alfalfa early in the season prompted some controls. Damage to alfalfa was noted in several areas very early; however, natural controls caused a population collapse in late May, thus preventing further buildup on alfalfa. Eggs hatched April 13 and production of nymphs began about May 7. Winged individuals appeared the second week of May. Cool temperatures favored population increases and aphids were sufficiently numerous in scattered fields to cause some damage to alfalfa plants. Populations in alfalfa collapsed the last week of May, probably due to parasitism by Praon pequodorum (a braconid wasp). Populations remained low until early October when numbers again began to increase. Pea aphid populations were rather low but very erratic throughout ILLINOIS. Parasites and disease were common, being heavy in some fields and absent in others. The heaviest population found in any field was 600 per sweep April 26-29. Controls were applied to an estimated 10,640 acres in Illinois.

Pea aphid was first observed on alfalfa in southwestern INDIANA by April 10. Counts ranged 9-35 per sweep in the southern quarter of the State by April 24 and increased to scattered economic densities of up to 80 per sweep by May 1. Pea aphid was light in southern two-thirds of the State during May, 5-20 per sweep by May 23. Dry conditions existed throughout Indiana until mid-July, and populations increased as substantial rains and cool temperatures prompted lush growth of alfalfa during August and September. Counts ranged 10-40 per sweep throughout Indiana from mid-August through mid-September. Pea aphid numbers in MICHIGAN varied greatly among fields, depending largely upon growth stage of alfalfa, time of year and numbers of natural enemies present. Succulent, fast growing-stands generally harbored largest colonies. During early May, braconid wasps probably kept pea aphid numbers relatively low; fewer than 30 aphids per 10 sweeps were taken in Monroe and Livingston Counties. During September, lady beetles and damsel bugs were important in keeping pea aphid counts on alfalfa down to an average of 166 per 10 sweeps in 24 fields sampled in 8 Lower Peninsula counties. Pea aphid began to increase in OHIO the latter half of April. Random high populations remained through September, declining in October. Maximum counts approached 150 per sweep. Residual populations were noted in Ohio in mid-November. Activity was statewide, with specific occurrences observed in some 20 counties. Individual populations varied greatly according to harvest of alfalfa, parasitism and predation.

Pea aphid infested alfalfa throughout VIRGINIA but caused little damage, and numbers on this crop in MARYLAND were again below normal with populations over 100 per sweep occurring only in isolated areas. This aphid was present in usual abundance wherever alfalfa was grown in RHODE ISLAND. Parasitized individuals were common. Pea aphid numbers were very low on alfalfa in MASSACHUSETTS in 1965, comprising only 3 percent of the total number of insects taken on this crop compared with 50 percent in 1964.

COWPEA APHID (Aphis craccivora) was general but light on burclover in Brazos County, TEXAS, and CLOVER APHID (Nearctaphis bakeri) was abundant in red clover seed fields in Grant County, WASHINGTON, by July.

MEADOW SPITTLEBUG (Philaenus spumarius) was slightly more abundant on alfalfa in MASSACHUSETTS than in 1964, but represented less than 1 percent of all insects on this crop. Stunting of plants occurred in some fields. This pest was common

throughout RHODE ISLAND from late May to midsummer, and was a problem on alfalfa and red clover in western and central sections of MARYLAND. Early stage nymphs were first noted in alfalfa in southern OHIO on April 13 and adults were collected May 21. Fields inspected during this period in 13 counties, mostly in southern half of the State, showed up to 70 percent of plants infested with 3 spittle masses per plant. In MICHIGAN, adults were emerging June 8 in Monroe County. Numbers were variable among fields with 8-70 per 10 sweeps noted in Ingham and Macomb County alfalfa July 6. By late September, counts averaged 6 per 10 sweeps in 24 fields of alfalfa in 8 Lower Peninsula counties.

Meadow spittlebug nymphs were unusually heavy in central and eastern portions of the southern quarter of INDIANA during May; 1-2 per alfalfa stem were present in many fields during mid-May. Adults ranged 8-12 per sweep during week ending June 4. By June 11, adults had dispersed in southernmost areas. Populations were generally light in central and northern Indiana, with 2-4 nymphs per 10 stems during late May. Adults averaged 2 per 10 stems by June 18, but ranged 40-80 per sweep in one area in extreme northeastern Indiana. Meadow spittlebug was extremely low in ILLINOIS. Results of the annual survey showed a State average of only 0.31 adults per sweep. About 4 or 5 counties in the northwest corner of the State had infestations ranging light to medium, while the remainder of Illinois was rated as noneconomic. Meadow spittlebug nymphs appeared early in May in southern WISCONSIN, with populations again highest in southwestern counties. As many as 16 nymphs per plant were reported but 1-2 per plant were normal. Adults appeared in mid-June. Nymphs were reported in Washburn County as late as mid-July, illustrating the variation of development between the more advanced southern areas and the northern areas of Wisconsin.

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) was moderate to heavy on alfalfa in ARIZONA during August and September, with moderate girdling apparent in Maricopa, Pinal and Yuma Counties. This pest infested alfalfa over many areas of TEXAS, and was generally light in alfalfa throughout the season in OKLAHOMA with high counts noted in early October. Three-cornered alfalfa hopper continued as a minor problem on alfalfa in ARKANSAS.

POTATO LEAFHOPPER (Empoasca fabae) was exceptionally heavy on alfalfa in VERMONT, and was above normal in MARYLAND, where it caused conspicuous injury to alfalfa in all sections most of the summer. Potato leafhopper was generally distributed on alfalfa throughout OHIO by mid-July but populations were generally low and damage was light. A light sampling of adults was taken from 6 fields of alfalfa in Monroe, Lenawee and Washtenaw Counties, MICHIGAN, on May 18. Seasonal levels were low enough that no major problems developed on alfalfa. Potato leafhopper was economically unimportant in the southern two-thirds of INDIANA. In the northern third of the State, however, economic infestations occurred from July 16 through July 30, when adults and nymphs ranged 8-16 per sweep and yellowing of alfalfa was evident throughout the area on second-growth alfalfa. First specimens were found on alfalfa in southern ILLINOIS on April 26 and the main flight into the State occurred about May 15. Adults ranged as high as 8-12 per sweep in some fields during late May and June. Light to moderate yellowing was evident on 7 percent of second-cutting alfalfa in the northwest district and on 22 percent of second cutting in central district. Yellowing of alfalfa was also reported in west and west-southwest districts. An estimated 18,500 acres of alfalfa were treated for control of this pest in Illinois. Potato leafhopper adults were observed in alfalfa the second week of May in WISCONSIN. Nymphs were noted the first of June and numbers increased until late June when adults began to appear. This pest was numerous in a few fields of alfalfa throughout the summer; nymphs and adults remained until the first week of November.

First potato leafhopper adults of the season were swept from alfalfa in southwest and west central MISSOURI about May 6; counts ranged up to 25 per 10 sweeps through June, July and August, with heavy yellowing observed in several fields over the State. Damage to alfalfa was not so heavy as in 1964, possibly because of the excellent growing conditions during 1965. Populations in NEBRASKA ranged 2-30 per 10 sweeps in alfalfa, about the same as in 1964. Light damage to alfalfa

occurred in some fields in central and southwest Nebraska.

RAPID PLANT BUG (Adelphocoris rapidus) nymphs were noted in alfalfa in WISCONSIN the second week of May, with ALFALFA PLANT BUG (A. lineolatus) and TARNISHED PLANT BUG (Lygus lineolaris) appearing a short time later. Nymphs and adults were common in nearly all fields in the State during the season, but the extent of crop damage was difficult to determine. Nymphs of alfalfa plant bug and rapid plant bug were first observed in southern ILLINOIS April 26 and adults May 17. Alfalfa plant bug nymphs reached peak abundance May 17-20 when counts ranged 60-2,200 per 100 sweeps and adults peaked July 26-29 with 10-300 per 100 sweeps in the southern half of the State. Rapid plant bug populations were generally low throughout the season. Both of these plant bugs damaged legumes in MISSOURI. In OHIO, rapid plant bug and alfalfa plant bug were of some significance. In MICHIGAN, nymphs and adults of FOUR-LINED PLANT BUG (Poecilocapsus lineatus) caused greater than usual injury to host plants in early July.

Alfalfa plant bug populations were unusually heavy on alfalfa throughout the growing season in southern INDIANA. Nymphs and adults ranged 8-18 per sweep the last 2 weeks of May. Populations reached 4-12 per sweep on July 9 and averaged 5-7 per sweep July 30. In northern areas of Indiana, populations were lighter with peak densities of 3-10 per sweep occurring the last 2 weeks of July. Alfalfa plant bug was below economic levels throughout the season in KANSAS and light populations during June and July caused little damage to alfalfa in eastern and central sections of NEBRASKA. Alfalfa plant bug nymphs and adults varied 30-600 per 100 sweeps in most alfalfa checked in eastern SOUTH DAKOTA in June.

Rapid plant bug, which has been scarce for several years in ARKANSAS, ranged 20-30 per 100 sweeps in alfalfa in that State in May. In ALABAMA, this pest caused some damage to crimson and white clovers during the year.

TARNISHED PLANT BUG (Lygus lineolaris) caused some damage to crimson clover and white clover in ALABAMA. The pest became active during mid-April in OKLAHOMA, but remained light through mid-June. Moderate to occasionally heavy counts occurred from late June to mid-August. Tarnished plant bug remained below economic levels throughout the season in KANSAS and NEBRASKA, but caused some damage to legumes in MISSOURI. Tarnished plant bug was low most of the season in ILLINOIS, with highest counts per 100 sweeps in any field of clover or alfalfa being 160 adults and 700 nymphs. This pest was first noted in OHIO this season on alfalfa in early April. Populations were relatively low and spotty, but continued through mid-November. Populations were somewhat below one per sweep in 18 counties over the State, although many fields had one or more per sweep. Nymphs in one area of Ohio approached 20 per sweep.

Alfalfa plant bug was again widespread and prevalent in alfalfa and clover in MARYLAND, especially those fields in or near bloom. Plant bugs were somewhat less abundant in MASSACHUSETTS alfalfa in 1965, comprising 4 percent of total insect numbers, compared with 5 percent in 1964. Tarnished plant bug was the most abundant species, comprising 61 percent of all plant bugs collected.

LYGUS BUGS (Lygus spp.) infested alfalfa in most areas of TEXAS, but degree of infestation varied considerably. Infestations were heavy on seed alfalfa in ARIZONA during May, June and July. Infestations of lygus bugs were normal on seed alfalfa in NEVADA where held below economic levels by insecticide treatments; however, severe damage did occur in Lincoln County. These pests were very widespread and damaging to all forage crops in CALIFORNIA. Winter adults of Lygus hesperus and L. elisus were active on alfalfa in WASHINGTON by mid-April, with first and second instars prevalent by April 30. An adult "fly-in" increased populations of these pests in seed fields in Washington up to 25-fold during late June.

Populations of CRICKETS in western third of MINNESOTA were higher than in 1964. Most infestations occurred along roadsides with some movement into alfalfa late in the season. No damage to crops was observed in Minnesota but some nuisance

infestations were reported in homes. These pests caused heavy feeding injury to reseeded crimson clover in grass sods in ALABAMA during September, October and November. WESTERN FLOWER THRIPS (Frankliniella occidentalis) was heavy in alfalfa in Esmeralda County, NEVADA, during July, and EUROPEAN EARWIG (Forficula auricularia) caused some damage to forage crops in CALIFORNIA during the 1965 season.

ALFALFA SEED CHALCID (Bruchophagus roddi) damaged alfalfa seed in Imperial County, CALIFORNIA, and in WASHINGTON, populations and damage were higher than in 1964, with an average seed infestation of 15 percent. Infestation of red clover seed by CLOVER SEED CHALCID (B. platyptera) has been increasing in Washington during recent years. In one area of Franklin County, where hay cutting was not taken, seed lots were up to 50 percent infested.

MITES were present and damaging to forage crops in CALIFORNIA, but due to cool weather these pests caused continuing damage rather than abrupt damage as in previous years with hot weather. SPIDER MITES (Tetranychus spp.) were moderate to heavy in alfalfa in Yuma, Maricopa, Pinal and Graham Counties, ARIZONA, with controls necessary in many fields.

BROWN WHEAT MITE (Petrobia latens) was below economic levels on alfalfa in NEVADA, but scattered, spotty populations damaged alfalfa in Dona Ana, Sierra, Lea, Eddy, Roosevelt and Curry Counties, NEW MEXICO, during the spring. CLOVER MITE (Bryobia praetiosa) was below economic levels on alfalfa in New Mexico. This pest was active in ARKANSAS in early April, but was not of economic importance.

SOYBEAN AND PEANUT INSECTS

Highlights:

CORN EARWORM was not the important pest of soybeans as it was in 1964. In spite of high moth populations in Delaware, larval damage to soybeans was very low. Heavy, local pod injury occurred in Maryland and only locally heavy infestations were present on soybeans and peanuts in Virginia. Corn earworm was much lighter on soybeans in Arkansas than last year, as was YELLOW-STRIPED ARMYWORM. CABBAGE LOOPER and VELVETBEAN CATERPILLAR were serious on soybeans in Alabama. POTATO LEAFHOPPER populations were high on soybeans in Delaware. GREEN STINK BUG populations were high in Kansas and damaging in several areas of Missouri. THRIPS were of concern on peanuts in Georgia, Texas and Oklahoma, and damaged soybeans on the Eastern Shore of Maryland.

CORN EARWORM (Heliothis zea) moths averaged 15 per night in blacklight traps the second week of August in DELAWARE and by late August through most of September averaged 90 per night. In spite of this very high population, there was little larval injury to soybeans as most growers planted early and the crop was not attractive for oviposition during peak flight periods. Corn earworm larvae caused heavy pod injury to late soybeans locally in Wicomico County, MARYLAND, but infestations on soybeans and peanuts in VIRGINIA were generally light throughout the season, with only a few locally heavy infestations reported late in August and in September. Larvae were first detected on soybeans in NORTH CAROLINA in middle and late August in 8 northeastern coastal counties. Most were very small at this time and only late-planted fields were damaged in other areas of the Coastal Plain, but no general infestations were noted in North Carolina. In ALABAMA, Heliothis spp. larvae were major pests of soybeans. Infestations of corn earworm on soybeans in ARKANSAS were much lighter than in 1964, with 24.9 percent of fields requiring treatment this year compared with 59 percent in 1964. Larvae of this noctuid were active in early April in OKLAHOMA and moderate numbers occurred on peanuts in much of the State by late July.

GREEN CLOVERWORM (Plathypena scabra) larvae averaged 30 per 100 sweeps on soybeans in most areas of DELAWARE by mid-August. Low numbers of larvae were present on

most soybeans in VIRGINIA. Infestations on soybeans in ARKANSAS ranged from low numbers to 50-60 per 30 feet of row. The pest was light on this crop in OKLAHOMA, and damaged soybeans in Ochiltree County, TEXAS. Green cloverworm was of minor importance on soybeans in ALABAMA.

FALL ARMYWORM (Spodoptera frugiperda) and BEET ARMYWORM (S. exigua) were also of minor significance on soybeans in ALABAMA this season. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) was lighter on soybeans in ARKANSAS in 1965 than in 1964.

CABBAGE LOOPER (Trichoplusia ni) was light on soybeans in ARKANSAS, caused locally heavy damage to soybeans in the Brazos River Bottom area of TEXAS, and was a major pest of this crop in ALABAMA. A LOOPER (Pseudoplusia includens) was prevalent and damaging on soybeans in ALABAMA, and VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) became serious on this crop in southern areas of the State. GRANULATE CUTWORM (Feltia subterranea) caused light to heavy feeding injury on peanut foliage in GEORGIA during the first half of 1965 season.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) heavily damaged a field of soybeans in south central VIRGINIA during August. Numbers were light to moderate on peanuts in southern GEORGIA the first 6 months of 1965, but the pest caused heavy local damage to peanuts over a wide area of TEXAS this season. RED-NECKED PEANUTWORM (Stegasta bosqueella) damaged peanuts in OKLAHOMA from mid-July to mid-October, with counts ranging up to 80 per 100 terminals in a few areas. Populations were more widespread and caused more damage to peanut foliage in the Portales area of Roosevelt County, NEW MEXICO, than in 1964. If this pest continues to build up and begins appearing earlier each year, it could cause severe damage to peanut-growing industry in Roosevelt County.

BEAN LEAF BEETLE (Cerotoma trifurcata) caused some damage in OKLAHOMA, and populations were relatively low in ARKANSAS, where highest numbers on soybeans averaged about 50 per 30 feet of row. Bean leaf beetle was of some significance on soybeans in ALABAMA, and light to heavy populations were detected on soybeans in VIRGINIA. In OHIO, bean leaf beetle caused some leaf damage to soybeans in Fayette County during early August.

MEXICAN BEAN BEETLE (Epilachna varivestis) caused striking but spotty foliage injury to soybeans in several fields in Worcester County, MARYLAND, and caused light to moderate defoliation of this crop in VIRGINIA. Mexican bean beetle was of some importance on soybeans in ALABAMA.

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) was light on peanuts in VIRGINIA, causing only slight damage.

CLOVER HEAD WEEVIL (Hypera meles) infested soybeans during late June in Auglaize County, OHIO. CLOVER ROOT CURCULIO (Sitona hispidula) was of some significance on forage crops in Ohio, infesting soybeans in Mercer and Hardin Counties during late June and early July. A JAPANESE WEEVIL (Calomycterus setarius) was collected for the first time in MISSOURI during the 1965 season, being detected in Atchison County after defoliating a 5-acre area in a field of soybeans.

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) continued to be a minor problem on soybeans in ARKANSAS. Generally light populations were present on soybeans throughout the growing season in OKLAHOMA with counts being highest in early October. Three-cornered alfalfa hopper infested soybeans over many areas of TEXAS.

Population levels of POTATO LEAFHOPPER (Empoasca fabae) on soybeans were markedly high in DELAWARE this season compared with those present in 1964.

GREEN STINK BUG (Acrosternum hilare) was present in high numbers on soybeans this fall in KANSAS, particularly in Crawford County. Green stink bug caused light to moderate damage to soybeans in southeastern, southwestern and west central MISSOURI. Highest numbers were observed in August and early September, and

damage to soybeans in the State was slightly heavier than in 1964. Green stink bug was light on soybeans in some areas of VIRGINIA.

THRIPS populations were moderate to heavy on peanuts in OKLAHOMA from early June to mid-July, and caused light to heavy widespread damage to peanuts in TEXAS. Thrips were heavy on peanuts throughout the peanut-growing area of GEORGIA during the first 6 months of the year. Several species of thrips caused widespread streaking and stunting of seedling and young soybeans on the Eastern Shore of MARYLAND.

STRAWBERRY SPIDER MITE (Tetranychus atlanticus) was a problem in several fields of soybeans in Dorchester and Wicomico Counties, MARYLAND, during August. Unspecified SPIDER MITES were moderately severe on soybeans in Cumberland County, NEW JERSEY, and caused light to heavy, widespread damage to peanuts in TEXAS.

SUNFLOWER AND FLAX INSECTS

BANDED SUNFLOWER MOTH (Phalonia hospes) larvae averaged 2-3 per head in sunflowers during late August in NORTH DAKOTA. Counts in volunteer sunflower at Fargo, Cass County, reached 12 per head. Larvae of PAINTED LADY (Vanessa cardui) averaged 2-3 per sunflower plant in some east central areas of South Dakota, with severe defoliation evident in several fields. BLACK CUTWORM (Agrotis ipsilon) infested sunflowers in CALIFORNIA.

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) was low in flax in NORTH DAKOTA, with only trace numbers encountered in most instances.

Weather continued from page 118.

central New York where moisture from the Great Lakes was sufficient to produce 4 to 8 inches of new snow with some localities receiving more than 12 inches. Drifting caused the closing of several major highways on Sunday. It was a dry, sunny, and cool week in the Southwest and southern Great Plains where no measurable precipitation was recorded. This was the first time in 4 weeks that no rain fell over such a widespread area in that part of the Country. The Pacific Northwest also recorded abnormally light precipitation.

SNOW COVER: The return of cold weather east of the Rockies found little or no snow as far north as the central Great Plains, the Corn Belt, and the southern Appalachians. Snow cover continued moderate to heavy over the northern Great Plains, the Great Lakes area, and the Northeast. (Summary supplied by U. S. Weather Bureau).

UNITED STATES DEPARTMENT OF AGRICULTURE
Hyattsville, Maryland 20782

VOL. 16 No. 9 March 4, 1966

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 March 4, 1966 Number 9

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

BEET LEAFHOPPER movement to cultivated districts of southwestern California, central Arizona, southern Nevada and Utah is expected to be light to moderate if present conditions prevail. Movement to eastern Utah and western Colorado expected to be light to moderate with possible heavy concentration due to local topography. (p. 143).

SOUTHERN PINE BEETLE infestations continue extremely heavy in Alabama, Mississippi, North Carolina and Tennessee; decreased somewhat in Georgia, Louisiana, South Carolina, Texas and Virginia. (p. 145).

Present MOSQUITO numbers, with continued rainfall, indicate potential for large spring and summer populations in California; conditions appear favorable for increase in mosquito breeding in Florida. (p. 146).

CITRUS BLACKFLY found on property 11 kilometers north of Hidalgo, Tamaulipas; northernmost known infestation in northeastern Mexico. (p. 148).

GYPSY MOTH infestation near Manahawkin, New Jersey, is southernmost point species taken in United States. (p. 148).

Detection

Look for FIG WAX SCALE Now. (p. 149).

New State records included a TRIGONALID WASP (Poecilogonalos costalis) from Louisiana, an ARMORED SCALE (Melanaspis bromeliae) and a CHLOROPID FLY (Oscinella formosa) from Hawaii, and GRAPE ERINEUM MITE (Eriophyes vitis) from Ohio. New island and county records from Hawaii and Kansas. (pp. 148, 149).

Special Reports

A Supplemental Character for Separating Adult Trogoderma granarium Everts, Khapra Beetle, from Other Nearctic Trogoderma Species. (Key). (p. 147).

Change in Scientific Name of Protoparce (p. 150).

Summary of Insect Conditions in the United States - 1965

Fruit Insects. (pp. 152-166).

Reports in this issue are for week ending February 25 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING FEBRUARY 28

HIGHLIGHTS: (1) Continued wet South and East. (2) Warming trend North.

TEMPERATURE: The cold Arctic air that had settled over most of the Nation the previous week was still entrenched at the beginning of the period. However, the much below normal temperatures in the northern States from the eastern Rockies to the Atlantic modified by midweek resulting in near normal weekly averages. The warming trend was less pronounced in the South. Temperatures averaged much below normal in most of Texas and Louisiana; the lower Rio Grande Valley was especially cold. The Southeast was also slightly below normal. Most of the West experienced little temperature change from the previous week with average temperatures mostly near normal.

Weather continued on page 166.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE*

Beet Leafhopper Survey in Desert Areas of Southern Utah and Nevada, Southwestern California and Central Arizona

Surveys were conducted for beet leafhopper (Circulifer tenellus) during the period January 31 to February 12, 1966. If present conditions prevail, spring movement from the southern desert breeding grounds to cultivated districts of southwestern California, central Arizona, southern Nevada and Utah, is expected to be light to moderate. Movement to eastern Utah and western Colorado is expected to be light to moderate with possible heavy leafhopper concentration due to local topography. The southern desert breeding grounds, comprising approximately 50,000 square miles of potential weed host area, were considered to have an estimated 65 percent host plant cover at time of survey. Above-average fall and winter rains resulted in widespread weed host development over much of the breeding grounds in Arizona and California and in some areas of southern Nevada and Utah. Storms during the second week of February should help sustain annual weed hosts and may cause additional plants to germinate. The average number of beet leafhoppers found in areas where host plants were present was 0.013 per square foot in 1966 compared with 0.04 in 1965, 0.15 in 1964, 0.02 in 1963, 0.12 in 1962 and 0.02 in 1961. It is estimated from data collected during this survey that overwintering beet leafhoppers in the southern desert breeding grounds total 6.5 billion in 1966 compared with 12 billion in 1965, 112 billion in 1964, 7.7 billion in 1963, 6.1 billion in 1962 and 6.3 billion in 1961. This report covers only the beet leafhopper situation in the area surveyed. It does not have reference to populations that may have overwintered in local breeding areas in northern and eastern Utah or in western Colorado or western Nevada. (PPC, West. Reg.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARKANSAS - Counts very low in northeast area; numbers below those in January before occurrence of extended cold weather. Current low temperatures apparently preventing buildup. (Ark. Ins. Sur.).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - FLORIDA - Increasing on rye at Gainesville, Alachua County; 100 sweeps yielded 50 specimens, mostly nymphs. (Mead). ARKANSAS - Numbers very low in northeast; below January levels before extended cold weather. Current low temperatures apparently preventing buildup. (Ark. Ins. Sur.).

LEAFHOPPERS - FLORIDA - Increased slowly on rye during past 2 weeks at Gainesville, Alachua County; 100 sweeps yielded 13 adult Macrosteles fascifrons, 8 adults of Balclutha spp. and 14 adults of mixture of Graminella spp., Deltocephalus spp., Stirellus spp. and Exitianus spp. (Mead).

THRIPS (Frankliniella spp.) - FLORIDA - Increasing on rye at Gainesville, Alachua County; 100 sweeps yielded 30 specimens. (Mead).

TURF, PASTURES, RANGELAND

BERMUDAGRASS MITE (Aceria neocynodonis) - CALIFORNIA - Heavy on Bermuda grass locally in Huntington Beach, Orange County. (Cal. Coop. Rpt.).

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*NOTE: This section was entitled "Special Migratory Insects" in last week's report. On further consideration with respect to the various species that will be included in this special section, a broader heading has been selected. This will permit inclusion of insects which are not considered migratory in a strict sense.

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - None found in Dona Ana County alfalfa. (Nielsen, Elson). Very light on alfalfa in Artesia area, Eddy County, (Kloepfer), and Belen area, Valencia County, (Heninger). ARKANSAS - Very low in northeast; below January levels before extended cold weather. Current low temperatures apparently preventing buildup. (Ark. Ins. Sur.).

LEAFHOPPERS - FLORIDA - Generally light on blue lupine at Gainesville, Alachua County; 100 sweeps yielded 3 Cuerna costalis adults, 3 Macrosteles fascifrons adults and 1 Aceratagallia sanguinolenta adult. (Mead).

CLOVER LEAF WEEVIL (Hypera punctata) - CALIFORNIA - Larvae light in alfalfa in Fresno, and Hypera sp. light on same host locally in Firebaugh, Fresno County. (Cal. Coop. Rpt.).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (Myzus persicae) - FLORIDA - Developing on potatoes at Homestead, Dade County. Det. by D. O. Wolfenbarger. (Fla. Coop. Sur.).

COLE CROPS

GREEN PEACH APHID (Myzus persicae) - CALIFORNIA - Light on 2 acres of rutabagas in Chino, San Bernardino County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

OYSTERSHELL SCALE (Lepidosaphes ulmi) - CALIFORNIA - This species and Aspidiotus perniciosus medium on abandoned pear trees locally in Lompoc, Santa Barbara County. (Cal. Coop. Rpt.).

For Other Fruit Insects, see Federal-State Plant Protection Programs, page 148.

CITRUS

SCALE INSECTS - FLORIDA - Inspection of 200,000 sweet orange plants revealed Adonidiella citrina on 75 percent, Ceroplastes floridensis on 30 percent, and Saissetia oleae on 10 percent in citrus nursery in Dundee, Polk County. (Eisenschenk).

SPIDER MITES - FLORIDA - General with severe damage on more than 11,000 sweet orange plants in nursery at Lake Alfred, Polk County. Entire nursery showing effects of Panonychus citri and Eutetranychus banksi; leaves becoming gray and dropping. (Eisenschenk).

For Other Citrus Insects, see Federal-State Plant Protection Programs, page 148.

GENERAL VEGETABLES

THRIPS - NEW MEXICO - Very light in southern Dana Ana County; averaged less than 1 per 3 onion plants in fields checked. (Elson, Nielsen).

ORNAMENTALS

A TWIG BORER (Amphicerus cornutus) - CALIFORNIA - Adults medium on Pittosporum tobira shrubs in Sepulveda, Los Angeles County. (Cal. Coop. Rpt.).

A SAP BEETLE (Conotelus punctatus) - FLORIDA - Infesting gardenia blossoms at Homestead, Dade County. Species ordinarily feeds on pollen, but some bud damage may occur. (Daigle).

PINE WEBWORM (Tetralopha robustella) - FLORIDA - Larvae infested 10 percent of 1,500 plants of sand pine (Pinus clausa) at nursery in Plant City, Hillsborough County; controls requested. (Herrmann).

COOLEY SPRUCE GALL APHID (Chermes cooleyi)- MARYLAND - A problem on Norway spruce in 2 large Christmas tree plantations near Accident, Garrett County. (U. Md., Ent. Dept.).

MELON APHID (Aphis gossypii) - CALIFORNIA - Heavy populations developing on crassula nursery stock in Santa Clara, Santa Clara County. (Cal. Coop. Rpt.).

SOFT SCALES - CALIFORNIA - Saissetia oleae and Parlatoria oleae locally heavy on cotoneaster in Marysville, Yuba County. Saissetia sp. locally heavy on Natalplum (Carissa grandiflora) in Brawley, Imperial County. This species cannot be separated from S. oleae, but infests different hosts. Parasite preference also indicates difference. Saissetia sp. normally infests fig in desert areas. (Cal. Coop. Rpt.).

AN ARMORED SCALE (Pseudaonidia paeoniae) - ALABAMA - Species infesting greenhouse camellias in Jefferson County, as reported in CEIR 16(8):120, definitely identified as this species by H. H. Tippins. (McQueen).

A MEALYBUG (Pseudococcus obscurus) - CALIFORNIA - Heavy on callalily bulb nursery stock in retail sales establishment in Redding, Shasta County. (Cal. Coop. Rpt.).

A PSYLLID (Psylla uncatoides) - CALIFORNIA - Adults heavy on shrubs in Burlingame, San Mateo County; heavy on window sills and invading residence. Normally does not invade dwellings; widespread and serious pest of albizia and acacia. (Cal. Coop. Rpt.).

A PRIVET BUD MITE (Aculus ligustri) - FLORIDA - Heavy on leaves of 50 Ligustrum sinense plants of 100 inspected in Tampa, Hillsborough County. Leaf drop moderate to heavy. (Hale).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - Extremely heavy infestations continue in ALABAMA, MISSISSIPPI, NORTH CAROLINA and TENNESSEE. Populations in GEORGIA, LOUISIANA, SOUTH CAROLINA, TEXAS and VIRGINIA, while still active, decreased to some extent. Controls being carried out in all known infested areas by salvage supplemented by chemical methods. (South. For. Pest. Rptr., Feb.).

BALSAM WOOLLY APHID (Chermes piceae) - Surveys of spruce-fir type in NORTH CAROLINA and TENNESSEE detected several previously unknown infestations on Roan Mountain. (South. For. Pest. Rptr., Feb.).

SEED AND CONE INSECTS - Systematic observations of populations on selected areas in ARKANSAS, LOUISIANA, NORTH CAROLINA and SOUTH CAROLINA indicate populations were relatively low in 1965. Most common insects infesting seeds and cones were Dioryctria sp., Laspeyresia sp. and a coneworm, probably Eucosma sp. (South. For. Pest. Rptr., Feb.).

For Other Forest and Shade Tree Insects, see Federal-State Plant Protection Programs, page 148.

MAN AND ANIMALS

MOSQUITOES - CALIFORNIA - Adults very active during daytime in many areas. In spite of below normal temperatures, overwintering populations became active during days when temperatures ranged 52-65° F. Irritation lower than normal for past year. With present numbers and continued rainfall high potential for large spring and summer populations exists. (Cal. Coop. Rpt.). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control during period February 19-25 contained Aedes sollicitans, Culex salinarius and Culiseta inornata. Light trap collections yielded Anopheles crucians, Culex salinarius and Culiseta inornata. Adult activity very low throughout parish. (Stokes). FLORIDA - Aedes spp. larvae taken in woodland pool at Gainesville, Alachua County. Not developed beyond second instar. Several other woodland pools and ditchwater sampled with negative results. Conditions seem right for increase in mosquito breeding. (Mead).

CATTLE GRUBS (Hypoderma spp.) - UTAH - Treatment applied to approximately 5,000 cattle for control of Hypoderma spp. in Sevier County since December 1965. (Rickenbach, Knowlton). MISSOURI - Grubs light in backs of cattle in northeastern area; ranged 0-12 and averaged about 1 per head. (Houser). ALABAMA - Maturing larvae of H. lineatum present in backs of cattle in central area. Some have cut holes through hide, emerged and ready for pupation. (Lee, Meadows, et al.).

CATTLE LICE - UTAH - Controls applied to approximately 20,000 cattle in Sevier County since December 1965. (Rickenbach, Knowlton). VIRGINIA - Linognathus vituli found on faces of dairy calves in Fluvanna County. (Isakson, Watts, Feb. 18). NORTH CAROLINA - Several species ranged light to moderate on 5 of 7 small groups of dairy and beef animals examined in Vance County. (Bowden, Mount). ALABAMA - Bovicola bovis light in widely scattered cattle herds in Covington County. (Pike).

HOUSEHOLDS AND STRUCTURES

BOXELDER BUG (Leptocoris trivittatus) - MISSOURI - Active in homes on warm days in central district. (Houser).

COCKROACHES - ALABAMA - Blattella germanica and Periplaneta americana reported in 3 homes in Opelika-Auburn area, Lee County. Indications are that enormous numbers present in all parts of these homes. Controls somewhat difficult. (Lee, Turner, et al.).

CLOVER MITE (Bryobia praetiosa) - ALASKA - Observed on window panes of houses at Kodiak Naval Station, Kodiak Island, February 10. (Gillespie).

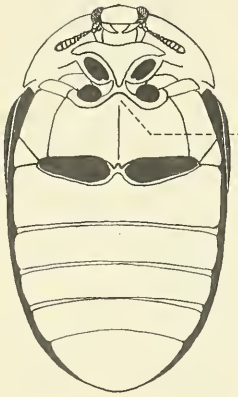
POWDER-POST BEETLES (Lyctus spp.) - CALIFORNIA - Adults of L. caricollis medium in Philippine-mahogany paneling in Salinas, Monterey County. (N. F. McCalley). Adults of L. brunneus heavy in oak flooring in Mill Valley, Marin County. (Cal. Coop. Rpt.).

STORED PRODUCTS

GREEN PEACH APHID (Myzus persicae) - NEW YORK - Found breeding on sprouts of potatoes stored in home cellar at Orient, Long Island, by R. Latham. Sprouts about 2 inches long. All stages present. Potatoes dug in October 1965; vines had been dead for some time. (Leonard).

A SUPPLEMENTAL CHARACTER FOR SEPARATING ADULT TROGODERMA GRANARIUM EVERTS, KHAPRA BEETLE, FROM OTHER NEARCTIC TROGODERMA SPECIES

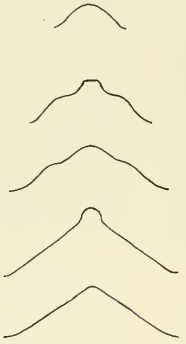
by
George T. Okumura
Bureau of Entomology
California Department of Agriculture, Sacramento, California



Trogoderma granarium ♀ (ventral view)

Anteromedial metasternal process rounded (A) (rarely rudimentary nipple present)...Trogoderma granarium Everts

Anteromedial metasternal process with nipple (B) or occasionally pyramidal (C)....Trogoderma angustum (Solier)
Trogoderma anthrenoides (Sharp)
Trogoderma ballfinchae Beal
Trogoderma fasciferum Blatchley
Trogoderma glabrum (Herbst)
Trogoderma grassmani Beal
Trogoderma inclusum LeConte
Trogoderma okumurai Beal
Trogoderma ornatum (Say)
Trogoderma parabile Beal
Trogoderma paralia Beal
Trogoderma primum (Jayne)
Trogoderma simplex Jayne
Trogoderma sinistrum Fall
Trogoderma sternale Jayne
Trogoderma teukton Beal



Of the foreign species only Trogoderma versicolor (Creutzer), T. boganense Armstrong, T. irroratum Reitter were available for examination. All have nipples.

The assistance of Dr. John M. Kingsolver, Entomology Research Division, A.R.S., U.S.D.A., is gratefully acknowledged. This investigation was supported in part by Stored-Product Insects Research Branch, Market Quality Research Division, A.R.S., U.S.D.A., Cooperative Agreement No. 12-14-100-8389(51).

Coop. Econ. Ins. Rpt. 16(9):147

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - NEW HAMPSHIRE - Approximately 150 winter webs found in apple tree at Canterbury; additional infestation found at Mont Vernon at site infested in 1964. Site negative in 1965. (PPC East. Reg., Jan. Rpt.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Biological Control Zone - Inspections of 5,828 trees on 4 properties in Municipios of Guemez, Hidalgo and Padilla, Tamaulipas, revealed 319 lightly infested trees. Property 11 km. north of Hidalgo is northernmost known infestation in northeastern Mexico. Total of 100,200 specimens of Prospaltella opulenta (a eulophid) collected in grove to be sprayed. Parasite releases needed on 45 properties in States of Aguascalientes, Campeche, Chiapas, Guanajuato, Guerrero, Tamaulipas, Veracruz and Territorio sur de Baja California; collections possible in States of Colima, Sinaloa and Veracruz. Heavy, new infestation on 20,000 trees between Cuauhtemoc and Comitan, Chiapas; infested trees to be defoliated and leaves burned. Chemical Control Zone - Total of 66,972 trees, including 23,800 nursery plants, inspected in States of Nuevo Leon, Tamaulipas, Sonora and Baja California negative. (PPC Mex. Reg., Jan. Rpt.).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Survey by grid system disclosed additional 17 city blocks infested in City of Fresno, Fresno County. Treatment in previously known infested area completed; treatment now being applied to new area, about 1.5 miles northwest of treated area. (Cal. Coop. Rpt.).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Still common in southeast; adults collected in McPhail traps in Palm Beach, Dade and Broward Counties. Larvae more often taken from calamondin than any other fruit, but some taken from fruits of guava, loquat, kumquat and Ceylon-gooseberry (Dovyalis hebecarpa) in Dade and Palm Beach Counties. (Fla. Coop. Sur., Feb. 16-18).

GYPSY MOTH (Porthetria dispar) - NEW YORK - Infestation of 4 egg masses and numerous pupal cases found in Orleans Township, Jefferson County, about 5 miles northeast of Stone Mills. Five egg masses found at intersection of Clearview Expressway and Union Turnpike in Queens County; one egg mass found there in 1965. PENNSYLVANIA - Egg masses found in 5 of 18 trapsites where males recovered in 1965; scouting completed in 1,000-foot radius at each location. NEW JERSEY - Scouting of positive trapsites revealed following infestations: Stafford and Union Townships, Ocean County; New Shrewsbury Township, Monmouth County; Montague Township, Sussex County; Franklin Township, Somerset County; and Franklin Township, Warren County. Infestation near Manahawkin, Stafford Township, southernmost point species taken in United States. (PPC East. Reg., Jan. Rpt.).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - Inspections of 710 traps on 685 properties in Baja California and 50 traps on 25 properties in Sonora negative. (PPC Mex. Reg., Jan. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - ALABAMA - Larvae and pupae observed in field of turnips in Covington County. (Pike).

INSECT DETECTION

A TRIGONALID WASP (Poecilogonalos costalis) - LOUISIANA - Single female reared from loblolly pine bolt in association with southern pine beetle (Dendroctonus frontalis) rearing in Allen Parish. Collected by N. A. Overgaard May 28, 1965. Det. by L. M. Walkley. (Newsom). This is first record for Louisiana. The only known host of P. costalis is a noctuid, Phisophila turbulenta. (PPC).

AN ARMORED SCALE (Melanaspis bromeliae) - HAWAII - Recently found established on pineapples on Oahu and Kauai. This is new State record. (Beardsley). (p. 151).

A CHLOROPID FLY (Oscinella formosa) - HAWAII - Specimens collected from coconut flowers in June 1964 determined this species by C. W. Sabrosky. This is new State record. (Hardy). (p. 151).

AN ASTEIID FLY (Loewimyia n. sp.) - HAWAII - Three additional specimens collected on Oahu. (Hardy). Reported for first time from State in CEIR 16(8):125. These are additional locality records. (p. 151).

GRAPE ERINEUM MITE (Eriophyes vitis) - OHIO - Taken on hybrid grape in Hamilton County, July 23, 1965, for new State record. (p. 163).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - KANSAS - Reported as new county record in Sedgwick County in annual summary. (p. 153).

AN ANTHRIBID BEETLE (Araeocorynus cumingi) - HAWAII - Collection of adults confirms establishment on Hawaii Island. This is new island record. (Higa, Shiroma). (p. 151).

A EURYTOMID WASP (Eurytoma latrodecti) - HAWAII - Parasitized 4 egg masses of Latrodectus mactans on Hawaii Island. This is new island record. (Bianchi). (p. 151).

BLACK THREAD SCALE (Ischnaspis longirostris) - HAWAII - Collected from leaves of Prosopis pallida (mesquite) in Puako, Hawaii Island. This is new host and island record. (Davis). (See CEIR 16(8):125).

Look for Fig Wax Scale Now

Look for a large grayish-white scale, about 4.5 mm. long by 3.4 mm. wide, on branches and twigs of fig, including ornamental Ficus. The adult female is globose with a distinct angular form, marked by eight rectangular plates around the body. Star-shaped larvae will be found along veins on upper side of leaves.

Ceroplastes rusci (L.) is a widespread pest of fig in many parts of the world. Also feeds on camellia, hawthorn, holly, citrus, olive and many other plants. This scale is distributed in Lebanon, Libya, Tunisia, Turkey, Syria, Ethiopia, Iraq, Israel, Cyprus, Greece, Egypt, Jordan, Iran; widely distributed in Mediterranean area; also reported from other areas, but records difficult to confirm. It is not known to occur in the United States. Infestations are difficult to control. Damage occurs from deposits of honeydew and subsequent development of sooty molds and from feeding of second and third-stage females on branches. Heavily attacked trees become weakened and unproductive.

For more details see CEIR 10(38):886.

CORRECTIONS

CEIR 16(7):111 - Paragraph 3, line 1 - D. virgifera should read Diabrotica longicornis.

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 2/22; blacklight) Agrotis ipsilon 2, Feltia subterranea 7, Pseudaletia unipuncta 4.

GEORGIA (Tifton, 2/16-23; temp. 39-58°F.; precip. 1.25 in.; blacklight) Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

SOUTH CAROLINA (Charleston, 2/14-20; temp. 34-75°F.; precip. 1.83 in.; blacklight) P. unipuncta 1, Spodoptera frugiperda 0, Prodenia ornithogalli 0, A. ipsilon 3, Feltia subterranea 4, Peridroma saucia 0, H. zea 0, H. virescens 0, M. sexta 0, M. quinquemaculata 0, Estigmene acrea 0, Trichoplusia ni 0. (Charleston, 2/21-27; temp. 38-66°F.; precip. 2.03 in.; blacklight) P. unipuncta 0, S. frugiperda 0, P. ornithogalli 3, A. ipsilon 1, F. subterranea 5, P. saucia 0, H. zea 0, H. virescens 0, M. sexta 0, M. quinquemaculata 0, E. acrea 0, T. ni 0.

TEXAS (Brownsville, 2/19-25; temp. 36-72°F.; precip. 0.44 in.; 2 blacklight) A. ipsilon 3, F. subterranea 9, H. zea 5, Prodenia ornithogalli 2, Pseudaletia unipuncta 32, Peridroma saucia 44.

Change in Scientific Name of Protoparce

The following information is presented concerning Manduca [1807], Phlegethontius [1819] and Protoparce (1856). Manduca, with its type M. carolina Hbn., is the oldest name. Although this has been known for years, it was finally decided by the International Commission on Zoological Nomenclature that Hübner's "Samml. ex. Schmett." [1807] is binomial and in opinion 137, direction 4 (published October 1, 1954), this work was placed on the Official List of Works Approved as Available for Zoological Nomenclature. Until this question was resolved, Federal taxonomists were unwilling to make the change to Phlegethontius, an available name, but which, it was justifiably believed, would be replaced eventually by Manduca.

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HAWAII INSECT REPORT

Cereal and Forage Insects - A BILLBUG (Sphenophorus venatus vestitus) caused considerable damage to Bermuda grass lawns at hotel in Kawaihae, Hawaii Island. This constitutes first record on western side of Hawaii Island. (Bianchi).

Fruit Insects - A SCARAB (Protaetia fusca) moderate to heavy on mango flowers in Puako, Hawaii Island. (Yoshioka). COTTONY-CUSHION SCALE (Icerya purchasi) very light on citrus trees in Makawao, Maui; scattered on citrus in Honolulu, Hawaii. Larvae of VEDALIA (Rodolia cardinalis) observed feeding on scales in Honolulu, Oahu. (Miyahira, Nakao).

Truck Crop Insects - SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) light in Koloa, Waimea and Lawai, Kauai; nymphs moderate on various weeds and crops in Ewa and Honolulu, Oahu. (Au, Hironaka). MELON FLY (Dacus cucurbitae) population low on diversified crops in Kawaihau, Kauai, where most tomato and melon crops grown. (Au).

Forest, Ornamental and Shade Tree Insects - A twig-boring BARK BEETLE (Xylosandrus compactus) light on twigs of Vitex sp. in Kailua and Kaneohe, Oahu. (Davis). Sporadic outbreaks of SOUTHERN GREEN STINK BUG, mostly nymphs, noted on Asystasia coromandeliana in Kailua and Honolulu, Oahu. (Davis). SPOTTED GARDEN SLUG (Limax maxima) moderate to heavy among potted wedelia and strawberry plants in Makawao, Maui. (Miyahira). Adults of an ANTHRIBID BEETLE (Araeocorynus cumingi) heavy in pods of Canavalia microcarpa (Maunaloa) in Manoa, Oahu. Four live specimens found in Mucuna sp. seeds in Waiakea, Hawaii Island, by B. Hu and R. Kami confirms establishment of this weevil on Hawaii Island and constitutes first locality record for that island. (Higa, Shiroma).

Insects Affecting Man and Animals - Rainy weather resulted in large populations of a MOSQUITO (Aedes vexans nocturnus) on Kauai. Appears well established and widely distributed on north side of island; molesting horses. (Au).

Beneficial Insects - Adults of a CHRYSOMELID BEETLE (Chrysolina quadrigemina) and a GALL MIDGE (Zeuxidiplosis giardi) observed in good numbers on Hypericum perforatum (Klamath-weed) at Mt. Hualalai, elevation 6,800 feet, Hawaii Island. Since no larvae observed, beetles very likely from original release on June 8, 1965. Dry conditions prevailed throughout area. (Yoshioka). New girdling damage to Lantana by a CERAMBYCID BEETLE (Plagiohammus spinipennis) observed at Hookena, South Kona, Hawaii Island; 2 medium sized larvae noted in one stem. Beetle appears definitely established in this locality. (Yoshioka). A EURYTOMID WASP (Eurytoma latrodecti) parasitized 4 egg masses of Latrodectus mactans (black widow spider) in Mahukona area, Kohala District, Hawaii Island, January 17, 1966. This is new island record for this parasite. Previously recorded only from Oahu. (Bianchi).

New State of Hawaii Insect Records - AN ARMORED SCALE (Melanaspis bromeliae) recently found established on pineapples on Oahu and Kauai. First collected at Davis, California, in late November 1965 on Hawaiian-grown pineapples; det. by R. F. Wilkey. Subsequent examination of pineapple fruits and plants on Oahu, Kauai, Molokai, Maui and Lanai showed small numbers of this scale on fruits and plants on Oahu and Kauai only. (Beardsley).

A CHLOROPID FLY (Oscinella formosa) - Specimens collected from cocconut flowers and determined as Oscinella sp. in June 1964, now identified by C. W. Sabrosky as O. formosa. (Hardy).

An ASTEIID FLY (Loewimyia n. sp.) was reported as new to the State in CEIR 16(8): 125. Three additional specimens collected on Oahu; two by C. R. Joyce in Honolulu, November 8, 1965, and January 3, 1966; and one by J. W. Beardsley in Waipio November 24, 1965. (Hardy).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 140)

FRUIT INSECTS

POME FRUIT INSECTS

Highlights:

EUROPEAN RED MITE was a problem in commercial orchards in most of the Great Lakes States and in North Carolina and western Maryland. Several species of SPIDER MITES were troublesome in the West and Midwest. Several species of Lepidoptera were troublesome in poorly sprayed orchards; especially CODLING MOTH in New Mexico, Kansas, and Indiana, and APPLE-AND-THORN SKELETONIZER in the Pacific Northwest. Aphids were not troublesome, generally, except for WOOLLY APPLE APHID in Alabama. PEAR PSYLLA was troublesome on the West Coast. APPLE MAGGOT caused injury in some areas of the Northeast and Great Lakes States. PLUM CURCULIO caused heavy local damage in Maine.

EUROPEAN RED MITE (Panonychus ulmi) continued to be the number one fruit pest in MICHIGAN and more money is spent controlling this pest than any other arthropod that attacks fruit. The usual pattern of heavy infestations on certain apple varieties, notably Red Delicious, continued. Heavy infestations also occurred on other fruits. Populations were generally 3-4 weeks late in reaching high levels and problems in commercial orchards in the southwest peaked in early August rather than in July. In INDIANA, overwintering P. ulmi hatched at the normal time, when Red Delicious trees were showing pink, but early development was at least 2 weeks slower than normal. Summer populations were below those of the past 4-5 years with highest densities of 60 per leaf in poorly maintained orchards and 1-5 per leaf in better orchards by mid-July. In ILLINOIS, most apple growers obtained good control of European red mite early in the season; however, the long, warm fall allowed a long time for deposit of winter eggs. In OHIO, this mite continued a major pest on apples. Overwintering eggs hatched in early April and first summer eggs were found in mid-May. Economic populations did not build up until after mid-June. During July and August, scattered orchards had highs of over 100 per leaf and bronzing was common. First overwintering eggs were noted in mid-August; populations declined generally in September.

In NORTH CAROLINA, European red mite was the most difficult pest to control in commercial apple orchards in the mountains. In western MARYLAND, European red mite was a serious problem in many commercial apple orchards. Bronzing was evident and spraying was general. P. ulmi caused extensive bronzing of apple leaves throughout NEW JERSEY; but was slightly less abundant on apples in PENNSYLVANIA than in 1964. In MASSACHUSETTS, drought favored an increase of P. ulmi, but severe injury to apple foliage was restricted to a few orchards due to good control measures. In KANSAS, little injury occurred on apples in 1965 since P. ulmi does not normally become a problem.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was more numerous on apples than in recent years in PENNSYLVANIA. In INDIANA, SPIDER MITES did not approach economic levels until June, and then only in scattered locations. By August 6, populations of 14 per leaf were reported in isolated southern areas and in the northern section of Indiana damaging infestations were much more prevalent. In the fruit-growing areas of southwest MICHIGAN numbers of adults and nymphs remained low until relatively late in the season. In late August, spider mites averaged 8 per leaf on some apple trees in research plots in southwest Michigan, indicating a high population.

Spider mites caused some bronzing of the foliage of apples in most areas of

east and central KANSAS, but injury was not as severe as in 1964. Only slight bronzing occurred in northeast Kansas, but mites continued the number one fruit problem in the State. In COLORADO, spider mites were most serious pests to apple and pear growers. Most growers obtained control with normal spraying programs and the estimated loss was one percent or less.

In MARYLAND, spider mites were relatively light in commercial apple orchards in the Hancock area of Washington County. Tetranychus spp. were very widespread and troublesome on apples in ILLINOIS again in 1965. Tetranychus mcdanieli infested apples in San Bernardino County, CALIFORNIA. T. mcdanieli is becoming more damaging to pears in WASHINGTON, probably due to the use of chlorinated hydrocarbons for control of pear psylla (Psylla pyricola). T. mcdanieli populations were out of control on apples in the Wenatchee area, Chelan County, Washington, but were quickly reduced by a 1.7-inch rain on August 23. PEAR RUST MITE (Epitrimerus pyri) infested pears in El Dorado and Solano Counties, CALIFORNIA. In OREGON, E. pyri, T. urticae and YELLOW SPIDER MITE (Eotetranychus carpini borealis) were noted moving into developing pear buds in Jackson County March 13.

PEACH SILVER MITE (Aculus cornutus) populations in COLORADO were at a low level and were controlled with normal spray programs. PEAR LEAF BLISTER MITE (Eriophyes pyri) was light in all orchards in COLORADO where they were found and no significant loss occurred. In CALIFORNIA, local infestations of E. pyri occurred in Solano and Humboldt Counties. In WASHINGTON, pear leaf blister mite and pear rust mite were of little consequence because of good control programs.

CODLING MOTH (Carpocapsa pomonella) infestations in CALIFORNIA were normal in pears and apples. Moderate damage occurred on apples in fruit-growing areas of ARIZONA except where effective, repeated controls were used. Populations were below normal in Arizona during 1965. In NEW MEXICO, codling moth was probably the number one pest damaging apples and pears. Especially serious damage occurred in imporperly and untreated orchards in Lincoln, Santa Fe, Bernalillo, Sandoval and Rio Arriba Counties.

In KANSAS, apples in well sprayed orchards were exceptionally free of codling moth injury. However, apples in unsprayed orchards were 100 percent infested. Adults emerged in the Wathena area of Doniphan County, May 5-10. Large numbers of moths were taken in bait traps in an unsprayed orchard May 24, second generation moths appeared in bait traps June 29 and a partial third generation appeared in August. C. pomonella caused very little loss of commercial apples in INDIANA in 1965. Larvae and "stings" were a problem in orchards where cover sprays were missed or stretched too far. One small apple orchard near Vincennes, Knox County, Indiana, omitted controls and developed a 95-percent infestation. In VIRGINIA, codling moth was well controlled except for a few apple orchards which allowed some late activity between the end of the control program and harvest. Codling moth numbers were heavy in unsprayed apple orchards in most sections of MARYLAND. However, control was excellent in commercial orchards in the Hancock area of Washington County. ORIENTAL FRUIT MOTH (Grapholitha molesta) was well controlled and caused no material injury to apples in VIRGINIA.

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was not a problem in sprayed or unsprayed apple orchards in MARYLAND. In MICHIGAN, only a few commercial orchards were troubled by red-banded leaf roller during 1965. First-brood larvae caused some leaf injury in a few apple orchards in southwest Michigan and Kent County during late May. Second-brood larvae appeared in southwest area by July 21 but little injury resulted from this brood, although it has caused major problems several times in the past decade. In ILLINOIS, red-banded leaf roller was light in the spring but many orchards had some damage during the season and about 1-2 damaged apples per 100 at harvest. In KANSAS, A. velutinana caused little injury to apples in the Wathena area, Doniphan County, until late September when a few apples showed feeding injury. This species was found for the first time in Sedgwick County, feeding on foliage of young apple trees in two orchards near Wichita.

EASTERN TENT CATERPILLAR (Malacosoma americanum) eggs hatched in Newport, Penobscot County, MAINE, on May 9 and moderate to heavy infestations were found on apple and wild cherry in most areas of the State by late May. Larvae were moving to pupation sites by early June in most areas below Old Town, Penobscot County. Eastern tent caterpillar was more troublesome than usual in commercial orchards in NEW HAMPSHIRE. M. americanum infested apple in MONTANA at Sidney, Richland County; Lewistown, Fergus County; and Bozeman, Gallatin County.

VARIEGATED CUTWORM (Peridroma saucia) damaged apple nursery stock throughout much of WASHINGTON. GREEN FRUITWORM (Lithophane antennata) larvae were common in late May in some eastern MICHIGAN apple orchards. EYE-SPOTTED BUD MOTH (Spilonota ocellana) larvae injured new growth of apples during the latter half of May in several fruit areas of the State, in orchards where there was little or no treatment for insects. APPLE-AND-THORN SKELETONIZER (Anthophila pariana) caused severe damage to untreated apple trees throughout the Willamette Valley of OREGON during July, August and September. A. pariana severely damaged apple and crab apple in southwestern WASHINGTON. Leaf rolling and feeding injury by PALMERWORM (Dichomeris ligulella) larvae was widespread in Kent County, MICHIGAN, apple orchards during late May. YELLOW-NECKED CATERPILLAR (Dantana ministra) was about as troublesome as usual on apples in VIRGINIA and was well controlled. A local infestation of BROWN-TAIL MOTH (Nygmia phaeorrhoea) was eliminated from an apple orchard in Acton, York County, MAINE, in mid-May by a special spray application.

Various species of APHIDS were present in average abundance on apple trees in RHODE ISLAND, but they were no problem in commercial orchards. Aphids were of no significance in well managed apple orchards in MISSOURI. In VIRGINIA, APPLE APHID (Aphis pomi) was normally troublesome well into midseason, but apple growers generally maintained good control to prevent the spread of fire blight. Apple aphid nymphs were first observed on apple in the Madison area of WISCONSIN on May 6 and increased through June into early July. Some treatment was carried out, especially in Door County. In NEBRASKA, moderate to heavy populations caused some damage to apple trees in the southeastern area.

WOOLLY APPLE APHID (Eriosoma lanigerum) was fairly common on apple nursery stock in the mountains of NORTH CAROLINA, but its importance in commercial orchards has not been assessed. In ALABAMA, this species continues to be of major importance in apple orchards. Woolly apple aphid was numerous on 40-year-old Wealthy apple trees in one orchard near Wichita, KANSAS. Control of ROSY APPLE APHID (Dysaphis plantaginea) was generally excellent in sprayed apple orchards in MARYLAND, but one poorly sprayed orchard showed over 50 percent of fruit injured. In VIRGINIA, rosy apple aphid was easily and adequately controlled on apples. Rosy apple aphid was not so numerous in KANSAS as in 1964 and caused less damage to apples. APPLE GRAIN APHID (Rhopalosiphum fitchii) nymphs were noted in Wayne County, OHIO, in early April and populations built up in apple orchards generally, but declined after May. In KANSAS, adults and eggs of R. fitchii were plentiful on apple twigs early in the season.

SAN JOSE SCALE (Aspidiotus perniciosus) was a pest in one apple orchard near Hancock, Washington County, MARYLAND. In ILLINOIS, this pest was observed on fruit in several apple blocks. This species has been the main scale pest in Illinois during the past few years. BLACK SCALE (Saissetia oleae) infested pear trees throughout CALIFORNIA. Biological control is important in controlling this pest in the State.

Oviposition and hatching of PEAR PSYLLA (Psylla pyricola) occurred in early May in RHODE ISLAND. The earliest hatching in MASSACHUSETTS occurred May 5, and some control difficulty was experienced with a certain organic phosphate in 1965. Pear psylla was a fruit pest of lesser importance in OHIO. Pear psylla adults became active in southwest MICHIGAN pear orchards about April 22, and commercial control was generally good. This species was prevalent in many pear-growing areas in northern CALIFORNIA. In OREGON, control continued a problem in all pear-

growing areas, with resistance to insecticides increasing in the Willamette Valley. First-generation pear psylla adults appeared in WASHINGTON by mid-May and second-generation adults by early July. Some orchards in Washington had heavy post-harvest populations in October.

APPLE MAGGOT (Rhagoletis pomonella) caused injury in one unsprayed apple orchard near Hancock, Washington County, MARYLAND. In PENNSYLVANIA, this species was a severe problem since egg laying in the northern half of the State was prolonged beyond the normal protection period and maggots appeared in stored apples. Early, heavy adult emergence began June 24 in southern and middle MICHIGAN. Field populations continued in fruit areas until late September although numbers were greatly reduced after mid-August. Control in commercial apple orchards was reasonably good. In WISCONSIN, apple maggot adults began appearing in southern counties in early July, were quite numerous the last 3 weeks of July and common through August to the second week of September. Some first-generation maggots completed development in early apples by July 23.

PLUM CURCULIO (Conotrachelus nenuphar) activity began about June 9 in central MAINE. Heavy damage was noted in Monmouth, Kennebec County, on untreated McIntosh and Golden Delicious apples. In VIRGINIA, plum curculio was adequately controlled on apples and little damage occurred. C. nenuphar was very light on apples in ILLINOIS again in 1965. BROAD-NECKED ROOT BORER (Prionus laticollis) continued to damage two apple orchards in western MASSACHUSETTS, although amount of injury decreased. JAPANESE BEETLE (Popillia japonica) was much less prevalent on apples in VIRGINIA, as has been the case for several seasons. A LEAF BEETLE (Cryptocephalus castaneus) damaged apples in San Luis Obispo County, CALIFORNIA.

LEAFHOPPERS were quite damaging to young apple plantings in VIRGINIA and POTATO LEAFHOPPER (Empoasca fabae) severely infested apple leaves in some orchards in south central PENNSYLVANIA. In VIRGINIA, adequate controls for PLANT BUGS on apples were not generally applied. In MASSACHUSETTS, TARNISHED PLANT BUG (Lygus lineolaris) was unusually abundant early in the season and damaged fruit during and after bloom. Dimpled apples were very noticeable at harvest time. FLOWER THRIPS (Frankliniella tritici) caused less damage to apples in ILLINOIS in 1965; only about 1 percent affected.

EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) continued to increase in abundance in MASSACHUSETTS for the third consecutive year. Slight injury occurred in most orchards in the State, but the most noticeable injury was in orchards where the calyx spray was applied late. H. testudinea was found in NEW HAMPSHIRE for the first time in 1965. European apple sawfly was present in RHODE ISLAND in mid-June, but was not conspicuous generally.

STONE FRUIT INSECTS

Highlights:

Lepidopterous larvae were generally well controlled in commercial orchards throughout the Nation; however, the reduced peach crop in Indiana caused growers to neglect controls and encouraged damage by ORIENTAL FRUIT MOTH. This species also caused considerable injury to young peach trees in Virginia. LESSER PEACH TREE BORER was troublesome in parts of Michigan and Indiana. PLUM CURCULIO was a serious pest of plums in many parts of the South, especially where controls were neglected. Low cherry prices caused growers in Pennsylvania to reduce controls and this led to the highest FRUIT FLY populations in years. MITES were generally troublesome, but growers in most States maintained adequate controls and economic injury was minor. SCALE INSECTS were important pests in Texas and Florida.

The highest ORIENTAL FRUIT MOTH (Grapholitha molesta) population in perhaps 10 years caused considerable injury to terminal growth of young, unsprayed peach trees in VIRGINIA. However, no injury occurred in fruit in bearing orchards. Oriental fruit moth was not a problem in MARYLAND in well sprayed peach orchards. In ALABAMA, oriental fruit moth occurred on peaches and plums throughout the State, but the extent of damage to fruit is questionable. Because of the reduced peach crop in INDIANA, many growers did not finish their spray program and there was a high percentage of "flagging" by oriental fruit moth through much of the 1965 season. This problem is expected to continue during the 1966 season. In MICHIGAN, injury by first-brood G. molesta larvae to terminal growth was relatively low in peach orchards in the southwestern section. A few larvae were found in peaches harvested in late August, but commercial control was generally good in Michigan. In MISSOURI, the first adult oriental fruit moth of the season was found in Cape Girardeau County May 19; and second-brood larvae were found in peach terminals in the southeast and in the Kansas City area about May 26; however, controls were good statewide and fruit was unusually clean. G. molesta caused little injury to peaches and other fruits in KANSAS in 1965 except for some isolated, unsprayed orchards in the Wichita area. The second generation in Kansas started June 4. In COLORADO, the overall population of oriental fruit moth was down from previous years and caused less than 0.5 percent loss to standard Elberta peaches. This species infested peaches in varying degrees in northern CALIFORNIA.

CODLING MOTH (Carpocapsa pomonella) populations in CALIFORNIA were normal on apricots and plums. EYE-SPOTTED BUD MOTH (Spilonota ocellana) larvae in MICHIGAN injured new growth of cherries in poorly treated orchards during the latter half of May.

LESSER PEACH TREE BORER (Synanthedon pictipes) caused moderate injury to plums in NORTH DAKOTA at Mandan, Morton County, and Wyndmere, Richland County. In MICHIGAN, general adult emergence of S. pictipes was underway the second week in June and widespread attacks on stone fruits continued. However, the level of infestation in peaches in southwestern Michigan was lower in 1965 than in previous years. Pupae of an undetermined parasitic hymenopteron were collected from S. pictipes larvae in Monroe County June 8. Such parasitism is rarely noted in Michigan. In 1965, lesser peach tree borer was brought back under control in ILLINOIS in most peach blocks after it rapidly increased in 1964. In southwestern INDIANA, lesser peach tree borer is steadily increasing in peach orchards, and populations were larger in 1965 than in many years. Adult emergence began in April in Indiana and continued into October. In VIRGINIA, lesser peach tree borer caused much less injury to peaches than normal and is expected to be of minor importance within a few years due to improved spray recommendations. In FLORIDA, S. pictipes was a serious pest in fall and winter peach orchards where growers neglected controls.

In NEW JERSEY, lesser peach tree borer and PEACH TREE BORER (Sanninoidea exitiosa) were troublesome in home plantings of peach, cherry and plum. In FLORIDA, peach tree borer was a serious pest during fall and winter in peach orchards where controls were neglected. S. exitiosa continues to be well controlled in ILLINOIS and is not observed in many peach blocks. In KANSAS, peach tree borer killed or damaged many trees in one untreated peach orchard near Wathena, Doniphan County, and heavily infested nearly 5 acres of weakened trees near Wichita, Sedgwick County. Sanninoidea spp. were extremely heavy in some peach orchards in the Bernalillo area, Sandoval County, NEW MEXICO. These species were also heavy in peach trees in Valencia, Bernalillo and San Juan Counties.

Peach tree borer and lesser peach tree borer were the most destructive pests of fruit trees in ALABAMA. These same species damaged fruit in MISSOURI, but were of little consequence. Peach tree borer was only a minor problem in ARKANSAS due to modern controls. However, in OKLAHOMA, peach tree borer caused some damage. Lesser peach tree borer damage remained light in KANSAS in 1965. In OHIO, lesser peach tree borer was a fruit pest of lesser importance. PEACH TWIG BORER (Anarsia lineatella) was more numerous in OREGON orchards which did not receive regular treatment.

PEACH TWIG BORER (Anarsia lineatella) adults were noted June 9 in a Jackson County, OREGON, peach orchard, and damage to untreated trees throughout the State was the heaviest since 1959. In CALIFORNIA, peach twig borer caused varying degrees of damage to peaches from mid-State north. Damage occurred from early spring until winter.

FOREST TENT CATERPILLAR (Malacosoma disstria) severely attacked 120 acres of young peach trees in a cleared forest area near Brooksville, Hernando County, FLORIDA, in May. In MICHIGAN, larvae of GREEN FRUITWORM (Lithophane antennata) were common in late May in some cherry orchards in the eastern section. Larvae of a PHYCITID MOTH (Acrobasis tricolorella) were much more numerous on cherries in the northwestern Lower Peninsula of MICHIGAN in late July and early August of 1965 than during recent years. Larvae of this species started spinning hibernacula in mid-August in Michigan. RED-HUMPED CATERPILLAR (Schizura concinna) infested prune trees at several locations in northern CALIFORNIA. ORANGE TORTRIX (Argyrotaenia citrana) damaged peaches in western WASHINGTON.

PLUM CURCULIO (Conotrachelus nenuphar) was again a serious pest of peaches in FLORIDA, but damage was light to moderate where complete spray programs were used. In ALABAMA, production of quality peaches and plums is impossible without proper control of this pest. Two generations of plum curculio developed in the Piedmont and Tidewater areas of VIRGINIA, and some fruit injury occurred on late maturing peach varieties in poorly sprayed orchards. In OHIO, plum curculio occurrences were generally noneconomic although infestations were found in apricot and plum fruit. In ILLINOIS, this weevil was again very light and catfacing was very low on peaches; less than 2 percent of fruit was damaged. In MISSOURI, larvae of C. nenuphar were nearly full grown in plums in the central section by May 20, but, as in 1964, this species caused little damage. Plum curculio was not reported as causing damage in sprayed commercial orchards in KANSAS, but fruit on 2 untreated plum trees south of Wathena, Doniphan County, were heavily infested. In NORTH DAKOTA, moderate plum curculio damage to plum was observed near Fullerton, Dickey County, and Mandan, Morton County.

A new outbreak of BROAD-NECKED ROOT BORER (Prionus laticollis) was recently discovered in eastern MASSACHUSETTS on peach trees. SHOT-HOLE BORER (Scolytus rugulosus) infested stone fruit trees in a few locations in CALIFORNIA. In OREGON, adults of a LEAF BEETLE (Syneta albida) feeding in cherry blossoms were more numerous than in 1964 in the Willamette Valley.

Infestations of BLACK CHERRY FRUIT FLY (Rhagoletis fausta) and CHERRY FRUIT FLY (R. cingulata) were the heaviest in many years in PENNSYLVANIA. Emergence was unusually prolonged and additional sprays were required for protection. However, many growers did not continue spraying because of low prices and lost their cherry crop. Cherry fruit fly was rare at Madison, Dane County, and in Door County, WISCONSIN. R. fausta was somewhat more common but apparently not of economic importance in commercial cherry orchards.

SPIDER MITES (Tetranychus spp.) were reported infesting peaches and plums in southwest MICHIGAN in late August. In KANSAS, spider mites caused some bronzing of peach foliage in most of the east and central sections. Tetranychus spp. and EUROPEAN RED MITE (Panonychus ulmi) populations developed on about half the peach blocks in ILLINOIS, but only a few blocks had severe damage. In MICHIGAN, European red mite was heavy on plums and lesser populations occurred in some peach orchards. P. ulmi was a problem in southeast PENNSYLVANIA on peaches. This species was heavy in some home plantings of peach and plum in MARYLAND and populations on peach in VIRGINIA were higher than normal but caused only minor injury. In CALIFORNIA, light populations of PACIFIC SPIDER MITE (Tetranychus pacificus) infested plums in a few locations and Bryobia rubrioculus infested peach trees in many locations. Tetranychus mcdanieli, other spider mites and rust mites were the worst pests on stone fruits in WASHINGTON.

A WEB-SPINNING SAWFLY (Neurotoma fasciata) damaged peaches in Montague County, TEXAS. Larvae of N. fasciata were taken for the first time in Leon County, FLORIDA, on wild black cherry near Tallahassee. PEAR-SLUG (Caliroa cerasi) damaged plum foliage in the Espanola area of Rio Arriba County, NEW MEXICO, and lighter infestations were found on pear and cherry foliage.

HICKORY PLANT BUG (Neolygus caryae) caused some injury to peaches in the Amherst area of MASSACHUSETTS for the second consecutive year. Plant bugs were above normal on peaches in PENNSYLVANIA. TARNISHED PLANT BUG (Lygus lineolaris) caused less injury to peaches than normal in VIRGINIA, probably due to weather conditions. Tarnished plant bug was plentiful in peach orchards in northeast KANSAS but caused little damage to the light fruit crop.

In Fresno County, CALIFORNIA, RUSTY PLUM APHID (Hysteroneura setariae) infested plums locally and MEALY PLUM APHID (Hyalopterus pruni) occurred on apricots. BLACK CHERRY APHID (Myzus cerasi) was heavy on individual cherry trees in RHODE ISLAND in early June.

SAN JOSE SCALE (Aspidiotus perniciosus) damaged peaches and plums over a wide area of TEXAS, and heavy, local populations of WHITE PEACH SCALE (Pseudaulacaspis pentagona) in Jefferson and Hardin Counties damaged peach orchards and home plantings. White peach scale was the most important insect on peaches in FLORIDA. Large limbs, and even trees, were lost where rigid control measures were not taken. Crawlers were still active in December 1965.

GENERAL DECIDUOUS FRUIT INSECTS

Overwintering EUROPEAN RED MITE (Panonychus ulmi) eggs began hatching in MAINE May 9-12 and summer eggs were found June 8. Development was about normal, but numbers, particularly of eggs, were higher than average. Summer eggs hatched about June 17 and the third generation was evident by mid-July. Cooler temperatures slowed development of the fourth generation and overwintering eggs were noted about the third week of Aguust. In VERMONT, heavy infestations of P. ulmi occurred in orchards. European red mite built up in the Champlain Valley of NEW YORK during the summer and was the most prevalent fruit pest in the Hudson Valley. The warm, dry spring in DELAWARE caused European red mite to be a problem during late spring and early summer where early season oil sprays were not used. In Delta County, COLORADO, this mite was found in the Hotchkiss area July 19 and in the Paonia and Cedaredge areas later in the season. This was a new State record, and detection was possible because cool weather favored development. P. ulmi has probably been present in the area for a year or two. European red mite was prevalent on decidious fruit trees in CALIFORNIA, primarily in the northern section. In OREGON, early season populations of P. ulmi did not reach the level indicated by egg surveys in March. Later populations were about normal except in a few orchards.

SPIDER MITES (Tetranychus spp.) were generally light over MAINE statewide in early June. No injury was reported in spite of the unusually early date. Populations continued low through mid-June and strong colonies were well established by late June but were kept in check on unsprayed trees by vigorous Panonychus ulmi populations. A very heavy buildup of unspecified spider mites followed the decline of P. ulmi in late July and early August. The most severe spider mite injury in the last decade occurred on untreated check trees in Maine. In MASSACHUSETTS, spider mite numbers increased rapidly in some orchards after European red mite was controlled. Some control measures failed late in the season. In CALIFORNIA, Tetranychus spp. were general pests, but probably not as severe as in most years.

SCHOENE SPIDER MITE (Tetranychus schoenei) and European red mite were the most troublesome pests on fruit in VIRGINIA and controls ranged from adequate to quite unsatisfactory. FOUR-SPOTTED SPIDER MITE (Tetranychus canadensis) was found in orchards in ILLINOIS but did not develop high populations. In NEW MEXICO, heavy populations of SPIDER MITES built up in orchards where frost destroyed the crop and growers did not treat. Where proper controls were used spider mites were of minor importance.

MITES were not a problem in MISSORUI due to frequent heavy rains and good orchard management. Mite populations and damage to fruit trees in OREGON appeared to be slightly less than last year in treated orchards.

CODLING MOTH (Carpocapsa pomonella) populations and damage were about normal in WASHINGTON and OREGON where good controls were used. Pupation occurred in mid-March in Yakima County, Washington, and first moths were trapped in late April. In Oregon, adults emerged April 27 in Jackson County and May 9 in Umatilla County. Unsprayed trees in Oregon were heavily infested. In COLORADO, lower numbers of C. pomonella were taken in bait traps compared with previous years, and the estimated loss ranged 1-3 percent.

In MISSOURI, fruit was unusually clean throughout the State, and significant codling moth damage occurred only on unsprayed trees and in poorly managed orchards. First codling moth entries of the season were reported May 19 in central and southeastern Missouri and a heavy larval infestation occurred in the central area May 24. In ILLINOIS, codling moth emergence was rapid during the first brood, which was well controlled during early season. However, many growers discovered numerous new entries shortly before or during harvest. Adult codling moths appeared in WISCONSIN blacklight traps May 21 and larval "stings" were noticed the second week of June. Second-brood adults appeared in Door County, Wisconsin, in mid-August and adults were present in the State until mid-September. In MICHIGAN, general emergence of spring-brood adults in cages in southwest and in Kent County began by May 28. Second-brood emergence started July 12 in St. Joseph County. Second-brood emergence in cages in Kent County occurred during late July and early August because of cool weather. Good spray programs kept commercial problems low. First adults of the season in OHIO emerged May 12 in Wayne County and peak emergence occurred during late May. Few economic infestations were noted.

Codling moth increased slightly on young trees in southeastern PENNSYLVANIA. C. pomonella caused considerable injury to fruit in home gardens in NEW JERSEY, but not in well managed orchards. Codling moth injury was noticeable in many orchards in NEW YORK, but damage was insignificant. Codling moth was not a problem in MASSACHUSETTS in 1965 due to low numbers. In MAINE, bait traps indicated first-brood adult flights from June 25 to August 2 and small second-brood flights August 23-30. First larval activity in Maine was reported from Auburn, Androscoggin County, June 20.

EYE-SPOTTED BUD MOTH (Spilonota ocellana) caused heavy damage to leaves of unsprayed fruit trees in the Willamette Valley of OREGON in late March. In WASHINGTON, ORIENTAL FRUIT MOTH (Grapholitha molesta) was more numerous in orchards which did not receive regular treatment. In ARKANSAS, oriental fruit moth was a very minor pest in 1965. G. molesta was well controlled in ILLINOIS and only a few orchards had as much as one percent fruit damage at harvest.

Substantial populations of GREEN FRUITWORM (Lithophane antennata) were observed in the Monmouth area of Kennebec County, MAINE, on May 12, and appreciable injury to foliage and buds occurred. EASTERN TENT CATERPILLAR (Malacosoma americanum) was more troublesome than usual in orchard areas of NEW HAMPSHIRE, but was of lesser importance in OHIO. Eastern tent caterpillar was again widely distributed on various fruit trees in central area of TEXAS. WESTERN TENT CATERPILLAR (Malacosoma pluviale) larvae appeared in the Willamette Valley of OREGON on March 13. Infestations were heavy in some localities of Multnomah, Washington and Yamhill Counties but averaged lighter than in 1964 over the valley.

Low populations of RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) occurred in scattered locations in southern and central MAINE; however, no damage was reported. In MASSACHUSETTS, A. velutinana was light for the third consecutive year. In MISSOURI, red-banded leaf roller and FRUIT-TREE LEAF ROLLER (Archips argyrospilus) were very light, as in 1964. Fruit-tree leaf roller was also very light in ILLINOIS. Adults of red-banded leaf roller and fruit-tree leaf roller were caught in light traps during the summer in NEW MEXICO, but only slight damage occurred on foliage and fruit in Bernalillo and Sandoval Counties. In CALIFORNIA, fruit-tree leaf roller was a pest on deciduous fruits in a few locations.

First PLUM CURCULIO (Conotrachelus nenuphar) adults of the season in MICHIGAN were collected in Livingston County May 11. The usual servere infestations of unsprayed fruit plantings occurred throughout the State. This species was not a problem in well kept commercial orchards in southern INDIANA. In NORTH CAROLINA, plum curculio was very active in the Sand Hills in April. Plum curculio populations in commercial orchards in MARYLAND were below those of 1964 and very little damage was experienced. In MASSACHUSETTS, populations of this weevil were as high or higher than in 1964, but injury to fruit was low; apparently due to good controls. In RHODE ISLAND, adults were noted May 27 and built up slowly to average populations, but caused little trouble in commercial orchards.

PACIFIC FLATHEADED BORER (Chrysobothris mali) damaged deciduous fruit trees in Siskiyou and Riverside Counties, CALIFORNIA. First BROAD-NECKED ROOT BORER (Prionus laticollis) of 1965 in RHODE ISLAND was collected in Kingston, June 21, and additional specimens found frequently into late July.

SAN JOSE SCALE (Aspidiotus perniciosus) was more numerous in WASHINGTON in orchards which did not receive regular treatments. In OREGON, infestations were heavier than usual in fruit trees in Jackson County. San Jose scale infested deciduous fruit trees quite generally in CALIFORNIA. This species damaged fruit trees in the Velarde area, Rio Arriba County, NEW MEXICO, and lighter populations were noted in fruit-growing areas of Santa Fe, Sandoval, Bernalillo and San Juan Counties. In KANSAS, San Jose scale remained light in orchards. Persistent San Jose scale populations which appeared resistant to many currently recommended controls, were reported in a few INDIANA orchards. A. perniciosus was a fruit pest of lesser importance in OHIO. In ALABAMA, however, this species was one of the predominant scale pests of fruit other than pecan. The upsurge of San Jose scale in PENNSYLVANIA lessened in 1965, probably due to increased control activity. A. perniciosus populations appear to be building up in RHODE ISLAND.

OLIVE SCALE (Parlatoria oleae) infested deciduous fruits in CALIFORNIA, primarily in the San Joaquin Valley. WHITE PEACH SCALE (Pseudaulacaspis pentagona) was one of the predominant scale pests in ALABAMA on fruits other than pecan.

Light infestations of APPLE MEALYBUG (Phenacoccus aceris) in MAINE caused light to moderate damage in a few locations. In NEW HAMPSHIRE, apple mealybug is apparently on the increase and troublesome numbers appeared in supposedly well kept orchards. VERMONT also had heavy infestations of P. aceris in orchards.

APPLE APHID (Aphis pomi) showed normal development in MAINE during early season, but numbers were severely curtailed by the extreme drought in mid and late summer. Apple aphid and APPLE GRAIN APHID (Rhopalosiphum fitchii) were light to moderate in COLORADO and were controlled by normal spray programs. Apple grain aphid colonies built up in WISCONSIN early in the season but migrated to grains in May. In OHIO, apple aphid and BLACK CHERRY APHID (Myzus cerasi) were fruit pests of lesser importance in 1965. In NEW YORK, apple aphid was heavy in a few locations in the Champlain Valley and ROSY APPLE APHID (Dysaphis plantaginea) was more abundant than usual in the Hudson Valley. In NEVADA, black cherry aphid, rosy apple aphid, and GREEN PEACH APHID (Myzus persicae) were prevalent on fruit. Rosy apple aphid was a problem in a few orchards in COLORADO early in the season, but the loss was in the one percent range. Green peach aphid was low in COLORADO and no specific sprays were needed for control. Rosy apple aphid was widespread

in OHIO during spring and fall; some fall infestations were heavy. Green peach aphid and apple aphid hatched about mid-April in MASSACHUSETTS, but did not build up to damaging numbers during 1965.

Brood V PERIODICAL CICADAS (Magicicada spp.) emerged in OHIO in 1965. The distribution of M. septendecim, M. cassini and M. septendecula was established, and M. septendecim was the most widespread. Emergence began in southeastern Ohio in mid-May and adults were generally present through the end of June. The enormous periodical cicada populations caused extensive injury to fruit trees in Ohio.

TARNISHED PLANT BUG (Lygus lineolaris) adults were numerous by May 12 in the Monmouth area of Kennebec County MAINE. Appreciable populations occurred statewide, but injury was generally light. Orchards in VERMONT had higher L. lineolaris populations than usual. Lygus spp. damaged fruit in MISSOURI, but was of little consequence.

APPLE MAGGOT (Rhagoletis pomonella) populations were generally low in MAINE and damage was negligible. This species was less troublesome than usual in NEW HAMPSHIRE; however, populations were high in VERMONT, especially in abandoned blocks of trees. In MASSACHUSETTS, prolonged drought apparently reduced emergence of apple maggot adults, but damaging numbers still occurred where controls were inadequate. Adults of R. pomonella were present in average abundance in RHODE ISLAND and home grown fruit suffered more than commercial orchards. In NEW JERSEY, this species injured considerable fruit in home gardens, but not in well managed orchards. A few infestations of apple maggot larvae were reported in OHIO, generally from improperly sprayed orchards. R. pomonella populations in MINNESOTA were generally lower than in previous years.

CHERRY FRUIT FLY (Rhagoletis cingulata) adults were common in McPhail trap collections in RHODE ISLAND. Infestations in western NEW YORK increased strongly in 1965. R. cingulata was a fruit pest of lesser importance in OHIO. R. cingulata indifferens was more numerous than previously in WASHINGTON in orchards which did not receive regular treatments. In OREGON, populations of R. cingulata indifferens were normal and control was excellent in commercial orchards.

PEAR-SLUG (Caliroa cerasi) populations were about normal in NEVADA except in Churchill and Lincoln Counties, where damage was above average. A light infestation was found in NORTH DAKOTA near Wyndmere, Richland County.

NUT CROP INSECTS

Highlights:

PECAN NUT CASEBEARER and HICKORY SHUCKWORM were serious pests in many pecan-growing areas. PECAN WEEVIL caused heavy local damage in Texas and Oklahoma and other beetles caused local damage in the South and West. The combined damage of APHIDS and SPIDER MITES defoliated pecan trees in Alabama before the nuts matured.

PECAN NUT CASEBEARER (Acrobasis caryae) was extremely heavy in ALABAMA and inflicted severe damage. In OKLAHOMA, damage from A. caryae was moderate to heavy in most pecan-producing areas from late May to mid-July. Damage from the second generation was light in Oklahoma. In TEXAS, pecan nut casebearer was general throughout pecan-growing areas and damage varied from light to heavy. However, infestations were not as heavy, overall, as in 1964. A. caryae appears to have spread to new areas near Carlsbad, Eddy County, NEW MEXICO. Surveys in northern

Eddy County and Dona Ana County were negative. PECAN LEAF CASEBEARER (Acrobasis juglandis) was light locally in TEXAS on pecans in Guadalupe, Tarrant and Galveston Counties. In GEORGIA, infestations of A. juglandis were light to heavy on pecans.

HICKORY SHUCKWORM (Laspeyresia caryana) was extremely heavy and severely damaging in ALABAMA, and was abundant in most areas of TEXAS with heavy damage in Kimble, Parker and Nueces Counties. In OKLAHOMA, damage by L. caryana was more common than in 1964 and occurred from mid-July to early November. ORIENTAL FRUIT MOTH (Grapholitha molesta) infested almonds in varying degrees in northern CALIFORNIA. In Lane County, OREGON, emergence of FILBERTWORM (Melissopus latiferreanus) began July 5 and lasted 6 weeks. Light trap counts throughout the emergence period were much higher than in 1964, but effective control was not difficult.

FALL WEBWORM (Hyphantria cunea) damaged pecan trees in OKLAHOMA from late June to mid-October. In TEXAS, fall webworm caused light, widespread foliage damage on pecans in the San Marcos-Seguin area of Hays and Guadalupe Counties. Populations on walnut trees in OREGON were much less than in 1964. SALT-MARSH CATERPILLAR (Estigmene acrea) caused heavy local damage to pecan foliage in Glasscock County, TEXAS.

WALNUT CATERPILLAR (Datana integerrima) damaged pecans in Nacogdoches and Hamilton Counties, TEXAS, and also damaged pecan trees in OKLAHOMA from late June to mid-October. RED-HUMPED CATERPILLAR (Schizura concinna) infested walnut trees in several locations in northern CALIFORNIA. An unusual infestation of OBLIQUE-BANDED LEAF ROLLER (Choristoneura rosaceana) in Butte County, CALIFORNIA, did considerable damage to maturing almond fruit. Almonds in northern California were also damaged in varying degrees by PEACH TWIG BORER (Anarsia lineatella).

PECAN WEEVIL (Curculio caryae) infestations were heavy in many areas of OKLAHOMA by mid-September and damage continued until late October. In TEXAS, pecan weevil caused heavy local damage to pecans in the Junction area of Kimble County, but was generally lighter in the northern area. A WEEVIL (Compsus auricephalus) caused heavy local damage to pecan foliage in Glasscock County. A FALSE POWDER-POST BEETLE (Amphicerus cornutus) heavily infested almond trees in Clark County, NEVADA, in July. A LEAF BEETLE (Cryptocephalus castaneus) damaged walnut trees in San Luis Obispo County, CALIFORNIA. TWIG PRUNER (Elaphidionoides villosus) damaged pecans in Williamson County, TEXAS. A MAY BEETLE (Phyllophaga sp.) caused heavy feeding damage to pecan foliage in several areas of GEORGIA.

Heavy populations of BLACK-MARGINED APHID (Monellia costalis) in ARIZONA damaged pecan trees in Yuma, Maricopa and Graham Counties. Black-margined aphid infested pecan trees in Fresno County, CALIFORNIA, and caused some damage in OKLAHOMA. BLACK PECAN APHID (Myzocallis caryaefoliae) infestations on pecans were light to heavy throughout GEORGIA the first half of the season. In ALABAMA, there were serious infestations of black pecan aphid and yellow aphids during 1965. In CALIFORNIA, local infestations of black pecan aphid occurred on pecan trees in Merced County. Black pecan aphid was light to moderate in north central and central TEXAS; however, numbers decreased considerably from 1964. Commercial pecan orchards in Dona Ana County, NEW MEXICO, were treated regularly for black-margined aphid and black pecan aphid. WALNUT APHID (Chromaphis juglandicola) was a considerable pest of walnuts statewide in CALIFORNIA. Monellia sp. was unusually heavy on pecan trees in Monticello area of Jefferson County, FLORIDA.

SPIDER MITES were heavy on pecans in local areas of Brazos County, TEXAS. In ALABAMA, many orchards were defoliated before the nuts matured as a result of heavy damage by spider mites during unseasonably dry periods and aphid damage. In CALIFORNIA, light populations of PACIFIC SPIDER MITE (Tetranychus pacificus) infested almonds in a few locations and a FRUIT-TREE MITE (Bryobia rubrioculus) infested almond trees in many locations.

WALNUT HUSK FLY (Rhagoletis completa) was severe on walnuts in CALIFORNIA and caused moderate damage to English walnuts in Washington County, UTAH. Walnut husk fly infestations in OREGON are still confined to noncommercial walnut trees in eastern and southern areas. The small infestation of Rhagoletis suavis, which was found for the first time in Oregon in 1964, is still present in Hood River County.

GRAPE INSECTS

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) caused heavy damage to grapes in the Las Vages area of Clark County, NEVADA. The species is under eradication in Alameda and Fresno Counties, CALIFORNIA, and was light in San Diego County. GRAPE BERRY MOTH (Paralobesia viteana) caused complete loss of fruit in one vineyard near Troy, Doniphan County, KANSAS, but was not important on grapes in ARKANSAS, OHIO, or in the Rosati area of Phelps County, MISSOURI. In MICHIGAN, grape berry moth larval damage was relatively low in 1965. GRAPE PLUME MOTH (Pterophorus periscelidactylus) was heavy on grape in East Greenwich, RHODE ISLAND, in early June. In CALIFORNIA, CUTWORMS were probably more damaging than in the past few years in vineyards and GRAPE LEAF FOLDER (Desmia funeralis) was a grape pest in a few locations.

GRAPE FLEA BEETLE (Altica chalybea) was numerous on early leaves and buds in one vineyard west of Troy, Doniphan County, KANSAS. In ARIZONA, scattered, heavy populations caused moderate to heavy damage to grapes in Maricopa and Pinal Counties, but controls were generally effective.

Heavy populations of LEAFHOPPERS (Erythroneura spp.) moderately damaged grapes in all grape-producing sections of ARIZONA; however, controls were generally effective. Erythroneura sp. was present and damaging in most grape-growing areas of CALIFORNIA. GRAPE MEALYBUG (Pseudococcus maritimus) was present in grapes in Madera and San Joaquin Counties of California.

A SPIDER MITE (Eotetranychus willamettei) infested grapes in Mendocino and Napa Counties of CALIFORNIA. GRAPE ERINEUM MITE (Eriophyes vitis) was taken on hybrid grape in Hamilton County, OHIO, July 23, 1965, for a new State record.

CRANBERRY AND BLUEBERRY INSECTS

CRANBERRY GIRDLER (Crambus topiarius) moth emergence in MASSACHUSETTS was heavy early in the season with injury appearing in late August. Injury was severe on some bogs. In NEW JERSEY, cranberry girdler was more abundant on bogs than usual, primarily due to prolonged drought. Heavy emergence and flights of CRANBERRY FRUITWORM (Acrobasis vaccinii) occurred in MASSACHUSETTS during June and July. Activity continued well into August and late oviposition caused severe infestation in berries. BLACK-HEADED FIREWORM (Rhopobota naevana) and YELLOW-HEADED FIREWORM (Acleris minuta) infestations in NEW JERSEY were severe, but were confined to limited areas. A LEAF ROLLER MOTH (Sparganothis sulfurana) adults were rather abundant in MASSACHUSETTS from late June to late August and larvae were still feeding and webbing berries during picking season. FALL WEBWORM (Hyphantria cunea) was light to moderate in blueberry plantings in NEW JERSEY during 1965.

BLUEBERRY MAGGOT (Rhagoletis mendax) was more numerous in MASSACHUSETTS than in the last several years and was very active in plantings in the eastern area during July and August. Blueberry maggot infestations were very low statewide in MAINE because drought caused a crop reduction. This species was less troublesome

than usual in NEW HAMPSHIRE. Blueberry maggot was light to moderate in blueberry plantings during 1965 in NEW JERSEY.

BLUEBERRY THRIPS (Frankliniella vaccinii) was very heavy and damaging at Sedgwick, Hancock County, MAINE, in late May; light infestations and damage at Jonesboro, Washington County, in early June; and heavy with severe damage at North Ellsworth, Hancock County, in mid-June.

BLUEBERRY BUD MITE (Aceria vaccinii) was unusually abundant on blueberries in NORTH CAROLINA; heaviest infestations in 10-12 years, considerably reduced yields in Pender County. CYCLAMEN MITE (Stenotarsonemus pallidus) suddenly became a problem on cranberry in WASHINGTON, especially in the Grayland area of Grays Harbor County.

CITRUS INSECTS

HIGHLIGHTS:

SCALE INSECTS were troublesome throughout the citrus-producing regions, but controls were generally effective. Several citrus pests reached new record high populations in Florida. CALIFORNIA RED SCALE and CITRUS RUST MITE continued to spread in Arizona and Unaspis citri extended its range southward in Florida. Several species of MITES required controls and ANTS were damaging in local areas of Texas and California. In Arizona, CITRUS THRIPS required continuous controls.

Numerous infestations of CALIFORNIA RED SCALE (Aonidiella aurantii) were detected on citrus and ornamentals in the Phoenix area of Maricopa County, ARIZONA, and eradication treatments were applied. California red scale was found in most citrus-growing areas of CALIFORNIA, but was a pest primarily in southern California. YELLOW SCALE (Aonidiella citrina) was a problem on citrus in Tulare County, California. In FLORIDA, yellow scale reached record high levels from January through March, when 67 percent of the groves were infested and 21 percent had moderate to heavy infestations. PURPLE SCALE (Lepidosaphes beckii) occurred in over 80 percent of the citrus groves in FLORIDA from January through March, but few infestations were heavy. This species exceeded normal abundance in Florida in June and then declined. Purple scale was generally kept in control biologically in Orange County, CALIFORNIA. BLACK SCALE (Saissetia oleae) was above average in FLORIDA with a sharp increase in June which peaked at a record high population in July with moderate to heavy infestations in 60-65 percent of the groves. The populations then decreased to the normal low in autumn and remained normal. In CALIFORNIA, black scale infested citrus trees throughout the State, but biological controls were important in keeping this pest under control. CITRICOLA SCALE (Coccus pseudomagnoliarum) was a pest on citrus locally in San Luis Obispo and Fresno Counties, CALIFORNIA. Very few infestations of BROWN SOFT SCALE (Coccus hesperidum) were found on citrus in California. Brown soft scale was below average in FLORIDA and of little importance. In Cameron County, TEXAS, brown soft scale was moderate to heavy on grapefruit, but not as heavy as in 1964. BARNACLE SCALE (Ceroplastes cirripediformis) was light locally on citrus in Hidalgo County, Texas. In ARIZONA, numerous infestations of COTTONY-CUSHION SCALE (Icerya purchasi) were found on citrus througout the year. In most cases, these increased infestations were effectively controlled by the use of predators.

GLOVER SCALE (Lepidosaphes gloverii) reached record high populations in FLORIDA in February and continued high through June. Populations then declined until another increase in September caused above normal levels through December. CHAFF SCALE (Parlatoria pergandii) reached record high levels in Florida in June, then

declined through the summer and numbers were below normal in the fall. An ARMORED SCALE (Unaspis citri) was reported for the first time in Hillsborough, Polk and St. Lucie Counties, Florida, a southern extension of this pest. Control was difficult and populations continued above normal into the fall. Another ARMORED SCALE (Pinnaspis strachani) was heavier than normal in summer and fall in Florida, but caused little concern.

MEALYBUGS were above normal in FLORIDA in the spring and populations approached record high levels in May and June, but decreased to the normal low level by the end of September. In San Diego, Santa Barbara and Riverside Counties, CALIFORNIA, light populations of CITRUS MEALYBUG (Planococcus citri) occurred on citrus. In April WHITEFLIES decreased to normal populations in FLORIDA for the first time since August 1963. The whitefly population then fluctuated until reaching abnormal highs in December. During March and April CITRUS WHITEFLY (Dialeurodes citri) was very heavy on citrus and other dooryard fruits in Gainesville, Alachua County, Florida.

New infestations of CITRUS RUST MITE (Phyllocoptruta oleivora) were found on lemons in Yuma County, ARIZONA. Although controls have been successful on existing infestations a constant spread has been detected. Citrus rust mite was the most important citrus pest in FLORIDA during late winter and spring. Numbers declined to record low levels by mid-August and then increased to economic levels in the fall. In CALIFORNIA, light populations of citrus rust mite occurred in coastal areas of Santa Barbara and San Diego Counties. Controls were required for CITRUS BUD MITE (Aceria sheldoni) on citrus in San Diego and Santa Barbara Counties, California, and CITRUS FLAT MITE (Brevipalpus lewisi) infested citrus in varying degrees in Riverside, Tulare and Imperial Counties. Medium to heavy infestations of citrus flat mite were a serious problem to many citrus growers in the Yuma area of Yuma County, ARIZONA, for much of 1965. Lighter infestations were found in Maricopa and Pinal Counties.

YUMA SPIDER MITE (Eotetranychus yumensis) was medium to heavy on citrus in Yuma County, ARIZONA, and some controls were necessary. CITRUS RED MITE (Panonychus citri) was not as severe in CALIFORNIA during 1965 as in the past several years; however, this mite is now statewide in California. P. citri was below average in FLORIDA, but important in scattered groves from April through June and reached the normal summer peak in late July. Populations then declined to a record low level. TEXAS CITRUS MITE (Eutetranychus banksi) was moderate in FLORIDA through March and reached a record high level in June and July but declined rapidly to below normal in the fall. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) populations were near normal in FLORIDA and were not important to citrus growers.

PINK SCAVENGER CATERPILLAR (Sathrobrota rileyi) damaged citrus locally in Orange County, and ORANGE TORTRIX (Argyrotaenia citrana) damaged citrus in many locations over CALIFORNIA. Larvae of a LEAF ROLLER MOTH (Sparganothis sulfurana) damaged citrus locally in Los Angeles and Riverside Counties, California.

Widespread infestations of TEXAS LEAF-CUTTING ANT (Atta texana) stripped leaves from citrus in Hidalgo County, TEXAS. ARGENTINE ANT (Iridomyrmex humilis) was a problem in citrus groves in a few locations in southern CALIFORNIA. Larger than normal populations of CITRUS THRIPS (Scirtothrips citri) required continuous controls on citrus in Yuma, Maricopa and Pinal Counties, ARIZONA. Citrus thrips was more severe on citrus in Tulare County, CALIFORNIA, than in the southern part of that State. BROWN GARDEN SNAIL (Helix aspersa) damaged citrus in Riverside, Orange, Santa Barbara and San Diego Counties, California.

AVOCADO INSECTS

In CALIFORNIA, AVOCADO BROWN MITE (Oligonychus punicae) was a local problem on avocado in Santa Barbara County, and larvae of a LEAF ROLLER MOTH (Sparganothis sulfurana) damaged avocados locally in Los Angeles and Riverside Counties.

GREENHOUSE THRIPS (Heliothrips haemorrhoidalis) on avocados in Santa Barbara County, California, was mostly held in check by biological controls.

Weather continued from page 142.

STORMS: The week began with a series of small disturbances preceding the leading edge of an Arctic air mass. On Monday, up to 7 inches of snow fell in Oklahoma, Missouri, and Arkansas, and flurries occurred in the Ohio Valley. A new system started to develop in south central Texas on Tuesday. Heavy snow, freezing rain, and sleet coated the area bounded by Dallas, San Angelo, and San Antonio. A foot of snow was reported in the Austin area before the worst storm in southwest Texas in 17 years moved into Arkansas and Tennessee.

All week the system continued to strengthen as it traveled northeastward. It dumped 5-12 inches of snow along the lower Appalachians, but its full fury was not felt until the weekend when the storm reached New England. Gale winds and more than 20 inches of new snow brought transportation to a standstill in Maine. There was one happy note as the above average snow cover caused by the storm greatly improved ski conditions in New York and northern New England. It was the third straight week of heavy precipitation in the Southeast. Rains associated with a stationary front deluged the Florida Peninsula in midweek relieving the water crisis in the drought-stricken Everglades. The rains also delayed space launchings from Cape Kennedy. As the week ended, a Low over New Mexico moved eastward and merged with a Low in the Gulf of Mexico resulting in heavy rains and thunderstorms and lowland flooding over the Gulf States. Once again the Pacific Northwest received relatively little precipitation. Intermittent light rain and showers fell throughout the period, but no significant storms traversed the region. (Summary supplied by U. S. Weather Bureau).

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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

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SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG, CORN LEAF APHID and other GRAIN APHIDS active in Oklahoma and Texas. WINTER GRAIN MITE increasing on wheat in Oklahoma. (p. 169).

SPOTTED ALFALFA APHID increased on alfalfa in Yuma Valley of Arizona. (p. 169). ALFALFA WEEVIL eggs hatching in Missouri; economic infestations expected to develop on first cutting of alfalfa in southeast. Active in Mississippi. (p. 169). A WEEVIL (Hypera brunneipennis) increasing in alfalfa in Arizona, with 90 percent terminal damage. This more damage than at same time in 1965. (p. 170).

SAN JOSE SCALE damaging peach trees in some Southern States. (p. 170).

COMMON CATTLE GRUB heavy in cattle in Oklahoma, reported in Colorado. (p. 173). BLACK-LEGGED TICK (Ixodes scapularis) dominant tick on deer at check stations in Oklahoma. (p. 173).

Predictions

TENT CATERPILLAR damage expected to be lighter this year in Texas than in 1965. FOREST TENT CATERPILLAR infestations in Minnesota expected to be heavy on half million acres, moderate on 1 million acres and light on 3.3 million acres. (p. 172).

Detection

New State records include a FALSE SPIDER MITE in Maryland; and 5 moths, of no apparent economic importance, in Delaware. A new island record from Hawaii. (p. 175).

Special Reports

Summary of Insect Conditions in the United States - 1965
Truck Crop Insects. (pp. 177-190).

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A Note on the Names Adelges and Adelginae. (p. 193).

Reports in this issue are for week ending March 4 unless otherwise indicated.

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SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - OKLAHOMA - Counts per linear foot 4-30 in wheat in Cotton and Tillman Counties; 20-80 in Fairview area, Major County, and 1-25 in Kingfisher, Garfield and Blaine Counties; continues heavy locally in Mayes County; ranged 5-30 per linear foot in Blaine County. (Feb. 26). Averaged 2 per linear foot in wheat checked in Noble County; light in Mayes County. (Okla. Coop. Sur.). TEXAS - Light on wheat near Terrell, Kaufman County; no economic damage reported. (Turney).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Increasing in small grains in areas of Maricopa and Pinal Counties. (Ariz. Coop. Sur.). OKLAHOMA - Present in most wheat checked; ranged up to 30 per linear foot but most counts less than 10 per linear foot. (Okla. Coop. Sur., Feb. 26). TEXAS - Very light on oats near Terrell, Kaufman County. (Turney).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Increased in Yuma Valley alfalfa. Damage continues light. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Dry cornstalks checked in Beckham County 12 percent infested with live larvae; 20 percent in Washita County. All stalks in both fields showed perforations. (Okla. Coop. Sur., Feb. 26).

SMALL GRAINS

GRAIN APHIDS - OKLAHOMA - Rhopalosiphum padi ranged 5-10 per linear foot in wheat checked in Garfield and Kingfisher Counties; 80-200 per linear foot in Blaine County. (Okla. Coop. Sur., Feb. 26). Averaged 25 per linear foot in Noble County wheat; Macrosiphum avenae ranged 10-15 per linear foot in wheat in this county. (Okla. Coop. Sur.). TEXAS - Rhopalosiphum fitchii light in oats near Terrell, Kaufman County; populations not yet economic. (Turney).

LEAFHOPPERS - FLORIDA - Very light on rye at Gainesville, Alachua County. Macrosteles fascifrons averaged 14 adults per 100 sweeps. Balclutha spp. next most abundant. (Mead).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Increasing in wheat in eastern Tillman County; up to 400 per linear foot in some areas. Ranged up to 30 per linear foot in Cotton County. (Okla. Coop. Sur., Feb. 26). TEXAS - Few observed near Terrell, Kaufman County. Recent, heavy rains apparently reduced populations. (Turney).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSOURI - First-stage larvae averaged 2 per 100 sweeps in 2 of 4 Pemiscot County alfalfa fields, southeast. First report of season occurred March 2. Eggs just hatching; economic infestations expected to develop on first cutting alfalfa in southeast. Alfalfa just beginning to green. (Jones, Keaster). ARKANSAS - Oviposition studies continue in Mississippi County; eggs now average 721,644 per acre. Few larvae found; many eggs showed embryonic development. Hatching expected to increase as temperatures rise. (Ark. Ins. Sur.). MISSISSIPPI - Larvae averaged 84 per square foot in field of alfalfa in Pontotoc County; as many as 7 per bud found in some instances. Larvae averaged 21 per square foot in alfalfa checked in Oktibbeha County. (Dinkins et al.).

A WEEVIL (Hypera brunniepennis) - ARIZONA - Larvae increasing in alfalfa in Yuma and Maricopa Counties. Larvae as high as 1,100 per 100 sweeps in some fields on Yuma Mesa, with 90 percent terminal damage. (Ariz. Coop. Sur.).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - MISSISSIPPI - Two adults taken with vacuum sweeper in 200 linear feet of clover in Oktibbeha County. (Dinkins et al.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - First and second-stage larval infestations observed in Yuma County. Occasionally light infestation near Buckeye, Maricopa County. (Ariz. Coop. Sur.). MISSOURI - Two small larvae swept from young alfalfa March 2; less than 1 per 100 sweeps. First report of season. (Jones, Keaster).

GREEN CLOVERWORM (Plathypena scabra) - FLORIDA - Most larval instars noted on blue lupine at Gainesville, Alachua County. (Mead).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Gradually increasing in alfalfa in Yuma, Maricopa and Pinal Counties. (Ariz. Coop. Sur.). NEW MEXICO - Light in alfalfa in Dona Ana and Eddy Counties. (Mathews, Kloepfer). MISSOURI - Very small numbers present in Pemiscot County alfalfa. (Jones, Keaster). MISSISSIPPI - Total of 23 adults taken in 200 linear feet of clover with vacuum sweeper in Oktibbeha County. (Dinkins et al.).

SUGAR BEETS

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Light numbers appearing in sugar beet seed fields in Maricopa County. (Ariz. Coop. Sur.).

SAY STINK BUG (Chlorochroa sayi) - ARIZONA - Small numbers of nymphs present in most sugar beet seed fields in Maricopa County. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

SAN JOSE SCALE (Aspidiotus perniciosus) - OKLAHOMA - Heavy and damaging peach trees in Mayes County. (Okla. Coop. Sur.). TEXAS - Moderate and damaging peach trees near Wills Point, Van Zandt County. (Berry). ALABAMA - Light on numerous peach trees and orchards in central counties where poor control measures used last summer. Few orchards observed in Geneva County and other extreme southern areas practically free of this pest. (Bagby et al.).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - ALABAMA - Light to moderate on several isolated peach trees in Lee County. (Barwood et al.).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Survey indicates moderate to heavy egg deposition in Mesa County. No hatching observed. (Bulla).

LESSER PEACH TREE BORER (Synanthedon pictipes) - MISSISSIPPI - Larvae averaged 4 per tree in 10 of 20 trees inspected in Pontotoc County orchard. (Dinkins et al.).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - CALIFORNIA - General on peach trees in large orchard in Herndon, Fresno County. Early for mite to be evident on deciduous fruit trees. (Cal. Coop. Rpt.).

CITRUS

CITRUS RED MITE (Panonychus citri) - CALIFORNIA - Light on citrus in Centerville and Sanger, Fresno County. Major pest of citrus in southern area; now more frequent in middle and northern areas. (Cal. Coop. Rpt.).

OTHER TROPICAL AND SUBTROPICAL FRUITS

A WEEVIL (Brachyrhinus cribricollis) - CALIFORNIA - Eggs, larvae and adults locally heavy in olive orchard in Ivanhoe, Tulare County. (Cal. Coop. Rpt.).

GENERAL VEGETABLES

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Increasing populations required controls on lettuce in Yuma Valley. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Small larvae light in vegetables in Maricopa and Yuma Counties. (Ariz. Coop. Sur.).

THRIPS - NEW MEXICO - Continue light on onions in Dona Ana County. (N. Mex. Coop. Rpt.).

ORNAMENTALS

APHIDS - ALABAMA - Aphis spiraecola egg hatch extremely high on all spirea in central area. Stem mothers producing tremendous colonies of nymphs. Overwintered Adalia bipunctata quite noticeable; feeding and laying eggs. (McQueen). CALIFORNIA - Eriosoma lanigerum medium on pyracantha plants locally in San Rafael, Marin County. (Cal. Coop. Rpt.).

ARMORED SCALES - CALIFORNIA - Parlatoria oleae medium on ash and flowering pear nursery stock in Thermal, Riverside County. Abgrallaspis cyanophylli medium on Faucaria tigrina (tiger-jaw) nursery stock in Vista, San Diego County. (Cal. Coop. Rpt.). VIRGINIA - Pseudaulacaspis pentagona medium to heavy on Modesto ash and Japanese pagoda trees in Chesapeake area. (Pierce, Feb. 28). PENNSYLVANIA - Diaspis echinocacti very heavy on several cactus varieties in greenhouse in Altoona, Blair County. (Udine, Feb. 10).

A FALSE SPIDER MITE (Pentamerismus taxi) - MARYLAND - Adults collected August 4, 1965, from Taxus sp. at Cumberland, Allegany County. Collected by W. T. Garrett. Det. by E. W. Baker. This is a new State record. (U. Md., Ent. Dept.).

A SPIDER MITE (Tetranychus marianae) - CALIFORNIA - Medium on Solanum sp. in Olinda, Orange County; second location reported for county. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

BARK BEETLES (Dendroctonus spp.) - CALIFORNIA - D. pseudotsugae infesting Douglas-fir on Jackson State Forest, Mendocino County. Groups of trees in 0.5-acre area dead or dying. (D. M. Burns). D. ponderosae and D. brevicomis causing death of ponderosa pines in groups of 2-8 trees in Big X area, El Dorado National Forest. Many trees just starting to fade. (B. S. Bever). D. brevicomis and D. valens killing single trees and groups of 5 ponderosa pines in Prather Mill-Upper Lake area, Mendocino National Forest. (L. C. Simmens, USFS).

ELM LEAF BEETLE (Galerucella xanthomelaena) - COLORADO - Overwintering adults active on elm trees in Pueblo County. (Hantsbarger).

SILVER-SPOTTED TIGER MOTH (Halisidota argentata) - CALIFORNIA - Infesting single trees of Douglas-fir and white fir in Gilberts Canyon area, El Dorado National Forest. Numbers of reports increased over last 2 years. (Hill, Kneiffe, Lutigo, USFS). Active in the Happy Camp area on Klamath National Forest. (Alden, USFS).

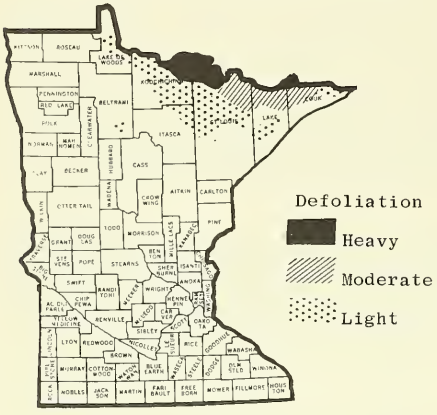
A TIGER MOTH (Halisidota ingens) - COLORADO - Larvae heavy on pine in Elbert County. (Hantsbarger).

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Causing severe damage to native oaks in Pine Hills and North Peak area, San Diego County. About 150 acres completely defoliated; light damage in remainder of area. (Cal. Coop. Rpt.).

SPRING CANKERWORM (Paleacrita vernata) - MISSOURI - Adult males noted at lights in Pemiscot County March 2. (Jones, Keaster).

FOREST TENT CATERPILLAR (Malacosoma disstria) - MINNESOTA - Fall and winter egg band survey indicates infested area increased 41 percent over that of 1965. Infestations again in one block as in 1965, except for 2 small areas. Southern limits range from Warroad through Big Falls, Hibbing, Cook, Tower, Ely, Grand Marais to Pigeon River. Infestations in 1966 will be heavy on 0.5 million acres, moderate on 1 million acres and light on 3.3 million acres. Infested acreage totals 4.8 million compared with 3.4 million in 1965. (Minn. Ins. Rpt.). (See accompanying map).

Forest Tent Caterpillar Predicted Defoliation in Minnesota - 1966



TENT CATERPILLARS (Malacosoma spp.) - TEXAS - Survey for egg cases of M. disstria and M. tigris in Travis, Hayes, Comal, Bexar, Kendall, Blanco, Johnson, Burnet, Lampasas, Hamilton and Coryell Counties showed very light numbers compared with 1965. Several sites in main cities checked and several trees at 15-mile intervals along route inspected. Indicates much lighter damage expected this year. (Parker). ALABAMA - Light to medium numbers of M. americanum egg masses observed on wild cherry in central and southern areas. No hatch noted. (McQueen).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - CALIFORNIA - Locally heavy on pine and fir trees in Pine Grove, Amador County. (Cal. Coop. Rpt.).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - MARYLAND - Heavy on several red maple trees in Glenridge community, Prince Georges County. (U. Md., Ent. Dept.).

A CONIFER APHID (Cinara coloradensis) - CALIFORNIA - Locally heavy on Picea pungens in Manteca, San Joaquin County. (Cal. Coop. Rpt.).

A CECIDOMYIID MIDGE (Thecodiplosis cockerelli) - COLORADO - Widespread and heavy on pinyon pine at Fort Collins, Loveland, Boulder and Denver. Overall infestation 5 percent, but as high as 25 on some trees. (Thatcher).

MAN AND ANIMALS

MOSQUITOES - CALIFORNIA - Emergence of hibernating Anopheles spp. reduced during week. Spring emergence now about 90 percent over. Return of low daytime and nighttime temperatures could cause second emergence prior to egg laying. Fall and winter treatment of tree holes with persistent insecticides should control Aedes sierrensis sufficiently to eliminate irritation areas treated for 2 or more seasons. Gambusia affinis (a mosquito fish) holding ponds well stocked. (Cal. Coop. Rpt.). NEW MEXICO - Culiseta inornata larvae ranged 3-4 per dip in Valencia, Bernalillo and Dona Ana Counties. Aedes dorsalis and Aedes vexans adults found in large numbers under bridge in Las Cruces area, Dona Ana County; Culex tarsalis

averaged 5 larvae per dip in drain ditch in Las Cruces. (N. M. Dept. of Pub. Health). FLORIDA - Additional rains and warm weather in Gainesville area resulted in 2 mosquito larval broods in woodland pool. At same time, large brood of first and second instars of several species noted; estimated hatching time approximately February 27. Aedes infirmatus and Psorophora ferox 2 most common species, followed by Aedes vexans and Aedes atlanticus. Pool lined primarily with oak and pine leaves. (Mead). MARYLAND - First-stage larvae of Aedes canadensis found in Montgomery, Anne Arundel and Prince Georges Counties, and of Aedes cantator in Anne Arundel County, all on March 1. (U. Md., Ent. Dept.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Heavy on cattle checked in Pushmataha and Cotton Counties week ending February 26. Averaged less than 5 per head on untreated yearling steers in Canadian County. (Okla. Coop. Sur.). COLORADO - Counts per head in untreated cattle averaged 12 in Baca County, and 17 in Weld County. (Hantsbarger).

CATTLE LICE - COLORADO - Heavy buildup noted in Weld County. (Hantsbarger). OKLAHOMA - Heavy on cattle checked in Pushmataha and Cotton Counties week ending February 26. Extremely heavy on yearling steers in Kay County, moderate on cattle in Roger Mills County March 4. (Okla. Coop. Sur.). ARKANSAS - Very light in herd of 150 cattle in Washington County, northwest. (Ark. Ins. Sur.). ALABAMA - Although somewhat lighter than usual on cattle this winter, now occurring in many herds in Marion County. (Price). NORTH CAROLINA - Linognathus vituli, Solenopotes capillatus and Bovicola bovis heavy on several calves examined in beef herd on pasture in Orange County. L. vituli present in greatest numbers. (Mount).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - ARKANSAS - Infestations variable in Washington and Benton Counties, northwest. Heavy where present, but in probably less than 5 percent of flocks. (Ark. Ins. Sur.). MISSISSIPPI - Infestation spotted and light on caged laying hens in Oktibbeha County; ranged 10-20 per bird. (Dinkins et al.).

SHEEP SCAB MITE (Psoroptes ovis) - CALIFORNIA - Four individual breeding herds of beef cattle in Merced County found infested; 2,000 cattle involved brought from out of State during 1965. All herds under "hold order" and receiving eradication treatments. Only known occurrence of pest in State. (Cal. Coop. Rpt.).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Averaged 6 per head on cows in Pushmataha County week ending February 26. About 60 encapsulated in skin of red fox in Delaware County; readily apparent from underside. (Okla. Coop. Rpt.).

TICKS - OKLAHOMA - Total of 1,494 specimens taken from deer at check stations in McCurtain, Atoka, Le Flore, Pushmataha, Latimer, Coal and Pittsburg Counties during November 1965, determined as follows: Of this total, 1,386 (92.8 percent) Ixodes scapularis, by far dominant species; 67 (4.5 percent) Dermacentor albipictus, with heaviest concentration at Naval Ammunition Depot in Pittsburg County where it represented 28.5 percent of ticks taken; and remaining 41 (2.7 percent) Amblyomma americanum, representing no more than 7.7 percent of total in any location. Numbers per head ranged from 20 (Heavener area of Le Flore County and northeast McCurtain County) to 1,000 (Farris area, Atoka County). Ixodes scapularis remains heavy on deer in Atoka County; averaged over 500 per head. A. americanum and D. albipictus also present; averaging 10 percent and 0.5 percent of population respectively. Unspecified ticks moderate on cattle in Roger Mills County. (Okla. Coop. Sur.).

A VESPID WASP (Polistes fuscatus centralis) - NEVADA - Overwintering females numerous in and around homes in Las Vegas, Clark County. (Barton).

HOUSEHOLDS AND STRUCTURES

CIGARETTE BEETLE (Lasioderma serricorne) - CALIFORNIA - Infestation found in silk floss of embroidered pictures in San Francisco home. Pictures purchased by homeowner in Japan approximately one year earlier. Infestations previously occurred in spices and other commodities in this household. Infestation in silk floss may have originated from previous infestation. (Morrill, Dept. of Navy).

A POWDER-POST BEETLE (Trogoxylon prostomoides) - CALIFORNIA - Heavy in residences in Aptos, Santa Cruz County. More instances of adult emergence reported this winter than normal. Probably due to cold weather which required continued heating over a long period. (Cal. Coop. Rpt.).

BLACK CARPENTER ANT (Camponotus pennsylvanicus) - ALABAMA - Winged males and females grouping outside of nesting area near Lee County home prior to swarming. Numerous and annoying in kitchen. (McQueen).

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - MARYLAND - Winged forms emerged inside home at Hyattsville, Prince Georges County. (U. Md., Ent. Dept.).

BOXELDER BUG (Leptocoris trivittatus) - VIRGINIA - Adults common in and around many homes in Fulvanna County (Watts); common in Pulaski and Middlesex Counties (Isakson, Rich, Edwards). DELAWARE - Causing considerable annoyance in northern New Castle County. (Burbutis).

A SPRINGTAIL (Onychiurus fimetarius) - CALIFORNIA - Locally heavy in soil and mulch around maple trees in Fresno, Fresno County. Annoying to homeowners by migrating onto lawns, driveways, swimming pools and into residences. (Cal. Coop. Rpt.).

STORED PRODUCTS

LESSER GRAIN BORER (Rhyzopertha dominica) - TEXAS - Heavy infestations damaging stored shelled and ear corn near Seguin, Guadalupe County. (New).

RICE WEEVIL (Sitophilus oryzae) - TEXAS - Light populations observed in stored corn near Seguin, Guadalupe County; few Tribolium castaneum also observed. Moderate numbers damaging shelled stored corn at same locality. (New).

INDIAN-MEAL MOTH (Plodia interpunctella) - CALIFORNIA - Larvae heavy on commercial packages of dehydrated meat dog food. Apparently sufficient cereal material to support large populations. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

DAMSEL BUGS (Nabis spp.) - OKALHOMA - Up to 1.5 per linear foot noted in wheat in Cotton and Tillman Counties. (Okla. Coop. Sur., Feb. 26).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

A BOLL WEEVIL (Anthonomus sp.) - ARIZONA - Adults observed flying in eastern Yuma County February 29. (Ariz. Coop. Sur.).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Status unchanged; larvae and adults common in Dade, Broward and Palm Beach Counties. Calamondins, guavas and loquats principal hosts February 21-28. (Fla. Coop. Sur.).

GRASSHOPPERS - OKLAHOMA - Survey at 3 stops in Beckham County and one in Harmon County; average of 0.6 egg pod per square foot. One stop in pastureland south of Elk City, Beckham County, showed 15 egg pods in 2 square feet. Most pods sound; bee fly larvae noted at stop in Beckham County. (Okla. Coop. Sur.).

INSECT DETECTION

A FALSE SPIDER MITE (Pentamerismus taxi) - MARYLAND - Adults collected August 4, 1965, from Taxus sp. at Cumberland, Allegany County. Collected by W. T. Garrett. Det. by E. W. Baker. This is a new State record. (U. Md., Ent. Dept.). (p. 171).

AN OLETHREUTID MOTH (Pseudexentera spoliana) - DELAWARE - Adult taken in sweep net in woods at Newark, New Castle County, April 12, 1964. Collected by D. F. Bray. Det. by D. R. Davis. Known host chestnut. This is new State record. (Burbutis). Widespread in eastern United States, but apparently of no economic importance. (ARS).

AN OLETHREUTID MOTH (Grapholitha eclipsana) - DELAWARE - Adult collected from grass and shrubs in sweep net at Newark, New Castle County, May 4, 1964. Collected by D. F. Bray. Det. by D. R. Davis. Known host grape. This is new State record. (Burbutis). Widespread in eastern United States, but of no apparent economic importance. (ARS).

AN OLETHREUTID MOTH (Olethreutes coruscana) - DELAWARE - Adult collected from grass and shrubs in sweep net at Newark, New Castle County, May 29, 1964. Collected by D. F. Bray. Det. by D. R. Davis. This is new State record. (Burbutis). Widespread in eastern United States, but of no apparent economic importance. (ARS).

A GELECHIID MOTH (Gnorimoschema salinaris) - DELAWARE - Adults reared from galls on goldenrod by D. F. Bray at Newark, New Castle County, September 4, 6 and 12, 1964. Det. by R. W. Hodges. This is new State record. (Burbutis). Of no economic importance as far as is known. (ARS).

A PLUME MOTH (Oidaematophorus inquinatus) - DELAWARE - Adults collected at porch light in Newark, New Castle County, May 17, 1964, by D. F. Bray. Det. by R. W. Hodges. Known hosts ragweed and cocklebur. This is new State record. (Burbutis). Of no economic importance as far as is known. (ARS).

AN ASTEIID FLY (Bryania bipunctata) recorded as new island record on Oahu, Hawaii. (Hardy). (p. 176).

CORRECTIONS

CEIR 16(3):37 and 16(8):125 - A STINK BUG (Thyanta accera) should read Thyanta accerra.

CEIR 16(8):117, 124, 125 - A PRODOXID MOTH (Tetegicula sp.) should read (Tegeticula sp.).

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 3/2; blacklight) - Feltia subterranea 1, Pseudaletia unipuncta 1.

GEORGIA (Tifton, 2/23-3/2; temp. 34-62°F.; precip. 2.65 in.; blacklight) - Heliothis zea 0, H. virescens 0, Manduca quinquemaculata 0, M. sexta 0.

SOUTH CAROLINA (Charleston, 2/28-3/6; temp. 34-69°F.; precip. 3.28 in.; blacklight) - Pseudaletia unipuncta 4, Spodoptera frugiperda 0, Prodenia ornithogalli 0, Agrotis ipsilon 0, F. subterranea 1, Peridroma saucia 0, H. zea 0, H. virescens 0, M. sexta 0, M. quinquemaculata 0, Estigmene acrea 0, T. ni 0.

TEXAS (Brownsville, 2/26-3/4; temp. 47-85°F.; precip. trace; 2 blacklight) - Agrotis ipsilon 19, F. subterranea 53, H. zea 5, Peridroma saucia 59, Prodenia ornithogalli 6, Pseudaletia unipuncta 54, Trichoplusia ni 3.

HAWAII INSECT REPORT

Cereal and Forage Insects - A GRASSHOPPER (Schistocerca vaga) - Total of 23 adults (13 females, 10 males) flushed from Desmanthus virgatus (slender-mimosa) and Pluchea indica (Indian pluchea) in 0.25-acre area on Sand Island, Oahu. This indicates fast population buildup from previous observations. (Gaddis).

Truck Crop Insects - A LEAF MINER FLY (Liriomyza sp.) medium on snap beans and light on Solanum nigrum (popolo), a wild host, in Hanapepe, Kauai. (Au). BEAN BUTTERFLY (Lampides boeticus) larvae light on Dolichos lablab (hyacinth-bean) in Ewa, Oahu; about 2 per 20 beans. (Hironaka). ONION THRIPS (Thrips tabaci) light and attacking Allium fistulosum (green onions) in truck farms in Hanapepe, Kauai; mostly nymphs. Variety of A. fistulosum (red stem onions) completely free from attack. (Au).

Insects Affecting Man and Animals - SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) light throughout most of Oahu during week of February 14-21 as indicated by light trap counts by Mosquito Control Branch, State Department of Health. Waiahole and Honouliuli only areas with counts of more than 100 (177 and 129 respectively). Aedes vexans nocturnus light in most areas of Oahu same period. Averaged 19.9 per trap at 42 light trap stations. (Dept. of Health).

Miscellaneous Insects and Other Pests - AN ASTEIID FLY (Bryania bipunctata) previously recorded only from Laysan, Nihoa and Kure of leeward islands. Six specimens taken in light traps in Honolulu on December 1, 1963, July 20, 1964, August 17-20, 1964, and December 13, 1965, constitute first records from Oahu. (Hardy). A full grown BROWN GARDEN SNAIL (Helix aspersa) found in Nawiliwili, Kauai; sixth specimen collected during past 12 months in area. One specimen also intercepted on camellia plant from California in Honolulu. (Look). A PLATASPID BUG (Coptosoma xanthogramma) very heavy on Cajanus flavus (pigeon-pea) at Pacific Heights, Oahu. Thick clusters of adults and various nymphal instars on one mature plant. Some branches (one-eighth inch diameter) bore 200-300 individuals per foot. This constitutes new host record for this bug. (Higa). GIANT AFRICAN SNAIL (Achatina fulica) found on barge from Oahu in Lihue, Kauai, February 25. Specimen 3 inches in diameter. (Look). A LYCTID BEETLE (Lyctus sp.) heavy on bamboo used in large anthurium greenhouse in Lawai, Kauai. Outer layer of bamboo remained intact but inner portion reduced to powder. (Au).

Beneficial Insects - A HELIODINID MOTH (Schreckensteinia festaliella) actively feeding on foliage and terminals of Rubus sp. (blackberry) in Koekee, Kauai. Approximately 3,000 acres of blackberry found in area. (Au). An ARCTIID MOTH (Selca brunella) becoming established near Kipu, Kauai, on Melastoma malabathricum (Indian-rhododendron). Damage to leaves and twigs obvious. (Au).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 166)

TRUCK CROP INSECTS

EGGPLANT, PEPPER, POTATO AND TOMATO INSECTS

Highlights:

Although troublesome as usual, LEPIDOPTEROUS larvae were not so severe on solanaceous crops throughout the Nation as in other years. Some exceptions of note were CLAY-BACKED CUTWORM in Ohio, where infestations were widespread, EUROPEAN CORN BORER on the Eastern Shore of Virginia and TOMATO PINWORM in California. COLORADO POTATO BEETLE was particularly abundant and damaging the entire season on the Delmarva Peninsula. FLEA BEETLES were damaging in home gardens, particularly, but some commercial plantings suffered. WIREWORMS are becoming more destructive in the Pacific Northwest. APHIDS were widespread and in some instances more so owing to the severe drought. POTATO PSYLLID required controls but it was not so serious in most Western States as in past years.

TOMATO FRUITWORM (Heliothis zea) was the most serious pest of tomatoes in ALABAMA. It was light on tomatoes in southwestern GEORGIA during the first half of the year. This noctuid caused rather heavy damage to some late tomatoes in VIRGINIA, and infestations were heavy in untreated sweet peppers in DELAWARE in September. Light populations occurred on tomatoes, peppers and other crops in NEW JERSEY. This was the most troublesome pest of tomatoes in MISSOURI; infestations varied over the State. In KANSAS, this species was generally light or not reported as causing damage except to tomatoes in the Wichita area. H. zea continued a major pest of tomatoes in ARKANSAS but was lighter than in 1964. This pest was general on commercial and home vegetables over TEXAS. Continuous controls were necessary in ARIZONA to maintain noneconomic populations on spring truck crops. Moderate infestations were found in early fall. Egg surveys on tomato leaves in UTAH forecast almost no injury in the northern area; insecticide applications were omitted because of the low forecast. This pest infested tomatoes in COLORADO. Moderate to high numbers occurred on tomatoes in Mesa, Montrose, Delta and Garfield Counties; controls were fair to good. Much of the reduced yield was due to labor shortage and many fields were picked once and a partial second time only in that part of Colorado. Infestations were slow in starting in CALIFORNIA but they persisted into winter. There was a significant reduction of winter pupae in WASHINGTON following below zero temperatures on December 17, 1964. The first adult of the season was recorded in the Yakima Valley June 3; adult flights in the fall were the largest since 1958 because of the warm spring and summer.

BLACK CUTWORM (Agrotis ipsilon) was apparently responsible for injury to tubers in commercial potatoes in North Kingstown, South Kingstown and Exeter, RHODE ISLAND. It caused more than the usual injury to potatoes throughout NEW JERSEY. Larvae were light in potato fields in late June in WISCONSIN. This pest contributed to losses on potatoes in northern COLORADO. In OHIO, CLAY-BACKED CUTWORM (A. gladiaria) destroyed 20 acres of tomatoes in Sandusky County; other infestations in that State were widespread.

CABBAGE LOOPER (Trichoplusia ni) infestations on potatoes were heavy in northwestern counties of NEVADA; larvae were heavy on potatoes in Lyon, Pershing and Washoe Counties from mid-May into August, with controls applied in most fields. Trichoplusia spp. caused considerable injury to commercial tomatoes in Madison County, NORTH CAROLINA. T. ni and Pseudoplusia includens were minor pests of tomatoes in ALABAMA. T. ni was perhaps worse than usual on potatoes, tomatoes and other crops at Homestead, FLORIDA, during the winter-spring season and very numerous on unsprayed potatoes at Hastings during the same period.

Other noctuids attacking solanaceous crops were reported. Moderate to heavy infestations of CUTWORMS damaged potatoes in central MAINE in late June and an occasional potato plant was attacked by Papaipema sp. in Aroostook County in mid-July; it caused very severe damage in one field. STALK BORER (P. nebris) was generally present and caused about the usual number of complaints in RHODE ISLAND; tomatoes and peppers were most frequently attacked. Cutworms were damaging to tomatoes and potatoes in ALABAMA. VARIEGATED CUTWORM (Peridroma saucia) damaged some greenhouse tomato plants in Wayne County, OHIO, during November. P. saucia ranged trace to moderate on potatoes in COLORADO. This pest damaged potatoes and other crops throughout much of WASHINGTON.

TOMATO HORNWORM (Manduca quinquemaculata) was very prevalent in many tomato-growing areas of CALIFORNIA, and moderate to high numbers infested tomatoes in COLORADO. Tomato hornworm and TOBACCO HORNWORM (M. sexta) were light throughout INDIANA, causing little, if any, economic damage. HORMWORMS were severe on bell peppers in FLORIDA during September and October at Bradenton.

EUROPEAN CORN BORER (Ostrinia nubilalis) was light to moderate on potatoes, peppers and tomatoes throughout NEW JERSEY. Infestations in late potatoes increased slightly in MARYLAND. After a 4-year period of low incidence in VIRGINIA, larvae caused considerable damage to potatoes on the Eastern Shore. They were found in fall potatoes in very large numbers, probably due to field corn maturing early. This pest was very light on pimiento peppers in northern sections of ALABAMA late in the season.

POTATO TUBERWORM (Phthorimaea operculella) larvae mined potato leaves in a large commercial planting in Slocum, RHODE ISLAND, in late summer. This gelechiid was well distributed in foliage of fall potatoes on the Eastern Shore of VIRGINIA and it was also troublesome in stored potatoes in a few areas of the State. This pest was present in most potato-growing areas of CALIFORNIA. Another gelechiid, TOMATO PINWORM (Keiferia lycopersicella) infested tomatoes in Imperial, Yolo and Fresno Counties, with infestations the worst in 10 years in San Diego County.

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) was abundant and damaging by mid-May in Grant County, WASHINGTON. Numbers ranged trace to moderate in COLORADO, were generally low in NORTH DAKOTA and generally light to moderate in KANSAS. This pest damaged potatoes in OKLAHOMA from mid-April to late June. During the first half of the year, this chrysomelid was light to moderate on tomatoes and potatoes throughout GEORGIA. This was one of the important pests of potatoes in ALABAMA; normal infestations occurred. Colorado potato beetle continued as the number-one pest of potatoes on the Eastern Shore of VIRGINIA. Infestations were extremely heavy and 1-4 foliage applications of insecticide were necessary. Tomatoes were also severely damaged. Following cool weather in June, an unusually large second brood developed on Virginia's Eastern Shore and adults of that brood caused considerable damage to fall peppers and late tomatoes. Infestations on the Eastern Shore of MARYLAND were also generally heavy and caused considerable damage to unprotected potatoes and tomatoes early in the season. Damage to late tomatoes and eggplants was also above normal. Populations were generally high this past year on tomatoes and potatoes in several areas of DELAWARE. Light to moderate injury occurred on potatoes throughout NEW JERSEY. This pest caused less conspicuous injury to emerging plants in RHODE ISLAND than in 1964; commercial growers maintained control. THREE-LINED POTATO BEETLE (Lema trilineata) was present in Rhode Island but inconspicuous.

TOBACCO FLEA BEETLE (Epitrix hirtipennis) infested tomatoes in several CALIFORNIA counties. WESTERN POTATO FLEA BEETLE (E. subcrinita) was present in Malheur, Baker and Klamath Counties, OREGON, on potatoes but no severe damage occurred. TUBER FLEA BEETLE (E. tuberis), which in former years caused heavy damage to central Oregon's potatoes, has not been a problem there the past 2 years; however, some damage occurred in the Willamette Valley. Spotty infestations of STRIPED FLEA BEETLE (Phyllotreta striolata) caused varying degrees of damage to potatoes and tomatoes in the Big Horn Basin of WYOMING; the most heavily infested potato fields ranged 32-46 adults per 100 sweeps. Infestations were larger than those

found in 1964. Very small numbers of P. striolata were found in the southeastern growing areas of Wyoming. Trace to moderate populations of E. tuberis were noted on potatoes in COLORADO. Damage by POTATO FLEA BEETLE (E. cucumeris) was generally spotty on potatoes in NORTH DAKOTA; isolated moderate to heavy infestations appeared in the northeast.

Potato flea beetle populations were heavy in home gardens in Temple, MAINE; heavy damage occurred on potatoes and tomatoes in Auburn; damage occurred in June in both instances. Moderate to heavy damage occurred in Vassalboro, Maine, home gardens and on tomatoes in home gardens in Cumberland County in mid-June. Moderate populations caused moderate to heavy damage in central Maine until mid-August. Various FLEA BEETLES attacked tomatoes and potatoes in VERMONT. E. cucumeris was general on potatoes and tomatoes in average numbers in RHODE ISLAND. Flea beetles caused light to moderate injury to potatoes throughout NEW JERSEY. E. cucumeris was quite abundant in southeastern PENNSYLVANIA in May. This species was fairly common on some potatoes in New Castle and Kent Counties of DELAWARE in June and early July but populations were generally lower than in 1964. Epitrix spp. were somewhat lighter than usual in MARYLAND on tomatoes, potatoes and other solanaceous crops. E. cucumeris was relatively light in VIRGINIA and caused little damage to potato tubers. ELONGATE FLEA BEETLE (Systena elongata) caused moderate damage to tomatoes in the Griffin area of GEORGIA. Several species of flea beetles were damaging to potatoes in ALABAMA.

PACIFIC COAST WIREWORM (Limonius canus) and SUGAR-BEET WIREWORM (L. californicus) damaged potatoes by early May in south central WASHINGTON; these are increasingly destructive in eastern areas. L. californicus was more abundant than usual on potatoes in Malheur County, OREGON. Cardiophorus sp. damaged potatoes in several CALIFORNIA locations. Limonius spp. damaged tomato plants slightly in Goshen County, WYOMING. Damage first appeared in mid-June; populations appeared smaller than those of 1964. WIREWORMS caused light to moderate injury to potatoes throughout NEW JERSEY and ALABAMA.

DARKLING BEETLES (Blapstinus spp. and Metoponium spp.) damaged tomatoes and peppers in several locations in CALIFORNIA; PEPPER WEEVIL (Anthonomus eugenii) occurred on peppers in Orange County. FALSE WIREWORMS damaged tomato plants slightly in Goshen County, WYOMING. POTATO STALK BORER (Trichobaris trinotata) was very severe in several fields of newly set tomato plants in Luzerne County, PENNSYLVANIA. BLISTER BEETLES (probably Epicauta spp.) were especially damaging to tomatoes and potatoes near Masardis, MAINE, in early July; moderate populations, with severe injury, occurred on potatoes in Surry area in mid-July. Moderate damage to potatoes occurred in Jonesboro and damage was noted in a few fields in central Aroostook County in mid-July.

GREEN PEACH APHID (Myzus persicae) and BUCKTHORN APHID (Aphis nasturtii) migrations to potatoes began June 12 in MAINE; by mid-June, POTATO APHID (Macrosiphum euphorbiae) predominated. FOXGLOVE APHID (Acyrthosiphon solani) appeared between June 25 and July 10; migration was completed by that time. Increase in numbers during that period was 3 times the 1964 level. The increase during July 17 to August 14 was less than average. First indications of mortality due to entomogenous fungi were noted July 15 followed by a sharp increase in mortality until August 17. Fungi continued to decimate aphid populations to about August 28. Aphis nasturtii and Macrosiphum euphorbiae began fall migrations by or before August 17 and 23, respectively.

Green peach aphid was very abundant on potatoes in MASSACHUSETTS for the second consecutive year; many growers experienced difficulty in control. Incidence of this aphid in NEW JERSEY was abnormally high owing to shortage of normal weed hosts because of the prolonged drought and subsequent migration of alates to irrigated crops during midsummer and late summer. Potatoes, tomatoes, peppers and other crops were damaged. Potato aphid was moderate on potatoes early in the season in New Jersey. By mid-May, many young pepper plants were infested with green peach aphid in Sussex County, DELAWARE; populations were high on several large potato fields in western Kent County during July. Green peach aphid was

rather common on untreated peppers in Kent and Sussex Counties, Delaware, from mid-August through September. Potato aphid and green peach aphid injured many plantings of tomatoes and peppers over a wide area of MARYLAND. APHIDS attacked pimiento peppers in northern ALABAMA throughout the season but were less than normal on tomatoes and peppers. Green peach aphid became numerous on potatoes in FLORIDA. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) continued as the most prominent insect pest of greenhouse tomatoes in OHIO.

Green peach aphid increased rapidly on potatoes in the Yakima Valley of WASHINGTON during May; heavy infestations plus a high incidence of leaf roll virus occurred on potatoes in the eastern area. Green peach aphid and potato aphid were present in COLORADO in trace to moderate numbers. Controls were fair to good.

POTATO PSYLLID (Paratrioza cockerelli) caused concern to potato growers in Maricopa and Pinal Counties, ARIZONA, when medium populations developed in February, and early March and April. Populations were less than in 1964 but continued a serious economic problem. This psyllid damaged eggplants in San Luis Obispo County, CALIFORNIA, and damaged potatoes in Kern County. Populations were generally low in NEVADA as they had been in 1964. Large numbers of eggs and adults were found in mid-May in Goshen County, WYOMING, on matrimony-vine. This was a very early occurrence compared with mid-June of most years; however, numbers found throughout the State were slightly smaller than those of 1964. Nearly all fields were treated at planting with systemic insecticides and this, along with timely applications of contact insecticides, contributed to the very slight damage from psyllid yellows. Trace to moderate numbers of this psyllid occurred in most of the potato-growing areas of COLORADO. Tomatoes were infested lightly. Low populations also occurred in northwestern NEBRASKA with little economic damage. Preventive chemical controls were applied.

POTATO LEAFHOPPER (Empoasca fabae) was heavy in central MAINE and damaged potatoes in mid-August. Moderate damage occurred throughout NEW JERSEY. On the Eastern Shore of MARYLAND and VIRGINIA, this leafhopper caused extensive damage to late potatoes. LEAFHOPPERS were notable pests of potatoes in ALABAMA. Seasonal levels of E. fabae were low in MICHIGAN and no major problems developed on potatoes. Although this species was numerous in a few alfalfa fields in WISCONSIN throughout the summer, numbers decreased on vegetable crops in mid-August. Populations built up to considerable numbers in untreated potato fields and hopperburn was noticeable late in the season. Numbers remained low throughout the season in NORTH DAKOTA. Trace numbers occurred on potatoes in COLORADO. In CALIFORNIA, several species of leafhoppers were damaging to potatoes, tomatoes and other crops.

FOUR-LINED PLANT BUG (Poecilocapsus lineatus) caused severe feeding damage in Aroostook County, MAINE, in mid-July. Damage occurred on margins of 2 fields of potatoes bordering woods; spotty damage occurred within fields. TARNISHED PLANT BUG (Lygus lineolaris) ranged up to 5 per sweep on potatoes in Pembina County, NORTH DAKOTA. Medium infestations of SAY STINK BUG (Chlorochroa sayi) caused wilting of potato stems in Eureka County, NEVADA, in July. SUCKFLY (Cyrtopeltis notatus) caused locally heavy damage to tomatoes in Presidio County, TEXAS. LEAF-FOOTED BUG (Leptoglossus phyllopus) and STINK BUGS were minor pests of tomatoes in ALABAMA.

VINEGAR FLIES (Drosophila spp.) were less troublesome than usual in both tomato fields and in canneries of NEW JERSEY. D. melanogaster was very abundant in INDIANA from late August until mid-September. Weather conditions were ideal for the buildup on tomatoes.

TOMATO RUSSET MITE (Aculus lycopersici) was a general pest of tomatoes in CALIFORNIA. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) severely damaged potatoes and other crops in eastern WASHINGTON crop areas. Several species of SPIDER MITES damaged tomatoes in most areas of TEXAS. Tetranychus sp., probably urticae, was light to moderate throughout NEW JERSEY on tomatoes, eggplant and

other crops.

GRAY GARDEN SLUG (Deroceras reticulatum) and other species damaged tomatoes in Clark County, WASHINGTON.

CRUCIFER INSECTS

Highlights:

CABBAGE LOOPER damaged crops in eastern and western Washington for the first time since 1958. Elsewhere, this and other LEPIDOPTEROUS larvae were troublesome on crucifers where controls were applied too late or natural controls were inadequate. ROOT MAGGOTS (Hylemya spp.) were particularly destructive to crucifers; several reports of resistance were noted.

CABBAGE LOOPER (Trichoplusia ni) damaged crops in both eastern and western localities in WASHINGTON for the first time since 1958. This pest was widespread and damaging to many crops in CALIFORNIA. Light to medium infestations occurred on cabbage and other crops during the spring in ARIZONA; parasites were helpful in preventing larger populations. Moderate damage occurred on fall crops in Arizona. This noctuid caused conspicious injury to several acres of cabbage in Salt Lake County, UTAH, during the summer. Larvae were numerous in COLORADO in all areas where cabbage was grown. It continued to cause considerable loss in KANSAS home gardens where controls are often applied too late. This was a pest of cole crops in ARKANSAS but it was lighter than in some years; it was active as late as mid-November in broccoli. Damage to cole crops in NORTH DAKOTA gardens ranged moderate to severe but damage appeared late in the season. Considerable parasitism of larvae was observed in Foster County, North Dakota. The first main flight of adults in MICHIGAN was extremely late in arriving. Blacklight trap data showed that the flight occurred the first week of September; catches remained relatively low that month. Larvae appeared September 7 in 3 Monroe County plantings of cabbage. Overall damage was relatively light.

Cabbage looper was heavy on truck crops in the spring in the Belle Glade area of FLORIDA where inadequate insecticide treatments were applied. This pest was probably worse than usual on cabbage and other crops at Homestead during the winter-spring season. T. ni was the most damaging pest of crucifers in ALABAMA; a related species, Pseudoplusia includens, was also destructive. Cabbage looper infestations were light to heavy on crucifers in GEORGIA during the first half of the year. Trichoplusia spp. were the usual, serious problems on commercial and home garden cabbage throughout NORTH CAROLINA; larvae averaged 1-2 per head in 15 treated commercial fields in Watauga County in mid-September. T. ni was a major pest of crucifers in VIRGINIA and MARYLAND in the summer and fall; nuclear polyhedrosis virus reduced one population peak in Virginia, but the hot, dry weather in the fall reduced virus spread and larvae continued to be a problem in both States well into the fall. This pest was unusually abundant in NEW JERSEY and difficult to control on crucifers. It was also one of the most difficult pests to control on cabbage and cauliflower in MASSACHUSETTS. Light to moderate numbers caused moderate damage to cabbage at Cape Elizabeth, MAINE, in late June.

ALFALFA LOOPER (Autographa californica) was unusually abundant and damaging to crucifer seed crops and other crops in many parts of WASHINGTON; however, the second brood did not damage broccoli as anticipated in the northwest. VARIEGATED CUTWORM (Peridroma saucia) damaged crucifer seed crops in northwestern Washington. P. saucia was widespread in the Willamette Valley of OREGON where it severely damaged cabbage and other crops.

IMPORTED CABBAGEWORM (Pieris rapae) caused severe damage to cabbage and related plants in northwestern NEW MEXICO. Larvae continued to cause considerable losses in home gardens in KANSAS where controls are often applied too late. Damage to cole crop gardens in NORTH DAKOTA was moderate to severe; considerable parasitism of larvae was noted in Foster County. OHIO vegetables were attacked. This was the second most serious pest of crucifers in ALABAMA. Light to heavy infestations occurred the first half of the year in GEORGIA. Larvae were a problem early in the season on most crucifers in MARYLAND, especially in home gardens. There was little change in damage in RHODE ISLAND. Light to moderate populations caused moderate damage on cabbage in Cape Elizabeth, MAINE, in late June.

DIAMONDBACK MOTH (Plutella maculipennis) larvae were heavy on a large planting of cabbage near Salisbury, MARYLAND in June; this was a major pest of spring vegetables in VIRGINIA. Larvae of this species, PICKLEWORM (Diaphania nitidalis) and unspecified WEBWORMS were damaging to crucifers in ALABAMA.

CABBAGE APHID (Brevicoryne brassicae) was lower than normal in northwest WASHINGTON, probably because frost killed most cruciferous hosts. This aphid was prevalent on cole crops all year in CALIFORNIA. POPLAR PETIOLE GALL APHID (Pemphigus populitransversus) damaged cabbage roots in the Rio Grande Valley and turnip roots in the gulf coast area of TEXAS. Although B. brassicae was present in small numbers on vegetable crops in scattered areas of WISCONSIN, it was apparently not economically important. GREEN PEACH APHID (Myzus persicae) was first noted on young cabbage plants in April and B. brassicae was common on young cabbage plants in several areas of DELAWARE during late April and May. Cabbage aphid was light to heavy in GEORGIA during the first half of the year. APHIDS, including B. brassicae, TURNIP APHID (Hyadaphis pseudobrassicae) and P. populitransversus were damaging pests of crucifers in ALABAMA. Myzus persicae became numerous on late cabbage in FLORIDA.

CABBAGE MAGGOT (Hylemya brassicae) caused light damage on radish and cabbage generally in Androscoggin and Sagadohoc Counties, MAINE, in late June. Damage by these maggots was unusually heavy in the Burlington area, VERMONT, and in one instance eliminated a crucifer planting. Cabbage maggot appeared in average abundance in Vermont; it was particularly destructive to turnips. Adults were about as active as in 1964 in MASSACHUSETTS; egg deposition was heavy in some areas of Hampden and Hampshire Counties. Infestations were severe in Chinese cabbage in late July. This pest caused considerable concern to growers of turnips, radishes and cabbage throughout central NEW JERSEY. It was very damaging on commercial cabbage in untreated fields in NORTH CAROLINA and on fields receiving a standard chlorinated hydrocarbon treatment in Watauga County in late June. Cabbage maggot was severe and difficult to control in PENNSYLVANIA on cole crops, radishes and turnips. Infested cabbages were noted in 7 OHIO counties in mid-June and again in late September. Insecticide resistance was present in some areas. This pest was less numerous in WISCONSIN than in 1964; preventive controls appeared adequate in most fields. A few untreated cabbage fields in southeastern counties and some in Outagamie County as well as many home gardens of Wisconsin had high populations. H. brassicae infested Brussels sprouts in Santa Cruz and San Mateo Counties, CALIFORNIA. This anthomyiid fly severely damaged radishes and turnips in southwestern WASHINGTON.

Several species of FLEA BEETLES, especially Phyllotreta cruciferae, were again abundant in all sections of MARYLAND where they caused considerable injury to cabbage, broccoli, turnip greens and collards. Flea beetles were major pests of spring crop vegetable greens. P. cruciferae was very numerous on mustard greens, turnip greens, kale, collards and cabbage during September. A LEAF BEETLE (Phaedon sp.) caused heavy damage to mustard at Gainesville, FLORIDA.

GARDEN SLUGS were abundant and caused moderate to severe damage to cabbage in southeastern NORTH DAKOTA.

ASPARAGUS, ONION AND GARLIC INSECTS

SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) ranged light to moderate in southern areas of NORTH DAKOTA. ASPARAGUS BEETLE (C. asparagi) was numerous on asparagus plants and shoots in the Wathena area of KANSAS. This species was slightly above normal in most sections of MARYLAND in both commercial and home plantings of asparagus. It was abundant in southern counties of NEW JERSEY and caused moderate injury. Populations of both species were the heaviest observed in many years in RHODE ISLAND.

ONION MAGGOT (Hylemya antiqua) was less numerous than in 1964 in WISCONSIN; preventive control measures appeared adequate in most fields. Several severe infestations in onions were reported in southeastern NORTH DAKOTA. H. antiqua and SEED-CORN MAGGOT (H. platura) were light in all onion fields checked in Mesa, Montrose, Delta and Garfield Counties of COLORADO. Local infestations of H. antiqua developed in Siskiyou County, CALIFORNIA.

ONION THRIPS (Thrips tabaci) infestations were heavy on green onions in Clark County, NEVADA, in March and on dry onions in Lyon County in July. This thrips was prevalent as in most years in western COLORADO onion fields but one or two sprays during the season were adequate. This thrips was damaging in onion-growing areas of TEXAS. Heavy populations caused considerable damage to onions in northwestern ILLINOIS; controls were necessary. In MARYLAND, onion thrips was the cause of injury to many onion plantings in home gardens.

CUTWORMS were exceptionally heavy on a wide variety of crops including asparagus in VERMONT. CLAY-BACKED CUTWORM (Agrotis gladiaria) feeding at bases of asparagus plants caused 75 percent of the crop to curl and bend in northeastern PENNSYLVANIA. Cutworms damaged onions and other crops in several MICHIGAN Counties.

BROWN WHEAT MITE (Petrobia latens) was heavy on onions in Lyon County, NEVADA; controls were necessary in May. BULB MITE (Rhizoglyphus echinopus) damaged garlic and other crops in CALIFORNIA.

BEAN, PEA AND LEGUME INSECTS

Highlights:

MEXICAN BEAN BEETLE populations ranged normal to lighter than normal in most areas of the Nation. Other coleopterous pests were generally well-controlled. Outbreaks of NOCTUIDS did not materalize on legumes, largely due to the careful inspections of areas where outbreaks occurred in 1964. However, considerable losses were reported.

MEXICAN BEAN BEETLE (Epilachna varivestis) overwintered in tremendous numbers in ALABAMA and it appeared throughout the State in April; it was a major pest of beans and peas. Light to heavy infestations occurred on beans in GEORGIA during the first half of the year. This beetle was a considerable problem on both home garden and commercial beans in NORTH CAROLINA as usual. This pest was unusually light on the spring crop of beans in VIRGINIA; it was again about normal in MARYLAND where it caused conspicuous but generally spotty injury to pole, snap and lima beans in all sections. Home gardens were damaged most in Maryland. There was little change in populations in RHODE ISLAND. Relatively few adults survived the 1964-65 winter in MICHIGAN, a sharp contrast with 1963-64. As a result, overall feeding damage by adults and larvae was much less. Severe infestations were noted on snap and pole beans in Morrow County, OHIO, in mid-September.

Mexican bean beetle caused heavy damage to bean foliage in NEW MEXICO; it often killed plants in Torrance and Valencia Counties; lighter damage was noted in Bernalillo, San Juan, Sandoval and Rio Arriba Counties. Infestations in KANSAS were much lighter than in 1964 although areas of infestations have increased. Damage to home garden snap beans did not cause concern until August and September; little injury occurred before then in Kansas. Light populations were noted in field beans in northwest NEBRASKA. This was the major insect present in irrigated bean areas of eastern COLORADO; however, it caused slight damage. This beetle was light in Mesa and Delta Counties on pinto beans; an occasional moderate population was noted in the Montrose area of Colorado.

BEAN LEAF BEETLE (Cerotoma trifurcata) destroyed or caused severe injury to home garden beans in eastern KANSAS where controls were not used. Adults were common but not overly destructive on snap and lima beans in MARYLAND. This leaf beetle was unusually light on the spring crop of beans in VIRGINIA. Large numbers overwintered in ALABAMA; it became a major pest of beans and peas throughout the year. Light to heavy infestations occurred in GEORGIA; PALE-STRIPED FLEA BEETLE (Systena blanda) caused heavy damage to lima beans in the Griffin area of Georgia. COWPEA CURCULIO (Chalcodermus aeneus) was a serious pest of commercial peas in southeastern ALABAMA. FLEA BEETLES were moderate on beans in western COLORADO; these were of little importance in Mesa and Delta Counties on pinto beans.

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) severely damaged lentils and dry peas in Whitman County, WASHINGTON, in August; ALFALFA LOOPER (Autographa californica) was unusually abundant and damaging to peas and other crops in many parts of that State. General infestations of BEAN LEAF SKELETONIZER (Autoplusia egena) occurred on green beans in Orange County, CALIFORNIA. Because of widespread larval infestations of GREEN CLOVERWORM (Plathypena scabra) in beans in MICHIGAN during the 1964 season, a close check was maintained by using blacklight traps and field sweepings. The first general flight occurred July 9-11; peak flight occurred about 2 weeks later. Weather and other natural control agents kept larval numbers low; no field problems were encountered in Michigan during 1965. CUTWORMS caused moderate to heavy damage to beans in central MAINE in late June. Green cloverworm was light on snap beans in NEW JERSEY. Cutworms were present and damaging to beans and peas in ALABAMA. Pseudoplusia includens and to a lesser extent CABBAGE LOOPER (Trichoplusia ni) caused moderate to heavy damage to foliage on snap beans with moderate injury to pods in FLORIDA. Considerable economic loss was noted. T. ni was probably worse than usual on beans and other crops at Homestead during the winter-spring season.

SALT-MARSH CATERPILLAR (Estigmene acrea) damaged field beans in CALIFORNIA, primarily in the southern area. BEAN LEAF ROLLER (Urbanus proteus) was a pest of southern peas and pole beans at Dover, FLORIDA. In ALABAMA, LESSER CORNSTALK BORER (Elasmopalpus lignosellus) was a serious pest, especially to noncommercial garden peas in the southeast.

PEA APHID (Acyrthosiphon pisum) built up to very high populations in WISCONSIN early in the season on alfalfa. Natural controls caused a population collapse in late May and prevented further buildup on alfalfa and peas. Winged aphids began dispersing from alfalfa into peas by the second week of May; populations were low until the second week of July then increased rapidly in peas, necessitating controls in many fields. Considerable variation between fields was noted; counts ranged zero to 200 per sweep. A. pisum was numerous in a few Wisconsin pea fields until the end of harvest. This aphid was common on commercial peas in most areas of DELAWARE by late April; counts in untreated fields averaged 200 per 100 sweeps. BEAN APHID (Aphis fabae) was fairly common in several commercial fields of lima beans in Delaware during July. Pea aphid started migrating in early June in Walla Walla County, WASHINGTON; no serious infestations developed on peas. Aphis fabae infested beans in Butte and Orange Counties, CALIFORNIA.

WHITEFLIES were heavy on beans in Torrance County, NEW MEXICO, and a problem on beans in home gardens in the Las Cruces area, Dona Ana County. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) infested beans in a few CALIFORNIA locations.

LEAFHOPPERS were unusually light on the spring crop of beans in VIRGINIA. POTATO LEAFHOPPER (Empoasca fabae) ranged moderate to heavy on snap and lima beans in MARYLAND. High populations of this leafhopper on lima beans appeared to be associated with lowered yields in DELAWARE. E. fabae caused moderate injury to lima beans in NEW JERSEY. This leafhopper damaged beans occasionally in VERMONT. Lima bean fields in WISCONSIN with high numbers were treated when yellowing of alfalfa was noted.

BEAN THRIPS (Caliothrips fasciatus) infested beans in Santa Barbara and Sutter Counties, CALIFORNIA. Moderate numbers of unspecified THRIPS were noted on beans in western COLORADO. A heavy population of thrips killed young lima bean seedlings following onion harvest in NEW JERSEY. Thrips were heavy in the flowers of beans and peas in several areas of GEORGIA the first half of the season.

SEED-CORN MAGGOT (Hylemya platura) destroyed 60 percent of dry beans in Ferrisburg, VERMONT. It damaged bean seedlings by early May in Franklin County, WASHINGTON.

SPIDER MITES (Tetranychus spp.) were light to moderate on lima beans in NEW JERSEY. These became serious in midsummer in MARYLAND in lima bean fields over the State. Unspecified spider mites developed heavy populations on early beans in VIRGINIA in some instances. Spider mites were light on beans in western COLORADO; MITES were of little economic importance on pinto beans. TWO-SPOTTED SPIDER MITE (T. urticae) severely damaged beans and other crops throughout eastern WASHINGTON crop areas.

GARDEN SYMPHYLAN (Scutigerella immaculata) damaged beans in some CALIFORNIA locations.

BEET, SUGAR BEET AND SPINACH INSECTS

Highlights:

The heaviest population of SPINACH LEAF MINER ever recorded in Washington developed on sugar beets in mid-May; a second brood was abundant in June. An EPHYDRID FLY (Psilopa leucostoma) is now recorded as a pest of sugar beets throughout the Pacific Northwest. Various NOCTUIDS were troublesome on beets in the Nation but other Lepidoptera appeared to cause less concern.

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) was relatively light to moderate on sugar beets in COLORADO; it caused some loss to that crop in the northeastern area. Populations of this pest were slightly larger than in 1964 in WYOMING. Damage was first noted on sugar beets in the Big Horn Basin on June 23. In fields infested with this otitid fly, 4 to 8 plants in 100 showed feeding damage. Considerable damage was observed in NORTH DAKOTA in some eastern areas.

SPINACH LEAF MINER (Pegomya hyoscyami) eggs were abundant on sugar beets by early May in Yakima County, WASHINGTON. The heaviest population ever recorded developed by mid-May. A second brood was abundant in Washington by mid-June. Infestations occurred in OREGON in June. This anthomyiid fly was again the cause of concern to sugar beet growers in WYOMING. In the northern area, 22 percent of the beet plants were infested and in the southeast 28 percent were infested. These infestations were slightly lower than those found in 1964. Spinach leaf miner contamination was responsible for the dumping of many tons of State prison canned spinach grown in Utah and Salt Lake Counties of UTAH. This was also a serious pest of sugar beet foliage in parts of Utah during the season. Spinach leaf miner attacked vegetables in OHIO. This maggot is very common in RHODE

ISLAND wherever beets are grown.

An EPHYDRID FLY (Psilopa leucostoma), first recorded as a leaf miner on sugar beets at Walla Walla, WASHINGTON, in 1962, now attacks this crop in all major production areas of the Pacific Northwest. Ovipositing on sugar beets began in late May in Yakima County.

ZEBRA CATERPILLAR (Ceramica picta), along with VARIEGATED CUTWORM (Peridroma saucia), defoliated sugar beets in eastern WASHINGTON areas in September and October. Late stripping of foliage threatened reduction of sugar content of beets. ALFALFA LOOPER (Autographa californica) was unusually abundant and damaging to sugar beets and other crops in many parts of Washington. Variegated cutworm was widespread in the Willamette Valley of OREGON and it severely damaged new plantings of beets and other crops. BEET ARMYWORM (Spodoptera exigua) was widespread on beets and truck crops in CALIFORNIA. Elsewhere in that State ROUGH-SKINNED CUTWORM (Proxenus mindara) infested sugar beets in a few locations. Several species of CUTWORMS required controls on sugar beets in Delta County, COLORADO; cutworms were relatively light on sugar beets in other areas of the State. Alfalfa looper caused moderate to heavy damage on small sugar beet plants in Washakie County, WYOMING; infested fields averaged 2-3 larvae per plant with many fields requiring controls. BLACK CUTWORM (Agrotis ipsilon) damaged sugar beets in north central OHIO.

BEET WEBWORM (Loxostege sticticalis) was of no major consequence to sugar beet growers in WYOMING; a spotty infestation occurred near Huntley in mid-August, much later than June 25 occurrence in 1964. Most heavily infested fields in Wyoming ranged 8-15 larvae per plant. Beet webworm contributed to losses in southeastern COLORADO. Second-generation larvae of Loxostege spp. damaged some sugar beet fields in NEBRASKA during August; controls were necessary. FALSE CELERY LEAF TIER (Udea profundalis) infested beets in CALIFORNIA. A LEAF ROLLER MOTH (Ptycholoma peritana) was a pest of sugar beets in a few California locations.

Spotty infestations of STRIPED FLEA BEETLE (Phyllotreta striolata) caused varying degrees of damage to sugar beets and other crops in the Big Horn Basin of WYOMING. Infestations were larger than those of 1964; most heavily infested sugar beet fields averaged 32 to 46 adults per 100 sweeps. Very few numbers were found in the southeastern growing area. The first specimens were taken in the Big Horn Basin on June 23. FLEA BEETLE infestations on seedling sugar beets ranged medium to heavy for the third consecutive year in Pershing County, NEVADA. However, damage was low owing to insecticide treatments in late May and early June. Populations were up in Churchill County during the same period; some fields were treated and a few fields were totally destroyed. Late planted sugar beets required control measures in Washoe County in late June. Flea beetles occurred on sugar beets in COLORADO but not in large numbers. Various species damaged spinach and other crops in VIRGINIA.

PACIFIC COAST WIREWORM (Limonius canus) and SUGAR-BEET WIREWORM (L. californicus) damaged beets by early May in south central WASHINGTON. These are increasingly destructive in eastern Washington. Limonius spp. caused very light damage on sugar beets in Washakie County, WYOMING, in mid-June; populations were lighter than in 1964. SEED-CORN BEETLE (Agonoderus lecontei) was relatively light on sugar beets in COLORADO; it caused some losses to that crop in northeastern areas. STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) damaged sugar beets in the Yakima Valley of WASHINGTON.

LEAFHOPPERS damaged sugar beets and other crops in CALIFORNIA. GREEN PEACH APHID (Myzus persicae) increased rapidly on sugar beets in the Yakima Valley of WASHINGTON during May. This aphid was relatively light on sugar beets in COLORADO.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) severely damaged sugar beets and other crops throughout western WASHINGTON. An ACARID MITE (Tyrophagus dimidiatus) was present on spinach in Orange and Yolo Counties, CALIFORNIA.

CUCURBIT INSECTS

STRIPED CUCUMBER BEETLE (Acalymma vittata) caused light damage to cucumbers and squash in Androscoggin and Sagadohoc Counties, MAINE, in early June. This beetle was common wherever cucurbits are grown in RHODE ISLAND. Adults were fairly common and caused noticeable feeding injury to cucurbits during the first half of June in Kent and Sussex Counties, DELAWARE, and on summer squash in mid-July. Adults ranged light to heavy which is about normal on the Eastern Shore of MARYLAND. High populations attacked cucurbits, especially commercial cucumbers, in the northern part of ALABAMA. The first symptoms of bacterial wilt, indicative of earlier attack by this beetle, were reported in Berrien County, MICHIGAN, on June 30. This pest was heavy on cucumbers and other vine crops from late May until late September in OKLAHOMA.

WESTERN SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata undecimpunctata) was found in very low numbers in early summer in the Willamette Valley of OREGON due to a cold, wet spring that apparently reduced the overwintering female population. Diabrotica spp. occurred in a few CALIFORNIA locations on cucurbits. SPOTTED CUCUMBER BEETLE (D. undecimpunctata howardi) was heavy on cucumbers and other vine crops in OKLAHOMA from late May to late September. Normal damaging populations of this subspecies occurred on cucurbits in ALABAMA. Diabrotica spp. caused light injury to cucurbits in NEW JERSEY during the season. POTATO FLEA BEETLE (Epitrix cucumeris) was heavy on home gardens in MAINE; it caused heavy damage to cucumbers and other crops in early June in Auburn. SQUASH BEETLE (Epilachna borealis) was present in normal abundance locally in Washington County, RHODE ISLAND; apparently this pest is not widely distributed in the State.

MELONWORM (Diaphania hyalinata) occurred on cucurbits in ALABAMA in normal damaging numbers. WEBWORMS (Loxostege spp.) damaged commercial cucumber seedlings in Jackson County, OKLAHOMA, in mid-August. Heavy, local populations of SQUASH VINE BORER (Melittia cucurbitae) damaged squash in San Jacinto County, TEXAS. This aegeriid attacked vegetables in OHIO. Normal, damaging populations occurred on cucurbits in ALABAMA.

SQUASH BUG (Anasa tristis) caused severe damage to squash in Riley County, KANSAS, during July. This bug became active in mid-May in OKLAHOMA with egg laying noted in late May; moderate to heavy infestations were present from early June to mid-August. Activity continued through early October. This coreid was a widespread problem to watermelon and squash producers over TEXAS; however, it was generally lighter than in 1964. This pest was locally damaging to squash in San Joaquin County, CALIFORNIA. Normal infestations occurred on cucurbits in ALABAMA.

MELON APHID (Aphis gossypii) developed large populations in late summer in RHODE ISLAND. Although present in small numbers on vegetable crops in WISCONSIN, this aphid was apparently not economically important in that State. This pest damaged watermelons in Hidalgo County, TEXAS. Medium to heavy populations were present in ARIZONA on melons and vegetables; it reached a peak during April. Populations developed on a few crops in CALIFORNIA. WHITEFLIES were severe on honeydew melons locally in Fresno County, California. Whiteflies were also a problem in home gardens in the Las Cruces area of NEW MEXICO.

In MARYLAND, THRIPS caused conspicuous foliage injury to cucumbers and squash at numerous locations on the Eastern Shore during midsummer, and SPIDER MITES (Tetranychus spp.) heavily injured several watermelon plantings in Wicomico County.

CARROT AND CELERY INSECTS

CARROT WEEVIL (Listronotus oregonensis) was locally heavy in carrot fields in the Rio Grande Valley of TEXAS but it was apparently less widespread than in 1963 and 1964. This weevil attacked vegetables in OHIO. It was a pest in carrots in home gardens in southeastern WISCONSIN but it apparently caused little damage in a few commercial plantings in that area. A DARKLING BEETLE (Eleodes suturalis) was a problem locally in carrots in Riverside County, CALIFORNIA.

VARIEGATED CUTWORM (Peridroma saucia) was widespread in the Willamette Valley of OREGON where it severely damaged new plantings of carrots and other crops. BULB MITE (Rhizoglyphus echinopus) damaged celery and other crops in CALIFORNIA. A SPIDER MITE (Tetranychus sp., probably urticae) was light to moderate on carrots and other crops in NEW JERSEY.

SWEETPOTATO INSECTS

Progress in the SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) program in the South during 1965 has been good. The SOUTH CAROLINA quarantine prohibits planting of sweetpotatoes within areas of known infestations. Surveys for wild hosts and volunteer sweetpotato plants within the nonplanting areas of the Coastal Plain revealed no new infestations. Host plants were destroyed when found and through this effort the weevil population was reduced to a bare survival level. Sweetpotato growers in GEORGIA treat all seedbeds, fields, and storage areas; 37 properties were found infested in Georgia. The State of FLORIDA is generally infested and commercial production of sweetpotatoes is minor. The primary interest is in reducing the danger of spread from heavy infestations to bordering States. Progress in ALABAMA was good; 8 properties were released from regulation and 108 properties were found infested. Additional infestations were found on 121 properties in MISSISSIPPI all in counties known to have infestations. Sweetpotatoes are one of the important cash crops in LOUISIANA and the successful production of commercial sweetpotatoes in most sections is dependent on the control of this pest. Surveys in 34 parishes revealed 468 infested properties; 121 properties were released from regulation in Louisiana. Surveys in TEXAS revealed 178 infested properties.

GOLDEN TORTOISE BEETLE (Metriona bicolor) caused conspicuous foliage injury in many sweetpotato fields in Wicomico County, MARYLAND, during June; adults of SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) were heavy on newly set plants during May and June and again in late season just before harvest. Larval injury was below normal in Maryland. This flea beetle was heavy on the Eastern Shore of VIRGINIA in May; most sweetpotato growers treated for this pest. Several species of chrysomelids attacked sweetpotatoes in ALABAMA; MOTTLED TORTOISE BEETLE (Deloyala guttata), golden tortoise beetle and Agroiconota bivittata were normal.

SOUTHERN POTATO WIREWORM (Conoderus falli) and TOBACCO WIREWORM (C. vespertinus) injury to sweetpotatoes in NORTH CAROLINA was about the same for the past 3 years; damage was commonly present but not generally sufficient to lower grade of the sweetpotatoes. In CALIFORNIA, Cardiophorus sp. damaged sweetpotatoes in several locations.

STRAWBERRY INSECTS

STRAWBERRY WEEVIL (Anthonomus signatus) was moderate in Waterville, MAINE, by

May 26 and moderate with moderate damage in Monmouth June 3. Numerous reports were received from all areas of the State during the first week of June. Damage ranged light to heavy in Maine. STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) caused serious injury to some strawberry plantings in eastern MASSACHUSETTS early in the season. Strawberry weevil adults caused considerable amount of bud injury in several fields in Anne Arundel and Wicomico Counties, MARYLAND. STRAWBERRY CROWN BORER (Tyloderma fragariae) was heavy and damaging to strawberries in eastern NEBRASKA. Brachyrhinus spp. damaged strawberries in southwestern WASHINGTON and Nemocestes incomptus damaged strawberries in Pierce County. Sciopithes obscurus emerged in late June in OREGON and it was more numerous than usual in strawberry fields of Linn, Marion, Yamhill and Clackamas Counties.

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) infestations remained light in northeastern KANSAS but continued moderate to heavy in the Wichita area. This olethreutid damaged strawberry fruit in MISSOURI but it was of little consequence. It was also a pest of minor importance in OHIO. OMNIVOROUS LEAF TIER (Cnephasia longana) developed moderate to heavy populations on strawberries throughout western WASHINGTON by mid-June. Another LEAF ROLLER MOTH (Ptycholoma peritana) was a pest of strawberries in a few CALIFORNIA locations. CUTWORMS were very prevalent on ripening strawberries statewide in MASSACHUSETTS even where controls were used.

STRAWBERRY APHID (Chaetosiphon fragaefolii) was unusually abundant in WASHINGTON; it averaged 0.5 per strawberry leaf in mid-April in Clark County. Populations built up in Marion County, OREGON, strawberry field in early May. This aphid infested strawberries in Orange and Fresno Counties, CALIFORNIA. Pentatrichopus spp. were generally light on strawberries in all sections of MARYLAND. TARNISHED PLANT BUG (Lygus lineolaris) was exceptionally heavy on strawberries in VERMONT.

FLOWER THRIPS (Frankliniella tritici) damage was very high on strawberries in ILLINOIS; this buildup was probably aided by dry weather during harvest. A survey of 20 commercial strawberry fields revealed that 27 percent of the fruit had some damage although this damage was very light on most berries.

GARDEN SPRINGTAIL (Bourletiella hortensis) appeared in great numbers in commercial strawberry plantings in Foster, RHODE ISLAND, in mid-May.

SPIDER MITES (Tetranychus spp.) were again very troublesome on numerous strawberry plantings in Harford, Prince Georges and Wicomico Counties, MARYLAND. CYCLAMEN MITE (Steneotarsonemus pallidus) was serious on strawberry plants in northern areas of MINNESOTA. As in past years, STRAWBERRY SPIDER MITE (T. atlanticus) was a definite problem on strawberries in MISSOURI. MITES were the principal pests of strawberries in ARKANSAS. Tetranychus spp. were severe on strawberries and other truck crops in CALIFORNIA.

BRAMBLEBERRY INSECTS

RASPBERRY CROWN BORER (Bembecia marginata) emergence occurred in MICHIGAN research plots in Berrien County on August 23. Egg laying began the following day. This aegeriid continues as a serious pest of raspberries in Michigan. Damage by this pest was extensive in OREGON in untreated blackberries in Marion County. Larvae of ORANGE TORTRIX (Argyrotaenia citrana) were actively feeding and webbing tips of new growth of cane berries in the Willamette Valley of OREGON about 2 weeks earlier than normal.

STRAWBERRY WEEVIL (Anthonomus signatus) adults damaged blackberries in Narragansett, RHODE ISLAND, in early June and adults of a JAPANESE WEEVIL (Calomycterus setarius) were common on raspberries in East Greenwich at the same time. A WEEVIL (Sciopithes obscurus) emerged in late June in OREGON; it was more numerous

than usual on cane berry fields of Linn, Marion, Yamhill and Clackamas Counties.

Adults of EASTERN RASPBERRY FRUITWORM (Byturus rubi) were common on raspberries in early May in RHODE ISLAND and RED-NECKED CANE BORER (Agrilus ruficollis) infested raspberries in Narragansett in late April in that State. Blackberries were heavily damaged in Harris County, TEXAS, by A. ruficollis. ROSE CHAFER (Macrodactylus subspinosus) was abundant in raspberries in Lawrence County, PENNSYLVANIA.

MINT INSECTS

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) and BLACK VINE WEEVIL (B. sulcatus) populations became heavy in mint fields of Linn County, OREGON, in April but they were effectively controlled with fumigation. A MINT FLEA BEETLE (Longitarsus waterhousei) caused some damage to peppermint fields of Umatilla County and in the Willamette Valley but damage was less than in 1964. ALFALFA LOOPER (Autographa californica) was unusually abundant and damaging to peppermint and other crops in many parts of WASHINGTON; VARIEGATED CUTWORM (Peridroma saucia) damaged mint throughout much of the State. CUTWORMS damaged mint in several counties of MICHIGAN. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) severely damaged peppermint and other crops in western WASHINGTON.

ARTICHOKE, CHICORY, ENDIVE AND LETTUCE INSECTS

ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) continued as a severe problem in artichoke plantings in Santa Cruz, Santa Barbara and San Mateo Counties, CALIFORNIA. CELERY LEAF TIER (Udea rubigalis) infested lettuce in San Joaquin County, California.

CABBAGE LOOPER (Trichoplusia ni) was light to medium on lettuce and other crops in ARIZONA during the spring; lighter than normal infestations of BEET ARMYWORM (Spodoptera exigua) occurred on spring and fall lettuce crops in that State and only scattered infestations were economic. Heavy populations and a large flight of adults of cabbage looper required continual treatments on lettuce fields in Dona Ana and Sierra Counties of NEW MEXICO. T. ni. was also a problem in Valencia and Bernalillo Counties and failure to control this noctuid caused some losses. VARIEGATED CUTWORM (Peridroma saucia) was widespread in the Willamette Valley of OREGON and it severely damaged new plantings of lettuce and other crops. Cabbage looper and ALFALFA LOOPER (Autographa californica) were present in COLORADO and tended to persist throughout the growing season on lettuce. TOMATO FRUITWORM (Heliothis zea) destroyed considerable acreage of fall lettuce in southern counties of NEW JERSEY. Moderate numbers of cabbage looper larvae caused moderate damage to lettuce at Cape Elizabeth, MAINE, in late June.

GREEN PEACH APHID (Myzus persicae) incidence was abnormally high in NEW JERSEY; lettuce and other crops were severely damaged. Lettuce mosaic destroyed up to 90 percent of many fall plantings of endive and chicory.

DARKLING BEETLES (Blapstinus sp. and Metoponium sp.) damaged lettuce and other crops in several CALIFORNIA locations.

SUMMARY OF INSECT CONDITIONS IN ALASKA - 1965

Prepared by R. A. Washburn

Highlights

Although spring and early summer were the coldest and driest in recent years, with only 4 days in excess of 60° F. until July, there was little apparent effect on insect problems except a slight delay in appearance. Several new insect problems developed that had not been noted previously.

Cereal and Forage Insects

CUTWORMS were the most numerous in several years. They were noted crossing highways in the Palmer area. Main destructive species were RED-BACKED CUTWORM (Euxoa ochrogaster) and BLACK ARMY CUTWORM (Actebia fennica). Large numbers of CUTWORM moths were taken in blacklight traps, but none of economic importance. The most numerous species continued to be Xylina thoracica. Most cutworm feeding occurred in newly emerging hay and grain fields; there was some injury to new shoots of brome. Usual numbers of grass inhabiting APHIDS and LEAFHOPPERS were found, but none in destructive numbers.

Fruit Insects

Insects on strawberries continued the most serious problem on fruits. A LEAF BEETLE (Galerucella sp.) appears to be widespread. In addition to the Sand Lake area near Anchorage, this beetle was found on strawberries at the Matanuska Experiment Station and on strawberries and cabbage at the College Experimental Farm in the Tanana Valley, as well as on willows several miles away. It was also present on strawberries near Willow. At Willow, two other beetles, a WEEVIL and a CLICK BEETLE, were present in almost every ripening fruit. A SPIDER MITE (Tetranychus sp.) continued a problem on some strawberries in the Sand Lake area as well as at the Matanuska Experiment Station, although generally no problem elsewhere. WESTERN RASPBERRY FRUITWORM (Byturus bakeri) were present in widely scattered localities. BLACK ARMY CUTWORM (Actebia fennica) fed on apple buds and leaves in the Matanuska station orchard; this is one of few insects attacking Malus in Alaska. MEADOW SPITTLEBUG (Philaenus spumarius) and GARDEN SLUGS continued troublesome to bush and cane fruits in some southeastern coastal areas.

Truck Crop Insects

BLACK ARMY CUTWORM (Actebia fennica) and RED-BACKED CUTWORM (Euxoa ochrogaster) heavily damaged commercial plantings of vegetables in the Matanuska Valley as well as many home gardens. This was heaviest damage to truck crops in a number of years. PSYLLIDS occurred in large numbers on turnip greens in the Sutton area. This is the first time psyllids have been found on an economically important crop. TURNIP MAGGOT (Hylemya floralis) continued as the most consistently serious insect problem. Where crucifers were heavily treated with chlorinated hydrocarbons, lesser control than in previous years was reported. Resistance has not been confirmed by laboratory tests.

Forest, Ornamental and Shade Tree Insects

A STINK BUG (Elasmostethus interstinctus) was heavy on poplar and birch in Fairbanks. APHIDS were heavy on caragana hedge in Fairbanks. A SPEAR-MARKED BLACK MOTH (Eulype hastata) rolled leaves on birch and poplar in Matanuska Valley and adults were common in moist sites. BIRCH LEAF MINER (Fenusa pusilla) infested numerous weeping cutleaf birches. A BIRCH APHID, probably Calaphis betulaecolens, continued troublesome to homeowners as much as any other single insect problem

as most birches utilized as ornamentals were heavily infested and covered with large quantities of honeydew. An APHID (Rhopalosiphum padi) occurred on most Prunus padus, although degree of infestation varied considerably from plant to plant. EASTERN SPRUCE GALL APHID (Chermes abietis) produced distorted terminals on many spruce used as ornamentals. MITES were not quite as common on spruce as in previous years. IMPORTED WILLOW LEAF BEETLE (Plagiodera versicolora) heavily infested willows in Haines area. A GALL MIDGE (Rhabdophaga strobiloides) was also common on willows in many areas of the State. MOSSY-ROSE-GALL WASP (Diplolepis rosae) and an unspecified APHID were common on native rose (Rosa acicularis) but rare on cultivated varieties and species. RED-BACKED CUTWORM (Euxoa ochrogaster) continued destructive to many flower gardens as well as bedding plants in greenhouses.

Insects Affecting Man and Animals

BITING FLIES, especially BLACK FLIES and MOSQUITOES, were extremely annoying in interior and tundra areas and not so serious in more heavily settled areas as in 1964. Several problems of special interest were noted for the first time this year. A REINDEER WARBLE (Hypoderma tarandi*) was as serious as usual in reindeer and caribou herds throughout the mainland of Alaska as well as in several of the reindeer herds on the islands. A WARBLE infestation in musk ox in the college herd appeared to be H. tarandi. They appeared somewhat abnormal as though not too well adapted to the host. BROWN DOG TICK (Rhipicephalus sanguineus) and an unspecified FLEA appear established in some family quarters on a military base near Anchorage.

Household and Structural Insects

GERMAN COCKROACH (Blattella germanica) and BROWN-BANDED COCKROACH (Supella supellectilium) continued troublesome in south central Alaska. EUROPEAN EARWIG (Forficula auricularia), after several introductions, appears to be surviving the winter on a military base near Anchorage. A CARPENTER ANT (Camponotus sp.) continued troublesome in many buildings using rough lumber in construction. A HORNTAIL (Urocerus flavicornis) emerged occasionally from green lumber used in houses.

Stored-Product Insects

Stored-product insects troublesome in the State continued to be the types found in home storage; most grain and feed normally infested in other States is stored in unheated buildings at temperatures to low for these insects to be active. However, infestations in homes were very widespread throughout the State, undoubtedly introduced from infested bagged and packaged products. Among the most consistent problems this year were RED FLOUR BEETLE (Tribolium castaneum), CONFUSED FLOUR BEETLE (T. confusum), SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) and YELLOW MEALWORM (Tenebrio molitor). MEDITERRANEAN FLOUR MOTH (Anagasta kuehniella) was occasionally troublesome.

*Chillcott, J. G. 1965. Family Oestridae. In Stone, A. et al. Catalog of the Diptera of America North of Mexico, U. S. Dept. Agr. Handbk. No. 276:1112.

A Note on the Names Adelges and Adelginae

(Homoptera : Aphidoidea)

The International Commission on Zoological Nomenclature has approved the generic name Adelges Vallot, 1836, and suppressed the generic name Chermes Linnaeus, 1758. Both generic names have been applied to insects of the Aphidoidea that have been known commonly as aphids, adelgids, and chermids. The Commission also approved the subfamily name Adelginae Annand, 1928, and rejected the family-group name Chermides Fallen, 1814. These actions are recorded in Opinion 731, Bull. Zool. Nomen., vol. 22, pt. 2, pp. 86-87, 18 May 1965. In accordance with the Commission rulings, I will use Adelges in place of Chermes and Adelginae in place of Cherminae.

The family to which the Adelginae belongs was not considered by the Commission. It is relevant, however, because the subfamily was placed in the Phylloxeridae by Annand, an assignment followed by some later workers, while it is treated as a separate family, the Adelgidae, by many present day Europeans. There are ample reasons for recognizing two groups, but the adelgids and phylloxerans are believed to be much more closely related to each other than to other groups of aphids. Because of the similarities of their morphology and development, their closeness to each other and remoteness from other aphids, I believe their placement in subfamilies indicates their relationships more accurately than does their recognition as families. I shall therefore use Phylloxeridae, an older family name than the Adelgidae, for subfamilies Adelginae and Phylloxerinae.

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Coop. Econ. Ins. Rpt.
16(10):193

WEATHER BUREAU'S 30-DAY OUTLOOK

MARCH 1966

The Weather Bureau's 30-day outlook for March calls for temperatures to average below seasonal normals west of the Mississippi River except for near normal in northern border States. East of the Mississippi, above normal temperatures are anticipated in South and Middle Atlantic Coast States while near normal averages are in prospect elsewhere. Precipitation is expected to exceed normal over most of the eastern half of the Nation except for near normal totals in the upper Mississippi Valley and the upper Great Lakes as well as in Florida. Elsewhere, near normal precipitation is in prospect except for above normal over the southern Rockies and subnormal amounts in northern border States.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING MARCH 7

HIGHLIGHTS: (1) Blizzard northern Great Plains. (2) Severe tornadoes Mississippi-Alabama. (3) Heavy rains continue Southeast.

One of the worst blizzards of the century began as a Low over the northern Rockies on Tuesday. Rain and snow covered a widespread area from the Pacific through eastern Montana and Wyoming; Eugene, Oregon, recorded an unusual snowfall of two inches. The deepening storm became a blizzard on Wednesday as it traveled slowly eastward across the northern Plains accompanied by heavy snowfalls, winds over 70 m.p.h., blowing and drifting snow, and low visibilities. The blizzard continued to rage until Saturday. Bismarck, North Dakota, reported record snowfalls for a 24-hour period. Up to 3 feet of snow fell throughout the northern Plains, while hurricane-force winds piled drifts as high as 20 feet. Most towns were isolated by the choking, blinding, blowing snow. Powerlines were down from Montana through Wisconsin. Many homes were without heat, and several towns were without communications. Transportation and commerce came to a standstill; livestock losses were heavy. At least 15 deaths were attributed to the blizzard.

Cold Arctic air borne on strong northwesterly winds came barrelling in behind and through the blizzard area. Temperatures plummeted adding to the paralysis and hampering the "digging out." Record March lows were reported in Arizona and Utah, and duststorms caused by the high winds damaged wheat fields in the southern Plains. By Saturday the blizzard conditions ended, but high winds, rain, and snow continued into the Northeast as the weakening storm moved towards the Canadian Maritime Provinces. Skies gradually cleared by Sunday as the cold air following the system spread through the Midwest and the East Coast States from the Canadian border through Florida. In contrast to the blizzard, warm, moist air flowing northward from the gulf ahead of the storm brought mild temperatures to the East. Weekly averages were much above normal from the Great Lakes to the Atlantic and the week was the warmest since November in the Middle Atlantic States. A rising trend was also noted in the Southeast where temperatures at this time of the year are critical to agricultural interests. The gulf air also brought heavy precipitation. On Monday, 2 storm centers, one over the Ohio Valley and one over the Carolina coast, spread heavy showers and thundershowers from the Mississippi River to the Atlantic and caused local flooding while only minor damage resulted from 3 tornadoes in northern Florida and southern Georgia. The rain gradually abated by Tuesday. On Thursday and Friday rain drenched the Southeast, resulting in the fourth straight week of above normal precipitation. (By way of contrast Texas experienced the driest weather in 14 weeks.) The heaviest precipitation was centered over western Georgia, where flash flooding required the evacuation of scores of families. A series of tornadoes racked Mississippi and Alabama on Thursday. The worst twisters reported in Mississippi since 1936 smashed suburban Jackson leveling a shopping center and knocking out communications and electric power. Overall, these tornadoes killed more than 60 persons, injured at least 500 others, and caused $12 million worth of property damage. (Summary supplied by U. S. Weather Bureau).

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Hyattsville, Maryland 20782

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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 March 18, 1966 Number 11

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GRAIN APHIDS, including GREENBUG, low in small grains in several Southern States. (pp. 197, 205). SOUTHERN CORN ROOTWORM adults collected in southern Indiana. (p. 197). Surveys show average of 1.7 viable GRASSHOPPER egg pods per square foot of soil in rangeland areas of Oklahoma. (p. 202). ALFALFA WEEVIL general across Tennessee; larvae detected in Virginia, North Carolina, Mississippi, Missouri and Indiana and adults active in Indiana and Nevada. Larvae of a WEEVIL (Hypera brunneipennis) increasing in alfalfa in Arizona with controls necessary; locally heavy in California. PEA APHID increasing in alfalfa in Arizona, reported in New Mexico and Virginia. LYGUS BUGS increasing in Arizona. (p. 198).

SPRING CANKERWORM adult males reported in Indiana and Missouri. CATTLE LICE troublesome in some Southern States. SUBTERRANEAN TERMITES swarming in several areas of the Nation. (p. 202).

Predictions

GRAIN APHIDS not expected to be troublesome on small grains in several Southern States. (pp. 197, 205). ALFALFA WEEVIL expected to be severe in Tennessee. (p. 198).

Detection

Look for Pine Processionary Moth Now. (p. 203).

New State records reported from Oklahoma include a FLEAHOPPER (Rhinacloa forticornis) and a SPRINGTAIL (Sminthurus packardi). (p. 203).

Special Reports

Names for Boll Weevil Complex. (p. 199).

Interceptions of Special Interest at U. S. Ports of Entry. (p. 204).

Summary of Insect Conditions in the United States - 1965
Tobacco Insects. (p. 207).
Cotton Insects. (p. 209).

Reports in this issue are for week ending March 11 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING MARCH 14

HIGHLIGHTS: (1) Dry, mild week most areas. (2) Heavy rains Pacific Northwest.

TEMPERATURE: Weatherwise, the week was tranquil compared to previous periods. Most of the Nation enjoyed variable sunshine with only scattered showers and temperatures characteristic of mid-April. Weekly averages were above normal from the Pacific to the Appalachians with departures of more than 9 degrees in the Great Basin, the northern Great Plains, and the Great Lakes region. Temperatures averaged above normal in New Mexico and Colorado for the first time since January. Parts of Oklahoma had the warmest weather in 14 weeks. Warming in the West was

Weather continued on page 214.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Continues to increase slowly on small grains in Maricopa and Pinal Counties. Very light on barley in Cochise and Graham Counties. (Ariz. Coop. Sur.). TEXAS - Very few found in barley in Wichita Falls area, Wichita County. (Daniels). OKLAHOMA - Light, 2-10 per linear foot, in small grain in central and north central counties. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - OKLAHOMA - Ranged 2-10 per linear foot in wheat checked in Logan, Kingfisher, and Garfield Counties; 1-3 in barley in Garfield County, and oats and barley in Kingfisher County. Ranged 10-40 per linear foot in wheat in Grady and Caddo Counties, 2-30 in Tillman, Comanche and Jackson Counties. Greenbug "spots" appearing in few places in extreme southwest and near Hennessey, Kingfisher County. Light in wheat in Mayes, Bryan, Muskogee and McIntosh Counties. (Okla. Coop. Sur.). TEXAS - Recent surveys show generally light numbers in small grains in Panhandle area and in Vernon-Wichita Falls-Abilene area. Very few localized fields with populations that could increase to damaging numbers. Wheat and other grains beginning to grow; doubtful if problem develops this season. (Daniels).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Continues light in alfalfa in areas of Maricopa County. Few small colonies in Graham County. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - SOUTH DAKOTA - Larval collections made south of Volga, Brookings County, in area where Sympiesis viridula (a eulophid wasp) released several years ago. O. nubilalis larval numbers low compared with previous years; averaged less than 15 per 100 stalks. Parasitism attributed to S. viridula approximately 6 percent that of Diadegma punctoria (an ichneumon wasp) approximately 5 percent; 15-25 percent of larvae killed by other causes such as woodpecker predation. (Jones, Mar. 4).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Live larvae found in 45 percent of dry cornstalks checked in McIntosh County field. (Okla. Coop. Sur.).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - INDIANA - Adults collected in southern Harrison County March 3. Earliest collection date for State. (Huber).

SMALL GRAINS

GRAIN APHIDS - TENNESSEE - Infestations in small grains not expected to be troublesome this season. (Mullett). OKLAHOMA - Rhopalosiphum padi ranged 20-40 per linear foot in wheat in Tillman and Comanche Counties, 2-10 in wheat, oats and barley in Kingfisher, Logan and Garfield Counties. (Okla. Coop. Sur.). TEXAS - Populations of Rhopalosiphum fitchii-padi complex declined on small grains during past month. Very few Macrosiphum avenae found in Vernon-Wichita Falls area. As grains beginning to grow, problem not expected this season. (Daniels).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged 100-300 per linear foot in wheat in Comanche and Tillman Counties. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

A BILLBUG (Sphenophorus phoeniciensis) - ARIZONA - Adults heavy in many Bermuda grass lawns in Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

For Grasshoppers, see Federal-State Plant Protection Programs, page 202.

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - VIRGINIA - Larvae detected in Prince Edward, Culpeper, Hanover and Charles City Counties; 1-8 per 12 alfalfa tips; most first instars. (Pienkowski, Mar. 5). NORTH CAROLINA - Hatch late this year; only few larvae present in alfalfa in Piedmont area. (Campbell). TENNESSEE - Present generally across State; severe infestation expected. (Mullett). MISSISSIPPI - Larval counts per square foot in alfalfa as follows: 90 in De Soto County field; 80 in 2 Marshall County fields; 114 in Pontotoc County, with 11 samples taken in this field. (Dinkins et al.). MISSOURI - Egg hatch continues in Pemiscot County; 10-15 young larvae per 100 sweeps in several alfalfa fields. (Jones, Keaster). INDIANA - Trace numbers of small larvae present in some alfalfa March 8 in southern Harrison County. (Hintz). Trace numbers of adults active March 3 in same area. (Huber). NEVADA - Active adults averaged 1 per square inch in alfalfa in valley above Lovelock, Pershing County. (Ferraro).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Larvae increasing in alfalfa in Yuma and Maricopa Counties. Heavy in all areas of Yuma County; controls necessary in Gila Valley and Yuma Mesa. (Ariz. Coop. Sur.). CALIFORNIA - Locally heavy on alfalfa in Escondido, San Diego County. (Cal. Coop. Rpt.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Larvae moderate to heavy in alfalfa in north Gila Valley, Yuma County; average 65 per 100 sweeps. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - CALIFORNIA - Locally heavy on alfalfa in Escondido, San Diego County. (Cal. Coop. Rpt.).

DIAMONDBACK MOTH (Plutella maculipennis) - CALIFORNIA - Medium in alfalfa in El Centro, Imperial County. (Cal. Coop. Rpt.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Increasing rapidly in Yuma, Maricopa and Pinal Counties. Small colonies appearing in alfalfa in Graham and Cochise Counties. (Ariz. Coop. Sur.). NEW MEXICO - Light on alfalfa in Dona Ana and Eddy Counties. (Elson, Kloepfer). VIRGINIA - First-stage nymphs noted in field of alfalfa in Charles City County. (Pienkowski, Mar. 5).

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphs increasing in alfalfa in Maricopa and Yuma Counties; 80-160 per 100 sweeps in seed alfalfa areas of south Gila Valley. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - CALIFORNIA - Locally heavy on alfalfa in Escondido, San Diego County. (Cal. Coop. Rpt.).

A SPRINGTAIL (Sminthurus packardi) - OKLAHOMA - Sminthurus sp. reported as heavy in alfalfa in Tillman County in CEIR 15(46):1263, determined as S. packardi by D. L. Wray. (Okla. Coop. Sur., Feb. 19). Several lots of Collembola collected from alfalfa in State by F. A. Fenton about 1950-1954 contained this species. However, this is first published record of S. packardi from State. (PPC).

CLOVER MITE (Bryobia praetiosa) - ARIZONA - Moderate to heavy populations damaging some alfalfa on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

COTTON

Names for Boll Weevil Complex

In spite of the fact that considerable effort has been directed, during the last 50 years, to the problem of interpreting the significance of biological or geographical segregates in the populations of Anthonomus grandis (in the broad sense) and applying names to the segregates, the problem has not been solved. Evidence indicates that we are dealing with a "species" of insect that, occurring from Southern Mexico to Arizona on the West and to the Carolinas on the East, is susceptible to variations in details of biology and structure depending in part, at least, upon the ecology of the areas where the variants occur. The populations in Missouri, the Southeastern States and Texas show variations between themselves in details of biology. It would appear, therefore, that rather than two or three segregates there are as many as a half dozen, and probably more. If we are forced to give a name by which all these segregates can be recognized on morphological grounds we would have to revert to the name Anthonomus grandis Boh., the boll weevil.

Rose Ella Warner made an exhaustive study of the preserved material, accumulated over the past half century, in the National Collection. Analyses were made of her data and as a result most of the specimens she receives from Arizona and Western Mexico can be put in recognizable segregates. As you know, considerable effort is being made in Louisiana and Texas to reach a decision on this problem. Studies of living populations and cross breeding experiments are expected to shed light on the relationships between populations from widely separated geographical areas. This is possible, but we foresee a delay in reaching a satisfactory conclusion on names. In the meantime we all need a name for representatives of this wide-spread species.

We propose that an appropriate scientific name for the weevil in cotton in Northwestern Mexico, California, and Arizona is Anthonomus grandis Boh. complex, and an appropriate common name -- boll weevil complex. Weevils in cotton produced in the area from Texas to the East Coast will continue to be called Anthonomus grandis Boh., the boll weevil. The weevil in the thurberia plant should continue to be called A. grandis thurberiae Pierce. (Ent. Res. Div.).

PLANT BUGS - OKLAHOMA - Unspecified fleahopper reported as common in most cotton in Altus area, Jackson County, August 14, 1965, (CEIR 15(34):972) determined as 3 species: Rhinacola forticornis recorded for first time in State; Chlamydatus associatus and Spanogonicus albofasciatus reported for first time from Jackson County. Det. by R. C. Froeschner. (Okla. Coop. Sur., Mar. 5).

SUGAR BEETS

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Increase continues on sugar beets for seed in Maricopa County areas. (Ariz. Coop. Sur.).

MISCELLANEOUS FIELD CROPS

FALSE CELERY LEAF TIER (Udea profundalis) - CALIFORNIA - Larvae infesting new plantings of safflower in Fresno County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

CALIFORNIA PRIONUS (Prionus californicus) - CALIFORNIA - Medium in apricot tree roots in Hollister, San Benito County. (Cal. Coop. Rpt.).

WOOLLY APPLE APHID (Eriosoma lanigerum) - ALABAMA - Extremely high numbers observed on badly damaged root systems of apple trees on 2 Morgan County farms. (Vest, Parker et al.).

CITRUS

Citrus Insect Situation in Florida - End of February - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 51 percent of groves (norm 60 percent); 28 percent economic (norm 37 percent). Decreased to moderate level; below average for February. North district showed greatest decline, but all districts decreased except west. Little change expected. Highest district west. TEXAS CITRUS MITE (Eutetranychus banksi) infested 23 percent of groves (norm 26 percent); 5 percent economic (norm 8 percent). Decreased to below February average; low in all districts. Very few important infestations expected in March. CITRUS RED MITE (Panonychus citri) infested 25 percent of groves (norm 36 percent); 13 percent economic (norm 12 percent). Continued below average; in low range in most districts. Highest district east, but north district expected to exceed it. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 5 percent of groves; none economic. Population very low; below normal; slight increase expected. GLOVER SCALE (Lepidosaphes gloverii) infested 74 percent of groves; 16 percent economic. Above average and at moderate level; little change expected. PURPLE SCALE (L. beckii) infested 78 percent of groves; 5 percent economic. Below average and at moderate level; no change expected. YELLOW SCALE (Aonidiella citrina) infested 70 percent of groves; 24 percent economic. Population will continue near current record high level. Highest districts central and south. CHAFF SCALE (Parlatoria pergandii) infested 57 percent of groves; 8 percent economic. Below average and further decrease expected. Highest district is south. BLACK SCALE (Saissetia oleae) infested 35 percent of groves; 21 percent economic. Still above normal but will continue decrease to low level. Highest districts east and central. Destructive larval forms of WHITEFLIES infested 61 percent of groves, but pupation underway. MEALYBUGS slightly above average. New flush of growth started in all groves; bloom opened in about 10 percent of groves. APHIDS scarce but expected to appear in numbers by end of March. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

GENERAL VEGETABLES

THRIPS - NEW MEXICO - Ranged 2-4 per plant on some larger onions in southern Dona Ana County. (Elson, Campbell).

ORNAMENTALS

ARMORED SCALES - FLORIDA - Unaspis euonymi and Parlatoria pergandii severe on stems of 11 out of 15 plants of Euonymus japonicus in Plant City, Hillsborough County. Scales so numerous that some stems killed. (Herrman, Mar. 3). MARYLAND - Aspidiotus perniciosus immatures heavy on pyracantha at University Park, Prince Georges County. (U. Md., Ent. Dept.).

For Tuliptree Scale, see Federal-State Plant Protection Programs, page 202.

APHIDS - ALABAMA - Isolated, heavy infestations of Macrosiphum rosae occurring on some well-protected rose plants used as foundation plantings at 2 locations in Jefferson County. Small numbers occurring on new growth in rose gardens in central area. (McQueen). CALIFORNIA - Nymphs and adults of Aphis spiraecola heavy on Viburnum japonicum nursery stock in Rancho Santa Fe, San Diego County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ALABAMA - Egg masses ranged 2-10 on isolated wild cherry trees in Morgan County; none noted on other tree species. Most egg masses lightly but partially destroyed, apparently by bird feeding. No hatch observed, although trees budding and leafing. (Parker et al.).

SPRING CANKERWORM (Paleacrita vernata) - INDIANA - Males emerged in West Lafayette, Tippecanoe County, March 2. (Chandler). MISSOURI - Males active in Columbia, Boone County. First observed March 9. (Stone).

A PSYLLID (Pachypsylla venusta) - ALABAMA - Overwintered galls containing larvae heavy on isolated and older hackberry trees on lawns and along field borders. Galls so heavy in some instances, trees appear heavily fruited. Survival apparently unaffected by extreme low temperatures of minus 10°F. (McQueen).

DOGWOOD CLUB-GALL MIDGE (Mycodiplosis alternata) - ALABAMA - Galls heavy on dogwood in Morgan County. (Parker et al.).

MAN AND ANIMALS

MOSQUITOES - MARYLAND - Second and third-stage Aedes spp. larvae collected from woodland pools in College Park area, Prince Georges County. (U. Md., Ent. Dept.). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control March 7-11 contained Aedes vexans, Anopheles quadrimaculatus, Culex salinarius, and Culiseta inornata. Light trap collections continued light. (Stokes). OKLAHOMA - Adults of Culiseta inornata taken occasionally in light traps in Stillwater, Payne County. Unspecified mosquitoes biting people in Tulsa and Oklahoma Counties. (Okla. Coop. Sur.).

CATTLE GRUBS (Hypoderma spp.) - OKLAHOMA - Most H. lineatum dropped from backs of cattle to pupate. (Okla. Coop. Sur.). MISSOURI - Survey of cattle herds, hide buyers and slaughter houses in northern fourth of State indicates infestation lowest in years. Western range-cattle average approximately 30 percent "grubby" (over 5 per head) and "native" (midwestern stock) average approximately 15 percent "grubby". Averaged 7 (range 0-39) per head in feeder cattle on-the-hoof in northwestern district. (Houser). SOUTH DAKOTA - Appearing in young Hereford stock at Brookings, Brookings County. Later this year compared with previous years. Averaged 9.7 per animal on 40 untreated calves brought from Highmore area, Hyde County, in December. H. bovis and H. lineatum believed present. (Kohler).

A LOUSE FLY (Lipoptena sp.) - OKLAHOMA - Present on 17.9 percent of the deer at check stations in Cherokee, Muskogee and Sequoyah Counties ranged 1-10 per head. (Okla. Coop. Sur.).

CATTLE LICE - ALABAMA - Becoming more of a problem on herds in Marion, Madison, Lee and Morgan Counties. (Price et al.). OKLAHOMA - Moderate on cattle in Mayes and Bryan Counties. (Okla. Coop. Sur.). MISSOURI - Abnormally troublesome on beef cattle in Nodaway County. (Swope). UTAH - Cattle rubbing due to infestations near Hyrum, Cache County. (Knowlton).

TICKS - OKLAHOMA - Total of 815 ticks taken from deer at check stations in Cherokee, Sequoyah, Muskogee, Adair, Wagoner and Delaware Counties during November 1965, determined as follows: Of total, 728 (89.3 percent) Ixodes scapularis, again dominant species, with 97 pairs in copulae taken; 30 (3.7 percent) Dermacentor albipictus, slightly less than 4.5 percent found farther south (CEIR 16(10): 173); remaining 57 (7 percent) Amblyomma americanum, somewhat higher than 2.7 percent found in earlier group; numbers per head somewhat less, 5-400. (Okla. Coop. Sur.).

For Status of Screw-worm in the Southwest, see page 203.

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) - NEW JERSEY - Reticulitermes sp. wing forms active in many areas. (Ins.-Dis. Newsltr.). DELAWARE - First swarms of R. flavipes of season noted in New Castle County first week of March. (MacCreary). MARYLAND - R. flavipes winged forms swarming on several properties in Hyattsville, Prince Georges County. (U. Md., Ent. Dept.). VIRGINIA - Reticulitermes sp. adults collected in home in Sussex, Sussex County. (Isakson, Parson). NORTH CAROLINA - R. flavipes swarmed in large numbers at Wake County location March 4. First report of season. (Wray). NEVADA - Large numbers of R. hesperus adults swarming in office in Reno, Washoe County. (Ream).

ANTS - NORTH CAROLINA - Acanthomyops interjectus swarmed inside Burke County home March 4. Det. by D. A. Mount. (Speas). VIRGINIA - Acanthomyops claviger reproductives common in Staunton location, Augusta County. (Isakson, Morse). DELAWARE - Crematogaster lineolata troublesome in kitchens in New Castle County. (Burbutis). NEW JERSEY - A. interjectus active in many areas. (Ins.-Dis. Newsltr.).

A CARPENTER ANT (Camponotus vicinus) - CALIFORNIA - Adults heavy in walls of residence in Gualala, Mendocino County. (Cal. Coop. Rpt.).

STORED PRODUCTS

WHITE-SHOULDERED HOUSE MOTH (Endrosis sarcitrella) - CALIFORNIA - Heavy in old feed storage tanks in Nipomo and in poultry feed and litter in Arroyo Grande, San Luis Obispo County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

Beneficial Insects in Mississippi - Survey of 400 linear feet of wintergrass with vacuum sweeper in Oktibbeha County revealed following: 25 Geocoris spp., 30 Nabis spp., 10 brown lacewings, one Hippodamia convergens, and 2 unspecified lady beetle larvae. Survey of 400 linear feet of oats with vacuum sweeper revealed 20 Nabis spp., one Geocoris sp., 15 brown lacewings and 10 lady beetle larvae. (Dinkins et al.).

LADY BEETLES - ALABAMA - Thousands of Coleomegilla maculata fuscilabris adults observed in 2 large hibernating locations in Morgan County; moving to top of surface trash. (Brown, Robinson). Few Hippodamia convergens adults observed flying in central area where temperatures over 60°F. (McQueen).

SYRPHID FLIES - ALABAMA - Adults laying eggs on arborvitae where aphids increasing in Morgan County. (McQueen).

DAMSEL BUGS (Nabis spp.) - ARKANSAS - Activity of these and hymenopterous parasites increasing in northwest. (Ark. Ins. Sur.).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - OKLAHOMA - Egg pod surveys in rangeland areas of Beckham, Washita, Roger Mills, Harmon, Greer and Pittsburg Counties showed average of 1.7 viable egg pods of several species per square foot of soil. Bee fly or ground beetle larvae noted at several stops. Light numbers of egg pods destroyed by predators. (Okla. Coop. Sur.).

TULIPTREE SCALE (Toumeyella liriodendri) - CALIFORNIA - Host property addresses from previous surveys in San Jose inspected; 2 additional deciduous magnolias found infested. Heavily infested wood in 11 trees pruned, treated; 135 hosts sprayed. Pest under eradication treatment in State. (Cal. Coop. Rpt.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period March 6-12 no cases were reported in the United States. The Republic of Mexico reported 4 cases as follows by State: Sonora 1, Tamaulipas 1, and Territorio sur de Baja California 2. Sterile screw-worm flies released: Texas 20,126,250 and Mexico 70,668,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	1	1	85	368	1.17	0.27
1965	0	4	31	468	0.00	0.85
1966	0	26	21	189	0.00	13.75
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	17	412	17	267	100.00	154.30
1966	4	395	12	165	33.33	239.39

Mexico Field Study - During this period 183 cases were identified in Mexico south of the Barrier Zone as follows: Jalisco 9, Veracruz 25, Guerrero 6, Sinaloa 26, Oaxaca 20, Tabasco 13, Michoacan 2, Queretaro 1, Durango 6, San Luis Potosi 4, Nayarit 10, Puebla 4, Chiapas 20, Yucatan 32, Hidalgo 1, Colima 2, Campeche 1, Zacatecas 1.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

INSECT DETECTION

Look for Pine Processionary Moth Now

In southern areas, look for dingy gray webs in pine branches containing hairy caterpillars, blackish in color and with yellow and brown markings. These caterpillars are 1 to 1.5 inches in length. Habit of moving in "procession", head to tail, very noticeable. Larvae often clump together when entering ground to pupate.

Thaumetopoea pityocampa (Denis & Schiffermuller) is a serious defoliator of pine forests in Italy, Spain and Switzerland. Outbreaks also have been reported from other countries including Yugoslavia and France. This thaumetopoeid moth has been recorded in southern Europe, Syria, Turkey, Tunisia, Lebanon and Libya. The night-feeding larvae often cause complete defoliation of infested trees. Bark beetles attack trees weakened by T. pityocampa. Outbreaks may involve whole forests but usually do not last more than two years. The larvae are capable of producing cases of severe urtication in humans.

For more details see CEIR 9(50):1045.

PLANT BUGS - OKLAHOMA - Unspecified fleahopper reported as common in most cotton in Altus area, Jackson County, August 14, 1965, (CEIR 15(34):972) determined as 3 species: Rhinacloa forticornis recorded for first time in State; Chlamydatus associatus and Spanogonicus albofasciatus reported for first time from Jackson County. Det. by R. C. Froeschner. (Okla. Coop. Sur., Mar. 5). (p. 199).

A SPRINGTAIL (Sminthurus packardi) - OKLAHOMA - Determined by D. L. Wray from specimens collected on alfalfa in Tillman County week ending November 5, 1965. (Okla. Coop. Sur., Feb. 19). (CEIR 15(46):1263). Several lots of Collembola collected from alfalfa in State by F. A. Fenton about 1950-1954 contained this species. However, this apparently first published record of S. packardi in State. (PPC). (p. 198).

INTERCEPTIONS OF SPECIAL INTEREST AT U. S. PORTS OF ENTRY

Some important interceptions that were reported by the Plant Quarantine Division, ARS, USDA, during January 1966, follow. These reports are based on identifications received from Federal taxonomists at the U. S. National Museum during the month, and include any of special interest from recent months that were not previously reported.

LEEK MOTH (Acrolepia assectella (Zell.)) 3 times; twice in stores at Charleston, South Carolina, and once in air cargo at Dulles International Airport, Virginia.

CHINESE ROSE BEETLE (Adoretus sinicus (Burm.)) twice in air baggage at Honolulu, Hawaii.

CITRUS BLACKFLY (Aleurocanthus woglumi Ashby) 5 times; at Brownsville (1) and Laredo (4), Texas.

PEACH FRUIT MOTH (Carposina niponensis (Wlsm.)) once at New York, New York.

MEDITERRANEAN FRUIT FLY (Ceratitis capitata (Wied.)) 18 times; at Hawaii (14); New York (2), New York; Norfolk (1), Virginia; San Diego (1), California.

MELON FLY (Dacus cucurbitae Coq.) 3 times at San Diego, California.

A CRAMBID MOTH (Diatraea considerata (Hein.)) twice in baggage at Calexico, California.

AN ANOBIID BEETLE (Ernobius sp., probably abietis (F.)) (recorded as a destructive cone pest in parts of Europe and USSR) 8 times in baggage; at Chicago (1), Illinois; McGuire AFB (1), New Jersey; John F. Kennedy International Airport (1), and New York (1), New York.

A PYRAUSTID MOTH (Evergestis forficalis (L.)) (pest of crucifers) once at New York, New York.

BEAN BUTTERFLY (Lampides boeticus (L.)) once in Honolulu, Hawaii.

CABBAGE MOTH (Mamestra brassicae (L.)) 15 times; at Boston (1), Massachusetts; Cleveland (3), Ohio; Jacksonville (1), Florida; New York (4), New York; San Juan (4), Puerto Rico; Seattle (2), Washington.

A WEEVIL (Premnotrypes sp.) (potato borer of importance in South America) once at Houston, Texas.

A NOCTUID MOTH (Sesamia nonagrioides (Lef.)) (a small grain pest) in air baggage at John F. Kennedy International Airport, New York.

AN AVOCADO SEED MOTH (Stenoma catenifer Wlsm.) 30 times; at Bermuda (1); Brownsville (18), Hidalgo (1), Laredo (4), and Galveston (1), Texas; Miami (2), Florida; New Orleans (2), Louisiana; New York (1), New York.

A FRUIT-TREE SPIDER MITE (Tetranychus viennensis Zacher) (pest of apples and pears in Europe and Japan) 8 times; at Portland (3), Oregon; Seattle (3), Washington; Travis AFB (2), California.

WHITE GARDEN SNAIL (Theba pisana (Müller)) 12 times (6 alive, 6 dead); at Boston (4), Massachusetts; Dover (1), Delaware; John F. Kennedy International Airport (2) and New York (1), New York; Mobile (1), Alabama; Norfolk (2), Virginia; Wilmington (1), North Carolina.

KHAPRA BEETLE (Trogoderma granarium Everts) 56 times; at Anchorage (1), Alaska; Baltimore (6), Maryland; Charleston (11), South Carolina; Cleveland (1), Ohio; Dover (1), Delaware; Houston (1), Texas; Jacksonville (1), Florida; New Orleans (1), Louisiana; New York (17), New York; Norfolk (1), Virginia; Philadelphia (4), Pennsylvania; Portland (3), Oregon; San Diego (1), San Francisco (1) and San Pedro (1), California; San Juan (1), Puerto Rico; Seattle (2), Washington; St. Thomas and St. John (1), Virgin Islands; Wilmington (1), North Carolina.

GRASS CYST NEMATODE (Heterodera punctata) 3 times; at McGuire AFB (1) and Hoboken (1), New Jersey; Jacksonville (1), Florida.

GOLDEN NEMATODE (Heterodera rostochiensis) 7 times; at San Francisco (3), California; Jacksonville (2), Florida; Charleston (1), South Carolina; New York (1), New York.

CORRECTIONS

CEIR 16(8):130 - Distribution of Alfalfa Weevil (Hypera postica) - Delete Marion County, Missouri, (isolated record in northeast). Add Bernalillo County, New Mexico, and Golden Valley County, North Dakota.

CEIR 16(10):173 - COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Note should read: Ranged 8-20 per head on calves in Tillman County, heavy in Cotton County week ending February 26. Averaged less than 5 per head on untreated yearling steers in Canadian County. (Okla. Coop. Sur.).

LIGHT TRAP COLLECTIONS

GEORGIA (Tifton, 3/2-9; temp. 30-70°F.; precip. 1.90 in.; blacklight) - Heliothis zea, H. virescens, Manduca sexta, M. quinquemaculata all zero.

TEXAS (Waco, 3/5-11; blacklight) - Pseudaletia unipuncta 19, Peridroma saucia 27, Feltia subterranea 15. (Brownsville, 3/5-11; temp. 37-75°F.; precip. 0.46 in.; 2 blacklight) - Agrotis ipsilon 1, F. subterranea 3, P. saucia 1, Pseudaletia unipuncta 6.

ADDITIONAL NOTES

ARKANSAS - GRAIN APHIDS - Aphid numbers currently low due to extremely low temperatures. Although buildup expected if warm weather continues, no severe problem anticipated because of present low populations. PEA APHID (Acyrthosiphon pisum) low on alfalfa and vetch in northwest. COMMON CATTLE GRUB (Hypoderma lineatum) averaged approximately one per head in 17 head of cattle in Benton County. No CATTLE LICE found in this herd. (Ark. Ins. Sur.).

HAWAII INSECT REPORT

Cereal and Forage Insects - A GRASSHOPPER (Schistocerca vaga) - Female taken in Waianae, Oahu, confirms previous reports in area. Waianae approximately 5 miles from Nanakuli, 20 miles from Sand Island. (Yonamine).

Fruit Pests - A FALSE SPIDER MITE (Brevipalpus phoenicis) medium to heavy on papaya fruits on 3 acres in Waimanalo, Oahu. Spray program curtailed due to wet conditions. (Sato). SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) adults light on terminals of young citrus in Wailuku, Maui, at 500 feet elevation. (Takishita). COTTONY-CUSHION SCALE (Icerya purchasi) - All stages on grapefruit and orange trees in Lawai, Omao, and Kalaheo, Kauai; heavy in shaded areas. Light numbers of Rodolia cardinalis (vedalia) appearing. (Au).

Truck Crop Insects - A NOCTUID MOTH (Chrysodeixis chalcites)-Larvae medium on tomato in Hilo, Hawaii Island; fruit damage noticeable. (Yoshioka). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) eggs, nymphs and adults heavy on snap beans and eggplants in scattered areas in Waianae, Oahu; light to medium on 2 acres of snap beans in Waimanalo. Light on tomato at 1,300 feet elevation in Omaopio, Maui. (Yamamoto, Sato, Miyahira). A GRASSHOPPER (Atractomorpha ambigua) feeding on seeding mustard cabbage at C Village, Ewa Plantation, Oahu; 2 adults per sweep. Damage light to moderate. (Higa). LEAF MINER FLIES (Liriomyza spp.) light on tomato in Omaopio, Maui, and on 0.25-acre area in Wailua, Kauai. Heavy on Dolichos lablab (lablab beans) in Lihue, Kauai; 85 percent of leaves infested. (Miyahira, Au, Fujimoto). LEEK MOTH (Acrolepia assectella) larvae light on 1 acre of green onions in Waimanalo, Oahu. (Sato). No evidence of SOUTHERN GREEN STINK BUG on wild hosts in Omaopio, Maui, although occasional adult reported. Adults light on 0.25-acre of snap beans in Waianae, Oahu. Fifth-stage nymphs light on preferred wild weed host (Malva parviflora (cheeseweed)) in abandoned cattle feeding pens at Honouliuli, Oahu; 2-3 per plant noted; adults scarce. (Miyahira, Yamamoto, Davis).

Forest, Ornamental and Shade Tree Insects - COCONUT LEAF ROLLER (Hedylepta blackburni) caused light to heavy damage to coconut fronds in various localities on Kauai; light in Poipu, moderately heavy in Wailua and Kapaa. Damage heaviest in exposed coastal areas. (Au). All stages of COTTONY-CUSHION SCALE light on Casuarina sp. (ironwood tree) in Waimanalo, Oahu. (Hironaka). First and second-stage larvae of a NOCTUID MOTH (Achaea janata) observed for first time this year on croton plants in Lanikai, Oahu. Further increase and spread expected. (Davis). GREEN SCALE (Coccus viridis) medium (mostly nymphs) on gardenia and plumeria in scattered areas in Kaneohe, Oahu; about 90 per gardenia leaf and 50 per terminal of young plumeria plants. Medium to heavy on plumeria in Kapaa, Kauai. (Chong, Au). Sporadic occurrence of a twig-boring BARK BEETLE (Xylosandrus compactus) noted on twigs of Prosopis pallida (kiawe or mesquite) on western coast of Oahu between Nanakuli and Maile. Of 10 scolytid beetles examined, 8 were X. compactus, and 2 tentatively determined as Stephanoderes sp. This new locality record and most westerly spread of X. compactus on Island of Oahu since first discovered at Kailua in 1961. (Davis).

Beneficial Insects - A CERAMBYCID BEETLE (Plagiohammus spinipennis) pupating in stems of lantana at Kau, Hawaii Island, approximately 7 months after oviposition. (Harley).

Miscellaneous Insects - All stages of RED-BANDED THRIPS (Selenothrips rubrocinctus) medium to heavy on Schinus terebinthifolius (Christmas-berry) in Ewa, Oahu. (Higa).

Weather at Honolulu - During January the average maximum temperature was 76.9°F. and the average low was 67.2°F. at the Honolulu Substation of the Weather Bureau; precipitation totaled 2.82 inches. During February, the average maximum temperature was 75.8°F., the average low 65.9°F.; precipitation totaled 4.10 inches.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 190)

TOBACCO INSECTS

Highlights:

TOBACCO FLEA BEETLE was unusually abundant in southern Indiana and was more than usually destructive to newly set and young tobacco plants in Maryland. The second generation of this leaf beetle ranged medium to heavy on large tobacco in Virginia. Infestations ranged up to heavy on this crop in Georgia. SOUTHERN POTATO WIREWORM caused up to 42 percent loss in some fields of shade-grown tobacco in Florida, and populations were higher than for 2 years in North Carolina. TOBACCO BUDWORM was heavy on tobacco in Georgia and was a major pest of this crop in Alabama. HORNWORMS were very minor on tobacco in 1965. GREEN PEACH APHID necessitated controls on 10,000 acres of tobacco in Maryland and heavy populations were spotty in Virginia. GARDEN SPRINGTAIL was important on tobacco in the bed and THRIPS were conspicuous on newly set plants over a wide area of Maryland.

TOBACCO FLEA BEETLE (Epitrix hirtipennis) was unusually abundant throughout the southern tobacco-growing area of INDIANA during 1965. Up to 8 adults per leaf were common on young transplants during the latter part of June, and treatment was warranted in many fields. By early August, tobacco had populations of 20-30 adults per plant and "shot-hole" feeding injury was common. Epitrix spp. damaged several fields of tobacco in southwestern OHIO the last week of August. Tobacco flea beetle adults were more than usually destructive to newly set and young tobacco plants in MARYLAND. Populations were also high during most of August and early September. This leaf beetle was one of the most important pests of tobacco in the bed in Maryland. Overwintered tobacco flea beetle adults were light to medium on newly set tobacco in VIRGINIA. Emergence of the second generation peaked later than usual and populations were medium to heavy on large tobacco. Heavy infestations occurred largely in areas of Charlotte, Mecklenburg and Brunswick Counties where drought conditions prevailed in Virginia during 1965.

Tobacco flea beetle ranged light to heavy on tobacco in the plant bed in GEORGIA, and infestations in the field were heavy on newly transplanted tobacco. Tobacco flea beetle caused light damage to shade-grown tobacco in some plant beds in the Quincy area of FLORIDA. Growers have become more aware of this pest and losses have been reduced effectively in the plant beds with proper use of insecticides. Heavy rainfall during April hindered emergence of the first brood, thus populations were light in this area. The second brood emerged in moderate numbers and caused most of the damage to the shade-grown tobacco crop in the field in the Quincy area. Moderate to heavy damage to tobacco resulted where controls were not applied properly. Unspecified FLEA BEETLES were a major problem on tobacco in ALABAMA.

WIREWORMS, mostly SOUTHERN POTATO WIREWORM (Conoderus falli), caused light losses to the shade-grown tobacco crop in the Quincy area of FLORIDA. Some fields, however, were heavily damaged and losses were as high as 42 percent. Heavy rains during June hindered insecticide applications and losses were greatest at that time. TOBACCO WIREWORM (Conoderus vespertinus) ranged light to heavy across the tobacco belt in GEORGIA during the first half of the year, with infestations being more severe than in recent years. Tobacco wireworm and southern potato wireworm populations on tobacco in NORTH CAROLINA were higher than during the previous 2 years. Economic damage, however, was not extensive because of treatments and favorable growing conditions during transplanting. Tobacco wireworm was generally light on tobacco in VIRGINIA, but spotted medium to heavy infestations were reported in certain areas of Pittsylvania, Mecklenburg and Brunswick Counties.

VEGETABLE WEEVIL (Listroderes costirostris obliquus) infestations on tobacco in the plant bed in GEORGIA ranged light to moderate through June 30.

TOBACCO BUDWORM (Heliothis virescens) larval populations were light to moderate on shade-grown tobacco in the Quincy area of FLORIDA, with some light damage reported. Larvae were as numerous as ever observed on unsprayed plots of flue-cured tobacco in the same area of the State. Counts of 2.4 larvae per plant were typical during May and June, with counts of slightly more than 3 per plant occurring. Biocontrol curtailed populations of this pest, with Cardiochiles nigriceps (a braconid wasp) and Peucetia viridans (a green spider) being the principal agents. Tobacco budworm ranged light to heavy on tobacco throughout the tobacco belt of GEORGIA before June 30, and this noctuid was one of the major pests of tobacco in ALABAMA during 1965. Larval infestations of CORN EARWORM (H. zea) were heavy on tobacco in GEORGIA the latter part of the first half of the season.

BUDWORMS (Heliothis spp.) were more prevalent on tobacco in NORTH CAROLINA throughout the 1965 season than they were in 1964, but Campoletis perdistinctus (an ichneumon wasp) was also very abundant and kept budworm populations in check. Budworms were unusually light on tobacco in VIRGINIA for the second consecutive year and were not problem on tobacco in MARYLAND for the third consecutive year.

CABBAGE LOOPER (Trichoplusia ni) infestations were lighter on shade-grown tobacco in the Quincy area of FLORIDA than in 1964, but remained the number-one pest of this crop, causing moderate losses. In late June and early July, cabbage looper was occasionally observed damaging tobacco in VIRGINIA. LOOPERS (Trichoplusia spp.) were not reported as a problem on tobacco in NORTH CAROLINA during 1965 as they were in some areas of the State in 1964.

Other noctuids were reported as infesting shade-grown tobacco in the Quincy area of FLORIDA. BEET ARMYWORM (Spodoptera exigua) was light and caused light damage to the crop. Infestations of VARIEGATED CUTWORM (Peridroma saucia) and BLACK CUTWORM (Agrotis ipsilon) were lower than in 1964, but caused moderate losses to some fields of shade-grown tobacco in the area.

CUTWORMS were generally light on tobacco in VIRGINIA, but heavy infestations were reported in a few Mecklenburg County fields. Cutworms, especially CLAY-BACKED CUTWORM (Agrotis gladiaria, caused moderate injury to newly set plants in a few fields in MARYLAND.

TOBACCO HORNWORM (Manduca sexta) was not damaging to shade-grown tobacco in the Quincy area of FLORIDA. First moths were trapped April 27, compared with April 26, 1964. Catches indicated 51.9 percent fewer moths taken in 1965. Eggs in unsprayed plots of flue-cured tobacco in the Quincy area were numerous, but late-stage larvae were rarely observed. This is attributed to biological control, mainly by predatory wasps and Peucetia viridans (a green spider). Tobacco hornworm was a major pest of tobacco in ALABAMA but infestations were light on tobacco in GEORGIA.

Populations of HORNWORMS (Manduca spp.) were lower on tobacco in NORTH CAROLINA than in 1964, when numbers were very light. Hornworms were generally light on tobacco in VIRGINIA, but more numerous than in 1964. Moth catches in blacklight traps were substantially larger than those of 1964. Hornworms were again below normal on tobacco in all section of MARYLAND, with injury ranging light to moderate. These pests caused some damage to tobacco in southwest OHIO during 1965.

POTATO TUBERWORM (Phthorimaea operculella) infestations were light on shade-grown tobacco in the Quincy area of FLORIDA, and little damage was reported. This pest was rarely observed on flue-cured tobacco in this area during 1965, although it was economic on tobacco in 1964.

GREEN PEACH APHID (Myzus persicae) populations during late July and August ranged moderate to heavy throughout the 5 tobacco-growing counties of MARYLAND. Over 10,000 acres of tobacco were treated to control this pest in the State. Infesta-

tions of this aphid ranged light to heavy on tobacco in Pittsylvania, Halifax, Mecklenburg and Brunswick Counties, VIRGINIA, but heavy populations were spotty. Entomogenous fungi increased in late July and aided the population decline in some areas. Green peach aphid was light on tobacco in the plant bed and in the field in GEORGIA through June 30. This aphid was light on shade-grown tobacco in the Quincy area of FLORIDA and no losses to the crop were recorded. M. persicae was not a problem on flue-cured tobacco in this area, either in experimental plots or in commercial plantings.

BROWN STINK BUG (Euschistus servus) occasionally damaged tobacco in VIRGINIA during the 1965 season and was more common than at any time during the past 5 years.

SOUTHERN MOLE CRICKET (Scapteriscus acletus) was light to moderate in tobacco in the field in GEORGIA by the end of June. A SNOWY TREE CRICKET (Oecanthus sp.) caused some damage to field tobacco near Oakville, St. Marys County, MARYLAND, during July.

GARDEN SPRINGTAIL (Bourletiella hortensis) was one of the most important pests of tobacco in the bed and THRIPS were conspicuous on newly set plants over a wide area during late May and June in MARYLAND. CRANE FLY larvae were also important on tobacco in the bed in the State this year.

The value of the shade-grown tobacco crops in FLORIDA was estimated to be $15,340,800 in 1965. Insect losses to this crop were estimated at 5.2 percent, or $797,722. Cabbage looper (2.3 percent), cutworms (1.6 percent), flea beetles (0.5 percent), budworms (0.4 percent), wireworms (0.1 percent) and other insects (0.3 percent) contributed to the overall loss. The outlook for 1966, in view of 1965 infestations in Florida, indicates an apparent increase in insect populations. Losses from insects should range 6-8 percent of the crop value. Unfavorable weather conditions in March and April could bring about a reduction in these estimated losses. Insects expected to increase in population in 1966 are cabbage looper, flea beetles, cutworms and budworms. Beet armyworm is unpredictable, but may be more numerous than in 1965. Some losses are expected from wireworms, but these should not average greater than in 1965. It is expected that wireworm losses will be reduced with more acreage treated for control.

COTTON INSECTS

Highlights:

BOLL WEEVIL populations and damage were unusually high in North Carolina, and sufficient numbers entered hibernation in the fall of 1965 in Alabama to be of concern if winter survival is normal. This pest was heavier than during the past 3 years in Arkansas. Boll weevil was again heavy below the Caprock in Texas and reported above the Caprock for the third consecutive year. Larvae of Anthonomus grandis complex were collected in California for the first time. BOLLWORM was of concern on cotton in the West, but infestations were lighter in Oklahoma than last year and were the lightest since 1961 in Missouri. BOLLWORMS (Heliothis spp.) were of some concern throughout the Cotton Belt; infestations were lighter in Georgia than in 1964, but populations caused considerable damage in some untreated cotton in North Carolina. PINK BOLLWORM was reported for first time in California; spread was general in eastern and southern Arizona; infestations resulted in much lower yields and grades of cotton in the Pecos Valley of New Mexico, and heavy losses in other areas of the State. Several PLANT BUGS caused some damage to cotton in a few areas, and THRIPS (Frankliniella spp.) damaged cotton through July in Arizona. SPIDER MITES necessitated controls in Nevada, and infestations were less severe on cotton in the Brazos River Bottom area of Texas than in 1964. Spider mites, mainly STRAWBERRY SPIDER MITE, were a problem on seedling cotton plantings in Missouri.

BOLL WEEVIL (Anthonomus grandis) populations and damage were unusually high in NORTH CAROLINA during 1965. The November 1 forecast for cotton yield was 40 percent below that of 1964 and 23 percent below the 1959-1963 average. These yield reductions were due to boll weevil and excessive rains during the growing season. Boll weevil was present in large numbers in North Carolina early in the season and increased as the season progressed. On the Coastal Plain only 3 growers that began treatment early and maintained a regular schedule despite the rains were able to keep damage to a low level. Boll weevil infestations in GEORGIA, however, were low during the first 6 months of the year, except for a few fields. During the week of June 21, counts ranged 0-33 percent punctured squares and averaged 7 percent. Winter hibernation survival surveys for boll weevil in ALABAMA indicated that survival was much higher than in 1964. Counts made on farms in Henry, Dallas, Tuscaloosa and Morgan Counties in April, May and June were about the same as during the survival survey in these counties in March. The numbers of weevils entering hibernation in the fall of 1965 in these counties were as follows: Henry 2,126, Dallas 5,239, Tuscaloosa 3,627 and Morgan 5,158. Boll weevil populations have again built up rather high throughout Alabama and sufficient numbers entered hibernation in the fall of 1965 to be of general concern if winter survival is normal. This situation is of major concern in the northern portion of the State where most of the cotton is grown. Infestations appeared early in 1965 with heavy egg laying. Cotton made excellent growth, affording excellent shade for larvae in squares during June and July, with favorable moisture and heavy emergence of first-generation weevils in late June and mid-July. This condition continued through succeeding generations. High boll weevil populations and unsuitable weather for effective controls resulted in extreme damage to cotton in southeastern Alabama counties.

Boll weevil was heavier in ARKANSAS in 1965 than for the past 3 years, but was lighter than it has traditionally been. The percentage of fields with economic populations, as shown by point sampling, ranged from 0.3 percent to 20.3 percent, with a seasonal average of 10.8 percent. This compares with a range of zero to 7 percent and a season average of 2.8 percent in 1964. Boll weevil was present in cotton fields in MISSOURI during the 1965 season but was of no economic importance. Boll weevil infestations appeared in cotton in OKLAHOMA in mid-June. By early August, populations were heavy in many areas and remained so the rest of the season. Punctured squares ranged 80-100 percent in untreated fields by mid-September. Boll weevil was again heavy below the Caprock in the western area of TEXAS, with weevils reported above the Caprock for the third consecutive year. Widespread infestations with heavy damage to cotton were reported in some sections of the Rio Grande Valley and Rolling Plains areas. Heavy local damage to cotton by this curculionid was reported in the gulf coast area and in the Blacklands and eastern area of Texas.

Four larvae of Anthonomus grandis complex taken from a green cotton boll 2.5 miles west of Winterhaven, Imperial County, constituted a new State record for CALIFORNIA. Another WEEVIL (Anthonomus sp.) does not appear to have extended its range significantly in ARIZONA. Some extremely heavy infestations were still present in some fields, however. During the 1965 season, over 38,000 acres were infested on more than 500 properties in Cochise, Maricopa, Pima, Pinal, Santa Cruz and Yuma Counties, Arizona.

BOLLWORM (Heliothis zea) was present in varying infestations in CALIFORNIA during the season and required continuous treatments. Populations of this noctuid began increasing in NEVADA during August and required controls into early September. Bollworm populations occurred in all cotton areas in ARIZONA during the summer and fall months, with population peaks during early September. Scattered, heavy populations caused some economic loss in Arizona in 1965, but the amount of insecticides used this season were below those used during 1964. Mostly scattered, light to moderate bollworm populations damaged cotton in the cotton-growing areas of NEW MEXICO, with only a limited number of growers treating for this pest. Bollworm damage in TEXAS was about the same as occurred during 1964. Although widespread infestations occurred throughout the State, these were generally light during 1965, except for some locally heavy damage. Bollworm infestations in

OKLAHOMA were considerably lighter this year than in 1964. Activity began in mid-June and continued through mid-October. Egg and larval counts seldom ranged over 30 percent infestation. Bollworm infestations in cotton in MISSOURI were the lightest since 1961. Larvae ranged 0-10 per 100 terminals during critical periods. Average counts were quite low this season and the percent of the scouted fields that were infested were also low.

TOBACCO BUDWORM (Heliothis virescens) moths were numerous in June and early July, comprising 22 percent on sugar baited hosts in southeastern ARKANSAS during the period June 10-30. The percentage dropped to 9.6 percent for July 1-7 and was then insignificant through early September. No H. virescens moths were taken in a light trap in the same area during the period June 10 through July 7. Of the 1,165 Heliothis spp. larvae collected from cotton in Arkansas during July and August, only 11, or 0.94 percent, were H. virescens. This compares with 1.49 percent in 1964 and 5.9 percent in 1963. Infestations of bollworms were lighter in Arkansas during 1965 than they were in 1964. The seasonal average percent of fields with bollworms present was 42.2 in 1965 compared with 48.7 in 1964 and a 5-year average of 48.1 percent. The seasonal average percent of fields with more than 3 larvae per 100 terminals was 12.9 compared with 17.3 in 1964 and 20.8 on 1963. Lighter infestations of bollworms are also reflected by the percent of fields with more than 4 percent damaged squares. The seasonal averages for 1965, 1964 and 1963, respectively were 5.5 percent, 10.5 percent and 16.9 percent. Tobacco budworm damage to cotton in TEXAS was about the same as in 1964. Although widespread infestations occurred throughout the State, they were generally light, but there was some locally heavy damage reported.

Moth flights and egg laying by bollworm and tobacco budworm occurred early in April, May and June in ALABAMA, but adult populations were not reflected by the number of larvae entering pupation in cotton fields. Pupation occurred in and moth flights originated from vetch, crimson clover, corn and many other crops. Controls for these pests were not general in Alabama until necessary for boll weevil (Anthonomus grandis), at which time sufficient dosage and spacing of applications were made to control both insects. Heavy larval populations developed late throughout Alabama on grain sorghum, sweet corn, and late cotton squares, blooms and bolls, as well as other crops. Control of this cotton insect complex apparently was not as difficult in 1965 as prior to 1963 when it became equal to or greater in importance than boll weevil. This may be due to better knowledge of control methods by growers. Bollworms (Heliothis spp.) were very light in cotton in GEORGIA until the week of June 21. Egg counts during this week ranged 0-9 and averaged 3 per 100 terminals. Larval counts during this period ranged 0-6 and averaged 4 per 100 terminals. Heliothis spp. were not a problem on cotton in NORTH CAROLINA until late in the season. Increases were rapid during the third week of August and considerable damage occurred in some untreated fields.

CABBAGE LOOPER (Trichoplusia ni) appeared in ALABAMA cotton as early as June, but did not feed on leaves in noticeable numbers until August. A complex of T. ni and Pseudoplusia includens was present in all fields affected. Populations did not reach suspected damaging proportions except where considerable controls had been applied for other insects. Reports did not indicate any special efforts were made specifically for these 2 loopers, although numerous but isolated fields were ragged by high populations that were controlled by naturally occurring viruses. Cabbage looper infestations were light and just appearing at the end of June in GEORGIA. Cabbage looper caused some damage to cotton in OKLAHOMA during the 1965 season, and localized populations occurred in cotton in TEXAS, but were not a general problem there. Cabbage looper populations were much smaller in ARIZONA cotton than they were in 1964. Parasites aided in keeping populations below economic proportions in the State. Infestations of T. ni were at economic levels in some cotton fields in NEVADA where controls were necessary in mid-June and early July. In CALIFORNIA, this noctuid was not as severe in cotton as in previous years. Virus diseases were noted in some areas.

PINK BOLLWORM (Pectinophora gossypiella) male moths were taken in sex lure traps in Riverside and Imperial Counties, CALIFORNIA, and a single larva was taken from

a green boll late in December. This is the first record of this cotton pest in California. Light to heavy infestations of pink bollworm appeared throughout Graham, Maricopa and Pinal Counties, ARIZONA. Spread was general, with infestations in nearly all areas of eastern and central portions of the State. Moths were numerous in sex lure traps in Yuma County, previously uninfested, but only a few larvae were taken during gin trash and field inspections. Pink bollworm built up rapidly during late summer and fall in the Pecos Valley of NEW MEXICO, resulting in much lower yields and grades of cotton than in previous years. Infestations were also light to heavy in southern Dona Ana County fields late in the season. Cotton bloom surveys in Eddy County in June indicated that large numbers of larvae survived the winter; 10 percent of blooms in several fields checked were found rosetted. Heavy losses resulted from heavy infestations which built up during the summer and fall in Eddy and Chaves Counties. Late buildup in southern Dona Ana County cotton fields caused the loss of the "top crop" in a number of fields. Light to heavy infestations also occurred in several fields near Columbus and east of Deming in Luna County, New Mexico.

Pink bollworm was again present in the Rio Grande Valley and gulf coast areas of TEXAS, and infestations in the trans-Pecos area increased considerably over those present in 1964. Pink bollworm caused some damage to cotton in OKLAHOMA and more larvae were recovered during gin trash inspections in ARKANSAS than in 1964. Pink bollworm is still not known to occur in MISSOURI; observations by cotton scouts and inspections of gin trash and lint cleaners failed to reveal this pest's presence in the State.

BEET ARMYWORM (Spodoptera exigua) caused early damage to cotton in several CALIFORNIA counties, but was unimportant on cotton during 1965 in NEVADA. Beet armyworm populations were subnormal during the cotton season in all areas of ARIZONA, with a minimum amount of controls being necessary. Beet armyworm did damage cotton stands in the Rolling Plains area of TEXAS, however.

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) also damaged cotton stands in the Rolling Plains of TEXAS, but infestations were lighter in ARKANSAS cotton during 1965 than they were in 1964. COTTON LEAFWORM (Alabama argillacea) was present in fields of cotton in MISSOURI, but was of no economic importance.

Several species of CUTWORMS were present in cotton in MISSOURI, but these too were not of economic importance this season. Cutworms were responsible for damage to cotton in Rolling Plains area of TEXAS. These pests caused a considerable problem in early cotton in CALIFORNIA, as cool, damp weather was ideal for development.

GARDEN WEBWORM (Loxostege similalis) damaged stands of cotton in the Rolling Plains of TEXAS and WEBWORMS (Loxostege spp.) destroyed several fields of cotton in southwestern OKLAHOMA in mid-July. EUROPEAN CORN BORER (Ostrinia nubilalis) was present in some cotton fields in MISSOURI but was of no economic importance.

COTTON SQUARE BORER (Strymon melinus), although present in cotton in MISSOURI during the season, was of no economic importance. This lycaenid butterfly caused some damage to cotton in OKLAHOMA, and occurred in local areas of TEXAS but created no general problem.

SALT-MARSH CATERPILLAR (Estigmene acrea) occurred locally in TEXAS cotton but was not a general problem, and was present in very light populations during the fall in ARIZONA causing very little damage. Little control was used in Arizona. Salt-marsh caterpillar was present in CALIFORNIA primarily in desert cotton. Also in California, larvae of a LEAF ROLLER MOTH (Platynota stultana) were quite damaging to cotton in many locations. COTTON LEAF PERFORATOR (Bucculatrix thurberiella) was a local problem on cotton in Imperial County, CALIFORNIA. The lack of stub cotton in California has materially reduced infestations of this pest. Light infestations of cotton leaf perforator were found in most areas of ARIZONA with an occasional moderate infestation noted in Yuma County and in the southern portion of the State.

COTTON APHID (Aphis gossypii) infestations in GEORGIA cotton were light through June 30. Early populations of 1-24 per plant on 2 to 4-leaf cotton occurred throughout ALABAMA. Large numbers of convergent lady beetle (Hippodamia convergens) appeared in these infestations, were controlled in 10-20 days. The amount of delay in plant growth, fruiting and yields were unpredictable. Some light control applications were made for cotton aphid but this was not general. Cotton aphid infestations in Alabama also occurred during main fruiting periods in July, August and September. Cotton aphid was lighter throughout the 1965 season in ARKANSAS than during 1964, and although present on cotton in MISSOURI, was not of economic importance. Cotton aphid caused some damage to cotton in OKLAHOMA this season. This aphid occurred on cotton throughout TEXAS; however, populations varied from light to heavy, even within local areas. A late buildup of cotton aphid during October and November created a problem because of honeydew on cotton lint in scattered fields in the Pecos and Mesilla Valleys of NEW MEXICO. This aphid was unimportant on cotton in NEVADA during 1965.

APHIDS as a group were not much of a problem on cotton in NORTH CAROLINA, and although present on cotton in CALIFORNIA, were not as damaging as in past years.

LEAFHOPPERS infested cotton in most areas of CALIFORNIA and caused considerable damage. WHITEFLIES were also present on cotton in a few locations of that State.

LYGUS BUGS (Lygus spp.) were major pests of cotton in CALIFORNIA, but were probably lighter in number than in 1964. Lygus bugs began moving into cotton in NEVADA during August when desert vegetation dried up; controls were required at this time. Late August rains stimulated growth of desert plants and lygus bugs then moved from cotton to these plants and no additional treatments were necessary. Medium infestations of lygus bugs were present in cotton in ARIZONA from June through September. The spring infestation of these bugs increased in June and damage ranged moderate to heavy in many areas. Treatments were necessary to protect cotton in the early growing stages. Heavy local populations of lygus bugs were reported on cotton in the trans-Pecos and north central areas of TEXAS.

TARNISHED PLANT BUG (Lygus lineolaris) and another plant bug, Neurocolpus nubilus, were economic in less than one-fourth of one percent of the cotton fields surveyed in ARKANSAS this season. N. nubilus infested 93 percent of the scouted cotton fields in MISSOURI at one time during the 1965 season, but numbers were economic in only 2 percent of these fields. A complex of COTTON LEAFHOPPER (Psallus seriatus), tarnished plant bug and RAPID PLANT BUG (Adelphocoris rapidus) also infested 93 percent of the scouted cotton fields in Missouri at one time during the season; however, economic numbers were present in only the same 2 percent of these fields.

Cotton fleahopper was economic in a very small percent of cotton in ARKANSAS during the 1965 season, but moderate to heavy populations damaged cotton from mid-June to mid-August in OKLAHOMA. Cotton fleahopper occurred on cotton throughout TEXAS, with populations varying from light to heavy even within local areas. Light to moderate infestations of a BLACK FLEAHOPPER (Spanogonicus albofasciatus) occurred on cotton in central areas of ARIZONA. Populations were light on cotton in the eastern area and in Yuma County. Population peaks in Arizona occurred about June 15. Heavy populations of FALSE CHINCH BUGS (Nysius spp.) developed on cotton in Merced County, CALIFORNIA.

THRIPS were general on cotton in CALIFORNIA most of the season and were unimportant on this crop in NEVADA. The cool, wet spring in ARIZONA was ideal for the buildup of Frankliniella spp. Heavy populations occurred on cotton in most areas of the State, especially in higher elevations. Damaging populations of Frankliniella spp. remained on cotton through July. Several species of thrips were present on cotton throughout TEXAS; however, populations varied from light to heavy even within local areas. Moderate to heavy populations of Thrips spp. and Frankliniella spp. damaged cotton in OKLAHOMA from early June to mid-July. Thrips were of minor importance on cotton in ARKANSAS this season. TOBACCO THRIPS (Frankliniella fusca), FLOWER THRIPS (F. tritici) and Sericothrips variabilis

infested cotton in MISSOURI but were of no economic importance.

FIELD CRICKETS (Gryllus spp.) caused some damage to cotton in Imperial County, CALIFORNIA, during the 1965 season.

Infestations of SPIDER MITES (Tetranychus spp.) required controls in late May, early June and July in Nye County, NEVADA, especially where cotton was adjacent to alfalfa. Tetranychus sp. infested cotton in the Brazos River Bottom area in central TEXAS, but was generally much less severe than in 1964. Other species of spider mites were present in cotton over the State in varying populations. Spider mites, mainly STRAWBERRY SPIDER MITE (Tetranychus atlanticus), were a problem in seedling cotton plantings in MISSOURI. By mid-August, one-third of the scouted cotton fields in the State was infested. Spot treatments and some treatment of complete fields were made in several instances during July and August in Missouri. Spider mite damage in the Sand Mountain and Tennessee Valley areas of ALABAMA in many past seasons has equaled or exceeded that of boll weevil (Anthonomus grandis). Infestations and damage by these pests, however, were light in the State during 1965. Partial or complete controls were necessary on some farms, but no major control effort developed in Alabama during the 1965 season. Spider mite infestations were light to moderate on cotton in GEORGIA during the first half of the season.

MITES generally were not much of a problem on cotton in NORTH CAROLINA this year. Mite infestations on cotton in ARKANSAS were heavier in June 1965 than they were in June 1964; however, infestations as a whole were lighter in 1965 than last year. Mites were present on cotton in CALIFORNIA early and continued all through the season.

Weather continued from page 196.

favored by a persistent East Coast High that kept temperatures about 6 degrees below normal in the Southeast where it was the 4th consecutive cool week.

PRECIPITATION: Wet weather was the rule in the Pacific Northwest. A storm off the coast early in the week brought over 8 inches of rain to portions of Oregon; Cape Blanco recorded 13.4 inches in 3 days. The heavy precipitation, lashing the area from Canada to northern California, was accompanied by gale winds up to 60 m.p.h. The storm abated by Thursday, but by the weekend, rain once again commenced. Warm air flowing over the rapidly melting snow cover in the upper Midwest produced a blanket of thick fog during the weekend. Visibilities frequently lowered to only a few yards thus restricting travel. Wisconsin's rivers and creeks became free of ice last week ending one of the shortest ice seasons on record in that State. The mild weather also created a severe flood threat as the snow- and ice-melt brought many rivers to critical stages. Widely scattered showers produced generally light amounts west of the Appalachians, but some of the heavier showers gave totals of more than an inch. For the first week in 5 months, Tennessee experienced little or no rain. Weekend precipitation in the Northeast reminded the Nation that winter is not yet over. Several inches of snow fell over upstate New York and New England causing hazardous driving conditions but extending the skiing season. The Southeast, meanwhile, was dry as the deluges of the last month ended. (Summary supplied by Environmental Data Service, ESSA).

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AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG and WINTER GRAIN MITE heavy on wheat in Oklahoma, and CORN LEAF APHID increasing on small grains in Arizona. (pp. 217, 218). ALFALFA WEEVIL larvae present in alfalfa in several Eastern and Southern States; adults reported in Pennsylvania and Colorado and damage reported in Missouri. Larvae of a WEEVIL (Hypera brunneipennis) continue to increase in alfalfa in Arizona, with damage severe in many fields of first and second cutting. (p. 218). TARNISHED PLANT BUG reported for first time this season in wheat and alfalfa in Missouri and Delaware, respectively. (pp. 218, 219).

Predictions

CORN FLEA BEETLE expected to be heavy on corn this spring in eastern and southern Maryland. (p. 217). ALFALFA WEEVIL expected to be as abundant in New Jersey as in 1965 and infestations should appear soon in Virginia if warm weather continues. (p. 218). Further increases in PEA APHID numbers expected in Arkansas during next few weeks. (p. 219).

Detection

A SPIDER BEETLE (Ptinus variegatus) identified for first time from Georgia and Kentucky; of potential economic importance as stored grain pest. New county records from Oklahoma and Georgia. (p. 226).

Guidelines for Pear Sawfly Survey. (p. 227).

Recognition of the European Apple Sawfly and the Pear Sawfly. (pp. 228-230).

Special Reports

Nomenclatural Changes in the Leaf Beetles. (p. 232).

Pink Bollworm Regulated Areas (Map). (p. 233).

Reports in this issue are for week ending March 18 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING MARCH 21

HIGHLIGHTS: (1) Frontal passage ends warmth, Midwest. (2) Rain continues Northwest; dry Northeast.

TEMPERATURE: Except for the Atlantic coast and the West, temperatures were much above normal. Departures of more than 18° were reported in parts of the northern Plains as southerly winds brought warm air from the Gulf of Mexico to Canada. The temperature pattern was similar to that of the previous week, only the vast area of warmth shifted slightly eastward and became stronger. By the end of the week, however, temperatures returned to normal throughout the Midwest. A Low gradually moved from the eastern Rockies across the Great Lakes region, and a strong temperature gradient near its cold front resulted in the mercury dropping more than 30° in 24 hours. The cooler air was modified as it traveled to the Atlantic so that its effects were not as pronounced in the East as in the Midwest. A four week

Weather continued on page 232.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - OKLAHOMA - Ranged 1-14 per linear foot along south Canadian River in Blaine, Dewey, Roger Mills, Custer, Caddo, Ellis, Canadian, Grady and McClain Counties, except for 70 per linear foot in field in Goldsby area, McClain County; averaged 40 per linear foot in Grady County field. Ranged 2-25 per linear foot in wheat in Kingfisher, Major, and Garfield Counties. Reported heavy in certain areas of Tillman and Cotton Counties; controls about to begin. (Okla. Coop. Sur.). NEW MEXICO - Infestations in wheat mostly light and spotty in Quay County. (Kloepfer).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Ranged 2-20 per linear foot in wheat in Major, Garfield and Kingfisher Counties; very few seen in other areas. (Okla. Coop. Sur.). NEW MEXICO - Light and spotted in barley in Roswell area, Chaves County. (Mathews). ARIZONA - Increasing rapidly on small grains in Yuma and western Maricopa Counties. (Ariz. Coop. Sur.). CALIFORNIA - Nymphs and adults on barley in Santa Ana area, Orange County. (Cal. Coop. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Light to medium in alfalfa in Yuma Valley, Gila Valley and Yuma Mesa, Yuma County. Few small colonies found in Wellton-Roll area. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

CORN ROOTWORMS (Diabrotica spp.) - SOUTH DAKOTA - Populations of D. virgifera and D. longicornis changed abruptly in 1965. In study plots at Brookings, average seasonal populations of D. virgifera dropped to low of 1.0 adult per 100 plants in 1965. The sudden decrease followed yearly increases of 1.6 adults per 100 plants in 1962, 8.7 in 1963 and 21.6 in 1964. In contrast, populations of D. longicornis increased sharply to an overall plot average of 522.3 adults per 100 plants for the season. In 1962, 1963 and 1964, average seasonal populations of D. longicornis were 43, 181 and 164 adults per 100 plants, respectively, for each year. The ratio of D. longicornis to D. virgifera in 1965 was about 99 to 1, compared with 78 to 22 in 1964. Similar changes in the D. longicornis-D. virgifera ratio for adult populations have been noted in State survey reports from Minnesota and Iowa. It is postulated that D. longicornis was more able to withstand weather conditions experienced in the region during the winter of 1964-1965 than during previous 3 years. (Northern Grain Ins. Lab., Ent. Res. Div.).

CORN FLEA BEETLE (Chaetocnema pulicaria) - MARYLAND - Heavy numbers expected on corn this spring in eastern and southern sections; winter temperatures and other factors favorable for heavy carryover of adults. (U. Md., Ent. Dept.).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARIZONA - Appearing on small grains in Wellton-Roll area, Yuma County. (Ariz. Coop. Sur.). OKLAHOMA - Counts of 1-10 per linear foot common in wheat in southwest, west, central, and northwest areas. Occasionally up to 35 per linear foot. Numerous winged adults seen at lights in Weatherford, Custer County, night of March 15. (Okla. Coop. Sur.). ARKANSAS - Numbers increased significantly but not high; 50-75 per 100 sweeps in northwest. (Ark. Ins. Sur.). MISSOURI - Alatae and apterae present in Dunklin County wheat; 5 per foot of row in small wheat just beginning spring growth. (Houser).

GRAIN APHIDS - SOUTH CAROLINA - Less destructive than usual on small grains. Doubtful if problem develops before harvest. Problem in area most frequently in connection with early planted grain for fall and winter grazing. (Nettles, Mar. 15). OKLAHOMA - Rhopalosiphum padi ranged 1-20 per linear foot in most wheat in central, west central and northwest areas; occasionally up to 50 per linear foot. (Okla. Coop. Sur.). CALIFORNIA - Myzus persicae nymphs and adults observed on barley in Santa Ana area, Orange County. (Cal. Coop. Rpt.).

TARNISHED PLANT BUG (Lygus lineolaris) - MISSOURI - First adult of season taken in wheat in Scott County. (Houser).

GREAT BASIN WIREWORM (Ctenicera pruinina) - IDAHO - Probably this species, ranged 3-4 per foot of row in newly planted grain field near Parma, Canyon County. (Scott).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Heavy in wheat in Tillman and Cotton Counties and in scattered fields in Garfield County. Ranged 1-110 per linear foot in scattered fields in central and west central areas. Only mite seen in wheat checked in those areas. Moderate to heavy in wheat and barley in Kingfisher County. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

AN ARCTIID MOTH (Haploa sp.) - TEXAS - Damaging larval numbers found on pasture near Spring, Montgomery County. (Straughan).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEW JERSEY - Expected to be as abundant as in 1965; growers urged to prepare spray rigs. (Ins.-Dis. Newsltr.). PENNSYLVANIA - Adults active in Somerset County March 2 on alfalfa; mating in Westmoreland County March 11. Some females gravid in latter county, but no egg laying. (Udine). MARYLAND - Light numbers of small larvae, mostly first instar, feeding on new alfalfa growth in Dorchester and Worcester Counties. (U. Md., Ent. Dept.). VIRGINIA - Larvae detected throughout State. If warm weather continues, infestations should appear sooner than usual. Larvae 1-15 per 10 alfalfa tips in south central area; most second instar. (Isakson). Larvae 1-10 per 12 alfalfa tips in 3 Pittsylvania County fields; most second instar. (Dominick). INDIANA - Egg hatch well underway in southern Harrison County; first and second instars common on alfalfa. (Wilson). TENNESSEE - Larvae feeding in all alfalfa fields surveyed in Henry County March 14. Growth and degree of infestation do not warrant treatments at this time. Fields should be observed closely until first cutting. (Johnson). NORTH CAROLINA - Larvae appearing in Piedmont area; primarily first stage; occasional second stage noted. Development about 2 weeks later than normal. Alfalfa just beginning to grow; 2-3 inches high. (Campbell). MISSISSIPPI - Counts by county as follows: Bolivar, 33 larvae per square foot in 5 square-foot samples; 2 cocoons. Washington, 84 larvae per square foot in 5 square-foot samples; 1 cocoon. Leflore, 70 larvae per square foot in 5 square-foot samples; 2 cocoons. Sunflower, one larva found in 5 square-foot samples; this newly planted field. (Dinkins). ARKANSAS - Egg hatch continues in northeast. (Ark. Ins. Sur.). MISSOURI - Egg hatch continues; early stage larvae damaging 0-10 percent of alfalfa terminals in Pemiscot County. Eggs hatching at Fredericktown, Madison County; less than 1 percent terminal damage observed. (Houser). COLORADO - Adults collected from alfalfa in Larimer County; Bathyplectes curculionis (an ichneumon wasp) also noted. Alfalfa showed some growth last few days. (Simpson, Daniels). Adults becoming active with higher daytime temperatures in few fields showing green. (Bulla).

CLOVER LEAF WEEVIL (Hypera punctata) - MARYLAND - Larvae feeding on new growth of alfalfa in Dorchester and Worcester Counties. (U. Md., Ent. Dept.). IDAHO - Observed on alfalfa crowns in Twin Falls County field. (Youtz, Feb. 19).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - IDAHO - Observed in Twin Falls County alfalfa field on crowns. (Youtz, Feb. 19).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Larval counts continue increase in many alfalfa areas of Yuma County, particularly on Yuma Mesa and in Gila Valley. Damage severe in many fields of first and second cutting. Lighter but increasing populations found in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Medium in first and second-cutting alfalfa in Yuma, Maricopa and Pinal Counties. (Ariz. Coop. Sur.). NEW MEXICO - Very light, spotted infestations found in southern Bernalillo County. (Heninger). MISSISSIPPI - Total of 23 adults and nymphs taken on 5 square feet of alfalfa in Bolivar County. In 100 sweeps, 20 adults and nymphs taken on oats in Leflore County, 13 adults and nymphs taken on wheat in Sunflower County. (Dinkins). ARKANSAS - Increased slightly but remains low in northwest. Further increase expected during next few weeks. (Ark. Ins. Sur.). MISSOURI - Light in Pemiscot County alfalfa; 100 per 100 sweeps. (Houser). MARYLAND - Light populations feeding on new alfalfa growth in Dorchester and Worcester Counties. (U. Md., Ent. Dept.).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - First adults of season active in alfalfa in New Castle County. (Burbutis).

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphs increasing in alfalfa in most areas of Yuma and Maricopa Counties; 400 per 100 sweeps. (Ariz. Coop. Sur.).

A FULGORID PLANTHOPPER (Acanalonia bivittata) - NEBRASKA - This unusual insect found abundant in alfalfa. Nymphs and adults (det. by J. P. Kramer) averaged 1 per sweep in Howard County alfalfa field in mid-July 1965. When confined to alfalfa in the laboratory, nymphs completed development; resulting adults inserted eggs into alfalfa stems. In August, adults were again observed in same field where previously collected and in nearby field, but only near margins. In mid-August, they were abundant along margins of field in Dundy County and were particularly heavy on Mexican fireweed (Kochia scoparia) growing in waste areas adjacent to this field. Although A. bivittata can develop and oviposit on alfalfa, it does not appear to be a serious pest of this plant. (Manglitz).

GARDEN SYMPHYLAN (Scutigerella immaculata) - UTAH - Damaged alfalfa and other experimental plants in greenhouse on Utah State University campus at Logan; necessitated soil treatments. (Bohart, Knowlton).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Hibernation survey on High Plains revealed no weevils above or below Cap Rock. Surface trash examined in Wilbarger County revealed overwintering population of approximately 3,800 per acre; 6 hibernation cages at Presidio yielded only one live weevil. (PPC South. Reg., Feb. Rpt.).

For other Cotton Insects, see Federal-State Plant Protection Programs, page 224.

SUGAR BEETS

GREEN PEACH APHID (Myzus persicae) - WASHINGTON - Several apterous stages on sugar beets growing in tare (trash) piles at Harrah, Yakima County, February 15. First time in 4 years summer forms found under these conditions in area. (Wallis).

POTATOES, TOMATOES, PEPPERS

AN ARCTIID MOTH (Haploa sp.) - TEXAS - Larvae found in damaging numbers on greenhouse tomatoes near Spring, Montgomery County. (Straughan).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - ALABAMA - Few adults observed in ground trash samples. (McQueen).

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - ALABAMA - Large number of adults of this species and Cerotoma trifurcata taken from ground trash samples in Morgan County. Subzero weather and snow apparently did not materially affect survivals. (McQueen).

CUCURBITS

DARKLING BEETLES (Blapstinus spp.) - ARIZONA - Medium and migrating into seedling melon fields in Yuma County; damage light in many fields. (Ariz. Coop. Sur.).

MELON APHID (Aphis gossypii) - ARIZONA - Adults noted in young melon fields; may become problem in cantaloup areas of Yuma County. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

GREEN PEACH APHID (Myzus persicae) - COLORADO - Overwintering egg counts near completion on peaches in Mesa County. First nymphs March 11; 5-10 percent of eggs hatched March 16th. Egg counts moderate to high; 1-15 per fruit bud. Dormant and delayed sprays stressed. (Bulla).

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - Adults present on pears at Prosser, Benton County, February 23; in about 20 minutes observation time, 12 adults noted on spurs. No eggs found. (Cone).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - ALABAMA - Heavy on few peach trees in Dallas County. (Cain et al.).

HICKORY SHUCKWORM (Laspeyresia caryana) - ALABAMA - Pupation noted in all pecan shucks observed in Dallas and Lee Counties. Some full-grown in shucks in Tuscaloosa County. (Cain et al.).

A FRUIT-TREE MITE (Bryobia rubrioculus) - CALIFORNIA - Eggs and nymphs medium on almond trees locally in Clovis, Fresno County. (Cal. Coop. Rpt.).

CITRUS

CHAFF SCALE (Parlatoria pergandii) - FLORIDA - All stages infesting citrus in grove in Plymouth, Orange County. (Musgrove, Smith, Walker).

A CITRUS SNOW SCALE (Unaspis citri) - FLORIDA - All stages infesting grapefruit, Hamlin orange and Citrus spp. in nurseries at Apopka and Plymouth, Orange County. (Smith, Musgrove).

COTTONY-CUSHION SCALE (Icerya purchasi) - ARIZONA - Infestations found in 3 adjacent citrus groves in Yuma County. No increase in Rodolia cardinalis (vedalia) observed in area. (Ariz. Coop. Sur.).

For other Citrus Insects, see Federal-State Plant Protection Programs, page 224.

SMALL FRUITS

CURRANT BORER (Ramosia tipuliformis) - CALIFORNIA - Larvae medium on currant bushes in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

GENERAL VEGETABLES

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Increasing on Yuma County lettuce; some controls required. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - DELAWARE - Apterous adults and nymphs common on spinach; 3 per plant in large commercial field in western Kent County. (Burbutis).

For other General Vegetable Insects, see Federal-State Plant Protection Programs, page 224.

ORNAMENTALS

AN OLETHREUTID MOTH (Epinotia subviridis) - CALIFORNIA - Larvae of this species and Herculia phoezalis (a pyralid moth) heavy on Italian cypress and Pfitzer junipers in Laguna Beach, Orange County. (Cal. Coop. Rpt.).

A PLUME MOTH (Platyptilia sp.) - CALIFORNIA - Larvae of this and Argyrotaenia sp. damaging flower buds of geranium plants in Encinitas, San Diego County. (Cal. Coop. Rpt.).

GREEN PEACH APHID (Myzus persicae) - NEW YORK - Number of specimens collected by W. T. Johnson, February 4, from leaves of Crocus sp. being forced indoors. Further note of March 14 states that M. persicae came from several bulbs in single pot and that infestation resulted in all of above-ground parts of plants being killed. No winged forms found. Det. by M. D. Leonard. According to Dr. Leonard, only other similar occurrence of which he knows is collection of this species from Ithaca, on October 24, 1927, on "stored crocus bulbs" by Grace Griswold. (Leonard).

APHIDS - OKLAHOMA - Cinara tujifilina continues heavy on some Payne County arborvitae. (Okla. Coop. Sur.). NEW MEXICO - Cinara sp. light and spotty on ponderosa pines in Albuquerque area, Bernalillo County. (Heninger). ARIZONA - Aphis craccivora very heavy in new growth on ornamental citrus in Yuma, Yuma County. (Ariz. Coop. Sur.) CALIFORNIA - Macrosiphum euphorbiae numphs and adults heavy on viburnum plants locally in Lindsay, Tulare County. Aphis sambucifoliae nymphs and adults heavy on elderberry plants in Santa Ana, Orange County. Populations early this season. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - NEW MEXICO - Noted on number of ornamental plantings of ponderosa pine in Albuquerque area, Bernalillo County. (Heninger). UTAH - Numerous on several Colorado spruce trees at Logan, Cache County. (Knowlton).

ARMORED SCALES - ALABAMA - Fiorinia theae heavy on camellia and Burford holly in Lee, Dallas and Escambia Counties. (May, Cain et al.). CALIFORNIA - Aspidiotus perniciosus heavy on rose bushes in Colusa, Colusa County. Particularly heavy in many locations this season. (Cal. Coop. Rpt.).

SOFT SCALES -CALIFORNIA - Coccus hesperidum and Saissetia oleae were heavy on yucca nursery stock in Cardiff, San Diego County. S. oleae heavy on gardenia plants locally in Colusa, Colusa County. Occurred in several different stages. (Cal. Coop. Rpt.). FLORIDA - Ceroplastes rubens infesting following host plants in nursery at Boynton Beach, Palm Beach County: Aglaonema sp., Anthurium sp., Aralia elegantissima, birds-nest-fern (Asplenium nidus), Philodendron pertusum, Pteris sp., frangipani (Plumeria sp.), ivy (Hedera sp.), Ixora sp., Medinilla sp., and neanthe bella palm (Chamaedorea sp.). (Fla. Coop. Sur., Mar. 10-14).

SUBTERRANIAN TERMITES (Reticulitermes spp.) - INDIANA - Workers reported attacking juniper grafts in greenhouse in Richmond, Wayne County. (Schuder).

For other Ornamental Insects, see Federal-State Plant Protection Programs, page 224.

FOREST AND SHADE TREES

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Early instars infesting oak trees in Danville, Contra Costa County. Adult flights exceedingly early this season. Cold weather slowed larval development. Early infestations serious on deciduous oaks. (Cal. Coop. Rpt.).

FALL CANKERWORM (Alsophila pometaria) - MICHIGAN - Adult males active recently in several locations in Washtenaw, Livingston and Ingham Counties. (Dowdy).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - VIRGINIA - First-stage larvae noted on apple at Richmond. (Matheny). Eggs hatching; most conspicuous on wild cherry and apple. (Isakson).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - OKLAHOMA - Large numbers of larvae present in dying elm trees checked near Boomer Lake, Payne County. (Okla. Coop. Sur.).

OLEANDER SCALE (Aspidiotus hederae) - CALIFORNIA - Locally heavy on palm trees in Fairfield, Solano County. (Cal. Coop. Rpt.).

A PINE RESIN MIDGE (Retinodiplosis resinicola) - TEXAS - Moderate locally on pine trees in Houston area, Harris County. (Kay).

AN ANT (Prenolepis imparis californica) - CALIFORNIA - Adults heavy on redwood trees in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

For other Forest and Shade Tree Insects, see Federal-State Plant Protection Programs, page 224.

MAN AND ANIMALS

MOSQUITOES - OKLAHOMA - Culiseta inornata adults continue active. First and second-stage larvae of unspecified species found around Stillwater, Payne County. (Okla. Coop. Sur.). TEXAS - C. inornata dominant in Jefferson County light traps; some Culex sp. (probably salinarius) found. Very few Anopheles quadrimaculatus caught. Larvae of Culex restuans, C. salinarius, Culiseta inornata, Aedes sollicitans and A. vexans also noted. (Jeff. Co. Mosq. Cont. Dist., Feb. Rpt.; Thompson). ARKANSAS - Active in eastern area. (Ark. Ins. Sur.). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control for period March 4-11 yielded Anopheles quadrimaculatus, Culex salinarius and Culiseta inornata. Light trap collections increased slightly with increasing numbers of A. crucians and Aedes vexans. C. salinarius and Culiseta inornata still predominating in light traps. (Stokes). ALABAMA - Adults numerous and biting people in Auburn, Lee County, in late afternoon where temperatures over 70 degrees. (McQueen).

CATTLE LICE - ALABAMA - Increase in activity noticeable in Bibb and Hale Counties. (Odom, Deavours). OKLAHOMA - Several species heavy on cattle in Noble County, moderate in Mayes County. (Okla. Coop. Sur.). UTAH - Controls applied to approximately 1,000 additional cattle in Millard County since mid-December 1965. (Hall, Knowlton).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Moderate on hogs in Mayes County. (Okla. Coop. Sur.).

SHEEP KED (Melophagus ovinus) - TEXAS - Moderate on sheep near Eastland, Eastland County. (Cooper).

HOUSE FLY (Musca domestica) - ARKANSAS - Adults active, especially around poultry houses in southwest. (Ark. Ins. Sur.).

BLACK WIDOW SPIDER (Latrodectus mactans) - OKLAHOMA - Becoming more active in homes as weather warms up. (Okla. Coop. Sur.).

A BROWN SPIDER (Loxosceles reclusa) - OKLAHOMA - Becoming more active in homes as weather warms up. (Okla. Coop. Sur.). TEXAS - Several found in household in Pampa, Gray County. (Whaley).

TICKS - ARKANSAS - Primarily Amblyomma americanum, taken on people in Fayetteville area. (Ark. Ins. Sur.). TEXAS - Dermacentor albipictus locally light on beef cattle in Throckmorton County. (Lindey).

HOUSEHOLDS AND STRUCTURES

COCKROACHES - MARYLAND - Blattella germanica heavy in large building at Suitland, Prince Georges County. (U. Md., Ent. Dept.). UTAH - Blatta orientalis a problem in numerous Davis County homes. (Rogers, Knowlton).

SUBTERRANEAN TERMITES (Reticulitermes spp.) - MARYLAND - R. flavipes reproductives swarming inside buildings statewide. (U. Md., Ent. Dept.). COLORADO - Adults of R. tibialis swarming in Cortez area, Montezuma County. Probably Reticulitermes sp. swarming in Larimer County. (Hantsbarger).

STORED PRODUCTS

A SPIDER BEETLE (Ptinus variegatus) - This species has now been identified from GEORGIA and KENTUCKY. Undoubtedly introduced, this insect was originally reported in the United States from North and South Carolina and Virginia, and has been intercepted in U. S. Quarantine with poplar seeds. P. variegatus itself is of potential economic importance because other ptinids are known as stored product pests. (Ent. Res. Div.).

LESSER MEALWORM (Alphitobius diaperinus) - DELAWARE - Larvae, pupae and adults numerous in two poultry houses in Sussex County. (Bray).

BENEFICIAL INSECTS

Beneficial Insects in Mississippi: Specimens per 100 sweeps in oats as follows: Sunflower County - 4 Scymnus spp., 10 Nabis spp., 2 Geocoris spp. In wheat in Leflore County - 2 Scymnus spp., 13 Nabis spp., 1 Geocoris sp. (Dinkins).

Beneficial Insects in Oklahoma: Various predators becoming active in central and west central areas; Nabis spp. and Chrysopa spp. noted in wheat; one or more species present in most fields checked. (Okla. Coop. Sur.).

A TWISTED-WING INSECT (Halictophagus sp.) - CALIFORNIA - Adults of this parasite of Circulifer tenellus (beet leafhopper) taken on plantago with C. tenellus in Taft area, Kern County. (Cal. Coop. Rpt., Mar. 11).

HONEY BEE (Apis mellifera) - MICHIGAN - Workers active for first time this season in many Lower Peninsula counties March 13; temperatures in 50's. Activity continued on several warm days. (Dowdy).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period March 13-19 no cases were reported in the United States. The Republic of Mexico reported 33 cases as follows by State: Baja California 2, Territorio sur de Baja California 2, Sonora 17, Chihuahua 7 and Tamaulipas 5. Sterile screw-worm flies released: Texas 11,686,250 and Mexico 106,241,200.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative

Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).

1964	2	3	129	497	1.55	0.60
1965	0	4	65	533	0.00	0.75
1966	0	26	34	223	0.00	11.65

Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*

1965	60	472	35	302	171.42	156.29
1966	33	428	19	184	173.68	232.60

Mexico Field Sutdy - During this period 337 cases were identified in Mexico south of the Barrier Zone as follows: Chiapas 37, Oaxaca 29, Jalisco 29, Veracruz 35, Guerrero 26, Guanajuato 3, Nayarit 12, Sinaloa 40, Durango 2, Campeche 10, Yucatan 37, Puebla 9, Tabasco 32, Hidalgo 2, Michoacan 13, San Luis Potosi 15, Morelos 1, Colima 4, Queretaro 1.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

BOLL WEEVIL COMPLEX (Anthonomus grandis complex) - MEXICO - Hibernation survey in Presidio-Ojinaga area yielded one live adult in field on Rio Conchos near Ojinaga; 67 yards of trash from 17 fields collected and examined. Total of 2,200 bolls from 11 fields in treated area at La Salina, Sonora, yielded 1,279 live forms and 81 dead forms of Anthonomus sp., or 58 per 100 bolls. Four fields outside treated area yielded 562 live forms and 89 dead forms of Anthonomus sp. from 800 bolls. This 70 live weevils per 100 bolls. (PPC Mex. Reg., Jan. Rpt.).

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - Annual winter web survey in northern New England began February 14; webs found in 5 towns in NEW HAMPSHIRE in known infested areas. Heaviest infestations at Canterbury (125-150 webs) and Gilmantown (50-75 webs). Infestations at Weare, Allenstown and Mont Vernon consist of 1-5 webs per location. Surveys in MAINE and in southern New England negative. (PPC East. Reg., Feb. Rpt.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Biological Control Zone - Inspection of 8,035 trees on 74 properties in Municipios Guemez and Hidalgo, Tamaulipas, revealed light infestations on 86 trees on 21 properties in latter area. Parasite captures of 523,200 Prospaltella opulenta (a eulophid) made in grove in Municipio Padilla, Tamaulipas. Reports of parasites noted in 16 States and 2 Territories; releases needed in 11 States. Parasite captures possible on 8 properties in 3 States and one Territory. Chemical Control Zone - Inspection of 58,432 trees, including 4,751 nursery stock, inspected on 2,185 properties in 13 municipios in 4 States. All negative except in Municipio of Linares, Nuevo

Leon, where 74 trees on 45 urban properties infested. Area about 25 city blocks; infestations light except on 3 trees in center of outbreak. (PPC Mex. Reg., Feb. Rpt.).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Discovery of light, new infestation on gardenia in Fresno, Fresno County, extends current area to be treated by 7 city blocks. New Infestation is farily well delineated; infested and buffer blocks being treated. In Sacramento area, Sacramento County, intensive inspection revealed infestation on additional city block in Foothill Farms subdivision; perimeter grid pattern inspection revealed single gardenia plant infested in West Sacramento, Yolo County; infestation approximately 1.25 mile from nearest infested properties in Sacramento. Treatment in Sacramento area now completed. (Cal. Coop. Rpt.).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Four larvae found in 2 grapefruits. Owner reported that many fruits dropped week before; most of them picked and buried. Larvae taken from firm fruit. (Fla. Coop. Sur.).

FRUIT FLIES - MEXICO - Inspection of Steiner traps in 17 States, the Federal District and Territorio de Quintana Roo negative. (PPC Mex. Reg., Feb. Rpt.).

GYPSY MOTH (Porthetria dispar) - Scouting around positive trapsites in NEW JERSEY revealed single egg clusters in Middletown Township, Monmouth County; Stillwater Township, Sussex County; and Cassville, Ocean County. Infestations in Union and Ocean Townships, Ocean County, now consist of approximately 20 new egg clusters. These extend nearly 5 miles from positive trapsite. Egg clusters now found in all 4 positive trapsites in Ocean County. Surveys of 40 properties in MARYLAND, DELAWARE and DISTRICT OF COLUMBIA negative. (PPC East. Reg., Feb. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Winged forms plentiful in mounds examined in Dallas County. (Cain et al.). Treatment areas surveyed in Carteret and Craven Counties, NORTH CAROLINA; few mounds found near Morehead City. Limited extensions of infested areas found in Horry, Florence, Charleston and Dorchester Counties, SOUTH CAROLINA. Found for first time in Cook County, GEORGIA, on State Highway 37 near Colquitt County line. Minor extensions found in several other counties; mounds treated when found. New areas found infested in Citrus, Hernando, Orange, Sarasota, Sumter and Wakulla Counties, FLORIDA. All mounds in Orange and Citrus Counties treated. New infestations found in Copiah and Lee Counties, MISSISSIPPI; treatments applied to mounds in Covington, Monroe and Pike Counties. Small extensions of infested areas found in Bienville, Caldwell, Lincoln and Natchitoches Parishes, LOUISIANA. Small infestations found in TEXAS in Bexar County and in San Antonio. Treatments applied in these areas and in Austin. (PPC South. Reg., Feb. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Survey of wild hosts in Calhoun County revealed 4 live larvae from 500 pods of 2 species of wild hibiscus; 50 green cotton bolls collected in Martin County infested. Surface debris in San Jacinto County yielded 4 larvae. (PPC South. Reg., Feb. Rpt.). Early March survey in Trans-Pecos area revealed overwintering larvae present in almost every cotton field. As many as 5 live larvae found in one small cotton boll in field where stalks not destroyed. In Fort Stockton and Coyanosa area, Pecos County, as many as 14 live larvae recorded per 10 cotton bolls. (Neeb). ARIZONA - Live adult taken March 15 from field cage northeast of Solomon, Graham County. (Ariz. Coop. Sur.) See map page 233.

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - Additional infested property found in Decatur County, GEORGIA. Surveys in ALABAMA revealed 11 new infestations in Geneva County and one in Covington County. Two new infested properties found in Perry County and one each in Jones and Hines Counties, MISSISSIPPI. Hines County infestation caused by bringing infested material from Copiah County. (PPC South. Reg., Feb. Rpt.).

TULIPTREE SCALE (Toumeyella liriodendri) - CALIFORNIA - Intensive survey in areas adjacent to 3 known infestations in San Jose, Santa Clara County, nearly complete. No new finds made after inspection of 487 residential and 875 streetside host plants. (Cal. Coop. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - VIRGINIA - Treatment of infested area at Camp Allen, Norfolk, underway; 63 acres treated. (PPC East. Reg., Feb. Rpt.). Small extension of infested area found in Bladen County, NORTH CAROLINA. Treatment completed in known infested areas of Bamberg and Orangeburg Counties, SOUTH CAROLINA. Extension of infestation found in Lauderdale County, TENNESSEE. Additional 140 acres infested on City of Monroe Airport, Ouachita Parish, LOUISIANA (PPC South. Reg., Feb. Rpt.).

CORRECTIONS

CEIR 16(3):44 - Brachyrhinus rugosostriatus - Change page number from 249 to 1249.

CEIR 16(9):165 - AVOCADO INSECTS - Sparganothis sulfurana should read Amorbia essigella. S. sulfurana does not occur in California.

CEIR 16(10):188 - First paragraph - A DARKLING BEETLE (Eliodes suturalis) should read A DARKLING BEETLE (Coniontis sp.). E. suturalis has been eradicated from California. (Cal. Coop. Rpt.).

CEIR 16(10):189 - Paragraph 3, end of line 4: Pentatrichopus should read Chaetosiphon.

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 3/15; blacklight) - Prodenia ornithogalli 1, Pseudaletia unipuncta 1.

GEORGIA (Tifton, 3/9-16; temp. 56-75°F.; precip. 0.35 in.; blacklight) - Heliothis zea 1.

SOUTH CAROLINA (Charleston, 3/7-13; temp. 28-73°F.; precip. 0.13 in.; blacklight) - Pseudaletia unipuncta 2, Feltia subterranea 1.

TEXAS (Brownsville, 3/12-18; temp. 53-80°F.; precip. trace; 2 blacklight) - Agrotis ipsilon 2, Estigmene acrea 2, F. subterranea 18, H. zea 4, Peridroma saucia 29, Prodenia ornithogalli 1, Manduca quinquemaculata 1, P. unipuncta 9, Spodoptera frugiperda 4, Trichoplusia ni 2. (Waco, 3/12-18; blacklight) - P. unipuncta 18, Peridroma saucia 14, F. subterranea 8, E. acrea 1.

INSECT DETECTION

A SPIDER BEETLE (Ptinus variegatus) identified from Georgia and Kentucky. Of potential economic importance as other ptinids are known as stored product pests. (Ent. Res. Div.). (p. 223).

AN ANT (Lasius neoniger) - OKLAHOMA - Taken in Dewey County March 14, 1966; a new county record. (Okla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Found for first time in Cook County. (PPC). (p. 225).

Guidelines for Pear Sawfly Survey

Introduction: Pear sawfly (Hoplocampa brevis), an economic pest of pear in Europe, was discovered in Canada in 1964. In connection with this report, Federal taxonomists reviewed specimens of this sawfly group in the United States National Museum and found H. brevis adults had been submitted from Newburgh, New York, in 1953. Details of these reports were included in Cooperative Economic Insect Report 16(4):62-64, January 28, 1966. Survey for this pest is indicated in all pear-growing areas of the Country, especially in the Northeast.

Survey procedures: Adults are needed for positive determination. They are difficult to collect. Dr. L. W. Boulanger, now at the University of Maine, used sticky board traps placed in pear orchards to capture the adults taken in New York in 1953. He favors this method; however, specimens may be badly damaged by collection on sticky boards if they are not handled properly. The collector should carry a small bottle of petroleum solvent such as varsol and a medicine dropper. A few drops of solvent on the specimen to be removed will quickly soften the sticky material. The specimens should then be placed in vials containing the same solvent. Generally, by the time the specimens are to be checked, the sloshing motion has dissolved the sticky material. The specimens are then placed on paper toweling and transferred to alcohol.

Promising captures on sticky board traps should be followed up by sweeping the pear blossoms with a sweep net. It would seem that about one trap per acre in selected pear orchards would be sufficient for an exploratory detection survey. The trap should be exposed in the lower portion of the tree but high enough to be beyond the easy reach of children or animals. In Canada, Dr. G. G. Dustan, Canada Department of Agriculture, reports that adults were so scarce in Ontario in 1965 that only 3 were recovered. These were obtained by tapping limbs over a cotton sheet.

Survey for larvae in Canada was conducted by scouting in pear orchards for the characteristic hole in the side or calyx end of the small fruits. Suspected fruits were cut and examined. About 20 minutes were spent in each orchard. Judging from European literature, a good method for survey would be to cut and examine fruit which falls in the "June drop". Attacked fruit, according to reports, falls at an early stage and a massive drop may be indicative of the presence of the pest. Attempts should be made to rear the insect in order to obtain adults where they cannot be collected in adequate numbers.

Timing of surveys: Timing of survey is highly important in detection of this insect. Adults are active for around 10 days only and larvae about 20-25 days. Adults appear when the pear blossoms begin opening; therefore, traps should be placed in orchards just ahead of this time and kept in orchards until petal fall. Observations in 1965 on life histroy in Canada were as follows: First adult was collected on May 12 when pear blossoms were 75 percent open. First adult emerged from soil in insectary May 17. Newly hatched larvae and unhatched eggs were found May 19. No larvae could be found in the fruit after about June 15.

A key to aid in the recognition of the European apple sawfly and the pear sawfly is given on the following pages. (Survey and Detection Operations, PPC).

Recognition of the European Apple Sawfly and the Pear Sawfly

(Hymenoptera: Tenthredinidae)

David R. Smith 1/

The tables and illustrations presented here are intended to help in the identification of two closely related sawflies now known to occur in North America: The European apple sawfly, Hoplocampa testudinea (Klug), and the pear sawfly, Hoplocampa brevis (Klug).

The genus Hoplocampa includes about 35 species, 21 of which are known to occur in North America. In the larval stage, members of this genus live and feed in the fruits of Rosaceae, the known hosts being Malus, Pyrus, Prunus, Crataegus, Amelanchier, and Sorbus.

Ross (1943) revised the adults of the North American species but did not include H. brevis which was not known to occur here at that time. The species are separated primarily on the basis of genitalic characters, and slide mounts are necessary for accurate determination in many instances. In most cases, coloration cannot be relied on, but it may be used for the differentiation of several species within the genus. Bird (1927) gave some useful characters for generic identification of larvae. The larvae are known for only a very few species. No complete work has been done on them, and there is insufficient material available to permit the separation of testudinea and brevis from the larvae of other species.

For these reasons, the spearation of these two species from other members of the genus, especially for field determination, will have to be made on the basis of host plant. H. brevis and H. testudinea are the only species of this genus in North America which are known to feed on apple and pear. Consequently, if adults are found on the blossoms or in an orchard of these hosts, and if larvae are found feeding in the fruits of these hosts, and they fit the combination of characters given below for the genus, it is probable that they are one of these two species.

The distinction between the adults of these two species may be made on the basis of color as given in the table below. The larvae present more of a problem. The best characters seem to be the shape of the head capsule; however, this is difficult to interpret unless both species are present for comparison. The characters presented for the larvae are based on the last feeding stage; therefore, it is necessary to have the largest larvae available for identification. The same stages of each species should always be compared. (Illustrations by A. D. Cushman).

Hoplocampa, generic characters

Adult

1. Relatively small, 4 to 7 mm.

2. Color varies but is usually yellow-brown with black markings.

3. The second antennal segment is longer than wide (Fig. 2).

4. Antenna short, its length less than twice the width of the head (Fig. 2).

5. Tarsal claw with a short inner tooth.

6. Vein M of the fore wing joins Sc + R proximal to the junction of vein Rs + M with Sc + R, making cell 1M appear 5-sided (Fig. 2).

7. Anal cell of fore wing medially constricted into two cells, the basal anal cell (B) and the distal or petiolate anal cell (D)(Fig. 2). In many genera resembling Hoplocampa, the basal anal cell is absent.

1/ Ent. Res. Div., ARS, U. S. Dept. Agr., Washington, D. C.

Larva

1. Prolegs present on abdominal segments 2 to 7 and 10 (Fig. 1). In many other sawflies, prolegs are present on abdominal segments 2 to 8 and 10.

2. Abdominal segments 1 to 8 each with 5 dorsal annulets (Fig. 1); annulets 2 and 3 with very small inconspicuous setae.

3. Early instars with body white, head capsule and plates on the 8th, 9th, and 10th abdominal segments black. Last feeding stage with head capsule and plates light.

4. Last feeding stage about 7 to 12 mm. in length.

5. Lives and feeds in the fruits of Rosaceae.

Characters for separation of Hoplocampa testudinea (Klug) and H. brevis (Klug)

Adult

Hoplocampa testudinea (Klug)	Hoplocampa brevis (Klug)
1. Large, 6 to 7 mm.	1. Small, 4 to 5 mm.
2. Head with a large black spot on vertex and frons.	2. Head entirely brown.
3. Dorsum of thorax entirely black.	3. Dorsum of thorax with considerable brown on mesonotum.
4. Wings blackish infuscate.	4. Wings slightly yellowish infuscate.
5. Female with sheath black.	5. Female with sheath brown.

Larva (last feeding stage)

1. Host: apple (recorded to a lesser extent from pear).	1. Host: pear (recorded to a lesser extent from apple).
2. Larger, 9 to 11 mm.	2. Smaller, 7 to 9 mm.
3. Head capsule usually lighter, yellow-brown.	3. Head capsule usually darker, brown with darker spots on frons.
4. In lateral view, head capsule appearing oblong (Fig. 3).	4. In lateral view, head capsule appearing shorter, more rounded (Fig. 4).
5. In frontal view, head capsule appearing evenly round (Fig. 5).	5. In frontal view, head capsule appearing slightly ovate, wider than long (Fig. 6).
6. Frons (F) longer than wide; upper portion of frontal sutures nearly straight (Fig. 5).	6. Frons (F) slightly wider than long; frontal sutures evenly rounded (Fig. 6).

Literature Cited

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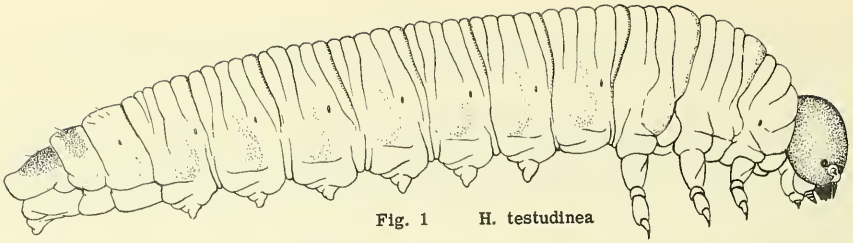


Fig. 1 H. testudinea

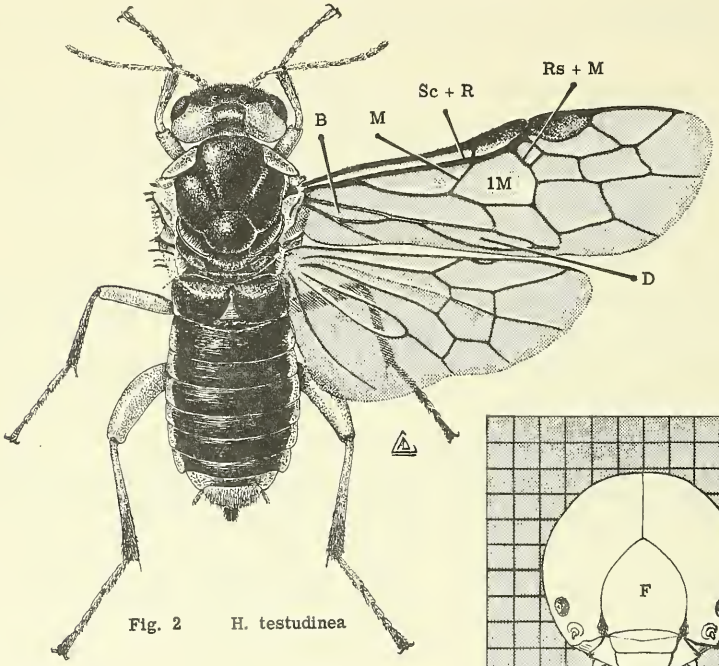


Fig. 2 H. testudinea

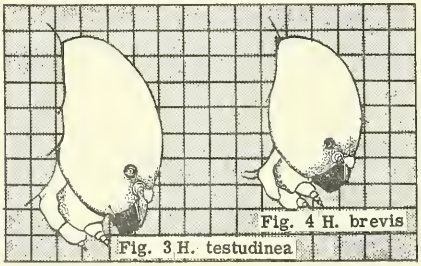


Fig. 4 H. brevis

Fig. 3 H. testudinea

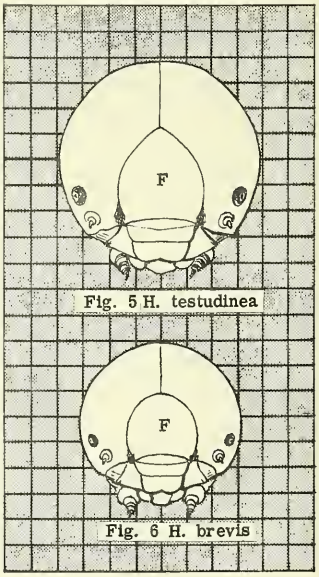


Fig. 5 H. testudinea

Fig. 6 H. brevis

HAWAII INSECT REPORT

Fruit Insects - RED WAX SCALE (Ceroplastes rubens) severe on mango trees in Waianae, Oahu; 30-40 adults per leaf. (Kajiwara).

Truck Crop Insects - SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) nymphs and adults dense on cheeseweed in Auwahi, Maui, 7 miles east of Ulupalakua. Early nymphs moderate on cheesweed in Kihei, Lahaina and Pukalani, Maui. None on cultivated crops. Definite buildup occurring in these areas. On Oahu, adult populations on snap beans in Waianae increasing where spray schedule not followed closely. Numbers (mostly nymphs) medium on several weed hosts in scattered areas in Honolulu, Oahu. Moderate on turnips in Hilo, Hawaii Island. (Miyahira, Yamamoto, Sumida, Yoskioka). A LEAF MINER FLY (Liriomyza sp.) light on tomato in Kihei, Maui, heavy on string beans in Waianae, Oahu. Larvae, pupae and adults numerous on leaves. (Miyahira, Funasaki). IMPORTED CABAGEWORM (Pieris rapae) caused moderate to heavy damage to cabbage in Waiakoa, Maui, on farms without good spray schedule. Minimum damage where regular spray program followed. (Miyahira). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) light on snap beans and tomato in Pukalani and Waiakoa, but medium to heavy on cantaloup in Kihei, all on Maui. Adults light on cucumbers (0.25 acre) in Kahaluu, Oahu. Continues heavy on snap beans throughout Waianae, Oahu. Counts on several older leaves from 4-acre farm showed 250 or more nymphs of various stages per square inch. (Miyahira, Sato, Yamamoto, Nakao).

Cotton Insects - A PLATASPID BUG (Coptosoma xanthogramma) medium on cotton plant growing adjacent to heavily infested pigeon pea plant at Pacific Heights in Honolulu, Oahu. Gregarious nymphs and adults attacking stems, bases of petioles and bolls. Some twigs 3/16 inch in diameter with 100 per foot, mostly fourth and fifth instar nymphs. This another new host record for this bug since first reported in late 1964. (Higa).

Forest, Ornamental and Shade Tree Insects - BARNACLE SCALE (Ceroplastes cirripediformis) adults light and nymphs heavy on Citharexylum spinosum (fiddlewood) in Kailua, Oahu; 8 trees infested with 5 adults and 90 nymphs per foot on branches 0.25 inch in diameter. (Haw. Ins. Rpt.). RED WAX SCALE heavy on Brassaia actinophylla (octopus tree) in Waianae, Oahu; about 35 adults per leaf. Light to medium on plumeria and Bixa orellana (lipstick plant). (Kajiwara). A NOCTUID MOTH (Chrysodeixis chalcites) very active in Lanikai, Oahu, on Hibiscus syriacus, H. calycinus and Asystasia coromandeliana. Larva few in numbers but caused considerable foliar damage, especially to H. syriacus. Effective predators, particularly Polistes spp., not generally active this time of year. (Haw. Ins. Rpt.).

Insects Affecting Man and Animals - CATTLE TAIL LOUSE (Haematopinus quadripertusus) severe on dairy cattle in Waianae, Oahu; numerous eggs and adults on tail and anal region. Species first recorded in State in April 1965 from Waimanalo, Oahu. Det. by C. R. Joyce. (Nakao). SHEEP KED (Melophagus ovinus) medium on several wild sheep shot at 9,000 feet elevation on slopes of Mauna Kea, Hawaii Island. (Kajiwara).

Beneficial Insects - A TACHINA FLY (Trichopoda pennipes) - Eggs present on 55 and 60 percent of southern green stink bug adults collected in Hilo, Hawaii Island, and in Auwahi, Maui, respectively. (Yoshioka, Miyahira). A SCARAB (Oniticellus militaris) recovered for first time in cow dung on Parker Ranch, Hawaii Island, in November 1965 by Dr. G. Bornemissza. Introduced from Southern Rhodesia in 1957 to break up dung and make it undesirable for horn fly breeding. Det. by R. Madge. (Chong). A EULOPHID WASP (Encarsia formosa) - Numerous adults reared from greenhouse whitefly on snap beans collected in Waianae, Oahu, in February 1966. E. formosa introduced from Canada in 1942. Det. by C. Yoshimoto. (Chong). A SCARAB (Copris incertus) very abundant in horse and cow dung on Parker Ranch, Hawaii Island. Adults averaged 20 per dropping. Introduced from Mexico in 1922 to control horn fly breeding. (Yoshioka). Buildup of a HISTERID BEETLE (Hister nomas) noticeable in cow dung on Parker Ranch, Hawaii Island, Large numbers occurred in November 1965 then subsided considerably. This histerid introduced to control horn fly larvae. (Yoshioka).

Nomenclatural Changes in the Leaf Beetles

(Chrysomelidae: Coleoptera)

Recent taxonomic studies by Gressitt and Kimoto (Pacific Insect Monograph, 1963) and Wilcox (A Synopsis of the North American Galerucinae, 1965) have altered the standing of the genus Galerucella. The former work recognized the priority of the name Pyrrhalta over Galerucella, and the later placed Galerucella as a synonym of Pyrrhalta. Therefore, all species formerly in Galerucella now belong in Pyrrhalta. This affects the names of five species occurring in the list of the "Common Names of Insects approved by the Entomological Society of America" (1965). The Pacific willow leaf beetle has often been recognized as a full species, but, as indicated by Wilcox, it is properly a subspecies of decora. The new scientific names that will be used by the Entomology Research Division for the five leaf beetles are as follows:

Elm leaf beetle.....Pyrrhalta luteola (Muller)

Waterlily leaf beetle.....Pyrrhalta nymphaeae (Linnaeus)

Cherry leaf beetle.....Pyrrhalta cavicollis (LeConte)

Gray willow leaf beetle.....Pyrrhalta decora decora (Say)

Pacific willow leaf beetle.....Pyrrhalta decora carbo (LeConte)

Richard E. White
Entomology Research Division
ARS, USDA
Washington, D. C.

Weather continued from page 216.

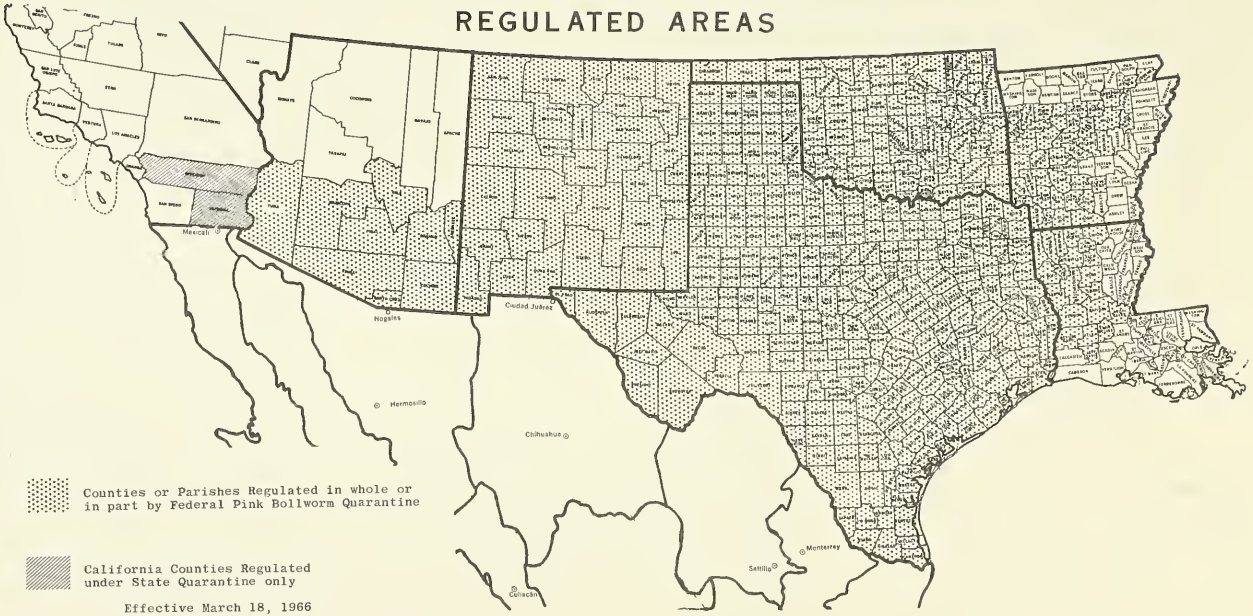
cool spell in the Southeast ended as temperatures rose to as much as 8° above normal. After a cold winter, the Southwest enjoyed warm weather for the second consecutive week, and the western Appalachian area experienced its first warm spell of the season.

PRECIPITATION: Rain continued in the Northwest with some coastal areas receiving up to 4 inches. Many parts of this region have had precipitation every day for more than a month, thus reversing the dry trend of December and January. On Monday, a tornado was reported northeast of Walla Walla, Washington, and during the weekend high winds accompanied rain and snow. At the opposite end of the Country, showers and thundershowers again plagued the Southeast. Amounts were relatively light but some locally heavy storms dumped up to 2 inches of rain. A severe thundershower on Saturday in the Raleigh vicinity, North Carolina, left 4 inches of golf ball sized hail on the ground. Severe storms struck the Central Plains on Thursday as the warm, moist gulf air clashed with the cool, dry air behind the cold front. Winds up to 80 m.p.h., and 1-inch hail accompanied thundershowers in Oklahoma and Kansas, a tornado was reported west of Liberty, Missouri, and blowing dust was severe in Nebraska. Storm damages were not heavy. Most of the Nation was dry last week. A quarter of the Country received no measurable precipitation and amounts were light in most other areas. The west central Appalachian area has been experiencing a dry spell for 3 weeks. The Northeast and Middle Atlantic States were dry for the second consecutive week. (Summary supplied by Environmental Data Service, ESSA).

PINK BOLLWORM

(Pectinophora gossypiella)

REGULATED AREAS



Counties or Parishes Regulated in whole or in part by Federal Pink Bollworm Quarantine

California Counties Regulated under State Quarantine only

Effective March 18, 1966

Coop. Econ. Ins. Rpt. 16(12):233

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Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 April 1, 1966 Number 13

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG damaging in scattered areas throughout western half of Oklahoma, light to severe in some wheat in Texas. (p. 237). BEET LEAFHOPPER populations decreased significantly in Texas, but doubled in New Mexico, as indicated by spring survey in these States. (p. 237). POTATO PSYLLID migrations from spring breeding areas in Arizona and California expected to be light to moderate in 1966. (p. 239). EUROPEAN CORN BORER larval winter survival 10-15 percent higher than normal in Illinois. Fall 1965 survey in New Jersey indicated heaviest incidence in most counties since 1961. (p. 239). BROWN WHEAT MITE damaging some wheat in Oklahoma; some spraying underway. (p. 240).

ALFALFA WEEVIL continues heavy in Mississippi; hatch could be advanced in New Jersey as a result of recent warm weather. Adults and larvae active in other States. A WEEVIL (Hypera brunneipennis) caused severe terminal damage to some alfalfa in Arizona. (p. 240).

ENGLEMANN SPRUCE BEETLE buildup of concern on National forests in Colorado. (p. 245).

Predictions

SPITTLEBUGS expected to be slightly more abundant (p. 242) in New Jersey and populations of ASPARAGUS BEETLES expected to be about same (p. 244) as in 1965.

Detection

New Island records reported in Hawaii. (p. 249).

Special Reports

Beet Leafhopper Survey, Texas and New Mexico - 1966. (p. 237).

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1966. (p. 239).

Distribution of Alfalfa Weevil (Map). (p. 241).

Summary of Insect Conditions in the United States - 1965

Forest Insects. (p. 251).
Shade Tree Insects. (p. 255).
Ornamental Insects. (p. 257).

Important Insects and Snails Most Frequently Intercepted at U. S. Ports of Entry in Fiscal Year 1964. (p. 263).

Reports in this issue are for week ending March 25, unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING MARCH 28

HIGHLIGHTS: (1) Major blizzard North Central; snow in Northeast. (2) Sharp cooling Central and East; freezes South.

TEMPERATURE: Gradual warming west of the Rocky Mountains produced above normal average temperatures over the Pacific Coastal States and most of the Great Basin.

Weather continued on page 262.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - OKLAHOMA - Pouplations currently damaging in scattered areas throughout western half of State. Spraying underway in many areas; some not justified as based on presence of several aphid species which seldom cause economic damage. Also, damaging populations of Penthaleus major (winter grain mite) yellowing many fields of grain; unobserving growers spraying fields for S. graminum. Difficult to predict probability of damage by S. graminum this season, with any degree of accuracy. Populations in excess of 400 per linear foot present in January, with serious outbreak probable. Severe cold weather, following unseasonable warm period reduced populations to less than 1 per linear foot. This population slowly built up to damaging levels but temperatures decreased to below 20°F. March 24, following several days of over 80°F. S. graminum populations may again be decimated. (Howell). Ranged 30-100 per linear foot in wheat in Cotton and Tillman Counties, 30-50 per linear foot in most fields in Major County; ranged 200-400 per linear foot in occasional field on sandy land. Ranged 5-40 per linear foot in Garfield, Noble, Payne and Logan Counties; averaged 2 per linear foot in Washita County. Heavy in wheat in Kingfisher and Cleveland Counties, moderate in Woodward County and light in Woods, Beckham and Kiowa Counties. Considerable spraying done in Cotton, Tillman and Major Counties. (Okla. Coop. Sur.). ARKANSAS - Very light in most areas surveyed. In Johnson County, ranged 15-20 per linear foot. (Ark. Ins. Sur.). TEXAS - On 10 fields of wheat checked in Clay County, populations ranged 20-170 per foot of drilled row. Wheat ranged 2-4 inches high. Light in 5 wheat fields surrounding Krum in Denton County; ranged 10-25. (Turney). Light to moderate on small grains in Bell and Williamson Counties. (Parker).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Continues light to moderate throughout Maricopa County. (Ariz. Coop. Sur.). TEXAS - Few noted on wheat near Krum, Denton County. Populations noneconomic. (Turney). OKLAHOMA - Ranged 5-30 per linear foot in wheat in Garfield, Noble and Logan Counties. Light in Kingfisher County. (Okla. Coop. Sur.).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - FLORIDA - Averaged 13 adults per 50 sweeps on barley at Quincy, Gadsden County. (Tappan, Mead, Mar. 11).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Continues light in alfalfa in all areas of Maricopa and northern Pinal Counties; less than one per trifoliate leaf. (Ariz. Coop. Sur.). ARKANSAS - Only occasional specimen found in Miller County; surveys negative in Faulkner and Johnson Counties. (Ark. Ins. Sur.).

Beet Leafhopper Survey, Texas and New Mexico - 1966

The beet leafhopper (Circulifer tenellus) survey was begun February 28 and completed March 9, 1966. The survey was conducted in 51 counties in Texas and 6 counties in New Mexico, with 101 stops being made in Texas and 25 stops in New Mexico. Host plants were present at 75 percent of stops in Texas and 80 percent of stops in New Mexico. The number of beet leafhoppers per 100 square feet was 8 in Texas and 32 in New Mexico.

Significant observations: Texas - Population counts decreased from 11 specimens per 100 square feet in 1965 to 8 in 1966. Counts were much higher at Crystal City this year. Host plants were generally widespread but stands were only fair and conditions of plants were fair. New Mexico - Population counts increased to 32 per 100 square feet in 1966 compared with 14 in 1965. Host plants were more abundant than normal and in good condition.

In order that the survey information be more specific, the following breakdown is presented.

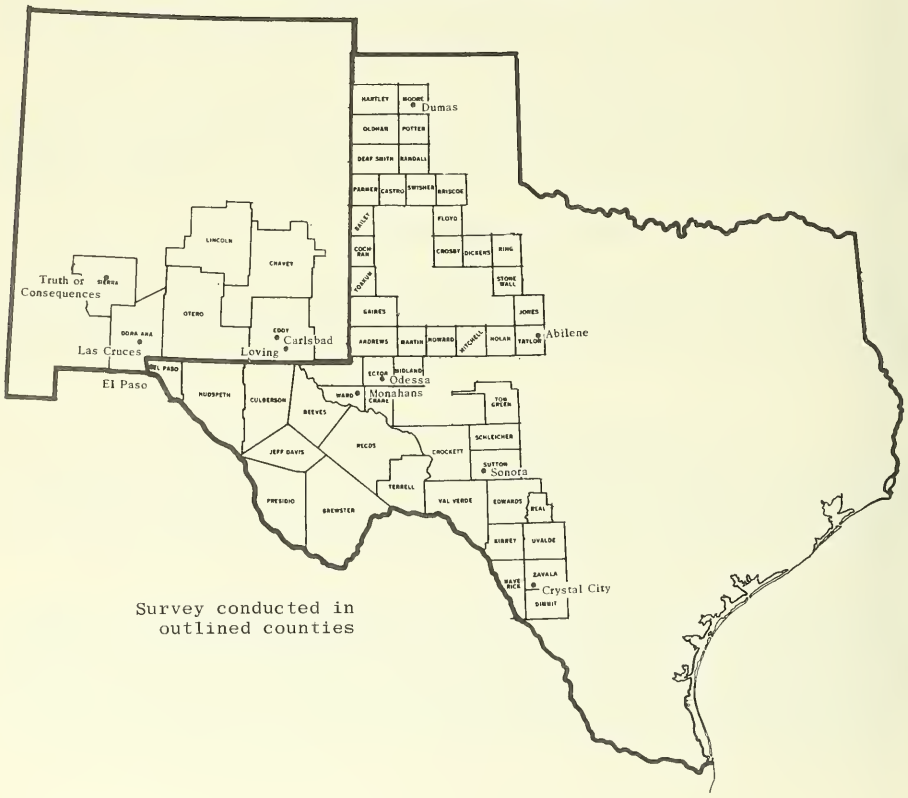
TEXAS - El Paso-Crystal City-Monahans Area - This area produced over 50 percent of the beet leafhoppers found on the entire survey in 1965. Heaviest concentration was in the Pecos area; however, a decided increase was noted in the Crystal City area, a principal spinach-producing area. Counts in the Pecos Valley decreased compared with 1965.

Odessa-Dumas-Abilene Area - Counts in this area in 1966 were 3 times those found in 1965. The entire total was confined to 4 of the 35 stops made; the western leg of this area was the positive producer. Flixweed is the dominant host plant in this area.

Sonora-Abilene-Monahans Area - Counts in 1966 showed a decrease over those of 1965, with the majority of specimens being found along U. S. Highway 80, the northern boundary of this area. Town mustard is the dominant host plant.

NEW MEXICO - Beet leafhoppers were distributed all along the survey route. The Carlsbad-Loving Area and the Las Cruces-Truth or Consequences Area showed large increases in 1966. (PPC and cooperating agencies).

BEET LEAFHOPPER SURVEY, TEXAS AND NEW MEXICO - 1966



Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1966

The 1966 survey for potato psyllid (Paratrioza cockerelli) in overwintering areas of Arizona and California conducted March 15-19. Weather conditions favorable for development of wild lycium, the preferred host in winter-breeding areas. Foliage present on lycium host plants in all areas surveyed but more luxuriant in south-central Arizona where light populations of immatures were observed at most stops. Immatures were very abundant at some stops in Needles and Essex areas of California. Weather was warm and generally good during the survey period. Results of survey indicate light to moderate migration potential this season.

Comparison of average number per 100 sweeps on overwintering hosts during spring surveys 1960 through 1966 as follows:

State	District	1966	1965	1964	1963	1962	1961	1960
Arizona	Tucson-Phoenix	73	508	158	715	2,236	149	665
California	Blythe-Barstow	228	87	100	185	909	41	282

(PPC West. Reg.).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Surveys indicate occasional first or second instar nymphs on potatoes in Queen Creek area. Eggs numerous in all potato-growing areas of Maricopa County. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEW JERSEY - Fall 1965 survey indicates heaviest incidence in most counties since 1961. Number of borers per 100 plants in 1964 and 1965, respectively, by counties as follows: Sussex 9.3 and 27.6, Hunterdon 16.0 and 49.6, Somerset 31.6 and 25.4, Middlesex 36.4 and 183.2, Monmouth 55.3 and 244.6, Mercer 58.0 and 204.2, Burlington 58.8 and 178.4, Camden 73.6 and 125.6, Gloucester 99.2 and 152.4, Salem 83.6 and 153.2, and Cumberland 37.0 and 117.0. (Ins.-Dis. Newltr.). ILLINOIS - Survey March 14-18 showed average percent by district as follows: southeast 82, southwest 81, west-southwest 79, and west 82. This is 10-15 percent higher than normal carryover; however, these counts made in fields undisturbed after picking. Due to very late fall in 1965, many more fields than usual ploughed, disked or chopped (54-78 percent); this expected to more than balance increase in winter survival. (White).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - ALABAMA - Survival of larvae in corn stubble in Fayette County ranged 20-80 percent in fields where specimens collected for experimental study. (Burger, Hunter).

SMALL GRAINS

GRAIN APHIDS - ARKANSAS - Macrosiphum avenae ranged 200-300 per 100 sweeps in rye in Nevada County. Very light on wheat in Poinsett County. (Ark, Ins. Sur.). OKLAHOMA - Rhopalosiphum padi ranged 0-30 per linear foot in wheat in Payne, Garfield, Noble, Logan and Washita Counties. (Okla. Coop. Sur.). TEXAS - R. fitchii light in wheat near Krum, Denton County; light, 20-25 per foot of drill row. (Turney).

CUTWORMS - NEW MEXICO - Agrotis orthogonia damaging wheat in Curry County. (Crystal). ARIZONA - Two light infestations of Feltia subterranea in barley found in Buckeye area, Maricopa County. (Ariz. Coop. Sur.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged up to 1,000 per linear foot on wheat in scattered fields in north central area; moderate to heavy in Woodward, Kingfisher and Kiowa Counties. Ranged light to 150 per linear foot in

wheat in Cotton and Tillman Counties. (Okla. Coop. Sur.). TEXAS - Light on oats in Collin County. Light to moderate in 4 fields of oats and barley near Krum, Denton County; heavy infestation, 124 per foot of drill row. Heavy in one of 10 fields checked in Clay County. Infestations generally light. (Turney).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Damaging scattered wheat fields in Major, Woods, Cotton, Tillman and Garfield Counties. Ranges up to 300 per linear foot. Some spraying done. (Okla. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MASSACHUSETTS - Examination of 50 stem samples of dead alfalfa in southern Berkshire County March 22 revealed no overwintering eggs and no evidence of recent oviposition. In field uncut in 1965, 23 of 50 stems showed oviposition punctures. In field receiving normal cuttings in 1965, only one of 50 stems contained a puncture. Comparison with data obtained in March 1965 from an adjacent field showed present findings agreed with those obtained in 1965. (Shaw, Miller). NEW JERSEY - Recent field checks showed some eggs ready to hatch in Salem County. Recent warm temperatures throughout State could advance usual hatching time. (Ins.-Dis. Newsltr.). PENNSYLVANIA - Old eggs in old alfalfa stems and new eggs in new stems noted in Westmoreland County. Females with developing eggs and eggs ready to lay also noted. (Udine). VIRGINIA - Larvae in tips of alfalfa in Washington County. (Barnes, Mar. 14). Larvae ranged 2-8 per 10 tips in fields checked in Bland, Tazewell, Smyth, Grayson, Wythe, Carroll and Pulaski Counties; mostly first and second instars. Alfalfa about 3 inches high. (Isakson). SOUTH CAROLINA - First instars apparent; caused light damage. Inspection urged. (Thomas, Mar. 22). MISSISSIPPI - Continues heavy in several counties. Larvae per square foot, by county, averaged as follows: Marshall 54, Pontotoc 175, Holmes 75 with cocoons found, and Attala 180 with cocoons found. One field inspected in each county; 5 one-square foot samples taken in each field. (Dinkins). ARKANSAS - Total of 18 larvae taken in 100 sweeps in field in Faulkner County; this field first record in county, June 1965. None found in Miller and Johnson Counties. Larvae 5-10 per square foot in old alfalfa in Lee County; numbers lower in new alfalfa. (Ark. Ins. Sur.). UTAH - Six adults recovered from 0.25 pound of juniper duff on University campus at Logan, Cache County. No alflafa within mile of collection point. (Knowlton). NEVADA - Adults active in most alfalfa checked in Churchill, Lyon and Washoe Counties. Numerous adults noted in flight in towns and on rangeland. (Coop. Rpt.). (See map page 241).

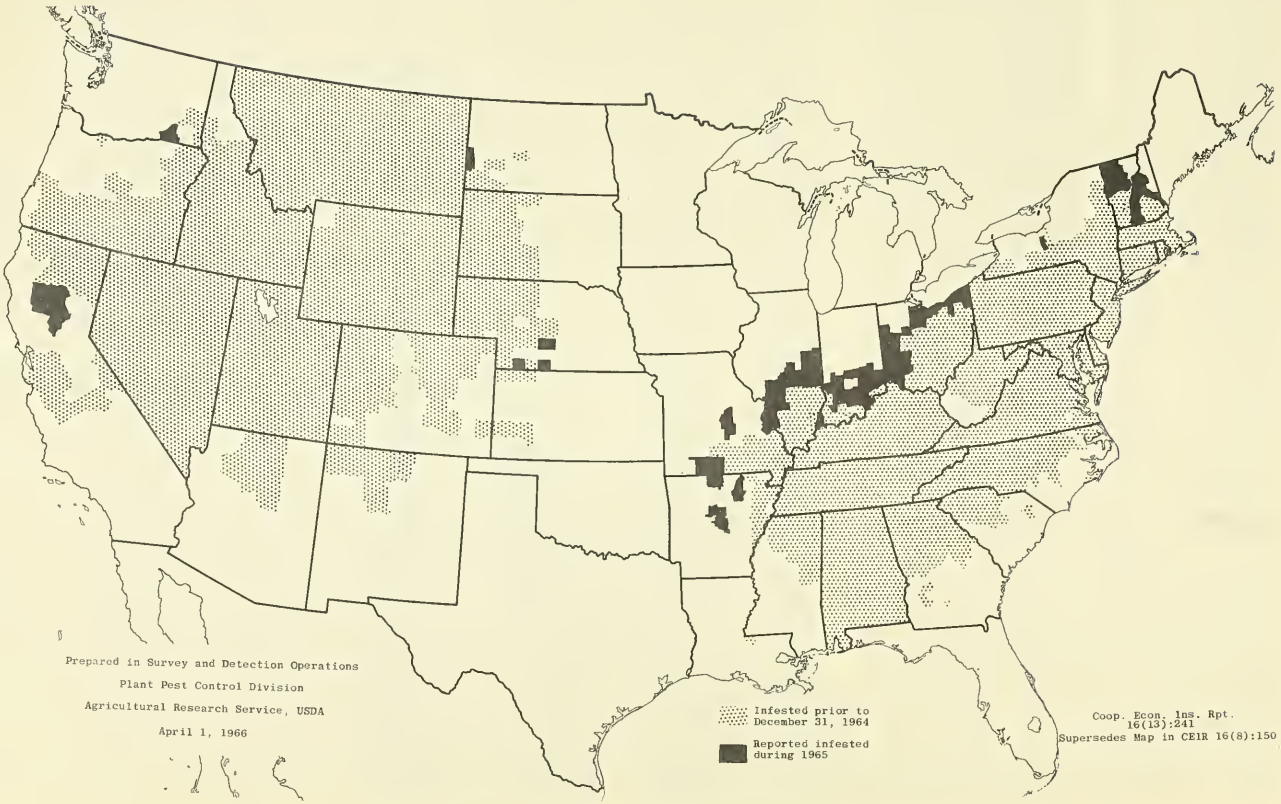
CLOVER LEAF WEEVIL (Hypera punctata) - MARYLAND - Larvae causing light to moderate injury to red clover near Upper Marlboro, Prince Georges County. (U. Md., Ent. Dept.). OKLAHOMA - Larvae ranged 10-18 per 10 sweeps in alfalfa in Washita County, averaged 2 per square foot in Beckham County. (Okla. Coop. Sur.).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Surveys in Maricopa County indicate 80 percent of alfalfa fields infested. Light to heavy, with 80-950 per 100 sweeps. Terminal damage severe in some fields in Buckeye and Baseline Road areas. (Ariz. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Expected heavy populations on alfalfa not yet materialized in Maricopa County. Remains light, 450 per 100 sweeps. (Ariz. Coop. Sur.). TEXAS - Light on alfalfa near Boling, Wharton County. (Parker). Light to moderate on vetch in Delta County; noneconomic. (Turney). OKLAHOMA - Ranged 1-75 per sweep in alfalfa checked in Washita County. Moderate in Kiowa County and light in Beckham County. (Okla. Coop. Sur.). ARKANSAS - Ranged 300-400 per 100 sweeps on roadside vetch in Miller County, 200-300 per 100 sweeps in Faulkner County. (Ark. Ins. Sur.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphs light to medium in alfalfa in Maricopa and Pinal Counties; 40-125 per 100 sweeps. (Ariz. Coop. Sur.). NEW MEXICO - Nymphs common in Dona Ana County alfalfa. (Nielsen).

DISTRIBUTION OF ALFALFA WEEVIL
(Hypera postica)



THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - NEW MEXICO - Occasionally light to moderate in southern Dona Ana County alfalfa. Highest counts 25-60 adults per 100 sweeps. (Nielsen).

LEAFHOPPERS - OKLAHOMA - Causing heavy damage to field of alfalfa in Coal County. (Okla. Coop. Sur.).

SPITTLEBUGS - NEW JERSEY - Fall survey of egg masses indicates these pests will be slightly more abundant than in 1965. (Ins.-Dis. Newsltr.).

THRIPS - NEW MEXICO - Building up in most alfalfa checked in southern Dona Ana County; large numbers found in nets after sweeping. None noted when same fields checked 3 weeks ago. (Nielsen). ARIZONA - Frankliniella occidentalis moderate to heavy in 40 percent of alfalfa fields in Maricopa County. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARKANSAS - Occasional larva found in alfalfa in Miller County. (Ark. Ins. Sur.).

GREEN CLOVERWORM (Plathypena scabra) - ARKANSAS - Occasional larva found in alfalfa in Miller County. (Ark. Ins. Sur.).

SUGAR BEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Ranged 0-6 per square foot in 1965 sugar beet crop fields in Weld County. (Jenkins).

MISCELLANEOUS FIELD CROPS

DESERT CORN FLEA BEETLE (Chaetocnema ectypa) - ARIZONA - Moderate and causing light damage to young safflower seedlings in Queen Creek and Chandler areas of Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (Myzus persicae) - NEVADA - Light on tomatoes in Moapa Valley, Clark County. (Zoller). ARIZONA - Light on potatoes throughout Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - ALABAMA - Adults plentiful; flying and laying eggs throughout State. Appeared about March 17 when temperatures reached 80° F. (McQueen).

DECIDUOUS FRUITS AND NUTS

LESSER PEACH TREE BORER (Synanthedon pictipes) - MISSISSIPPI - Inspection of 20 peach trees in Oktibbeha County revealed 15 trees infested; 5 of this total yielded 3-4 larvae per tree. (Dinkins).

PEACH TREE BORER (Sanninoidea exitiosa) - ALABAMA - Larvae approaching maturity; feeding at and below ground line on peach, flowering peach, and cherry over State. New and recent feeding evident. (Knox, Stephenson, et al.).

SAN JOSE SCALE (Aspidiotus perniciosus) - OKLAHOMA - Heavy on apple and peach trees in Mayes County. (Okla. Coop. Sur.)

APPLE APHID (Aphis pomi) - MARYLAND - Young nymphs observed March 23 on apple tips in Montgomery and Washington Counties. (U. Md., Ent. Dept.).

EUROPEAN RED MITE (Panonychus ulmi) - NEW JERSEY - Overwintering eggs moderate on apple trees in several orchards in Burlington County. (Ins.-Dis. Newsltr.).

HICKORY SHUCKWORM (Laspeyresia caryana) - OKLAHOMA - Present in 10 percent of nuts around pecan trees checked in Payne County. (Okla. Coop. Sur.)

CITRUS

Citrus Insect Situation in Florida - Mid-March - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 49 percent of groves (norm 58 percent); 30 percent economic (norm 35 percent). Population will continue slightly below average and near current moderate level. Infestations lower on fruit than on leaves. Highest districts west and south. CITRUS RED MITE (Panonychus citri) infested 28 percent of groves (norm 40 percent); 16 percent economic (norm 14 percent). Below average and in low range. Normal moderate increase expected in most districts. Scattered groves will develop heavy infestations. Highest districts east and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 25 percent of groves (norm 28 percent); 6 percent economic (norm 11 percent). Below average and at low level. Much lighter than normal for March. Gradual increase expected. Highest district east. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 2 percent of groves (norm 11 percent); none economic. Continues below normal and will be of little concern in March and April. YELLOW SCALE (Aonidiella citrina) infested 70 percent of groves; 24 percent economic. Populations expected to drop slightly from current level which is highest on record for March. Highest districts central and south. GLOVER SCALE (Lepidosaphes gloverii) infested 75 percent of groves; 12 percent economic. Slightly above moderate level normal for March. Little change is expected. Highest districts central, south and east. PURPLE SCALE (L. beckii) infested 75 percent of groves; 4 percent economic. Below normal and decreasing. Highest district central. CHAFF SCALE (Parlatoria pergandii) infested 54 percent of groves; 11 percent economic. Below normal and in moderate range. Slight increase expected. Highest districts south, east, and central. BLACK SCALE (Saissetia oleae) infested 30 percent of groves; 18 percent economic. Currently low but much above average for March. Further decrease expected in March; slight increase in April. Highest district east. WHITEFLIES infested 63 percent of groves; near normal. Larval forms will decrease during the next 6 weeks as transformation to pupal and adult forms increases. MEALYBUGS more numerous than normal. APHIDS less abundant than normal. (W. A. Simanton, (Citrus Expt. Sta., Lake Alfred)).

BLACK CITRUS APHID (Toxoptera aurantii) - FLORIDA - Infested leaves of 5 of 50 calamondin plants inspected in nursery at St. Petersburg, Pinellas County. Colonies just appearing on new flushes of growth. (Bingamon).

CITRUS RED MITE (Panonychus citri) - CALIFORNIA - Medium locally on citrus in Porterville, Tulare County. (Cal. Coop. Rpt.).

SMALL FRUITS

SPIDER MITES (Tetranychus spp.) - NEW JERSEY - Warm weather caused mites to leave winter quarters; active with newly formed webs noted on strawberry foliage in 2 of 3 fields surveyed in Hammonton area March 23; no eggs seen. Early control urged. (Ins.-Dis. Newsltr.).

GENERAL VEGETABLES

ASPARAGUS BEETLES (Crioceris spp.) - NEW JERSEY - Overwintering adults of C. asparagi and C. duodecimpunctata light to moderate in Cumberland, Salem, Gloucester, Atlantic, Camden and Burlington Counties; survey indicates numbers will be approximately same as in 1965. (Ins.-Dis. Newsltr.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Light to moderate and problem on lettuce in northern and northwestern portions of Salt River Valley. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Small number of moderate infestations on lettuce in Peoria area, Maricopa County. (Ariz. Coop. Sur.).

IMPORTED CABBAGEWORM (Pieris rapae) - ARIZONA - One heavy and damaging infestation noted on lettuce in Peoria area, Maricopa County. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - NEW MEXICO - Probably this species, built up in several onion fields in area south of Las Cruces, Dona Ana County. Spotted, but several fields treated or to be treated. (Nielsen).

CHRYSANTHEMUM LEAF MINER (Phytomyza atricornis) - CALIFORNIA - Larvae medium in artichoke leaves in Watsonville, Santa Cruz County. (Cal. Coop. Rpt.).

AN ACARID MITE (Tyrophagus dimidiatus) - CALIFORNIA - Light infestations occurring on spinach plantings in Fresno County. This has not been a pest in this area previously. (Cal. Coop. Rpt.).

ORNAMENTALS

A CHRYSAUGID MOTH (Galasa nigrinodis) - VIRGINIA - Webbing noted and larvae observed in boxwood in Carroll County. (Barnes).

AN APHID (Myzocallis arundinariae) - CALIFORNIA - Adults heavy on bamboo nursery stock in San Pablo, Contra Costa County. (Cal. Coop. Rpt.).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - CALIFORNIA - Occurs throughout State but seldom of consequence as orchard pest. Frequent occurrence on abandoned and dooryard fruit trees main problem. This allows buildup in and spread from these reservoirs. Periodic buildups occur resulting in spread to native and ornamental black walnut, ash, alder and other shade trees. L. ulmi kills young trees and large portions of older trees. Many heavy infestations occurred on single tree hosts in widely separated areas this year; has also become serious on ornamental trees. Severely damaged or killed large number of ash trees on one military base. Native alder stands have been killed out in some locations. Single host tree infestations not important, but seriously contribute to large scale infestations. Noticeable increase in this type of infestation noted during 1965. (Hawthorne).

ARMORED SCALES - CALIFORNIA - Aspidiotus hederae medium on dracena nursery stock in San Jose, Santa Clara County. Diaspis cocois heavy on Japanese windmill palm nursery stock in San Luis Obispo, San Luis Obispo County. (Cal. Coop. Rpt.). TEXAS - Fiorinia theae heavy on Burford holly at Gilmer, Upshur County. (Simpson).

SOUTH CAROLINA - Fiorinia theae widespread on camellia and Burford holly; caused some leaf drop on holly. F. theae number one pest of ornamentals in State at present. (Nettles et al., Mar. 22). VIRGINIA - Unaspis euonymi heavy at 4 locations in Accomack County (Pierce); heavy on bittersweet in Harrisonburg, Rockingham County (Isakson, Craun).

JAPANESE WAX SCALE (Ceroplastes ceriferus) - FLORIDA - Adults on stems of 5 out of 10 inspected plants of Podocarpus macrophylla in nursery at Miami, Dade County. (Meyer).

LONG-TAILED MEALYBUG (Pseudococcus adonidum) - FLORIDA - All stages causing severe damage on stipes and fronds of 20 inspected Boston fern plants in nursery at Fort Myers, Lee County. (Burnett et al., Mar. 4).

NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) - MARYLAND - Pupation underway March 25 on American holly at Silver Spring, Montgomery County. (U. Md., Ent. Dept.).

FOREST AND SHADE TREES

BLACK HILLS BEETLE (Dendroctonus ponderosae) - COLORADO - At lowest level since early 1950's throughout Central Rocky Mountain areas on pine. On Western Slope, north of Dolores, small outbreak on San Juan National Forest to be treated. (Pest Contr. Branch Div., Timber Mgt.).

ENGELMANN SPRUCE BEETLE (Dendroctonus obesus) - COLORADO - Buildup of concern in San Juan, Grand Mesa, Uncompahgre and Gunnison National Forests. Survey showed 2 areas of potential trouble spots. New outbreak discovered last fall on San Isabel National Forest. (Pest Contr. Branch, Div. Timber Mgt.).

AN ENGRAVER BEETLE (Ips mexicanus) - CALIFORNIA - Heavy on Monterey pine in Los Osos, San Luis Obispo County. Histiostoma sp. (an anoetid mite) noted on I. mexicanus. (Cal. Coop. Rpt.).

PALES WEEVIL (Hylobius pales) - NORTH CAROLINA - Girdled up to 30 percent of seedling loblolly pines in untreated check areas in southeastern area. Damage in treated areas ranged 1-10 percent. (Green).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - TEXAS - Attacking pine trees in Pasadena, Harris County. (Anderson).

SPRUCE NEEDLE MINER (Taniva albolineana) - PENNSYLVANIA - Infested Colorado blue spruce in 2 nurseries at Columbia, York County, July 8, 1965. (Pa. Bur. Plant Industry).

A MARGARODID SCALE (Matsucoccus sp.) - CALIFORNIA - Medium on ponderosa pines in Nevada City, Nevada County. (T. G. Waddell).

A XYELID SAWFLY (Xyela radiatae) - CALIFORNIA - Larvae in staminate cones of Monterey pine in Soquel, Santa Cruz County. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - TEXAS - Appearing in Brazos County on plum and crataegus trees. (Randolph). OKLAHOMA - Hatched in Woodward and Payne Counties. (Okla. Coop. Sur.). ALABAMA - Tents observed on cherry, apple and plum in Dallas, Henry, Barbour, Lee and other south and central counties. (Stephenson, Knox, et al.). NORTH CAROLINA - Hatching noted on flowering crab in Wake County March 19. (Greene).

PALM LEAF SKELETONIZER (Homaledra sabalella) - FLORIDA - Larvae and pupae infesting butia palm (Butia sp.) and cabbage palm (Sabal palmetto) in Gainesville, Alachua County. Most fronds damaged; larvae making unsightly brown webbing and frass, killing portions of leaves. Probably widespread and attacking palms in State. (Mead).

ELM LEAF BEETLE (Pyrrhalta luteola) - OKLAHOMA - First adults of season active on elms in Bryan County. (Okla. Coop. Sur.).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - OKLAHOMA - Pupating in Payne County. Averaged about 50 percent larvae and 50 percent pupae in dead elm trees checked. (Okla. Coop. Sur.).

BEECH SCALE (Cryptococcus fagi) - PENNSYLVANIA - Heavy on native beech in Lakawanna, Luzerne, Monroe, Pike, Susquehanna and Wayne Counties January 10. (Pa. Bur. Plant Industry).

A DRYWOOD TERMITE (Kalotermes approximatus) - FLORIDA - Colonies found in branch scars and tree holes in laurel oak at Gainesville, Alachua County, during mid-March. Det. by L. A. Hetrick. (Fla. Coop. Sur.).

WILLOW BEAKED-GALL MIDGE (Mayetiola rigidae) - PENNSYLVANIA - Heavy on pussy willow in Indiana County. (Udine).

MAN AND ANIMALS

MOSQUITOES - WISCONSIN - Small numbers of adults noted with occurence of unseasonably warm temperatures. (Wis. Ins. Sur., Mar. 18). FLORIDA - Very light to light in Gainesville area, Alachua County, Culex salinarius probably most active bitter, but Anopheles quadrimaculatus, Aedes vexans, and Aedes sticticus also biting. Aedes infirmatus and Psorophora ferox larvae and pupae still found; however, most now adults. Culex restuans larvae currently most abundant in 2 types of woodland pools; all instars present. Culex territans much less abundant. Aedes canadensis larvae and pupae taken in woodland pools harboring Aedes, Psorophora, Culex, and few Anopheles. Pools rapidly drying, some small pools dry. (Mead). Few adults taken in blacklight trap in residential area of northwest Gainesville, March 19 and 20; Aedes vexans, Aedes mitchellae, and Culex salinarius. (Woodruff). Adults using oat, rye and lupine fields in Gainesville area as resting areas. (Mead).

HORN FLY (Haematobia irritans) - ALABAMA - Present on many cattle in Henry and Crenshaw Counties; 200 or more observed on herd bulls, lesser numbers on brood cows. First noted on cow in Lee County about March 11. (Boure et al.).

SHEEP BOT FLY (Oestrus ovis) - NEW MEXICO - Third-stage larvae in heads causing severe irritation and mucus discharge in sheep in McKinley County. (Durkin).

BLACK FLIES - ARKANSAS - Rather severe in eastern area. Reported from Monroe, Lee and Poinsett Counties. Some livestock reported killed. (Ark. Ins. Sur.).

LITTLE HOUSE FLY (Fannia canicularis) - NORTH CAROLINA - Numerous and problem in 3 large cage layer houses in Lincoln County. (Ashton).

CATTLE LICE - NEW MEXICO - Problem on range cattle in McKinley County. One unusually heavy infestation reported. (Durkin). OKLAHOMA - Bovicola bovis, Linognathus vituli, Haematopinus eurysternus, and Solenopotes capillatus heavy on cattle in Kiowa and Cleveland Counties; moderate in Stephens and Mayes Counties, light in Bryan County. (Okla. Coop. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - SOUTH CAROLINA - Heavy on caged laying chickens in Spartanburg County March 7-11; under control following week by sprays. (Kissam).

HOUSEHOLDS AND STRUCTURES

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - ALABAMA - First swarming of season noted from decaying tree in Henry County. (Knox et al.). MARYLAND - Winged forms swarmed inside several homes in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.). PENNSYLVANIA - Swarming in Centre County. (Adams).

CONNECTICUT - Adults swarming in homes in Plantsville, Hamden, Windsor, New Haven, Somers, Bridgeport and Fairfield during March; most swarming recorded last full week of month. General swarming predicted with warmer weather. (Johnson).

A SUBTERRANEAN TERMITE (Reticulitermes sp.) - SOUTH DAKOTA - Swarming flight noted near house in White River, Mellette County. (Berndt).

A COREID (Arhyssus scutatus) - CALIFORNIA - Adults locally heavy; entering homes in Willows, Glenn County, and Atwater, Merced County. (Cal. Coop. Rpt.).

ODOROUS HOUSE ANT (Tapinoma sessile) - CALIFORNIA - Medium and entering homes in Yreka, Siskiyou County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - ALABAMA - Hundreds of Coleomegilla maculata fuscilabris observed emerging from hibernation along field borders in Dallas County March 18. Hippodamia convergens laying eggs on crimson clover where aphids heavy in Dallas County. (McQueen). TEXAS - H. convergens larvae heavy in oats near San Saba, San Saba County. (Kidd).

A BRACONID WASP - ALABAMA - Large numbers, tentatively identified as Bracon hebetor, in farm grain bin in Henry County attacking larvae of grain moths feeding on stored corn. Some pupation of B. hebetor observed. (McQueen).

AN ICHNEUMON WASP (Bathyplectes curculionis) - COLORADO - Pupae of this parasite of Hypera postica averaged about 50 per square yard in fields of alfalfa near Fort Collins, Larimer County. (Simpson).

Beneficial Insects in Arkansas - Buildup rather minor; should improve with warm weather. Only one Hippodamia convergens specimen collected in all surveys conducted. Parasitic Hymenoptera less active than previous week. (Ark. Ins. Sur.).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Final ground trash examinations in Lubbock County indicate population in preferred types of ground cover reduced 87.6 percent over that of this time last year. Reduction apparently due to good in-season control program coupled with areawide fall diapause control program in 1965. (Parker).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Populations in southern area remain at low level. Only 6 specimens from 2 locations trapped in Broward County March 3-11. (Haley).

GRASSHOPPERS - OKLAHOMA - Egg pod surveys made in rangeland and cropland habitats in Jefferson, Stephens and Greer Counties. Egg pods averaged 1.5 per square foot of soil at rangeland stops; 0-1 at crop margin stops. (Okla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - First swarming flight observed in Dallas County March 18. (McQueen).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Adult emerged from experimental cage at Mesa Experiment Station March 24. (Ariz. Coop. Sur.).

TULIPTREE SCALE (Toumeyella liriodendri) - CALIFORNIA - Intensive survey in areas adjacent to known infestations in San Jose nearly complete. No new finds made after inspection of 487 residential and 875 streetside host plants. (Cal. Coop. Rpt.).

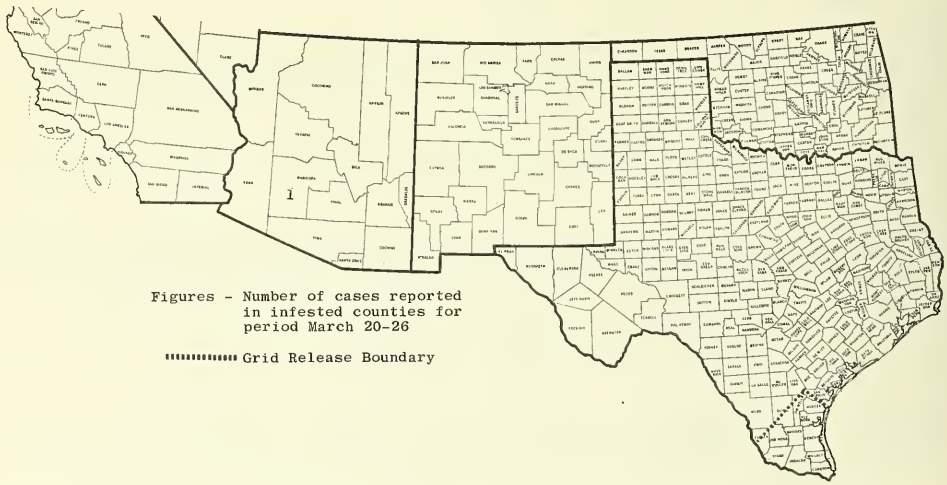
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period March 20-26, one case was reported in the United States in Maricopa County, ARIZONA. The Republic of Mexico reported 23 cases as follows: Sonora 17, Tamaulipas 4, Veracruz 1 and San Luis Potosi 1. Sterile screw-worm flies released: Texas 4,017,250, Arizona 660,000 and Mexico 97,270,400.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	4	7	204	701	1.96	0.99
1965	0	4	37	570	0.00	0.70
1966	1	27	78	301	1.28	8.97
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	43	515	31	333	138.70	154.65
1966	24	452	38	222	63.15	203.60

Mexico Field Study - No report received for this period.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



INSECT DETECTION

A GRASSHOPPER (Oxya chinensis) - HAWAII - Adults collected in Kamalo constitue a new island record for Molokai. Previously known from islands of Kauai, Oahu, Hawaii and Maui. (Haw. Ins. Rpt.). (p. 250).

A MANGO BEETLE (Protaetia fusca) - HAWAII - Adult collected on Ficus retusa in Kaunakakai, Molokai. This is new island record. Previously known from islands of Oahu, Kauai, Hawaii and Maui. (Haw. Ins. Rpt.). (p. 250).

LIGHT TRAP COLLECTIONS

FLORIDA (Gainesville, 3/19-20; blacklight) - Agrotis ipsilon 5, Feltia subterranea 28, Peridroma saucia 1, Pseudaletia unipuncta 1. (Gainesville, 3/23; blacklight) F. subterranea 3, Heliothis zea 1, Prodenia ornithogalli 1.

MISSISSIPPI (Stoneville, 3/17-23; temp. 41-83°F.; precip. 0.16 in.; blacklight) - Agrotis ipsilon 15, Feltia subterranea 15, Peridroma saucia 97, Prodenia ornithogalli 11, Pseudaletia unipuncta 164. (Rolling Fork, 3/17-23; blacklight) - A. ipsilon 5, F. subterranea 4, P. saucia 8, P. ornithogalli 10, P. unipuncta 64. (Tunica, 3/17-23; blacklight) - A. ipsilon 63, P. saucia 132, P. ornithogalli 9, P. unipuncta 179.

SOUTH CAROLINA (Charleston, 3/14-20; temp. 38-78°F.; precip. 0.04 in.; blacklight) - Feltia subterranea 1, Pseudaletia unipuncta 2. (Charleston, 3/21-27; temp. 38-81° F.; blacklight) - Agrotis ipsilon 1, P. unipuncta 3.

TEXAS (Waco, 3/19-25; blacklight) - Estigmene acrea 7, Feltia subterranea 8, Peridroma saucia 15, Pseudaletia unipuncta 39. (Brownsville 3/22-28; temp. 53-80°F; precip. trace; 2 blacklight) - Agrotis ipsilon 12, E. acrea 2, F. subterranea 84, Heliothis zea 18, Loxostege similalis 23, Peridroma saucia 62, Prodenia ornithogalli 5, Pseudaletia unipuncta 46, Trichoplusia ni 3.

SOME FIRST APPEARANCES

ALFALFA CATERPILLAR and GREEN CLOVERWORM larvae noted in alfalfa in Arkansas. (p.242).

HAWAII INSECT REPORT

Cereal and Forage Insects - THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) light on 30 acres of alfalfa in Kaunakakai, Molokai; averaged 8 per 10 sweeps. Adults of a GRASSHOPPER (Oxya chinensis) numerous on Commelina diffusa (honohono) in Kamalo, Molokai. No previous record of this insect from Molokai. It is also found on Kauai, Oahu, Hawaii Island and Maui. (Haw. Ins. Rpt.).

Fruit Insects - ORIENTAL FRUIT FLY (Dacus dorsalis) adults medium on avocado and citrus in Wailuku, Maui. Active usually June to October when fruits plentiful. (Takishita). A MANGO BEETLE (Protaetia fusca) adult found on Ficus retusa (Chinese banyan) in Kaunakakai, Molokai, by N. Miyahira. This is first record of presence on Molokai. First discovered in State (Oahu) in 1949 and subsequently on Kauai, Hawaii Island, and Maui in 1954. (Haw. Ins. Rpt.).

Truck Crop Insects - BEAN BUTTERFLY (Lampides boeticus) larvae light to medium on Dolichos lablab (hyacinth beans) in Ewa, Oahu; 7-15 larvae of all instars per 20 beans. Adults light on lima beans in Maunaloa, Molokai. (Haw. Ins. Rpt.). SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) trace on snap beans in Waimanalo, Heeia and Kahana, Oahu; 3-5 adults observed during harvest. Eggs and nymphs seen occasionally. Adults medium on soybeans in Hilo, Hawaii Island. (Sato, Yoshioka). COWPEA APHID (Aphis craccivora) heavy on terminals and young leaves of lima beans in Maunaloa, Molokai; elevation 1,000 feet. Several adults and few nymphs of a LADY BEETLE (Coelophora inaequalis) observed feeding on aphids. (Haw. Ins. Rpt.). AN ONION APHID (Micromyzus formosanus) moderate to heavy on green onions in Hilo, Hawaii Island. (Yoshioka). CARMINE SPIDER MITE (Tetranychus telarius) heavy on snap beans in Waianae, Oahu. (Yamamoto). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) heavy on 2 acres of snap beans, light on 0.25 acre of cucumber in Heeia and Kahana, Oahu. CORN EARWORM (Heliothis zea) egg counts in Omapio and Kihei, Maui, averaged less than one and six respectively per young ear of corn. Increase anticipated. (Miyahira).

Forest, Ornamental and Shade Tree Insects - BARNACLE SCALE (Ceroplastes cirripediformis) adults and nymphs heavy on Citharexylum spinosum (fiddlewood) in Manoa, Oahu. Twigs and branches 0.25 to 1 inch diameter of 12 small trees heavily infested. Few on leaves. (La Plante). COTTONY-CUSHION SCALE (Icerya purchasi) and an APHID (Thoracaphis fici) moderate on Ficus benghalensis (Indian banyan) from Lahaina to Olinda, Maui, reported in February subsided considerably. (Miyahira). COTTON APHID (Aphis gossypii) and a WHITEFLY(Dialeurodes kirkaldyi) heavy on Morinda citrifolia (noni) at Kahaluu Park, Kona, Hawaii Island. Larvae of a LADY BEETLE (Cryptolaemus montrouzieri) observed on infested leaves. (Yoshioka). WATERLILY APHID (Rhopalosiphum nymphaeae) heavy on waterlily plants, blossoms in particular, in Hilo, Hawaii Island. (Yoshioka). A SCOLYTID BEETLE (Xyleborus semiopacus) specimen collected by R. K. Le Barron from Eucalyptus saligna on Maui. This is a new host record. (Chong). CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) eggs, nymphs and adults medium on young leaves of Ficus retusa at Naval Ammunition Depot, Lualualei, Oahu. (Kajiwara).

Beneficial Insects - A PYRAUSTID MOTH (Bocchoris adipalis) larvae recovered for first time in Hilo, Hawaii Island. Introduced and released in 1965 to aid in the control of Melastoma malabathricum, a weed pest. (Yoshioka). A LEAF BEETLE (Octotoma scabripennis) very active on Lantana in Kona District, Hawaii Island. Eggs, larval mines and adults observed. Introduced from Mexico in 1953 to aid in control of Lantana camara var. aculeata, a rangeland weed. (Harley).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 214).

FOREST INSECTS [1/]

Highlights:

With the exception of virulent epidemics of BARK BEETLES in stands of lodgepole pine in portions of Idaho, Wyoming, and Utah, damage and loss caused by forest insects in the United States in 1965 were well below levels of the past few years. There were, of course, many new outbreaks of bark beetles, defoliators, and other pests at various locations in all sections of the Country. However, other than the lodgepole epidemics, most were checked by timely suppressive action before they caused intolerable damage. The most troublesome problems across the Country, and an accounting of action programs undertaken to suppress them, are outlined in the following paragraphs.

Conditions in the Pacific Coast States

Forest insect conditions in ALASKA improved considerably over 1964. In the southeastern panhandle, BLACK-HEADED BUDWORM (Acleris variana) largely succumbed to natural control and major defoliation occurred only from Haines and Skagway inland to the Canadian border. HEMLOCK SAWFLY (Neodiprion tsugae) populations were well below 1964 levels; infestations were concentrated largely on Prince of Wales and Chicagof Islands. BARK BEETLE infestations were low.

In OREGON and WASHINGTON, outbreaks of destructive insects were confined to about 1.4 million acres. The bulk of damage to the forest resource was again caused by BARK BEETLES. While the gross area of infestations by DEFOLIATING INSECTS increased slightly fron 1964, that affected by SUCKING INSECTS decreased. Known infestations of the EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) outside the containment zone in western Washington are believed to have been eradicated. The serious outbreaks of DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata) in eastern OREGON were successfully controlled by aerial spraying.

In CALIFORNIA, two new defoliating species appeared which were never before seen there in damaging numbers. One, WHITE-FIR NEEDLE MINER (Epinotia meritana), damaged red fir in the central Sierra Nevadas. The other, a LOOPER, (Nepytia sp.), attacked Douglas-fir at four locations near McCloud. BARK BEETLE activity centered primarily in stands of Douglas-fir and ponderosa pine that were downed and damaged by the severe winter storm of 1964-65. However, an increased volume of Jeffrey, lodgepole, ponderosa, and sugar pines also was killed by beetles elsewhere. Aerial spraying, aided by natural control factors, ended the severe outbreak of Douglas-fir tussock moth.

Conditions in the Intermountain, Rocky Mountain, and Southwestern States

The population explosion of MOUNTAIN PINE BEETLE (Dendroctonus ponderosae) in stands of lodgepole pine in southern IDAHO and western WYOMING dominated all insect problems in the Intermountain, Rocky Mountain, and Southwestern States. The most extensive and spectacular of these infestations was on the Teton and Targhee National Forests, and Grand Teton National Park, where beetles killed upwards of

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1/ This summary is the introduction of highlights section of the "Forest Insect Conditions in the United States - 1965" which was compiled and published by the Forest Service, U. S. Department of Agriculture. Copies of the complete annual summary are available upon request from the Regional Forester or Area Director in your area. Addresses of the regional offices may be found on page 254 of this issue of the CEIR.

two million trees. Less spectacular, but serious infestations in lodgepole pine occurred elsewhere in Idaho and Wyoming, and at several locations in UTAH. Mountain pine beetle was also quite destructive in several stands of white pine and ponderosa pine in Idaho and MONTANA. Infestations in north Idaho killed several million board feet of mature white pine. A heavy toll was taken of young ponderosa pines in Montana.

The long-standing outbreaks of SPRUCE BUDWORM (Choristoneura fumiferana) continued unabated in MONTANA, and damage to host trees was moderate to severe on about 2.25 million acres. LARCH CASEBEARER (Coleophora laricella) continued its spread through the 2.5 million acres of western larch in north IDAHO and MONTANA and caused heavy defoliation in all affected stands. Other pests of larch, such as LARCH SAWFLY (Pristiphora erichsonii), a LOOPER (Semiothisa sp.) and a BUD MOTH (Zeiraphera sp.) added to damage of stands in both States.

The major outbreak of DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata) in Latah and Benewah Counties, IDAHO, was brought under control by aerial spraying and a naturally occurring polyhedral virus. Another TUSSOCK MOTH (Dasychira sp.), however, was recorded for the first time in stands of ponderosa pine around Ashland and Ft. Howes, eastern MONTANA.

Several other major infestations persisted or developed anew in the Intermountain States. For example, SPRUCE BUDWORM (Choristoneura fumiferana) populations continued at a high level on some 2.3 million acres of host type in IDAHO; practically all of the lodgepole pine stands in southern Idaho and western MONTANA suffered varying degrees of defoliation by a lepidopterous complex; and, defoliation of pinyon pine by a SAWFLY was widespread in western NEVADA.

Forest insect infestations throughout most of the Central Rocky Mountains were down to their lowest level since the early 1950's. The serious outbreaks of BLACK HILLS BEETLE (Dendroctonus ponderosae) in SOUTH DAKOTA were checked and infestations at scattered locations in COLORADO and WYOMING also were contained. Blowdown spruce at several locations in southern Colorado portends serious outbreaks of ENGELMANN SPRUCE BEETLE (Dendroctonus obesus), but prompt salvage of the down timber may avert damaging infestations. Spruce budworm populations in COLORADO remained high only on about 80,000 acres.

Defoliators were the most important forest insects in the Southwestern States. The WHITE-FIR NEEDLEMINER (Epinotia meritana), a newcomer there, heavily defoliated white fir on some 62,000 acres in northern ARIZONA. Two tussock moths, also previously unobserved in the two States, became important when the larvae stripped broadleaf trees in high-use recreation areas in southern NEW MEXICO. SPRUCE BUDWORM (Choristoneura fumiferana), long the Number 1 enemy of Southwestern forests, damaged mixed conifer stands on about 470,000 acres. Of these, 50,000 acres were heavily defoliated in a new outbreak near Taos, NEW MEXICO. The virulence of this new outbreak is such that plans are being made to suppress it by aerial spraying early in June. Control of forest insects in ARIZONA and NEW MEXICO in 1965 was confined largely to aerial spraying of GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) infestations, and logging or hand spraying trees infested by BARK BEETLES.

Conditions in the South and Southeast

Conditions of forest insects in the South and Southeast were little changed from those of 1964. SOUTHERN PINE BEETLE (Dendroctonus frontalis) continued or developed anew in outbreak numbers at many locations, especially in north central NORTH CAROLINA, SOUTH CAROLINA, TENNESSEE, ALABAMA, MISSISSIPPI, LOUISIANA, and TEXAS. BLACK TURPENTINE BEETLE (Dendroctonus terebrans) and ENGRAVER BEETLES (Ips spp.) also caused considerable damage at many locations and, in the aggregate, killed as many or more trees than the southern pine beetle.

BALSAM WOOLLY APHID (Adelges piceae) killed many fir trees in NORTH CAROLINA and infestations spread to new locations, including the TENNESSEE side of Roan Moun-

tain. PALES WEEVIL (Hylobius pales) and associated weevils were highly destructive to pine seedlings in stand clearings in coastal areas of NORTH CAROLINA. Several species of insects also caused heavy losses to pine seeds and cones in almost all seed production areas and seed orchards.

Conditions in Lake States, Central States, and the Northeast

The major forest insect problem in the Lake States was an increase of defoliator activity. Infestations of the JACK-PINE BUDWORM (Choristoneura pinus) extended from Lower MICHIGAN to central and north central MINNESOTA; FOREST TENT CATERPILLAR (Malacosoma disstria) became firmly entrenched in hardwood stands along the northern border of MINNESOTA and in the northern tier of counties in Upper MICHIGAN and RED-HEADED PINE SAWFLY (Neodiprion lecontei) populations caused severe damage to red pine plantations at many locations.

In the Central States, living tree BORERS of hardwoods remained the primary problem. In addition, FALL WEBWORM (Hyphantria cunea) and various pine DEFOLIATORS and TIP and SHOOT INSECTS caused concern in local areas.

DEFOLIATORS of hardwoods were the most important forest insects in the Northeast, with FALL CANKERWORM (Alsophila pometaria) the most serious offender. In northeastern PENNSYLVANIA and northern NEW JERSEY, fall cankerworm stripped much of the foliage from host trees on more than 750,000 acres. An OAK LEAF ROLLER (Croesia semipurpurana) and associated species also severely defoliated large acreages of oak stands in CONNECTICUT, NEW JERSEY, and PENNSYLVANIA. Other defoliators, such as GYPSY MOTH (Porthetria dispar), FOREST TENT CATERPILLAR (Malacosoma disstria), PINE SAWFLIES, HEMLOCK and PINE LOOPERS, and others were troublesome in local areas. BALSAM WOOLLY APHID (Adelges piceae), WHITE-PINE WEEVIL (Pissodes strobi) and RED-PINE SCALE (Matsucoccus resinosae) continued as chronic problems in many locations.

Suppression Activities

Concerted efforts by Federal and State agencies and owners and managers of forest lands were continued during 1965 to check the damage and losses caused by insects. The largest control project was against mountain pine beetle in lodgepole pine in southern Idaho and western Wyoming, where more than 500,000 infested trees were sprayed, burned, or logged. Although control of infestations was largely achieved on the Teton National Forest and Grand Teton National Park, additional large-scale effort will be needed in 1966 to contain the epidemic on the Targhee National Forest. The outbreaks of Black Hills beetle in the Black Hills of South Dakota and Wyoming, and at several locations elsewhere in Wyoming and Colorado were reduced to endemic levels.

Southern pine beetle infestations in most areas of the South and Southeast were reduced to low levels during the spring and summer months, but outbreaks which recurred or developed anew at many locations later in the year triggered resumption of control action on a major scale. Persistent infestations of black turpentine beetle required a continuation of suppression work to reduce the rate of tree killing in problem areas. Small-scale tests for the control of pales weevil and associated weevils, and cone and seed insects were only partially successful.

Aerial spraying of 105,000 acres to control fall cankerworm in Pennsylvania was the major effort against pest species in the Northeast. However, outbreaks of hemlock looper in Maine and New Hampshire also required suppressive measures to prevent mortality of its host trees.

A summary of pest control operations for 1965 is presented in the tabulation on the following page.

Pest Control Accomplishments

Project	Location	Trees treated	Acres sprayed
Mountain pine beetle	Utah, Idaho, Wyoming	515,000	
Black Hills beetle	South Dakota, Colorado, Wyoming	112,000	
Southern pine beetle	South and Southeast	283,000	
Black turpentine beetle		508,000 1/	
Western pine beetle	California	12,000	
Spruce budworm	Idaho, Montana		16,000
Fall cankerworm	Pennsylvania		105,000
Douglas-fir tussock moth	California, Oregon, Idaho		241,000
Pine tussock moth	Wisconsin		12,000
Tent caterpillars	Minnesota, Arizona		22,000
Jack-pine budworm	Michigan		7,500
Miscellaneous insects	Countrywide	75,000	30,000
Total		1,505,000	433,500

REGIONAL OFFICE ADDRESSES

U. S. FOREST SERVICE

Region	
1	U. S. Forest Service Federal Building Missoula, Montana 59801
2	U. S. Forest Service Federal Center Building 85 Denver, Colorado 80225
3	U. S. Forest Service New Federal Building 517 Gold Street, S. W. Albuquerque, New Mexico 87101
4	U. S. Forest Service Forest Service Building Ogden, Utah 84403
5	U. S. Forest Service 630 Sansome Street San Francisco, California 94111
6	U. S. Forest Service P. O. Box 3623 Portland, Oregon 97208
7	U. S. Forest Service 6816 Market Street Upper Darby, Pennsylvania 19082
8	U. S. Forest Service 50 Seventh Street, N. E. Atlanta, Georgia 30323
9	U. S. Forest Service 710 N. Sixth Street Milwaukee, Wisconsin 53203
10	U. S. Forest Service Fifth Street Office Building P. O. Box 1631 Juneau, Alaska 99801

1/ Includes treating of stumps

SHADE TREE INSECTS

Highlights:

FALL WEBWORM was heavy in parts of the Midwest and MIMOSA WEBWORM spread rapidly and caused severe damage in Kansas. ELM LEAF BEETLE continues to spread and cause severe damage in many areas of the West and Midwest. SMALLER EUROPEAN ELM BARK BEETLE continued to spread. SCALE INSECTS and APHIDS were active in all parts of the Country and damage ranged from moderate to very heavy.

FALL WEBWORM (Hyphantria cunea) was very heavy in many areas of ILLINOIS and some trees in the southern section were completely defoliated by the end of August. In the more heavily infested area of Illinois, 15-20 nests per tree were common. Fall webworm was severe on walnut and hickory shade trees in south central and southwestern MISSOURI. The heaviest infestation in Missouri in several years occurred south and west of Springfield, Greene County. In OKLAHOMA, this arctiid damaged many native deciduous trees from mid-July to mid-October. Populations in NEW MEXICO were scattered and appeared some lighter on shade trees than in 1964. In ALABAMA, fall webworm damaged shade and ornamental trees in lawns. Infestations were noticeable in southern Sussex County, DELAWARE, but were not as heavy as in the previous 2-3 years.

SPRING CANKERWORM (Paleacrita vernata) defoliated elms and other shade trees in Lawrence, Pennington and western Meade Counties, SOUTH DAKOTA; control programs were instituted. In WISCONSIN, this geometrid caused moderate defoliation in a few scattered areas, but damage was less than in 1964.

MIMOSA WEBWORM (Homadaula albizziae) was reported from a much larger area of KANSAS than in the past, extending as far west as Riley County. Prior to 1965, this pest had been reported from the eastern tier of counties only. Several generations kept honeylocust in Kansas devoid of healthy foliage. In ALABAMA, mimosa webworm damaged mimosa trees on lawns. Larvae were noted in DELAWARE by the first week in July, but injury was generally not as severe as in 1964.

Populations of TENT CATERPILLARS (Malacosoma spp.) in WYOMING were larger than in 1964 and infested many species of shrubs and trees throughout the State. In central TEXAS, oaks and other trees were damaged by FOREST TENT CATERPILLAR (M. disstria); however, infestations were not as widespread as in 1964. EASTERN TENT CATERPILLAR (M. americanum) damaged shade and ornamental trees in ALABAMA. In DELAWARE, population levels of eastern tent caterpillar appeared to be very low in most areas.

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) larvae on willow caused more complaints than usual, especially from Providence County, RHODE ISLAND. Larvae caused medium damage to elm, poplar and willow in several areas of NEVADA. Mourning-cloak butterfly was a pest on willow and elm in several locations in CALIFORNIA.

SOLITARY OAK LEAF MINER (Cameraria hamadryadella) and GREGARIOUS OAK LEAF MINER (C. cincinnatiella) were heavy in the southern counties of NEW JERSEY. OAK SKELETONIZER (Bucculatrix ainsliella) was heavy locally in the residential section of Warwick, RHODE ISLAND in early fall. RED-HUMPED CATERPILLAR (Schizura concinna) damaged some shrubs and shade trees in CALIFORNIA.

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) was heavy on ornamental and seedling pine plantings in OKLAHOMA from early March to mid-October. In ALABAMA, this olethreutid damaged shade and ornamental pines.

ELM LEAF BEETLE (Pyrrhalta luteola) damage to the trees in the urban areas of eastern WASHINGTON becomes more extensive each year. Populations and damage

continued at a high level over most of OREGON and complete defoliation occurred in some areas of Jackson County. Elm leaf beetle populations in NEVADA were medium to heavy in all previously infested areas. Infestations were found in Clark and Nye Counties for the first time. In CALIFORNIA, this leaf beetle was severe in many locations. Populations spread rapidly through many areas of ARIZONA and severely damaged elm trees during May and June. Infestations in Arizona were larger and more numerous than in previous years. In NEW MEXICO, elm leaf beetle appears to have spread in the northern part of the State. Damage was heavier and populations were longer lasting than in 1964. High mortality of young trees was noted in New Mexico due to heavy defoliation in the past few years. In TEXAS, this chrysomelid continued to damage elms over a wide area and apparently is still increasing. Infestations were heavy on Chinese elm in all areas of ARKANSAS. Elm leaf beetle damage was heavy in most areas of OKLAHOMA for the eighth consecutive year. Damage was slightly less in 1965 than in 1964, but many trees were 70-80 percent defoliated. In KANSAS, this beetle is now found in all but 6 western counties. In almost all infested areas, Siberian elm was more than 90 percent defoliated and American elm more than 50 percent. New leaves were destroyed as rapidly as they were produced and trees appeared dead and brown from mid-June until mid-September. In southeast NEBRASKA numbers were heavier than in 1964 and many elm trees were defoliated. In MISSOURI, elm leaf beetle was the most troublesome shade tree pest in 1965. On untreated trees, skeletonizing of leaves ranged from moderate to complete, with heaviest damage in the southern half of Missouri. Elm leaf beetle caused much browning of elm leaves in the southern half of ILLINOIS. Eggs hatched in central OHIO by mid-June and damage to elm foliage was heavy through July. Significant defoliation was reported from 9 widespread counties. Shade and ornamental trees were damaged in ALABAMA. Feeding by adults and larvae of COTTONWOOD LEAF BEETLES (Chrysomela scripta complex) throughout WYOMING caused much concern to homeowners and many applied chemical treatments.

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) was more abundant in INDIANA in 1965 than for several seasons; the number of trees showing symptoms of Dutch elm disease also increased. S. multistriatus is now found in Mitchell County as well as most of the Panhandle of TEXAS. This bark beetle was generally light on elms in CALIFORNIA and populations were lower than in several years. Adults of NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) were taken from elm in Lisbon, Ransom County, and Jamestown, Stutsman County, for a new State record in NORTH DAKOTA. BLACK TURPENTINE BEETLE (Dentroctonus terebrans) damaged shade and ornamental pines on lawns in ALABAMA.

WILLOW FLEA BEETLE (Rhynchaenus rufipes) was heavy in Narragansett, RHODE ISLAND, in early June. MAY BEETLES (Phyllophaga spp.) were active by late April in southeast ARKANSAS and by May 20 in the northwest. Nearly 100 percent defoliation of isolated trees occurred in southeast Arkansas. May beetles also caused some damage in OKLAHOMA.

COTTONY MAPLE SCALE (Pulvinaria innumerabilis) was very heavy and caused moderate to heavy damage to street plantings of maples at Farmington, Franklin County, MAINE, in early June; spray applications controlled the problem. Infestations of CALICO SCALE (Lecanium cerasorum) on elm, sweetgum and maple appeared to increase in DELAWARE in 1965 compared with 1964. EUROPEAN FRUIT LECANIUM (Lecanium corni) was prevalent in central counties of NEW JERSEY. OBSCURE SCALE (Melanaspis obscura) and GOLDEN OAK SCALE (Asterolecanium variolosum) were heavy on oak shade trees in central and northern counties of New Jersey.

OYSTERSHELL SCALE (Lepidosaphes ulmi) was moderately heavy on weeping willow in the Santa Fe area of Santa Fe County, NEW MEXICO, and occasional infestations of EUROPEAN ELM SCALE (Gossyparia spuria) were found in Torrance and Santa Fe Counties. European elm scale was normal on elms over CALIFORNIA. However, infestations of this dactylopiid scale were heavier than usual in many NEVADA counties. European elm scale caused some damage to elms in central NEBRASKA, and was prevalent on elms in central NEW JERSEY.

APHIDS were a problem in most areas of NEW MEXICO throughout the year, especially spring and fall. Willow was the heaviest hit in New Mexico, but black walnut and other shade trees were also infested. Lachnus salignus is an increasing pest of willow and Prociphilus fraxinifolii was locally damaging to ash trees in several CALIFORNIA locations. PAINTED MAPLE APHID (Drepanaphis acerifoliae) was heavy on maples in several locations in California. L. salignus and Pterocomma spp. were heavy on willow in several areas of NEVADA. In WYOMING, populations of WOOLLY ELM APHID (Eriosoma americanum) were slightly larger and damage was more widespread than in 1964. Considerable curling of American elm leaves occurred in the north central section of Wyoming, and controls were only moderately successful. Also in Wyoming, populations of Chaitophorus populellus were somewhat larger on cottonwood trees throughout the State than in 1964. Honeydew from this species greatly concerned home owners in Wyoming. In MONTANA, several species of trees were defoliated by aphids in many locations. In NORTH DAKOTA, aphids were generally abundant on various trees and shrubs; in particular, woolly elm aphid was light to moderate on elm foliage in many areas. A few very heavy infestations of WOOLLY ALDER APHID (Prociphilus tessellatus) were reported on soft maple in NEW HAMPSHIRE.

BIRCH LEAF MINER (Fenusa pusilla) infestations were generally high in New Castle County, DELAWARE. ELM SAWFLY (Cimbex americana) damaged elms locally in Denton County, TEXAS, and caused some damage in OKLAHOMA. In SOUTH DAKOTA, a local infestation of elm sawfly in elms at Dupree, Ziebach County, was controlled by spraying. Elm sawfly larval damage to elm foliage in southern NORTH DAKOTA was light to moderate. BROWN-HEADED ASH SAWFLY (Tomostethus multicinctus) infested ash in a few locations in northern CALIFORNIA.

In NEVADA, adult female CICADAS caused heavy damage to trees in Boulder City, Clark County, in July while ovipositing in twigs and branches.

A SPIDER MITE (Oligonychus viridis) was collected for the first time in DELAWARE on hickory in Sussex County during August. Trees and ornamentals throughout ARIZONA were damaged by moderate to heavy infestations of SPIDER MITES (Oligonychus spp. and Tetranychus spp.), heaviest populations occurring in Yuma and Maricopa Counties. In NEVADA, spider mites infested and damaged shade trees in varying degrees with populations slightly above 1964 levels. MAPLE BLADDER-GALL MITE (Vasates quadripedes) caused severe deformation of maple foliage in NORTH DAKOTA.

ORNAMENTAL INSECTS

Highlights:

BAGWORM continued a major pest of ornamental evergreens in many sections of the Country. Missouri also reported infestations on deciduous ornamentals. MIMOSA WEBWORM was active in several States in the East and Midwest. JAPANESE BEETLE activity was generally below normal, probably due to the prolonged drought in the Northeastern States; however, ROSE CHAFER was more troublesome than usual in some States where Japanese beetle activity was light. APHIDS, SCALE INSECTS and various MITES were quite troublesome in many areas of the Country. Many new State and county records were established for a wide variety of ornamental pests.

Heavy populations of BAGWORM (Thyridopteryx ephemeraeformis) again caused considerable damage to evergreens in most areas of OKLAHOMA from mid-May to late September. In KANSAS, bagworm occurred in usual abundance in previously infested areas. Infestations were heavier in the eastern half of NEBRASKA than in 1964, and some evergreens were completely defoliated. An additional new county record

for this species was established in Dawson County, Nebraska. In MISSOURI, infestations were normal on untreated evergreens, ranging from light to severe, and caused some problems on deciduous ornamentals. Damage was less than in recent years in ILLINOIS; however, damage was noticeable on evergreens in some southern areas. This species continued heavy in ARKANSAS. In ALABAMA, bagworm caused considerable damage to ornamental evergreens. Populations were extremely heavy in eastern VIRGINIA during 1965. In eastern and southern MARYLAND, bagworm was heavy on many arborvitae and juniper plantings. Infestations in DELAWARE were generally not as severe as in 1964. In OHIO, bagworm was a minor pest of trees in 1965.

In the Willamette Valley of OREGON, ORANGE TORTRIX (Argyrotaenia citrana) built up on propagating plants in many greenhouses late in the fall. A TORTRICID MOTH (Choristoneura houstonana) was found on juniper at Franklin, Franklin County, NEBRASKA, in June for a new State record. In KANSAS, new county records for C. houstonana were established for Pawnee, Pratt, Ellis and Smith Counties. Choristoneura zapulata caused medium to heavy damage to various ornamental shrubs in southern Washoe County, NEVADA, in May and June. ZIMMERMAN PINE MOTH (Dioryctria zimmermani) continued to be a problem in commercial Christmas tree plantations in INDIANA, especially in Porter County; however in OHIO, this species was a minor pest of trees in 1965.

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) was a pest of several species of pines in KANSAS. Infestations in Saline County, Kansas, and other infested areas were frequent and severe. EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) continued to be a common pest in RHODE ISLAND in nurseries and ornamental plantings. In NEW JERSEY, European pine shoot moth damage was extensive on Japanese black pine in Cape May County. Surveys for this species in OREGON revealed no infestations in private or nursery plantings in the State. Three pine trees brought to Oregon from an infested area were found to be infested with R. buoliana and were destroyed before the moths emerged. In northwestern OHIO, SPRUCE NEEDLE MINER (Tanivia albolineana) was active on spruce and nursery stock during spring and fall.

JUNIPER WEBWORM (Dichomeris marginella), a recent invader of OREGON, continued to attack ornamental junipers from Multnomah County to Jackson County. A COSMOPTERIGID MOTH (Periploca nigra) was a serious pest of junipers in CALIFORNIA.

MIMOSA WEBWORM (Homadaula albizziae) infestations were heavier in eastern NEBRASKA than in 1964 and some trees were completely defoliated. In MISSOURI, nearly all mimosa trees had light infestations and a few trees were severely webbed. Mimosa webworm continued a problem in ARKANSAS. This species was also widespread in southern ILLINOIS, but damage was not as severe as in 1963. In OHIO, mimosa webworm was a minor pest in 1965. Infestations were moderate to heavy on mimosa and honeylocust in southern MARYLAND. Mimosa webworm activity was also extensive in the southern counties of NEW JERSEY.

DOGWOOD BORER (Thamnosphecia scitula) frequently infested dogwood in RHODE ISLAND and infestations may be increasing. In FLORIDA, a newly described PYRAUSTID MOTH (Undulambia polystichalis Capps) ranged 1-3 per square yard on leatherleaf ferns in several ferneries in Volusia County. Controls were satisfactory, although repeated applications were necessary. In ALABAMA, STALK BORER (Papaipema nebris) continued to be a serious pest of dahlias and CORN EARWORM (Heliothis zea) often injured roses. VARIEGATED CUTWORM (Peridroma saucia) damaged many varieties of ornamentals throughout the Willamette Valley of OREGON, including Douglas-fir seedlings in Benton County. AZALEA CATERPILLAR (Datana major) was of considerable concern on ornamentals along the coastal area of ALABAMA. ORANGE-DOG (Papilio cresphontes) damaged ornamental citrus in Travis and Runnels Counties, TEXAS, and IO MOTH (Automeris io) larvae were widespread on a variety of shrubs in Harris County. AZALEA LEAF MINER (Gracillaria azaleella) damaged azalea at several locations in CALIFORNIA. LILAC LEAF MINER (Gracillaria syringella) was collected in Marathon County, WISCONSIN. Small populations occur in a few areas of northern Wisconsin.

JAPANESE BEETLE (Popillia japonica) populations in MASSACHUSETTS were very low and adults were present only for a short time. In RHODE ISLAND, adult populations were negligible. Japanese beetle populations were high in Montgomery County, VIRGINIA, in late July and August; however, populations were low in northern Virginia again in 1965, probably due to dry weather. Japanese beetle was a minor pest of trees in OHIO.

Light populations of ROSE CHAFER (Macrodactylus subspinosus) were generally damaging to several species of plants in Androscoggin and Sagadahoc Counties, MAINE, in early July. In NEW HAMPSHIRE, considerable numbers fed on ornamentals. This species was heavy in RHODE ISLAND and was far more conspicuous and injurious than Japanese beetle. In MICHIGAN, spotty infestations of rose chafer adults were heavy on host plants in several central counties in late June; however, the overall infestation was lower than sometimes occurs.

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) was found for the first time in WASHINGTON at Yakima, Yakima County, in early May. In July, adults of a LANGURIID BEETLE (Languria trifasciata) were taken on grasses and weeds at Hialeah, Dade County, FLORIDA, for a new State record. In MARYLAND, A BILLBUG (Sphenophorus sp.) heavily injured several zoysia grass lawns in Prince Georges and Howard Counties.

BLACK VINE WEEVIL (Brachyrhinus sulcatus) in RHODE ISLAND remains a major nursery pest although heavy infestations were local and sporadic. Adults became common in June on yews in several Lower MICHIGAN counties. In WISCONSIN, a search of the area found to be infested by B. sulcatus in 1964 failed to reveal an infestation in 1965. Black vine weevil infestations occurred in a few locations in CALIFORNIA. Brachyrhinus cribricollis damaged olive foliage in Clark County and Brachyrhinus spp. damaged lilac, peony and privet in Washoe County, NEVADA. HOLLYHOCK WEEVIL (Apion longirostre) occurred in several northern CALIFORNIA counties, and was reported from UTAH for the first time where it was found from Lewiston, Cache County, to Fillmore, Millard County. A WEEVIL (Nemocestes incomptus) damaged azaleas in Pacific County, WASHINGTON. PLUM CURCULIO (Conotrachelus nenuphar) cut 90 percent of the fruit on ornamental plums and crab apple in Centre County, PENNSYLVANIA. PALES WEEVIL (Hylobius pales) was increasingly common in some areas of INDIANA and many red pine and Scotch pine trees were killed. NORTHERN PINE WEEVIL (Pissodes approximatus) feeding was severe on white pine Christmas trees in Indiana County, PENNSYLVANIA.

High populations of APHIDS on shade trees were an outstanding feature of 1965 in UTAH, even more than in 1963 or 1964. Great numbers of ants, flies, bees and wasps were often attracted to honeydew on trees and shrubs and were extremely annoying to homeowners in the State. Aphids infested and damaged ornamentals in varying degrees and populations were slightly above 1964 levels in NEVADA. Aphids were generally abundant on various trees and shrubs in NORTH DAKOTA. Aphids also caused some damage in OKLAHOMA. In ARKANSAS, activity by various species was above normal, especially on oak leaves in May. Aphids caused considerable damage to ornamental shrubs throughout ALABAMA. In MASSACHUSETTS, several species were rather abundant on trees, causing homeowners to complain of honeydew on autos and lawn furniture. Aphids were very heavy in late summer and the injury was intensified by drought in RHODE ISLAND; however, parasites were common. Lachnus salignus infested weeping willow and caused the usual volume of complaints in Rhode Island. L. salignus occurred statewide in MONTANA. In ARIZONA, heavy populations of this aphid caused moderate damage to ornamentals in Maricopa, Pinal, Pima and Gila Counties.

BEAN APHID (Aphis fabae) was common on euonymous in RHODE ISLAND throughout 1965. SPIREA APHID (Aphis spiraecola) was common on new growth throughout most of the season in DELAWARE, starting in late May in New Castle County. ROSE APHID (Macrosiphum rosae) was heavy on rose in many areas of MARYLAND during the spring, and prevalent on rose in CALIFORNIA early in 1965. Myzocallis elegans was a serious pest on elm in the Logan area of Cache County, UTAH. BOXELDER APHID (Periphyllus negundinis) heavily infested boxelder in many counties of NEVADA.

APPLE GRAIN APHID (Rhopalosiphum fitchii) infested bulbous iris in western WASHINGTON; and TULIP BULB APHID (Dysaphis tulipae) was numerous on stored iris and tulip bulbs in the Puyallup Valley in late November. Prociphilus venafuscus was unusually abundant on ash trees in Whitman and Walla Walla Counties, Washington. Heavy infestations of RUSTY PLUM APHID (Hysteroneura setariae) damaged roses and other ornamentals in most areas of ARIZONA during spring and early summer. LEAFHOPPERS and an APHID (Amphorophora nervata) were a problem on roses throughout the year in most areas of NEW MEXICO.

In Multnomah County, OREGON, a CONIFER APHID (Schizolachnus pineti) was heavy on nursery and private plantings of Mugho pine and Scotch pine, and SPRUCE APHID (Elatobium abietinum) was heavy on ornamental spruce during March. An APHID (Neophyllaphis podocarpi) was found for the first time in Alameda and Contra Costa Counties, CALIFORNIA, infesting podocarpus. A CONIFER APHID (Cinara tujafilina) was common on juniper and arborvitae in California. C. tujafilina heavily infested arborvitae in nurseries and home gardens in several counties in NEVADA. C. tujafilina and other species of aphids were troublesome during the spring and the fall in NEW MEXICO. C. tujafilina damaged arborvitae in many areas of OKLAHOMA from early January to late March and again in mid-December. Cinara spp. were above normal in ARKANSAS during the spring until lady beetles built up and brought them under control. COOLEY SPRUCE GALL APHID (Adelges cooleyi) was abundant on some fir and spruce trees in northern ILLINOIS in June.

EUONYMUS SCALE (Unaspis euonymi) was moderate to heavy on euonymus in the New Castle County area of DELAWARE. Euonymus scale was a common problem on euonymus and bittersweet in all sections of MARYLAND and one of the scales most frequently received for determination in VIRGINIA. Euonymus scale was a common problem on euonymus in NORTH CAROLINA. U. euonymi caused moderate to heavy damage in many areas of OKLAHOMA. Euonymus scale is still a problem on euonymus in the Albuquerque area, Bernalillo County, NEW MEXICO, and control is difficult. SAN JOSE SCALE (Aspidiotus perniciosus) was widespread on many ornamentals in CALIFORNIA. San Jose scale infested ornamental Prunus spp. statewide in MARYLAND. TEA SCALE (Fiorinia theae) was very prevalent on camellias in NORTH CAROLINA, and unusually heavy on camellias and holly in northern and central FLORIDA. An ARMORED SCALE (Aspidiotus yuccae) was found in Florida on yucca plants in nurseries in Pinellas and Lee Counties. These infestations were believed to have been introduced from out-of-State. In MAINE, heavy infestations of OYSTERSHELL SCALE (Lepidosaphes ulmi) damaged lilac in the Auburn-Lewiston area of Androscoggin County.

Oystershell scale and EUROPEAN ELM SCALE (Gossyparia spuria) caused severe damage to lilac, green ash, cotoneaster, willows and pine in all areas of WYOMING and many new infestations were noted; however, controls were generally effective. European elm scale occurred in usual abundance in KANSAS. BLACK SCALE (Saissetia oleae) damaged queen palm and orchids at several locations in FLORIDA, and scattered infestations were usually held in check by biological controls in CALIFORNIA. TULIPTREE SCALE (Toumeyella liriodendri) is under eradication in San Jose, Santa Clara County, California. This species was a minor pest of trees in OHIO in 1965. In PENNSYLVANIA, tuliptree scale and MAGNOLIA SCALE (Neolecanium cornuparvum) were unusually abundant on magnolia. Magnolia scale was heavy on magnolia at locations in Prince Georges County and in Baltimore, MARYLAND. A SOFT SCALE (Pulvinaria ericicola) was found on azalea in Kingston, RHODE ISLAND. P. ericicola was also found on azalea in Portage County, OHIO, for a new State record. Pulvinaria acericola was found on dogwood at Beltsville, Prince Georges County, MARYLAND, for a new State record.

PINE NEEDLE SCALE (Phenacaspis pinifoliae) infested pine and spruce in five counties of OHIO from April through early July. Some infestations were heavy. Pine needle scale was heavy on pine trees in Henderson County, ILLINOIS, in late April and much browning of needles occurred. In WYOMING, this species caused severe damage to pine trees in all areas of the State. Many new infestations were noted in all areas although controls were generally effective. Large numbers of BLACK PINE-LEAF SCALE (Nuculaspis californica) appeared on Mugho pine at Marion, La Moure County, NORTH DAKOTA.

A PSYLLID (Psylla uncatoides) was serious on acacia and albizia Statewide in CALIFORNIA and was heavy on madrone in north coastal areas. LONG-TAILED MEALYBUG (Pseudococcus adonidum) was severe on the foliage of a variety of plants on nurseries in FLORIDA. PERIODICAL CICADAS (Magicicada spp.) were heavy in Alleghany, Augusta, Bath and Highland Counties, VIRGINIA, in June and early July. Periodical cicadas also caused extensive injury to forest, ornamental and shade trees in many counties in OHIO due to heavy populations and heavy egg laying. A SPITTLEBUG (Clastoptera arizonana) was a pest on ornamentals and acacia in San Diego, San Mateo and Riverside Counties, CALIFORNIA.

AZALEA WHITEFLY (Pealius azaleae) continued to be common on Rhododendron mucronatum wherever it was grown in RHODE ISLAND. Another whitefly, Aleurotuberculatus similis, which was found in Rhode Island for the first time in 1964, was heavy locally on Japanese holly in Kingston. Azalea whitefly was a minor pest in OHIO in 1965. During March and April CITRUS WHITEFLY (Dialeurodes citri) reached the highest populations ever seen in the Gainesville area of Alachua County, FLORIDA. The principal ornamental hosts were viburnum, gardenia and ligustrum.

BOXELDER BUG (Leptocoris trivittatus) was normally troublesome on ornamentals in most areas. In RHODE ISLAND, the usual seasonal complaints were received from Lincoln, Woonsocket and Cumberland. Specimens collected in Cranston, Providence County, may represent a southward movement in the State. In MASSACHUSETTS, boxelder bug caused many complaints in Hampden, Hampshire and Worchester Counties. In MICHIGAN, however, homeowners made very few inquiries about control measures for this pest.

SPIDER MITES were troublesome in many sections of the Country in 1965. They caused major damage to ornamental shrubs in ALABAMA and were troublesome on azalea, boxwood, hemlock, spruce, hollyhock, mint and rose in MARYLAND. Tetranychus spp. were unusually heavy on a wide variety of conifers and other ornamentals in WISCONSIN and caused moderate to severe damage to evergreens in scattered areas of NORTH DAKOTA. In MISSOURI, these pests were constantly present throughout the State and the heaviest numbers in several years were found in the Springfield area of Greene County; however, periodic heavy rains helped control infestations. Spider mites also caused some damage in OKLAHOMA. Tetranychus spp. continued to cause moderate to severe damage on ornamental evergreens in WYOMING, although infestations were slightly smaller than in 1964. Tetranychus marianae was found for the first time in CALIFORNIA on nightshade in San Bernardino County. SPRUCE SPIDER MITE (Oligonychus ununguis) was moderate on pine trees in Lee County, ILLINOIS, about May 10. In OHIO, this species was widespread on evergreens during the summer, but activity appeared light and little damage was reported. EUROPEAN RED MITE (Panonychus ulmi) and CLOVER MITE (Bryobia praetiosa) infested mountain-ash and other ornamental trees in NEW HAMPSHIRE. SOUTHERN RED MITE (Oligonychus ilicis) was heavy locally on Japanese holly in RHODE ISLAND.

A FALSE SPIDER MITE (Pentamerismus taxi) caused extensive damage to yew in Urbana, Champaign County, ILLINOIS, in early September. This infestation was a new State record. PRIVET MITE (Brevipalpus obovatus) infested privet in some areas of CALIFORNIA. A TARSONEMID MITE (Tarsonemus setifer) was found for the first time in DELAWARE on firethorn in New Castle County.

Several new county and State records were established for ERIOPHYID MITES in different sections of the Country. Eriophyes insidiosus was found on flowering peach in Kern, Tulare and Fresno Counties of CALIFORNIA for new county records. Eriophyes gardeniella on gardenia at Lacoochee, Pasco County, FLORIDA, was a new United States record as well as a new State record. A new State record for BERMUDAGRASS MITE (Aceria neocynodonis) was established in Oklahoma County, OKLAHOMA. This mite was later found in Canadian, Kingfisher, Woodward, Jackson and Woods Counties.

HOLLY LEAF MINER (Phytomyza ilicis) was found on holly in Lane County, OREGON, for a new county record. NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) was heavy on American holly in all sections of MARYLAND. Phytomyza sp. was common wherever

holly is grown in RHODE ISLAND and was one of the most damaging ornamental shrub pests in ALABAMA. In Ventura County, CALIFORNIA, zinnias were damaged by CHRYSANTHEMUM LEAF MINER (Phytomyza atricornis). A GALL MIDGE (Feltomyia pisonifolia) emerged from galls taken from leaves of Pisonia aculeata in the Everglades National Park, FLORIDA. This is a new United States record.

In WISCONSIN, populations of EUROPEAN SPRUCE SAWFLY (Diprion hercyniae) were either extremely low or else failed to overwinter; however, populations of a SAWFLY (Profenusa canadensis) were unusually severe on hawthorn and about 80 percent of the leaf tissue was destroyed on several trees. BIRCH LEAF MINER (Fenusa pusilla) was serious in the Puyallup area, Pierce County, WASHINGTON. This is the first time this pest has been destructive in the western part of the State.

THRIPS were a problem on roses in ALABAMA and were unusually abundant on many native shrubs and trees in CALIFORNIA. CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) was locally serious on rubber trees (Ficus spp.) in southern California. Populations of PRIVET THRIPS (Dendrothrips ornatus) were above normal in southern WISCONSIN and caused severe yellowing and wilting of privet hedges. In Lancaster County, PENNSYLVANIA, WESTERN FLOWER THRIPS (Frankliniella occidentalis) caused a 10-percent loss of chrysanthemums in a greenhouse.

EUROPEAN EARWIG (Forficula auricularia) was very heavy in RHODE ISLAND and caused foliage damage. European earwig was a general pest in many places in northern CALIFORNIA. In San Luis Obispo County, California, a MILLIPED (Oxidus gracilis) was heavy locally on azalea. GARDEN SYMPHYLAN (Scutigerella immaculata) caused heavy damage to nursery plantings of dogwood and white birch in Multnomah County, OREGON. In Delaware County, PENNSYLVANIA, garden symphylan caused a 50-percent loss of azaleas grown outdoors. Local infestations of a SNAIL (Otala lactea) occurred in Los Angles, Alameda, Santa Clara and Marin Counties, CALIFORNIA. Alameda and Marin Counties are new county records.

Weather continued from page 236.

Warm moist Gulf air streamed northward early in the week. A continuing 2- to 3-week warm spell in mid-America sent temperatures to 80° at Pittsburgh on Wednesday. Then a major blizzard, the second in March, moved out of the central Rocky Mountains. Temperatures dropped sharply as the storm moved toward Upper Michigan. Subzero temperatures occurred in northern North Dakota and northern Minnesota. By Friday, the freezing line had advanced almost to the Gulf of Mexico. Scattered frost occurred over northern and western Florida, more than 3 weeks after the mean date of last freeze. At weekend there was moderation in Florida and Texas but polar air continued to pour into the Eastern States. Maximum temperatures over the weekend were in the 20's and 30's over much of the Northeast.

PRECIPITATION: Precipitation was of little importance over the western half of the Nation, with only some scattered light showers plus light snows in the central and northern Rockies. Wide areas in the West received no precipitation during the week. The severe blizzard moved out of the central Rockies early in the week. It produced light snow in eastern Colorado, 3 to 6 inches in Kansas, and a foot or more from northeastern Nebraska to Upper Michigan. The storm caused numerous deaths. Many schools and businesses were closed. oads and highways were blocked. The snow was accompanied by strong winds, low visibilities, and rapidly falling temperatures. Severe thunderstorms and scattered hail occurred in advance of the cold front as it pushed southeastward toward the Gulf and Atlantic coasts. Precipitation was above normal in parts of the East, but light in some areas. It was the th rd week with below-normal rainfall in Kentucky and Tennessee and only light scattered showers occurred in Florida.

SNOWFALL: The snow cover, 1" or more, advanced into Iowa and parts of Kansas by early Thursday, and into northern Indiana and central Appalachians by early Friday. By the end of the period most of the snow had melted. Some cover remained from north-central Iowa to Lake Superior and from western Pennsylvania to northern Maine. Snow also remained in the western mountains. (Summary supplied by Environmental Data Service, ESSA).

IMPORTANT INSECTS AND SNAILS MOST FREQUENTLY INTERCEPTED AT UNITED STATES PORTS OF ENTRY IN FISCAL YEAR 1964

This list was abstracted from the records compiled by the Plant Quarantine Division of Plant pests intercepted at ports of entry from July 1, 1963, through June 30, 1964. Only those pests intercepted 10 or more times during the year are included here. A total of 35,276 plant pests were submitted from ports of entry during the year. The complete interception list which includes all insects, mites, snails, bacteria, fungi, nematodes and viruses of known or potential plant quarantine significance to the United States may be obtained from Plant Quarantine Division, Federal Center Building, Hyattsville, Maryland, 20782.

Pest	Host	Country of Origin	Number of Interceptions
Acrolepia assectella (Zell.) (Yponomeutidae)	Allium porrum (leek)	France, Germany, Italy, Japan, Netherlands	13
Aleurocanthus woglumi Ashby (Aleyrodidae)	Citrus aurantifolia (lime) leaf C. paradisi (grapefruit) leaf Citrus sp. (leaf)	Colombia, Costa Rica, Mexico, Nicaragua, Panama, unknown	24
Anastrepha ludens (Loew) (Tephritidae)	Casimiroa edulis (white sapote) Citrus aurantifolia (lime) C. aurantium (sour orange) C. paradisi (grapefruit) C. reticulata (Mandarin orange) C. sinensis (sweet orange) Cydonia oblonga (quince) Malus sylvestris (apple) Mangifera indica (mango) Prunus persica (peach) Punica granatum (pomegranate) Pyrus communis (pear)	Guatemala, Mexico	335
Anastrepha mombinpraeoptans Sein (Tephritidae)	Anacardium occidentale (common cashew) Annona cherimola (cherimoya) Calocarpum sapota (sapote) Eugenia cuminii (jambolan) Mangifera indica (mango) Psidium guajava (guava) Spondias mombin (yellow mombin) Terminalia catappa (tropical almond)	American Virgin Islands, Brazil, British Honduras, Costa Rica, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Martinique, Mexico, Nicaragua, Puerto Rico.	248
Bruchus ervi Froel. (Bruchidae)	Lens culinaris (lentil) Phaseolus sp. (bean) seed	Greece, Italy, Lebanon, Netherlands, Turkey	13
Bruchus lentis Froel. (Bruchidae)	Lens culinaris (lentil) Phaseolus vulgaris cv. (string bean)	Australia, Canada (?) France, Germany, Greece, Italy, Lebanon, Mexico, Morocco, Netherlands, Scotland, unknown.	24
Bruchus tristiculus Fahr. (Bruchidae)	Lathyrus odoratus (sweetpea) L. sativus (grass peavine) seed Lathyrus sp. (peavine) seed Lens culinaris (lentil) seed Vicia faba (broadbean)	Greece, Italy, Morocco, Portugal	10

Pest	Host	Country of Origin	Number of Interceptions
Bruchus tristis Boh. (Bruchidae)	Lathyrus sativus (grass peavine) Lathyrus sp. (peavine) seed Lens culinaris (lentil) Lupinus albus (white lupine) seed	Italy	11
Carposina niponensis Wlsm. (Carposinidae)	Malus sylvestris (apple)	Japan	10
Caryedon gonagra (F.) (Bruchidae)	Acacia sp. Arachis hypogaea (peanut) Cassia sp. (senna) pod and seed Pisum sativum (pea) Seed - unidentified Tamarindus indica (tamarind) pod and seed	American Virgin Islands, Cape Verde Islands, Hawaii, India, Jamaica, Mexico, Philippines, unknown.	32
Ceratitis capitata (Wied.) (Tephritidae)	Annona sp. (fruit) Calophyllum inophyllum (Indiapoon beautyleaf) fruit Capsicum annuum (pepper) C. annuum var. longum (chili pepper) Carica papaya (papaya) Citrus grandis (pummelo) C. limon (lemon) C. paradisi (grapefruit) C. reticulata (Mandarin orange) C. sinensis (sweet orange) Coffea arabica (Arabian coffee) berry Cydonia oblonga (quince) Diospyros kaki (kaki persimmon) Diospyros sp. (persimmon) Ficus carica (fig) Fortunella sp. (kumquat) Malus sylvestris (apple) Mangifera indica (mango) Mespilus germanica (medlar) Opuntia humifusa (pricklypear) Passiflora sp. (passionflower) fruit Prunus domestica (plum) P. persica (peach) Prunus sp. Psidium guajava (guava) Punica granatum (pomegranate) Pyrus communis (pear) Sorbus domestica 'Appleform' (servicetree mountain-ash) fruit Synsepalum dulcificum Terminalia catappa (tropical almond)	Angola, Argentina, Azores, Brazil, Canary Islands, Costa Rica, Europe (country (?)), France, Ghana, Greece, Hawaii, Israel, Italy, Lebanon, Libya, Morocco, Nicaragua, Peru, Portugal, Republic of Congo, Republic of South Africa, Spain, Syria, United Arab Republic, unknown.	211
Coccus viridis (Green) (Coccidae)	Coffea arabica (Arabian coffee) Gardenia jasminoides (leaf) G. taitensis (leaf) Gardenia sp. (leaf and stem)	Hawaii Tahiti	26
Cochlicella barbara (L.) (Helicellidae)	Humulus japonicus (Japanese hop) seed Phaseolus lunatus (lima bean) seed	Crete, France, Germany, Greece, Italy, Morocco, Netherlands, Spain, Turkey, United Arab Republic	29

Pest	Host	Country of Origin	Number of Interceptions
Cochlicella ventrosa (Ferussac) (Helicellidae)	Buxus sempervirens (boxwood) seed Laburnum sp. (seed) Soil with plants (Asparagus plumosus, Begonia sp., Gardenia sp., and Hyacinthus sp.) Syringa sp. (lilac) seed	Azores, Germany (?) Italy, Lebanon, Morocco, Portugal Spain, unknown.	18
Dacus dorsalis Hend. (Tephritidae)	Annona sp. Averrhoa sp. (fruit) Calocarpum sapota (sapote) Carica papaya (papaya) Mangifera indica (mango) Musa nana (dwarf banana) Musa X paradisiaca (banana) Passiflora edulis (purple granadilla) Passiflora sp. (passionflower) fruit Persea americana (avocado) Prunus armeniaca (apricot) Psidium guajava (guava) Terminalia catappa (tropical almond)	Hawaii, Malaysia, Philippines, Viet-Nam	40
Dacus oleae (Gmel.) (Tephritidae)	Olea europaea (common olive) Olea sp. (olive)	France, Israel, Italy, Lebanon, Portugal, Spain	84
Dialeurodes kirkaldyi (Kot.) (Aleyrodidae)	Gardenia jasminoides (leaf and stem) G. taitensis (leaf) Gardenia sp. (leaf and stem) Jasminum sp. (leaf) Plumeria sp. (frangipani) leaf	Hawaii, Tahiti	16
Frankliniella intonsa (Trybom) (Thripidae)	Calluna vulgaris Centaurea cyanus (cornflower) Chrysanthemum sp. (flower) Dianthus caryophyllus (carnation) Flowers (mixed) Gladiolus sp. Rosa sp. (rose) flower Tagetes sp. (marigold) petal	Czechoslovakia, Denmark, England, Europe (country(?)), Germany Hungary, Italy, Poland, Scotland, Sweden	29

Pest	Host	Country of Origin	Number of Interceptions
Helicella caperata (Montagu) (Helicellidae)	Herb--unidentified Humulus japonicus (Japanese hop) seed Lathyrus odoratus sweetpea) seed Soil with conex box, Hyacinthus sp., and Lonicera sp.	Crete, Germany, Greece, Italy, Netherlands, unknown	10
Helicella cretica (Ferussac) (Helicellidae)	Asparagus sp. Lactuca sativa (lettuce) Soil with plants (cactus, Gardenia sp., Jasminum sp., Lonicera sp., Pelargonium sp., and unidentified plant .	Crete, Greece, Lebanon, Turkey.	26
Helicella derbentina (Andrz.) (Helicellidae)		Turkey	15
Helicella maritima (Draparnaud) (Helicellidae)	Brassica chinensis (Chinese cabbage) Citrus paradisi (grapefruit) Pelargonium sp. (geranium) Vicia sativa (vetch) seed	Azores, France, Israel, Italy, Libya, Spain	19
Helicella variabilis (Draparnaud) (Helicellidae)	Buxus sempervirens (boxwood) seed Malus sylvestris (apple) Vicia sativa (vetch)	France, Italy, Spain	14
Helix aperta Born (Helicidae)	Brassica oleracea var. botrytis (cauliflower) B. oleracea var. capitata (cabbage) Cynara scolymus (artichoke) Humulus japonicus (Japanese hop) seed Lactuca sativa (lettuce) Petroselinum crispum (parsley)	France, Italy, Netherlands, Spain	11
Helix aspersa Müller (Helicidae)	Brassica oleracea var. capitata (cabbage) Delphinium sp. (flower) Flowers (mixed) Herb--unidentified Soil with Asparagus plumosus	Bermuda, England, France, Greece, Haiti, Italy, Mexico, Portugal, Spain	13
Laspeyresia splendana (Hbn.) (Olethreutidae)	Castanea sativa (European chestnut) Castanea sp. (chestnut) Quercus suber (cork oak) seed	Azores, Canary Islands, France, Germany, Greece, Italy, Portugal, Yugoslavia	61
Mamestra brassicae (L.) (Noctuidae)	Apium graveolens var. dulce (celery) Brassica oleracea var. acephala (collard) B. oleracea var. botrytis (cauliflower) B. oleracea var. capitata (cabbage)		

Pest	Host	Country of Origin	Number of Interceptions
Mamestra brassicae --continued	Chrysanthemum sp. (flower) Flowers (mixed) Lactuca sativa (lettuce)	England, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain	35
Maruca testulalis (Geyer) (Pyraustidae)	Cajanus cajan (pigeonpea) pod Canavalia microcarpa (mauna loa) Phaseolus vulgaris cv. (string bean)	Angola, Colombia, Dominican Republic, Hawaii, Ivory Coast, Japan, Puerto Rico, Venezuela, unknown	17
Metamasius hemipterus sericeus (Oliv.) (Curculionidae)	Musa X paradisiaca (banana)	Ecuador, Honduras, Panama	14
Monacha carthusiana (Müller) (Helicellidae)	Buxus sempervirens (boxwood) seed Clematis viticella (Italian clematis) seed Cotinus coggyria (common smoketree) seed Hibiscus syriacus (shrub-althea) seed Lathyrus sativus (grass peavine) bean Soil with Hyacinthus sp. (bulb), unidentified plant	England, Greece, Italy Liberia, Italy, unknown	14
Morganella longispina (Morg.) (Diaspididae)	Chaenomeles sp. (flowering quince) Citrus aurantifolia (lime) C. grandis (pummelo) C. limon (lemon) C. paradisi (grapefruit) C. reticulata (Mandarin orange) C. sinensis (sweet orange)	American Samoa, Brazil, Japan, Tahiti, unknown	26
Nephotettix apicalis (Motsch.) (Cicadellidae)		Canton Island, India, Japan, Philippines, Thailand, Viet-Nam, Wake Island, unknown	11
Otala vermiculata (Müller) (Helicidae)	Brassica oleracea var. botrytis (cauliflower) B. oleracea var. capitata (cabbage)	Cuba, France, Greece, Italy	13
Parlatoria cinerea Hadden (Diaspididae)	Citrus aurantifolia (lime) C. grandis (pummelo) C. limon (lemon) C. paradisi (grapefruit) C. reticulata (Mandarin orange) C. sinensis (sweet orange)	American Samoa, Brazil, Formosa, Guatemala, Honduras, Hong Kong, Italy, Japan, Mexico, Nicaragua, Panama, Spain, Surinam, Tahiti, Trinidad, unknown	58
Parlatoria zizyphus (Lucas) (Diaspididae)	Citrus aurantifolia (lime) C. grandis (pummelo) C. limon (lemon) C. mitis (calamondin orange) C. paradisi (grapefruit) C. reticulata (Mandarin orange) C. sinensis (sweet orange) Citrus sp. (dried peel and leaf)	Africa (country (?)), Brazil, Colombia, Formosa, France, Greece, Hong Kong, Indonesia, Israel (?), Italy, Japan, Morocco, Okinawa, Philippines, Thailand, Trinidad, Wake Island, unknown.	72

Pest	Host	Country of Origin	Number of Interceptions
Pectinophora gossypiella (Saund.) (Gelechiidae)	Gossypium tomentosum (Hawaiian cotton) Gossypium sp. (cotton) boll, seed, and waste. Hibiscus esculentus (okra)	Albania, Antigua, Bahamas, British West Indies (Island (?)), Dominican Republic, Ghana, Grenada, Haiti, Hawaii, Jamaica, Mexico, Trinidad, Turkey	60
Pheidole megacephala (F.) (Formicidae)	Ananas comosus (pineapple) bean, Bromeliad, Cibotium sp. (tree fern) log, Citrus sp. (leaf), Cordyline terminalis (ti) stem Dalbergia sp. (rosewood) log Fragaria sp. (strawberry) plant Hibiscus sp. (flower) Lycopersicon esculentum tomato orchid, Pisum sativum (pea) plant material--unidentified Saccharum officinarum (sugarcane) soil with grass Zingiber officinale (ginger)	American Samoa, Australia (?), Bahamas, Bermuda, British Honduras, Dominican Republic, Fiji, France, Guam, Guatemala, Hawaii, Honduras, Philippines, Republic of South Africa,	29
Phytomyza rufipes Meig. (Agromyzidae)	Brassica oleracea var. botrytis (cauliflower) B. oleracea var. capitata (cabbage) B. rapa (turnip) Cichorium endivia (endive) Lactuca sativa (lettuce) Raphanus sativus (radish)	Algeria, Belgium, Denmark, England, France, Germany, Malaysia, Netherlands, Scotland	20
Rhagoletis cerasi (L.) (Tephritidae)	Prunus cerasus (sour cherry) Prunus sp. (cherry)	Europe (country(?)), France, Germany, Hungary, Italy, Poland, Switzerland	34
Sinoxylon conigerum Gerst. (Bostrichidae)	Cassia fistula (goldenshower senna) seed Cocos nucifera (coconut) leaf hats Eugenia sp. (stem) Swietenia mahagoni (mahogany)	Hawaii, India, Pakistan, Portugal, unknown	27
Stenoma catenifer Wlsm. (Stenomidae)	Persea americana (avocado) P. americana var. drymifolia (Mexican avocado) seed in fruit	Argentina, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru, Venezuela	40
Sternochetus mangiferae (F.) (Curculionidae)	Mangifera indica (mango)	Africa (country(?)), Australia, Hawaii, India, Philippines	40
Taeniothrips atratus (Hal.) (Thripidae)	Aster sp. (flower) Calluna vulgaris (heather) Centaurea cyanus (cornflower) Chrysanthemum sp. (flower)	Czechoslovakia, Denmark, England, Europe (country (?)), Germany, Ireland, Italy, Poland, Scotland, Sweden,	

Pest	Host	Country of Origin	Number of Interceptions
Taeniothrips atratus - continued	Dahlia sp. (leaf and stem) Dianthus caryophyllus (carnation) Flowers (mixed) Freesia sp. (flower) Gladiolus sp. (flower) Lathyrus odoratus (sweetpea) Lavandula sp. (lavender) Liatris scariosa (tall gayfeather) Mentha sp. (mint) Rosa sp. (rose) flower	Switzerland, unknown	57
Taeniothrips hawaiiensis (Morg.) (Thripidae)	Chrysanthemum sp. (flower) Gardenia jasminoides (flower) Plumeria rubra (Mexican frangipani) Polianthes tuberosa (tuberose)	Hawaii, Japan	62
"Targionia" hartii (Ckll.) (Diaspididae)	Zingiber officinale (ginger)	Fiji, Philippines	33
Theba pisana (Müller) (Helicidae)	Althaea rosea (hollyhock) seed Cedrus sp. (cedar) seed Soil with Hyacinthus sp. (bulb) Tropaeolum sp. (nasturtium) seed	Azores, France, Greece, Italy, Libya, Morocco, Spain, Turkey, United Arab Republic	57
Thrips flavus Schrank (Thripidae)	Flowers - (Bellis perennis, Calluna vulgaris, Chrysanthemum sp., Dianthus caryophyllus, Fuchsia sp., Rosa, sp., and Tagetes sp.).	Czechoslovakia, England, Europe (country(?)), France, Germany, Hungary, Ireland, Netherlands, Norway, Poland, Scotland, Switzerland	42
Trichia hispida (L.) (Helicellidae)	Amorpha fruticosa (indigobush amorpha) seed Buxus sempervirens (boxwood) seed Chrysanthemum sp. Cotinus coggygria (common smoketree) seed Laburnum sp. Rosa sp. Soil with Cotoneaster sp., Iris sp., and Juniperus sp. (plants)	Belgium, England, France, Germany, Ireland, Italy	13
Trogoderma granarium Everts (Dermestidae)	Acacia senegal (gum arabic and gum hashabi) Apium graveolens var. dulce (celery) seed Arachis hypogaea (peanut) Astragalus gummifer (gum tragacanth) Bixa orellana (anatto-tree) seed Cajanus cajan (pigeonpea) Castanea sp. (chestnut) Cicer arietinum (chickpea) Cinnamomum sp. (cinnamon) bark Citrus aurantifolia (lime) dried Coffea sp. (coffee)	Burma, Ceylon, Cyprus, Formosa, Ghana, Guinea, Hong Kong, India, Indonesia, Iran, Iraq, Ivory Coast, Japan, Korea, Lebanon, Malaysia, Mexico, Netherlands, Nigeria, Pakistan, Seychelles, Sudan, Syria, Thailand, United Arab Republic, unknown.	368

Pest	Host	Country of Origin	Number of Interceptions
Trogoderma granarium --continued	Coriandrum sativum (coriander) seed Cucumis sp. (seed) Cuminum cyminum (cumin) seed Cyanopsis tetragonoloba (guar gum) Foeniculum vulgare (fennel) seed Gossypium sp. (cottonseed and raw cotton) Lens culinaris (lentil) Manihot esculenta (common cassava) Oryza sativa (rice) Phaseolus vulgaris (bean) Piper nigrum (black pepper) Pistacia sp. (pistache) nut Pisum sativum (pea) dried Plantago psyllium (husk) Prunus amygdalus (almond) Sterculia urens (gum karaya) Tamarindus indica (tamarind) seed powder Terminalia sp. (myrabolan) nut Theobroma cacao (cacao) bean Zea mays (corn)		
Tydeus kochi Oud. (Tydeidae)	Calluna vulgaris (heather) Chrysanthemum sp. (plant) Citrus sp. (plant) Dianthus sp. (flower) Malus sylvestris (apple) Orchid (flower) Rosa sp. (rose) flower	Argentina, Brazil, England, Nicaragua, Panama, Venezuela	10
Unaspis yanonensis (Kuw.) (Diaspididae)	Citrus aurantifolia (lime) C. aurantium (sour orange C. grandis (pummelo) C. ichangensis X C. reticulata (ichandarin) C. limon (lemon) C. paradisi (grapefruit) C. paradisi X C. reticulata (tangelo) C. reticulata (Mandarin orange) C. sinensis (sweet orange) Citrus sp. Fortunella sp.	Australia, Hong Kong, Japan, Okinawa	424
Vinsonia stellifera (Westw.) (Coccidae)	Broughtonia sanguinea (orchid) Broughtonia sp. (orchid) leaf Epidendrum nocturnum (orchid) leaf Epidendrum sp. (leaf) Gardenia jasminoides Ionopsis sp. (orchid) leaf Ixora sp. (leaf) Oncidium luridum (orchid) O. papilio (butterfly orchid) Oncidium sp. (orchid) leaf Orchid Phaius sp. (orchid)	Bahamas, Brazil, British Guiana, British Honduras, Canal Zone, Colombia, Costa Rica, Dominica, Dominican Republic, Guatemala, Jamaica, Panama, Puerto Rico, Surinam, Trinidad, Venezuela	58

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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 April 8, 1966 Number 14

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG locally heavy and damaging small grains in areas of Texas, Oklahoma and Arkansas. ARMYWORM larvae active on oats in Florida (p.273), also see light trap reports (p. 285). EUROPEAN CORN BORER spring survival 82.5 percent in Illinois; pupation noted in Delaware. (p. 273). Economic infestations of BROWN WHEAT MITE in wheat in Oklahoma and Texas.

ALFALFA WEEVIL adults active in West and in Missouri; larval counts high in Mississippi and increasing in Maryland; eggs hatching in Maryland and Ohio. New alfalfa seedings heavily infested in Kentucky, will require control. (p. 274). A WEEVIL (Hypera brunneipennis) damaging first and second-growth alfalfa in Arizona; definite threat to first and second cuttings in California. (p. 275).

First seasonal activity of CEREAL LEAF BEETLE noted March 10 in Michigan. Large-scale egg deposition likely to be delayed until early May. (p. 281). HORN FLY appearing in Oklahoma, increasing in Mississippi (p. 280).

Predictions

ALFALFA WEEVIL expected to cause severe damage to first cutting of alfalfa in extreme southeastern counties of Missouri. (p. 274).

Detection

- A SEED MIDGE (Stenodiplosis bromicola), new to North America, found infesting smooth bromegrass in southern Nebraska. Pest widespread in USSR where it is a serious pest of bromegrass seed production. Literature references given. (p. 283).

For new State and county records, see page 284.

Special Reports

Reports in this issue are for week ending April 1 unless otherwise indicated.

CONTENTS

WEATHER BUREAU'S 30-DAY OUTLOOK

April 1966

The Weather Bureau's 30-day outlook for April calls for temperatures to average below seasonal normals in the eastern half of the Nation except for near to above normal in South Atlantic Coast States. Over the western half of the Nation temperatures are expected to average above normal in the Intermountain Region and the Pacific Coast as well as western portions of the Northern Plains, but below normal in the Southern Plains. Precipitation is predicted to be subnormal from the Northern and Central Plains westward to the Pacific Coast and also along southern portions of the Pacific Coast. Above normal rainfall totals are called for over the Gulf and South Atlantic Coast Regions while near normal amounts are indicated in unspecified areas.

Weather continued on page 285.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - ARKANSAS - Local, heavy population seriously injured oats in north Logan County. (Barnes). Surveys negative on university farm near Fayetteville, Washington County. No aphid species found in appreciable numbers in northwest. (Boyer). OKLAHOMA - Ranged 17-55 per linear foot in wheat in Greer, Jackson, Tillman and Comanche Counties. Heavy in Cotton County and local areas in northwest, north central and central areas. Highest counts reached 3,000 per linear foot in eastern Major County. Damage very severe in local areas. Ranged 50-350 per linear foot in many fields in Garfield, Noble, Payne and Logan Counties. Moderate in Woodward County, light in Garvin County. Control operations widespread in many areas but hampered by high winds and cold weather. (Okla. Coop. Sur.). TEXAS - Ranged light to moderate throughout panhandle on wheat. Heavy in some fields; averaged 1,000 per foot around Tulia, Swisher County; ranged 1,500-2,000 at Hillsboro, Hill County, and 1,000-2,000 in Smith County. Damaging numbers reported in Bell County. (Parker).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Light to moderate in small grains throughout Yuma, Maricopa, Pinal and Graham Counties. (Ariz. Coop. Sur.).

ARMYWORM (Pseudaletia unipuncta) - FLORIDA - May be increasing in oats at Gainesville, Alachua County; 12 larvae taken in 100 sweeps March 30. (Mead). ARKANSAS - Moths observed around city lights on nights when temperature 45°F. or above. (Boyer).

SPOTTED ALFALFA APHID (Therioaphis maculata) - UTAH - Rare in alfalfa in Santa Clara, Washington County. (Knowlton).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - Overwintering larvae pupating March 29 in Sussex County. (Burbutis). ILLINOIS - Average percent winter survival survey results as follows: 90.7 in east district and 80.0 in northwest district. Borer populations in northeast and central districts were so low that survival could not be established. State average for borer survival this spring is 82.5 percent. (White). MISSOURI - Spring survey in New Madrid County March 18-19 showed average of 1,762 borers per acre. Of 23 fields checked, ranged 200-15,667 per acre in 15 fields; none found in 8. (Keaster).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - MISSOURI - Winter survival negative in 3 of 4 New Madrid County fields March 18; survival 26.1 percent in 1 field with sandy loam soil. Fields with no survival disked during fall. (Keaster).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae)- FLORIDA - Increase evident; averaged 125 per 100 sweeps of oats at Gainesville, Alachua County. (Mead). MISSOURI - Remains light on small grains in southeast; 1-5 per foot of row. (Houser). MARYLAND - Averaged 25 per 100 sweeps on young barley at Cambridge, Dorchester County. (U. Md., Ent. Dept.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - TEXAS - Decreasing throughout Panhandle due to weather, plant stage, and high populations of Lysiphlebus testaceipes (a braconid wasp). (Parker).

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Ranged up to 300 per linear foot in scattered wheat fields in Payne, Noble, Garfield, Kiowa, Jackson, Major and Logan Counties. Normally averages 30 or less per linear foot. (Okla. Coop. Sur.).

GRANULATE CUTWORM (Feltia subterranea) - ARIZONA - Light and scattered in barley in Casa Grande and Eloy areas, Pinal County. (Ariz. Coop. Sur.).

BROWN STINK BUG (Euschistus servus) - FLORIDA - Five adults taken per 100 sweeps in oats at Gainesville, Alachua County. Some eggs noted. (Mead).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Up to 2,000 per linear foot in wheat on lighter soils in Major County; moderate to heavy (up to 300 per linear foot) in many areas of Tillman, Cotton, Comanche, Noble, Grant, Payne and Logan Counties. Some fields sprayed. (Okla. Coop. Sur.). TEXAS - Built up to economically significant infestations on wheat; some damage in Ochiltree, Lipscomb, Roberts, Hemphill, Gray and Wheeler Counties. (Parker).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Present in many wheat fields in northwest, north central and central areas; damage slight. (Okla. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - GEORGIA - Five sweeps of alfalfa yielded 277 larvae in Houston County. (Tippins). MISSISSIPPI - Continues high. Larvae averaged 180 per square foot in Pontotoc County alfalfa. All larval stages observed. First-generation adults apparently emerging over State. (Dinkins et al.). ARKANSAS - Two larvae collected April 1 in 175 sweeps of 15-inch net on university farm near Fayetteville, Washington County. Det. by J. R. Phillips. Also found in Clay and Chicot Counties March 30. These are new county records. The Washington County record means H. postica spread completely across State in 3 years. Larvae averaged 10 per square foot in Marion County and 21 per square foot in Mississippi County. Surveys negative in Boone County. (Boyer et al.). MISSOURI - Cold weather and frost slowed activity in southeast. Damaged terminals ranged 5-45 percent but actual damage remains light. Overwintering adults active; 4-200 per 100 sweeps in 4-8 inch high alfalfa. Severe damage anticipated on first cutting in many fields in extreme southeastern counties. (Houser, Jones). KENTUCKY - Development and damage ceased due to low temperatures. Many small larvae in alfalfa buds; about 5-10 percent killed by low temperatures. New eggs found in hollow stems of new alfalfa growth; will hatch in about 7 days. Egg laying will continue through first cutting. Fewer weevils and less damage found in fields grazed or cut during late fall or winter months. Many new seedings heavily infested; will need spraying soon. (Miller). OHIO - Eggs hatching in Meigs and Lawrence Counties. (Niemczyk, Flessel). VIRGINIA - Present in all alfalfa checked; 12-120 larvae per 100 sweeps in Culpeper, Orange, Madison, Louisa, Fluvanna, Albemarle and Nelson Counties. Most in first and second instars. Alfalfa 4-7 inches high. (Isakson). MARYLAND - Adults active; laying eggs in alfalfa stems in most sections. First and second-stage larvae light but increasing in Dorchester and Talbot Counties. (U. Md., Ent. Dept.). DELAWARE - Young larvae common on alfalfa in Kent County; 2 per stalk in one field. (Burbutis). NEW JERSEY - Small larva noted in Salem County alfalfa. (Ins.-Dis. Newsltr.). MASSACHUSETTS - No evidence of overwintering eggs or spring oviposition April 1 in Hampden County. (Shaw). COLORADO - Adults active on alfalfa in Weld County. (Jenkins, Johnsen). UTAH - Adults active on warm days at Logan, Cache County. (Knowlton). NEVADA - Adults active and mating in Churchill, Douglas, Lyon, Pershing and Washoe Counties; no eggs found. (Coop. Rpt.). IDAHO - Adults first observed at Parma, Canyon County, March 17. (Waters). Considerable adult activity in several Bonneville County fields. Averaged 5-6 per square foot in fields in which plants just breaking dormancy, March 29. (Paulson).

CLOVER LEAF WEEVIL (Hypera punctata) - MARYLAND - Larvae causing conspicuous foliage injury on red clover in Queen Annes and Talbot Counties. (U. Md., Ent. Dept.). MISSOURI - Young larvae ranged 0-5 per square foot in alfalfa in southeast and east central districts. Damage very light on 0-2 percent of plants. (Houser). OKLAHOMA - Larvae light in alfalfa in Beckham and Kiowa Counties. (Okla. Coop. Sur.).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Larvae heavily damaging 200-acre field of crimson clover in Montgomery County on farm where similar condition existed in 1964. Controls applied. (Williamson).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - UTAH - Larvae severely damaged red clover at Altonah, Duchesne County, June 18, 1965; unusual record for State. Det. by D. M. Anderson. This is new county record. (Knowlton).

WEEVILS (Hypera spp.) - CALIFORNIA - Survey in Strathmore-Porterville area, Tulare County, showed 24-60 H. brunneipennis adults per 100 sweeps in alfalfa. Larvae common, but peak not reached. Heavy adult populations mean egg laying continuing. This species definite economic threat to first and second alfalfa cuttings. Bathyplectes curculionis (an ichneumon wasp) present in low numbers. This is valley area where H. postica (alfalfa weevil) and H. brunneipennis meet. (van den Bosch, Lagace). ARIZONA - Hypera brunneipennis heavy and damaging second-growth alfalfa in Yuma County areas. Continued increases in Buckeye, Goodyear, Tolleson, Peoria, and Baseline Road areas heavily damaging first-growth alfalfa in Maricopa County. (Ariz. Coop. Sur.).

CLOVER ROOT CURCULIO (Sitona hispidula) - MARYLAND - First adults of season swept from alfalfa at Cambridge, Dorchester County, March 29. (U. Md., Ent. Dept.).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - OKLAHOMA - Averaged 1.5 per 10 sweeps in alfalfa in Greer County. First report of year. (Okla. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Occasional larva noted in alfalfa in Dona Ana and Chaves Counties. (N. M. Coop. Rpt.).

CUTWORMS - OHIO - Amathes c-nigrum larvae active on alfalfa February 11 at Carpenter; nearly full grown March 21. (Rings). ARIZONA - Spodoptera exigua increasing in alfalfa in Gila and Yuma Valleys, Yuma County; 40-130 per 100 sweeps. Feltia subterranea light and scattered in alfalfa in Casa Grande and Eloy areas, Pinal County. (Ariz. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - MARYLAND - Ranged 1-7 per sweep on alfalfa in Dorchester and Talbot Counties. Light on red clover in Queen Annes and Talbot Counties. (U. Md., Ent. Dept.). VIRGINIA - Light in all alfalfa checked in Culpeper, Orange, Madison, Louisa, Fluvanna, Albemarle and Nelson Counties; 20-400 per 100 sweept (average 120). (Isakson). INDIANA - Apterous adults ranged 4-10 per 100 sweeps on alfalfa in Johnson County. (Huber). MISSOURI - Light (200 per 100 sweeps) in the southeast; building up. (Houser). OKLAHOMA - Ranged 150-250 per 10 sweeps in alfalfa checked in Tillman and Greer Counties; light to moderate (up to 50 per 100 sweeps) in Kiowa, Comanche, Beckham, Garvin, Kingfisher and Payne Counties. (Okla. Coop. Sur.). ARKANSAS - Very light (100-300 per 100 sweeps) in Boone and Washington Counties. (Roberts, Boyer). MISSISSIPPI - Total of 38 adults and nymphs taken in 50 sweeps of alfalfa in Oktibbeha County. (Dinkins et al.). NEW MEXICO - Very light to light in alfalfa checked in Bernalillo, Sandoval and Chaves Counties. (Kloepfer, Heninger, Mathews). UTAH - Numerous on alfalfa in St. George-Santa Clara area, Washington County. (Knowlton). WASHINGTON - Adults and third-instar overwintering forms (most parasitized) averaged 5 per sweep in Pasco, Benton County. Ranged 1-2 per sweep in Walla Walla, Walla Walla County; present in 3 of 15 fields checked. (Halfhill).

TARNISHED PLANT BUG (Lygus lineolaris) - MARYLAND - First adults of season swept from red clover at Easton, Talbot County, March 29. (U. Md., Ent. Dept.). INDIANA - Adults averaged 20 per 100 sweeps in central and south central area alfalfa. (Huber). ARKANSAS - Ranged 5-10 per 100 sweeps in Washington County alfalfa. (Ark. Ins. Sur.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Averaged 0-12 per 100 sweeps in Artesia area, Eddy County; 0-18 in Roswell area, Chaves County. (Mathews). COLORADO - Active on alfalfa in Weld County. (Jenkins, Johnsen). NEVADA - Adults common in

alfalfa in Churchill, Douglas, Lyon, Pershing and Washoe Counties; very numerous on range plants. (Coop. Rpt.)..

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - NEW MEXICO - Populations higher in alfalfa than in previous years in numerous southern Dona Ana County fields; 12-56 adults per 100 sweeps. (Nielsen, Elson).

THRIPS - NEW MEXICO - Very abundant in much alfalfa in southern Dona Ana County; light in Chaves County. (N. M. Coop. Rpt.).

PEANUTS

WHITE GRUBS - GEORGIA - Heavy in land being prepared for peanuts in Randolph County. (Peters).

TOBACCO

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Larvae moderate in plant beds in southern area. (French et al.).

GREEN PEACH APHID (Myzus persicae) - FLORIDA - Infesting 1 percent of 40 acres of tobacco at farm in Seville, Volusia County. (Pott, Roberts, Mar. 23).

MISCELLANEOUS FIELD CROPS

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Increasing slowly in safflower throughout Yuma and Maricopa Counties. Winged forms becomming predominant in fields. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Moderate numbers causing light damage to seedling safflower in southern and eastern Maricopa County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (Myzus persicae) - FLORIDA - Light in 15-acre commercial planting of pepper in Delray Beach, Palm Beach County. (Genung, Mar. 27).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - First-instar nymphs increasing on potatoes throughout Maricopa County. Egg counts continue high. (Ariz. Coop. Sur.).

COLE CROPS

DIAMONDBACK MOTH (Plutella maculipennis) - FLORIDA - Moderate on acre of experimental cabbage at Belle Glade, Palm Beach County. Very few noted in commercial plantings. (Genung, Mar. 24).

LYGUS BUGS (Lygus spp.) - UTAH - Numerous on Sophia spp. and other mustards in St. George-Santa Clara area, Washington County; 80 percent L. elisus. (Knowlton).

DECIDUOUS FRUITS AND NUTS

EASTERN TENT CATERPILLAR (Malacosoma americanum) - NORTH CAROLINA - Larvae appearing on wild cherry tree in Wake County March 25, leaves just beginning to bud at time of hatching. (Greene). TENNESSEE - Eggs hatching across State. (Mullett). GEORGIA - Infesting wild cherry, apple and crab apple trees over State. (Coleman).

ARKANSAS - Egg hatching began March 18 in south section. (Warren). OKLAHOMA - Light on wild plum and other trees in northwest, north central and central areas. (Okla. Coop. Sur.).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - INDIANA - Adults active in Vincennes area, Knox County; no egg masses observed. (Cleveland, Dolphin).

PECAN LEAF CASEBEARER (Acrobasis juglandis) - GEORGIA - Larvae active, buds opening at Albany. (Osburn).

FRUITWORMS - OHIO - Eupsilia sp. and Lithophane sp. moths active in Cincinnati area in March; active at Wooster, March 1. Many eggs deposited March 23. Orthosia hibisci moths emerged March 14; still emerging April 1. (Rings).

PLUM CURCULIO (Conotrachelus nenuphar) - GEORGIA - First adult jarred from peach tree near full bloom in Fort Valley March 21. (Jacklin).

APPLE APHID (Aphis pomi) - DELAWARE - Noted on apple buds in Kent and Sussex Counties. (MacCreary). INDIANA - Egg hatch nearly complete in Vincennes area, Knox County; aphids feeding on apple buds during warm weather. (Cleveland, Dolphin).

AN APHID (Anuraphis helichrysi) - UTAH - Numerous on plums in St. George-Santa Clara area, Washington County. (Knowlton).

SAN JOSE SCALE (Aspidiotus perniciosus) - TEXAS - Locally damaging on peaches near Gonzales, Gonzales County. (Stockton).

WOOLLY APPLE APHID (Eriosoma lanigerum) - UTAH - Numerous on apples in St. George-Santa Clara area, Washington County. (Knowlton). ARIZONA - Light on apple trees in Graham County. (Ariz. Coop. Sur.).

EUROPEAN RED MITE (Panonychus ulmi) - MARYLAND - Eggs moderate on apple tips at Fairland, Montgomery County. (U. Md., Ent. Dept.).

A SPIDER MITE (Bryobia sp.) - CALIFORNIA - Eggs and immatures heavy on peach trees in Banning, Riverside County. (Cal. Coop. Rpt.).

CITRUS

CALIFORNIA RED SCALE (Aonidiella aurantii) - ARIZONA - Two additional infestations found in backyard plantings in city of Yuma. Intensive surveys continue in Yuma County to delimit infested areas. (Ariz. Coop. Sur.).

GRAPE FLEA BEETLE (Altica chalybea) - ARIZONA - Rapid increase in adult activity required controls in some areas of western and central Maricopa County. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Increasing rapidly on citrus in Yuma and Maricopa Counties. Control necessary. (Ariz. Coop. Sur.).

CITRUS RED MITE (Panonychus citri) - FLORIDA - Moderate on leaves of 375 of 500 sweet orange (Citrus sinensis) plants in nursery at Wimauma, Hillsborough County. (Simmons, Mar. 22).

GENERAL VEGETABLES

DESERT CORN FLEA BEETLE (Chaetocnema ectypa) - ARIZONA - Heavy numbers damaging very young lettuce in Salt River Valley area, Maricopa County. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Continues light to moderate in Pinal and Maricopa Counties. Controls necessary in some fields. (Ariz. Coop. Sur.).

CUTWORMS - FLORIDA - Heavy under lettuce plants in 80-acre commercial planting at Belle Glade, Palm Beach County. Agrotis ipsilon and Feltia subterranea present in ratio of 4 to 1 in random sample. Most A. ipsilon late stages; F. subterranea younger stages. (Genung). ARIZONA - Spodoptera exigua light on lettuce from Peoria to Goodyear, Maricopa County. (Ariz. Coop. Sur.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Larvae infesting spinach plantings in few locations in Fresno, Fresno County. (Cal. Coop. Rpt.).

APHIDS - CALIFORNIA - Capitophorus elaeagni and Myzus persicae heavy on artichoke garden in Pescadero, San Mateo County. (Cal. Coop. Rpt.). WASHINGTON - Several apterous stages of Myzus persicae on common yarrow. First instance of summer forms collected at Othello, Adams County February 23. (Powell).

THRIPS - NEW MEXICO - Probably Frankliniella occidentalis apparently continues buildup on most onions checked in southern Dona Ana County. (Elson, Nielsen).

AN ACARID MITE (Tyrophagus dimidiatus) - CALIFORNIA - Medium on spinach plantings in Sanger, Fresno County. (Cal. Coop. Rpt.).

ORNAMENTALS

CHRYSANTHEMUM APHID (Macrosiphoniella sanborni) - ARIZONA - Increasing on ornamentals throughout most of Maricopa County. (Ariz. Coop. Sur.).

DOGWOOD BORER (Thamnosphecia scitula) - MARYLAND - Severely injured dogwood at Laurel, Prince Georges County. (U. Md., Ent. Dept.).

A BLASTOBASID MOTH (Holcocera iceryaeella) - CALIFORNIA - Larvae medium on leaves of spruce tree nursery stock in Mountain View, Santa Clara County and infesting seed head on dracaena palm in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

A CHRYSAUGID MOTH (Galasa nigrinoides) - VIRGINIA - Larvae and heavy webbing on boxwood at Halifax, Halifax County. (Isakson, Reynolds).

ELM LEAF BEETLE (Pyrrhalta luteola) - OKLAHOMA - Adults emerged from winter quarters in Major County. (Okla. Coop. Sur.). NEW MEXICO - Adults emerging from sheltered areas; becoming nuisance. (Heninger).

CONIFER APHIDS (Cinara spp.) - NEVADA - First-stage nymphs of Cinara sp. emerging on spruce in Yerington, Lyon County; infestations light. (Bechtel, Cooney). C. tujafilina heavy on arborvitae nursery stock brought in from out-of-State. (Hilbig).

FLORIDA RED SCALE (Chrysomphalus aonidum) - FLORIDA - Severe on leaves of 200 sago palm (Cycas revoluta) plants in nursery at Miami, Dade County. (Meyer, Mar. 21).

AN ARMORED SCALE (Diaspis boisduvalii) - CALIFORNIA - Heavy on chamaerops nursery stock in Saratoga, Santa Clara County. (Cal. Coop. Rpt.).

A MEALYBUG (Rhizoecus pritchardi) - PENNSYLVANIA - Heavy on 300 potted St. Paulia plants in Schuylkill County. Det. by R. J. Snetsinger. (Gesell).

MEALYBUGS - CALIFORNIA - Trionymus diminutus eggs, nymphs and adults heavy on New Zealand flax nursery stock in San Jose, Santa Clara County. Pseudococcus microcirculus heavy on cattleya orchids in orchid garden in Larkspur, Marin County. (Cal. Coop. Rpt.).

RASPBERRY SAWFLY (Monophadnoides geniculatus) - CALIFORNIA - Larvae medium on wild blackberry plants in Pacific Palisades, Los Angeles County. (Cal. Coop. Rpt.).

SOUTHERN RED MITE (Oligonychus ilicis) - FLORIDA - This and Brevipalpus phoenicis severe on leaves of 204 Viburnum odoratissimum plants in inspected nursery at Ruskin, Hillsborough County. (Hale).

A SPIDER MITE (Eotetranychus libocedri) - CALIFORNIA - Eggs, nymphs and adults heavy on twisted juniper tree nursery stock in Santa Paula, Ventura County. (Cal. Coop. Rpt.).

AN ERIOPHYID MITE (Eriophyes buceras) - FLORIDA - Damaged leaves of black olive (Bucida buceras) in Miami area, Dade County. (Dillon, Mar. 8).

A SNAIL (Rumina decollata) - CALIFORNIA - Heavy in lawns, shrubs and ground areas locally in Bakersfield, Kern County. This is a new county record. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - OKLAHOMA - Overwintering generation emerging from pines in Payne County. (Okla. Coop. Sur.). GEORGIA - First-generation larvae feeding on pines in Clarke County. (Coleman).

SPRUCE NEEDLE MINER (Taniva albolineana) - NEVADA - Surveys negative in Churchill, Lyon and Storey Counties. (Bechtel, Cooney).

AN APHID (Essigella californica) - CALIFORNIA - Adults locally heavy on pine trees in Ojai, Ventura County. (Cal. Coop. Rpt.).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - MARYLAND - Heavy on several large white pines at Laurel, Prince Georges County. (U. Md., Ent. Dept.). NEVADA - Heavy on older spruce trees in Yerington, Lyon County. (Bechtel, Cooney).

SPRING CANKERWORM (Paleacrita vernata) - MINNESOTA - Moths, probably this species, observed flying week of March 21 in Minneapolis. (Minn. Ins. Rpt.).

A LEAF-MINING WEEVIL (Odontopus calceatus) - TENNESSEE - Ground trash surveys in Union County indicate adult numbers vary 28,000 to 400,000 per acre. (Stanley).

EUROPEAN FRUIT LECANIUM (Lecanium corni) - PENNSYLVANIA - Overwintering crawlers heavy on last year's growth on oaks and sassafras in Pike, Monroe, Northampton and Wayne Counties. Det. by G. Sleesman. (Jeffery, Mar. 23).

A PIT SCALE (Asterolecanium minus) - PENNSYLVANIA - Damaging red, white and chestnut oaks at scattered locations in Pike County. Damage heavy on white and chestnut oaks. Det. by G. Sleesman. (Jeffery, Mar. 23).

AN ERIOPHYID MITE (Aceria mackiei) - CALIFORNIA - Medium on oak trees in Contra Costa County. (Roberts).

MAN AND ANIMALS

MOSQUITOES - FLORIDA - Light trap collections at 43 locations indicate Aedes taeniorhynchus most abundant in southwest at Everglades City and Naples, Collier County, and at Ft. Myers Beach, Lee County. Highest count March 15 was 720 females at Everglades City. (Fla. State Board Health). Most temporary woodland pools dried up at Gainesville; one nearly dry remnant showed Culex restuans larvae and pupae most abundant; several Culex salinarius larvae taken. (Mead). ALABAMA - Larvae very noticeable in water cans and old automobile tires in central section. (McQueen). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control for period ending March 25 contained Culex salinarius and Culiseta inornata. Culex salinarius increased in light trap collections. (Stokes). OKLAHOMA - Culiseta inornata fourth-stage larvae present in permanent pools in Stillwater area, Payne County. (Okla. Coop. Sur.). NEVADA - Culex tarsalis adults active during evenings in southern Washoe County due to unseasonably warm weather. (Coop. Rpt.). MINNESOTA - First larvae found March 9. Larvae now in first and Control District. Previous earliest record March 9. Larvae now in first and early second stages. Specimen brought into laboratory to accelerate development determined as Aedes excrucians. General reduction in larval populations occurred following 14-inch snowfall March 23. In some breeding sites, 25 percent of larvae survived even though sites completely filled with snow. (Minn. Ins. Rpt.).

A BITING MIDGE (Culicoides niger) - FLORIDA - Caused considerable annoyance to residents in surburban area of Gainesville, Alachua County. Det. by F. S. Blanton. Several persons forced inside homes during evening. Several dozen noted around single individual. Flies had tendency to get in hair and bit scalp and back of neck. (Mead).

HORN FLY (Haematobia irritans) - OKLAHOMA - Moderate on cattle in Seminole County. First report of year. (Okla. Coop. Sur.). MISSISSIPPI - Increasing throughout State. Averaged 10 per animal on 27 head of cattle in Jefferson Davis County; increase from 3 per animal previous week. Average 9 per animal on 16 head of cattle in Grenada County; averaged 11 per animal on 15 head in Webster County. (Dinkins et al.).

FACE FLY (Musca autumnalis) - IDAHO - Hibernating adults observed emerging during most of winter in home at St. Maries, Benewah County. Benewah new county record. This second record for State. (Ducommun).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - First adults of season moderate on cows in Seminole County. (Okla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - Bovicola bovis, Linognathus vituli, Haematopinus eurysternus and Solenopotes capillatus moderate to heavy on cattle in Garvin and Cotton Counties. (Okla. Coop. Sur.). MISSISSIPPI - Heavy on 6 of 16 animals observed in Jefferson Davis County. (Dinkins et al.). ALABAMA - B. bovis and some blood sucking species seriously affecting about 12 percent of cattle in Bibb County. Damage most noticeable where feed short and cattle in poor condition. Lesser numbers reported in Lee County. (Odom, Teague).

HOUSEHOLDS AND STRUCTURES

A CLOTHES MOTH (Niditinea fuscipunctella) - NORTH CAROLINA - Adults collected in Wake County home January 5. Det. by D. R. Davis. According to available records, this is first report of this cosmopolitan species in State. (Mount, Mar. 18).

A POWDER-POST BEETLE (Trogoxylon prostomoides) - ILLINOIS - Apparently established in oak flooring in home in Rockford, Winnebago County. Det. by T. J. Spilman. First reported in December 1965, but apparently present when present owner purchased home 6 years before. Source of infestation unknown. Treatment applied. (Johnston, USFS). T. prostomoides is native of Mexico and Central America; occasionally intercepted in imported woods at Ports of Entry. This is a new State record. (PPC).

CLOVER MITE (Bryobia praetiosa) - MARYLAND - Entering homes and annoying occupants in Cecil, Montgomery, and Prince Georges Counties. (U. Md., Ent. Dept). NORTH CAROLINA - Continues to be problem to homeowners in Washington, Guilford, Martin and Wake Counties. (Scott, Wray). TENNESSEE - Troublesome and widespread around homes across State. (Mullett). ARIZONA - Entering homes in Yuma, causing problem to homeowners throughout city. (Ariz. Coop. Sur.). CALIFORNIA - Heavy migration of adults infesting residence in Fremont, Alameda County. (Cal. Coop. Rpt.). NEVADA - Large numbers continue to enter homes and other buildings in Reno-Sparks area, Washoe County. (Arnett). IDAHO - Entered several households in Moscow area, Latah County. (Castellaw).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - Hippodamia convergens most common aphid predator in wheat in western part of State. Present in most fields. Common in alfalfa in southwest. (Okla. Coop. Sur.).

DAMSEL BUGS (Nabis spp.) - ARKANSAS - Numbers lower than 2-3 weeks ago, probably due to cold weather. Increase expected. (Boyer).

AN ANTHOCORID BUG (Orius insidiosus) - ARKANSAS - First specimen of season taken April 1 in Washington County alfalfa. (Boyer).

A BRACONID WASP (Aphidius sp.) - WASHINGTON - Apparently parasitized overwintering Acyrthosiphon pisum (pea aphid); 1-10 mummified aphids per square foot on alfalfa foliage in Pasco area near Wallula Junction, Benton County. (Halfhill).

General Beneficial Insects: VIRGINIA - Predators less common than expected in alfalfa, probably due to cold weather. However, some LADY BEETLES and Nabis sp. observed. (Isakson). MISSISSIPPI - Populations increasing as temperature continues to rise; 5 Hippodamia convergens, 19 Nabis spp., 1 Scymnus sp., 1 Geocoris sp., 1 unidentified lady beetle larva and 25 parasitic Hymenoptera taken in 50 sweeps in Oktibbeha County alfalfa. (Dinkins et al.). MISSOURI - Very low numbers present in small grains and alfalfa in the east central and southeastern districts. Species present were GOLDEN-EYE LACEWING (Chrysopa oculata), CONVERGENT LADY BEETLE (Hippodamia convergens) LADY BEETLE (Ceratomegilla maculata), and a damsel bug. (Houser).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - MICHIGAN - Only slight field activity of overwintering adults observed. First seasonal activity noted March 10 in research woodlots near Galien, Berrien County; temperatures in 50's. No flight yet observed. Large-scale movement from overwintering sites not expected before daytime temperatures exceed 50° for sustained period. First eggs expected about one week after adults move from overwintering quarters. Large-scale egg deposition will likely be delayed until early May or at least two weeks after mass movement from overwintering sites. (Gomulinski).

AN ERIOPHYID MITE (Eriophyes insidiosus) - CALIFORNIA - This vector of peach mosaic light on flowering peach trees in Tulare, Visalia and Porterville, Tulare County. Disease not known to occur in area. (PPC)

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Few adults reared from fruits of dooryard grapefruit (Citrus paradisi) at 3 locations in Miami area; fruits collected February 11 and 14. Some specimens det. by R. H. Foote. (Swanson).

GRASSHOPPERS - OKLAHOMA - Egg surveys in rangeland and cropland areas of Roger Mills, Beckham, Washita and Kiowa Counties showed average of 1 egg pod per square foot at rangeland stops. None found in stops at crop margins. Egg pods examined

at a Beckham County stop showed slight development. Light numbers of young nymphs found in alfalfa margins in Kiowa County. (Okla. Coop. Sur.).

LEAFHOPPERS - GEORGIA - Vectors of phony peach disease collected from peach trees in Fort Valley. (Jacklin).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period March 27-April 2, one case was reported in the United States in Hidalgo County, TEXAS. The Republic of Mexico reported 73 cases as follows: Sonora 54, Territorio sur de Baja California 5, Chihuahua 6, Nuevo Leon 1, Coahuila 1 and Tamaulipas 6. Sterile screw-worm flies released: Texas 14,586,250, Arizona 1,200,000 and Mexico 86,220,800.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	5	12	230	931	2.17	1.28
1965	0	4	45	615	0.00	0.65
1966	1	28	63	364	1.58	7.69
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	57	572	34	367	167.64	155.85
1966	74	526	86	308	86.04	170.77

Mexico Field Study - No report received for this period.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

SOME FIRST APPEARANCES OF SEASON

Armyworm larvae in Florida; adults in Arkansas. Clover root curculio in Maryland. Spotted cucumber beetle in Oklahoma. Spotted cutworm in Ohio. Tarnished plant bug in Maryland. Red-banded leaf roller adults in Indiana. Apple aphid in Delaware and Indiana. Nantucket pine tip moth in Oklahoma. Mosquito larvae in Minnesota. Horn fly, common cattle grub adults and grasshopper nymphs in Oklahoma. An anthocorid bug (Orius insidiosus) in Arkansas.

INSECT DETECTION

A Seed Midge New to North America

Adults swept and reared from bromegrass seed heads in Lancaster County, Nebraska, in June 1965 identified as Stenodiplosis bromicola Marikovskii and Agafonova by R. J. Gagne'. Evidence of midge infestation was found in 10 of 11 samples of smooth bromegrass seeds collected along southern border of Nebraska. Infestation rate was seldom high; highest level of damage 11.4 percent (Lancaster County). This species is widespread and a serious pest of bromegrass seed production in USSR and not previously known to occur in North America. Damage to smooth bromegrass heads has been reported over a wide area in the past: From Lafayette, Indiana, to Mandan, North Dakota, and Stillwater, Oklahoma. Principal damage was to Bromus inermis, but damage to B. anomalus, B. kalmii, B. ciliatus and B. purgans was also observed. (Manglitz, Neiman).

There are only two readily available literature references on this pest. These are abstracts in The Review of Applied Entomology. One is found in Ser. A. 50(10): 542, 1962: "Marikovskii (P. I.) & Agafonova (Z. Ya.). A new species of gall-midge (Diptera, Itonididae), injuring brome grass, and certain features of its bionomics. (In Russian.)--Rev. Ent. URSS 40 pt. 2 pp. 272-274, 1 fig. Leningrad, 1961. Descriptions are given of the adults of both sexes of Stenodiplosis bromicola, sp.n.. which was found in 1956 infesting the inflorescences of grasses of the genus Bromus, including the cultivated B. inermis and B. riparius, near Kursk and in other parts of the Soviet Union. Infestation reached 60 per cent. in B. riparius and 100 per cent. in B. inermis. The Cecidomyiid overwintered as larvae in diapause in cocoons in fallen seeds and flowers in the field and also in storehouses; such larvae remained viable for up to two years. The females laid 80-100 eggs each, in the flowers, usually singly, and the larvae fed on the ovaries. In unfertilised flowers, they pupated without forming a cocoon and the adults emerged soon after, but in fertilised ones their development was retarded and they spun cocoons, in which they overwintered. Adults were first observed in mid-May, full-grown larvae and pupae in early June and overwintering larvae in cocoons about the beginning of July. Mass emergence of first-generation adults occurred on 15th-21st June, and the females oviposited in withering flowers of late-developing plants. The adults of the second and third generations emerged in July and early August, respectively. In the laboratory, males lived for 1-2 and females for 2-3 days. Late varieties were most heavy attacked."

The second reference is also in Rev. Appl. Ent. as follows: Ser. A. 51(2): 74, 1963. Agafonova, Z. Ya. 1962. The development of the midge Stenodiplosis bromicola Mar. and Ag. (Diptera, Itonididae) in relation to pecularities of the biology of brome grasses (Bromus inermis Leyss. and Bromus riparius Rehm.). Rev. Ent. URSS 41(1):22-39, 1962. In Rus., Engl. sum., 16 figs, 37 refs.

Studies are being continued by Manglitz and Neiman on biology and ecology of this insect. Cooperators should be alert for occurrence of S. bromicola in their areas this coming season. (PPC).

CLOUDY-WINGED WHITEFLY (Dialeurodes citrifolii) - HAWAII - Medium on citrus in Hilo, Hawaii Island. Det. by L. M. Russell. This is new State record. (Chong, Yoshioka). (p. 286).

A CLOTHES MOTH (Niditinea fuscipunctella) - NORTH CAROLINA - Adults collected in Wake County home and determined by D. R. Davis. Apparently first record of this species in State, according to available records. (Mount). (p. 280).

A POWDER-POST BEETLE (Trogoxylon prostomoides) - ILLINOIS - Apparently established in oak flooring in home in Rockford, Winnebago County. (Johnston). This is a new State record. (PPC). (p. 280).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Found for first time in Washington, Clay and Chicot Counties. Has spread across State in 3 years. (Boyer et al.). (p. 274).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - UTAH - Larvae severely damaged red clover in Duchesne County June 18, 1965. This new county record and unusual for State. (Knowlton). (p. 275).

FACE FLY (Musca autumnalis) - IDAHO - Adults emerged during most of winter in home in St. Maries, Benewah County. This new county record. (Ducommun). (p. 280).

A SNAIL (Rumina decollata) - CALIFORNIA - Reported for first time in Kern County. (Cal. Coop. Rpt.). (p. 279).

CORRECTIONS

CEIR 16(12):231 - Paragraph 4, line 7 - Chrysodeixis chalcites should read Anomis flava (Haw. Ins. Rpt.).

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, P = pheromone, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA																								
Gainesville 3/29-31			BL	1					19															
Gainesville 3/31			BL						3															
GEORGIA																								
Tifton 3/23-30	37-67	0	BL							1														
MISSISSIPPI																								
Stoneville 3/24-30	26-80	0.08	BL	2													26		32					
Rolling Fork 3/24-30			BL														4		5					
Tunica 3/24-30			BL	7													21		11					
SOUTH CAROLINA																								
Charleston 3/25-4/3	34-80	0.40	BL	2					2										4					
TEXAS																								
Brownsville 3/26-4/4	51-83	0.07	2BL	25					105		56						61	8	128			4		
Waco 3/23-4/1			BL	2		1			2		2						12	1	14					

Weather continued from page 272.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent od Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING APRIL 4

HIGHLIGHTS: (1) Sunny, mild in West; cool, scattered rains East. (2) Severe tornadoes, Florida. (3) Forest fires Southeast, duststorms in Plains, floods Minnesota area.

TEMPERATURE: Low pressure aloft over the Great Lakes and high pressure along the Pacific coast produced sunny, warm weather in the West, but variable cloudiness, scattered showers, and cool weather in the East. Unseasonal warmth occurred from the Pacific Ocean to the Mississippi River. Weekly temperatures over the northern and central Great Plains averaged 10° to 20° warmer than the previous week and 10° to 14° above normal. Persistent high pressure over the northern Rockies circulated clear cool air over the Eastern States where temperatures were cooler than a week earlier. Some eastern areas averaged 3° to 6° cooler than normal. Strengthening of northerly winds after Thursday caused duststorms in the western Great Plains.

PRECIPITATION: Much of the Nation received no important precipitation during the past week. Light snow fell late in the week in the Rocky Mountains. Frequent light sprinkles and snow flurries fell from the northern Rocky Mountains to New England but the weekly totals were of little consequence. Parts of the southern Great Plains have had no soaking rains in more than 2 months. Local dry areas from Oklahoma to the Carolinas caused a serious fire hazard. Numerous fires burned thousands of acres of range and timber. Showers late in the week decreased the fire hazard in portions of the Southeast.

TORNADOES: Severe tornadoes crossed the central Florida Peninsula on Monday, April 4 causing very heavy damage and many personal injuries. Early reports indicate 9 or more fatalities; the greatest 1-day tornado toll on record for the State. There were more tornado deaths in 1 day than in any entire year in previous Florida history. (Summary supplied by Environmental Data Service, ESSA).

HAWAII INSECT REPORT

Cereal and Forage Insects - A GRASSHOPPER (Schistocerca vaga) - One adult male and fourteen second to fifth-stage nymphs caught on Desmanthus virgatus (slender mimosa) and Chloris inflata (swollen finger grass) in Nanakuli, Oahu. Further increase and spread anticipated. (Haw. Ins. Rpt.).

Fruit Insects - CHINESE ROSE BEETLE (Adoretus sinicus) caused heavy foliar damage to Euphoria longan in Hilo, Hawaii Island. (Yoshioka).

Truck Crop Insects - SOUTHERN GREEN STINK BUG (Nezara viridula) heavy on wild hosts, especially Crotalaria sp. (rattlebox) in Waimanalo, Oahu. Mostly second to fifth-stage nymphs. (Mitchell). One adult of a STINK BUG (Thyanta accerra) caught in Waianae, Oahu, on Waltheria americana (hialoa), a lowland weed, by M. Hironaka. Subsequently, one adult and a 3rd instar nymph were caught on Chloris inflata (swollen finger grass) in Nanakuli, Oahu, by R. Suzukawa. This most westerly spread since first discovery on snap beans and eggplant in Ewa, Oahu, in October 1965. (Haw. Ins. Rpt.). DIAMONDBACK MOTH (Plutella maculipennis) larvae heavy on Chinese cabbage in Waianae, Oahu. (Mitchell). BLACK CUTWORM (Agrotis ipsilon) medium on Chinese cabbage in Kipapa, Oahu, 3 miles north of Waipahu. (Yamamoto). SWEETPOTATO LEAF MINER (Bedellia orchilella) larvae medium on 0.25 acre of sweet-potato in Kalaheo, Kauai; adults noticeable. (Fujimoto). IMPORTED CABBAGEWORM (Pieris rapae) causing moderate damage to broccoli in Kahului, Maui; moderate damage to head cabbage in 5 acres at Kula, Maui, 3,000 feet elevation. (Miyahira, Takishita). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) heavy on tomato, potato and snap beans in Kahului, Maui. (Miyahira). HAWAIIAN BEET WEBWORM (Hymenia recurvalis) larvae and adults heavy on chard in Hilo, Hawaii Island. (Yoshioka). BROAD MITE (Hemitarsonemus latus) heavy and caused severe damage to chard in Hilo; plants considerably set back. (Yoshioka).

Cotton Insects - PINK BOLLWORM (Pectinophora gossypiella) larvae and adults heavy on cotton on Sand Island, Oahu; 18 larvae and 7 pupae noted in 15 bolls. Moths readily seen hiding in bolls and calyces. (Gaddis).

Forest, Ornamental and Shade Tree Insects - THREE-LINED POTATO BEETLE (Lema trilineata) adults heavy on Solandra guttata (cup-of-gold) in Makawao, Maui. (Hardy). APHIDS - Neophyllaphis araucariae infestation moderate to heavy on Araucaria heterophylla (Norfolk Island pine) in Kapoho, Hawaii Island, heaviest on young trees; Pentalonia nigronervosa medium on Alpinia purpurata (red ginger) in Hilo, Hawaii Island. (Yoshioka).

Household and Structural Insects - FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) swarms observed for first time this year in Manoa area of Honolulu, Oahu, March 14. (Mitchell).

Beneficial Insects - A TACHINA FLY (Trichopoda pennipes) - Eggs present on 63.9, 90 and 82 percent of southern green stink bug adults collected in Palama area of Honolulu, Oahu and in Hilo and Puako, Hawaii Island, respectively. (Mitchell, Yoshioka). A HELIODINID MOTH (Schreckensteinia festaliella) - Moderate to heavy larval population feeding on terminals and foliage of blackberry (a weed pest) in Olinda, Maui; light on blackberry in Waiakamoi, Maui, 3 miles northeast of Olinda. (Miyahira).

Miscellaneous Insects - AN APHID (Aphis oenotherae) heavy on Oenothera stricta (evening primrose) along Saddle Road in Mauna Loa Game and Forest Reserve, Hawaii Island, at 6,300 feet. First found in State on evening primrose on Hawaii Island in 1963 by B. Hu and subsequently on Maui in 1964 by J. Beardsley. (Kami).

New State of Hawaii Insect Record - CLOUDY-WINGED WHITEFLY (Dialeurodes citrifolii) reported medium on citrus in Hilo, Hawaii Island, by E. Yoshioka. Det. by L. M. Russell. (Chong)

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 262)

INSECTS AFFECTING MAN AND ANIMALS

Highlights:

Although MOSQUITOES were annoying in Florida, the number of cases of mosquito-borne diseases was considerably reduced. A large number of equine encephalitis cases among horses did develop in North Carolina. The prolonged drought on the Eastern Seaboard undoubtedly kept mosquito populations lower than normal. The northern Great Plains, which had abundant rainfall, also had abundant mosquito populations. The threat of encephalitis caused considerable concern in States with high mosquito populations. Controls are essential for FACE FLY in all States reporting this pest for several years. Face fly has spread to 20 additional counties including 3 new States. HOUSE FLY, HORN FLY, STABLE FLY and CATTLE GRUBS also caused losses to stock throughout the Nation. The number of SCREW-WORM cases found in the Southwest are believed to have come from long-distance migrations and not from native populations. CATTLE LICE were serious on untreated cattle throughout the Country.

Various species of MOSQUITOES caused major annoyance in ALABAMA. Aedes sollicitans and other species were constant pests during summer months from the coastal area to the Tennessee Valley. Although mosquitoes were present throughout Alabama, most concern developed in coastal areas of Mobile and Baldwin Counties, extending generally along rivers and other streams where large bodies of water were impounded. Through November, 45 cases of equine encephalitis were reported in FLORIDA; 111 cases were reported in the same period in 1964. Only 5 cases of equine piroplasmosis and 67 cases of anaplasmosis were reported in that period. The Encephalitis Research Center of the Florida State Board of Health reported that Dr. W. McD. Hammon of the University of Pittsburgh Laboratory has determined that a new member of the California group of arboviruses is present in Florida. Incomplete data indicate that 21 positive mosquito pools for California group arboviruses, 15 for Tensaw, 9 for eastern equine encephalitis (EEE) and 3 for Hart Park-like agent have been identified. Viruses belonging to the California complex are now the most commonly found type of arbovirus in Florida mosquitoes and this is rapidly becoming a new problem in medical entomology in the State. Intensive search failed to find evidence of virologic or serologic activity of St. Louis encephalitis virus in the Tampa Bay area since the epidemic of 1962. Arboviral agents of the California complex have been recovered in that area in 1963, 1964 and part of 1965 from Aedes infirmatus and A. atlanticus. Despite ample evidence of viruses in mosquitoes in the area, there is minimal evidence by antigen tests that infection is occurring in either man or other animals. Western equine encephalitis (WEE) was isolated from a horse brain. From Culiseta melanura, 8 EEE and 4 WEE isolates were made; 1 recovery each of EEE was made from pools of Culex pipiens quinquefasciatus, C. nigripalpus and Mansonia perturbans. In February, EEE was recovered from C. salinarius in Florida.

Aedes sollicitans populations were slightly higher along the coast of NORTH CAROLINA than in 1964. This species was very light during the second week of August and fairly abundant in late October. Culiseta melanura was unusually abundant on the Coastal Plain. C. melanura was believed to have been a major factor in the large number of equine encephalitis cases among horses in 1965. Aedes aegypti larvae and adults were abundant around Kernersville, North Carolina, in late September. Unspecified mosquitoes were annoying occasionally in VIRGINIA. In general, complaints of mosquito annoyance in MARYLAND were considerably below normal. High tides on the Eastern Shore failed to produce any widespread abundance of Aedes spp. although severe, localized annoyance was experienced. Culex spp. were a problem in several residential areas in southern sections of Maryland. Two major peaks of abundance were noted for A. vexans in New Castle County, DELAWARE,

the end of July and the second week in June. A. sollicitans was not particularly abundant in Kent and Sussex Counties, but small numbers occurred throughout the season. Small numbers of Culex spp. occurred throughout Delaware from July to September. Aedes spp. and Culex spp. were most abundant in the spring locally in RHODE ISLAND. Spring flood-pool mosquitoes were particularly annoying in NEW HAMPSHIRE in spite of drought conditions. Aedes spp. were the predominant woods-pool mosquitoes in MAINE. Numbers increased during the first week in June in Orono and became extremely heavy.

The most common mosquito species in OHIO during 1965 were Aedes vexans, Culex pipiens, C. restuans, A. stimulans, C. pipiens quinquefasciatus and Anopheles punctipennis. An extremely large population of Aedes spp. persisted over much of MICHIGAN from mid-May until mid-June. Numbers were considerably greater than in recent years. A late brood of adults caused annoyance in October in southern Michigan counties. Various species were very abundant and troublesome in most areas of ILLINOIS. Mosquitoes had favorable weather conditions in WISCONSIN early and late in the season when there were numerous pools of shallow water in fields and woodlands. Mosquitoes were most numerous in late May and early June when they plagued cattle as well as humans and again after heavy September rains.

Mosquito development was approximately 2 weeks later than in 1964 in MINNESOTA. Warm weather in early May speeded larval development and by May 15 most single-brooded Aedes had emerged in the Minneapolis-St. Paul area. A. vexans and A. sticticus were common in larval collections by May 7. Heavy rains occurring almost weekly brought on successive broods of A. vexans; the first heavy emergence of this species occurred about May 20 with a second on May 28. A. sticticus, a floodwater species, was abundant in May and early June, especially in northern Anoka and Isanti Counties. A. vexans was generally predominant in trap and biting collections for the remainder of the season. Culex tarsalis reached a peak the week of July 17. Since this species is a known vector of western equine and St. Louis encephalitis, there was concern of possible increases in these diseases; however, no increase was noted. The peak for Mansonia perturbans occurred by the end of July. Of the 100,000 plus female mosquitoes taken from 16 light traps in the Metropolitan Mosquito Control District the week of July 18, over 80,000 were A. vexans. This catch exceeded the total number of this species taken during the entire 1964 season. Populations declined in August but several single-brooded species, such as A. stimulans, A. excrucians, A. fitchii and A. sticticus, were common in bite collections to late August. Anopheles walkeri appeared in early August trap collections and Aedes triseriatus, a tree-hole breeder, appeared August 13. The total catch of the Metropolitan Mosquito Control District was 243,000 females of which 194,000 were Aedes vexans; rainfall in the district for May through September was almost 28 inches, equal to the average rainfall for an entire year. Large numbers of mosquitoes appeared in most areas of NORTH DAKOTA. Aedes vexans and A. dorsalis were the dominant species in the east and A. nigromaculis was dominant in some western areas.

Several species of mosquitoes were reported in various areas of TEXAS. Culiseta inornata became active in late February in OKLAHOMA. This mosquito and other species were heavy, especially in the east until late October. Activity continued into early November. Aedes sollicitans, Culex tarsalis, Psorophora confinnis and P. ciliata were the most commonly collected species in Oklahoma. Plentiful moisture encouraged higher than normal numbers of mosquitoes in MISSOURI, particularly in many flooded areas caused by the heavy rains. Dominant species in these areas were A. vexans and P. confinnis; the dominant species in nonflooded areas were members of the Culex pipiens complex. Encephalitis was the most important insect-borne disease in KANSAS. There were 42 unconfirmed and 15 confirmed cases in the State. Of the total cases reported, 23 cases occurred in children 15 years old or younger. Most cases were reported in western Kansas. The Arkansas River underwent severe flooding in southwestern Kansas but through the efforts of Federal, State and local officials, mosquito populations were kept at low levels. Aedes vexans was predominant locally where heavy rains occurred. Several communities initiated or intensified control efforts primarily because of A. vexans, Psorophora spp. and Culex tarsalis. Heavy numbers of C. tarsalis and A. vexans

were present in eastern NEBRASKA during June. A. trivittatus populations were moderate in eastern river bottoms in late June and early July. High populations of A. dorsalis occurred in northwest and southwest Nebraska in late June and early July. Mosquito populations were larger in WYOMING in 1965 than in the past few years due to above average spring rainfall and flooding of many areas. Only moderate control success was realized in many cities and towns. Mosquitoes were troublesome in many more locations in MONTANA and for a longer period of time. A. vexans, A. dorsalis and A. nigromaculis were in the majority; A. spencerii idahoensis, C. tarsalis and Culiseta inornata were often abundant. An outbreak of western encephalitis threatened the lower Milk River area of Montana, but cold weather in early September evidently halted its spread.

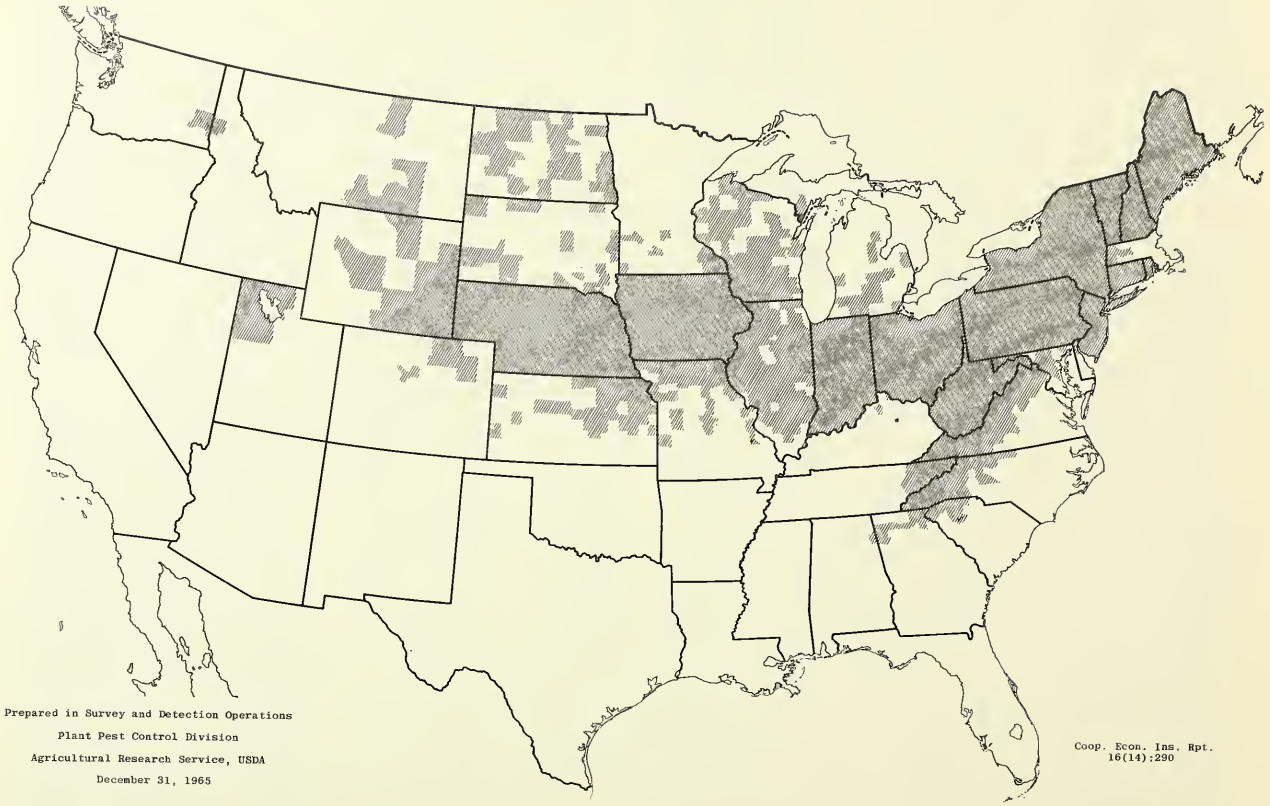
Mosquitoes were very abundant after heavy summer showers in NEW MEXICO. They were a problem in all areas of the northwest. Populations involving several species became quite large after heavy spring rains in ARIZONA and again following heavy rains in August and September; controls were necessary in some populated localities. UTAH had a short but very high population peak over a shorter than normal season of about 6 weeks in Weber County. Most years the season consists of 8-10 weeks of active control. Annoyance and peak populations were about twice normal. Some Aedes spp. were annoying in duck hunting areas but populations dropped after frosts. Annoyance was well above normal in many communities of Davis and Box Elder Counties. A. dorsalis was very abundant in Brigham City area in early September. Mosquito populations were heavy statewide in NEVADA with populations equaling the high 1963 levels. Aedes spp., Anopheles freeborni and Culex tarsalis were prominent and caused the most concern. Mosquito populations in CALIFORNIA were generally low with few occurrences of irritation. Heavy infestations occurred in OREGON at White City and Medford Airport, in Jackson County; the Klamath Basin and particularly in the upper Klamath Lake, Keno and Langell Valley areas. Species involved were Aedes nigromaculis, A. dorsalis, A. vexans, Anopheles freeborni and Culex tarsalis. A summary of the 1965 progress report of Aedes aegypti eradication program in the United States was reported in CEIR 16(3):38-39.

BLACK FLIES were heavy in MAINE in most areas by June 6. These flies were heavy in the spring in NEW HAMPSHIRE and created annoyance for early season visitors. The usual abundance occurred in rural areas of RHODE ISLAND. SOUTHERN BUFFALO GNAT (Cnephia pecuarum) was a minor livestock pest in OHIO. Black flies were generally abundant in river bottoms of NORTH DAKOTA, and were very abundant near Kindred in Cass County.

MIDGES emerged in heavy numbers from a lake in Clackamas County, OREGON, and caused a nuisance in nearby homes. People in papermills along the Columbia River had great difficulties in preventing clouds of midges from entering through window screens and contaminating their products. Midges were a nuisance to people near the newly formed lake at Dardenelle, ARKANSAS, in May. During spring and summer months, midges became troublesome in several areas of NEW JERSEY. They were attracted to lights in central and northern areas. Several flights of BITING MIDGES (Culicoides spp.) occurred from several lake areas in MAINE in early July.

FACE FLY (Musca autumnalis) was recorded for the first time in WASHINGTON, IDAHO, and UTAH during 1965. In Utah, it was a serious pest during late summer in the Cache Valley and parts of Box Elder, Weber and Davis Counties. Specimens in the Utah State University Museum indicate that face fly has been in the State as early as July 1964. Counts were generally lower in NORTH DAKOTA than in 1964. This was a serious problem in SOUTH DAKOTA. Population studies were made on Black Angus cattle in Charles Mix County for both face fly and Haematobia irritans (horn fly) and although the numbers of M. autumnalis were low compared with H. irritans, the pattern of buildup remained similar. Until early July, Black Angus stock had 1-5 M. autumnalis adults per head, with higher numbers on calves and young stock. From mid-July to mid-August, 12-25 adults per head were commonly observed in that study. Some face fly problems occurred in NEBRASKA, but populations were slightly below those of 1964. Populations were low in KANSAS as were other livestock pests. Face fly numbers were slightly higher in MISSOURI than in the previous 3 years, but this pest remains of little economic importance; it was

DISTRIBUTION OF FACE FLY
(Musca autumnalis)



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a problem around homes and buildings. The first specimen of the season in ILLINOIS was observed on cattle in Pike County April 20. Populations were very light throughout the season; the highest average was 10 flies per face and the highest number per animal was 30. One new county record was reported in Illinois. Face fly became numerous in a few areas of WISCONSIN in August. It reportedly caused a decrease in milk production; pinkeye, reputedly transmitted by Musca autumnalis, was a problem in some herds. This fly was generally at noneconomic levels on livestock in INDIANA. Summer populations were light with a slight buildup during September. Face fly populations on cattle began in late April in OHIO and continued through August. Numbers built up in early July but infestations did not appear to be too severe in 1965. During peak periods, averages of over 15 flies per face were common over Ohio.

Face fly populations were high in all areas of NEW HAMPSHIRE; statewide averages ranged 20-36 per animal. This fly was not so severe in PENNSYLVANIA. During mid-June populations averaged about 4 per animal in the northern area. This fly was unusually abundant in NEW JERSEY where controls were not practiced. Populations on beef and dairy cattle in central counties of MARYLAND were generally light for the second consecutive year. Face fly was the usual problem in the mountains of NORTH CAROLINA. Populations were as high as 25 per animal in Madison and Haywood Counties during early June.

HOUSE FLY (Musca domestica) was a serious pest of swine around breeder pens in ALABAMA. It continued as a major annoyance to man and a major household nuisance during the year. This fly was unusually abundant where controls were not used in NEW JERSEY. A heavy infestation of LITTLE HOUSE FLY (Fannia canicularis) occurred on a poultry farm in western PENNSYLVANIA. Heavy house fly populations developed in suburban areas of Burlington, NEW HAMPSHIRE. Populations were relatively low in MICHIGAN. House fly increased gradually from early May until a high level was reached in early August in WISCONSIN. Later it remained rather constant until cool, September temperatures began to inhibit activity and development. House fly counts were generally lower in NORTH DAKOTA than in 1964. The average number of reports concerning this pest were noted in MISSOURI. It was heavy around livestock feeding pens and a problem in homes and other buildings. Larvae of house fly were present on poultry droppings as early as April 9 in northwest ARKANSAS. Populations were high and continued high until cold weather in December. Activity began in early April in OKLAHOMA but numbers did not become heavy until early June. House fly was heavy in many areas through late October with activity continuing until mid-December. Large populations invaded homes, barns and milking parlors in all areas of WYOMING, particularly in late August, September and October, and it caused much concern to both urban and rural residents. House fly was generally not so prevalent as in past years in CALIFORNIA. A few local outbreaks occurred periodically.

HORN FLY (Haematobia irritans) infestations were normal in CALIFORNIA. Populations were heavy in NEVADA. It reached economic levels on untreated animals in southern areas of NEW MEXICO by mid-May and in northern areas by mid-June. Average populations of 500 per animal were reached in Valencia County by early July. These increased to an average of 1,300 per animal in early August then declined slowly, reaching a level of about 500 per animal in early September. Horn fly was of concern in TEXAS during the season. Populations became active in early April in OKLAHOMA; numbers were moderate to heavy from mid-May to mid-July with highest populations in early June. Numbers declined during late July but increased again in early August. The second peak of activity in Oklahoma occurred in mid-September; then decreased slowly until it disappeared in late November. Horn fly was heavy in early summer in ARKANSAS becoming lighter during August and early September when rains increased and heavy again when rainfall decreased in September. Counts ranged 100-200 per head on untreated cattle in MISSOURI in May and steadily increased to 500-1,000 per head in early July. Horn fly was the most serious pest of livestock in Missouri; numbers were commensurate with those of 1964. This fly was the most important pest of range cattle in KANSAS where large numbers built up by end of summer. Populations were light to moderate in NEBRASKA, about the same as in 1964. Cattle were again annoyed throughout WYOMING by the

presence of this fly. Largest populations were found in Laramie, Platte, Goshen, Johnson and Sheridan Counties. Wyoming stockmen are using more backrubbers and sprays each year to control flies.

Horn fly was a serious problem in SOUTH DAKOTA and numbers were at the highest point of several years over most areas of the State. Specific Black Angus herds in Charles Mix County were studied in conjunction with fly problems. From the beginning of the fly season in May to mid-June, the number of H. irritans adults built up to an average of 200 per side of stock. Further increases took place until mid-May on untreated herds, when averages of 300-400 per side were reached. Counts went up to an extreme of 10,000 per side on bulls. Such high numbers led to severe irritation to stock during daylight hours which was evidenced by non-feeding, bunching and fighting among animals. Populations of 200-300 per side of stock continued in South Dakota until late August and early September when numbers dropped to 75-100 per side. Numbers reached 200 or more per cow in southeastern NORTH DAKOTA. Activity increased slowly through May into June in WISCONSIN, creating problems in several areas. Horn fly was first reported by April 28 in Jackson and Monroe Counties, ILLINOIS, when populations ranged 0-100 per animal. A peak of 50-500 per animal was reached in southern Illinois about June 22 with a herd average of 250 per animal. This population declined somewhat, then peaked again the first of September when 100-500 per animal occurred in Johnson County. The peak in northern Illinois apparently occurred about the end of June when the heaviest infested herd had 50-300 adults per animal. Horn fly was generally at noneconomic levels in INDIANA; summer populations were light with a slight buildup occurring in September. Horn fly was common on the backs of cattle in OHIO in May and into June; estimated counts ranged up to 100 or more per back.

Horn fly ranged 75-100 per animal in the Burlington area of NEW HAMPSHIRE, was a definite problem at various times during the summer on dairy and beef cattle in all sections of MARYLAND, and reached 110 per animal on May 22 in GEORGIA. Horn fly caused considerable concern on dairy and beef cattle in ALABAMA but better overall control efforts by cattlemen appeared to have reduced populations during the past 2 years.

STABLE FLY (Stomoxys calcitrans) was unusually abundant in NEW JERSEY when controls were not used. An occasional report of this pest was received in VIRGINIA. Populations were heavier on livestock from July until October in INDIANA than they had been for a number of years. This insect was very annoying around homes and resort areas also. Stable fly was first noted June 9 in Iroquois County, ILLINOIS. Populations apparently peaked July 12-13 when as many as 30 flies were found on one animal. The heaviest infested herds averaged 12-15 per animal in Illinois. Stable fly was one of the worst pests of cattle in WISCONSIN, being prevalent from mid-June to the last of August. Populations were also high in SOUTH DAKOTA compared with the 3 previous summers. In late July and early August, 75-100 flies per side on stock in barnyards was not uncommon.. It was particularly numerous the first week of August near Redfield, South Dakota. Populations of stable fly were slightly larger around corrals and feedlots in WYOMING. Adults ranged 10-40 per animal in more heavily infested areas. The largest numbers were noted in Sheridan, Johnson, Goshen and Platte Counties. Light to moderate populations were noted in NEBRASKA which was about the same as in 1964. Stable fly continues as the worst pest around feedlots in KANSAS. Counts were normal in MISSOURI. Adults ranged 5-25 per animal on cattle in July. Stable fly became active in OKLAHOMA in early June. Moderate to heavy numbers were present on cattle from mid-June to mid-July but decreased during late July and early August. Stable fly again increased during late August and highest counts of the year occurred in mid-September. Activity continued until late October in Oklahoma. Very heavy populations were present in ARIZONA during July and August.

HORSE BOT FLY (Gasterophilus intestinalis) apparently is causing less concern in OKLAHOMA. There were no reports of abnormal activity of Gasterophilus spp. in MISSOURI.

SHEEP KED (Melophagus ovinus) was particularly numerous in many herds at shearing time in the spring in UTAH, but was a minor pest in OHIO.

Self-sustaining SCREW-WORM (Cochliomyia hominivorax) populations were again kept from becoming reestablished within the southwestern area of TEXAS and NEW MEXICO which has been freed of this costly pest. A number of infestations—465 in Texas and 122 in New Mexico—was disclosed in 1965. All of these were believed to have been caused by long-distance migrations from Mexico through the sterile fly barrier zone. The infestations found in the freed area were principally confined to those counties near the Mexican border.

In the latter part of April 1965, ARIZONA and CALIFORNIA entered in the screw-worm eradication program and the sterile fly barrier zone has been extended to the Pacific Ocean. Arizona reported 464 infestations during 1965. California remained relatively free, reporting only 9 infestations.

Over 17.2 billion sterile flies have been released since the southwestern program started in February 1962. Program aircraft have flown more than 11 million miles to release these flies. Nearly 4.8 billion sterile flies were dispersed in 1965. In some areas, the sterile fly barrier zone has been widened and now extends up to 400 miles in some areas of Mexico.

The livestock inspection line along the Arizona-New Mexico State line that was operated to keep infested animals from carrying screw-worm into freed areas has been closed because of the recudtion of screw-worm throughout the Southwest.

SECONDARY SCREW-WORM (Cochliomyia macellaria) was found infesting wounds in cattle near Belle Fourche, SOUTH DAKOTA; this was apparently the only report of this pest.

COMMON CATTLE GRUB (Hypoderma lineatum) and NORTHERN CATTLE GRUB (H. bovis) adults caused serious annoyance to beef cattle in Whitman County, WASHINGTON, during June. H. lineatum was locally heavy in a few CALIFORNIA locations. Populations of both species were about average in NEVADA. Thousands of cattle were treated during the season in UTAH for Hypoderma spp. Cattle grubs were again the most harmful livestock pests in WYOMING. Damage by larvae and running of animals by adults was noted in infested areas. Use of systemic insecticides is becoming more widespread in Wyoming. Numbers of cattle grubs were lower than in 1963 and 1964 in NORTH DAKOTA; averaged 5 per animal with 60 percent of the untreated animals infested. Epidemic populations of both species were present on untreated one and two-year-old cattle in SOUTH DAKOTA in early spring. Adults of H. lineatum became bothersome in a few WISCONSIN areas in late June. Counts of Hypoderma spp. were low on cattle checked in MISSOURI. Moderate numbers of H. lineatum were present from late January to early March in OKLAHOMA. Adults were active from early March to early May. Fall activity began in mid-October in Oklahoma. Some late instars of H. bovis became dark colored in native cattle in MICHIGAN the third week of April. Adults caused considerable annoyance by running cattle on pastures during June. A few incidences of cattle grubs on dairy cattle in east central OHIO occurred in May and April. Emergence began the first week of May in Ohio. Cattle grubs were a major concern on dairy and beef cattle in ALABAMA. Better overall control efforts by cattlemen appear to have reduced populations in the State. Infestations of H. lineatum were generally light in GEORGIA the first half of the year.

TABANID FLIES were slightly more annoying to man and animals in WYOMING than they were in 1964. Largest populations occurred in Albany, Lincoln, Carbon, Johnson and Sheridan Counties. HORSE FLIES were very heavy in some areas of NEVADA. Horse flies became active in mid-April in OKLAHOMA, with moderate to heavy numbers present from early May to early October in many areas. The first species seen were Tabanus mularis and Hybomitra lasiophthalma. The most common species were T. lineola, T. sulcifrons and T. atratus. DEER FLIES (Chrysops spp. and Silvius pollinosus pollinosus) were active in most Oklahoma areas during the same time. Tabanus spp. were normal over most of MISSOURI except in Barton County

where counts ranged 2-5 per head. Chrysops spp. were very annoying to people in timbered areas of central and south central Missouri. Deer flies caused extreme annoyance in forested areas of MINNESOTA in early July. Populations appeared to be much higher than in recent years. High nuisance levels were reported from central Minnesota northward. Tabanus spp. and Chrysops spp. became bothersome in a few WISCONSIN areas in late June. Horse flies were relatively scarce throughout the season in ILLINOIS, with first specimens of the season observed June 22 in Hardin and Pulaski Counties. First deer fly activity was noted in early June in Livingston County, MICHIGAN. These pests were especially annoying around resort areas. The usual abundance of deer flies was noted in rural areas of RHODE ISLAND. Chrysops spp. and Tabanus spp. were again very annoying during the summer in MARYLAND, especially in tidewater areas. Horse flies and deer flies were occasionally annoying in VIRGINIA. Diachlorus ferrugatus was a distinct pest in FLORIDA during May. Bites of this fly are very toxic to some people and there were reports of people being hospitalized in the Panama City area.

EYE GNATS were a considerable nuisance in an exclusive residental area near the mountains in the Albuquerque area of NEW MEXICO.

YELLOW JACKETS were unusually numerous and troublesome in NEW HAMPSHIRE. Scattered reports of Polistes spp. and numerous reports of Apis spp., Bombus spp. and Vespula spp. nesting in and near buildings in RHODE ISLAND were noted. BEES AND WASPS were a problem statewide in NEW JERSEY around homes, swimming pools, refreshment stands and picnic areas into early fall months. Many natural areas where bees and wasps normally obtain moisture requirements had dried by midsummer. Yellow jackets and Polistes spp. were especially annoying to many suburbanites in MARYLAND during late summer. CICADA KILLER (Sphecius speciosus) was active in central Maryland and in VIRGINIA. A few reports of GIANT HORNET (Vespa crabro germana) were also noted in Virginia. Yellow jackets and other wasps were not so annoying as in 1964 in ALABAMA. Vespula maculifrons was particularly bothersome from late May to October in forested areas of southern and southeastern OHIO. Giant hornet was also recorded from southern Ohio and for the first time in INDIANA from Floyd, Washington and Clark Counties. WASPS near homes in MINNESOTA and MISSOURI prompted many calls concerning control measures. Vespid wasps entered homes in OKLAHOMA during the fall. Yellow jackets and other wasps were particularly serious all year in CALIFORNIA. Picnic areas, barbecues and vineyards were most affected.

WESTERN BLOODSUCKING CONENOSE (Triatoma protracta) was particularly annoying in CALIFORNIA; more people were bitten and more specimens were submitted than in past years. Triatoma spp. caused the usual concern to residents of Hill County, TEXAS. MASKED HUNTER (Reduvius personatus) bit people in PENNSYLVANIA. BED BUG (Cimex lectularis) infested homes in RHODE ISLAND, PENNSYLVANIA and NEVADA. A BIRD BUG (Hesperocimex coloradensis) was recorded for the first time in Nevada. It was collected at Reno, Washoe County by P. C. Ting in a hospital room on September 27, 1962. This species is usually found in woodpecker holes occupied by Purple Martins.

Populations of CATTLE LICE were apparently low in CALIFORNIA and few infestations were reported. Cattle lice were the most important pests of cattle in NEVADA. They were important also in UTAH in Beaver County during late winter and early spring. Many cattle were dipped or sprayed in the spring in Utah. Although many herds of cattle throughout WYOMING are effectively treated for cattle lice, SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) and Solenopotes capillatus remain a serious problem on untreated cattle; populations were about the same as in 1964. By late March, cattle lice, primarily CATTLE BITING LOUSE (Bovicola bovis), were troublesome on untreated herd bulls and older cows in winter pastures of SOUTH DAKOTA. Infestations of B. bovis ranged light to severe in NORTH DAKOTA; severe infestations of H. eurysternus were found on untreated animals in Stark County. LONG-NOSED CATTLE LOUSE (Linognathus vituli) was noted on cattle in Dickson, North Dakota, but numbers were light.

Severe infestations of Haematopinus eurysternus and Bovicola bovis were common in

the northern part of NEW MEXICO from January to April. Linognathus vituli caused concern to stockmen in TEXAS. Moderate to heavy populations of cattle lice were present on cattle from mid-January to late June in OKLAHOMA, with counts heaviest in early April. The first fall activity in Oklahoma was noted in early November. Cattle lice were rather light in ARKANSAS. There were no reports of unusual activity in MISSOURI. H. eurysternus was a minor pest of livestock in OHIO. L. vituli was the most commonly collected louse in NORTH CAROLINA particularly in the mountains during a survey of lice on cattle. Solenopotes capillatus and Bovicola bovis were also commonly collected throughout the State but H. eurysternus was collected only once outside the mountains in North Carolina. Lice appeared to be more of a problem in the mountains. S. capillatus and L. vituli infestations on cattle were light in GEORGIA during the first half of the year. Cattle lice were serious problems during the winter months in ALABAMA.

HOG LOUSE (Haematopinus suis) was the most serious pest of swine in ALABAMA, but was minor in OHIO. Populations were moderate to heavy on hogs in many areas of OKLAHOMA from January to mid-May; fall activity began in mid-November. An unusually heavy infestation occurred in Lyon County, NEVADA.

EUROPEAN CHICKEN FLEA (Ceratophyllus gallinae) was very common in litter in commercial poultry farms in Foster, RHODE ISLAND. FLEAS (Ctenocephalides spp.) infested a large numberof homes in Rhode Island in late summer. These were annoying to cats, dogs and humans in MARYLAND and VIRGINIA. CAT FLEA (C. felis) was especially troublesome in NEW JERSEY homes during the spring and fall months. Ctenocephalides spp. were widespread and annoying throughout ALABAMA; populations reached "alarming" proportions in basements, inside homes and on a few lawns. DOG FLEA (C. canis) and C. felis were moderate to heavy on pets in OKLAHOMA. Flea populations were apparently lower than in past years in MISSOURI. C. felis adults infested home basements in Clark County, NEVADA. Many local infestations of C. felis and C. canis were reported in CALIFORNIA.

TICK populations were higher than usual in CALIFORNIA. PACIFIC COAST TICK (Dermacentor occidentalis) caused tick paralysis in local areas, AMERICAN DOG TICK (D. variabilis) caused paralysis of dogs in Amador County and WINTER TICK (D. albipictus) was locally heavy in a few California locations. Dermacentor spp. were troublesome in northwestern counties of NEVADA in March and April. LONE STAR TICK (Amblyomma americanum) caused concern on TEXAS livestock. A. americanum became active in OKLAHOMA in mid-January; numbers were light until late March. Moderate to heavy numbers were present on cattle in the eastern area from late March to late September. D. albipictus was light through January; fall activity began in mid-October. BLACK-LEGGED TICK (Ixodes scapularis) was present in Oklahoma from mid-March to late October. D. variabilis caused considerable concern to pet owners in Oklahoma also. A. americanum continued heavy in ARKANSAS being a nuisance to people in timbered areas as early as late March in northern areas and earlier in southern parts. A. americanum numbers were lower in MISSOURI than in both 1963 and 1964; infestations were sporadic. No A. americanum was found in Boone County which is generally considered the northern limit of distribution in Missouri. Populations of D. variabilis were also below those of 1963 and 1964 in Missouri; there were some heavy infestations, however. High D. variabilis populations were present in early June in the Republican River Valley of NEBRASKA and an increase over populations of 1964 was indicated.

Dermacentor variabilis was abundant in NORTH DAKOTA and caused considerable concern during the season. This tick was very numerous and active in MINNESOTA. It was reported the first week of May and it continued active through June and well into July. Cool weather and high moisture levels apparently were responsible for extending the "tick season" beyond the usual limits. D. variabilis was a nuisance in larger tracts of grass and woods in WISCONSIN. This tick was first reported May 9 in Iowa County. It became gradually more noticeable in more northerly locations as the season advanced, appearing in the extreme north about the third week of May. Relatively high populations occurred in Wisconsin, causing considerable annoyance to both man and small animals. This tick was heavy in many counties in Upper MICHIGAN. First collections were made in late April.

Specimens were taken in mid-July in Monroe and Berrien Counties, with 2 cases of Rocky Mountain spotted fever reported at that time at Niles, Berrien County, Michigan. D. variabilis was a problem on dogs and where dogs brought specimens into homes in OHIO. This tick was active from early May through late June in the southern half of that State. It was collected from a number of dogs in PENNSYLVANIA. Average abundance was recorded in RHODE ISLAND. The heaviest infestations were in sections near Narragansett Bay and on islands in the bay. American dog tick was abundant in DELAWARE during late April and early May in New Castle County. It was prevalent in numerous wooded areas in southern MARYLAND during spring and summer, and was occasionally reported in VIRGINIA. TICKS were of considerable concern on cattle in western ALABAMA and on dogs and in homes throughout the State.

Occasional reports of BROWN DOG TICK (Rhipicephalus sanguineus) infestations in VIRGINIA were noted. Reports of this species in DELAWARE were very numerous, especially in New Castle County. It was a pest in homes in PENNSYLVANIA and NEW JERSEY. R. sanguineus was occasionally a pest in homes in RHODE ISLAND. It was about as troublesome as usual in NEW HAMPSHIRE. Few reports of this species on dogs and in homes were noted in MISSOURI. This pest caused considerable concern throughout OKLAHOMA on pets and was numerous in Clark County, NEVADA. It infested yards, homes and kennels commonly in CALIFORNIA.

EAR TICK (Otobius megnini) was locally severe in a few herds of cattle in CALIFORNIA. Moderate numbers were noted on cattle in Beaver County, OKLAHOMA, in mid-July. Ear tick caused concern to TEXAS livestock.

House infestations of CHICKEN MITE (Dermanyssus gallinae) were noted in Pawtucket and Providence, RHODE ISLAND, in late June and in Warwick in July. An incidence of this mite on a man in PENNSYLVANIA caused concern. NORTHERN FOWL MITE (Ornithonyssus sylviarum) continued moderate to heavy in ARKANSAS and was about normal in CALIFORNIA.

CHIGGERS were general and fairly abundant in PENNSYLVANIA. Eutrombicula alfreddugesi was present in lawns and in recreational areas of ALABAMA. A buildup of Trombicula spp. occurred in late June and early July in OHIO. The first reports of Eutrombicula spp. activity occurred in central MISSOURI June 1. As usual, chiggers were quite troublesome to campers, vacationers, fishermen and others during June and July in Missouri. In OKLAHOMA, Eutrombicula spp. apparently caused less concern.

A BROWN SPIDER (Loxosceles reclusa) was reported in Jefferson and Webster Parishes, LOUISIANA. It was observed in several north central and west central counties of TEXAS. The number of bites inflicted by this spider apparently increased in MISSOURI during August and September. This spider was collected in homes in Monroe and Randolph Counties, ILLINOIS, the latter being a new county record. Unusually large numbers of BLACK WIDOW SPIDER (Latrodectus mactans) invaded buildings in several northwestern counties of NEVADA in September and October. This spider was more prevalent in CALIFORNIA.

Blacklight Trap Standards for General Insect Surveys

Recommended by the Entomological Society of America

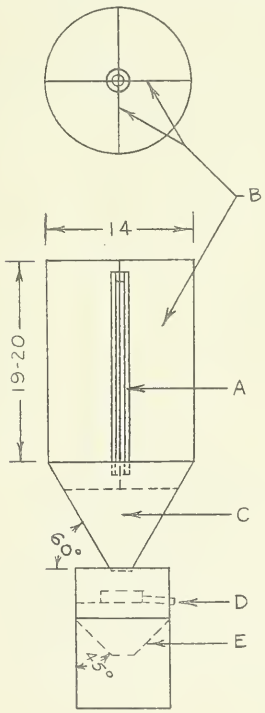
In recent years insect traps utilizing blacklight lamps as attractants have become valuable tools to entomologists and others as aids in determining the time of appearance and seasonal abundance of important insect pest species.

At present in the United States there are several different kinds of blacklight traps employed in general insect pest surveys. The Committee on Insect Surveys and Losses, Eastern Branch, ESA, and others, have felt a need for workers to use one basic kind of trap instead of traps of several different designs. It is the opinion of the Committee that a standardized blacklight trap would help considerably in making catches from the same area, or even different areas, more comparable. As a result of this position on the need for trap standardization the Committee, during 1964, embarked on a project aimed at the recommendation of standards for blacklight traps. The Entomological Society of America Committee on Insect Surveys endorsed the study and recommended that the standards be published.

A questionnaire was developed to obtain needed information on the types of traps and trap components in general use and to solicit opinions in regard to erecting trap standards. This questionnaire was sent to over 50 state and USDA workers known to be actively engaged or knowledgeable in insect light-trapping research or service programs. Included among those receiving questionnaires were survey and extension entomologists, agricultural engineers and Plant Pest Control people.

A total of 53 forms were sent out and 36 of these were returned to the Committee, of which 21 indicated that general insect survey blacklight traps should be standardized. Thirteen individuals recommended as a standard either a particular kind of trap or trap components.

A study of the returned questionnaires indicated that a definite majority used or recommended as a standard a light trap equipped with one linear 15-watt blacklight lamp. Concerning trap components other than lamps, a majority reported, or recommended, the use of an omnidirectional trap with baffles, no fan and a collection funnel opening (top) diameter of from 10-18 inches. No majorities were demonstrated favoring or emphasizing



Standards:

1. Attractant—one F15T8/BL lamp (15-watt black light) mounted vertically. See A.
2. Position of lamp—bottom even with rim of funnel, lower lampholder below rim.
3. Four baffles (two crossed), dimensions: total width 14"; total height above funnel rim 19"–20"; clearance between inner edge and lamp ¼"–½". See B.
4. Funnel—slope 60°; top diameter 14" (approx. ¾ length of lamp); bottom opening diameter 2"; lower end inserted into top of collection container ¼" to form drip rim for water. See C.
5. No large canopy over top of baffles (such a cover reduces catches of some species).

Additional Recommendations:

1. Wiring system showing Underwriters' Laboratories (UL) seal of approval.
2. Electrical components mounted either on side or top, but if on top the area of obstruction to light not to exceed a 5" square (25 sq. in.).
3. Use of a side-emptying drain placed in cover of collection can to leave collection container unobstructed. See D. Pan diameter at least 4", depth 1", drain opening ½"×1" minimum.
4. Collection container designed for use of less harzardous killing agents, such as ethyl acetate (as compared to calcium cyanide) through use of insert funnel with sealing gasket, 45° slope and 2" opening. See E.
5. Material—26 gauge galvanized steel minimum.

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Coop. Econ. Ins. Rpt. 16(14):297, 1966.

one size of collection container or one killing agent over others used. A few who listed ethyl acetate were enthusiastic about its use over cyanide. Several individuals thought that the position and location of the trap in the surveyed area is as important as the type of trap used.

Along with a review of the questionnaire, the Committee reviewed the literature on insect light traps and gave particular attention to the results of recent investigations. This was done for the purpose of assisting in the selection of a trap or trap components which would be favorable from the standpoints of durability, trapping efficiency and cost. On the basis of these reviews the Committee proposes that certain trap design standards be used in general insect survey work. The design should include: one 15-watt blacklight lamp; omnidirectional design; baffles; no fan; 10-18 inch funnel opening (top diameter); and a collection container capacity over one quart. For specifications of the standards as well as pertinent additional recommendations see the illustration.

It should be emphasized that the Committee's chief concern is with blacklight traps used in general insect survey programs employed to determine the time of occurrence and abundance of established insect pest species such as the corn earworm, fall armyworm, European corn borer, cabbage looper, etc. The Committee fully recognizes the separate need of specially designed survey traps for the purpose of detection or research.

Additional comments, criticisms or suggestions would be welcomed concerning these standards or the additional recommendations.

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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 April 15, 1966 Number 15

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG moderate to heavy in areas of Oklahoma; some wheat killed. (p. 301). ALFALFA WEEVIL continues active in alfalfa in various areas; some damage. (p. 302). PEA APHID increased on alfalfa in northwest Arkansas; counts high in Oklahoma. (p. 304). YELLOW SCALE population on Florida citrus above average and highest on record for March; increase expected. (p. 306).

Predictions

First-generation EUROPEAN CORN BORER population may be heavy in Nebraska. (p. 301). ALFALFA WEEVIL expected to be as severe as in 1965 in many areas. (p. 302). CUTWORM flights heavy in New Mexico; subsequent egg laying indicates possible heavy larval infestations later in season. (p. 305). FRUIT-TREE LEAF ROLLER expected to be abundant in Connecticut. (p. 306). Generally large numbers of EUROPEAN RED MITE eggs indicate high potential populations in southern Ohio apple orchards. (p. 306).

Detection

A TARSONEMID MITE (Steneotarsonemus ananas (Tyron)) collected from Aechmea fasciata (a bromeliad) in California constitutes a new record for North America. Species known from pineapple in Australia and Hawaii. (p. 308). For new State records from Delaware and Oklahoma, and new county records from Florida, see page 313.

SPECIAL REPORTS

Expected Appearances of Broods VI and XXVI of Periodical Cicadas (with map). (p. 316).

Estimates of Damage by the European Corn Borer to Grain Corn in the United States in 1965. (pp. 317-318). Dollar loss and bushel loss considerably lower than in several years.

Summary of Insect Conditions in the United States - 1965

Reports in this issue are for week ending April 8 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING APRIL 11

HIGHLIGHTS: (1) Another dry week most areas, scattered droughts appearing. (2) Warm West, cold East for second week.

TEMPERATURE: The second week of persistent low pressure over the Great Lakes and high pressure in the West continues the pattern of warm, sunny weather in the West and cold air with variable cloudiness in the East. However, the eastern cold area was a bit larger and stronger while the area of western warmth shrank a bit. The Ohio River area was 12° below normal and winter-like weather persisted in the Northeast. Touches of frost invaded the Deep South where a cool, late spring continues. It was the third mild week along the Pacific coast and the fifth warm week over much of the Great Basin.

Weather continued on page 330.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - OKLAHOMA - Heavy in wheat in Alfalfa County. Up to 1,000 per linear foot in spots in Noble County fields; generally moderate in other fields in county and in Kay County; 30 per linear foot near Perkins, Payne County. Ranged 50-250 per linear foot in wheat in northern Tulsa, Washington, northern Nowata and northern Craig and 3-40 in Ottawa, Delaware, southern Craig, Mayes, Rogers and southern Tulsa Counties. Few greenbug "spots" seen in Tulsa and Craig Counties. Ranged 500-1,000 per linear foot in some fields in Washita County; some wheat killed. Averaged 50 per linear foot in scattered areas of Beckham County. Ranged 25-50 per linear foot in Caddo County; heavy in Grady County with thousands of acres sprayed. Moderate to heavy in Cleveland and moderate in Kingfisher Counties. Counts per linear foot averaged 6 near Coweta, Wagoner County, and 40 in Creek County. Moderate in Cotton County; 5-45 per linear foot in wheat in Jackson, Greer and Kiowa Counties; light to moderate in Bryan, Murray and Stephens Counties. (Okla. Coop. Sur.). MISSOURI - None found in areas checked. (Houser).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Very light; 2 per 25 sweeps in barley near Garfield, Dona Ana County. (Campbell).

ARMYWORM (Pseudaletia unipuncta) - SOUTH CAROLINA - Large adult numbers collected in more southern States. Growers of highly fertilized small grain should be alert to possibility of attack in several weeks. (Nettles et al., Apr. 5). MISSOURI - This and Agrotis ipsilon taken in first light trap catch at Portageville, Pemiscot County, March 28 and April 2. (Keaster, Harrendorf, Jones).

BEET LEAFHOPPER (Circulifer tenellus) - COLORADO - Some planting of sugar beets underway in Mesa County. Survey near Colorado-Utah border on Russian thistle and other weed hosts March 28 indicated no leafhoppers. Checks on weed hosts in Loma-Mack beet farmlands showed no leafhoppers present. Apparently no overwintering population. (Bulla).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MISSISSIPPI - Averaged 30 adults and nymphs per square foot in Bahia grass in Oktibbeha County. (Dinkins et al.).

SPOTTED ALFALFA APHID(Therioaphis maculata) - ARKANSAS - Surveys negative in northwest; somewhat suprising considering extended dry weather. (Boyer). OKLAHOMA - Heavy in alfalfa in Beckham, moderate in Alfalfa, light in Noble and Bryan Counties; 0-10 per 10 sweeps in Washington, Nowata, Mayes, Rogers, Tulsa and Wagoner Counties. (Okla. Coop. Sur.).

INSECTS AFFECTING CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEBRASKA - Mortality of overwintering larvae very light. Strong possibility of heavy first generation population. (Rhine). MINNESOTA - Limited checks in central and south central districts showed overwintering mortality averaged 4 and 0 percents, respectively. Populations low; collection very difficult. Woodpeckers quite effective in reducing populations further in some fields. (Minn. Ins. Sur.).

BLACK CUTWORM (Agrotis ipsilon) - FLORIDA - Late instars averaged one per 10 linear feet; cutting off 6-inch high sweet corn in 20-acre field in Belle Glade area, Palm Beach County. Det. by R. H. Steinbruck. (Fla. Coop. Sur. Apr. 1).

SMALL GRAINS

GRAIN APHIDS - MISSOURI - Aphids ranged 1-7 per foot of row in small grains in southwest and west central districts. Macrosiphum avenae dominant species; comprised 70 percent alate forms. Occasional alate of Rhopalosiphum maidis observed. (Houser). OKLAHOMA - M. avenae present in most fields checked in northeast area,

and in Wagoner, Creek and Payne Counties; 1-40 per linear foot. Ranged 5-20 per linear foot in many fields in Jackson, Greer, Kiowa, Grady and Caddo Counties. (Okla. Coop. Sur.).

CHINCH BUG (Blissus leucopterus) - MISSISSIPPI - Light in wheat in Sunflower County; 10 adults per 100 sweeps. (Dinkins et al).

A LEAFHOPPER (Dikraneura carneola) - UTAH - Moderate in field margins of south Salt Lake County dryfarm wheat and on Levan Ridge, Juab County. (Knowlton).

GRASS SHEATH MINER (Cerodontha dorsalis) - DELAWARE - Fairly common in field of green barley. Heads prematurely white on stems infested with larvae. This species was taken in association with Chaetopsis debilis (an otitid), Notanisomorpha ainsliei (a eulophid) and Bracon meromyzae (a braconid). C. dorsalis is the suspected host of N. ainsliei and B. meromyzae. All of these species were collected June 18, 1965, at Magnolia, Kent County, by D. MacCreary. The following are new records from Delaware: Chaetopsis debilis, determined by G. C. Steyskal from reared adults; Notanisomorpha ainsliei, determined by B. D. Burks; and Bracon meromyzae determined by P. M. Marsh. (Burbutis).

CUTWORMS - COLORADO - Chorizagrotis auxiliaris and Agrotis orthogonia up to 3 per linear foot of row on wheat in Kit Carson County; causing damage. (Wissant).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Ranged 100-300 per linear foot in wheat and barley in Washita County; damaging in western half of county. Heavy in Alfalfa, Grady and Cotton Counties; light to moderate in Cimarron, Noble, Payne and Kingfisher Counties. (Okla. Coop. Sur.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Continues heavy in few areas; some damage to wheat in Noble County. (Okla. Coop. Sur.). MISSOURI - Very light in small grains in southwestern and west central districts; 0-20 per foot of row. (Houser).

TURF, PASTURES, RANGELAND

CLOVER MITE (Bryobia praetiosa) - CALIFORNIA - Locally heavy on turf in Lucerne Valley, San Bernardino County. (Cal. Coop. Rpt.).

MAY BEETLES (Phyllophaga sp.) - ALABAMA - Larvae extremely heavy and feeding on roots of St. Augustine grass lawn in Spring Hill, Mobile County. Pupation underway; numerous adults emerging. (Diller, Seibels).

For Grasshoppers, see Federal-State Plant Protection Programs page 312.

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Negative in 3 Madison and 4 Benton County fields. (Boyer). Treatments applied in Crittenden County. (Roberts). Oviposition studies continue in Mississippi County. Alfalfa samples taken April 5 consisted of new growth. Eggs ranged 35-84 per square foot in 4 samples; this approximately 2.5 million per acre. (Miner, Dumas). MISSISSIPPI - Surveys in 3 delta counties show approximately same infestation level of 3 weeks ago. Larvae per square foot by counties as follows: Bolivar 29, Leflore 74, Washington 111. (Dinkins et al.). ALABAMA - Larvae heavy in 8 acres of alfalfa in Morgan County March 29. (Rutledge). GEORGIA - Larvae continue to damage alfalfa in Houston County. (Tippins). NORTH CAROLINA - Eggs present in green stems March 15 in Wake County; egg laying by overwintering adults not begun in Rowan County at that time. Tip damage occurred about April 1. Early larvae now second and third instars. (Campbell). VIRGINIA - Larvae present in all alfalfa checked in Patrick, Henry, Carroll, Floyd, Franklin, Roanoke and Montgomery Counties. Most larvae

second stage. Alfalfa 4-6 inches high. (Isakson). NEW JERSEY - Activity increased in southern counties; abundance will be similar to 1965. Growers advised to check for larvae in developing terminals. (Ins.-Dis. Newsltr.). OHIO - Eggs hatching; limited damage occurring in Scioto, Washington, Ross, Lawrence, Meigs, Gallia and Hocking Counties. Crop damage expected in all south central and southeastern counties with warm weather. Inspection of fields urged. Heaviest populations observed in Gallia County; 6 larvae per stem; second and possibly third stages collected. Alfalfa 3-7 inches high. By April 16, large larval populations began appearing in southern third of State. (Blair et al.). KENTUCKY - Nearly all alfalfa will need controls. Fields sprayed earlier must be observed closely for signs of increased feeding on new growth. (Miller, Apr. 12). INDIANA - Damage ranged 4-25 percent on alfalfa in Spencer, Warrick, Vanderburgh, Posey, Gibson and Knox Counties; heaviest in Ohio River Valley area. First and second instars predominant. (Matthew, Huber). Summary of sampling in Ohio River area of Harrison County as follows: March 17 - Larvae averaged 72 per square foot; 37 percent first instars, 56 percent second and 7 percent third. No adults found as night temperatures in middle to high 20's. Spring laid eggs averaged 23 per square foot. March 31 - Adults averaged 198 per 100 sweeps at night in most heavily infested field in area. (Hintz, Wilson). ILLINOIS - Larvae ranged 6-230 (averaged 118) per 100 sweeps in 4-8 inch alfalfa in southeast; 20-80 percent (average 60) terminals infested by 1-4 (average 1.76) first to second instars per infested stem. Occasional larva, possibly third instar, observed. Adults 0-4 (average 1.25) per 100 daytime sweeps. Temperatures varied 30-55°F. with 10-20 mile-per-hour wind and some snow flurries. Damage by larvae expected to be severe as soon as weather warms. (White). MISSOURI - Below normal temperatures halted larval development and caused undetermined amount of mortality. (Houser).

NEW MEXICO - No adults found in alfalfa checked in Laplata and Farmington areas, San Juan County. (Heninger). COLORADO - Some alfalfa fields burned over with propane gas burners to stimulate growth and bring partial control of this pest in Mesa County. Few, if any, chemicals used for adults. (Bulla). No alfalfa insects observed to date. Conditions very windy and generally unfavorable in Arkansas Valley. (Schweissing). UTAH - Adults active in Davis, Millard, Utah, Sevier, Piute, Sanpete, Washington and Iron Counties; generally active in alfalfa along west slope of Wasatch Mountains, Box Elder through Juab Counties. Light to moderate in Plain City, Weber County, alfalfa. (Knowlton). NEVADA - Few first-stage larvae observed in alfalfa near Sparks, Washoe County. (Cooney). IDAHO - Egg laying underway April 4 in Camas Prairie area and Grangeville, Idaho County. (Parks). WYOMING - One active adult collected in 26 alfalfa fields of Platte, Goshen and Laramie Counties. First adults collected 3 weeks later than in 1965 in the same area. (Pfadt).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Continues heavy on second-growth alfalfa in Yuma County; 1,000 per 100 sweeps. (Ariz. Coop. Sur.).

CLOVER LEAF WEEVIL (Hypera punctata) - ILLINOIS - Larvae 3-35 per square foot in 1 alfalfa and 5 clover fields in southeast. Microscopic examination showed 30 percent of third to fourth instars parasitized by hymenopterous larvae probably Biolysia tristis (an ichneumon wasp). Only light damage expected in district. Along State Highway 1 in Edgar, Clark, Crawford and Lawrence Counties, larvae 0-15 per square foot in clover fields; 32 percent third to fourth instars parasitized. No damage expected in area. (White). MISSOURI - Larvae in alfalfa very low, 0-4 per square foot, in the southwestern and west central districts. Many small larvae killed by subfreezing temperatures. (Houser).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - ILLINOIS - Few adults observed in clover and alfalfa in east-southeast and southeast districts. (White).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Larvae damaging crimson clover in Bullock County. (Stone).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - IDAHO - Adults flying; temperature 67°F. in Moscow area, Latah County, April 7. (Portman).

CLOVER ROOT CURCULIO (Sitona hispidula) - ILLINOIS - Few adults observed in clover and alfalfa in southeast district. (White).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - ARIZONA - Moderate in alfalfa throughout Graham and northern Cochise Counties. (Ariz. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Very light in alfalfa near Lovington, Lea County, (Mathews), and in Laplata and Farmington areas, San Juan County, (Heninger). ARIZONA - Continues moderate in Yuma County alfalfa; some increases noted in newly planted fields. Light in Graham County and San Simon Valley of Cochise County. (Ariz. Coop. Sur.). ARKANSAS - Increased in alfalfa in northwest; 400-600 per 100 sweeps. (Boyer). OKLAHOMA - Ranged 10-130 per 10 sweeps in alfalfa checked in northeast counties; 200-1,000 per 10 sweeps in Greer, Comanche, Kiowa, Stephens and Logan Counties. Heavy in alfalfa in Murray, Bryan and Grady Counties; light to moderate in many northwest, west central, central and south central counties. (Okla. Coop. Sur.). MISSOURI - Very low in alfalfa in southwest and west central districts; 100-200 per 100 sweeps. (Houser). ILLINOIS - Adults and nymphs ranged 12-480 (average 213) per 100 sweeps in 4-8 inch alfalfa in southeast; 0-5 percent killed by parasites. (White). WISCONSIN - No nymphs found in 2 alfalfa fields checked in Madison area, but some hatch probably occurred. Alfalfa 1-2 inches high. (Wis. Ins. Sur.). VIRGINIA - Very light in alfalfa checked in Patrick, Henry, Carroll, Floyd, Franklin, Roanoke and Montgomery Counties; 30-350 per 100 sweeps (average 110). (Isakson).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARKANSAS - Small numbers in alfalfa; no appreciable increase noted. (Boyer).

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) - UTAH - Numerous in alfalfa at Plain City, Weber County. (Knowlton).

TARNISHED PLANT BUG (Lygus lineolaris) - ARKANSAS - Increasing in alfalfa in northwest; 15-20 adults per 100 sweeps. (Boyer). OKLAHOMA - Present in most alfalfa checked in northeast area; 0.5-2 per 10 sweeps. (Okla. Coop. Sur.). ILLINOIS - Few adults observed in clover and alfalfa in southeast district. (White).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Adults 2-4 per 25 sweeps in alfalfa near Salem, Dona Ana County, (Campbell); 0-2 per 25 sweeps in Lovington area, Lea County, (Mathews). ARIZONA - Nymphs low in alfalfa in Graham County and in San Simon Valley of Cochise County. (Ariz. Coop. Sur.). UTAH - L. elisus and Lygus sp. active in alfalfa fields examined in Box Elder, Weber, Salt Lake, Utah and Sevier Counties. Some L. hesperus in Sevier and Utah County fields. (Knowlton). WYOMING - Adults active in alfalfa in Platte, Goshen and Laramie Counties, 1-4 per square foot. (Pfadt).

MEADOW SPITTLEBUG (Philaenus spumarius) - ILLINOIS - Occasional first-instar nymph observed in White County. (White).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Larvae increasing in alfalfa in Gila Valley, Yuma County; 70 per 100 sweeps. (Ariz. Coop. Sur.). OKLAHOMA - First of season noted in Tulsa County alfalfa. (Okla. Coop. Sur.).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - No larvae found in alfalfa in southwestern and west central districts. (Houser). First light trap catch of season occurred at Portageville, Pemiscot County, April 6. (Kester, Harrendorf, Jones).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - OKLAHOMA - Averaged 1.5 per 10 sweeps in alfalfa in Kiowa County. First report of season. (Okla. Coop. Sur.).

CLOVER MITE (Bryobia praetiosa) - ARIZONA - Heavy numbers damaged field of alfalfa in San Simon Valley of Cochise County; light in other fields. (Ariz. Coop. Sur.).

BROWN WHEAT MITE (Petrobia latens) - NEW MEXICO - Light to moderate in alfalfa along river levee in vicinity of Hatch, Dona Ana County. (Campbell).

MISCELLANEOUS FIELD CROPS

CUTWORMS - NEVADA - Heavy flights and subsequent egg laying indicate possible heavy larval infestations later in season. Only early stage larvae of Peridroma saucia identified to date. (Zoller).

WHITE-LINED SPHINX (Celerio lineata) - ARIZONA - Small numbers of adults found in and around Safford, Graham County. (Ariz. Coop. Sur.).

EASTERN LUBBER GRASSHOPPER (Romalea microptera) - FLORIDA - Heavy on weeds in Winter Haven, Polk County; about 0.5 inch long and migrating. Chemical controls tested. (J. C. Denmark, Mar. 25).

VARIEGATED CUTWORM (Peridroma saucia) - ARKANSAS - Light but causing some damage to tomato plants in Drew County field. (Roberts).

TOMATO RUSSET MITE (Aculus lycopersici) - CALIFORNIA - Medium to heavy on black nightshade in San Marcos, San Diego County. Nightshade reservoir host. (Cal. Coop. Rpt.).

COLE CROPS

DIAMONDBACK MOTH (Plutella maculipennis) - ALABAMA - Larvae light and feeding on cabbage in St. Elmo area, Mobile County. Some pupation noted; few adults observed. (Seibels, Diller). UTAH - Adults and larvae moderate on Sophia sp. in St. George-Santa Clara area, Washington County. (Knowlton).

IMPORTED CABBAGEWORM (Pieris rapae) - ALABAMA - Small to medium sized larvae light on cabbage in St. Elmo area, Mobile County. Adults abundant throughout State. (Diller, Seibels et al.).

CUCURBITS

MELON APHID (Aphis gossypii) - ARIZONA - Appearing on new melon crop in Yuma County areas. (Ariz. Coop. Sur.).

SOME FIRST APPEARANCES OF THE SEASON

Armyworm and black cutworm adults in Missouri; large numbers of armyworm adults reported south of South Carolina. Lesser clover leaf weevil and clover leaf weevil adults in Illinois. Sweetclover weevil adults in Idaho. Meadow spittlebug nymphs in Illinois. Alfalfa caterpillar larvae in Arizona and Oklahoma. Variegated cutworm adults in Missouri. Yellow-striped armyworm in Oklahoma. Melon aphid in Arizona. Apple grain aphid in Ohio. A fruit-tree mite (Bryobia rubriculus) and mourning-cloak butterfly adults in Utah. Mosquito adults in Colorado. Horn fly adults in Arkansas. Elm leaf beetle in Missouri. Face fly adults in South Dakota.

DECIDUOUS FRUITS AND NUTS

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OHIO - First egg hatch in Fairfield County noted March 17; now 12-50 per bud. Syrphid fly larvae present; eggs first found March 29; averaged 1 per 5 buds. (Holdsworth). Infesting nearly 100 percent of buds on apple trees examined in southeast area; syrphid fly eggs and larvae observed in aphid colonies. (Rose).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Low numbers of adults and eggs found at Storrs April 1; adults very abundant April 5, eggs scarce. (Savos).

LYGUS BUGS (Lygus spp.) - UTAH - Active and fairly numerous in alfalfa fields and orchards in Weber County from Plain City through North Ogden. (Knowlton).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - CONNECTICUT - Large number of overwintering egg masses in New Haven; abundant in 1965; will probably be abundant in 1966. (Savos, Apr. 6).

EUROPEAN RED MITE (Panonychus ulmi) - OHIO - Overwintering eggs hatching in southern area apple orchards. Generally large numbers indicate high potential populations. (Rose).

A FRUIT-TREE MITE (Bryobia rubrioculus) - UTAH - Active in apple orchard at Santa Clara, Washington County. (Knowlton).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Stem mothers attaining maturity. Approximately 50 percent of eggs hatched; 60 percent of unhatched eggs nonviable on peaches in Mesa County. Population moderate to heavy. Apricots in full bloom. (Bulla). UTAH - Causing m 'erate curling of peach foliage at Santa Clara and Veyo, Washington County. (Knowlton).

AN APHID (Anuraphis helichrysi) - UTAH - Numerous in St. George-Santa Clara area, Washington County; leaves on some plum trees severely curled. (Knowlton).

LESSER PEACH TREE BORER (Synanthedon pictipes) - ALABAMA - Adult emergence and flight occurring in central area from laurelcherry, peaches and ornamentals. (McQueen).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - CALIFORNIA - Adults medium in bait traps in peach trees at Mettler Station, Kern County. (Black, Ent. Serv.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OKLAHOMA - Light to moderate on fruit trees in Cleveland County; widespread but light on wild plum in northeast counties. (Okla. Coop. Sur.).

FIG SCALE (Lepidosaphes ficus) - CALIFORNIA - Light on fig trees at Clovis, Fresno County. Parasites quite effective in reducing infestations in past few years. (Cal. Coop. Rpt.).

HICKORY SHUCKWORM (Laspeyresia caryana) - OKLAHOMA - Pupation begun in shucks checked in Lincoln County. (Okla. Coop. Sur.).

CITRUS

Citrus Insect Situation in Florida - End of March - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 52 percent of groves (norm 58 percent); 33 percent economic (norm 36 percent). Population below normal and in moderate range but increasing. Increase expected in April will be offset by new growth and removal of mites by harvest. Highest districts south and west. CITRUS RED MITE (Panonychus citri) infested 36 percent of groves (norm 42 percent); 14 percent economic (norm 16 percent). Population low and below average; little change expected. Highest districts east and north. TEXAS CITRUS MITE (Eutetranychus

banksi) infested 31 percent of groves (norm 32 percent); 8 percent economic (norm 13 percent). Population below average and in low range; however increase in distribution and intensity expected. Highest districts north and west. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 3 percent of groves (norm 11 percent); none economic. Will increase slightly but will be unimportant. GLOVER SCALE (Lepidosaphes gloverii) infested 78 percent of groves; 19 percent economic. Population above normal and approaching high range. Increase expected. Highest districts central, east and south. PURPLE SCLAE (L. beckii) infested 74 percent of groves; 5 percent economic. Population below normal; slight increase expected. Highest district central. YELLOW SCLAE (Aonidiella citrina) infested 75 percent of groves; 20 percent economic. Population above average and highest on record for March. Increase expected in most districts. Highest district central and lowest north. CHAFF SCALE (Parlatoria pergandii) infested 60 percent of groves; 12 percent economic. Population below normal and in moderate range; slight increase expected. Highest district central. BLACK SCALE (Saissetia oleae) infested 29 percent of groves; 13 percent economic. Population near average and at low level. Increase not expected until May. Highest district east. Populations of WHITEFLIES near normal. Larval forms will decrease and adults will increase during April. MEALYBUGS at low levels but light infestations more numerous than normal. APHIDS below normal for March. Light in 20 percent of groves; will reach peak during April in most groves. High infestations extending into May expected in groves defoliated by cold. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

Quarterly Insect and Mite Outlook in Florida - April through June - This outlook is based on the assumption that weather beyond the period of the current Environmental Data Service's 30-day outlook will be normal. Therefore, the forecast given below cannot be viewed with the same degree of confidence as those in the "Citrus Insect and Disease Summary" usually released twice each month.

Near normal populations of CITRUS RUST MITE will occur, with about 35 percent of groves developing moderate to heavy infestations. Increases expected in late April and in June. TEXAS CITRUS MITE will increase in scattered groves in April, becoming more general in May. Expected to be above average and in high range by June with more than 50 percent of groves moderate to heavy. CITRUS RED MITE will be about as abundant as in past 3 years. Scattered groves will have important infestations in April. General increase starting in May will result in moderate to heavy infestations in about 40 percent of groves. Summer population peak expected at the end of June. SIX-SPOTTED MITE infestations will occur in about 6 percent of groves through June but very few will be important. Rapid increase of BLACK SCALE starting in early May expected to result in an abnormally high population by the end of June. YELLOW SCALE will be above average; all districts expected to have more infestations with some of economic importance. GLOVER SCALE increase in April and May expected to give population peak in late June at above average level and in high range. AN ARMORED SCALE (Unaspis citri) will occur in more locations. CHAFF SCALE and PURPLE SCALE will increase but neither expected to develop statewide population exceeding normal, moderate level. Adult WHITEFLIES will be numerous in April and again in late June. Larvae expected to be near normal level. MEALYBUGS expected in above normal numbers in May through June. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Continues buildup in citrus groves in Maricopa and Yuma Counties; treatments necessary for protection of new fruit. (Ariz. Coop. Sur.).

SMALL FRUITS

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - IDAHO - Seriously damaged 30-acre commercial strawberry planting in Ada County. Grower plans to treat infested areas. (Hilfiker).

ORNAMENTALS

ARMORED SCALES - ALABAMA - Fiorinia theae crawlers active and abundant on previously affected camellia and Burford holly; moving to undersides of old and new leaves. (McQueen). VIRGINIA - Pseudaulacaspis pentagona medium on pyracantha in Lebanon, Russell County; found on wide variety of hosts and important because of 2-3 generations per year. (Amos). CALIFORNIA - Hemiberlesia rapax heavy on ceanothus nursery stock in Walnut Creek, Contra Costa County. Diaspis cocois heavy on coconut palms in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

SOFT SCALES - CALIFORNIA - Pulvinaria sp. medium on birch in nursery in Walnut Creek, Contra Costa County. Saissetia coffeae heavy on mother ferns in a nursery in Oroville, Butte County. (Cal. Coop. Rpt.).

GREENHOUSE ORTHEZIA (Orthezia insignis) - FLORIDA - Moderately infesting stems and leaves of 50 of 100 inspected Alternanthera bettzickiana plants in nursery at Fort Lauderdale, Broward County. (Clinton, Mar. 28).

A MEALYBUG (Pseudococcus obscurus) - CALIFORNIA - Locally heavy on Buxus sp. in Modesto, Stanislaus County. (Cal. Coop. Rpt.).

APHIDS - ALABAMA - Aphis spiraecola heavy on new growth of spirea throughout State. Macrosiphum rosae heavy on new growth of roses in central and southern areas. (McQueen). CALIFORNIA - Aphids, probably A. gossypii heavy on euphorbia nursery stock in Mountain View, Santa Clara County. Tamalia coweni heavy on manzanita nursery stock in Walnut Creek, Contra Costa County. Cinara curvipes very heavy locally on Atlas cedar in Alameda, Alameda County. (Cal. Coop. Rpt.).

A PSYLLID (Psylla uncatoides) - CALIFORNIA - Adults heavy on acacia shrubs in Lompoc, Santa Barbara County. (Cal. Coop. Rpt.).

A LACE BUG (Corythucha incurvata) - CALIFORNIA - Heavy on Photinia arbutifolia in La Grange, Stanislaus County. (Cal. Coop. Rpt.).

AZALEA LEAF MINER (Gracillaria azaleella) - CALIFORNIA - Medium and damaging azalea nursery stock in Oroville, Butte County. (Cal. Coop. Rpt.). FLORIDA - Larvae moderate on 140 of 200 inspected azalea plants at Brandon, Hillsborough County. (Simmons, Mar. 30).

NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) - DELAWARE - Heavy in American holly in New Castle County; mostly pupae. (Burbutis).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Larvae medium on Malva parviflora in San Marcos, San Diego County. (Cal. Coop. Rpt.).

A WALSHIID MOTH (Periploca ceanothiella*) - CALIFORNIA - Heavy on ceanothus nursery stock in Walnut Creek, Contra Costa County. (Cal. Coop. Rpt.).

JUNIPER WEBWORM (Dichomeris marginella) - IDAHO - Small larvae, probably this species, webbing leaves of Meyer juniper in Boise, Ada County. (McCracken).

A TARSONEMID MITE (Steneotarsonemus ananas (Tyron)) - CALIFORNIA - Medium on a bromeliad (Aechmea fasciata) nursery stock in Brea, Orange County. Det. confirmed by E. W. Baker. Species known from pineapple in Australia and Hawaii. This is a new North American record. (Cal. Coop. Rpt.).

PRIVET MITE (Brevipalpus obovatus) - CALIFORNIA - Medium locally on rhododendrons in Menlo Park, San Mateo County. (Cal. Coop. Rpt.).

A FALSE SPIDER MITE (Pentamerismus erythreus) - IDAHO - General infestation, requiring treatment, observed on ornamental arborvitae in Caldwell. (Bechtolt).

* See also corrections page 313.

FOREST AND SHADE TREES

A CONIFER SAWFLY (Neodiprion taedae linearis) - ARKANSAS - First hatching noted March 15 in Calhoun County. By March 23, hatching well under way. Observations indicate light infestation in 1966. (Ark. For. Pest Rpt., April).

ENGRAVER BEETLES (Ips spp.) - ARKANSAS - Activity will increase as season progresses. Tree vigor and available moisture will influence level of infestations and resultant damage. Residual infestations from 1965 pine bark beetles evident in a few isolated areas. Salvage operations underway where feasible. (Ark. For. Pest Rpt., April).

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - ARKANSAS - Remains absent or undetected in State. Foresters encouraged to remain alert. (Ark. For. Pest Rpt., April).

PINE TIP MOTHS - ARKANSAS - Emergence of adults first noted in Hempstead County March 15. Examination of test plots revealed adult activity well under way. Treatment for first generation control advised by April 10 in south, and by April 20 in north. This assumes that seasonal moderate weather prevails for the first week in April. Emergence noted at Fayetteville March 29. (Ark. For. Pest Rpt., April).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ARKANSAS - Second and third stage larvae noted on wild cherry in Washington County. (Boyer). MISSOURI - Larvae observed on black cherry as far north as Lamar, Barton County. (Houser). ILLINOIS - Small nests observed in east-southeast district. (White).

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) - UTAH - Severe on some poplar trees and shrubs along Virgin River drainage from Santa Clara to Rockville, Washington County; moderate on shrubs north of St. George. Conspicious in some orchards at Rockville. (Knowlton).

A TENT CATERPILLAR (Malacosma incurvum discoloratum) - NEVADA - Larvae and damage heavy on elm and poplar trees in Overton, Clark County. (Nichols). Identification based upon comparison with larvae determined by F. H. Stehr. (Bechtel).

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Larvae heavy and defoliating oak trees at Fort Ord, Monterey County. (Cal. Coop. Rpt.).

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) - UTAH - Adults observed in Box Elder, Utah and Iron Counties week of March 31. Numerous adults observed in Ogden area, Weber County. (Knowlton).

ELM LEAF BEETLE (Pyrrhalta luteola) - MISSOURI - Adults beginning to leave overwintering sites in southwestern district. (Jaynes, C. Jones).

A PLANT BUG (Orthotylus translucens) - DELAWARE - All stages abundant on Moraine honeylocust and causing severe injury at Bridgeville, Sussex County, June 4, 1965. Collected by D. MacCreary. Det. by R. C. Froeschner. This is a new State record. (Burbutis).

ARMORED SCALES - FLORIDA - Neopinnaspis harperi and Melanaspis obscura infested oak, in Sebring, Highlands County. These are new county records. (Mosier, Mar. 28).

MAN AND ANIMALS

MOSQUITOES - UTAH - First and second-stage larvae of Aedes sp. very numerous in

Randolph area, Rich County. (Roberts). Mosquito adults observed in fields in St. George-Washington area, Washington County. Few overwintered Culex tarsalis adults noted in Weber County; Aedes dorsalis and A. increpitus larvae common in some areas. Several areas sprayed twice to reduce larval populations; granular insecticides also applied. Larvae sometimes numerous elsewhere in northern area. Aedes niphadopsis adults emerging in Grantsville area, Toole County. In Weber County, A. increpitus larvae most numerous as in past 4-5 years along Weber River and South Fork of river above Huntsville; no adults noted to April 8. A.dorsalis larvae dominant in lower pasture areas of lower valley; third and fourth stages 0-30 per dip. No large populations near lakeshore. Control needed only twice this spring. First to third stage A. sierrensis larvae common in tree holes from Uintah to Riverdale. A. campestris ranged 0-3 per dip in Pleaseant View area north of Ogden. Culiseta inornata unusually low. Warm spring with little rain held population below normal in Weber County. (Fronk, Knowlton). COLORADO - Adults of Culex tarsalis and Culiseta inornata taken in Greeley, Platteville and Windsor areas; females presumably of overwintering populations. First larvae of Aedes dorsalis taken March 31 in Evans area. Intensive surveys in Colorado Springs area and other areas of El Paso County showed no breeding to March 31 (Harmston). MINNESOTA - Most mosquitoes in 174 larval collections made in Metropolitan Mosquito Control District second instar; few third instar Aedes excrucians, A. riparius, A. abserratus and A. stimulans found. (Minn. Ins. Rpt.). LOUISIANA - Larval collections in Jefferson Parish Department of Mosquito Control during week ending April 1 yielded Anopheles crucians, Culex pipiens quinquefasciatus, C. salinarius and Culiseta inornata; Culex salinarius predominates in light traps, Culiseta inornata decreased in light traps. (Stokes).

HORN FLY (Haematobia irritans) - MISSISSIPPI - Averaged 50 flies per animal on 33 head of cattle in Jefferson Davis County. Buildup very rapid; control measures urged in Jefferson Davis County. (Dinkins et al.). ARKANSAS - First outdoor specimens of season observed in northeast April 4. (Lancaster, Simco). OKLAHOMA- Averaged 300 per head on cows and 900 per head on bulls in Major County. Ranged 5-100 per head in Payne County and averaged 12 per head on cows in Mayes County. Moderate on cows and horses in Comanche County. (Okla. Coop. Sur.).

CATTLE GRUBS (Hypoderma spp.) - NORTH DAKOTA - Ranged 0-41 (averaged 3.2) on 1,424 range cows and calves at Dickinson and Mandan livestock auctions March 15-24. Grubs averaged 9.4 per animal in 34 percent of cattle. Severe on 9 percent, moderate on 25 percent, light on 66 percent of infested animals. Less than 1 percent of grubs had dropped. (Brandvik). KANSAS - Survey of cattle throughout State made during February; cattle randomly selected and counts made at community sales. Populations appeared heaviest in southeast and south central districts. Market managers, buyers and farmers indicate populations higher than in recent years. Percent infestation by district as follows: Northeast, 10-68 in 2 counties; east central, 6-58 in 3 counties; southeast, 69-86 in 3 counties; north central, 2-53 in 4 counties; central, 35-48 in 3 counties; south central, 44-84 in 6 counties; northwest, 4-13 in 2 counties; west central, 18-36 in 2 counties; southwest, 18-78 in 4 counties. Of 1,375 animals inspected, 605 found infested. (Simpson). OKLAHOMA - H. lineatum moderate on cattle in Comanche and Cotton Counties. (Okla. Coop. Sur.).

HOUSE FLY (Musca domestica) - OKLAHOMA - Averaged 4 per Scudder grid in untreated barns in Payne County. (Okla. Coop. Sur.). ARKANSAS - First outdoor specimens of season observed in northeast April 4. (Lancaster, Simco).

CATTLE LICE - UTAH - Approximately 85 percent of cattle entering Sevier County feed lots treated with a pour-on systemic insecticide; 15,000-20,000 cattle to be treated this spring. Many ranchers treat beef herds both fall and spring. (Rickenback, Knowlton).

TICKS - OKLAHOMA Amblyomma americanum averaged 30 adults per head on steers in Atoka County; Ixodes scapularis averaged 18 and Dermacentor variabilis 2 per head on same steers. Unspecified ticks reported heavy on livestock in Latimer County. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) - OKLAHOMA - Infesting food products in homes and stored grain in barns in Payne County. (Okla. Coop. Sur.).

DERMESTID BEETLES (Anthrenus spp.) - OKLAHOMA - Adults damaging woolens in several homes in Payne, Logan, and Pontotoc Counties. (Okla. Coop. Sur.).

WHITE-MARKED SPIDER BEETLE (Ptinus fur) - NORTH DAKOTA - Found in livestock feed storage area in Fargo, Cass County. (Post).

ELM LEAF BEETLE (Pyrrhalta luteola) - MISSOURI - Becoming nuisance in homes in southwestern district. (Jaynes, C. Jones).

FACE FLY (Musca autumnalis) - SOUTH DAKOTA - Nuisance in homes in Canton, Lincoln County. (Kantack).

MELON APHID (Aphis gossypii) - ARIZONA - Heavy adult populations migrating through city of Yuma; annoying in business establishments and to customers. (Ariz. Coop Sur.).

CLOVER MITE (Bryobia praetiosa) - OHIO - Active in central area. (Spilker). MISSOURI - Reported in new homes in Carterville area, Jasper County, (Jaynes); and from home in Moniteau County, (Peters). OKLAHOMA - Entering homes and public buildings in Texas and Pottawatomie Counties. (Okla. Coop. Rpt.). NEBRASKA - Heavy numbers entering homes throughout eastern and central areas. (Stilwell, Rhine).

SUBTERRANEAN TERMITES (Reticulitermes spp.) - MARYLAND - R. flavipes swarmed inside and about several homes in suburban Prince Georges County. (U. Md., Ent. Dept.). OHIO - R. flavipes peak swarming activity occurred mid- to late February in southern half of State. Persisted for about 2 weeks. Swarming this early unusual. (Delaplane). UTAH - R. hesperus present in home in Salina, Sevier County. (Knowlton).

BENEFICIAL INSECTS

LADY BEETLES - UTAH - Larvae becoming numerous on some aphid-infested rose bushes and plum trees in Santa Clara-St. George area, Washington County. (Knowlton). NEW MEXICO - Ranged 2-6 adults per 25 sweeps in alfalfa in northern Dona Ana County (N. M. Coop. Rpt.). OKLAHOMA - Hippodamia convergens continues to increase in wheat and alfalfa in most areas; 1-2 per linear foot in many wheat fields in northeast. (Okla. Coop. Sur.).

LACEWINGS - NEW MEXICO - Ranged 2-4 per 25 sweeps in alfalfa in northern Dona Ana County. (N. M. Coop. Rpt.). MISSISSIPPI - Chrysopa spp. increasing; other beneficial species unchanged. (Dinkins et al.). ARKANSAS - Chrysopa spp. adults increasing in alfalfa in northwest; 15-20 per 100 sweeps. (Boyer). ILLINOIS - Few Chrysopa oculata adults observed in clover and alfalfa in southeast district. (White).

HONEY BEE (Apis mellifera) - OHIO - Honey production totaled 10,027,000 pounds in 1965; 36 percent below 1964 production and 7 percent below 1963. Total of 4,011,000 pounds available for sale December 15, 1965, or 38 percent less than previous year. Beeswax production totaled 150,000 pounds, 37 percent less than in 1964. Honey yield of 37 pounds per colony 20 pounds less than in 1964 and 4 pounds less than in 1963. Lack of moisture caused early summer flow to be well below normal. Conditions improved in August and September, but some areas affected by excess moisture and cool weather. Fall honey flow below that anticipated. Quality and flavor quite variable over State, due to irregular weather pattern. Price per pound of honey was 18.5 cents in 1965, compared with 19.0 cents in 1964 and 1963. Beeswax price down one cent from 1964; averaged 44 cents

per pound. Value of honey and beeswax produced during 1965 totaled 1,921,000 dollars compared with 3,107,000 dollars in 1964. (Clampet, Kendall). ALABAMA - First swarm of season reported in southeast. (Wallace).

A BRACONID (Lysiphlebus testaceipes) - OKLAHOMA - Active in northeast counties. Up to 5 percent of Schizaphis graminum (greenbug) parasitized in few fields. (Okla. Coop. Sur.)

AN ICHNEUMON WASP (Dolichomitus irritator) - DELAWARE - Reared from Elaphidionoides villosus (twig pruner) in maple. Collected November 20, 1965, at Laurel, Sussex County, by D. MacCreary. Det. by L. M. Walkley. This is a new State record. (Burbutis).

A PTEROMALID WASP (Zatropis albiclavis) - DELAWARE - Adults reared from locust leaves; Obolodiplosis robiniae (a cecidomyiid midge) suspected host. Collected August 5, 1965, by D. MacCreary at Newark, New Castle County. Det. by B. D. Burks. This is a new State record. (Burbutis).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - OKLAHOMA - Egg surveys in rangeland areas of Greer, Jackson, Kiowa, Tillman, Carter, Johnston, Murray, Harper, Woodward, Blaine and Atoka Counties revealed 0.25-1.4 viable egg pods per square foot of soil. (Okla. Coop. Sur.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period April 3-[illegible], a total of 5 cases was reported in TEXAS by county as follows: One each in Live Oak, Hidalgo, Jim Wells, Webb and Cameron. The Republic of Mexico reported 51 cases as follows: Baja California Norte 1, Territorio sur de Baja California 1, Sonora 39, Chihuahua 1, Tamaulipas 7, Nuevo Leon 2. Sterile screw-worm flies released: Texas 11,306,250, Arizona 6,012,000, New Mexico 1,960,000, and Mexico 108,376,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	7	19	268	1199	2.61	1.58
1965	0	4	129	744	0.00	0.53
1966	5	33	108	472	4.62	6.99
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	57	629	41	408	139.02	154.16
1966	54	580	57	364	94.73	159.34

Mexico Field Study - No report received for this period.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

INSECT DETECTION

A TARSONEMID MITE (Steneotarsonemus ananas (Tyron)) - CALIFORNIA - Collected on Aechmea fasciata nursery stock in Brea, Orange County, by W. Amling March 18, 1966. Det. confirmed by E. W. Baker. Known from pineapple in Australia and Hawaii. This is a new North American record. (Cal. Coop. Rpt.).

AN OTITID FLY (Chaetopsis debilis) - DELAWARE - Larvae collected from stems of green barley at Magnolia, Kent County, by D. MacCreary June 18, 1965. Det. by G. C. Steyskal from reared adults. This is new State record. (Burbutis). (p. 302).

A EULOPHID WASP (Notanisomorpha ainsliei) - DELAWARE - Reared from barley stems in association with Chaetopsis debilis and Cerodontha dorsalis (suspected host); collected June 18, 1965, by D. MacCreary at Magnolia, Kent County. Det. by B. D. Burks. This is new State record. (Burbutis). (p. 302).

A BRACONID WASP (Bracon meromyzae) - DELAWARE - Collection data same as for N. ainsliei. Det. by P. M. Marsh. This is new State record. (Burbutis). (p. 302).

A PLANT BUG (Orthotylus translucens) - DELAWARE - Severely injured Moraine honey-locust at Bridgeville, Sussex County, June 4, 1965. Collected by D. MacCreary. Det. by R. C. Froeschner. This is new State record. (Burbutis). (p. 309).

A PTEROMALID WASP (Zatropis albiclavis) - DELAWARE - Adults reared from locust leaves; Obolodiplosis robiniae (a cecidomyiid midge) suspected host. Collected August 5, 1965, by D. MacCreary at Newark, New Castle County. Det. by B. D. Burks. This is new State record. (Burbutis). (p. 312).

AN ICHNEUMON WASP (Dolichomitus irritator) - DELAWARE - Reared from Elaphidionoides villosus (twig pruner) in maple by D. MacCreary. Collected November 20, 1965, at Laurel, Sussex County. Det. by L. M. Walkley. This is new State record. (Burbutis). (p. 312).

AN ANT (Leptothorax curvispinosus) - OKLAHOMA - Taken in hollow gall on dead weed in Nowata County, April 5, 1966. Det. by J. H. Young. This is new State record. (Okla. Coop. Sur.).

ARMORED SCALES - FLORIDA - Neopinnaspis harperi and Melanaspis obscura reported for first time in Highlands County. (Mosier, Mar. 28).

CORRECTIONS

CEIR 16(13):254 - Pest Control Accomplishments - Delete entry on pine tussock moth (Dasychira plagiata). Although a cooperative project to spray 12,000 acres of timber in Wisconsin for control of this pest had been approved, it was cancelled after evidence indicated that the population had declined sufficiently so that insecticide application was no longer warranted.

CEIR 16(13):258 - Paragraph 4 - A COSMOPTERIGID MOTH (Periploca nigra) should read a WALSHIID MOTH (Periploca nigra). Hodges, R. W. 1962. Entomologica Americana 42:113-114.

CEIR 16(13):261 - First paragraph, lines 1 and 2 - should read: A PSYLLID (Psylla uncatoides) was serious on acacia and albizzia statewide and A PSYLLID (Euphyllura arbuti) was heavy on madrone in north coastal areas. (Cal. Coop. Rpt.).

CEIR 16(14):278 - A CHRYSAUGID MOTH (Galasa nigrinoides) should read Galasa nigrinodis.

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
MISSISSIPPI																								
Stoneville 3/31-4/6	36-88	Trace	2BL	12			1											131	3	201				
Rolling Fork 3/31-4/6	36-87	1.85	BL	1					3		3							6		6				
Tunica 3/31-4/6	33-83	Trace	BL	7			1											22	1	23				
MISSOURI																								
Portageville 3/20-4/8			BL	3														1		2				
TEXAS																								
Brownsville 4/2-8	53-87	Trace	2BL	6			1		36		12					1		11		6			10	
Waco 4/2-8			BL	6			6		9									11		15				

HAWAII INSECT REPORT

Special Insects of Regional Significance - SOUTHERN GREEN STINK BUG (Nezara viridula smaragdula) heavy on Malva parviflora (cheese weed) in Nanakuli, Oahu; mostly adults and fifth-instar nymphs. Nymphs and adults medium on green beans and Plantago major (broad-leaved plantain) in Naalehu and Honuapo, Hawaii Island. Nymphs light in 0.25 acre of eggplant in Kapaa, Kauai. (Suzukawa, Shirakawa, Fujimoto). A GRASSHOPPER (Schistocerca vaga) - Ten adults and 47 nymphs of various stages swept from Desmanthus virgatus (slender-mimosa), Sida fallax (ilima), and Gossypium sp. (cotton) in Nanakuli, Oahu. Rapid buildup occurring. (Haw. Ins. Rpt.). A STINK BUG (Thyanta accerra) - Fifteen adults swept from Chloris inflata (swollen finger grass) in Nanakuli, Oahu. Nymphs and adults light on Phaseolus lathyroides (wild bean) in Fort Kam-Hickam Air Force Base area, Oahu. (Suzukawa, Kajiwara). One adult of a PLATASPID BUG (Coptosoma xanthogramma) intercepted at Honolulu International Airport, Oahu, April 2, on passenger's baggage destined for out of State. (Shiroma).

Beans and Peas - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) continues heavy on snap beans in Waianae, Oahu; light on snap beans in Puunene, Maui. (Yamamoto, Miyahira).

Citrus -All stages of COTTONY-CUSHION SCALE (Icerya purchasi) heavy on citrus and Pittosporum spp. in Naalehu and light on citrus in Hilo, Hawaii Island. Rodolia cardinalis (vedalia) larvae feeding on scales in Hilo. (Shirakawa, Yoshioka).

General Vegetables - IMPORTED CABBAGEWORM (Pieris rapae) caused moderate damage on turnips in Hilo, Hawaii Island, and on broccoli and cabbage in Makawao and Puunene, Maui. Pupal cases of Apanteles glomeratus (a braconid) noted in moderate numbers amid dead P. rapae larvae in Puunene. (Yoshioka, Miyahira). THREE-LINED POTATO BEETLE (Lema trilineata) caused moderate damage to eggplant in Puunene, Maui; eggs, larvae, and adults numerous. (Miyahira).

Ornamentals - Larvae of a NOCTUID MOTH (Achaea janata) heavy on wild Ricinus communis (castor-bean) in Auwahi, Maui; light on rose and croton plants in Lanikai, Oahu. (Haw. Ins. Rpt.).

Forest and Shade trees - BARNACLE SCALE (Ceroplastes cirripediformis) heavy on Citharexylum spinosum (fiddlewood) in Kaneohe, Oahu. Nymphs and adults heavy on branches of fifteen 10-foot trees. Trees appeared weak and stunted. (Haw. Ins. Rpt.).

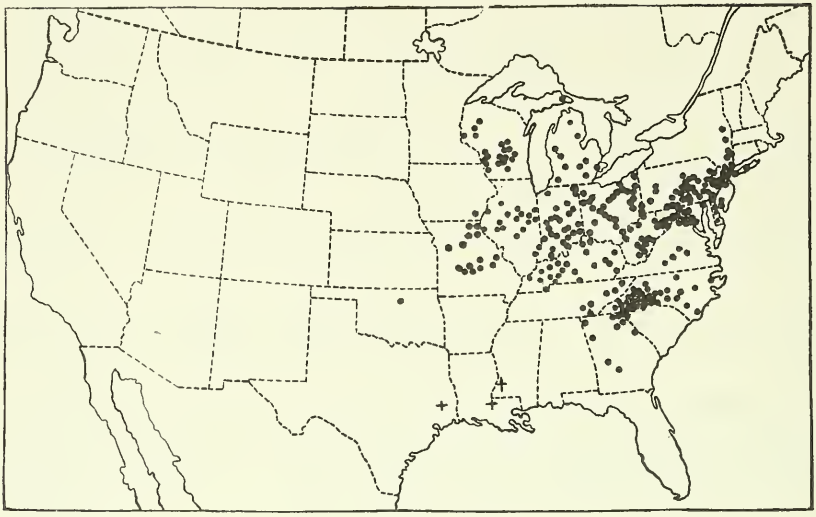
Man and Animals - BLACK WIDOW SPIDER (Latrodectus mactans) - Large numbers of eggs, immatures and adults noted under stones, boards and other objects in Kihei, Maui. (Krauss).

Beneficial Insects - One adult male of a predaceous MOSQUITO (Toxorhynchites inornatus) captured in Kaneohe, Oahu; first known recovery since 1929. Species purposely introduced from New Britain and New Guinea to aid in control of day-biting mosquitoes. (Hardy). Adults of a WEEVIL (Apion ulicis) medium on Ulex europaeus (gorse) in Olinda, Maui at 4,000 feet. This purposely introduced seed feeder established in State since 1957 but not observed during past several years. A CERAMBYCID BEETLE (Archlagocheirus funestus) apparently entering pupal stage in Opuntia sp. (prickly pear cactus) in Kawaihae-uka area, Hawaii Island; many larvae in prepupal stage. Species purposely introduced from Australia in 1951 to aid in control of wild cactus. (Yoshioka).

Miscellaneous Insects - A TENEBRIONID BEETLE (Gonocephalum bilineatum) - Light numbers of adults observed feeding on stems and leaves of Emex sp., a weed, in Mokuleia, Oahu; new host record. Species previously reported damaging shoots and stems of Acacia melonoxylon (Australian blackwood) at Waimea State Forest Nursery, Hawaii Island. (Haw. Ins. Rpt.).

PERIODICAL CICADAS (Magicicada spp.)

Expected appearance of Brood VI of the 17-year race and Brood XXVI of the 13-year race.



● = Brood VI of 17-year race

+ = Brood XXVI of 13-year race

Owing to the complex of species in this genus, Dr. R. C. Froeschner, Federal taxonomist in this group, is interested in obtaining specimens of cicadas from these areas for the National collection. These may be sent to the Division of Hemiptera, U.S. National Museum, Washington, D.C. 20560.

Estimates of Damage by the European Corn Borer to Grain Corn in the United States in 1965

Compiled in Survey and Detection Operations, PPC, ARS

The loss to grain corn, attributed to the European corn borer (Ostrinia nubilalis) in 1965 is estimated to be approximately 51,379,100 bushels in 16 corn-producing States. In these States, the loss was 1.43 percent of the production. This loss is approximately 1.24 percent of the total national crop estimated at 4,171,100,000 bushels. 1/ The value of the loss, based on the season average prices received by farmers for corn 2/, is $55,366,160. These loss estimates are only for the States shown in Table 1, and are based on the counties or districts surveyed during the fall of 1965 within these States. 3/

Table 1 is a composite of State and Federal estimates. These estimates were prepared by using production data 1/, and prices received 2/, released by the Statistical Reporting Service. The basis for the loss estimates was determined by the survey of European corn borer populations during the fall of 1965. 3/ The index of 3 percent loss per borer per plant was used to compute the loss in bushels.

Estimated loss to grain corn for the past 14 years in States where the fall abundance survey was conducted are as follows:

1965	51,379,100	Bushels	$ 55,366,160
1964	87,116,000	"	97,478,000
1963	120,648,000	"	127,838,000
1962	88,245,000	"	93,695,000
1961	65,044,000	"	68,998,000
1960	102,991,000	"	96,085,000
1959	67,763,000	"	71,979,000
1958	100,699,000	"	98,434,000
1957	180,897,000	"	158,841,000
1956	97,971,000	"	119,535,000
1955	155,355,000	"	182,579,000
1954	191,614,000	"	261,415,000
1953	90,000,000	"	125,466,000
1952	53,270,000	"	77,205,000

1/ Crop Production, 1965 Annual Summary by States, Crop Reporting Board, Statistical Reporting Service, USDA, December 20, 1965.

2/ Crop Values, Season Average Prices Received by Farmers and Value of Production - 1964 and 1965 - By States, Crop Reporting Board, Statistical Reporting Service, USDA, December 20, 1965.

3/ Cooperative Economic Insect Report, 16(2):21-27.

Coop. Econ. Ins. Rpt. 16(15):317-318, 1966.

Table 1. Estimates of Damage by the European Corn Borer to Corn Grown for Grain in the United States in 1965

State	Districts Included 1/	Total State Production	Estimated Data: Value Per Bushel	Estimated Data: Value of Production	Loss of Crop	
	Number	1,000 Bu.	Dollars	$1,000	1,000 Bu.	$1,000
Arkansas	4	3,811	1.27	4,840	34	44
Delaware	1	13,223	1.18	15,603	948	1,119
Illinois	7	891,664	1.07	954,080	1,061	1,135
Indiana	12	467,556	1.02	476,907	4,840	4,937
Iowa	12	811,964	1.07	868,801	33,874	36,245
Kansas	3	62,127	1.16	72,067	908	1,053
Maryland	3	37,074	1.19	44,118	127	151
Michigan	1	98,766	1.09	107,655	492	536
Minnesota	7	270,108	.92	248,499	163	150
Missouri	8	223,488	1.16	259,246	1,154	1,339
Nebraska	7	259,558	1.14	295,896	5,241	5,975
North Dakota	1	7,252	1.06	7,687	162	172
Ohio	5	219,825	1.06	233,015	519	550
South Dakota	6	92,040	1.05	96,642	1,604	1,684
Vermont	1	67	1.60	107	0.10	0.16
Wisconsin	9	124,412	1.10	136,853	251	276
Totals		3,582,935		3,822,016	51,379.10	55,366.16

1/ Cooperative Economic Insect Report. 16(2): 21-27.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965
(continued from page 296)

STORED-PRODUCT INSECTS

CONFUSED FLOUR BEETLE (Tribolium confusum), RED FLOUR BEETLE (T. castaneum) and T. destructor were among the most frequently reported pantry and storage pests of CALIFORNIA. T. confusum larvae and adults were quite abundant in mills and other grain storage in NEW MEXICO and appeared to be more of a problem. This pest was also annoying in homes in Albuquerque area. T. confusum and T. castaneum were reported by many homeowners and occurred in large storage facilities on various products from several areas of TEXAS. T. castaneum was of little importance in KANSAS although quite commonly found; T. confusum was of minor importance also. T. confusum was one of the most common pests in grain elevators in northwestern OHIO. Scattered infestations of T. confusum occurred throughout RHODE ISLAND. This darkling beetle was a primary pest of stored-food products in NEW JERSEY. It was heavy in a large storage of barley near Ellicott City, MARYLAND. Both this species and T. castaneum were of economic importance to stored corn in ALABAMA.

YELLOW MEALWORM (Tenebrio molitor) was very common in feed storage areas in NEW MEXICO. Tenebrio spp. damaged cotton seed in several areas of TEXAS. T. molitor was a common pest in northwestern OHIO in grain elevators, and important on stored corn in ALABAMA. Other tenebrionids infested stored products. Cynaeus angustus was collected for the first time in DELAWARE from feed in a poultry house in New Castle County, and caused considerable damage to stored corn on a farm in Alexander County, NORTH CAROLINA, in late August. BROAD-HORNED FLOUR BEETLE (Gnathocerus cornutus) and G. maxillosus were economically important on stored corn in ALABAMA.

DERMESTID BEETLES (Trogoderma spp., Attagenus spp. and Anthrenus spp.) were present in many stored products in mills and warehouses in CALIFORNIA. T. parabile was present in lower than normal numbers but was one of the more frequently encountered pests in NEVADA. Trogoderma spp. were mostly light in NEW MEXICO but an occasional heavy infestation was found on commercial properties. BLACK CARPET BEETLE (Attagenus piceus) was present in trace numbers in NORTH DAKOTA; numerous reports of household infestations were received. T. glabrum, identified in June had caused injury to corn in several mid-MICHIGAN Agricultural Stabilization and Conservation Service storages before being discovered. Unspecified dermestids were commonly encountered in grain elevators in northwestern OHIO. A. piceus was an occasional pest in VIRGINIA. LARDER BEETLE (Dermestes lardarius) infested hams on several farms in Anne Arundel and Charles Counties, MARYLAND.

No KHAPRA BEETLE (Trogoderma granarium) infestations were found in the United States; 13,903 properties in 775 counties in 28 States were inspected in 1965.

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) was present in lower than normal numbers but it was one of the more commonly encountered pests in NEVADA. This cucujid infested large storage facilities in one or more areas of TEXAS. FLAT GRAIN BEETLE (Cryptolestes pusillus) caused damage in several Texas areas also. A September survey in KANSAS indicated that O. surinamensis and RUSTY GRAIN BEETLE (C. ferrugineus) were again the major pests of farm-stored grains. Populations were light to moderate with an occasional high infestation encountered. In general, numbers were slightly higher than those in 1964 in Kansas; C. pusillus was found only occasionally in grain elevators in northwestern OHIO. Scattered infestations of O. surinamensis occurred throughout RHODE ISLAND. This beetle was a primary pest of stored products in NEW JERSEY, and infested a wide variety of stored products in MARYLAND, including farm-stored small grain in Howard County. This was also one of the most commonly reported pests of stored products in homes stores and barns in VIRGINIA. O. surinamensis and C. pusillus attacked stored corn in ALABAMA.

CIGARETTE BEETLE (Lasioderma serricorne) occurrences increased in NEW JERSEY. This was a common pest of various cereals and spices in all sections of MARYLAND and was one of the most commonly reported species in VIRGINIA. Occasional reports of DRUGSTORE BEETLE (Stegobium paniceum) were noted also in Virginia. Both of these anobiids were important on stored corn in ALABAMA. L. serricorne was reported by many homeowners in TEXAS as well as being found in large storage facilities in several areas. It was frequently reported as a pantry and storage pest in CALIFORNIA.

RICE WEEVIL (Sitophilus oryzae) was locally heavy on a wide variety of stored products in TEXAS and GRANARY WEEVIL (S. granarius) caused damage in one or more areas of the State. S. oryzae and S. zeamais were in most cases of minor importance in KANSAS. S. granarius was one of the common pests in grain elevators in northwestern OHIO. This weevil infested newly harvested corn at Street, Harford County, MARYLAND. S. oryzae was the major pest of stored corn in ALABAMA.

COWPEA WEEVIL (Callosobruchus maculatus) infested stored blackeye peas in CALIFORNIA. A heavy infestation in blackeye peas occurred in a market in Reno, NEVADA. BEAN WEEVIL (Acanthoscelides obtectus) infested stored products in several areas of TEXAS and was often reported damaging farm-stored peas and beans in ALABAMA.

Other coleopterous pests of stored products were reported. BROWN SPIDER BEETLE (Ptinus clavipes), a FALSE POWDER-POST BEETLE (Prostephanus truncatus) and CADELLE (Tenebroides mauritanicus) caused damage in several places in TEXAS. T. mauritanicus and SPIDER BEETLES were found in grain elevators in northwestern OHIO. RED-LEGGED HAM BEETLE (Necrobia rufipes) infested cured meat in Wayne County, NORTH CAROLINA, in April and a smokehouse in Gates County in June. A HAIRY FUNGUS BEETLE (Typhaea stercorea), CORN SAP BEETLE (Carpophilus dimidiatus) and LESSER GRAIN BORER (Rhyzopertha dominica) infested stored corn in ALABAMA.

INDIAN-MEAL MOTH (Plodia interpunctella) larvae and adults were quite abundant in NEW MEXICO and larvae caused damage in several areas of TEXAS. This pest was in most cases minor in KANSAS. Trace numbers were found in grain elevators in most areas of NORTH DAKOTA. This phycitid occurred throughout RHODE ISLAND. Increases in number of infestations were noted in NEW JERSEY. This is one of the most commonly reported pests infesting stored products in VIRGINIA in homes, stores and barns. This was a pest of stored corn in ALABAMA.

ALMOND MOTH (Cadra cautella) was the major pest of stored peanuts in ALABAMA although other pests were noted. Other phycitids in stored products were TOBACCO MOTH (Ephestia elutella) in NORTH CAROLINA where it heavily infested tobacco in several packinghouses in late August and NAVEL ORANGEWORM (Paramyelois transitella) in CALIFORNIA where it is probably the major pest of stored almonds and walnuts.

ANGOUMOIS GRAIN MOTH (Sitotroga cerealella) heavily infested farm-stored barley in Anne Arundel and St. Marys Counties, MARYLAND and stored corn on several farms in St. Marys, Howard and Harford Counties. This species was commonly reported in VIRGINIA, was a pest of stored corn in ALABAMA and caused damage in several areas of TEXAS. In most cases in KANSAS, this species was of minor importance and was not common in OHIO grain elevators.

Two indoor infestations of POTATO TUBERWORM (Phthorimaea operculella) were known in MICHIGAN, a processor's warehouse and a homeowner's basement. Controls were applied in both instances. For the first season during the past 3, no field infestations of this gelechiid occurred. This pest has been collected periodically in SOUTH DAKOTA. A heavy infestation occurred in a potato chip factory in Sioux Falls. Larvae infested stored potatoes on properties in Queen Annes, Talbot and Somerset Counties, MARYLAND.

Other pests of stored products reported included GRAIN MITE (Acarus siro) in DELAWARE and PENNSYLVANIA; very heavy infestations developed in grain in both States. GREEN PEACH APHID (Myzus persicae) was heavy on stored potatoes in

Pennsylvania also. SILVERFISH (Lepisma saccharina) was found in grain elevators in northwestern OHIO. Stored-product insects in WYOMING did not constitute a major problem. Owners are protecting their properties from insects infesting stored goods.

BENEFICIAL INSECTS

Beneficial insects were active in all sections of the Country during 1965. CALIFORNIA reported these insects were unusually effective in controlling pest species for the second consecutive year. Lady beetle larvae were very effective in suppressing outbreaks of Acyrthosiphon pisum (pea aphid) in many areas of NEVADA during June and early July. High populations also helped keep most cotton pests below economic levels in the State. CONVERGENT LADY BEETLE (Hippodamia convergens) adults were active on alfalfa in WASHINGTON by mid-May and showed good predation through the season. In NORTH DAKOTA, convergent lady beetle and TWO-SPOTTED LADY BEETLE (Adalia bipunctata) were abundant wherever their prey were abundant. Several species of lady beetles were common in nearly all crops throughout WYOMING. The largest populations again occurred during late July and early August. COLORADO had a high level of predation by lady beetles, especially H. convergens on pea aphid in alfalfa fields. In NEW MEXICO, lady beetles were very abundant in alfalfa infested with pea aphid and Therioaphis maculata (spotted alfalfa aphid) during spring. During summer and fall months, these predators were also common in the Pecos and Mesilla Valleys on cotton infested with Aphis gossypii (cotton aphid). Several species of lady beetles were observed on cotton over a large area of TEXAS. Convergent lady beetle was one of the most common beneficials in OKLAHOMA.

Populations of lady beetles were generally low in ARKANSAS although a brief buildup occurred in May. In MISSOURI, convergent lady beetle was plentiful in legumes and Coleomegilla maculata was plentiful on corn. Both species were also common on other crops. Lady beetles were numerous in corn fields in WISCONSIN and helped suppress colonies of Rhopalosiphum maidis (corn leaf aphid). In ILLINOIS, these predators increased rapidly during the spring, until May 17-20, when adults ranged 0-500 and larvae ranged 6-3,500 per 100 sweeps in fields infested with pea aphid.

Convergent lady beetle, Coleomegilla maculata fuscilabris and Coccinella novemnotata were of some importance in cotton in ALABAMA early in the 1965 season. Lady beetles were common on alfalfa and clover throughout VIRGINIA. Lady beetles, especially H. convergens, were common in MARYLAND and were helpful in reducing aphid populations on alfalfa, clover, corn and tobacco in all sections of the State. In RHODE ISLAND, these species were common wherever aphid populations built up.

In parts of SOUTH DAKOTA, particularly the south central area, grasshoppers were attacked by populations of ASH-GRAY BLISTER BEETLE (Epicauta fabricii), BLACK BLISTER BEETLE (E. pennsylvanica), and SPOTTED BLISTER BEETLE (E. maculata). Numbers of a MELYRID BEETLE (Collops hirtella) increased in field and forage crops in eastern WASHINGTON. GROUND BEETLES were common predators throughout MISSOURI, and were heavy in the south central and southwestern districts.

A PUNCTURE-VINE STEM WEEVIL (Microlarinus lypriformis) and a PUNCTURE-VINE SEED WEEVIL (M. lareynii) were numerous in Clark, Lincoln and southern Nye Counties, NEVADA. These two species overwintered successfully in Lincoln County in 1964, although they did not in 1963. M. lareynii was released in several areas of OKLAHOMA in late July for control of puncture-vine. Adults and larvae of THREE-LINED POTATO BEETLE (Lema trilineata) were destructive to Jimson-weed in many corn fields on the Eastern Shore of MARYLAND.

HYMENOPTEROUS PARASITES were active in ARKANSAS on warm days in March and parasitism of aphids was extensive in April. These parasites remained active until freezing weather in November. These parasites were also abundant on many crops in CALIFORNIA. The larvae of PARASITIC WASPS were very effective in suppressing outbreaks of Acyrthosiphon pisum (pea aphid) in many areas of NEVADA especially during June and early July.

An ICHNEUMON WASP (Biolysia tristis) parasitized 2-44 percent of Hypera punctata (clover leaf weevil) larvae collected from March 20 to April 15 in ILLINOIS. This was a new State record and new county records were established for many counties in the southern and central sections of the State, including Vermilion County. This parasite was also found for the first time in MISSOURI in 1965 and was collected in Boone, Reynolds, Shannon and Platte Counties. Bathyplectes curculionis an ichneumonid parasite of Hypera postica which was collected in ILLINOIS for the first time in 1964, was found in Vermilion and White Counties for the first time during 1965. This species was found for the first time in MISSOURI in 1965. Adults were collected in Reynolds County and diapausing and nondiapausing cocoons were collected in Shannon County. B. curculionis was important in keeping alfalfa weevil larvae under control in COLORADO. The Ostrinia nubilalis (European corn borer) winter mortality survey in SOUTH DAKOTA showed that two parasites, a EULOPHID WASP (Sympiesis viridula) and an ICHNEUMON WASP (Horogenes punctorius), contributed an average of 10 and 27 percent, respectively, to the overall mortality average of 54 percent. Heliothis spp. (budworms) were more common on tobacco in NORTH CAROLINA than in 1964 although an ICHNEUMON WASP (Campoletis perdistinctus) was very abundant and helped keep budworm populations in check.

Parasitism of Pieris rapae (imported cabbageworm) larvae by BRACONIDS was extremely high on the Eastern Shore of VIRGINIA in September. Of 100 larvae checked, 98 were parasitized. In MISSOURI, a specimen of Bracon caulicola was reared from Ostrinia nubilalis (European corn borer) larvae collected at Portageville, Pemiscot County. Another braconid, Praon simulans, helped suppress heavy populations of Acyrthosiphon pisum (pea aphid) in alfalfa fields in WISCONSIN during May and July. However, this parasite appeared to be of little direct value in pea fields. In Brazos County, TEXAS, considerable numbers of two braconids, Apanteles sp. and Lysiphlebus sp., were noted in small grains, vetch and alfalfa. Aphidius smithi, A. pulcher and Praon simulans built up in alfalfa fields in WASHINGTON by mid-May and A. smithi was recovered from the Columbia Basin area for the first time.

An ENCYRTID WASP (Ooencyrtus kuwanai) infested Porthetria dispar (gypsy moth) egg clusters in NEW HAMPSHIRE. A MINUTE EGG PARASITE (Trichogramma minutum) exerted considerable control on Heliothis zea (bollworm) and H. virescens (tobacco budworm) in cotton throughout ALABAMA. A CHALCID (Spilochalcis albifrons) was reared from Hypera postica (alfalfa weevil) pupae collected in Johnson and Hardin Counties, ILLINOIS. Several parasites were reared from caterpillars of Choristoneura houstonana (a leaf roller moth) in KANSAS. These included two chalcids, Brachymeria ovata and B. compsilurae, and three ichneumon wasps, Itoplectis conquisitor, Pimpla aequalis and Temelucha forbesi.

A FLOWER BUG (Orius insidiosus) was unusually prevalent in the silks of sweet corn in WISCONSIN and was probably responsible for the low numbers of Heliothis zea (corn earworm) larvae. In MISSOURI, this predator was common throughout the season, especially in alfalfa and clover, became active in late February and continued so until mid-December in OKLAHOMA. It was also observed on cotton over a large area of TEXAS. Adults became active in ARKANSAS in early April; however, numbers were low until late May and then increased to 300-400 per 100 sweeps in alfalfa by early June. Orius spp. were of some importance in cotton in ALABAMA early in the season. Populations of Orius spp. in WYOMING were slightly smaller than those found in 1964. The highest numbers were found in Goshen, Platte and Laramie Counties in late July and early August. Flower bugs were more numerous than usual on legumes in eastern WASHINGTON, probably because of the warm, dry season. High populations of MINUTE PIRATE BUGS were largely responsible for holding most cotton pests below economic levels in NEVADA. These bugs were

also abundant on many crops in CALIFORNIA.

DAMSEL BUGS (Nabis spp.) were common in MARYLAND and helped reduce aphid populations on alfalfa, clover, corn and tobacco in all sections. Damsel bugs were also common on alfalfa and clover throughout VIRGINIA and were of some importance on cotton in ALABAMA early in the season. Nabis spp. were common throughout the summer in ILLINOIS and active in OKLAHOMA from late February to mid-December. These species were observed on cotton over a large area of TEXAS. Record populations developed in NORTH DAKOTA and definitely helped control aphids. Large populations of Nabis spp. were found in alfalfa in all sections of WYOMING while the highest numbers in alfalfa, sugar beets and potatoes occurred in the southeastern area. High populations in NEVADA were important in holding most cotton pests below economic levels. Damsel bugs were abundant on many crops in CALIFORNIA. In eastern WASHINGTON, damsel bugs were more numerous than usual on legumes, probably because of the warm, dry season.

Large numbers of a BIG-EYED BUG (Geocoris sp.) were found in the Kingston and Newport areas of RHODE ISLAND. G. punctipes and ASSASSIN BUGS were of some importance in cotton in ALABAMA early in 1965. In ARKANSAS, the first adult big-eyed bugs of the season were found in early April. Numbers were disappointing in April and May but were up to normal during the remainder of the year. These bugs and damsel bugs were the most important predators in soybeans in Arkansas during July and August. Populations of Geocoris spp. were abundant on alfalfa throughout WYOMING. In NEVADA, high populations of these bugs were important in holding most cotton pests below economic levels. They were also abundant on many crops in CALIFORNIA.

FLOWER FLIES were common in RHODE ISLAND wherever aphid populations built up. The larvae were of some importance in controlling cotton pests in ALABAMA early in the season. Flower fly larvae were also common in alfalfa in MISSOURI, and were very effective in suppressing outbreaks of Acyrthosiphon pisum (pea aphid) in many areas of NEVADA. Flower flies were more numerous than usual on legumes in eastern WASHINGTON, probably due to the warm, dry weather. They were also the only effective predators of Myzus persicae (green peach aphid) on peaches in the Yakima Valley of Washington during the fall. A TACHINA FLY (Nemorilla pyste) was reared from caterpillars of Choristoneura houstonana (a leaf roller moth) in KANSAS. Tachina flies were common throughout the season in MISSOURI, especially around alfalfa and corn.

LACEWINGS were common wherever aphid populations built up in RHODE ISLAND. GOLDEN-EYE LACEWING (Chrysopa oculata) was of some importance on cotton in ALABAMA during the early part of the 1965 season. In ILLINOIS, adults and larvae of this species were plentiful in aphid infested clover and alfalfa by May 15. C. oculata was a common predator throughout the season in MISSOURI, especially in alfalfa. BROWN LACEWING adults were active as early as January in ARKANSAS. GREEN LACEWINGS (Chrysopa spp.) became active in OKLAHOMA in late February and continued until mid-December. Golden-eye lacewing was observed on cotton over a large area of TEXAS. Large populations of Chrysopa spp. were found in alfalfa in all areas of WYOMING but the largest populations were in the southwestern area where an average of 24 adults and 36 larvae per 100 sweeps were found in late July. In NEVADA, high populations of lacewings helped hold most cotton pests below economic levels. They were also abundant on many crops in CALIFORNIA, and were more numerous than usual on legumes in eastern WASHINGTON.

Record populations of DRAGONFLIES definitely helped control mosquitoes in NORTH DAKOTA. A PREDACEOUS PHYTOSEIID MITE (Typhlodromus occidentalis) was found to virtually eliminate populations of Tetranychus mcdanieli (a spider mite) in apple orchards in the Wenatchee area of Chelan County, WASHINGTON, provided predator populations are not reduced by chemicals.

Larvae of PAINTED LADY (Vanessa cardui) were reported to be feeding on Canada thistle in WYOMING. The most severe feeding was noted in Fremont County and varying degrees occurred in other areas. This species was not noted damaging other

plants or crops. In WASHINGTON, the larvae of a CINNABAR MOTH (Tyria jacobaeae) infested tansy ragwort in Clark County, following the 1964 release of this species.

The first HONEY BEE (Apis mellifera) swarm in RHODE ISLAND was reported May 13 in Hope, Providence County. In general, swarms were few and late. In 1965, KANSAS had one of the best honey crops in a long time. Production increased 34 percent over 1964 with 49,000 colonies producing an average of 58 pounds each for a total of 2,842,000 pounds. Wax production was also greater than in 1964 with a total of 50,000 pounds. Of the 1,586 colonies inspected, 50 were infested with American foulbrood and 19 with European foulbrood. Both diseases were slightly more prevalent than in 1964. In WASHINGTON, honey production varied according to local forage conditions. Tree fruit pollination was again critical because of the shortage of pollinizer bloom not injured by freezes and the lack of strong bee colonies in some localities.

ALKALI BEE (Nomia melanderi) populations were at high levels in NEVADA, especially in southern Nye County. In WASHINGTON, this species began emerging May 31 in Walla Walla County; however, adult populations were seriously injured when heavy rains flooded nests. The bees nested late and will be substantially reduced in 1966. A BEE FLY (Heterostylum robustum) actively parasitized N. melanderi in Walla Walla County during early June. Populations of a LEAFCUTTING BEE (Megachile rotundata) were about normal in alfalfa seed-producing areas of NEVADA. There was some loss of the overwintering forms of these bees in Humboldt County due to heavy infestations of a dermestid beetle and other factors. In WASHINGTON, emergence of M. rotundata started May 26 in Walla Walla County and pollinating activity was good during the season; however, parasitism by Monodontomerus montivagus (a torymid) was heavy. A DERMESTID BEETLE (Trogoderma glabrum) has emerged as the most serious threat to production of leafcutting bees in the Pacific Northwest.

MISCELLANEOUS INSECTS

The greatest amount of spread of JAPANESE BEETLE (Popillia japonica) in the South occurred in the northern part of GEORGIA where nearly 260 thousand acres in 13 counties were added to the infested status. Although traps were placed in all noninfested counties of SOUTH CAROLINA, specimens were taken only in McCormick County where light populations were found in a small infestation of one square mile. There are only 4 counties in NORTH CAROLINA (Montgomery, Lincoln, Chatham and Anson) that have not been recorded as supporting Japanese beetle; the entire State is under Federal and State regulation. Trapping was conducted throughout the South. The situation in TENNESSEE is very encouraging, generally. Populations are scarce and held in check on treated areas. The only buildups in Tennessee occurred where situations prevented complete coverage. Colonies of Tiphia vernalis (a tiphiid wasp) were introduced into northern Georgia and areas of North Carolina. Trapping programs were carried out in the Great Plains with the exception of the DAKOTAS. The greatest concentrations of traps were in the St. Louis, MISSOURI area, and in ILLINOIS. Heavy concentrations of traps were also used in KENTUCKY, OHIO and MICHIGAN. Trapping and control programs in the Corn Belt have been a factor in preventing the spread of this introduced scarab into the West. Three colonies of T. vernalis were released at Toledo, Ohio, and one colony at Sheldon, Illinois.

An extensive trapping program for Japanese beetle in the nonregulated areas of MAINE failed to reveal new infestations in that State. All other Eastern States south through GEORGIA are regulated in whole or in part by Federal and State regulations.

The last live Japanese beetle associated with an infestation in CALIFORNIA was taken June 18, 1962; during the following 3 years intensive surveys, utilizing over 33 thousand traps, plus visual surveys failed to reveal this pest in the

State. Nearly all other Western States also used traps for survey.

EUROPEAN CHAFER (Amphimallon majalis) surveys were made in New England, NEW YORK, PENNSYLVANIA, NEW JERSEY, MARYLAND, OHIO and the DISTRICT OF COLUMBIA. Chemical and blacklight traps were used extensively; visual observations were made primarily in delimiting operations in CONNECTICUT, New York, Pennsylvania, New Jersey and Ohio, the only States known to be infested.

WHITE-FRINGED BEETLES (Graphognathus spp.) were found in additional areas of ALABAMA, MISSISSIPPI and west TENNESSEE. Only a few counties in these areas remain free of the pest, and a population buildup was noted in older infested areas; GEORGIA and north FLORIDA are approaching a similar status. In LOUISIANA, SOUTH CAROLINA and NORTH CAROLINA these beetles were collected in additional areas. Attempts are being made to treat all infested areas in ARKANSAS and SOUTH CAROLINA as well as outlying ones in other States. G. leucoloma striatus was found for the first time in MARYLAND in Prince Georges County. This is nearly 200 miles north of the nearest known infestation at Norfolk, VIRGINIA.

A CUBAN MAY BEETLE (Phyllophaga bruneri) continued to spread in Greater Miami, FLORIDA. The infested area consists of at least 200 square miles and possibly 400 square miles. Population peaks early in May were as great as any recorded for this species. Over 49 thousand adults were collected in a single blacklight trap during one night. Some trees of West Indies mahogany and lychee were completely defoliated. Damage to Florida trema and royal poinciana was heavy in many areas; leaves and flowers of citrus and peach were damaged. Many other plant species suffered some injury. This scarab is considered a potential threat to agriculture. Research on biology and control of this pest is conducted cooperatively by the University of Florida, Florida Department of Agriculture and U.S. Department of Agriculture. For more details about this pest, see CEIR 15(47): 1282.

NORTHERN MASKED CHAFER (Cyclocephala borealis) adults appeared in heavy numbers during late June and early July at light traps in MARYLAND.

Adults of a WEEVIL (Brachyrhinus rugosostriatus) were found for the first time in ARIZONA. Numerous clusters were found on the side of a house at Cornville, Yavapai County. This weevil is a pest of many plants including vegetable, fruit and ornamental.

Surveys failed to reveal IMPORTED FIRE ANT (Solenopsis saevissima richteri) in 20 MISSISSIPPI and 8 ALABAMA counties. Every county in TENNESSEE and 32 counties in OKLAHOMA were inspected with negative results. Infestations were found for the first time in some counties of ARKANSAS, FLORIDA, GEORGIA, MISSISSIPPI, SOUTH CAROLINA, TEXAS and several parishes in LOUISIANA. Extensions were located in 6 previously infested NORTH CAROLINA counties.

EUROPEAN EARWIG (Forficula auricularia) was numerous in a few instances in Augusta, MAINE, in late July. Light numbers were reported from the Portland area in early August. Appreciable decrease in number of reports from those of 1963 and 1964 may indicate a stabilization of populations in Maine. Extremely heavy populations caused considerable concern statewide in RHODE ISLAND. European earwig is apparently established in the northeast section of Milwaukee, WISCONSIN.

HOUSEHOLD AND STRUCTURAL INSECTS

Highlights:

TERMITES were the most important structural insects and COCKROACHES were the most troublesome household pests over much of the Nation. BOXELDER BUG and CLOVER MITE were the most widespread household invaders. Large numbers of EUROPEAN EARWIG invaded houses in the Northeastern States. This pest appeared to be spreading in the Santa Fe area of New Mexico.

TERMITE activity in MASSACHUSETTS caused more requests for control information than usual from all areas of the State. Swarms of EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) were common in RHODE ISLAND from mid-March to late May. Swarms of Reticulitermes spp. were very prevalent throughout NEW JERSEY and numbers were substantially higher than in 1964. In DELAWARE, the first eastern subterranean termite swarms of the season were noted the first week of March and continued until mid-April; however, reports of new infestations were not as numerous as in previous years. Reticulitermes spp. were the most important structural pests throughout MARYLAND. Similar conditions occurred in VIRGINIA and ALABAMA. Eastern subterranean termite swarmed in NORTH CAROLINA from late March through May. This species began swarming in early April in southwestern OHIO and continued through mid-May in the central section of the State. R. flavipes was the most serious pest of structures in MISSOURI again in 1965. Eastern subterranean termite was found in Tomah, Monroe County, WISCONSIN, for a new county record.

In WYOMING a single report of damage by WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) was received during 1965, compared with 7 reports in 1964. Infestations of buildings by SUBTERRANEAN TERMITES (Reticulitermes spp.) increased in Douglas, Ormsby and Washoe Counties, NEVADA. This was especially true in the Reno-Sparks and Lake Tahoe areas. Incisitermes sp. was found established in a building in Omaha, Douglas County, NEBRASKA. This is the first record of this genus in the county or infesting a building in the State. A DAMPWOOD TERMITE (Paraneotermes simplicicornis) severely damaged the floor of a home in Las Vegas, Clark County, Nevada. Reticulitermes hesperus was as active as usual in CALIFORNIA. PACIFIC DAMPWOOD TERMITE (Zootermopsis angusticollis) and western subterranean termite caused considerable damage in OREGON. WESTERN DRYWOOD TERMITE (Incisitermes minor) was found in Portland, Multnomah County, in a piece of furniture brought to Oregon from out of State.

LEAD-CABLE BORER (Scobicia declivis) occurred more frequently in CALIFORNIA than in the past few years, and NEW-HOUSE BORER (Arhopalus productus) often invaded residences. OLD-HOUSE BORER (Hylotrupes bajulus) was of some concern in ALABAMA during 1965. Several larvae of this species were received for determination in VIRGINIA and several infestations were reported in NEW JERSEY. However, old-house borer infestations in New Jersey did not increase much above 1964 levels. In early April, an EUCNEMID BEETLE (Melasis rufipennis) emerged from the walls of new homes in one area of Edgecombe County, NORTH CAROLINA.

POWDER-POST BEETLES caused a routine volume of complaints in RHODE ISLAND. Most of these probably involved old damage; however, one problem involved a wooden screen from Japan. Powder-post beetles, particularly Lyctus sp., damaged flooring and hardwood furniture in OREGON. SOUTHERN LYCTUS BEETLE (Lyctus planicollis) and T. prostomoides occurred in normal numbers in CALIFORNIA. Heavy infestations and Trogoxylon prostomoides occurred in normal numbers in CALIFORNIA. Heavy infestations of WHARF BORER (Nacerdes melanura) were found in NEW HAMPSHIRE at Manchester, Hillsboro County, and at Berlin, Coos County.

CARPENTER BEE (Xylocopa virginica) was heavy in areas of RHODE ISLAND, and was unusually numerous in south central PENNSYLVANIA; and of concern in OHIO.

CARPENTER ANTS continued troublesome in NEW HAMPSHIRE, RHODE ISLAND and MASSACHUSETTS; common in NEW JERSEY, VIRGINIA and NORTH CAROLINA. Populations were somewhat higher than usual in MINNESOTA. Camponotus quercicola was found for the first time in Contra Costa County, CALIFORNIA.

Populations of DERMESTID BEETLES (Dermestes spp.) were more cyclic than usual in CALIFORNIA. LARDER BEETLE (Dermestes lardarius) infestations were common in the insulation of homes in MICHIGAN and reported in homes and camps in NEW HAMPSHIRE. Dermestes spp. and BLACK CARPET BEETLE (Attagenus piceus) were common in homes in all sections of MARYLAND. In RHODE ISLAND, black carpet beetle caused a normal volume of inquiries during 1965. In PENNSYLVANIA, black carpet beetle, Dermestes spp. and VARIED CARPET BEETLE (Anthrenus verbasci) were found in homes. In

OREGON, varied carpet beetle caused serious damage in homes.

DRUGSTORE BEETLE (Stegobium paniceum) occurred more frequently in CALIFORNIA than in the past few years and caused serious damage to food products in homes in OREGON. CIGARETTE BEETLE (Lasioderma serricorne) was frequently reported infesting pantry materials in NORTH CAROLINA. In Lincoln, Lancaster County, NEBRASKA, an ANOBIID BEETLE (Tricorynus herbarium) was found damaging books inported from Hawaii.

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) was a problem in homes in MISSOURI and many heavy infestations were reported in homes in New Castle County, DELAWARE. Saw-toothed grain beetle and RICE WEEVIL (Sitophilus oryzae) were found many times in PENNSYLVANIA, especially in kitchens. Saw-toothed grain beetle and RED FLOUR BEETLE (Tribolium castaneum) caused serious damage to food in homes in OREGON.

Bamboo window shades were found to be infested with POWDER-POST BEETLES in several parts of the country. Typical reports involved Trogoxylon prostomoides and BAMBOO POWDER-POST BEETLE (Dinoderus minutus) in PENNSYLVANIA and Lyctus sp. in NORTH DAKOTA.

BROWN HOUSE MOTH (Hofmannophila pseudospretella) and a BROWN-DOTTED CLOTHES MOTH (Acedes fuscipunctella) were more numerous than usual in homes in CALIFORNIA during 1965. INDIAN-MEAL MOTH (Plodia interpunctella) infestations were numerous in home kitchens in PENNSYLVANIA and MARYLAND.

Several species of COCKROACHES were troublesome in different sections of the Country. GERMAN COCKROACH (Blattella germanica) was reported in dwellings and office buildings in Farmington, Franklin County, MAINE. Residents believed this was the first time the species has been found in the area. In RHODE ISLAND, a normal number of reports of ORIENTAL COCKROACH (Blatta orientalis), German cockroach, WOOD COCKROACHES (Parcoblatta spp.), and BROWN-BANDED COCKROACH (Supella supellectilium) were received from all sections of the State. German cockroach continued to be the most troublesome household pest in NEW JERSEY, but reports of brown-banded cockroach, AMERICAN COCKROACH (Periplaneta americana) and oriental cockroach increased during 1965. Cockroaches, especially brown-banded cockroach and German cockroach, infested many apartments and homes in MARYLAND. These infestations were especially common in the metropolitan areas of the State. Brown-banded cockroach and German cockroach were also reported infesting homes in VIRGINIA. Five species of cockroaches formed the most important household insect complex in ALABAMA. These species were German cockroach, American cockroach, oriental cockroach, brown-banded cockroach and SMOKY-BROWN COCKROACH (Periplaneta fulginosa), listed in order of importance.

Cockroaches, primarily German cockroach, were of concern in households in OHIO during 1965. In INDIANA, this same species continued to be the chief pest in eating and food processing establishments. Reports of resistance to chlorinated hydrocarbon insecticides also continued during the year. Cockroaches continued to be the most troublesome household pests in MISSOURI. Activity also appeared to be normal in KANSAS. In MINNESOTA, wood cockroaches were unusually abundant in suburban homes early in 1965. German cockroach and brown-banded cockroach were numerous in various parts of WYOMING. Cockroaches were common in CALIFORNIA, with oriental cockroach, brown-banded cockroach and German cockroach the most troublesome species.

BOXELDER BUG (Leptocoris trivittatus) was a common household nuisance in many States during 1965. This species caused numerous complaints in NEW HAMPSHIRE, particularly in Manchester, Hillsboro County, and Concord, Merrimack County. Boxelder bug was apparently not as prevalent in NEW JERSEY as in 1964 although it was a nuisance in several counties. Many homes were invaded in DELAWARE, especially in New Castle County, and in all parts of MARYLAND. In VIRGINIA, this species entered homes for hibernation in November and December; however, in PENNSYLVANIA, boxelder bug was very prevalent in the spring as well as fall. This

species was also of concern in OHIO during 1965. In INDIANA, populations appeared to be heavier than in 1964 since reports of adults entering homes increased during the fall of 1965. WISCONSIN also reported more migration into dwellings than normal. Boxelder bug was a problem in and around homes in MISSOURI and OKLAHOMA; however, this pest was unusually light in KANSAS during the fall. Adults and nymphs were troublesome in and around homes in southern NORTH DAKOTA. Large populations entered homes in Laramie, Goshen, Platte and Sheridan Counties, WYOMING and caused much concern to homeowners during the late summer. In OREGON, boxelder bug invaded homes in search of winter shelter and were somewhat of a problem to homeowners in northern NEW MEXICO early in 1965.

A COREID BUG (Arhyssus scutatus) was a seasonal nuisance in CALIFORNIA and large numbers of a FALSE CHINCH BUG (Nysius sp.) entered homes in several counties of NEVADA.

CLOVER MITE (Bryobia praetiosa) was also a household nuisance in many States. This species was generally troublesome throughout NEW HAMPSHIRE and NEW JERSEY, being usually troublesome in housing developments in latter State. B. praetiosa continues to be a serious household pest in DELAWARE, especially in New Castle County, and was very annoying to many homeowners in suburban communities in MARYLAND. In VIRGINIA, clover mite entered homes in November and December and was prevalent in spring as well as in fall in PENNSYLVANIA. WINTER GRAIN MITE (Penthaleus major) entered homes in several areas of the State. Clover mite was a problem in and around buildings in MISSOURI, was more common than usual in many areas of KANSAS than during the winter of 1964, large numbers appeared around homes in some areas of southern NORTH DAKOTA and were reported from homes in MINNESOTA. Only a few migrations into homes were reported in WYOMING during the fall. This pest was a problem to homeowners in northern NEW MEXICO and in many areas of ARIZONA in the spring. Large numbers entered homes in NEVADA. Clover mite was a nuisance in CALIFORNIA.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) was unusually abundant in MASSACHUSETTS and entered many buildings in RHODE ISLAND. In NEW JERSEY, strawberry root weevil and BLACK VINE WEEVIL (B. sulcatus) caused some concern during June by entering homes. Strawberry root weevil migrations into homes were unusually prevalent in PENNSYLVANIA during August. In OHIO, B. ovatus and B. sulcatus migrated into homes during late summer and strawberry root weevil entered homes in southern INDIANA in June and continued throughout the summer, spreading northward as the season progressed. Numbers were heavier than the high populations of 1964. This pest was particularly troublesome in households in WISCONSIN during the summer. Adults were bothersome in several areas of eastern NORTH DAKOTA and were widespread in households in MONTANA.

A JAPANESE WEEVIL (Calomycterus setarius) was common in houses in RHODE ISLAND and WISCONSIN during mid-summer. ASIATIC OAK WEEVIL (Cyrtepistomus castaneus) migrations into homes in extreme southern INDIANA began in mid-June and continued all summer. In VIRGINIA, this species was very abundant during late summer and fall and created a nuisance in homes and motels. ALFALFA WEEVIL (Hypera postica) became a nuisance in CALIFORNIA.

ELM LEAF BEETLE (Pyrrhalta luteola) adults were pestiferous in several homes in MARYLAND during spring and fall and entered homes in VIRGINIA during September and October. Elm leaf beetle was a problem in and around homes in MISSOURI, KANSAS and OKLAHOMA in the fall. TWO-SPOTTED LADY BEETLE (Adalia bipunctata) frequently entered homes in PENNSYLVANIA. BROWN SPIDER BEETLE (Ptinus clavipes) and a LONG-HORNED BEETLE (Xylotrechus nauticus) frequently entered residences in CALIFORNIA. A BARK BEETLE (Pseudopityophthorus pubipennis) created a nuisance in homes in CALIFORNIA by emerging from firewood.

Several species of CRICKETS entered homes in NEW JERSEY during early fall. There appeared to be an increase in the incidence of infestation. CAMEL CRICKETS were

occasionally reported infesting home basements in VIRGINIA; reports were numerous in MINNESOTA and in home basements in southeastern NORTH DAKOTA. FIELD CRICKETS (Gryllus spp.) were less numerous in OKLAHOMA than in 1964, but caused some concern during August and September. In NEVADA, cricket nymphs invaded yards and homes in Reno, Washoe County, in September, with some clothing damage reported.

RHODE ISLAND had the usual volume of complaints about LARGER YELLOW ANT (Anantho-myops interjectus) and PAVEMENT ANT (Tetramorium caespitum). These same species were very common in NEW JERSEY and continued troublesome throughout 1965. The number of occurrences of THIEF ANT (Solenopsis molesta) increased in NEW JERSEY during the year. Winged forms of pavement ant and Acanthomyops sp. were common in many homes in VIRGINIA in July and again in October and November. Larger yellow ant was a common problem around homes in NORTH CAROLINA. Swarms were reported during March, April and May. Various species of ants were a problem in and around homes in PENNSYLVANIA, MISSOURI and OKLAHOMA. Lasius sp. and other species of ants were frequently reported in OREGON. Ants were more prevalent as household pests in CALIFORNIA during 1965 than in past years, with Pheidole sp. a pest in several locations, ARGENTINE ANT (Iridomyrmex humilis) active statewide and thief ant a kitchen pest.

EUROPEAN EARWIG (Forficula auricularia) continued troublesome in NEW HAMPSHIRE, particularly in the southern two-thirds of the State. More reports of this pest were received than in 1964, but no damage was indicated. This species was also very abundant in MASSACHUSETTS and inquiries on controls were received from all over the State. A substantial increase in earwig invasion of houses was noted in central and northern NEW JERSEY. Homeowners in southern WYOMING were concerned by European earwig migrations into living quarters. This pest appeared to be spreading in the Santa Fe area of Santa Fe County, NEW MEXICO; however, the heaviest populations are still in the area of the city where this species was first found in 1962. In ARIZONA, severe invasions of Labidura riparia in homes were a real nuisance during spring and summer and continuous controls were necessary.

CLUSTER FLY (Pollenia rudis) was troublesome in and around homes in NEW HAMPSHIRE and MISSOURI. MOTH FLIES were unusually abundant in PENNSYLVANIA, and a MOTH FLY (Telmatoscopus albipunctatus) was occasionally reported infesting home basements in VIRGINIA. For notes about HOUSE FLY (Musca domestica) see Insects Affecting Man and Animals (CEIR 16(14):291).

Very heavy numbers of MILLIPEDS invaded residental buildings in RHODE ISLAND in September and October. Most infestations occurred in the shore areas of Washington County. However, in NEW JERSEY, movement into homes apparently declined generally. Millipeds entered homes in VIRGINIA in August and there were also numerous reports from the northern and central sections in November and December. A MILLIPED (Oxidus gracilis) was abundant around many homes in the Pidemont and Coastal Plain sections of NORTH CAROLINA during June and July. Millipeds were also heavy in and around homes in several areas of GEORGIA, and were of concern to homeowners in OHIO and KANSAS.

Drought conditions in NEW JERSEY were probably responsible for the marked increase in SPRINGTAILS entering homes and buildings in the central section of the State. A SPRINGTAIL (Entomobrya kanaba) was numerous in homes on the Eastern Shore of VIRGINIA during spring and early summer. BOOK LICE were a problem in and around homes and buildings in MISSOURI.

Weather continued from page 300.

PRECIPITATION: No precipitation occurred over the West until the weekend when moderate rains hit coastal areas and light rains moved inland to the Rockies. Scattered light sprinkles or snow flurries persisted from the northern Rockies to New England but amounts were generally of little importance. Wide areas across the South from California to Arkansas received no rain. Two-inch rains came to parts of Florida and 1-inch rains to central Georgia and northeastern Missouri. Scattered light showers fell elsewhere from the northern gulf coast to New England. Parts of northwestern Texas have received no rain for 5 weeks. It was the 8th dry week in the Oklahoma Panhandle and nearby areas. Sunny skies, brisk winds, and low humidity increased the forest fire hazard over the Southeast. Soil moisture was short or becoming short from the Southwestern Deserts to the Carolinas. Dry areas have appeared in parts of the Corn Belt, in central Tennessee, and in Arkansas to name a few areas.

TORNADOES: The unusual tornadoes in central Florida on April 4 were mentioned last week. Damage of many millions of dollars was heaviest in the Tampa and Lakeland areas but extended eastward to Cocoa. The preliminary total of fatalities stands at 9. Records since 1916 show only one other tornado situation of this magnitude in Florida south of the Jacksonville area. On April 5, 1936, a tornado in the Miami area killed 7 persons. (Summary supplied by Environmental Data Service, ESSA).

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SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

BEET LEAFHOPPER populations higher than past 2 years in Idaho and slightly higher than 1965 in Wyoming. POTATO PSYLLID requiring some controls on potatoes in Arizona. EUROPEAN CORN BORER pupating in Maryland and Delaware. (p. 333). SOUTHERN CORN ROOTWORM larvae damaging roots of corn in Texas. (p. 334). ALFALFA WEEVIL damage continues in several areas. (pp. 334, 335). CITRUS THRIPS damaging citrus in Arizona, and EASTERN LUBBER GRASSHOPPER poses some threat to citrus in Florida. (p. 339). A MOSQUITO (Mansonia perturbans) annoying in Gainesville area, Florida; first large emergence of season. (p. 341). NORTHERN FOWL MITE medium to heavy on poultry in Arkansas. (p. 342). First seasonal adult activity of CEREAL LEAF BEETLE noted in Michigan. (p. 343).

Predictions

Potentially high EUROPEAN CORN BORER population indicated for coming season in Delaware. (p. 333). ALFALFA WEEVIL expected to be widespread and severe in California; heavy damage expected in all sections of Maryland during late April. (p. 334, 335). GYPSY MOTH infestations expected to be heavy in Nissequogue area of Long Island, New York. (p. 343).

Detection

▶ Detection Reminder - Three Important Pests of Small Grains. (p. 346).

Light KHAPRA BEETLE infestation discovered in feedlot in Brawley, California. (p. 345).

New State records reported in California, Delaware and Hawaii, and new county records in California and Missouri, and new Island records. (p. 345).

Special Reports

Summary of Insect Conditions in the United States - 1965

Weather of the Year 1965. (p. 348).
List of Contributors. (p. 350).

Correction: Due to an error in the preparation of the previous sections of the 1965 summary material, many of the Vermont notes were included under New Hampshire. In an attempt to correct this condition, the Vermont and New Hampshire summaries for the 1965 season are carried in this issue beginning on page 351. All references to these two States in other sections of the 1965 summary should be deleted.

Reports in this issue are for week ending April 15 unless otherwise indicated.

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WEATHER BUREAU'S 30-DAY OUTLOOK

MID-APRIL TO MID-MAY 1966

Temperatures are expected to average above seasonal normals from the Rockies to the Applachians and also in the Far Southwest. Below normal averages should be confined to the Pacific Northwest and the south Atlantic Coastal States while near normal temperatures are anticipated in unspecified areas. Precipitation is expected to be subnormal over the eastern fourth of the Nation except for near normal amounts in Florida and along the south Atlantic Coast. Subnormal totals

Weather continued on page 354.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

BEET LEAFHOPPER (Circulifer tenellus) - IDAHO - Survey for overwintering adults begun March 21 not complete, but populations in Saylor Creek, Glenns Ferry and Mountain Home areas, Elmore County, much higher than past 2 years. Host plant populations about same. Some drying of plants occurring; may reduce nymphal populations. Preliminary estimates indicate more than 20,000 acres need spraying for suppression if situation remains same. Nymphal surveys will be conducted during May to determine extent of chemical control needed. (Evans). WYOMING - Cooperative survey conducted on wasteland adjacent to sugar-beet areas of southern Big Horn and Washakie Counties. Total of 2,140 square-foot samples of weed host areas yielded 513 specimens; average 0.24 per square foot. Population slightly larger than in 1965, when average of 0.23 per square foot found. Kochia and annual mustards dominant host plants. Annual mustards much more abundant than in previous years. (Lowry et al.). COLORADO - Ranged 1-2 per 100 sweeps in weed hosts in Mesa County sugar beets. (Bulla).

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Increase continues on small grains in Pinal County; light to moderate with an occasional heavily infested field. (Ariz. Coop. Sur.). NEW MEXICO - Heavy on barley in Luna County. (Elson). TEXAS - Light to medium and increasing on small grains throughout Denton County. (Turney).

GREENBUG (Schizaphis graminum) - TEXAS - Moderate to heavy on wheat near McKinney, Collin County, March 25. Currently medium to heavy and widespread on wheat throughout Denton County; averaged about 50 per foot of drilled row in wheat throughout Kaufman County. (Turney). Present in most wheat throughout panhandle; damage generally light. Declining in Bell County. (Parker). OKLAHOMA - Decreasing rapidly in most areas. Danger of damage appears over in northwest and north central areas; spraying almost stopped. Decrease due to wheat beginning to joint and rapid increase of parasites and predators. Counts in Perkins area, Payne County, nearing zero. Ranged 0-120 per linear foot in Major, Alfalfa, Logan and Payne Counties; 50-100 in Washington County. (Okla. Coop. Sur.).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - First and second instars becoming more numerous in potato areas of Pinal and Maricopa Counties. Controls necessary in some fields. (Ariz. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Light in two alfalfa fields of 30 checked in Chaves County. Majority winged adults. (Mathews, Nielsen). OKLAHOMA - Averaged 40 per 10 sweeps in alfalfa in Kiowa County, 10 per square foot of crown in Beckham County. Very light in Payne and Alfalfa Counties. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - State average of 118 live borers per 100 stalks represents estimated 56 percent survival of overwintering borers based on fall population of 209 borers per 100 stalks. This third consecutive year in which spring populations have increased since 1963; indicates potentially high borer population for coming season. Pupation of overwintering borers 20 percent in Sussex County; no pupation noted in Kent and New Castle Counties. (Burbutis). MARYLAND - Pupation inside cornstalks underway April 14 in Wicomico County. (U. Md., Ent. Dept.). WISCONSIN - Larvae apparently overwintered well and observations in southwest showed better than 84 percent survival. Predation by birds low in area. (Wis. Ins. Sur.). MINNESOTA - Overwintering mortality very light; averaged 4 percent in west central and 3 percent in southwest districts. In one field in Otter Tail County, woodpecker feeding heavy and reduced borers by over 50 percent. Good survival will not change prediction of low borer population for coming season. (Minn. Ins. Sur.).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - ILLINOIS - Fifty girdled corn plants in Alexander County examined; 2 percent contained living larvae and 60 percent had woodpecker holes. No dead larvae observed. (White).

CORN ROOTWORMS (Diabrotica spp.) - NEBRASKA - Egg numbers low in 3 of 4 fields in Saunders County; fields in sorghum in 1965. Egg counts from corn fields 0-33 per pint of soil, showing very wide range of population potential for spring of 1966. (Weekman, Rhine). TEXAS - Larvae of D. undecimpunctata howardi attacking root systems of 4-inch high corn in several fields near Beeville, Bee County. Approximately 1 percent of 400-acre field killed. (Spaniel).

CORN FLEA BEETLE (Chaetocnema pulicaria) - NEW YORK - Not abundant in summer of 1965 in Hudson Valley but sometimes observed at rates of several per 10 plants. Past winter comparatively mild; treatment of corn at 2-leaf stage may be necessary from Ulster County southward. (N.Y. Wkly. Rpt.).

A WIREWORM (Melanotus communis) - FLORIDA - Causing considerable damage to field corn in prison farm at Belle Glade, Palm Beach County. Over 100 acres of corn lost. Damaging sweet corn at Belle Glade. Several growers not satisfied with current controls. (Genung).

SMALL GRAINS

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Continues moderate to heavy in wheat in northwest. Ranged 30-500 per linear foot in Major, Alfalfa, Logan and Payne Counties. Common in alfalfa in Alfalfa County. (Okla. Coop. Sur.). COLORADO - Averaged 5 per leaf on wheat in Washington County. (Jenkins).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Increased in wheat and barley in Noble County; damage very evident in some fields. Infestations very "spotty". (Okla. Coop. Sur.). TEXAS - Caused slight damage in small grain fields near Terrell, Kaufman County (Turney), and in many wheat fields throughout panhandle area (Parker).

GRAIN APHIDS - CONNECTICUT - None reported, but expected soon. (Savos, Apr. 13). MARYLAND - Macrosiphum avenae increasing; averaged 112 per 100 sweeps on barley at Cambridge, Dorchester County. (U. Md., Ent. Dept.). MISSOURI - M. avenae remains low on small grains in southeastern district; 0-35 per foot of row, but increasing. (Houser). TEXAS - Rhopalosiphum fitchii moderate to heavy on wheat near McKinney, Collin County, March 25. Currently light and noneconomic in most fields throughout Kaufman County. (Turney).

PALE WESTERN CUTWORM (Agrotis orthogonia) - COLORADO - Larvae 0-1 per 3 linear feet of drill row in Weld County wheat; no damage. (Jenkins).

For Other Small Grain Pests, see Federal-State Plant Protection Programs, page 343.

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - CALIFORNIA - Heavy on clover and alfalfa in Marysville, Yuba County; heavy on alfalfa in Elmira, Solano County, and in Roseville, Placer County. Occurrences indicate pest will be widespread and severe this season. Placer County is new county record. (Cal. Coop. Rpt.). IDAHO - Eggs found in Payette County April 8. (Bishop). Adults averaging 1-2 per square rod in alfalfa at Meridian, Ada County, April 6. (Peterson). NEVADA - Some eggs and few first instars present in Lovelock, Pershing County. Major egg laying will occur later. (Arnett, Ferraro). SOUTH DAKOTA - Two adults taken in one-cubic-foot sample of duff and pine needles beneath ponderosa pine tree near Whitewood, Lawrence County, April 9. Collection from slope overlooking alfalfa field. (Jones).

MISSOURI - Larvae in Pemiscot and Mississippi Counties; all stages of development damaging 10-70 percent of plants. All alfalfa fields infested. No pupation observed by April 14. Rains and cool weather hampered survey; larval counts difficult. (Houser, Jones). ARKANSAS - Second period of hatching occurred recently; two ages of larvae present in many eastern area fields. Older larvae pupating; younger larvae feeding on new growth. (Roberts, Miner). MISSISSIPPI - Five samples taken in Holmes County field revealed 78 larvae per square foot. (Dinkins). ALABAMA - Larvae damaging alfalfa in Colbert, Madison, Morgan and Cherokee Counties. Controls initiated in these and other northern counties. (Magnusson et al.). MARYLAND - Adults laying eggs and small larvae active on alfalfa in most sections. Damaged tips ranged 30-40 percent in alfalfa on lower Eastern Shore. Heavy damage to first growth expected during late April in all sections. (U. Md., Ent. Dept.). DELAWARE - Larvae average 2-3 per alfalfa stem in Kent and Sussex Counties; slight increase in injury noted. Majority first instars; some second and third instars present in Sussex County. (Burbutis). NEW JERSEY - No activity noted in Morris County. (Ins.-Dis. Newsltr.). OHIO - Larval populations in southern area appear similar to last week due to cold night temperatures and wet or overcast days. Little plant growth occurred. Larvae averaged 10 per stem in field in Lawrence County; few larvae in other fields in Jackson and Brown Counties. First through third instars present. (Rose). ILLINOIS - Larvae ranged 0-290 (average 102) per 100 sweeps in 5-7 inch alfalfa in the southwest district. Zero to 96 percent of terminals infested by first to third-instar larvae. Damage moderate in Alexander County. No infested terminals found in the east district where alfalfa beginning growth. (White).

CLOVER LEAF WEEVIL (Hypera punctata) - ILLINOIS - Second to fourth instars 0-19 per square foot in red clover 1-1.5 inches tall; 7-12 second to fourth instars in same crop 3-4 inches tall in southwest. No parasitized larvae found in east district; 4 percent of larvae parasitized in southwest, probably by Biolysia tristis (an ichneumon wasp). (White). MISSOURI - Larvae 1-13 (average 4) per square foot in alfalfa in southeast. Damage slight on 25-30 percent of terminals. (Houser). OKLAHOMA - Heavy in alfalfa in some areas of Kiowa County. Light in Payne County. (Okla. Coop. Sur.). IDAHO - Larvae 3 per square rod; feeding in alfalfa April 6 at Meridian, Ada County. (Peterson).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Larvae continue in crimson clover grown for seed in central counties. Controls initiated in Montgomery, Autauga, Bullock and other counties. (Scott, Stone et al.).

PEA LEAF WEEVIL (Sitona lineata) - CALIFORNIA - Adults swept from vetch in San Ramon, Contra Costa County, March 29, 1966, by T. R. Haig. Det. by R. E. Warner. This is a new State record. (Cal. Coop. Rpt.).

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Light on alfalfa throughout State. (N. M. Coop. Rpt.). TEXAS - Varied 50-450 per sweep with 15-inch net in alfalfa throughout Kaufman County. Light on vetch, but increasing, throughout same county; 15-25 per sweep with 15-inch net. (Turney). OKLAHOMA - Ranged 300-500 per 10 sweeps in alfalfa in Kiowa, Tillman and Stephens Counties. Moderate to heavy in many counties in western two-thirds of State, except in panhandle. (Okla. Coop. Sur.). MISSOURI - Remains low in southeastern area alfalfa; 100-500 per 100 sweeps. Few parasitized specimens observed. (Houser). ILLINOIS - Ranged 10-490 (average 300) per 100 sweeps in 5- to 7-inch alfalfa in southwest; 0-2 (average 0.67) percent of aphids killed by parasites. (White). WISCONSIN - Nymphs in second instar in southern counties; a few third instars present on southern slopes where development more advanced. Populations appear low in most fields examined although still too early to make population studies. (Wis. Ins. Sur.). MARYLAND - Generally light on alfalfa in most areas due to cool, wet weather. Winged forms collected on alfalfa in Dorchester County. (U. Md., Ent. Dept.). DELAWARE - Scarce on alfalfa in Sussex County. (Burbutis).

MEADOW SPITTLEBUG (Philaenus spumarius) - OHIO - First nymphs of season collected from alfalfa in Brown County. Very few present. (Rose). MARYLAND - No hatching observed to April 14 on alfalfa and red clover. (U. Md., Ent. Dept.).

TARNISHED PLANT BUG (Lygus lineolaris) - ILLINOIS - Adults 0-6 per 100 sweeps in 5- to 7-inch alfalfa in the southwest district. (White). MARYLAND - Adults 3 per 10 sweeps on alfalfa in Dorchester County. (U. Md., Ent. Dept.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Increasing in alfalfa in Yuma County and in Buckeye area of Maricopa County. Averaged 35 per 100 sweeps. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Increasing in alfalfa in Yuma County and in Buckeye area of Maricopa County. Larvae 90 per 100 sweeps. (Ariz. Coop. Sur.). MARYLAND - Larvae light in alfalfa in Dorchester County. (U. Md., Ent. Dept.).

GREEN CLOVERWORM (Plathypena scabra) - OKLAHOMA - Occasional small larva noted in alfalfa in Payne County. First report of season. (Okla. Coop. Sur.).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Egg masses swept from alfalfa in Pemiscot County April 6. (Puttler).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - MISSOURI - One adult taken in blacklight trap at Portageville, Pemiscot County, April 13. First catch of season. (Keaster, Harrendorf, Jones).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Total of 297 live weevils found in 385 square yards of surface trash examined in Wilbarger County. Majority found in communities with numerous shelterbelt plantings; remainder along fence rows, beneath shinnery oak, cottonwood, chinaberry and willow groves, and in leaf and drift trash in cotton fields where stalks not destroyed. (Rummel, Boring).

THRIPS - ALABAMA - Frankliniella tritici, Thrips tabaci and F. fusca present on grasses, legumes, weeds, vegetable and other new growth along fence rows, roads, and ditchbanks on borders of all cotton fields examined. (McQueen).

TOBACCO

FLEA BEETLES - GEORGIA - Very heavy on plants set in field in Tift County. (Girardeau).

CUTWORMS - GEORGIA - Light in Tift County. (Girardeau).

SUGAR BEETS

SEED-CORN BEETLE (Agonoderus lecontei) - COLORADO - Trace numbers of adults on sugar beets; no damage observed. (Jenkins).

FALSE WIREWORMS - NEW MEXICO - Damaging young sugar beets in Curry County. (Crystal).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (Myzus persicae) - IDAHO - Overwintering summer forms and progeny on bindweed and shepards-purse in Twin Falls County, April 8. If warm weather continues, winged migrants will be present soon. Eggs abundant on peach twigs throughout southern area. Conditions favor development of extremely high numbers in southern area during 1966 unless subsequent weather conditions unfavorable. Extra care urged in selecting seed stocks, especially where net necrosis of potatoes problem in past years. (Bishop).

GREAT BASIN WIREWORM (Ctenicera pruinina) - WASHINGTON - Light on 14 acres of potatoes, damaging seed pieces at Ringold, Franklin County. (Onsager).

COLE CROPS

CABBAGE APHID (Brevicoryne brassicae) - ARIZONA - Moderate to heavy on cabbage in Yuma Valley of Yuma County and in areas of Maricopa County. (Ariz. Coop. Sur.). DELAWARE - Present on young cabbage plants locally in New Castle County. (Burbutis).

ARMY CUTWORM (Chorizagrotis auxiliaris) - ARIZONA - Light in cabbage locally in Yuma Valley, Yuma County. (Ariz. Coop. Sur.).

HAWAII INSECT REPORT

Special Insects of Regional Significance - SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) adults light on mustard cabbage and snap beans in Waianae, Oahu. Increasing where spray program neglected. On Hawaii Island, medium infestations, mostly nymphs, on snap beans in Laupahoehoe and on pumpkins in Hilo. (Yamamoto, Yoshioka). Medium infestation of a PLATASPID BUG (Coptosoma xanthogramma) occurring on Canavalia cathartica (maunaloa) in Kailua and on Strongylodon macrobotrys (jade-vine) in Kaneohe, Oahu. Mostly nymphs of all stages. These are first occurrences on the windward side of the island. (Thistle, Higa).

New State of Hawaii Insect Record - Several adults of a SCOLYTID BEETLE (Stephanoderes birmanus) found in twigs of Litchi chinensis (litchi) in Lawai, Kauai, on October 27, 1965 by S. Au. Adults later collected from Prosopis pallida (kiawe) by C. J. Davis in Waianae, Oahu, on March 9, 1966 and in Kahului, Maui, on March 23, 1966. Det. by S. Wood. According to Dr. Wood, this species is closely allied to S. maculicollis. (Chong).

Deciduous Fruits - BLACK THREAD SCALE (Ischnaspis longirostris) heavy on Haden mango foliage in the Nuuanu area of Honolulu, Oahu. Leaves from 3 trees averaged 115 scales per square inch. (Haw. Ins. Rpt.).

General Vegetables - All stages of IMPORTED CABBAGEWORM (Pieris rapae) medium to heavy in 3 acres of cabbage at 2,000 feet elevation in Kula, Maui. Damage heavy on young plants. Grower behind on spray schedule. (Shigeta). CARMINE SPIDER MITE (Tetranychus telarius) very heavy on eggplant in Kahului; light on eggplant in Puunene on Maui. (Miyahira).

Ornamentals - CHINESE ROSE BEETLE (Adoretus sinicus) caused heavy foliar damage to various ornamental plants in Kaneohe, Oahu, including Hibiscus spp., Heliconia spp., Rosa spp., and Acalypha spp. (Haw. Ins. Rpt.). Dr. Carl Yoshimoto, Bishop Museum, collected a single specimen of a LYGAEID BUG (Nysius caledoniae) in Lanaihale, Lanai, on March 25, 1966. Species known only from the islands of Oahu and Hawaii, this constitutes a new island record. (Ashlock). Several adults of a SCOLYTID BEETLE (Stephanoderes georgiae) found in twigs of Cassia glauca (kolomona) in Kukuiula, Kauai, on January 5, 1966, by S. Au. This is a new island record. Previously reported only from Oahu. Det. by Dr. S. Wood. (Chong).

Miscellaneous Insects - A MIRID BUG (Rhinacloa forticornis) - Two specimens found on Rubus rogersii (blackberry) in Kokee, Kauai, on November 28, 1965, by S. Au. This is a new island record. It was first reported in the State (light trap at Honolulu, Oahu) in June, 1962 by Dr. C. R. Joyce. Det. by Dr. R. C. Froeschner. (Haw. Ins. Rpt.). Several adults of a GEOMETRID MOTH (Cosymbia serrulata) taken at light in Kaunakakai, Molokai, March 18-23, 1966. This is a new island record. (Beardsley).

DECIDUOUS FRUITS AND NUTS

APPLE APHID (Aphis pomi) - INDIANA - First nymphs of season found on apple bud tips in Delaware and Tippecanoe Counties. Bud stage ranges from silver to green tip. (Matthew). SOUTH CAROLINA - Several hours search at Long Creek showed none present. (Buxton, April 11).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OHIO - Eggs hatching in Wayne County. (Forsythe). Large populations noted on apple buds in Hocking County, but relatively lesser numbers in southern part of State. In Lawrence County, apple leaves out and blossoms in pink stage. Limited frost damage occurred. (Rose).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Only insect active at Storrs. Adults easily found; egg laying increased slightly. (Savos, Apr. 13). MICHIGAN - Adults and freshly laid eggs common in Oakland County pear orchard April 12. (Wooley, Lincoln).

EUROPEAN RED MITE (Panonychus ulmi) - NEW JERSEY - Overwintering eggs hatching in Camden County on Red Delicious apples. (Ins.-Dis. Newsltr.). CONNECTICUT - Very few overwintering eggs in all localities. (Savos, Apr. 13).

SPIDER MITES (Tetranychus spp.) - COLORADO - Overwintering mites active on pear and apple trees. Most fruit in delayed dormant stage in Paonia area, Delta County. (Bulla).

PEAR LEAF BLISTER MITE (Eriophyes pyri) - CONNECTICUT - Control urged before buds open. (Savos, Apr. 16).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - CONNECTICUT - Some overwintering egg masses found at Cheshire. (Savos, Apr. 13).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OKLAHOMA - Light to moderate on fruit trees in McIntosh County. (Okla. Coop. Sur.).

SAN JOSE SCALE (Aspidiotus perniciosus) - TEXAS - Light to medium on peach trees near Saratoga, Hardin County. (Martin).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - TEXAS - Heavy on peaches near Saratoga, Hardin County. (Martin).

LYGUS BUGS (Lygus spp.) - COLORADO - Ranged 4-6 per 100 sweeps where tansy mustard bloom present in Mesa County peach orchards; considered light. (Bulla).

A LEAFHOPPER (Erythroneura elegantula) - CALIFORNIA - Adults medium on peach trees in Fowler, Fresno County. (Cal. Coop. Rpt.).

PEACH SILVER MITE (Aculus cornutus) - CALIFORNIA - Light, early infestations on flowering peach trees in Turlock, Stanislaus County. (Cal. Coop. Rpt.).

PECAN NUT CASEBEARER (Acrobasis caryae) - ALABAMA - Small larvae emerged from overwintered hibernaculae on earlier pecan varieties in south and central areas; feeding on tender foliage. (McQueen). TEXAS - Second and third instars in young shoots of pecan trees near College Station, Brazos County. (VanCleave, Parker).

BLACK PECAN APHID (Melanocallis caryaefoliae) - ALABAMA - Nymphs very light on opening buds and tender foliage of earlier pecan varieties in Lee County. No noticeable damage but first of succeeding generation usually not heavy enough to damage until after July. (McQueen).

A XYELID SAWFLY (Megaxyela langstoni) - ALABAMA - Approximately 50 first and second instars feeding on tender foliage of young pecan tree in Lee County. Occasional pest of pecans; reported in Mobile and Lee Counties in April 1964. (Bagby et al.).

CITRUS

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Heavy and damaging citrus in commercial groves and backyard plantings in Pinal and Maricopa Counties. (Ariz. Coop. Sur.).

COTTONY-CUSHION SCALE (Icerya purchasi) - ARIZONA - Numerous infestations on older citrus groves on Yuma Mesa in Yuma County. Rodolia cardinalis (vedalia) very light. (Ariz. Coop. Sur.).

BROWN SOFT SCALE (Coccus hesperidum) - ARIZONA - Infested commercial lemon grove on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

EASTERN LUBBER GRASSHOPPER (Romalea microptera) - FLORIDA - Second instars present in colonies; about 40-50 per colony in Lake Alfred area, Polk County, in or near swampy area adjacent to citrus groves. Testing of some chemical controls underway. High concentrate low volume spray not effective in June last year. Large numbers present in 1965 caused some damage to citrus trees. (J. C. Denmark).

For other Citrus Pests, see Federal-State Plant Protection Programs, page 343.

SMALL FRUITS

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - NEW JERSEY - Egg laying underway in Hammonton area on strawberries. About one-third of infested leaves contained eggs; about 55 eggs per leaf. (Ins.-Dis. Newsltr.).

GENERAL VEGETABLES

A LEAF MINER FLY (Phytomyza atricornis) - CALIFORNIA - Adults heavy on artichokes and lettuce in Watsonville, Santa Cruz County. (Cal. Coop. Rpt.).

ORNAMENTALS

ARMORED SCALES - FLORIDA - Gymnaspis aechmeae and Hemiberlesia palmae severely damaged leaves of Billbergia sp. plants in nursery at West Palm Beach, Palm Beach County. (Long). Parlatoria proteus adults and nymphs infesting flowers and leaves of 6 of 300 plants of moth orchid (Phalaenopsis sp.) in nursery at Tampa, Hillsborough County. (Hale). All stages causing moderate damage to 100 of 1,000 Philodendron panduraeforme plants in nursery at Miami, Dade County. (Swanson). Pinnaspis aspidistrae adults infesting leaves of 10 of 20 plants of lily-turf (Liriope sp.) in Tampa. (Simmons). SOUTH CAROLINA - Fiorinia theae general over State especially on Burford hollies and camellias. (Nettles et al., Apr. 12). TEXAS - F. theae heavy on holly in College Station, Brazos County. (Randolph). CALIFORNIA - Aspidiotus perniciosus heavy on flowering cherry nursery stock in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

BROWN SOFT SCALE (Coccus hesperidum) - FLORIDA - Adults and nymphs infesting flowers and leaves of 50 of 300 plants of moth orchid (Phalaenopsis sp.) in nursery at Tampa, Hillsborough County; all stages causing severe damage on leaves of 10 plants of Aloe sp. in nursery at Tampa. (Hale).

AZALEA WHITEFLY (Pealius azaleae) - ALABAMA - Large numbers emerging from older azaleas in Lee County; overwintered nymphs heavy. (McQueen).

CHRYSANTHEMUM LACE BUG (Corythucha marmorata) - CALIFORNIA - Nymphs and adults medium to heavy on Ambrosia sp. in Placentia, Orange County. (Cal. Coop. Rpt.).

A LYGAEID BUG (Ochrostomus lineoloides) - TEXAS - Large numbers found at base of nursery stock in nursery near Alta Loma, Galveston County. (Gandear).

AZALEA LEAF MINER (Gracillaria azaleella) - FLORIDA - Larvae moderate on leaves of 11 plants of 37 Rhododendron indicum in nursery at Tampa, Hillsborough County. (Hale).

AN OLETHREUTID MOTH (Epinotia subviridis) - CALIFORNIA - Larvae locally heavy on juniper in Campbell, Santa Clara County. (Cal. Coop. Rpt.).

CANKERWORMS - NEW YORK - Lighter attacks on ornamentals predicted on Long Island; parasites reduced egg clusters. May be troublesome on South Fork around East Hampton. (N. Y. Wkly. Rpt., Apr. 18).

A SCARAB (Euphoria sepulchralis) - FLORIDA - Chewing blooms of roses and causing substantial damage to approximately 10 percent of 1,000 plants in nursery at Tampa, Hillsborough County. (Barber).

CITRUS RED MITE (Panonychus citri) - CALIFORNIA - Medium on elaeagnus nursery plants in Santa Barbara, Santa Barbara County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

SPRUCE NEEDLE MINER (Taniva albolineana) - NEVADA - Larvae mining new needles in southern Washoe County. No pupae found. Surveys in Winnemucca, Humboldt County, and in Lovelock, Pershing County, negative. (Bechtel, Cooney).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - ALABAMA - Emergence from over-wintered pupae in pine tips completed throughout State. No noticeable signs of first-generation larvae in new growth pine tips in central part of State; should occur soon. (McQueen).

WHITE-PINE WEEVIL (Pissodes strobi) - NEW JERSEY - Control sprays urged; thorough coverage of terminals necessary for adequate control. (Ins.-Dis. Newsltr.).

WHITE-PINE APHID (Cinara strobi) - NEW JERSEY - Eggs will hatch soon; spraying of terminals and small branches urged. (Ins.-Dis. Newsltr.).

GALL APHIDS (Adelges spp.) - CONNECTICUT - Overwintering nymphs active on spruce in some areas. (Savos). NEW YORK - A. cooleyi abundant on Douglas-fir in Louden-ville. (N.Y. Wkly. Rpt., Apr. 12).

A SPIDER MITE (Oligonychus coniferarum) - CALIFORNIA - Locally heavy on Juniperus torulosa trees in Oroville, Butte County. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - NEW JERSEY - Eggs hatched April 11 in Hartford area, Burlington County, on wild cherry. (Ins.-Dis. Newsltr.). DELAWARE - Young larvae noted on wild cherry in Sussex County. (MacCreary). MARYLAND - Eggs hatching on wild cherry in southern sections. First larvae of season observed April 7 on wild cherry at Salisbury, Wicomico County. (U. Md., Ent. Dept). MISSOURI - One web per tree observed on occasional wild cherry as far north as Jefferson County. (Houser). OKLAHOMA - Heavy on wild plum trees in Major, Alfalfa and Kingfisher Counties; light to moderate in Murray County. (Okla. Coop. Sur.). ALABAMA - Widespread in northern area on cherry trees and to much lesser extent on apples. Larvae approaching full growth in extreme south. (Rutledge et al.).

CANKERWORMS - MICHIGAN - Alsophila pometaria and Paleacrita vernata active in many parts of Lower Peninsula on warm evenings during third week of March. Moth activity ceased during cool period of late March and early April. (Newman, Hoffman). NORTH DAKOTA - P. vernata males emerging in Fargo area. In 1965, males emerged week of March 27. (Brandvik).

AN OLETHREUTID MOTH (Proteoteras aesculana) - DELAWARE - Larvae infested 30 percent

of maple trees 6-7 feet tall in nursery; 2-3 tip shoots attacked per infested tree. Collected June 30, 1965, by R. Hickman in Lewes, Sussex County. Det. by P. P. Burbutis. This is new State record. Larvae also known present in nurseries in other areas of State. (Burbutis).

A PLUTELLID MOTH (Abebaea subsylvella) - CALIFORNIA - Larvae heavy on oak trees in Los Altos Hills, Santa Clara County. (Cal. Coop. Rpt.).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - OKLAHOMA - Adults emerging from dead elm trees in Stillwater area, Payne County. (Okla. Coop. Sur.).

ELM LEAF BEETLE (Pyrrhalta luteola) - IDAHO - Adults active in Twin Falls County; caused serious damage to elms in 1965. (Youtz).

NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) - MARYLAND - Considerably above normal on American holly in most sections. (U. Md., Ent. Dept.).

A PIT SCALE (Asterolecanium minus) - CALIFORNIA - Heavy on oak nursery stock in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

For other forest and shade tree pests see Federal-State Plant Protection Programs, page 343.

MAN AND ANIMALS

MOSQUITOES - NORTH CAROLINA - No problems in Carteret and Pamlico Counties due to dry conditions of marsh areas. (Ashton). FLORIDA - Aedes taeniorhynchus biting activity generally very light to light in southern area; more abundant in Lee and Collier Counties. Scattered specimens biting at Jupiter Island, Martin County; Homestead and Everglades National Park, Dade County and Cape Sable and Florida Keys, Monroe County. Some larvae taken in brackish pool at Grassy Key, Monroe County. All collections taken second week in April. (Mead). In Gainesville area, Alachua County, Mansonia perturbans made first big appearance of season April 10-15; causing annoyance in several parts of city. Fresh specimens collected in southeastern areas. City fogging service started. Culex salinarius causing some annoyance but much less than M. perturbans. (Fla. Coop. Sur.). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control for period ending April 15 yielded Anopheles crucians, Culex pipiens quinquefasciatus, Culex territans and Culex salinarius. Aedes canadensis and Mansonia perturbans appeared in light trap collections for first time this year. (Stokes). TEXAS - Culex salinarius predominant species in Jefferson County; higher numbers reported from southern portion of county. Aedes sollicitans in moderate to small numbers, more prevalent in Port Arthur. Aedes vexans taken in light traps in Beaumont. Anopheles crucians noted throughout county; A. quadrimaculatus only in Port Arthur and north Beaumont traps. Culiseta inornata continues in all light traps; however, few warm days toward end of March diminished numbers considerably. (Thompson; Jeff. Co. Mosq. Contr. Distr. Rpt.). UTAH - Fourth instar of Culex erythrothorax taken in marshes northwest of Salt Lake City as ice melted in late March. Aedes campestris, A. dorsalis and Culiseta inornata larvae present in Salt Lake County. (Collett, Apr. 11). COLORADO - Third instars of Aedes dorsalis taken at Fort Collins, Larimer County. (Shaw). MINNESOTA - First and second instars of Aedes spp. found in 245 of 258 larval samples collected by Metropolitan Mosquito Control District; 16 samples contained Aedes excrucians, A. stimulans, A. abserratus, A. fitchii and A. riparius. Air temperatures somewhat below normal; larval development slowed. (Minn. Ins. Rpt.).

BITING MIDGES (Culicoides spp.) - FLORIDA - Few C. furens taken during biting at Hobe Sound, Martin County; C. barbosai distinct nuisance during daytime at Middle Cape of Cape Sable, Monroe County. Det. by F. S. Blanton. (Mead).

HORN FLY (Haematobia irritans) - MISSISSIPPI - Averaged 25 per head on 10 cattle in Oktibbeha County; level unchanged. (Dinkins). TEXAS - Ranged 30-40 per head

on cattle throughout Brazos County. (Parker). OKLAHOMA - Averaged 200 per head on cows and 600 per head on bulls in McIntosh County. Light to moderate in Murray, Garvin, Choctaw and Payne Counties. (Okla. Coop. Sur.). ARKANSAS - Ranged 75-100 per animal on 2 herds in Yell County and 15 per animal on 1 herd in Washington County. (Simco).

CATTLE GRUBS (Hypoderma spp.) - UTAH - Still emerging from dairy cattle in Cache Valley areas. (Olson, Knowlton, Apr.11). OKLAHOMA - H. lineatum adults light to moderate and annoying to cattle in McIntosh, Choctaw and Payne Counties. (Okla. Coop. Sur.). TEXAS - H. lineatum adults depositing eggs throughout northern area. (Turney).

TICKS - ARKANSAS - Amblyomma americanum and Ixodes scapularis present on cattle in Washington County. (Simco). OKLAHOMA - Dermacentor variabilis adults present on dogs checked in Noble County. Unspecified ticks moderate on cattle in Choctaw and Pushmataha Counties. (Okla. Coop. Sur.). WYOMING - Dermacentor andersoni adults active in widespread areas of Washakie County. (Pfadt).

A VESPID WASP (Polistes sp.) - ARIZONA - Large populations nesting in palm trees, houses and other buildings throughout Pinal County causing nuisance to many people. (Ariz. Coop. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - ARKANSAS - Medium to heavy on laying flocks in Washington County. (Simco)

HOUSEHOLDS AND STRUCTURES

TERMITES - CONNECTICUT - Swarming in East Haven, Branford, North Haven, Hamden, New Haven, West Haven, Bridgeport and Thompsonville. (Savos, Johnson, Apr. 13). ILLINOIS - Swarming in Champaign-Urbana area. (Ill. Ins. Rpt.) TEXAS - Reticulitermes flavipes swarming from house in Bay City, Matagorda County, (Vestal); house in Floresville, Wilson County, (Bippert); and several houses in Seguin, Guadalupe County, (Massey).

ANTS - ARIZONA - Increased activity of Forelius sp. and Camponotus sp. causing extreme problem to many homeowners in Casa Grande area, Pinal County. (Ariz. Coop. Sur.). MARYLAND - Tetramorium caespitum workers active in several lawns in Prince Georges County. Acanthomyops interjectus swarmed from soil near foundation plants on property in Federalsburg, Caroline County. (U. Md., Ent. Dept.).

STORED PRODUCTS

DRUGSTORE BEETLE (Stegobium paniceum) - NEVADA - Heavy in stored products in restaurant storeroom in Reno, Washoe County. (Ting).

For other Stored-Product pests see Federal-State Plant Protection Programs, page 343.

BENEFICIAL INSECTS

LADY BEETLES - MISSISSIPPI - Larvae more numerous in wheat fields in Delta area. Assassin bugs taken in samples in Attala County wheat fields. (Dinkins).

LACEWINGS - ILLINOIS - Adults of Chrysopa oculata and brown lacewings ranged 0-6 per 100 sweeps in alfalfa 5-7 inches high in southwest. (White).

A BRACONID WASP (Lysiphlebus testaceipes) - TEXAS - Light to medium in small grain fields throughout Kaufman County parasitizing Schizaphis graminum (greenbug) but high winds reduced activity. (Turney).

Beneficial Insects in Missouri - Activity surpressed probably due to cool weather. During period ending April 14, damsel bugs, Chrysopa oculata and Orius insidiosus observed. Bathyplectes curculionis collected and determined by B. Puttler in Wright County in August 1965. This is new County record. (Houser).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - MICHIGAN - First seasonal activity by overwintering adults noted third week of March near Niles, Berrien County; temperatures in 50's several days. No migration from woodlot hibernation sites observed. Few adults noted again April 11; no flight occurred. General migration from hibernation quarters in woodlots and stubble fields near woodlots expected with sustained warm period. Temperatures in 50's and 60's necessary for mass movement. Early emerging beetles expected to move largely to nearby wheat and grass. (Dowdy).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Chemical Control Zone - Second insecticide application on 3,028 trees on 502 properties and first application on 1,376 trees on 250 properties at Linares, Nuevo Leon, completed. Trees sprayed for first time in extension of protection zones around infestations found in February. Biological Control Zone - Light in Municipios Hidalgo and Padilla; inspections in Municipio Guemez negative; 23,145 trees on 156 properties inspected. Spraying of 4,594 trees in grove in Padilla, Tamaulipas, completed. Total of 424,500 specimens of Prospaltella opulenta (a eulophid) received from Tamaulipas and Yucatan for release in Chiapas and Tabasco. Release of parasites needed in 21 properties in 5 States. Chemical treatment applied on 2,000 citrus nursery trees in Villahermosa, Tabasco. (PPC Mex. Reg., Mar. Rpt.).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Numbers increased in traps along lower east coast during late March and early April. (Fla. Coop. Sur.).

GRASSHOPPERS - OKLAHOMA - Surveys in rangeland areas of Beaver, Ellis and Roger Mills Counties showed 0.5 egg pod per square foot of soil. Eggs showed slight development. Crop margins in same areas and in Custer County contained one-third egg pod per square foot. Light hatches of Melanoplus sp. noted in Beckham, Custer, Comanche and Stephens Counties. (Okla. Coop. Sur.). MINNESOTA - Checks in west central district revealed only Melanoplus femurrubrum eggs; most in clear stage. Some egg pods located on favorable sites showed early coagulation. Bee fly larvae destroyed 20 percent of egg pods in Otter Tail County field. (Minn. Ins. Rpt.). NORTH DAKOTA - Egg development in southeast ranged coagulated to segmented with 55 percent of eggs coagulated, 33 percent eyespot and 12 percent segmented. Species involved: Melanoplus femurrubrum and M. bivittatus. (Brandvik). WYOMING - Small numbers of first instars in waste area of southern Big Horn and Washakie Counties. (Pfadt). IDAHO - First and second instars of Oedaleonotus enigma averaged 9 per square yard in Snake River Canyon between King Hill and Bliss, April 7. Spotted hatching of Psoloessa delicatula noted near Mountain Home and Glenns Ferry, Elmore County; fourth instars near Mountain Home March 29. (Evans).

GYPSY MOTH (Porthetria dispar) - NEW YORK - Another heavy infestation predicted in Nissequogue area, Suffolk County. (N. Y. Wkly. Rpt., Apr. 18).

KHAPRA BEETLE (Trogoderma granarium) - CALIFORNIA - Very light infestation of larvae discovered in feedlot in Brawley, Imperial County. Source of infestation being checked. This first known infestation in State in more than 4 years. Quarantine interceptions are continuing threat for this pest to Western Hemisphere. Eradication treatment for new infestation being processed. (Cal. Coop. Rpt.).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - Inspection of 835 traps in Baja California and Sonora negative. (PPC Mex. Reg., Mar. Rpt.).

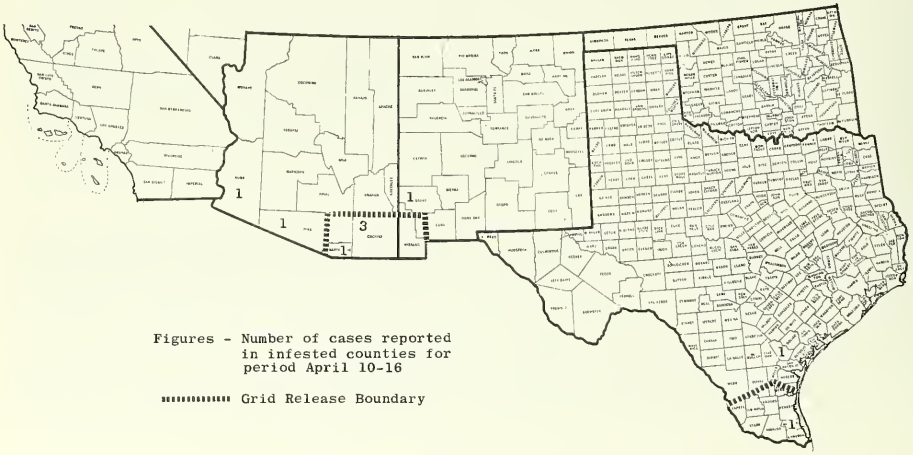
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period April 10-16 a total of 9 cases was reported in the Southwestern Eradication Area by States and counties as follows: TEXAS - Willacy 1, Bee 1; ARIZONA - Santa Cruz 1, Yuma 1, Cochise 3, Pima 1; NEW MEXICO - Grant 1. The Republic of Mexico reported 71 cases: Territorio sur de Baja California 1, Chihuahua 3, Sonora 56, Tamaulipas 8, Nuevo Leon 3. Sterile screw-worm flies released: Texas 9,306,250, Arizona 10,928,000, New Mexico 3,300,000 and Mexico 76,432,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	3	22	251	1450	1.19	1.51
1965	5	9	294	1038	1.70	0.86
1966	9	42	141	613	6.38	6.85
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	75	704	65	473	115.38	148.83
1966	78	658	63	427	123.80	154.09

Mexico Field Study - No report received for this period.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).



Figures - Number of cases reported in infested counties for period April 10-16

Grid Release Boundary

CORRECTIONS

CEIR 16(8):140 - SUNFLOWER AND FLAX INSECTS - Note for PAINTED LADY (Vanessa cardui) should read NORTH DAKOTA.

CEIR 16(13):254 - Pest Control Accomplishments - Delete entry on jack-pine budworm (Choristoneura pinus) in Michigan. This was a proposed project but was not carried out. (USFS).

See also corrected Summary of Insect Conditions in NEW HAMPSHIRE and VERMONT pages 351-353 this issue.

SOME FIRST APPEARANCES OF SEASON

Pale western cutworm larvae in Colorado. Meadow spittlebug nymphs in Ohio and Maryland. Green cloverworm larvae in Oklahoma. Yellow-striped armyworm adult in Missouri. Apple aphid in Indiana. Pear psylla adults and eggs in Connecticut and Michigan. Eastern tent caterpillar larvae in Maryland. Alfalfa weevil adults in Idaho and South Dakota and larvae in Nevada.

INSECT DETECTION

PEA LEAF WEEVIL (Sitona lineata) - CALIFORNIA - Adults swept from vetch in San Ramon, Contra Costa County, March 29, 1966, by T. R. Haig. Det. by R. E. Warner. New State record. (Cal. Coop. Rpt.). (p. 335).

AN OLETHREUTID MOTH (Proteoteras aesculana) - DELAWARE - Larvae infested 30 percent of maple trees in nursery in Lewes, Sussex County. Collected June 30, 1965, by R. Hickman. Det. by P. P. Burbutis. This is new State record. Also known from other nurseries in other areas of State. (Burbutis). (p. 340).

A SCOLYTID BEETLE (Stephanoderes birmanus) - HAWAII - Several adults found in twigs of Litchi chinensis in Lawai, Kauai, October 27, 1965, by S. Au. Det. by S. Wood. This is new State record. Adults also collected from Prosopis pallida on islands of Oahu and Maui. (Chong). (p. 337).

ALFALFA WEEVIL (Hypera postica) - CALIFORNIA - Heavy on alfalfa in Roseville, Placer County. New county record. (Cal. Coop. Rpt.). (p. 334).

AN ICHNEUMON WASP (Bathyplectes curculionis) - MISSOURI - Collected in Wright County in August 1965. Det. by B. Puttler. New county record. (Houser). (p. 343).

KHAPRA BEETLE (Trogoderma granarium) - CALIFORNIA - Very light larval infestation discovered in feedlot in Brawley, Imperial County. First known infestation in State in more than 4 years. Source of infestation being checked. Eradication treatment for new infestation being processed. (Cal. Coop. Rpt.). (p. 343).

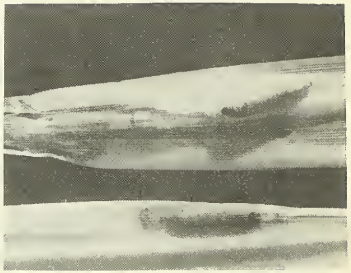
In Hawaii, new island records included: A LYGAEID BUG (Nysius caledoniae) on Lanai; a SCOLYTID BEETLE (Stephanoderes georgiae) and a MIRID BUG (Rhinacloa forticornis) on Kauai; and a GEOMETRID MOTH (Cosymbia serrulata) on Molakai. (p. 337).

LOOK FOR THESE IN SMALL GRAINS

Senn Pest Look for an oval, tan to brownish stink bug on heads or stems of small grains. Margins of adult abdomen have alternating dark and light areas. This insect can be easily seen but often drops quickly to the ground when disturbed. Can be taken readily in a sweep net. Often congregates under windrows of straw or other collections of debris.

Hosts include wheat, barley, rye, oats, millet, sorghum, spurge, sunflower, flax, clover and thistle. This pentatomid occurs in Afghanistan, Crete, Greece, Iran, Cyprus, Iraq, Israel, Jordan, Lebanon, West Pakistan, Syria, Turkey, and USSR (southern). Eurygaster integriceps Puton is one of the most destructive pests of grain in the Middle East. Adults feed on stems of young plants and adults and nymphs damage kernels. Entire wheat crops may be destroyed; yield is often reduced 25 percent or more. Senn pest also affects quality of flour and germination. Heavy damage has been reported from areas of USSR. For more details see CEIR 7(5):88.

Cereal Leaf Miner Yellowed or brown patches in grain fields may be indicative of presence of Syringopais temperatella (Led.). This lepidopterous miner feeds within the leaves, leaving the epidermis transparent. Larvae are about 5 mm. in length when full grown, and grayish yellow in color. Wing expanse of moth is from 12-18 mm. Forewings are brown, thorax and abdomen black.



Wheat, barley, and oats are preferred hosts. The pest occurs in Cyprus, Turkey, Lebanon, Syria, Jordan, Iraq, Israel, and Iran. Larvae mine leaves from November to April; may kill entire plantings. Major pest of cereals in Middle East; annual loss in Jordan 15-20 percent; 20-25 percent in Turkey; severe losses reported from other areas. As many as 60-90 larvae per plant have been reported in Iran. For more details see CEIR 9(38):873.

Senn pest and cereal leaf miner are not known to occur in the United States.

Cereal Leaf Beetle Presence of this introduced pest in grain fields may be first apparent from a streaked appearance of the leaves. In heavy infestations, plants appear yellowish white. Adults of Oulema melanopus (L.) are approximately 5 mm. in length. Wing covers and head are metallic, bluish black. Legs and thorax light reddish brown. Larva is a little longer than adult. It is yellowish, with brownish black legs. Coloring is obscured by a covering of fecal matter. Adults may be taken in sweep nets on warm spring days.

This chrysomelid attacks small grains and other grasses. Distribution includes Tunisia, Turkey, Cyprus, Israel, Iran, Morocco, and Europe east to Siberia. Also occurs in a small area of U. S. and has been reported in Canada. Serious damage to small grains has been reported in areas of Europe, and in areas of Michigan where the insect was discovered in 1962. The pest now occurs in wide areas of Michigan, Indiana, and Ohio; also reported from 3 counties in northeast Illinois. A cooperative State-Federal control program is in operation against the pest. Coop. Econ. Ins. Rpt. 16(16):346

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA																								
Gainesville 4/12			BL						4															
GEORGIA																								
Tifton 4/6-13	42-76	0.05	BL								3													
MISSISSIPPI																								
Stoneville 4/7-13	39-80	0.07	2BL	58			4		9									313	8	1025				
Rolling Fork 4/7-13	41-79		BL	12			3		1		6							41	2	41				
Tunica 4/7-13	35-79	0.22	BL	1			1											18		14				
MISSOURI																								
Portageville 4/9-15			BL															76	1	97				
TENNESSEE (Counties)																								
Madison 4/5-11				3														9	6	14				
Maury 4/5-11																		5		12				
Robertson 4/5-11				1														2	1	10				
Cumberland 4/5-11				1														1		1				
Knox 4/5-11																		4	12					
TEXAS																								
Brownsville 4/9-15	63-86	0.38	2BL	27			5		223	1	53				4			39	4	29		2	40	
Waco 4/9-15			BL	13			12		14		2							12		27				

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965

WEATHER OF THE YEAR 1965 [1/]

Highlights:

(1) Floods in Pacific Northwest in January. (2) Record-breaking spring floods in upper Mississippi Valley, Red River of the North, and portions of the Great Plains. (3) Frequent tornadoes. (4) Longest drought in history of Northeast. (5) Good snowfall in western mountains. (6) Most damaging hurricane on record. (7) Cool summer (8) Wet September. (9) Favorable weather for bumper crops.

TEMPERATURES: Temperatures for 1965 averaged below normal over about 75 percent of the 48 States. Relative to normal the year was coldest in the lower Appalachian region and between the Great Lakes and Rockies. In parts of the latter area the year was more than 2° colder than normal. Below normal temperatures generally prevailed in the northern Great Plains until October. The lowest temperature in the 48 States, -50°, occurred at Cook and Cotton in northeast Minnesota January 14. The 1964-65 winter at some locations in the northern Great Plains was the coldest since 1936. Degree days, a good indicator of fuel consumption, were well above normal from eastern Georgia to southern New England, thence westward along the northern border to the Rockies, and in central California. The year was warmer than normal in southern Florida, south central areas, and in parts of the Pacific Northwest. In the latter area only May, September, and December were colder than normal. Highest temperature in the 48 States was 120° at Maricopa, Arizona, on July 31.

Temperature highlights, in addition to the cold winter in the northern Plains included the following: June was the coldest in many years in the Southwest and parts of the Southeast. July was persistently cool in the Great Lakes region and Northeast with frost and freezing on the 6th and 7th in parts of Michigan and northern and central sections of New York and New England. Near to locally record-breaking low temperatures for August occurred on the 29th to 31st in sections of the Ohio Valley, and locally from the Carolinas to Maine with widespread early frost and freezing in New England. September was the coldest of record at a number of stations in the northern Great Plains and Far West. Temperatures rose to record or near record high levels at the end of July in the Pacific Northwest and in mid-August in the Great Plains.

PRECIPITATION: Precipitation for 1965 in the 48 States was below normal in much of the Pacific Northwest and east of a line joining Cleveland, Ohio, and the southwest corner of New Mexico. Totals were less than 75 percent of normal in the Rio Grande Valley and north Atlantic coastal sections.

By far the most serious precipitation deficiencies occurred in the Northeast where they prolonged a dry period that began in the area during September 1961, developed extreme drought characteristics by the end of September 1964, and spread southward during 1965. At the end of the year the drought was rated extreme in northern West Virginia, northern and eastern Virginia, Maryland, Delaware, New Jersey, eastern Pennsylvania, southeastern New York State, and central and southern New England. Owing to good distribution and timely occurrence during the warm season, the precipitation that did occur was sufficent to produce mostly fair to good crops. Reservoir and gound-water supplies reached record low levels, however.

Even though precipitation in the Pacific Northwest was below normal for the year, heavy rains and melting snow in northern California and western Oregon and Washington in January produced the year's worst flood. Losses included about 45 deaths and approximately a half billion dollars damage.

[1/] Prepared by H. L. Seamon, Climatologist, Environmental Data Service, Environmental Science Service Administration, Washington, D. C.

Precipitation was well above normal in a broad belt from the Far Southwest to the Great Lakes, and one of the wettest years on record in the Far Southwest and upper Mississippi Valley. Waterloo, Iowa, measured 50.79 inches of moisture for its wettest year. Warm season precipitation (April-September) also was above normal everywhere, except the Columbia River and Rio Grande Valleys, the east Texas coast, and the Northeast.

Record-breaking spring floods occurred along the upper Mississippi River for a distance of 700 miles as a result of heavy March and April rains and the rapid melting of a record-breaking March snowfall on frozen ground. Severe flooding al-also occurred along portions of the Missouri and Red River of the North. Total losses included at least 15 fatalities and over $100 million property damage.

Heavy June rains in eastern Colorado and the central Great Plains caused severe to record flooding on the South Platte and upper Arkansas Rivers. Several lives were lost and preliminary property losses were estimated at more than $200 million in the South Platte Basin alone.

Many flash floods occurred during the spring and summer in the western half of the Country. One of the worst was on June 11 at Sanderson, Texas, where losses included 24 deaths and a few million dollars property damage.

Numerous other periods of heavy rainfall occurred during the year. June and July rainfall was unusually heavy in the Southeast. Heavy August rains fell in northern and middle portions of the Far West. More than twice the normal rain fell during September in most areas from the Great Basin eastward to the Great Lakes and Ohio River. During the passage of hurricane Betsy, heavy rains fell in extreme southern Florida on September 8 and in the lower Mississippi and Ohio Valleys during the next 4 days.

Tropical storm Debbie left a record 16.85 inches in downtown Mobile, Alabama, September 29 and 30. A record 42 inches of rain fell in the Ft. Lauderdale, Florida area in October, mostly on the 14th-15th and 30th-31st. In southern California rainfall during storms on November 14 to 18 and 22 to 25 totaled 10 inches in Los Angeles and up to 16 inches in nearby mountains, with resulting floods, washouts, and mudslides blamed for at least 4 deaths and heavy damage. Heavy rains and melting snow in southeastern Arizona December 22 and 23 were responsible for millions of dollars damage from washing and flooding.

SNOWFALL: Snowfall for 1965 was near to below normal in the West, and much above in the upper Great Lakes region and parts of the Northeast and Middle Atlantic States, except near the coast. Several heavy snowstorms in the eastern half of the Country during the first 3 months of the year hampered transportation and caused other hardships usually experienced during these storms. Some of the worst of these included the following: (1) January 16-17 in the Appalachians and Middle and North Atlantic Coastal States, (2) January 23-24 in the middle Mississippi Valley northeastward, (3) February 23-25 from middle Mississippi Valley through the Great Lakes and Northeast, (4) March 16-18 in northern Great Plains, upper Mississippi Valley, and Great Lakes.

Snowfall in the Far West together with above normal rainfall and above normal reservoir storage water, furnished adequate irrigation water. Skiing conditions were excellent.

SEVERE STORMS: The year 1965 had more than its share of storminess. A record number of tornadoes, 898, killed 299 persons, injured over 4,000 more, and caused property damage of over $1 billion. The highlight of the tornado season occurred on April 11-12 (Palm Sunday Outbreak) when at least 47 of these storms killed 257 persons, injured over 1,500 others, and damaged property in excess of $200 million.

Betsy the most destructive hurricane, propertywise, in United States history crossed extreme southern Florida on September 8, crossed the Gulf to Louisiana and moved up the Mississippi Valley September 9-10. Damage totaled about

$1,420,000,000, and the storm was blamed for more than 70 deaths.

In addition to tornado and hurricane losses, damage from winds, hail, and lightning was unusually heavy.

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WYOMING
W. D. Marks

Included in the "Summary of Insect Conditions in the United States - 1965" are the following special reports:

1. Summary of Fruit Insect Conditions, 1965, New York-New England Fruit Spray Specialists' Conference, compiled by L. W. Boulanger, Maine Agricultural Experiment Station, from the conference held at Concord, New Hampshire, October 26-27, 1965.

2. The highlight section of Forest Insect Conditions in the United States - 1965, compiled by the Forest Service, U. S. Department of Agriculture.

Correction: Due to an error in the preparation of previous sections of the summary material, many of the Vermont notes were included under New Hampshire. In an attempt to correct this condition, the Vermont and New Hampshire summaries for the 1965 season are carried in this issue in their entirety. All references to these two States in other sections of the 1965 summary should be disregarded.

VERMONT

Prepared by J. W. Scott

Cereal and Forage Insects: ALFALFA WEEVIL (Hypera postica) continued to move northward in the State into Fairfax and East Fletcher, Franklin County, on the west side of the State. The northern boundary for the remainder of the State is roughly a line from Monkton Ridge southeast to Rochester and Royalton on the Connecticut River. Damage to alfalfa was not as great as expected, although some fields in Benson received as much as 50 percent injury. Overall average percent of plants infested by EUROPEAN CORN BORER (Ostrinia nubilalis) was 5.6 percent in 1965, an increase over the 4.3 percent infested in 1964. POTATO LEAFHOPPER (Empoasca fabae) was exceptionally heavy on alfalfa. CUTWORMS were also exceptionally heavy on alfalfa and other legumes in Windsor County.

Truck Crop Insects: SEED-CORN MAGGOT (Hylemya platura) destroyed 60 percent of dry beans in Ferrisburg. GARDEN SLUGS destroyed crops in several gardens. POTATO LEAFHOPPER damaged beans occasionally, and various FLEA BEETLES attacked crucifers, tomatoes and potatoes. Unspecified CUTWORMS were exceptionally heavy on a wide variety of vegetable crops, including asparagus. Damage by CABBAGE MAGGOT (Hylemya brassicae) was unusually heavy in the Burlington area, eliminating a crucifer planting in one instance. ROSE CHAFER (Macrodactylus subspinosus) populations were abundant in many sections of the State, feeding on vegetable crops.

Fruit Insects: Infestations of EUROPEAN RED MITE (Panonychus ulmi) and APPLE MEALYBUG (Phenacoccus aceris) were heavy in orchards. Unspecified CUTWORMS fed on apple foliage, and populations of APPLE MAGGOT (Rhagoletis pomonella) were high, especially in abandoned blocks. TARNISHED PLANT BUG (Lygus lineolaris) populations were higher than usual in orchards, and were exceptionally heavy on raspberries and strawberries.

Forest, Ornamental and Shade Tree Insects: A FRUIT-TREE MITE (Bryobia rubrioculus) and EUROPEAN RED MITE (Panonychus ulmi) infested mountain-ash and ornamental fruit trees. ELM LEAF BEETLE (Pyrrhalta luteola) infestations were heavy in Rutland, Middlebury, Brattleboro, Lyndonville and St. Johnsbury. Infestations were light in Chester and scattered in Burlington. CUTWORMS fed on flowers, young trees and other nursery stock. EASTERN TENT CATERPILLAR (Malacosoma americanum) populations were heavy and scattered throughout the State. Some field infestations of MAPLE BLADDER-GALL MITE (Vasates quadripedes) were observed, and there were more individual complaints concerning this pest than usual. A few very heavy infestations of WOOLLY ALDER APHID (Prociphilus tessellatus) were reported on soft maple. JAPANESE BEETLE (Popillia japonica) populations were very low during the 1965 season. Considerable numbers of ROSE CHAFER (Macrodactylus subspinosus) fed on ornamentals. SATIN MOTH (Stilpnotia salicis) infested aspen and other poplars on the shore of Lake Champlain in the vicinity of Burlington as well as at Bradford and Newport. Although not significant, defoliation by FOREST TENT CATERPILLAR (Malacosoma disstria) occurred; the prevalence of larvae during the summer and appearance of considerable numbers of egg masses indicate population buildup and point to impending trouble from this pest. BEECH SCALE (Cryptococcus fagi), first detected in the Green Mountain National Forest in 1955, has become generally distributed throughout the State during the past decade. The accompanying fatal nectria phase of the insect-disease complex, originally found at only 2 locations, has apparently been slow in following primary infestations of C. fagi until this year. Possibly enhanced by moisture stresses of drought, Nectria coccinea (var. faginata) figuratively blossomed in most C. fagi infestations this season. It is interesting to note that beech trees appearing chlorotic and thin-crowned from the air the past summer were invariably found to be infected by nectria. PINE LEAF CHERMID (Pineus pinifoliae) was moderate on the alternate host, red spruce, during the spring of 1965, but the mobile form failed to migrate successfully to white pine in any great numbers. RED-HEADED PINE SAWFLY (Neodiprion lecontei) caused greater than usual damage to red pine in several plantations.

Insects Affecting Man and Animals: FACE FLY (Musca autumnalis) populations were high in all areas, averaging 20-35 per animal statewide. Spring flood pool MOSQUITOES were particularly annoying in spite of drought conditions. BLACK FLIES were heavy in the spring, creating annoyance to early season woodland visitors. HOUSE FLY (M. domestica) populations were heavy in suburban areas of Burlington. HORN FLY (Haematobia irritans) ranged 75-100 per animal in the Burlington areas.

Household and Structural Insects: CLUSTER FLY (Pollenia rudis) remained troublesome in some new and old houses. There were more reports concerning EUROPEAN EARWIG (Forficula auricularia) during 1965 than during 1964, but no damage was indicated. LARDER BEETLE (Dermestes lardarius) continued to be reported in homes and camps, and BLACK CARPENTER ANT (Camponotus pennsylvanicus) continued to be a problem in homes. CLOVER MITE (Bryobia praetiosa) was reported to have entered homes.

Beneficial Insects: AN ENCYRTID WASP (Ooencyrtus kuwanai) was found infesting egg masses of Porthetria dispar (gypsy moth).

NEW HAMPSHIRE

Prepared by J. G. Conklin

Cereal and Forage Insects: CUTWORMS constituted the most serious insect problem during the season. Climbing species were particularly troublesome statewide. Sphaelotis spp., Septis spp. and Euxoa spp. were dominant. Although light trap collections in the fall of 1964 indicated continued outbreak of ARMYWORM (Pseudaletia unipuncta) in 1965, this outbreak did not materialize; the pest was found only occasionally during the season. ALFALFA WEEVIL (Hypera postica) extended its range to include all counties except Coos and Carroll. The pest was readily found in most alfalfa examined, but commercial damage has not yet become significant.

Fruit Insects: EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) was found in the State for the first time during 1965. EASTERN TENT CATERPILLAR (Malacosoma americanum) was more troublesome than usual in orchard areas. APPLE MEALYBUG (Phenococcus aceris) is apparently on the increase in the State and appeared in troublesome numbers in supposedly well-kept orchards. APPLE MAGGOT (Rhagoletis pomonella) and BLUEBERRY MAGGOT (R. mendax) were less troublesome than usual.

Truck Crop Insects: CUTWORMS constituted the major problem to these crops during the 1965 season.

Forest, Ornamental and Shade Tree Insects: An outbreak of HEMLOCK LOOPER (Lambdina fiscellaria), apparently begun in 1964, continued in 1965 but was controlled. There were some indications of a FOREST TENT CATERPILLAR (Malacosoma disstria) buildup, as the pest was rather common in widely scattered areas. MAPLE BLADDER-GALL MITE (Vasates quadripedes) was common and BIRCH LEAF MINER (Fenusa pusilla) was generally troublesome throughout the State. Defoliation by GYPSY MOTH (Porthetria dispar) was noticeable, particularly in southwestern portion of State; annual survey indicated noticeable defoliation on approximately 8,451 acres. LARCH SAWFLY (Pristiphora erichsonii) is apparently on the increase in the State; noticeable defoliation was reported in plantations during 1965.

Insects Affecting Man and Animals: TICKS were about as troublesome as usual. YELLOW JACKETS were unusually numerous and troublesome.

Household Insects: BOXELDER BUG (Leptocoris trivittatus) caused numerous complaints from householders, particularly in Manchester and Concord. CLOVER MITE (Bryobia praetiosa) was again generally troublesome statewide. EUROPEAN EARWIG (Forficula auricularia) continued troublesome during 1965, particularly in the southern two-thirds of the State. Heavy infestations of WHARF BORER (Nacerdes melanura) were encountered at Manchester and Berlin.

Weather continued from page 323.

are also called for in the Southern Border States from the southern Plateau in the West to the lower Mississippi Valley. On the other hand, above normal amounts are indicated for the Pacific Northwest and the northern Plains as well as the upper Mississippi Valley. In unspecified areas near normal precipitation is predicted.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

WEATHER OF THE WEEK ENDING APRIL 18

HIGHLIGHTS: (1) Beneficial rains, Corn Belt and central Appalachians. (2) Northern Plains snowstorm at weekend.

TEMPERATURES: Average temperatures were typical of mid-spring, except rather cool in the middle Atlantic area. In central sections, strong warming sent temperatures to 70° at Fargo, North Dakota, on Friday, but cold Canadian air brought 23° to Bismarck on Sunday. A brief spell of desert heat reached the California coast with 95° at Los Angeles and Santa Maria on Friday. Temperatures averaged near normal in the Deep South where much of the spring has been cool and late.

PRECIPITATION: Very helpful rains fell in a previously dry area extending from Missouri eastward to the Maryland and Delaware coast. Arkansas was also benefited but rains in eastern Texas were excessive including 6.55 inches at Houston. Rains were very light in the Northeast where the drought worsened. It was the 6th dry week in the Texas High Plains and the Southwest continued to be dry. While the eastern slopes of the Rockies received beneficial snows, most other areas extending from central Washington and Oregon eastward to New England received only light precipitation. (Summary supplied by Environmental Data Service, ESSA).

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Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 April 29, 1966 Number 17

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

Further buildup of BEET LEAFHOPPER populations indicated in most southwestern breeding grounds. Movement into cultivated districts of southeastern California, central Arizona, southern Nevada and southern Utah expected to be moderate to heavy; movement into eastern Utah and western Colorado also expected to be moderate to heavy. (p. 357). Current POTATO PSYLLID counts more than doubled in El Paso area of Texas and increased ten-fold in Las Cruces area of New Mexico, compared with 1965. (p. 358).

ARMYWORM very active in northwest Arkansas (p. 357); light trap catches higher in northwest Arkansas and at Stoneville, Mississippi, than at this time in 1965. (p. 378). ALFALFA WEEVIL larvae increasing and damaging in several areas. (p. 360). PEA APHID building up in southern Missouri; moderate to heavy on alfalfa in Oklahoma and vetch in Texas. (p. 361). CITRUS THRIPS continues to increase on citrus in Arizona. (p. 369). GREAT BASIN TENT CATERPILLAR damage increasing along Virgin River in Utah. (p. 371). GRASSHOPPERS appearing in Utah and active on rangeland in Wyoming. (p. 374).

Predictions

Damage by CLOVER LEAF WEEVIL in Illinois expected to be light to moderate in central and west central areas. (p. 361). CITRUS THRIPS may cause considerable damage to citrus in Arizona. (p. 369). Early observations in Indiana indicate EASTERN TENT CATERPILLAR populations will be as heavy as in 1965 or heavier. (p. 371).

Detection

A BRACONID (Microplitis croceipes), a parasite of Heliothis spp., reported for first time in Delaware. New county records reported in Arkansas, Oklahoma, North Dakota and California. (p. 376).

Special Reports

Second Beet Leafhopper Survey in Desert Areas of Southeastern California, Central Arizona, Southern Utah and Southern Nevada. (p. 357).

Potato Psyllid Survey, Spring Breeding Areas of Texas and Southeastern New Mexico. (p. 358).

Report on Survival of Boll Weevil as Determined by Surface Trash Examinations During the Spring - 1966. (pp. 363-366).

Reports in this issue are for week ending April 22 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING APRIL 25

HIGHLIGHTS: (1) Freezes West, warm East; reverses recent pattern. (2) Subzero in Nebraska. (3) Beneficial rains New Mexico to New England; flooding in Texas.

TEMPERATURE: A deep slow moving storm centered over the Colorado Rockies brought unseasonably cold weather to the western half of the Nation early in the week. Subfreezing temperatures occurred from Washington State to the Rocky Mountains

Weather continued on page 376.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Second Beet Leafhopper Survey in Desert Areas of Southeastern California, Central Arizona, Southern Utah and Southern Nevada

Additional data obtained during survey in March and April indicate further buildup of beet leafhopper (Circulifer tenellus) populations in most southwestern desert winter breeding grounds. On the basis of this information, movement of beet leafhopper to cultivated districts of southeastern California, central Arizona, southern Nevada and southern Utah is expected to be moderate to heavy; movement to eastern Utah and western Colorado is expected to be moderate to heavy; movement to western Nevada, central and northern Utah is expected to be light to moderate. Precipitation in southwestern desert areas during February and March was sufficient to germinate additional weed hosts in addition to sustaining plants already present. Desert annual plants have shown more widespread growth this season than for several years; last comparable season was 1960. At time of April survey, winter annuals were hardened, drying or dead in most areas, except in southern Nevada where plants were still actively growing in area east of Las Vegas. For results of preliminary survey see CEIR 16(9):143.

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Ranged 2-8 per 10 sweeps on sophia in St. George-Santa Clara area of Washington County. On west side of Utah Lake, Utah County, one taken in 100 sweeps on Erodium cicutarium (alfilaria); very rare on mustards. (Knowlton).

ARMYWORM (Pseudaletia unipuncta) - ARKANSAS - Very active, especially in northwest area; 187 taken in Fayetteville light trap. (Boyer).

CORN LEAF APHID (Rhopalosiphum maidis) - NEVADA - Light on barley in Moapa Valley, Clark County. (Zoller). NEW MEXICO - Aphids, mostly this species, light to moderate in Luna County barley; 30-80 per 50 sweeps in most fields. (Elson). TEXAS - Averaged 50 per sweep in several oat fields throughout Kaufman County. (Turney).

GREENBUG (Schizaphis graminum) - TEXAS - Light on small grains near Vernon, Wilbarger County. (Boring). OKLAHOMA - Ranged 5-20 per linear foot in most fields, occasionally up to 125, in Grant, Kay and Alfalfa Counties. Light to moderate in many counties over State. Parasites continue to increase. (Okla. Coop. Sur.). MISSOURI - Nymphs averaged less than one per foot of row in wheat in southwestern district. No adults seen. (Houser). KANSAS - Successfully overwintered in some south central area fields. Threatening in some fields in Sedgwick, Sumner and Harper Counties April 11; overwintering populations present in Montgomery County 3 weeks ago. Conditions currently favorable for S. graminum, but adverse for predators and control activities. Overwintered in small area in Shawnee County. Occasional specimen found in most wheat fields. (Kans. Ins. Sur. Rpt.). SOUTH DAKOTA - Two adults taken in propellor trap at Brookings week ending April 16. (Kieckhefer).

SPOTTED ALFALFA APHID (Therioaphis maculata) - MISSISSIPPI - Averaged 10 per square foot in Pontotoc County alfalfa. First report of season. (Dinkins). OKLAHOMA - Ranged 80-200 per 10 sweeps in alfalfa in Harmon, Jackson, Tillman and Comanche Counties and 10-50 per square foot of crown in Beckham County. Averaged 900 per 10 sweeps in Lone Wolf area, Kiowa County, and 3 in Noble County. (Okla. Coop. Sur.). WISCONSIN - Eggs nonviable or population too low to detect. None collected in 1,000 sweeps. Averaged about 1 per stem at this time in 1965. Visual observations also negative. (Wis. Ins. Sur.).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - WISCONSIN - Appearing in alfalfa in the Brodhead area, Green County. None found east of area although suspected to be more common in western part of State. (Wis. Ins. Sur.).

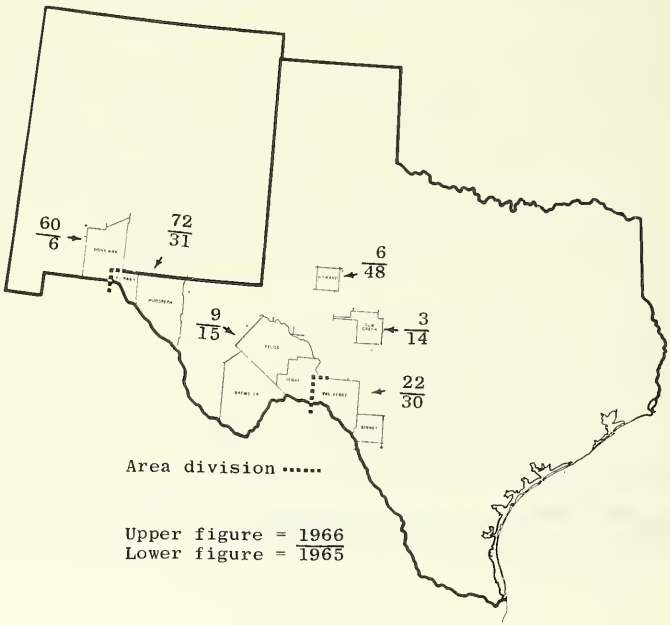
Potato Psyllid Survey, Spring Breeding Areas of Texas and Southeastern New Mexico

The 1966 potato psyllid (Paratrioza cockerelli) survey was completed April 8, 1966. Wild Lycium host plants were extremely late in leafing out this year. The Big Spring, San Angelo, Del Rio and Sanderson portions of the survey yielded a very reduced number of potato psyllids, compared to surveys of past years. Lycium is more uniform and in better condition in the El Paso and Las Cruces areas. Current potato psyllid counts more than doubled in the El Paso area and increased ten-fold in the Las Cruces area. Eggs were scarce in all areas except in El Paso area, where they were readily found. (PPC and cooperating agencies).

Potato Psyllid Survey on Overwintering Hosts

Average Number Per 100 Sweeps

State	District	1964	1965	1966
Texas	Big Spring (Howard County)	255	48	6
Texas	San Angelo (Tom Green County)	155	14	3
Texas	Del Rio (Val Verde and Kinney Counties)	52	30	22
Texas	Marathon-Sanderson (Terrell, Pecos and Brewster Counties)	8	15	9
Texas	El Paso (El Paso and Hudspeth Counties)	25	31	72
New Mexico	Las Cruces (Dona Ana County)	9	6	60



POTATO PSYLLID (Paratrioza cockerelli) - UTAH - Occasional adult taken on rabbit brush in St. George and Veyo areas of Washington County. (Knowlton).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NORTH DAKOTA - Reported for first time in Bowman, Slope, Golden Valley and Mountrail Counties. Only one north central and 2 northwestern counties remain uninfested. (Brandvik). OHIO - Overwintering larvae low in Van Wert County; averaged fewer than 100 per acre in stalks not plowed down or shredded. (Barry). DELAWARE - Pupation rate of overwintering borers unchanged in Sussex County; some pupation noted in southern Kent County. (Burbutis).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - TEXAS - Larvae damaging in several fields of 6-inch corn near La Grange, Fayette County. (Bippert).

A SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) - NEW MEXICO - Averaged 1 adult per 50 sweeps in barley near Deming, Luna County. (Elson).

FLEA BEETLES (Chaetocnema spp.) - NEVADA - C. ectypa adults medium on corn in Moapa Valley, Clark County. (Zoller). ALABAMA - C. pulicaria adults feeding on young Johnson grass in newly plowed fields for corn and other crops throughout northern area. (McQueen).

ENGLISH GRAIN APHID (Macrosiphum avenae) - MISSOURI - Adults and nymphs 0-12 per foot of row in central, south central and southwestern districts. (Houser).

SEED-CORN MAGGOT (Hylemya platura) - NEW JERSEY - Counts on sticky boards as follows: Great Meadows - 12 per 4 boards, Cedarville - 836 per 9 boards. (Ins.-Dis. Newsltr.).

SMALL GRAINS

BROWN WHEAT MITE (Petrobia latens) - TEXAS - Moderate in some Wilbarger County wheat. (Boring). Infesting several dryland wheat fields throughout panhandle area. (Parker). OKLAHOMA - Ranged 100-300 per linear foot in wheat in Alfalfa County, 5-200 in Grant County. Light in Kay County; moderate to heavy in Kingfisher County; light to moderate in Roger Mills, Beckham, Cimarron and Noble Counties. (Okla. Coop. Sur.). KANSAS - Observed in Russell County; none found in numerous fields checked in Sedgwick, Sumner and Harper Counties. (Kans. Ins. Sur. Rpt., Apr. 11).

ENGLISH GRAIN APHID (Macrosiphum avenae) - MARYLAND - Light on small grains on Eastern Shore. (U. Md., Ent. Dept.). OHIO - Wheat field in Pike County yielded 49 per 100 sweeps. Predators in sampling included 6 Hippodamia convergens and Coleomegilla maculata and 5 Nabis ferus. (Nault, Rose). WISCONSIN - Alates average 3 per 50 sweeps in grain in Racine and Rock Counties. Populations appear somewhat higher than in 1965. Few nymphs produced. (Wis. Ins. Sur.).

SEED-CORN BEETLE (Agonoderus lecontei) - WISCONSIN - Averaged 1 per 100 sweeps in rye field in Racine County. (Wis. Ins. Sur.).

OMNIVOROUS LEAF TIER (Cnephasia longana) - CALIFORNIA - Larvae medium in barley and oats in Hollister, San Benito County. (Cal. Coop. Rpt.)

TURF, PASTURES, RANGELAND

A FALSE CHINCH BUG (Nysius sp.) - ARIZONA - Heavy numbers migrating into homes and yards in city of Yuma; damage light on some lawns. (Ariz. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Larvae collected by A. R. Siler, in Lonoke County. This is a new county record. (Boyer). MISSISSIPPI - Samples taken in Pontotoc and Lee Counties; both fields treated previously. Larval counts quite high; 106 per square foot in Pontotoc County and 66 in Lee County. (Dinkins). ALABAMA - Pupation and emergence occurring in alfalfa in Cherokee County. Although controls applied 15 days ago, new and medium larval populations feeding. (O'Daniel et al.). GEORGIA - Larvae numerous in alfalfa in Houston County. (Tippins). SOUTH CAROLINA - Larvae damaging clover in some areas; still serious on alfalfa. Control generally not needed. (Thomas, Apr. 19). NORTH CAROLINA - Damage very evident on alfalfa in Piedmont. Dry weather and late spring inhibited growth. Alfalfa about 10 inches high. Large hatch expected due to current warm weather. (Campbell). VIRGINIA - Larvae medium to heavy on alfalfa in Pulaski and Roanoke Counties. (Saucier, Apr. 12). No evidence of adult feeding on alfalfa at Warm Springs, Bath County April 18. Collections in alfalfa in Augusta County yielded 73 larvae per 100 sweeps and 10 in Rockbridge County. (Woodside). MARYLAND - Larvae increasing on first-growth alfalfa in all sections. Terminal injury conspicuous on 50-65 percent of plants in fields on upper Eastern Shore. (U. Md., Ent. Dept.). DELAWARE - Averaged 1 adult per 10 sweeps and 3 larvae per stem in Kent County alfalfa; injury light to moderate. Injury very light in New Castle County. (Burbutis). NEW JERSEY - Recent cool weather slowed alfalfa growth; no signs of injury. Larvae 0-4 per 25 tips checked in Gloucester, Salem and Cumberland Counties; 0-1 in Hunterdon and Sussex Counties. (Ins.-Dis. Newsltr.). MASSACHUSETTS - Single adult taken in 100 sweeps in field in Amherst April 22. (Miller). OHIO - Larval damage continues on alfalfa in south central and southeastern sections; many forage fields have little alfalfa left due to damage in 1965. Damage slight in Washington County where alfalfa 5-7 inches high; larvae still small. Increase in damage anticipated in Washington County. (Gehres). Infestation in Lawrence County nearly 100 percent; damage currently estimated up to 50 percent. Warm weather accelerated larval activity. (Crawford). Infestations of 50-80 percent of alfalfa stems noted in Vinton and Pike Counties. Adults swept from alfalfa, clover and wheat. (Rose). INDIANA - Found for first time in Ohio County. Larvae 100-170 per 100 sweeps on alfalfa in Ohio River areas of Switzerland County; 50-80 percent of plants 4-8 inches high show some feeding in terminals. Adults average 14 per 100 sweeps (daytime sampling). (Huber).

ILLINOIS - Feeding apparent in 7 counties; will appear this week in many counties north to U. S. Highway 50. Old, established alfalfa stands show severe feeding. In mixed stands, weevils concentrating on alfalfa; severe infestation may soon kill plants. Although feeding light in 1965 seedings, adults concentrating egg laying in these fields; damage will become more apparent later. Several fields in southern area show 100 percent terminal damage; up to 10 larvae per terminal. (Ins. Sur. Bul.). MISSOURI - Damage increasing rapidly in New Madrid and Pemiscot Counties. Survey negative in Webster and Greene Counties. (Houser). Damage to alfalfa increased from 35 to 70 percent of terminals in field near Sikeston, Scott County. (Jones). WYOMING - First adult activity noted in Washakie County alfalfa April 15; averaged 1 per square foot. First activity noted in 1965 in same area April 23. (Marks). UTAH - Adults active and notching alfalfa at New Castle and Parowan, Iron County; Meadow, Millard County; and Santaquin, Utah County. (Knowlton). NEVADA - Larvae increasing, but still at very low levels in southern Washoe County. Some eggs and few larvae, mostly first instar, present in Smith Valley, Lyon County, and in Douglas County. Egg laying incomplete; cool weather retarded plant growth, activity and development. (Bechtel et al.).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - Larvae continue damage to alfalfa in isolated fields in Alfalfa County. (Okla. Coop. Sur.). KANSAS - Observed on alfalfa in Saline County. (Kans. Ins. Sur. Rpt., Apr. 11). MISSOURI - Counts low, 1-3 per square foot in alfalfa in central, south central, and southwestern districts; damage remains light, 0-10 percent of leaves notched. One heavy infestation in Franklin County. (Houser). ILLINOIS - Larvae 1-12 per square foot in northwest district (White); 3-7 in east, 11-26 in central, 1-33 in west-southwest, and 3-17 per square foot in southwest district (Moore). Clover and alfalfa

1-2 inches high in northwest and 5-8 inches in southwest. Larvae first to fourth instar in all districts. (Moore, White). State average 10.57 larvae per square foot or 1 larva per square foot above 10-year (1955-1964) average. About equal to 1963 average of 10.6 when estimated $498,675 damage occurred. Light to moderate damage expected this year in area south of U. S. Highway 150, west of U. S. Highway 45, and north of U. S. Highway 50. Damage in remainder of State should be noneconomic to light. (White). OHIO - Larvae currently active in central section. (Hamrich, Blair). MARYLAND - Larvae caused conspicuous foliage injury to red clover in Talbot County. (U. Md., Ent. Dept.).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - ALABAMA - Light in crimson clover in Morgan, Limestone and Madison Counties. (McQueen). MARYLAND - Adults light on red clover in Talbot County, April 21. (U. Md., Ent. Dept.).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Heavy and damaging throughout central counties. Larvae light but widespread on leaves and seed heads on crimson clover in Lee County. Pupation and emergence occurring in Bullock and counties west and south. (McQueen).

CLOVER ROOT CURCULIO (Sitona hispidula) - MARYLAND - Adults range 2-14 per 25 sweeps on alfalfa and red clover on upper Eastern Shore. (U. Md., Ent. Dept.).

WEEVILS (Sitona spp.) - MISSOURI - Adults averaged 200 per 100 sweeps in alfalfa in southwestern district. (Houser).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - OHIO - Adults present on legume forage. (Rose). MISSOURI - First adults of season swept from alfalfa on April 19 near Seymour, Webster County, and Springfield, Greene County, in southwestern district. One specimen taken at each location. (Houser). ARIZONA - Moderate in alfalfa in San Simon Valley and Kansas Settlement area, Cochise County. (Ariz. Coop. Sur.).

A SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) - NEW MEXICO - Counts per 50 sweeps in alfalfa averaged 6 in Socorro County and 2 in Sierra County. (Elson).

PEA APHID (Acyrthosiphon pisum) - NEVADA - Averaged 3-5 per sweep in Moapa Valley, Clark County, alfalfa fields. (Zoller). Occasionally observed in Douglas, Lyon and Washoe Counties. (Nev. Coop. Rpt.). NEW MEXICO - Continues light in alfalfa fields in Eddy, Chaves, Socorro, Dona Ana and Luna Counties. (Elson, Heninger, Mathews). TEXAS - Moderate to heavy in many vetch fields throughout Hunt and Kaufman Counties. (Turney). MISSISSIPPI - Averaged 33 per square foot in alfalfa in Pontotoc County and 20 per square foot in alfalfa in Lee County. Increasing slowly. (Dinkins). ARKANSAS - Increased; collected from alfalfa in Washington County; 1,000-1,500 per 100 sweeps. Very little disease or parasitism observed. (Boyer). OKLAHOMA - Ranged 200-250 per 10 sweeps in alfalfa in Harmon, Jackson, Tillman, and Comanche Counties; 50-200 per crown in Grant, Kay and Alfalfa Counties. Averaged 400 per 10 sweeps in Payne County. Moderate to heavy in Canadian, Bryan, and Coal Counties. Ranged 1,000-2,000 per foot of row in Austrian winterpeas in Kay and Grant Counties. (Okla. Coop. Sur.). MISSOURI - Building up in alfalfa in southern area, ranged 100-600 per 100 sweeps except in southeastern district where numbers higher. (Houser, Jones). KANSAS - Present in alfalfa fields in central area. All fields should be closely watched. Parasites and predators ordinarily reduce population. Spring population could build up early and cause damage before parasites and predators can become established. WISCONSIN - Populations appear very low in southeastern and southern sections; 1-3 per 10 sweeps in alfalfa 3-4 inches high. Few nymphs produced by fundatrices. In many fields, nearly 50 percent of older aphids show disease. Parasites scarce; occasional lady beetle present. Spiders, mostly Tetragnatha sp. unusually common in at least one field. (Wis. Ins. Sur.). MARYLAND - Generally light on alfalfa and red clover on Eastern Shore; 5-33 per sweep. (U. Md., Ent. Dept.).

COWPEA APHID (Aphis craccivora) - OKLAHOMA - Heavy in isolated alfalfa fields in Kay and Texas Counties. (Okla. Coop. Sur.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Remains light on alfalfa in Yuma, Maricopa, Graham, Cochise and Pinal Counties; but increases noted in Yuma, Graham and Maricopa Counties. (Ariz. Coop. Sur.). NEW MEXICO - Averaged 0-6 adults per 50 sweeps in alfalfa near Roswell, Chaves County. (Mathews); 1-3 per 50 sweeps in fields near Arrey, Sierra County, and 2-9 per 50 sweeps in fields near Las Cruces, Dona Ana County. (Elson). UTAH - Moderately numerous in alfalfa in apple orchard at Santa Clara, Washington County. (Knowlton).

MEADOW SPITTLEBUG (Philaenus spumarius) - INDIANA - First instars common on alfalfa and clover throughout southeastern area; 35 per 100 stems on alfalfa. (Huber). MARYLAND - First spittle masses of season noted April 18 on red clover in Talbot County. (U. Md., Ent. Dept.).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Adults active in alfalfa in Kent and Sussex Counties; averaged 2 per 10 sweeps. (Burbutis). MARYLAND - Adults ranged 3-8 per 25 sweeps on alfalfa and red clover in Talbot and Queen Annes Counties. (U. Md., Ent. Dept.). OHIO - Adults appeared on forage in southern area. About 8 per 25 sweeps on clover in Jackson County and 5 per 25 sweeps on alfalfa in Vinton County. (Rose).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Ranged 4-17 adults and nymphs per 50 sweeps in alfalfa fields near Roswell, Chaves County. (Mathews). ARIZONA - Generally light in alfalfa throughout State. Nymphs moderate in Graham, Pinal and Maricopa Counties. (Ariz. Coop. Sur.). UTAH - L. elisus and other species moderately numerous on mustards and common on alfalfa in "Dixie" area of Washington County. (Knowlton).

CUTWORMS - MASSACHUSETTS - Damaged alfalfa in sandy soil in Hampshire County. (Miller, Apr. 19). ARIZONA - Mixed populations of Chorizagrotis auxiliaris, Agrotis gladiaria, Peridroma saucia and Prodenia spp. causing light to heavy damage on alfalfa in areas of Dome Valley, Wellton, Hyder and Roll, Yuma County, and in Buckeye and Glendale areas, Maricopa County. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Larvae increasing in Graham County alfalfa; 10 per 100 sweeps. (Ariz. Coop. Sur.).

A WEBWORM (Loxostege sp.) - MISSOURI - Adults swept from alfalfa in southwestern district, first this season. (Houser).

THRIPS - NEVADA - Extremely heavy in several alfalfa fields in Moapa Valley, Clark County. Leaf and bud damage very evident. (Zoller). ARIZONA - Frankliniella occidentalis medium to heavy in some alfalfa in Graham, Maricopa and Yuma Counties; damage heavy in 2 Yuma County fields. (Ariz. Coop. Sur.).

COTTON

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Larvae damaging leaves of seedling cotton in Yuma Valley; 3 per plant in infested fields. (Ariz. Coop. Sur.).

COTTON APHID (Aphis gossypii) - ARIZONA - Light to moderate in cotton in Yuma Valley, Gila Valley, Wellton and Roll areas, Yuma County. (Ariz. Coop. Sur.).

THRIPS (Frankliniella sp.) - ARIZONA - Building up on seedling cotton in Graham County; 3 per plant in untreated fields. (Ariz. Coop. Sur.).

Report on Survival of Boll Weevil as Determined by Surface Trash Examinations During the Spring - 1966

Spring collections of surface ground (woods) trash samples (two square yards per sample) have been completed in six Southern States and in three counties of Alabama. Wherever possible, samples were taken from the same locations that were sampled in the fall of 1965. The number of live boll weevil (Anthonomus grandis) adults per acre of ground trash examined and the percent survival are reported in the following paragraphs. For details of the fall (1965) hibernation survey in these seven States, see CEIR 16(1):9-12.

In NORTH and SOUTH CAROLINA, samples were taken during the period March 14-24 in the same four representative areas in which fall examinations were made in 1965. In each area, a total of 30 locations (farm sites) was sampled with 3 samples from each location. The areas are as follows: South central South Carolina (Orangeburg, Dorchester and Bamberg Counties), Coastal Plain of North and South Carolina (Florence, Darlington and Marlboro Counties, S.C., and Scotland County, N. C.), Piedmont section of South and North Carolina (Greenville, Anderson and Spartanburg Counties, S. C., and Mecklenburg, Cleveland and Union Counties, N. C.), and north central North Carolina (Northampton, Nash, Wilson and Edgecombe Counties). The average number of live weevils per acre in these areas was 484, 3,307, 3,469 and 1,425, respectively. Percent survival for these areas was 12.4, 21.6, 48.0 and 31.7 respectively. Percent survival was lowest in south central South Carolina and highest in the Piedmont section of South and North Carolina. In Florence County, South Carolina, an average of 4,035 live weevils per acre was found for the spring of 1966 with a winter survival of 22.7 percent. The number of weevils surviving in Florence County is about 73 percent less than the number surviving in the spring of 1965. (Taft, Hopkins).

In TENNESSEE, a survey was made in McNairy County to determine the adult population which overwintered in the western portion of the State. This county was chosen because it usually represents "hot spot" of weevil infestations in Hardin, McNairy, Hardeman, Fayette and Shelby Counties. The fall surface ground (woods) trash examinations indicate an average of 1,211 weevils per acre, which is a rather high infestation for this area. Spring examinations of cotton field environ trash made the last week of March indicated an average of 1,089 weevils per acre, with a winter survival of 90 percent. This is an unusually high carryover since the high carryovers of 1951, 1952 and 1953. Counts in the spring of 1965 indicated 363 weevils per acre. Snow cover during the most severe cold periods may account for the high survival this spring. There are definitely sufficient weevils present in the southern tier of counties to inflict heavy damage if weather conditions are favorable for weevil development, namely ample rainfall on punctured squares and high humidity. Growers should scout fields closely in an effort to check infestations before they become serious. (Locke).

Spring trash examinations in ALABAMA were completed March 18 in Morgan County and April 1 in Dallas and Henry Counties. No survey was conducted this spring in Tuscaloosa County. The number of live weevils per acre in the 3 counties where surveys were completed was 1,362 in Morgan County, 302 in Dallas County and 242 in Henry County. The average of 1,362 live weevils per acre in Morgan County is three times as many as the 462 per acre in March 1965. Winter survival in Morgan County was 25 percent; a heavy snow cover was present in the northern area of the State during the extremely cold period in February. There was no snow cover in the more southern areas of the State. This no doubt affected boll weevil survival. (McQueen).

Collections were started March 2 in MISSISSIPPI and all examinations completed by March 9. Three samples were taken from each location and either 7 or 8 locations sampled in each county. Wherever possible, samples were taken from locations sampled last fall. Two counties made up each area and the State was divided into 4 areas as follows: Area 1 - south delta (Sharkey and Yazoo Counties), Area 2 - central delta (Washington and Leflore Counties), Area 3 - north delta

(Coahoma and Panola Counties), Area 4 - hill section (Holmes and Monroe Counties). Forty-five samples were taken from a total of 15 locations in each of the 4 areas. The average number of weevils found per acre in Areas 1, 2, 3 and 4 was 2,366, 1,076, 1,076 and 1,183, respectively. The State average was 1,425 compared with 995 in 1965, 289 in 1964, 13 in 1963, 1,132 in 1962, 1,246 in 1961 and 821 in 1960. The percent survival for Areas 1, 2, 3 and 4 was 35.48, 31.25, 16.67 and 9.28, respectively. The State average (percent survival) was 19.45 compared with 22.12 in 1965, 9.68 in 1964, 0.2 in 1963, 13.59 in 1962, 8.59 in 1961 and 16.23 in 1960. (Pfrimmer).

Collections were made in northeast LOUISIANA March 8-11. This area includes Madison, East Carroll and Tensas Parishes. Three samples were collected at each location and 20 locations were used in Madison Parish, 10 in Tensas Parish and 10 in East Carroll Parish. A total of 120 samples was taken. The average number of weevils per acre of trash was 323 in Madison Parish, 404 in East Carroll Parish and zero in Tensas Parish, or an average of 247 for the triparish area. Based on the 3,349 live boll weevil adults found per acre of trash in the fall of 1965, winter survival in the triparish area was 7 percent. In Madison Parish, where similar records have been made for the past 30 years, survival for the winter of 1965-1966 was 16 percent compared with the average of 42 percent for the 30-year period. The total rainfall records at the Tallulah Laboratory from December 1, 1965, to March 11, 1966, at which time the spring ground trash collections were completed, was 24.10 inches. In this same period, there were 39 days when the minimum temperature was 32 degrees or less, and 9 days when the temperature was 25 degrees or less. The lowest temperature recorded was 11 degrees on January 30. (Cleveland et al.).

In central TEXAS, spring collections were made March 16-23 from the same locations in Falls, Hill, Limestone and McLennan Counties as in the fall of 1965. Three samples were taken from each location and 6 or 7 locations were sampled in each county; 75 samples were taken from a total of 25 locations in the 4 counties. The average number of weevils found per acre in Falls, Hill, Limestone and McLennan Counties was 2,554, 269, 806 and 806, respectively, with an area average of 1,098. This compares with 5,914, 2,688, 4,166 and 4,838 found in these respective counties in the fall of 1965, with an average of 4,425 weevils per acre for the area. The survival percent was 24.8, compared with 100 in 1965, 18.8 in 1964, 25.4 in 1963, 33.1 in 1962, 33.7 in 1961 and 31.1 in 1960. The indicated spring survival of 24.8 percent in 1966 was lower than any previous year except 1964. Fewer weevils were found this spring than in any year except 1963 and 1964. Weather in December was mild with freezing temperatures on only 3 days. Subfreezing temperatures occurred on 23 days during January and February, with a minimum of 12 degrees recorded January 23 and 30. Rainfall was below normal during the 3 months. Snowfall totaled 2.6 inches in January and 4.8 inches in February. (Cowan).

See tabulation and map on following page.

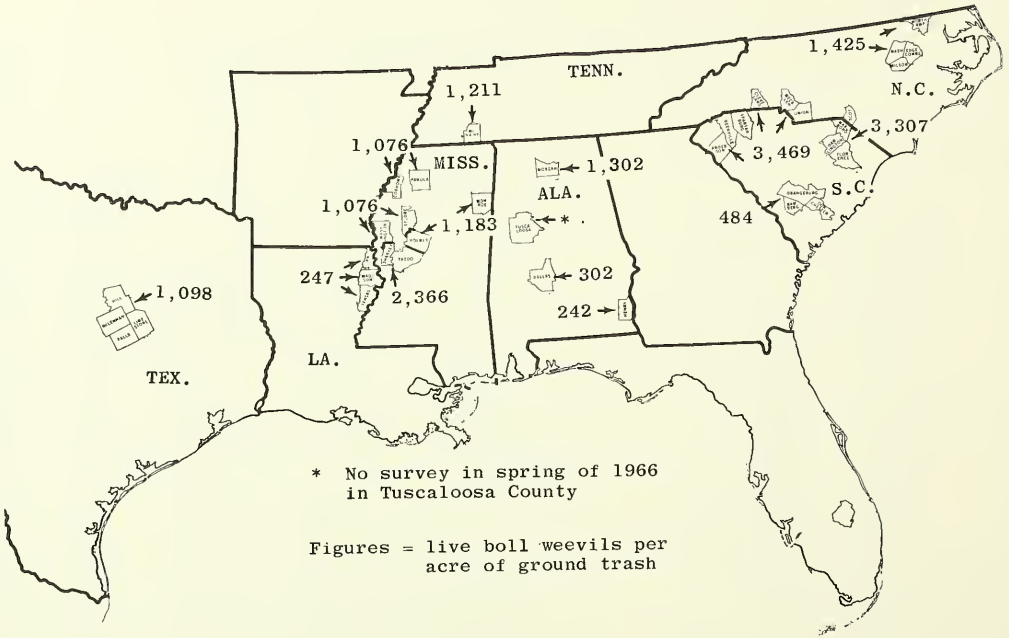
BOLL WEEVIL SURVIVAL SURVEYS - SPRING 1966

Area (County and State)	Number of Weevils Per Acre 1965	1966
NORTH and SOUTH CAROLINA		
South Central South Carolina (Orangeburg, Bamberg and Dorchester Counties)	1,855	484
Coastal Plain of South and North Carolina (Florence, Darlington and Marlboro Counties, S. C.; Scotland County, N. C.)	10,164	3,307
Piedmont of South and North Carolina (Anderson, Greenville and Spartanburg Counties, S. C.; Mecklenburg, Cleveland and Union Counties, N.C.).	---	3,469
North Central North Carolina (Nash, Wilson, Edgecombe and Southampton Counties)	1,371	1,425
TENNESSEE		
McNairy County	363	1,211
ALABAMA		
Morgan County	462	1,302
Tuscaloosa County (no survey in spring of 1966)	1,008	---
Dallas County	2,418	302
Henry County	3,228	242
MISSISSIPPI		
South Delta (Sharkey and Yazoo Counties (area 1))	1,129	2,366
Central Delta (Washington and Leflore Counties (area 2))	1,640	1,076
North Delta (Coahoma and Panola Counties (area 3))	296	1,076
Hill Section (Holmes and Monroe Counties (area 4))	914	1,183
LOUISIANA		
Northeastern (East Carroll, Madison and Tensas Parishes)	3,051	247
TEXAS		
Central (Falls, Hill, Limestone and McLennan Counties)	4,925	1,098

See map on following page.

Coop. Econ. Ins. Rpt. 16(17):365, 1966

BOLL WEEVIL SURVIVAL SURVEYS - SPRING 1966



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TOBACCO

FLEA BEETLES - GEORGIA - Heavy on tobacco in field in Cook County. (Miles, Girardeau). SOUTH CAROLINA - Caused some damage to tobacco in beds in Lee County during last week in March. (Nettles et al.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - SOUTH CAROLINA - This species, white grubs and snails reported in tobacco plant beds in Darlington County; very little damage as of April 1. (Nettles et al.).

WIREWORMS - GEORGIA - Heavy on tobacco in Cook County. (French, Girardeau).

CUTWORMS - GEORGIA - Light on tobacco in Cook County. (Girardeau, French).

MISCELLANEOUS FIELD CROPS

WHITE-LINED SPHINX (Celerio lineata) - ARIZONA - Moderate in yards in outlying communities northwest of Phoenix; heavy on desert around Parker, Yuma County. Could migrate into Parker Valley damaging crops and other plants. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

APHIDS - CALIFORNIA - Myzus persicae, Rhopalosiphum padi complex and Macrosiphum sp., probably euphorbiae, heavy on potato plants in Ontario, San Barnardino County. (Cal. Coop. Rpt.).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - OKLAHOMA - First of year noted damaging potato plants in Payne County. (Okla. Coop. Sur.).

TOMATO PINWORM (Keiferia lycopersicella) - CALIFORNIA - Larvae light in tomato plantings in Firebaugh area, Fresno County. (C. Ferris, Ext. Service).

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - ALABAMA - First adults of season on young garden beans April 11 in Covington County. (Stephenson).

PEA APHID (Acyrthosiphon pisum) - OKLAHOMA - Damaging garden peas in Payne County. (Okla. Coop. Sur.).

COLE CROPS

DIAMONDBACK MOTH (Plutella maculipennis) - UTAH - Very numerous on wild mustards on west side of Utah Lake, Utah County, and moderately numerous on sophia in St. George-Santa Clara area of Washington County. (Knowlton).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - ARIZONA - Damaging commercial radishes in areas of Maricopa County. (Ariz. Coop. Sur.).

CUCURBITS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - First and second-stage larvae damaging leaves of cantaloup in Yuma County; 2 larvae per leaf in many infested fields. (Ariz. Coop. Sur.).

A FLEA BEETLE (Systena sp.) - ARIZONA - Adults causing light to moderate damage to many melon fields in Yuma Valley. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

ROSY APPLE APHID (Dysaphis plataginea) - ALABAMA - Locally heavy on young apple trees in Lee County; crumpling and cupping new leaves. (McQueen). MARYLAND - Stem mothers found April 14 in apple orchard at Hancock, Washington County. (U. Md., Ent. Dept.). CONNECTICUT - Hatching at Storrs. (Savos, Apr. 20).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ALABAMA - Larvae extremely heavy on many cherry trees in northern area, with lesser numbers on apple. Many trees with 1-10 tents. Pupation occurring throughout south and central areas. (O'Daniel et al.). VIRGINIA - Tents conspicuous on wild cherry and apple trees in Pittsylvania County. (Dominick).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - MARYLAND - Eggs found April 19 in apple orchard at Hancock, Washington County. (U. Md., Ent. Dept.).

CODLING MOTH (Carpocapsa pomonella) - INDIANA - Some pupation occurred in Knox County area. (Dolphin).

PLUM CURCULIO (Conotrachelus nenuphar) - GEORGIA - Incidence of adults in protected places greater than last year in Peach, Taylor and Crawford Counties. (Jacklin).

GREEN PEACH APHID (Myzus persicae) - OREGON - Overwintering eggs hatched in mid-March; generally infesting leaves of peaches, apricots and pears in Jackson County. (Berry, Apr. 16). ARIZONA - Moderate to heavy and damaging terminal growth of peach trees in Graham County. (Ariz. Coop. Sur.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - WISCONSIN - Unusually heavy on opening apple buds throughout most commercial orchards in southeast; 20-30 nymphs on many buds. Migrant alate swept from grain in Janesville area, Rock County. (Wis. Ins. Sur.). MASSACHUSETTS - Hatched by April 18 on apples. (Crop Pest Cont. Mess.).

TARNISHED PLANT BUG (Lygus lineolaris) - INDIANA - Adults feeding on developing buds in peach orchards in Knox County area. (Dolphin).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - Hatching 90 percent complete on peach trees at Gainesville; in crawler or early sedentary stages. (Kuitert). GEORGIA - Overwintering females, eggs and young crawlers present on peach trees in Peach County. (Jacklin).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - WISCONSIN - Severe in commercial orchard near East Troy, Walworth County; controls required. (Wis. Ins. Sur.).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Eggs easily found at Storrs but majority of early season eggs not laid. (Savos, Apr. 20).

EUROPEAN RED MITE (Panonychus ulmi) - CONNECTICUT - Very low abundance of overwintering eggs statewide; possibly due to environmental conditions during egg-laying season last fall. (Savos, Apr. 20). NEW JERSEY - Development and hatch on apples in central and southern counties. (Ins.-Dis. Newsltr.). OHIO - Eggs not yet hatched in southern section, but expected soon. Many apple trees in area either in or approaching pink stage. (Rose). MISSOURI - Becoming active on apple trees in central district. (Enns).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - OREGON - Heavy buildup on unsprayed pear trees of Jackson County. (Berry, Apr. 16). MISSOURI - Active in ground cover in apple orchards in central district, but not on trees. (Enns).

A FRUIT-TREE MITE (Bryobia rubrioculus) - CALIFORNIA - Adults medium on peach trees in Fresno, Fresno County. (Cal. Coop. Rpt.).

PECAN NUT CASEBEARER (Acrobasis caryae) - TEXAS - Third and fourth instars boring

in shoots of pecans near Denton, Denton County. (Turney). Early instars in young pecan shoots in Upton County. (Kay). Third and fourth instars increasing in Brazos County. (Parker).

HICKORY SHUCKWORM (Laspeyresia caryana) - OKLAHOMA - Emerging in Payne County. (Okla. Coop. Sur.).

OBLIQUE-BANDED LEAF ROLLER (Choristoneura rosaceana) - OREGON - Overwintering eggs hatching; injury becoming evident in infested filbert orchards of Willamette Valley. (Jones, Apr. 16).

A XYELID SAWFLY (Megaxyela sp.) - TEXAS - Last instars light to medium on pecans near Seguin, Guadalupe County. (New).

CITRUS

Citrus Insect Situation in Florida - Mid-April - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 61 percent of groves (norm 58 percent); 37 percent economic (norm 35 percent). Population near normal; in moderate range. Overall numbers will increase as infestations build up on new leaves and fruit. Highest districts south, west and north. CITRUS RED MITE (Panonychus citri) infested 42 percent of groves (norm 46 percent); 16 percent economic (norm 15 percent). Near normal and in low range. Gradual increase expected. All districts will have few scattered infestations of importance. Highest districts north and east. TEXAS CITRUS MITE (Eutetranychus banksi) infested 38 percent of groves (norm 36 percent); 17 percent economic (norm 16 percent). Population near normal. Rapid increase expected. Although all districts currently in low range, all have some moderate to heavy infestations which will become more important especially in young groves. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) present only as light infestations in 5 percent of groves; much below average. BLACK SCALE (Saissetia oleae) infested 29 percent of groves; 14 percent economic. Spring increase started in April and will accelerate greatly in May. Population expected to continue above average and enter high range late in May. GLOVER SCALE (Lepidosaphes gloverii) infested 78 percent of groves; 24 percent economic. Population above average and entered high range. Slight, temporary decrease expected. Highest districts central, south and east. PURPLE SCALE (L. beckii) infested 78 percent of groves; 7 percent economic. Generally light and below normal. Will follow the same pattern of increase as L. gloverii, with which it usually occurs. Highest district central. CHAFF SCALE (Parlatoria pergandii) infested 66 percent of groves; 11 percent economic. Near normal and at moderate level. Little change is expected. Highest district central. YELLOW SCALE (Aonidiella citrina) infested 73 percent of groves; 16 percent economic. Decrease from record high level in March but still above average. Temporary decrease expected through April. Highest district central. WHITEFLY adults nearing spring peak of abundance above normal level. APHIDS present in 60 percent of groves; most infestations light. Decrease will occur in May. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Increase continues in Yuma County citrus. High winds preventing control applications; considerable damage from thrips feeding may occur.(Ariz. Coop. Sur.).

CITRUS WHITEFLY (Dialeurodes citri) - FLORIDA - Adults heavy on leaves of dooryard fruits such as kumquat, calamondin, Meyer lemon, sweet orange and Japanese persimmon, at Gainesville, Alachua County. (Mead).

COTTONY-CUSHION SCALE (Icerya purchasi) - ARIZONA - Infestations on Yuma Mesa being destroyed by increasing numbers of Rhodolia cardinalis (vedalia). (Ariz. Coop. Sur.).

SCALE INSECTS - CALIFORNIA - Aonidiella aurantii and Saissetia oleae locally heavy on citrus in Gilroy, Santa Clara County, and heavy on citrus in Arroyo Grande,

San Luis Obispo County. (Cal. Coop. Rpt.).

SMALL FRUITS

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - NEW JERSEY - Eggs abundant on strawberries; few newly hatched. (Ins.-Dis. Newsltr.).

GENERAL VEGETABLES

BROWN WHEAT MITE (Petrobia latens) - UTAH - Moderate on green onions at Washington, Washington County. (Knowlton).

BULB MITE (Rhizoglyphus echinopus) - IDAHO - Most "mother bulbs" of onion seed fields in Twin Falls County generally infested. (Peay).

CHRYSANTHEMUM LEAF MINER (Phytomyza atricornis) - CALIFORNIA - Heavy on artichoke in Watsonville, Santa Cruz County. (Cal. Coop. Rpt.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - OKLAHOMA - Adults heavy in home gardens in Coal County. (Okla. Coop. Sur.).

SOUTHERN MOLE CRICKET (Scapteriscus acletus) - GEORGIA - Heaviest flight ever observed in Tift County. (Beck).

ORNAMENTALS

APHIDS - OREGON - Schizolachnus spp. building up on Mugho and Scotch pines in nurseries of Multnomah County. Hippodamia spp. numerous. Elatobium abietinum caused heavy damage to needles of blue spruce in some untreated Multnomah County nurseries. (Larson, Apr. 16). CALIFORNIA - Eriosoma lanigerum locally heavy on pyracantha shrubs in Visalia, Tulare County. (Cal. Coop. Rpt.).

CITRUS WHITEFLY (Dialeurodes citri) - FLORIDA - Adults heavy on ligustrum and viburnum shrubs at Gainesville. (Kuitert, Mead).

SOFT SCALES - CALIFORNIA - Saissetia coffeae locally heavy on pyracantha shrubs in Exeter, Tulare County. (Cal. Coop. Rpt.). ALABAMA - Pseudophilippia quaintancii quite heavy on isolated ornamental white pine plantings in Marshall County. (St. Cloud).

ARMORED SCALES - ALABAMA - Two 3-year-old flowering crab apples badly damaged by Aspidiotus perniciosus in Hartselle, Morgan County. Most limbs and parts of main plant dead. (Rutledge et al.) NORTH CAROLINA - Pseudaonidia paeoniae extremely heavy on Camellia sasanqua and C. japonica locally in Cumberland County. Twigs on some plants encrusted with old scales; up to 110 per 16-inch twig noted. Crawlers emerged April 12. (Robertson, Apr. 15). CALIFORNIA - A. perniciosus heavy on English-laurel in Biggs, Butte County. (Cal. Coop. Rpt.).

A MEALYBUG (Trionymus diminutus) - CALIFORNIA - Heavy on green New Zealand flax nursery stock in Redwood City, San Mateo County. (Cal. Coop. Rpt.).

COTTONY-CUSHION SCALE (Icerya purchasi) - TEXAS - Heavy on pittosporum shrubs near Seguin, Guadalupe County. Large numbers of Rodolia cardinalis (vedalia) feeding on several colonies. (Massey).

CONCHUELA (Chlorochroa ligata) - CALIFORNIA - Nymphs and adults heavy on Ceanothus sp. in Paradise, Butte County. (Cal. Coop. Rpt.).

BAGWORM (Thyridopteryx ephemeraeformis) - ALABAMA - Overwintered bags heavy on many coniferous ornamental and forest shrubs and trees throughout central and northern

areas. No hatch noted in Morgan, Marshall, Madison and Cherokee Counties. (McQueen).

JUNIPER WEBWORM (Dichomeris marginella) - OREGON - Larvae severely damaged twigs of Meyer juniper in nursery field plantings at several locations in Multnomah County. (Larson, Apr. 16).

A LEAF ROLLER MOTH (Batodes angustiorana) - CALIFORNIA - Larvae heavy on English boxwood in Colma, San Mateo County. New host for State. (Cal. Coop. Rpt.).

SILVER-SPOTTED TIGER MOTH (Halisidota argentata) - OREGON - Larvae localized and defoliating twigs of Scotch and Austrian pines in several Multnomah County nurseries. (Larson, Apr. 16).

A LEAF BEETLE (Blepharida rhois) - OKLAHOMA - Adults damaging ornamental sumac in Stillwater, Payne County. (Okla. Coop. Sur.).

SPIDER MITES (Tetranychus spp.) - OREGON - Needle damage appearing on Scotch pines in nurseries of Multnomah County. (Larson, Apr. 16). CALIFORNIA - T. urticae medium on orchid nursery stock in orchidhouse in National City, San Diego County. (Cal. Coop. Rpt.). FLORIDA - T. hydrangeae adults moderate on leaves of 625 of 2,500 plants of Hydrangea macrophylla in nursery at Holly Hill, Volusia County. (Pott).

FOREST AND SHADE TREES

SPRUCE NEEDLE MINER (Taniva albolineana) - NEVADA - First pupae of season found in Douglas, Ormsby and Washoe Counties; most specimens observed in prepupal stage. (Bechtel et al.).

BALSAM WOOLLY APHID (Adelges piceae) - NORTH CAROLINA - Continues to spread from infestation on National Forest to private lands in Avery, Watauga and Caldwell Counties. Only occasional ornamental and roadside firs affected at present. Nearby Christmas tree plantings of firs not infested. (Whitfield).

GALL APHIDS (Adelges spp.) - WISCONSIN - A. abietis exuding wax on Norway spruce in Oshkosh area, Winnebago County, April 5. (Wis. Ins. Sur.). CALIFORNIA - A. cooleyi medium on Douglas-fir in Santa Rosa, Sonoma County. (W. D. Shaw, R. Hunt, CDF).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - WISCONSIN - Egg masses unusually abundant near Janesville, Rock County, with high of 5 masses on one foot of branch. Only 2 of 50 masses hatched April 21; feeding restricted to egg shells as buds not yet open. (Wis. Ins. Sur.). INDIANA - Webs present on wild cherry and unkept apple and peach trees throughout southern third of State; 5-30 webs per tree in southernmost areas. Pest building up in southern half of State for past 3 years. Early observations indicate 1966 populations will be as heavy as 1965 if not heavier. (Huber). CONNECTICUT - Hatched in Windsor April 18 and Storrs April 15-16; webs noted in Storrs. Controls urged. (Savos). Webbing absent at Windsor. (Phillips). NEW JERSEY - Hatching on wild cherry in Shiloh area. (Ins. -Dis. Newsltr.). MARYLAND - Tents numerous on wild cherry along roadsides, farms and other locations in eastern and southern sections. (U. Md., Ent. Dept.). VIRGINIA - Tents conspicuous on wild cherry and apple trees at Pittsylvania County. (Dominick). NORTH CAROLINA - Tents noticeable statewide. (Whitfield). ALABAMA - Larvae extremely heavy on many cherry trees in northern area; lesser numbers on apple trees. Many trees with 1-10 tents. Pupation occurring throughout south and central areas. (O'Daniel et al.).

TENT CATERPILLARS (Malacosoma spp.) - OREGON - M. pluviale eggs hatching on roadside brush in Washington County week of March 28. Populations appear about same as in 1965. (Larson). UTAH - M. fragile damage increasing in Rockville-Santa Clara area, Washington County. Most damage to poplars along Virgin River, but

some on shrubs north to Veyo. Some poplars 90 percent defoliated. (Knowlton). TEXAS - Late-stage larvae of M. disstria light on shade trees throughout northern area. Many larvae near pupation. (Turney).

BOXELDER LEAF ROLLER (Gracillaria negundella) - CALIFORNIA - Medium on maple trees in Fresno, Fresno County. First record for Fresno County. (C. Ferris, Ext. Serv.).

SPRING CANKERWORM (Paleacrita vernata) - OHIO - Adult males in flight north of Toledo, Lucas County. Numbers not large. (Brockway).

A NOCTUID MOTH (Oncocnemis punctilinea) - NEVADA - Larvae medium and damaging ash trees in Las Vegas, Clark County. (Zoller).

PAINTED LADY (Vanessa cardui) - UTAH - Migrating northward. Most numerous in Box Elder and Utah Counties, but one or few noted in flight south to Ivins, Washington County. (Knowlton).

ELM LEAF BEETLE (Pyrrhalta luteola) - TEXAS - Overwintering adults noted on elm trees in Vernon, Wilbarger County. (Boring). UTAH - Active in St. George area, Washington County. (Knowlton).

GIANT BARK APHID (Longistigma caryae) - ALABAMA - Nymphs and adults extremely heavy on oak trees. Causing considerable concern in Decatur area, Morgan County. Honeydew very objectionable on cars. Controls applied to some trees. (Rutledge et al.).

EUROPEAN ELM SCALE (Gossyparia spuria) - WISCONSIN - Nymphs taking on flocculence at Green County location. Evidence of nearly 80 percent parasitism in old scales. (Wis. Ins. Sur.).

A TREEHOPPER (Platycotis vittata) - FLORIDA - Adults severely damaged bark of 1 out of 30 Quercus hemisphaerica at cemetery in Tavares, Lake County. (Fatic, Apr. 8). First report of season; common springtime pest of oaks. (Fla. Coop. Sur.).

BIRCH LEAF MINER (Fenusa pusilla) - OREGON - Adults emerged week of April 11 in Multnomah County; large numbers now on developing leaves of birch. (Larson).

MAN AND ANIMALS

UTAH - Causing moderate annoyance in St. George; more troublesome in fields near river from Santa Clara through Washington, Washington County. (Knowlton). MINNESOTA - Total of 1,310 larval samples taken in 6-county area of Metropolitan Mosquito Control District; 1,185 Aedes spp. second instars or smaller; 110 A. excrucians, 27 A. stimulans, 12 A. abserratus, 10 A. riparius, 7 A. fitchii; 5 A. implicatus; 5 A. sticticus and 3 A. trichurus. Larvae generally second and third instars. No Culiseta spp. larvae or egg rafts observed. (Minn. Ins. Rpt.). MICHIGAN - Middle-stage larvae of undetermined species numerous in woodland pond in Shiawassee County April 16. (Dowdy). NORTH CAROLINA - Aedes sollicitans adults emerged week ending April 15 in southern Onslow County. Lighting at rate of 10-15 per minute in area. (Ashton). FLORIDA - In Gainesville area, Alachua County, several reports of severe biting activity by Mansonia perturbans received. Actively biting 6 miles south of Gainesville; nuisance in all sections of city. Other mosquitoes causing some annoyance to much lesser degree include Culex salinarius, Aedes vexans, Anopheles crucians and A. quadrimaculatus. (Mead).

CATTLE GRUBS (Hypoderma spp.) - NORTH DAKOTA - Fifty percent of grubs dropped from infested animals checked at Dickinson livestock auction. (Brandvik). MICHIGAN - Larvae, probably H. bovis, appeared in backs of native cattle in Ingham County since early April. (Dowdy). OKLAHOMA - H. lineatum adults moderate to heavy on and around cattle in Noble, Payne, Coal, Garvin and Cotton Counties. (Okla. Coop. Sur.). TEXAS - Egg laying by H. lineatum continues throughout Jack and Clay Counties. (Turney).

HORN FLY (Haematobia irritans) - GEORGIA - Active on beef cattle; 100 per animal in Spalding County. (Snoddy). MISSISSIPPI - Increasing rapidly in State. In Oktibbeha County, adults averaged 175 on 3 Herefords kept in lots; ranged 90-100 per animal on 20 Hereford cows and 125-130 per animal on 20 Angus cows on pasture. Ranged 55-65 flies per animal on cattle in Smith County; 90-100 per animal on cattle in Scott County. (Dinkins). TEXAS - Light but increasing throughout Jack County. (Turney). OKLAHOMA - Averaged 400 per head on cows and yearlings and 1,000 per head on bulls in Atoka County; 200 per head on steers in Alfalfa County. Moderate to heavy on cattle in Coal, Garvin and Cotton Counties. (Okla. Coop. Sur.).

FACE FLY (Musca autumnalis) - MARYLAND - Observed on 2 cattle herds at Beltsville, Prince Georges County, April 20. Averaged 1.1 and 1.4 per head in these herds. First report of season in State. (J. H. Fales). UTAH - Numerous around home at Providence, Cache County. (Hanson, Knowlton).

SHEEP KED (Melophagus ovinus) - UTAH - Numerous on ewes sheared in Benjamin-Goshen area of Utah County. Numerous every spring, especially on thinner ewes. (Knowlton).

TICKS - OKLAHOMA - Amblyomma americanum averaged 400 adults and 200 nymphs per head on yearlings, and 250 adults and 50 nymphs per head on small calves in Atoka County. Occasional Dermacentor variabilis adult found. Ixodes scapularis and D. albipictus not seen. (Okla. Coop. Sur.). MARYLAND - First adults of D. variabilis this season collected April 18 in vegetation near Fairland, Montgomery County. (U. Md., Ent. Dept.).

STORED PRODUCTS

A DERMESTID BEETLE (Trogoderma inclusum) - TEXAS - Large populations noted in grain warehouse near Olney, Young County. (Hill).

BENEFICIAL INSECTS

LADY BEETLES - MISSOURI - Numbers increasing in Pemiscot County. (Jones). First larva in southwestern district observed in alfalfa near Springfield, Green County, April 19. (Houser). VIRGINIA - Coleomegilla maculata numerous hibernating adults under old shells of Chinese chestnut at Blacksburg, Montgomery County. (Kosztarab). UTAH - Larvae moderately numerous on roses and in Acyrthosiphon pisum (pea aphid) infested alfalfa fields in Washington County. (Knowlton).

GREEN LACEWINGS (Chrysopa spp.) - ARKANSAS - Adults continue active but no reproduction observed. (Ark. Ins. Sur.). NORTH DAKOTA - Cocoons found in stored durum wheat in Pembina County. (McBride).

DAMSEL BUGS - OHIO - Now active. (Rose). ARKANSAS - Adults continue active but no reproduction observed. (Ark. Ins. Sur.).

A BRACONID (Microplitis croceipes) - DELAWARE - This parasite of Heliothis spp. collected by P. P. Burbutis and L. P. Kelsey in sweepings in lima beans at Overbrook, Sussex County, September 16, 1965. Det. by P. M. Marsh. This is a new State record. (Burbutis).

Beneficial Insects in Mississippi - Coleomegilla maculata and Cycloneda sanguinea first generation larvae numerous in small grains, clover and alfalfa. First-generation Nabis spp. and Geocoris spp. appearing in small grains, clover and

alfalfa. Beneficial insects moving out of overwintering quarters into new vegetation. (Dinkins).

FEDERAL STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - INDIANA - First adult activity of season observed in New Carlisle area of La Porte and St. Joseph Counties, April 15 and 16. Feeding signs on wheat rare. (Shade). MICHIGAN - Adults migrating from overwintering quarters April 17 in southwest; temperatures in high 50's. Mass migration occurred April 18; temperature in 70's. Early emerging beetles taken in greatest numbers from edges of wheat fields; 7-40 per 100 sweeps common in research fields near sites where population being maintained in Galien area for experimental purposes. Largest collection 186 per 100 sweeps. Very little adult feeding injury noted. Mating common among early emerging beetles. First eggs expected on or about April 22. (Gomulinski, Turner).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae collected from Surinam-cherry and guava at Miami and from loquat at Fort Lauderdale. (Fla. Coop. Sur.).

GRASSHOPPERS - OKLAHOMA - Egg surveys for several species made in Woodward, Woods and Major Counties show 0.25 egg pod per square foot of sod in rangeland and 0.33 egg pod per square foot in crop margins. Survey indicates major hatch in area will begin about May 10. Adults of Chortophaga viridifasciata taken in Creek County April 7. This is new county record. Det. S. Coppock. (Okla. Coop. Sur.). UTAH - Hatching in Snow Canyon to Ivins and Santa Clara, Washington County. (Knowlton). WYOMING - Fourth and fifth instar nymphs of Psoloessa delicatula and adults of Arphia conspersa active April 15 on rangeland areas near Ten Sleep, Washakie County. (Marks). NORTH DAKOTA - Egg development in Golden Valley County ranged coagulated to segmented; 56 percent of eggs coagulated, 32 percent eyespot, 12 percent segmented. Few scattered heavy concentrations of eggs found in some field margins. In western Adams County, eggs clear and coagulated with 17 percent clear, 83 percent coagulated; eggs scarce in area. M. bivittatus and M. sanguinipes dominant in both counties. (Frye). MINNESOTA - Only Melanoplus femurrubrum egg pods found in Anoka and Sherburne Counties; mostly in early coagulation stage. Very few egg predators present. (Minn. Ins. Rpt.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period April 17-23, a total of 16 cases was reported in the Southwestern Eradication Area by States and counties as follows: TEXAS - Jim Hogg 2, Cameron 1, Maverick 1; ARIZONA - Maricopa 3, Cochise 1, Pinal 1, Yuma 3, Santa Cruz 3, Pima 1. The Republic of Mexico reported 69 cases: Territorio sur de Baja California 4, Sonora 56, Chihuahua 1, Nuevo Leon 2, Tamaulipas 6. Sterile screw-worm flies released: Texas 27,486,250, Arizona 33,538,000, New Mexico 4,000,000, California 758,000 and Mexico 78,348,000.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative

Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).

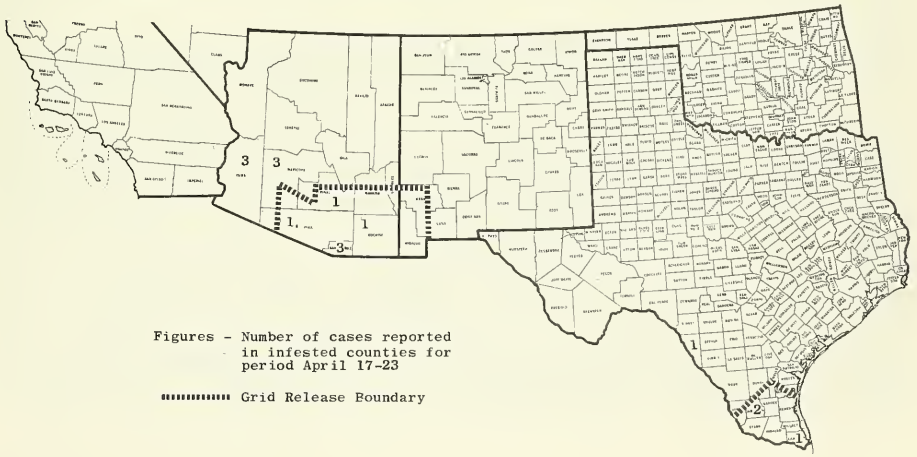
1964	8	30	421	1871	1.90	1.60
1965	11	20	232	1270	4.74	1.57
1966	16	57	132	745	12.12	7.65

Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*

1965	98	802	70	543	140.00	147.69
1966	85	743	54	481	157.40	154.46

Mexico Field Study - During this period 410 cases were identified in Mexico south of the Barrier Zone as follows: Colima 12, Nayarit 35, Oaxaca 21, Tabasco 21, Veracruz 38, Jalisco 47, Puebla 4, Michoacan 26, Guerrero 46, Sinaloa 61, Chiapas 23, San Luis Potosi 9, Guanajuato 4, Zacatecas 12, Durango 2, Yucatan 32, Hidalgo 2, Campeche 2, Morelos 5, Mexico 2, Aguascalientes 1, Quintana Roo 1, Queretaro 4.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health. Div.).



INSECT DETECTION

A BRACONID (Microplitis croceipes) - DELAWARE - This parasite of Heliothis spp. collected in sweepings on lima beans at Overbrook, Sussex County. Det. by P. M. Marsh. This is a new State record. (Burbutis). (p. 373).

EUROPEAN CORN BORER (Ostrinia nubilalis) - NORTH DAKOTA - Reported for first time in Bowman, Slope, Golden Valley and Mountrail Counties. (Brandvik). (p. 359).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Larvae collected in Lonoke County; new county record. (Boyer). INDIANA - Found for first time in Ohio County. (Huber). (p. 360).

BOXELDER LEAF ROLLER (Gracillaria negundella) - CALIFORNIA - Medium on maple trees in Fresno, Fresno County. New county record. (Cal. Coop. Rpt.). (p. 372).

A GRASSHOPPER (Chortophaga viridifasciata) - OKLAHOMA - Adults collected in Creek County. Det. by S. Coppock. This is new county record. (Okla. Coop. Sur.). (p. 374).

CORRECTIONS

CEIR 16(15):317,318 - Estimates of Damage by the European Corn Borer to Grain Corn in the United States in 1965 - Estimated loss figures (p. 317) for 1965 should read 52,848,100 Bushels and $56,726,160. Table 1. (p. 318) - Figures for Maryland under Estimated Data: Loss of Crop should read 1,270 (1,000 Bu.) and 1,511 ($1,000).

Weather continued from page 356.

and as far south as New Mexico. The Great Plains had freezes as far south as the Texas Panhandle. Subzero temperatures occurred in parts of Wyoming, Colorado, and the Nebraska Panhandle. In Nebraksa, Harrisburgh 10 NW registered 8° below zero, possibly the coldest ever recorded so late in the State. Some areas in Wyoming averaged more than 10° colder than the previous week and more than 15° colder than normal. For some western areas, this was the first colder-than-normal week since early in March. In contrast, Ohio had the warmest week of the season; 15° to 20° warmer than the previous week and 10° warmer than normal. Washington, D. C., registered 86° on Sunday.

PRECIPITATION: Amounts were light in the West, moderate to heavy East. The deep storm centered over the Colorado Rockies on April 8 brought snow to a wide area from Utah to Wisconsin; snow fall at Lander, Wyoming, was 20" and more than 20" fell in eastern Wyoming and the Black Hills of South Dakota. Winds to 60 mph raised dust clouds over New Mexico and the Texas Panhandle. Hail, high winds and heavy showers occurred with thunderstorms and moist tropical air to the Southeast. Tornadoes occurred from Kansas to Indiana and as far south as Arkansas but without excessive damage. Beneficial rains fell from southeastern New Mexico to southwestern New England. Some localities in northeast Texas received 10 to 12" of rain in 48 hours and several stations recorded more than 15" in 3 days. Heavy local flooding caused much damage.

FLOODS: Severe flash flooding in northeast Texas during weekend killed at least 12. Worst flooding was in Sabine River Drainage in Gregg and Harrison Counties. Residents were evacutated near Marshall, Kilgore, Longview, and Gladewater. Heavy damage to roads, bridges, etc, disrupted transportation. Major flooding is occurring on main stem of Sabine River at Gladewater. Heavy rains caused general rises and some flooding of tributaries in much of the west gulf drainage and middle and lower Mississippi Valley and adjacent areas. The Mississippi River continues above flood level from Libby to Fort Ripley, Minnesota. Peak stages ranged about 1-3 feet above flood stage. (Summary supplied by Environmental Data Service, ESSA).

HAWAII INSECT REPORT

Special Insects of Regional Significance - All stages of a PLATASPID BUG (Coptosoma xanthogramma) heavy in 20-foot row of lima beans and adults light in 10-foot row of snap beans in garden in Nuuanu Valley, Honolulu, Oahu. New host records and first occurrences of species on crops of economic importance. (LaPlante). Nymphs medium on Canavalia cathartica (maunaloa) in Kahuluu, and light in Waiahole, Oahu. Apparently spreading in northerly direction on windward side of island. (Haw. Ins. Rpt.). One adult taken during mail inspection at Honolulu International Airport post office; found in box of clothing destined for out of State. (Shiroma).

Beans and Tomatoes - All stages of GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) heavy on 0.75 acre of snap beans in Waimanalo, Oahu. (Sato). Larvae and adults of a LEAF MINER FLY (Liriomyza sp.) medium to heavy on 0.5 acre of tomato and snap beans in Kapahi area of Kapaa, Kauai. Larvae heavy in 1.5 acres of eggplant in Hauula, Oahu. (Fujimoto, Sato).

Taro - A TARO LEAFHOPPER (Tarophagus proserpina) light in 5 acres of taro in Kahaluu and light in small taro patch in Waiahole, Oahu. Light numbers of Cyrtorhinus fulvus, an egg-sucking mirid bug, observed at both localities. (Higa).

Ornamentals - A THRIPS (Thrips hawaiiensis) heavy on Gardenia spp. blossoms in wet areas throughout Oahu; common pest of gardenias during this time of year when plants in bloom. Approximately 100 percent of gardenia flowers inspected during predeparture at airport heavily infested. (Chong, Shiroma). An ARMORED SCALE (Pinnaspis buxi) severe on leaves of Monstera deliciosa (monstera) in Kaneohe, Oahu; about 65 per square inch. (Higa). An ORCHID WEEVIL (Orchidophilus sp) - Larvae and adults reported heavy on a hybrid vanda orchid ("Miss Joaquim) by growers in Kapoho, Hawaii Island. (Yoshioka).

Man and Animals - A FRESHWATER SNAIL (Lymnaea ollula), an intermediate host of cattle liverfluke, heavy in 5 acres of taro in Kahaluu, Oahu; numerous snails on stems of plants. (Nakao). Adult activity of a CATTLE GRUB (Hypoderma sp.) very noticeable at Parker Ranch, Waimea, Hawaii Island; cattle observed running. (Yoshioka).

Beneficial Insects - A purposely introduced PUNCTURE-VINE STEM WEEVIL (Microlarinus lypriformis) heavily infesting stems of Tribulus cistoides (nohu), an indigenous puncture-vine species, at Sandy Beach near southeast end of Oahu. (Haw. Ins. Rpt.).

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) medium in several areas in Kaneohe, Oahu, especially in banana fields. Usually active during rainy periods earlier and later in year. (Haw. Ins. Rpt.).

SOME FIRST APPEARANCES OF SEASON

Spotted alfalfa aphid in Mississippi. Six-spotted alfalfa hopper in Wisconsin. Southern corn rootworm adults in Missouri and Ohio. Adults of a webworm (Loxostege sp.) in Missouri. Colorado potato beetle in Oklahoma. Mexican bean beetle in Alabama. Spruce needle miner pupae in Nevada. Western tent caterpillar larvae in Oregon. Adults of a treehopper (Platycotis vittata) in Florida. Birch leaf miner adults in Oregon. Face fly adults in Maryland.

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (dingy cutworm)	Caenurgina erechtea (forage looper)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege sticticalis (garden webworm)	Mamestra configurata (bertha armyworm)	Mamestra oleracea (tomato hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)
																					Crops
ARKANSAS																					
Hope 4/7-20				37						6					32		74				
Fayetteville 4/19-20				36						1					60		187				
FLORIDA																					
Gainesville 4/13-18			BL	45				202							4	3	13		3		
Oneco 4/12-13			BL					109							1						
GEORGIA																					
Tifton 4/13-20	50-77	0.51	BL						1	13											
Spalding (County) 4/21										5											
ILLINOIS (County)																					
Champaign 4/15-21	34-76	0.60		10													12				
INDIANA (Counties)																					
Posey 4/1-9			BL	4											4		10				
Switzerland 3/31-4/10			BL	1																	
MICHIGAN (County)																					
Livingston 4/19			BL														5				
MISSISSIPPI																					
Stoneville 4/14-20	40-81	0.08	2BL	41		14		3		1					129	22	498				
Rolling Fork 4/14-20	39-82	1.10	BL	12						9			1		4		30				
Tunica 4/14-20	39-83	0.23	BL	6		2				1					19		18				
MISSOURI																					
Portageville 4/16-22			BL	11											55		71				
OHIO																					
Hilliard 4/14-21			BL	3													5				
SOUTH CAROLINA																					
Charleston 4/4-10	40-78	0.18	BL					6									6				
Charleston 4/11-17	36-82	0.11	BL	1				4							1		6				
TEXAS																					
Waco 4/16-22			BL	5		4		13		8					8	3	12			2	

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Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 May 6, 1966 Number 18

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM moths becoming active in more northern States. Pupation rate of EUROPEAN CORN BORER greatly increased in Delaware; first pupa of season taken in southwest Illinois. SPOTTED ALFALFA APHID caused locally severe damage in OKLAHOMA (p. 381). Populations of ALFALFA WEEVIL, while held in check in some areas owing to adverse weather, now active and damaging in nearly all States reporting. New county records reported from Arkansas, Ohio and Indiana. (pp. 382-383). CLOVER LEAF WEEVIL causing severe damage in Washington and larvae more numerous than usual in Nevada. (p. 383). PEA APHID generally low except in Arizona and Kansas. (p. 384). LYGUS BUGS causing heavier than usual damage to sugar beets in Washington and ARMY CUTWORM at economic levels on same crop in Colorado. (p. 385).

Predictions

Early appearance of STRAWBERRY LEAF ROLLER in New Jersey indicates possible problem on strawberries. (p. 389).

Heavy trap catches of DARK-SIDED CUTWORM moths in New York portends threat to onion growers. (p. 390).

Anticipated widespread defoliation by FOREST TENT CATERPILLAR and FALL CANKERWORM in areas of Pennsylvania. (p. 392).

Detection

PEAR SAWFLY (*Hoplocampa brevis*) reported for first time from Connecticut. (p. 387).

An ERIOCRANIID MOTH (*Mnemonica auricyanea*) collected for the first time in Delaware. (p. 392).

Additional new county records for other species reported on page 398.

Special Reports

Standard Survey Procedures for the Alfalfa Weevil (pp. 400-401).

Reports in this issue are for week ending April 29 unless otherwise indicated.

CONTENTS

WEATHER BUREAU'S 30-DAY OUTLOOK

MAY 1966

The Weather Bureau's 30-day outlook for May calls for temperatures to average below seasonal normals over the western half of the Nation but above normal over the eastern third. In the intermediate area near normal temperatures are predicted. Precipitation is expected to exceed normal from the Gulf Coast region northward through the Midwest and the Great Lakes, and also over much of the Great Basin. Subnormal precipitation is indicated along the middle and north Atlantic Coast and also over the Pacific Northwest. Elsewhere near normal totals are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

Weather continued on page 400.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - ARKANSAS - Very low; averaged 4 per 100 sweeps in oats in Arkansas County. Second and third instars most common. (Ark. Ins. Sur.). NEBRASKA - Gravid females caught in light traps. (Pruess). MICHIGAN - Some adults taken in Berrien County blacklight trap; others observed around lights in Oceana and Mason Counties. (Newman, Metzler). DELAWARE - Averaged 6 per night in blacklight trap in Sussex County. (Burbutis).

CORN EARWORM (Heliothis zea) - ARIZONA - Medium to heavy in alfalfa fields in Gila and Yuma Valleys in Yuma County. Averaged 50 per 100 sweeps. (Ariz. Coop. Sur.). CALIFORNIA - Medium on lettuce plantings in Blythe, Riverside County. (Cal. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - OKLAHOMA - Ranged 40-200 per linear foot in wheat in Nowata and Craig Counties; 0-40 per linear foot in Ottawa County. Continues to decrease. (Okla. Coop. Sur.). KANSAS - Surveys in Sedgwick County show 400-450 per linear foot in unsprayed fields. Ranged 100-700 per linear foot in Sumner County and 50 per linear foot in Cowley County. Heavy in Neosho County. Reno County wheat in boot stage; decrease in population during past week. No heavy populations in southwestern area. (Kans. Ins. Sur.). NEBRASKA - Winged adults average less than 1 per foot in wheat in eastern area. (Rhine). SOUTH DAKOTA - Two caught in propellor trap and suction trap at Brookings, Brookings County, April 21 and 24. (Kieckhefer).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Continues light to moderate in most potato-growing areas of Maricopa and Pinal Counties. Controls necessary. (Ariz. Coop. Sur.). COLORADO - Survey on matrimony-vine, Lycium, revealed none present in Weld County. Lycium growth set back severely by recent freezing temperatures. (Jenkins).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Only occasional spotted infestations in Chaves County alfalfa. (Mathews). OKLAHOMA - Caused severe damage in scattered alfalfa fields in Nowata County. Light in Noble and Bryan Counties. (Okla. Coop. Sur.). MISSISSIPPI - Very light on alfalfa in De Soto and Pontotoc Counties. Infestation in Pontotoc County down from last week. Adults and nymphs observed. (Dinkins).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - Pupation rate of overwintering borers greatly increased over last week; approximately 65 percent pupated in Sussex County. First adult of season collected in blacklight trap in Sussex County April 23. (Burbutis). ILLINOIS - First pupa of season collected at Carbondale, southwest district, April 26. (Meyer).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARKANSAS - Increased in heads of small grain in east section but noneconomic. (Ark. Ins. Sur.). OKLAHOMA - Continues in small grains in some areas. Ranged 10-40 per linear foot in wheat in Ottawa County and 5-20 per linear foot in barley in Adair County. (Okla. Coop. Sur.). SOUTH DAKOTA - Collections at Brookings, Brookings County, April 21-24, as follows: propellor trap 7, suction trap 8, and yellow pan trap 1. (Kieckhefer). OHIO - About one per sweep in wheat field in Pickaway County. Wheat about 8-12 inches high; damage insignificant. (Rose).

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Ranged 5-60 per linear foot in wheat in Craig and Ottawa Counties. (Okla. Coop. Sur.).

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Heavy, up to 8 per linear foot of row, and damaging winter wheat in Prowers County. Controls underway. (Fitzsimmons). Present, but noneconomic in Weld County wheat. (Jenkins). WYOMING - Spotty in winter wheat fields of Goshen County. Ranged 0-1 per linear foot of row. (Pfadt).

CUTWORMS - OREGON - Attacking 400 acres of wheat in Gilliam County. (Every). KANSAS - Samples from wheat fields in Greeley County showed about 5 Chorizagrotis auxiliaris to 1 Agrotis orthogonia. Some fields may have A. orthogonia as principal feeder, with patches of field showing damage. Wheat growth excellent, in stage where top feeding of C. auxiliaris has little effect. Heavy in Greeley and Hamilton Counties. (Ins. Sur. Rpt.).

STINK BUGS - MISSISSIPPI - Eight adults of unspecified brown species in oats in Webster County. Oats in late milk or early dough stage. (Dinkins).

BROWN WHEAT MITE (Petrobia latens) - COLORADO - Trace near Nunn, Purcell and Ault, Weld County; no damage. (Jenkins).

TURF, PASTURES, RANGELAND

MAY BEETLES (Phyllophaga spp.) - MISSISSIPPI - First adults of season from Jackson, Hinds County, and Oktibbeha County. (Dinkins, Maxwell). OHIO - Adults close to soil surface; about to emerge in Wayne County April 16. (Shambaugh). First adult of season collected in blacklight trap central area April 27. (Rose). WISCONSIN - Single specimen of P. fusca in Madison blacklight trap. Observations in Black River Falls area revealed many P. tristis adults in sod roots. (Wis. Ins. Sur.).

CHINCH BUG (Blissus leucopterus) - ILLINOIS - Adults averaged 35 per 100 sweeps in alfalfa-grass field in Champaign County. (Moore).

BANKS GRASS MITE (Oligonychus pratensis) - NEVADA - Heavy in timothy and required treatments in Smith Valley, Lyon County. (Rebuffo).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSOURI - Larval damage continues light to heavy in southeastern area; still hatching; larvae in all stages; pupation underway and some new adults swept from fields. Adverse weather delayed treatment over most of area. Damage expected to increase. Percentage of terminals showing injury ranges from less than five in some southeastern Ozark counties to 100 percent in several "bootheel" counties. (Wkly. Ins. Rpt.). ARKANSAS - Found in Jefferson County, southeast section. This is a new county record. (Ark. Ins. Sur.). MISSISSIPPI - Continues heavy; square foot averages as follows: Pontotoc County 60, De Soto County 42, and Marshall County 18. High numbers of newly emerged adults of first generation in Pontotoc County. (Dinkins). GEORGIA - Averaged 250 larvae per sweep in untreated alfalfa in Houston County. (Tippins). VIRGINIA - Adults and larvae active in all areas; all instars present. Larvae range 40-250 per 100 sweeps in alfalfa 5-10 inches high in west central counties. (Isakson). MARYLAND - Development of larvae on alfalfa in central and western sections retarded by cool, rainy weather. (U. Md., Ent. Dept.). NEW JERSEY - Larval injury noticeable in field near Cranbury; 55 adults per 100 sweeps April 26. Several adults mating. Many first and second instars feeding deep within terminals. Nearly 20 percent of terminals infested with 1-2 larvae. Larval injury to terminal buds more apparent in Salem and Gloucester Counties than in central counties. In field near Elsinboro Township, majority of terminals showed larval feeding injury. One terminal contained 8 developing larvae (first to third instar); most contained 2 larvae. Larvae averaged 200 per 100 sweeps in Salem County. Most Salem and Gloucester County growers will treat fields before first cutting. (Ins.-Dis. Newsltr.). PENNSYLVANIA - Hatching and mating in Bedford

County. (Udine, Apr. 24). Some larvae apparently killed by frost in other southern areas. (Menusan, Apr. 24). Up to 75 percent of stems damaged in some fields in Westmoreland County. (Udine). OHIO - Populations growing rapidly in Washington County; 6-8 larvae in terminal buds with extensive damage. Spraying begun. (Gehres). Larvae of various sizes and some leaf damage noted in Fairfield County April 20. (Taylor). Larvae in Wayne County (Glass), Clark County (Newman) and Wood County (Jones). Wood County is new county record. Larvae ranged 1.6-9 per stem on alfalfa in southeast. Number of stems infested ranged 50-100 percent. Largest infestation with about 10 percent of foliage eaten. Sweeping in southeast yielded averages of 1-6 larvae per sweep. Adults abundant. Crop height varies 5 to 10 inches. (Rose). Graying or first signs of extensive leaf damage apparent April 28 in Meigs County. (Flessel). INDIANA - Found in Wayne, Vigo, Parke, and Vermillion Counties for first time during week ending April 29. (Huber). In southern Harrison County area, alfalfa turning brown in some instances; terminal injury ranged 80-100 percent; up to 8 larvae per stem; 4,000 per 100 sweeps taken. Pupating in southern Harrison County. (Wilson, Hintz). In Posey, Gibson and Knox Counties, larvae ranged 800-2,200 per 100 sweeps; up to 8 per stem; 30-80 percent of plants infested in these counties; infestation ranged 40-60 percent. (Huber). ILLINOIS - Adults per 100 sweeps ranged 0 in east to 17.5 in southeast districts. No larvae found in Champaign, Piatt, or Coles Counties. Ranged 2.6-121 (average 35.5) per sweep on 6-11 inch alfalfa in southwest district and 4.5-40 (average 14.4) per sweep on 10-12 inch alfalfa in southeast district. Most alfalfa in southern 2 or 3 tiers of counties in State show 100 percent of terminals infested, some fields severely damaged. Mostly second to third instars with some spinning cocoons high up on the plants, probably due to very wet conditions. No pupation observed within cocoons. (White, Moore).

COLORADO - Larvae abundant in some western alfalfa fields; range 10-50 per 100 sweeps. (Bulla). Eggs and larvae taken in experimental plots in Larimer County. (Simpson). Adult feeding damage in Weld County; no eggs or larvae taken. (Jenkins). WYOMING - Adults difficult to find in alfalfa fields of Platte and Goshen Counties. (Pfadt). IDAHO - Adults average 2 per 5 sweeps near Lenore, Nez Perce County. (Kambitsch). Egg laying general in alfalfa stems 6 to 8 inches tall in field at Moscow. (Burns et al.). UTAH - Adults active in cool areas of Uintah Basin, Unitah County, and Duchesne County. (Knowlton). NEVADA - Mating continues; many gravid females present in fields; eggs and larvae more numerous in Churchill, Douglas, Lyon, Pershing, and southern Washoe Counties. (Bechtel et al.). CALIFORNIA - H. postica and H. brunneipennis unusually abundant this season in many areas. Some areas with large populations and severe damage compared with little or no damage in past years. Investigation shows 75-80 percent parasite egg encapsulation in Butte County and 75-80 percent viable parasite eggs in the Tracy-Livermore area, San Joaquin-Alameda Counties. Bathyplectes curculionis (an ichneumon) effective against H. postica but eggs heavily encapsulated in H. brunneipennis. Pupation of 2 species differs in that H. brunneipennis pupates in upper part of alfalfa and bur-clover and H. postica tends to pupate at the ground level. Morphological separation of species practically impossible in larval and adult stages. Based on parasite separation and aerial pupation, infestations in Butte and Sacramento Counties considered H. brunneipennis. This brings H. brunneipennis well into northern area from previously known range in south. Indications are that H. brunneipennis more damaging due to parasite resistance. If this proves to be the case in areas previously infested with H. postica, cost of growing alfalfa will be greatly increased due to added control. (Cal. Coop. Rpt.). NEW MEXICO - Ranged 16-24 larvae per 50 sweeps in alfalfa fields south of Albuquerque, Bernalillo County. (Heninger).

CLOVER LEAF WEEVIL (Hypera punctata) - WASHINGTON - Medium to large larvae heavy and severely damaging alfalfa hay fields near Royal City, Grant County (Foeppel, Telford); patches of alfalfa killed by injury to crowns in field near Royal City (Halfhill, Landis, Apr. 22). NEVADA - Larvae more numerous than usual in alfalfa in Fallon, Churchill County. Averaged 2 per sweep in several fields. (Cooney). KANSAS - Larvae ranged 8-15 per crown in alfalfa fields wilted by Acyrthosiphon pisum (pea aphid) in Reno County. (Ins. Sur. Rpt.). OKLAHOMA - Larvae ranged

0-13 per crown in alfalfa in Delaware and Adair Counties; pupation underway. (Okla. Coop. Sur.). ILLINOIS - Larvae ranged 1-20 per square foot in 8-9 inch clover in southwest district and 1-8 per square foot in 8-9 inch clover in southeast district. Mostly in last instar; pupation started. (White, Moore). OHIO - Small numbers of larvae on alfalfa and clover over most of southern half of State. About 2-4 per 25 sweeps in Noble County. (Arnold et al.).

CLOVER ROOT CURCULIO (Sitona hispidula) - INDIANA - Adults common in alfalfa throughout southern third of State. (Huber, White).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - ARIZONA - Moderate to heavy in alfalfa in Cochise and Pima Counties and in areas of Pinal County. (Ariz. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - WASHINGTON - All stages on alfalfa 11 inches high; averaged 2.5 per 10 sweeps at George, Royal City and Othello in Columbia Basin. (Halfhill). COLORADO - Light in western area alfalfa; ranged 15-25 per 100 sweeps. (Bulla). NEVADA - Very low in alfalfa in northwestern counties. (Coop. Rpt.). ARIZONA - Increase continues in alfalfa in Cochise, Yuma, Maricopa and Pinal Counties. Moderate in San Simon and Sulphur Springs Valley of Cochise County; heavy in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Continues very light to light in alfalfa in most areas. (N. M. Coop. Rpt.). OKLAHOMA - Ranged 200-600 per 10 sweeps in alfalfa in Nowata, Craig, Delaware, Adair and Sequoyah Counties. Ranged 10-200 per foot of row in Noble County; moderate in Pontotoc, Bryan, and Payne Counties. Hymenopterous parasites numerous in many northeast area fields. (Okla. Coop. Sur.). ARKANSAS - Continues high; several hundred per 100 sweeps in alfalfa and other legumes in all areas. (Ark. Ins. Sur.). KANSAS - Wilting alfalfa plants; heavy in south and central areas; no damage found in Coffey County or north central area. (Ins. Sur. Rpt.). INDIANA - Adults and nymphs light on alfalfa throughout southern two-thirds of State. Ranged 200-500 per 100 sweeps. (Huber). OHIO - Appearing on alfalfa in southeast; about 4 per 50 sweeps. (Rose). MARYLAND - Light and generally below normal on alfalfa in central and western sections. (U. Md., Ent. Dept.). VIRGINIA - Light to medium on alfalfa in west central counties. Range 5-75 per sweep. (Isakson).

YELLOW CLOVER APHID (Therioaphis trifolii) - ILLINOIS - Ranged 0-900 per 100 sweeps in 2 red clover fields in the west-southwest district. (White).

MEADOW SPITTLEBUG (Philaenus spumarius) - PENNSYLVANIA - Hatching on forage in all fields in York, Cumberland and Franklin Counties. (Menusan, Apr. 10).

TARNISHED PLANT BUG (Lygus lineolaris) - VIRGINIA - Adults averaged 35 per 100 sweeps on alfalfa in west central counties. (Isakson). INDIANA - Early instars ranged 200-1,200 per 100 sweeps on alfalfa throughout south central and southern areas. (Huber). ILLINOIS - Adults varied 10-160 per 100 sweeps in clover and alfalfa in southern half of State. (White, Moore). OKLAHOMA - Ranged 0-3 per 10 sweeps in alfalfa in Adair and Delaware Counties. (Okla. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Counts per 50 sweeps in alfalfa ranged 8-20 in Chaves County (Mathews), and 20-24 in Bernalillo County. (Heninger).

RAPID PLANT BUG (Adelphocoris rapidus) - ILLINOIS - Occasional nymph observed in clover and alfalfa in southern section. (White, Moore).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - NEW MEXICO - Averaged 2-8 adults per 50 sweeps in Chaves County alfalfa. (Mathews). ARIZONA - Continues light in alfalfa fields of Cochise, Pinal and Maricopa Counties. Some increase noted in Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

A FLEAHOPPER (Spanogonicus albofasciatus)- ARIZONA - Light, averaged 12 per 100 sweeps, in alfalfa in Graham and Pinal Counties. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Moderate in alfalfa fields of Yuma and western Maricopa Counties. (Ariz. Coop. Sur.).

ARMY CUTWORM (Chorizagrotis auxiliaris) - IDAHO - Damage minor in alfalfa in spotted areas at Midvale, Washington County. (Hackler).

CUTWORMS - UTAH - Moderately numerous in alfalfa at Ballard, Uintah County. (Knowlton).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - One alfalfa field heavily damaged in Stewart district, Cochise County. Light in other areas of county. (Ariz. Coop. Sur.).

BROWN WHEAT MITE (Petrobia latens) - NEVADA - Heavy in alfalfa; required treatment in several fields in Fallon, Churchill County. (Cooney, York).

COTTON

BOLL WEEVIL (Anthonomus grandis) - GEORGIA - One adult emerged in hibernation cage April 27 in Spalding County. (Beckham).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Light damage on seedling cotton throughout Pinal and Maricopa Counties. (Ariz. Coop. Sur.).

THRIPS (Frankliniella spp.) - ARIZONA - Moderate to heavy damage in many untreated fields in Yuma, Maricopa, Pinal and Pima Counties. (Ariz. Coop. Sur.).

TOBACCO

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - MARYLAND - Adults appearing on small plants in beds in Anne Arundel and Calvert Counties. (U. Md., Ent. Dept.).

FLEA BEETLES - GEORGIA - Generally light to heavy over tobacco belt. (French).

CUTWORMS - MARYLAND - Medium-sized larvae causing light, spotty injury to young plants in beds near Deale, Anne Arundel County. (U. Md., Ent. Dept.).

GARDEN SPRINGTAIL (Bourletiella hortensis) - MARYLAND - Light in beds in Anne Arundel and Calvert Counties. (U. Md., Ent. Dept.).

SPRINGTAILS - VIRGINIA - Abundant in tobacco plant bed near Chatham, Pittsylvania County. (Dominick, Apr. 26).

SUGAR BEETS

LYGUS BUGS (Lygus spp.) - WASHINGTON - Migrating from weeds and alfalfa to many fields of sugar beets in cotyledon and 4-leaf stage in Yakima and Benton Counties. Damage heavier than usual, one "sting" per plant often fatal. (Landis, Apr. 22).

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - At economic levels in fields near Gilcrest, Weld County. Controls applied. (Col. Ins. Sur.).

GREAT BASIN WIREWORM (Ctenicera pruinina) - WASHINGTON - Larvae caused slight losses to unthinned stands in virgin soil near Brownstown, Yakima County. (Onsager, Apr. 22).

POTATOES, TOMATOES, PEPPERS

GREAT BASIN WIREWORM (Ctenicera pruinina) - IDAHO - Eleven collections made April through August in Canyon, Elmore and Owyhee Counties on new farming land now producing potatoes yielded 10 C. pruinina collections and 1 Melanotus oregonensis (Oregon wireworm). C. pruinina predominates dryland species of Snake River Plains; M. oregonensis economically minor species. (Thornton, Apr. 22).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Scattered and heavy; damaged potatoes in Gila Bend and Goodyear areas of Maricopa County. (Ariz. Coop. Sur.).

MELON APHID (Aphis gossypii) - FLORIDA - Infesting tomato stems at Bereah, Polk County. (Schmidt, Apr. 19).

A THRIPS (Frankliniella bispinosa) - FLORIDA - Infesting tomato leaves at Bartow, Polk County. (Schmidt, Apr. 8).

BEANS AND PEAS

PEA APHID (Acyrthosiphon pisum) - WISCONSIN - Remains very low in northeast and western part of State. Ranged 0-1 per 10 sweeps. No reproduction in northerly areas. Pea plants ready to emerge in portions of Sheboygan County. (Wis. Ins. Sur.).

CUTWORMS - FLORIDA - Agrotis ipsilon and Feltia subterranea, mostly F. subterranea, injuring 200 acres of commercial southern peas, at Belle Glade, Palm Beach County. (Genung). GEORGIA - Damaging beans, cabbage and English peas in several home gardens in Spalding County. (Dupree).

MEXICAN BEAN BEETLE (Epilachna varivestis) - GEORGIA - Light on lima beans in Tattnall County. (Barber).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - GEORGIA - Moderate to heavy on cabbage in Spalding County. (Dupree). NEW JERSEY - Adults flying in central portions of State. (Ins.-Dis. Newsltr.).

CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) - CALIFORNIA - Adults heavy on mustard flowers in Buellton and Lompos, Santa Barbara County. Important flower and vegetable seed growing areas. (Cal. Coop. Rpt.).

FLEA BEETLES (Phyllotreta spp.) - MARYLAND - Adults infesting radish, turnip greens and newly set cabbage plants in southern sections. (U. Md., Ent. Dept.).

CUCURBITS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Larvae continue heavy in some melon fields in Yuma County. (Ariz. Coop. Sur.).

MELON APHID (Aphis gossypii) - FLORIDA - Spotty on watermelon at Leesburg, Lake County; not serious enough for controls. (Adlerz). ARIZONA - Increasing and requiring some controls on melons in Yuma Valley area of Yuma County. (Ariz. Coop. Sur.).

SPIDER MITES (Tetranychus spp.) - ARIZONA - Light to moderate damage on melons in Yuma County; requiring some controls. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

PEAR SAWFLY (Hoplocampa brevis) - CONNECTICUT - Found for the first time in State; larvae collected in June 1963 from pears at Mount Carmel, New Haven County. Det. April 28, 1966, by D. R. Smith. (Leonard). See also "Guidelines for Pear Sawfly" and "Recognition of the European Apple Sawfly and Pear Sawfly" in CEIR 16(12): 227-230.

APPLE APHID (Aphis pomi) - ALABAMA - Both winged and wingless forms medium on tender growth of apples and pears in Mobile, Lee, Cherokee and other counties throughout State. (Bolton, Seibels et al.). PENNSYLVANIA - Hatching on apple trees in York, Cumberland and Franklin Counties; some frozen. (Menusan, Apr. 10). CONNECTICUT - Noted in New Haven. (Savos, Apr. 27).

SPIREA APHID (Aphis spiraecola) - FLORIDA - Infesting most tender leaves of apple at Gainesville, Alachua County. (Mead).

ROSY APPLE APHID (Dysaphis plataginea) - ALABAMA - Continues heavy on new leaves of apples in Lee County. (Barwood). PENNSYLVANIA - No hatching on apple trees in York, Cumberland and Franklin Counties. (Menusan, Apr. 10). CONNECTICUT - Noted in Cheshire and Storrs; abundance lower than previous week. In second instar at Storrs. (Savos, Apr. 27).

WOOLLY APPLE APHID (Eriosoma lanigerum) - ALABAMA - Large numbers in patches on limb and trunk of apple, flowering crab apple and native crab apple in Lawrence, Morgan, Cherokee, Lee and Tallapoosa Counties and other areas. Several 2-5 year-old apple trees now dying in commercial orchards in Tallapoosa County due to extremely large numbers on root systems. Clusters on roots extend into soil 12-16 inches; galls heavy on root system. Controls unsatisfactory. (Carroll et al.). CALIFORNIA - Heavy on apple nursery stock in San Luis Obispo, San Luis Obispo County. (Cal. Coop. Rpt.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - WISCONSIN - Nymphs common on apple buds in Door, Sheboygan and Calumet Counties; populations much lower in southeast. (Wis. Ins. Sur.). OHIO - Present on apple trees; averaged 7 per leaf cluster in orchard in Fairfield County. Predation by two species of syrphid fly larvae noted. About one syrphid larva per 32 aphids. (Holdsworth). PENNSYLVANIA - Hatching on apple trees in York, Cumberland and Franklin Counties; some frozen. (Menusan, Apr. 10). CONNECTICUT - Noted in Bantam, Cheshire and Storrs; abundance lower than previous week. In second instar at Storrs. (Savos, Apr. 27).

APHIDS - MASSACHUSETTS - Eggs hatched; nymphs maturing rapidly. Many terminals on apple heavy with syrphid fly eggs. (Crop. Pest. Contr. Mess., May 2).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Eggs abundant at Storrs; majority of early spring egg laying over. (Savos, Apr. 27). MASSACHUSETTS - Egg laying began over weekend, in Amherst area about 2 weeks later than in 1965. (Crop. Pest. Contr. Mess., May 2).

PLANT BUGS - MASSACHUSETTS - Feeding on opening flowers of apple and pear. At next period of high temperature, some plantings can be damaged unless protected. (Crop. Pest Contr. Mess., May 2).

SAY STINK BUG (Chlorochroa sayi) - ARIZONA - Nymphs infesting fruit trees causing light to moderate damage in Safford area, Graham County. (Ariz. Coop. Sur.).

CODLING MOTH (Carpocapsa pomonella) - INDIANA - About 50 percent of overwintering larvae pupated in southwestern area. (Dolphin). WASHINGTON - Female, first adult, taken in trap in apple tree near White Swan, Yakima County. (Butt, Apr. 22).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - OREGON - Heavy on unsprayed apple trees in Multnomah County. Apple trees now in full bloom. (Larson).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - CONNECTICUT - Hatched in Glastonbury; nests formed and larvae feeding on developing apple buds at Storrs. (Savos, Apr. 27). SOUTH CAROLINA - Nesting in cherry trees and feeding on pecan, pear, ornamentals, crab apple and other plants in Orangeburg County. (Watson, Apr. 26). OHIO - First larvae infesting apple trees in Gallia County April 21. (Carter). OKLAHOMA - Nearly mature larvae heavy on peach and wild plum trees in Nowata and Craig Counties; moderate in Ottawa, Mayes and Delaware Counties. (Okla. Coop. Sur.).

EUROPEAN RED MITE (Panonychus ulmi) - INDIANA - Many newly hatched on Red Delicous apple foliage in Knox County area. (Dolphin). OHIO - Apple trees in bloom in southern part of State. Hatching in Athens County, but not in 2 orchards in Licking and Fairfield Counties. Large numbers of eggs on apple trees in orchard examined past few weeks indicate some high-potential populations. (Holdsworth, Rose). NEW JERSEY - Hatching from overwintering eggs in southern and central counties. (Ins.-Dis. Newsltr.). CONNECTICUT - Hatch expected soon in warmer areas. (Savos, Apr. 27). MASSACHUSETTS - Hatch expected within week in earliest orchards. (Crop. Pest Contr. Mess., May 2).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - ARIZONA - Heavy and damaging apple trees in some areas of Cochise County. (Ariz. Coop. Sur.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - COLORADO - First adults taken April 15 in bait traps in Mesa County peach orchard. High counts to date 55 moths in 15 traps in Palisade area. (State Dept. Agr., Anderson). INDIANA - First adults of season caught in bait traps April 25. (Dolphin). GEORGIA - Light on green peaches in 2 orchards in Bleckley County. (Lawson).

PEACH TWIG BORER (Anarsia lineatella) - NEW MEXICO - Damage to terminal growth of peach becoming evident in Roswell area, Chaves County. (Mathews).

PEACH TREE BORER (Sanninoidea exitiosa) - NEVADA - Larvae heavy and damaging peach trees in small orchard in Gardnerville, Douglas County. (Bechtel, Martinelli).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - OREGON - Severe in some cherry orchards of Wasco County. Many will require sprays after blossom drop. (Every).

A GEOMETRID MOTH (Operophtera occidentalis) - OREGON - Probably this species heavy on terminal leaves of cherry, plum, pear and apple trees in Portland, Multnomah County. (Goeden).

APHIDS (Myzus spp.) - WASHINGTON - Agamic forms of M. persicae averaged 38 per leaf; multiplying rapidly on peach at Othello, Adams County. (Powell). OKLAHOMA - Heavy infestations, probably M. cerasi on plum and sour cherry trees in small orchard in Noble County. (Okla. Coop. Sur.).

PLUM CURCULIO - (Conotrachelus nenuphar) - GEORGIA - One to 20 adults per tree jarred from unsprayed peach and plum trees in early and mid-April; none found in well-tended orchard in Peach County. (Jacklin).

LEAF-FOOTED BUG (Leptoglossus phyllopus) - GEORGIA - One adult jarred from peach tree April 8 and one April 12 in Peach County. (Jacklin).

LYGUS BUGS (Lygus spp.) - COLORADO - Increasing in Mesa County peach orchards especially where tansy mustard bloom abundant. Ranged 20-60 per 100 sweeps; control recommended. Peaches entering "husk" stage. (Bulla).

AN ERIOPHYID MITE (Eriophyes insidiosus) - CALIFORNIA - This vector of peach mosaic heavy on flowering peach in Palmdale, Los Angeles County. Disease not known to occur in this area. (Cal. Coop. Rpt.).

BLACK PECAN APHID (Myzocallis caryaefoliae) - GEORGIA - Nymphs and adults light in 100-acre pecan grove in Dougherty County. (Tedders). MISSISSIPPI - First generation winged adults started reproduction. (Hamner).

FILBERT APHID (Myzocallis coryli) - OREGON - Building up in Marion County filbert orchards. Appears to be bad year. (Jones).

SPITTLEBUGS - GEORGIA - Spittle masses on pecan trees in Burke County (Miller); one mass on tree in Hancock County (Harris). MISSISSIPPI - Infestation of Clastoptera achatina developing. (Hamner).

ITALIAN PEAR SCALE (Epidiaspis piricola) - CALIFORNIA - Medium on almond nursery stock in Morgan Hill, Santa Clara County. (Cal. Coop. Rpt.).

FILBERT BUD MITE (Phytoptus avellanae) - OREGON - Heavy in Benton County filbert orchards. Very difficult to control on Daviana and Royal varieties. (Jones).

SPIDER MITES - GEORGIA - Overwintering adults light and feeding on tender foliage; laying eggs on Schley pecan sucker growth in Dougherty County. (Tedders).

CITRUS

CITRICOLA SCALE (Coccus pseudomagnoliarum) - CALIFORNIA - Locally heavy on trees in Gridley, Butte County. (Cal. Coop. Rpt.).

OTHER TROPICAL AND SUBTROPICAL FRUITS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Adults medium on avocado trees in Del Mar, San Diego County. (Cal. Coop. Rpt.).

SMALL FRUITS

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - NEW JERSEY - Moths very early in season indicate potential problem this year. (Ins.-Dis. Newsltr.). WASHINGTON - Actively flying at Pullman, Whitman County, April 22. (Johansen).

MEADOW SPITTLEBUG (Philaenus spumarius) - OREGON - Hatching completed; average number of nymphs feeding in fruit clusters of strawberries in Linn and Benton Counties. (Rosensteil).

APHIDS - NEW JERSEY - Abundant in some strawberry fields. (Ins.-Dis. Newsltr.).

TARNISHED PLANT BUG (Lygus lineolaris) - ALABAMA - Adults and nymphs medium but localized on strawberries in Mobile County. (Bolton, Seibels).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - NEW YORK - Noted on strawberries in Suffolk County; 2 heavy infestations (overwintering adults, eggs and recently hatched) at Bellport and Yaphank April 22. (N. Y. Wkly. Rpt.).

OBLIQUE-BANDED LEAF ROLLER (Choristoneura rosaceana) - OREGON - Egg hatch about April 10-15. First and second instars feeding in blackberries and raspberries in Benton County. (Rosensteil).

A SCARAB (Anomala undulata) - FLORIDA - Up to 8 per blossom on blackberry at berry farm at Fort Pierce, St. Lucie County; 0.5-acre commercial berries affected; all open blooms destroyed. Developing berries injured. Species potential threat to berry industry. (Hayslip).

A SPIDER MITE (Eotetranychus clitus) - FLORIDA - Infesting blackberry at Altoona, Lake County. (Fuqua).

GRAPEVINE APHID (Aphis illinoisensis) - ALABAMA - Large buildup of wingless nymphs on grapevines in central and south sections. (McQueen).

GRAPE FLEA BEETLE (Altica chalybea) - ARIZONA - Light to moderate; light damage to grapes in western Maricopa County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

DARK-SIDED CUTWORM (Euxoa messoria) - NEW YORK - Heavy trap catches at Poughkeepsie in late summer of 1965 indicate possible difficulty to vegetable growers in Hudson Valley. Half-grown larvae found April 22 in truck garden at New Paltz. Spaelotis clandestina (w-marked cutworm) also taken. E. messoria likely to be attracted to cultivated onions. (N.Y. Wkly. Rpt., Apr. 26).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Moderate to heavy in scattered areas of Maricopa County on vegetables. (Ariz. Coop. Sur.)

ASPARAGUS BEETLES (Crioceris spp.) - NEW JERSEY - C. asparagi and C. duodecimpunctata expected on spears in cutting fields soon. (Ins.-Dis. Newsltr.).

THRIPS - GEORGIA - Heavy on onions and light on lima beans in Tattnall County. (Barber).

SPIDER MITES - NEVADA - Bryobia sp. or Petrobia sp. heavy and required controls on garlic in Smith Valley, Lyon County. (Rebuffo)

ORNAMENTALS

APHIDS - FLORIDA - Few adults of Neophyllaphis araucariae on 3 of 30 Norfolk Island pines in nursery at Pembroke, Polk County (Schmidt, Apr. 21). This is third known location in State. (Fla. Coop. Sur.). GEORGIA - Unspecified species heavy on ornamental plants in Clarke County. (Coleman). ALABAMA - Macrosiphum rosae continuing on tender growth of roses throughout State, especially where controls poor. Weather favorable and stem-mothers giving birth rapidly. (Barwood, Bagby et al.). NEVADA - Unspecified species heavy on various ornamental plants in Lovelock, Pershing County. (Ferraro). Cinara sp. light on spruce trees in Smith Valley, Lyon County and in Douglas County. (Bechtel, Marinelli).

ARMORED SCALES - UTAH - Lepidosaphes ulmi very heavy on lilac bushes and willows at Tremonton, Box Elder County. (Knowlton, Apr. 25). FLORIDA - Adults of Parlatoria proteus severely damaging 10 plants of Cymbidium sp. and Ischnaspis longirostris infesting leaves of 10 Phoenix sp. palms at Miami, Dade County. (Sloan, Apr. 13). Fiorinia theae adults moderately on leaves of 400 of 500 Camellia sasanqua in Seffner, Hillsborough County. (Simmons, Hill, Apr. 20).

A SOFT SCALE (Eucalymnatus tessellatus) - FLORIDA - This and Pulvinaria floccifera adults severe on stems and leaves of 4 Ardisia paniculata plants at shopping center in Miami, Dade County. (Sloan, Apr. 13).

MEALYBUGS - FLORIDA - Pseudococcus adonidum adults and larvae and Pseudococcus sp. moderately damaging stem, leaves and roots of 200 jasmines in nursery at Pembroke, Polk County. (Schmidt et al., Apr. 19). CALIFORNIA - Planococcus citri heavy on gardenia and light on Carissa tuttlii nursery stock in San Diego, San Diego County, and medium on Coleus sp. in Chico, Butte County. (Cal. Coop. Rpt.).

SPIDER MITES (Tetranychus spp.) - MARYLAND - Heavy on young marigold plants in home at Indian Head, Charles County. (U. Md., Ent. Dept.). FLORIDA - Immatures and adults of Tetranychus urticae ranged 200-300 per leaf on untreated chrysanthmums at Delray Beach, Palm Beach County, (Baranowski, Apr. 14); adults moderate to severe on 120 of 150 Rosa sp. at garden center in Largo, Pinellas County. (Bingaman, Apr. 21). OKLAHOMA - Tetranychus spp. moderate to heavy; damaging ornamental junipers at several locations in Noble and Garfield Counties. (Okla. Coop. Sur.).

SIX-SPOTTED MITE (Eotetranychus sexmaculatus) - FLORIDA - Adults and eggs infesting leaves of 40 of 200 Brassaia actinophylla at nursery in Pembroke, Polk County. (Schmidt).

PRIVET MITE (Brevipalpus obovatus) - CALIFORNIA - Medium on azalea nursery stock in Oroville, Butte County. (Cal. Coop. Rpt.).

CITRUS RED MITE (Panonychus citri) - CALIFORNIA - Heavy on Prunus sp. nursery stock in Colma, San Mateo County. (Cal. Coop. Rpt.).

SPRUCE SPIDER MITE (Oligonychus ununguis) - NEVADA - Ranged light to heavy on spruce trees in Smith Valley, Lyon County. (Bechtel, Martinelli).

ERIOPHYID MITES (Eriophyes spp.) - FLORIDA - Eriophyes buceras adults severely damaging leaves of 100 black-olive plants at nursery in Miami, Dade County. (Meyer, Apr. 12). CALIFORNIA - Eriophyes insidiosus, vector of peach mosaic, heavy on flowering peach in Palmdale, Los Angeles County. Disease not known to occur in this area. (Cal. Coop. Rpt.).

BOXWOOD LEAF MINER (Monarthropalpus buxi) - NORTH CAROLINA - Adults emerged from boxwood in Hendersonville April 27; 1 to 5 pupae in all old leaves (Smith).

BANDED GREENHOUSE THRIPS (Hercinothrips femoralis) - FLORIDA - Adults and nymphs infesting 100 of 1,000 Syngonium sp. in greenhouse at Tampa, Hillsborough County. Moderate to severe damage to leaves of 75 percent of plants. (Hale, Apr. 8).

A THRIPS (Frankliniella bispinosa) - FLORIDA - Adults infesting all snapdragon plants in 0.5-acre nursery at Tampa, Hillsborough County. Severe damage to flowers. (Hale, Apr. 14).

A SEED WEEVIL (Acanthoscelides pauperculus) - CALIFORNIA - Medium on sunflowers in Lompoc, and heavy on bladderpod in Guadalupe, Santa Barbara County. (Cal. Coop. Rpt.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Heavy on dahlias locally in Bakersfield, Kern County. (J. H. Black).

AN OLETHREUTID MOTH (Epinotia nanana) - PENNSYLVANIA - Larvae heavy on ornamental spruce in Centre County. (Kearby).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - NORTH CAROLINA - Generally at lowest level of past years. Most beetle "spots" located by aerial survey in upper Piedmont relatively small; larger "spots" controlled by salvage. Surveys indicated only light, isolated activity in northeast quarter of State. Some activity in Cleveland, Catawba and Wilkes Counties since October; most in small scattered spots. Extreme cold weather in midwinter killed most beetles in thin-barked trees, but considerable number survived in base of thin-barked shortleaf pines. Enough undoubltedly survived winter to keep outbreak going if conditions remain favorable. (For. Pest Newsltr., Apr.).

PALES WEEVIL (Hylobius pales) - NORTH CAROLINA - Caused serious losses on several plantations planted this year in southeast. Most areas site-prepared in fall and planted with untreated seedlings. Areas planted under these conditions should be examined immediately to determine control action. (For. Pest Newsltr., Apr.).

PINE BARK APHID (Pineus strobi) - NORTH CAROLINA - Crawlers active in Randolph and Davidson Counties. (Whitfield, Mount). VIRGINIA - Medium on several white pines near Chatham, Pittsylvania County. (Dominick).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - WISCONSIN - Hatched in southern counties; some webbing and leaf feeding. (Wis. Ins. Sur.). MICHIGAN - First instars chewing foliage and spinning small webs April 26 in Ingham County. (Davidson). OHIO - Larvae feeding predominantly on wild cherry and occasionally on apple and other deciduous trees. Widespread feeding through Washington and Noble Counties; many of host trees 30-40 feet high with 6-10 tents. Larvae about 0.25-inch size. (Rose). Larvae active in Pickaway County. (Walker). SOUTH CAROLINA - Nesting in cherry trees and feeding on pecan, pear, ornamentals, and crab apple and other plants in Orangeburg County. (Watson, Apr. 26). VIRGINIA - Tents noticeable in Montgomery, Floyd, Pulaski and Wythe Counties. Very conspicuous on wild cherry and other hosts in most southeastern counties. (Isakson, Hanley).

FOREST TENT CATERPILLAR (Malacosoma disstria) - PENNSYLVANIA - Anticipated widespread defoliation in east central counties. (Pa. For. Pest Rpt., Apr. 27).

TENT CATERPILLARS (Malacosoma spp.) - NEW YORK - Hatching in Calverton area, Suffolk County. (N. Y. Wkly. Rpt., Apr. 26).

SPRING CANKERWORM (Paleacrita vernata) - NORTH DAKOTA - Adult females emerged in Fargo, Cass County. Numbers appear less than this time last year when females were first observed in Fargo during week of April 16. (Brandvik).

FALL CANKERWORM (Alsophila pometaria) - PENNSYLVANIA - Anticipated widespread defoliation in northern central and east central areas. (Pa. For. Pest Rpt., Apr. 27).

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) - CALIFORNIA - Larvae heavy on willow in Mill Creek area of Visalia, Tulare County. (Cal. Coop. Rpt.).

AN ERIOCRANIID MOTH (Mnemonica auricyanea)- DELAWARE - Adult collected April 11 at Wilmington, Alapocas Woods, in New Castle County by R. W. Lake. Det. by D. R. Davis. This is a blotch leaf miner of oak and chestnut. This is a new State record. (Burbutis).

HACKBERRY PSYLLIDS (Pachypsylla spp.) - IOWA - Emerged from hibernation; dispersing in search of hackberry trees. (Iowa Ins. Inf., Apr. 27).

A PLANT BUG (Neoborus illitus) - CALIFORNIA - Heavy on ash trees in Stockton, San Joaquin County. Unusually heavy and widespread this season and much earlier than in previous years. (Cal. Coop. Rpt.).

A GALL WASP (Plagiotrochus suberi) - CALIFORNIA - Larvae locally heavy in cork oak trees along highway in Lincoln, Placer County. (Cal. Coop. Rpt.).

AN ERIOPHYID MITE (Aceria trichophilus) - CALIFORNIA - Medium on Quercus douglasii) in Del Paso Park, Sacramento, Sacramento County. (Cal. Coop. Rpt.).

CALICO SCALE (Lecanium cerasorum) - CALIFORNIA - Locally heavy on liquidambar trees in Santa Ana, Orange County. (Cal. Coop. Rpt.).

WALNUT SCALE (Aspidiotus juglansregiae) - PENNSYLVANIA - Heavy on 20 of 40 dogwood trees at Media, Delaware County; det. by G. Sleesman. (Tetrault, Apr. 14).

TULIPTREE SCALE (Toumeyella liriodendri) - MARYLAND - Caused heavy injury to several tuliptrees near Hagerstown, Washington County. (U. Md., Ent. Dept.).

MAN AND ANIMALS

MOSQUITOES - FLORIDA - Mansonia perturbans continues principal mosquito pest in Gainesville area, Alachua County. (Mead). LOUISIANA - Jefferson Parish Department of Mosquito Control larval collections April 15-28 resulted in: Anopheles crucians, A. quadrimaculatus, Aedes vexans, Culex pipiens quinquefasciatus, C. salinarius, C. territans, and Psorophora howardii. Light trap collections increased due to warmer weather. Mansonia perturbans and Psorophora confinnis appeared for first time this year. (Stokes). UTAH - Some adults emerged at Ouray, Uintah County. Severe outbreak expected as larvae mature. (Knowlton). COLORADO - Sampling of breeding ponds in Larimer County before cold and snow of last week revealed mosquitoes moderately abundant; about one-third of population in third instar. Sampling April 25 showed decrease in numbers and retarded development; no pupae. Some larvae killed by freezing temperatures. (Shaw, Thatcher). MINNESOTA - During week ending April 23, 1,108 larval collections made by Metropolitan Mosquito Control District. Of total 583 samples contained Aedes spp. too small to identify; 298 samples yeilded 89 Aedes excrucians, 68 A. stimulans, 23 A. fitchii, 21 A. abserratus, 18 A. cinereus, 6 A. sticticus, 3 A. punctor, 3 A. trichurus, 2 A. flavescens, 2 A. canadensis and 1 A. communis. First pupation April 27. First emergence single-brooded spring Aedes spp. expected week of May 2 in Twin City area. (Minn. Ins. Rpt.). MICHIGAN - Adults of one or more undetermined species reported from Allegan and Ingham counties during week. Few early emerging individuals noted to date. Biting populations expected to build up rapidly over Lower Peninsula in near future. (Jantz).

CLEAR LAKE GNAT (Chaoborus astictopus) - CALIFORNIA - Heavy in sewage ponds in Roseville and Loomis, Placer County. Adults creating considerable nuisance in plant and immediate area. (Cal. Coop. Rpt.).

CATTLE GRUBS (Hypoderma spp.) - SOUTH DAKOTA - Counts on untreated yearlings from Cottonwood, Jackson County, and Centerville, Clay County, Brookings, Brookings County, averaged 14 per animal. Counts on untreated older stock ranged 5-9 per animal. (Kohler). OKLAHOMA - Moderate to heavy numbers of adults of H. lineatum continue to annoy cattle in Hughes and Adair Counties. (Okla. Coop.Sur.)

FACE FLY (Musca autumnalis) - OHIO - On cattle April 10 in Holmes County. Ranged 4-5 flies per face. (Miller). In Washington County April 26, flies on 6 beef cattle averaged 7 per head and in Noble County, same number of cattle averaged 22 flies per face. (Rose). ILLINOIS - First adults of season on cattle in Coles County April 25. Ranged 0-3 per face on Hereford steers. (Moore).

STABLE FLY (Stomoxys calcitrans) - GEORGIA - Appearing around dairy barns in Spalding County. (Snoddy).

BLACK FLIES - CONNECTICUT - Increasingly annoying (Savos, Apr. 30). MARYLAND - Adults biting and annoying riding horses at North East, Cecil County. (U. Md., Ent. Dept.).

HORSE FLIES - OKLAHOMA - Hybomitra lasiopthalma light on cattle in Noble County. Unspecified species moderate in Choctaw County. (Okla. Coop. Sur.).

HORN FLY (Haematobia irritans) - OKLAHOMA - Ranged 50-200 per head on cows in Nowata, Delaware, and Noble Counties. Heavy in Pontotoc County. (Okla. Coop. Sur.).

CATTLE LICE - UTAH - Total of 4,000 "tribal herd" cattle and 500 privately owned Ute Indian cattle treated with systemic for grub and lice control last fall still lightly infested with lice in Uintah and Duchesne Counties. Some cattle near "White Rocks" conspicuously infested and rubbing on corral posts. (Knowlton).

AMERICAN DOG TICK (Dermacentor variabilis) - DELAWARE - Active in areas of New Castle County. (MacCreary). OHIO - Appearing in Delaware County. (Rose). INDIANA In Lafayette, Tippecanoe County; first report of season. (Osmun).

HOUSEHOLDS AND STRUCTURES

TERMITES - MASSACHUSETTS - Inquiries indicate swarming near peak in eastern area. (Garland, Apr. 30). ALABAMA - Reticulitermes flavipes causing considerable damage to 2 farm barns in Clay County and to steps and foundation of home in Lee County. (Barwood et al.). NEVADA - Medium infestation of Reticulitermes tibialis damaging home in Winnemucca, Humboldt County. (Lundahl). Reticulitermes sp. swarmed in Reno-Sparks area April 23-24 and medium infestation found in home in Reno, Washoe County. (Bechtel, Ting). CALIFORNIA - Heavy infestations of Reticulitermes hesperus in air terminal building in El Toro, Orange County. Locally heavy in Sacramento, Sacramento County, Atascadero, San Luis Obispo County and Gilroy, Santa Clara County, (Cal. Coop. Rpt.).

CARPENTER BEE (Xylocopa virginica) - INDIANA - First emergence of season April 24 in Lafayette, Tippecanoe County. (Chandler).

ANTS - MASSACHUSETTS - Tetramorium casepitum and Camponotus spp. more abundant than usual for time of year in eastern area. (Garland, Apr. 30). IOWA - Neivamyrmex nigrescens collected in home in Sioux City, Woodbury County. This is most northern area species found. Appears to prefer Missouri River bluffs, since it was also collected at Little Sioux, Harrison County. (Iowa Ins. Inf. Apr. 27).

STORED PRODUCTS

Stored Product Insects in Nevada - Rhyzopertha dominica, Tribolium castaneum and Cryptolestes sp. medium to heavy in stored barley in Lovelock, Pershing County. (Martinelli). New county record for R. dominica. (Bechtel).

A LEAF ROLLER MOTH (Platynota stultana) - CALIFORNIA - Larvae heavy in frozen blackberries in freezer plant in Manteca, San Joaquin County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - UTAH - Two species flying at Logan, Cache County April 30. (Knowlton). ARKANSAS - Various species likely to increase; larvae becoming full grown in legumes and small grain in all areas of State. (Ark. Ins. Sur.). OKLAHOMA - Large numbers of larvae of Hippodamia convergens present in alfalfa in Bryan County. Adults ranged 1-7 per 10 sweeps in alfalfa in Delaware and Adair Counties and very abundant in wheat in Nowata County. (Okla. Coop. Sur.). ILLINOIS - Adults mainly, Coleomegilla maculata fuscilabris, ranged 2-160 per 100 sweeps in clover and alfalfa in southern half of State. No larvae observed. (White, Moore). GEORGIA - Low levels of adults of Chilocorus stigma on peach trees during early April in Peach County. (Jacklin).

DAMSEL BUGS (Nabis spp.) - ILLINOIS - Adults ranged 0-40 per 100 sweeps in clover and alfalfa in southern half of State. (Moore, White). MISSISSIPPI - Increasing in small grains. Lady beetle larvae and Chrysopa spp. larvae increasing in small grains. (Dinkins).

GOLDEN-EYE LACEWING (Chrysopa oculata) - ILLINOIS - Adults ranged 0-40 per 100 sweeps in clover and alfalfa in southern half of State. No larvae observed. (Moore, White).

BRACONID WASPS (Aphidius spp.) - WASHINGTON - Adults 95 percent A. pulcher and 5 percent A. smithi eliminated Acyrthosiphon pisum in some alfalfa fields. Ranged 0-26 per sweep; 15 times population of aphid at George, Royal City and Othello in Columbia Basin. (Halfhill).

HONEY BEE (Apis mellifera) - NORTH CAROLINA - Swarming on several occasions in Wake County since April 22. First reports of season. (Meacham).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - Large infestation found at Henniker, NEW HAMPSHIRE, covering area of 40-50 acres with winter web counts estimated at 10 to 12 thousand. Many webs small; presumably constructed early. Last record of infestation in area in winter of 1955-56 when nearly 6,000 webs destroyed. Winter web cutting underway in towns other than Henniker. Survey in other New England States generally negative except on Cape Cod, MASSACHUSETTS; some extensions of known infested areas noted. (PPC East. Reg., Mar. Rpt.).

CEREAL LEAF BEETLE (Oulema melanopus)- INDIANA - Development as follows: April 19 - first mating observed. April 22 - first eggs in wheat found. April 23 - first eggs in oats observed. Adults ranged to 400 per 100 sweeps on wheat April 23-26. Adults moved into oats April 23-26. Data for New Carlisle area of La Porte and St. Joseph Counties. (Shade). OHIO - First adults of season collected in Williams County April 25. (Phillips). MICHIGAN - Egg laying started April 21 in research plots of wheat near Galien, Berrien County. Eggs scarce as cool weather started April 25; delaying effect on beetle activity. High mortality expected for first-laid eggs due to unfavorable weather. First larvae of season, few survivors of early eggs, expected during week. Beetles more common on wheat than other host crops at present. Left field margins and dispersed throughout fields. Feeding injury very light. On warmer days beetles observed flying and low numbers noted on brome, reed canary and other grasses in area. Oats emerged, but no beetles on young seedlings to date. (Dowdy).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Nymphs and adults on citrus, gardenia and privet in new infestation in Sierra Oaks area 1 mile east of known infested Sacramento area, Sacramento County. Delimiting survey involved 8 city blocks. Eradication treatment starting, but presence of adults complicates treatment. Infested material removed from areas under treatment suspected source of new infestation. (Cal. Coop. Rpt.).

FALL CANKERWORM (Alsophila pometaria) - PENNSYLVANIA - Control planned on about 500 acres in recreation areas on Allegheny National Forest in May. (Pa. For. Pest Rpt., Apr. 27).

GRASSHOPPERS - OKLAHOMA - Hatching in south central and southwest areas. Species include Melanoplus bivittatus, Ageneotettix deorum and Hesperotettix spp. Ranged 1-2 per square yard on rangeland and as high as 15 per square yard on roadsides, alfalfa margins and other habitats. (Okla. Coop. Sur.). NEVADA - Early instars in home gardens causing concern in Fallon, Churchill County. (York). UTAH - Winged, overwintered grasshoppers moderately numerous in fields near Randlett, Uintah County. Pardalophora haldemanii nymphs moderately numerous in Leota-Pelican Lake area of Uintah County. (Knowlton). Grasshopper hatching underway rather generally from Cache to San Juan Counties. Most in first instar, except P. haldemanii. (Thornley, Knowlton). SOUTH DAKOTA - Nymphs of undetermined "slant-faced" species active in low numbers; 1 per 3 square yards in alfalfa fields near Spearfish, Lawrence County. (Jones). MINNESOTA - Cool weather most of week retarded egg development. M. femurrubrum eggs in light, sandy soils in early coagulation stage. M. differentialis eggs all clear; no development. (Minn. Ins. Rpt.). WYOMING - Psoloessa delicatula adults active in rangeland areas of Goshen County. (Pfadt).

GYPSY MOTH (Porthetria dispar) - CONNECTICUT - Scouting of 20 towns in 5 counties underway; area infested appears substantially lower than in 1965; many small egg

masses in heavily infested areas in 1965 not hatched mainly because of parasites. (Turner). PENNSYLVANIA - Treatment of approximately 25,000 acres planned in May for control; 16 scattered spray blocks included in following eastern counties: Wayne, Pike, Monroe, Luzerne, Northampton and Bucks. (Pa. Forest Pest Rpt. Apr.27). NEW JERSEY - Additional infestation found in areas west of Manahawkin, north of Warren Grove, in vicinity of Whiting, Roosevelt City, and in Pasadena. Infestations found at 4 additional trapsites in Monmouth County and at trapsites in Warren, Sussex and Hunterdon Counties. Three infestations in Sussex, Warren and Hunterdon Counties with 50-300 egg clusters per acre. (PPC East. Reg., Mar. Rpt.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - Few mounds found in Junction City area, Union County, ARKANSAS. Found for the first time in Collins and Waller Counties, TEXAS; survey in Bexar County revealed 160 acres infested. Small infested areas found in Attala, Clairborne, Copiah, Itawamba, Lee and Pontotoc Counties, MISSISSIPPI; appraisal surveys in treated areas of Covington, Jefferson Davis and Pike Counties revealed some mounds in each county. (PPC South. Reg. Mar. Rpt.). Collected for the first time in Madison County, ALABAMA; newly infested properties found in Blount, Calhoun, Cleburne, Cullman, Etowah, Fayette, Linestone, Marion, Morgan, Randolph, St. Clair and Walker Counties. Additional infested properties found in Franklin, Lake, Orange, Pasco, Polk, Sumter, Volusia and Wakulla Counties, FLORIDA. Found for the first time in Screven County, GEORGIA; minor extensions of infestations found in 19 other counties and more extensive infestations found in Coffee, Jeff Davis and Tift Counties. Some scattered mounds found in treated areas in Liberty, Jones, Bleckley and Chatham Counties, Georgia. Few mounds found in Carteret and Pamilco Counties, NORTH CAROLINA. (PPC South. Reg., Mar. Rpt.). MISSISSIPPI - Found in Grenada County. This is a new county record. Infestation along Grenada and Calhoun county line, with some infestation in adjoining part of Calhoun County; 8-10 mile westward extension of known infested area in Calhoun County. (Coates).

MORMON CRICKET (Anabrus simplex) - IDAHO - Scattered east and north of Midvale, Washington county in soil bank and pastures. High of 6-8 per square yard; majority third and fourth instars. South and east of Cambridge, small bands near hatching beds ranged 3-20 per square yard. An occasional specimen east of and along Deer Creek. Cold windy weather affecting counts. (Hackler).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Emergence in experimental field cages at Safford increasing. Six moths emerged April 25. (Ariz. Coop. Sur.).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - One newly infested property in each of Bossier, Livingston, Tangipahoa and Washington Parishes, LOUISIANA, and 4 new infestations found in Caddo Parish. One reinfested property found in Perry County, MISSISSIPPI. One infested storage found in Henry County, ALABAMA. (PPC South. Reg., Mar. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - Specimen collected in Marshall County, TENNESSEE, about one mile east of infestation found in 1965. Small extensions of infested areas found in Brunswick and New Hanover Counties, NORTH CAROLINA. Small extension found in LOUISIANA at City of Monroe Airport, Ouachita Parish, and at Clarks, Caldwell Parish. (PPC South. Reg., Mar. Rpt.). MISSISSIPPI Larvae found near Calhoun City, Calhoun County. This is new county record. (Maxwell). ALABAMA - Larvae medium; destroyed stand of peanuts in Black community, Geneva County. (Reynolds, Stephenson).

WHITE PINE WEEVIL (Pissodes strobi) - PENNSYLVANIA - Total of 140 acres treated in spring in Tioga County. (Pa. Forest Pest Rpt.).

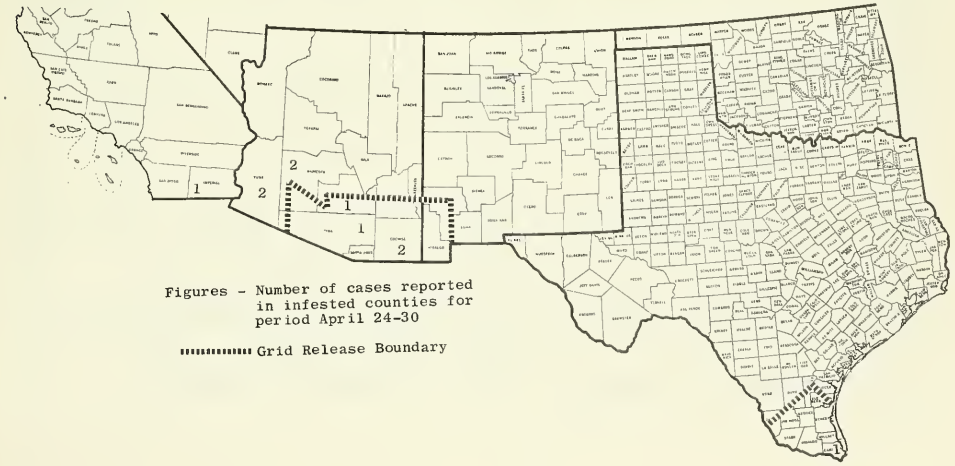
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period April 24-30, a total of 10 cases was reported in the Southwestern Eradication Area by States and counties as follows: TEXAS - Cameron 1; ARIZONA - Yuma 2, Maricopa 2, Cochise 2, Pinal 1, Pima 1; CALIFORNIA - Imperial 1. The Republic of Mexico reported 64 cases: Sonora 52, Chihuahua 5, Coahuila 1, Tamaulipas 4, Nuevo Leon 2. Sterile screw-worm flies released: Texas 17,538,250, Arizona 24,456,000, New Mexico 5,600,000, California 400,000 and Mexico 83,216,000. Note: The report for April 10-16 (CEIR 16(16):344) included one case in Grant County, New Mexico. Further investigation showed the specimen was old and it is believed to have beeen collected in 1965. Consequently this case is deleted from the 1966 records.

	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
Year	Current	Cumulative	Current	Cumulative	Current	Cumulative
Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).						
1964	7	37	401	2272	1.74	1.62
1965	3	23	228	1498	1.31	1.53
1966	10	67	142	887	7.04	7.55
Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.*						
1965	101	903	64	607	61.58	148.76
1966	74	817	60	541	123.33	151.01

Mexico Field Study - During this period 203 cases were identified in Mexico south of the Barrier Zone as follows: Guanajuato 5, Campeche 12, Yucatan 17, Sinaloa 48, San Luis Potosi 8, Nayarit 17, Colima 3, Zacatecas 20, Mexico 4, Queretaro 3, Morelos 2, Durango 2, Chiapas 3, Jalisco 22, Tabasco 15, Hidalgo 1, Oaxaca 4, Veracruz 6, Guerrero 6, Territorio de Quintana Roo 1, Michoacan 4.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health. Div.).



HAWAII INSECT REPORT

Pepper - Medium infestation of all stages of PEPPER WEEVIL (Anthonomus eugenii) in 0.25-acre of immature bell peppers in Waimea, Oahu. (Haw. Ins. Rpt.).

Beans and Peas - Large numbers of SOUTHERN GARDEN LEAFHOPPER (Empoasca solana) on cowpea in Kaumakani, Kauai. Nymphs and adults averaged 65 per 5 sweeps. Also found in lighter numbers on other varieties of beans. (Au). CARMINE SPIDER MITE (Tetranychus telarius) medium to heavy populations on snap beans and eggplant throughout Waianae, Oahu. Appears to be on increase due to warmer weather. (Yamamoto) BEAN POD BORER (Maruca testulalis) light to medium larval infestations in Dolichos lablab (hyacinth beans) in Ewa, Oahu; 5-12 larvae per 20 beans. (Haw. Ins. Rpt.). BEAN BUTTERFLY (Lampides boeticus) larvae medium infestation in Vigna marina (nanea) at Mokuleia, Oahu, and heavy in hyacinth beans in Ewa, Oahu. Counts in Ewa showed 14-18 larvae per 20 beans. (Haw. Ins. Rpt.).

Citrus - COTTONY-CUSHION SCALE (Icerya purchasi) - light to medium on pummelo in Lawai, Kauai. Rodolia cardinalis (vedalia) larvae and adults in small numbers. (Au).

General Vegetables - LEEK MOTH (Acrolepia assectella) larvae causing medium damage in 0.5-acre of green onions in Waimanalo, Oahu. (Sato). ONION THRIPS (Thrips tabaci) light in 0.75 acre of dry onions in Mana, Kauai. (Fujimoto). IMPORTED CABBAGEWORM (Pieris rapae) on Maui, medium to heavy populations of larvae and adults noted on cabbage plantings in Waiakoa and on cabbage and broccoli in Makawao and Pukalani. Damage light to moderate. (Miyahira). CABBAGE APHID (Brevicoryne brassicae) - light to medium on cabbage in Waiakoa, Maui. (Miyahira)

Beneficial Insects - A CERAMBYCID BEETLE (Plagiohammus spinipennis) adults emerging from pupal stage in Kau, Hawaii Island. Fresh adult feeding damages noted on foliage of Lantana. (Kunimoto). A HELIODINID MOTH (Schreckensteinia festaliella) causing considerable damage to foliage and terminals of Rubus rogersii (blackberry) at Kokee State Park, Kauai; 85 percent of leaves damaged in some areas. (Au).

SOME FIRST APPEARANCES OF SEASON

Tarnished plant bug in Pennsylvania April 15 at State College. Black cutworm and variegated cutworm in light traps in Nebraksa. European corn borer pupae in Illinois. Yellow-striped armyworm adults in Delaware. Codling moth adults in Washington. Painted lady flight in Utah and Oregon. Oriental fruit moth in Colorado and Indiana. Face fly in Illinois. May beetles (Phyllophaga spp.) in Mississippi, Ohio and Wisconsin. Cereal leaf beetle first eggs on wheat in Indiana; egg laying underway in Michigan.

INSECT DETECTION

PEAR SAWFLY (Hoplocampa brevis) - CONNECTICUT - Reported for the first time in State. (p. 387).

An ERIOCRANIID MOTH (Mnemonica auricyanea) - DELAWARE - Reported for first time in State. (p. 392).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Found for the first time in Jefferson County. OHIO - Found for the first time in Wood County. INDIANA - Found for the first time in Wayne, Parke and Vermillion Counties. (p. 382-383).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Found for the first time in Madison County. GEORGIA - Found for the first time in Screven County. MISSISSIPPI - Found for the first time in Grenada County. TEXAS - Found for the first time in Collins and Waller Counties. (p. 396).

WHITE-FRINGED BEETLES (Graphognathus spp.) - MISSISSIPPI - Found for the first time in Calhoun County. (p. 396).

LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	*Agrotis ipsilon* (black cutworm)	*Carpocapsa pomonella* (codling moth)	*Chorizagrotis auxiliaris* (army cutworm)	*Estigmene acrea* (salt-marsh caterpillar)	*Faronta diffusa* (wheat head armyworm)	*Feltia subterranea* (granulate cutworm)	*Heliothis virescens* (tobacco budworm)	*H. zea* (bollworm, corn earworm, tomato fruitworm)	*Loxostege commixtalis* (alfalfa webworm)	*Loxostege similalis* (garden webworm)	*Loxostege sticticalis* (beet webworm)	*Manduca quinquemaculata* (tomato hornworm)	*Manduca sexta* (tobacco hornworm)	*Ostrinia nubilalis* (European corn borer)	*Peridroma saucia* (variegated cutworm)	*Prodenia ornithogalli* (yellow-striped armyworm)	*Pseudaletia unipuncta* (armyworm)	*Spodoptera exigua* (beet armyworm)	*Spodoptera frugiperda* (fall armyworm)	*Trichoplusia ni* (cabbage looper)	Crops
FLORIDA																								
Gainesville 4/27			BL						2															
GEORGIA																								
Tifton 4/20-27	54-79	0	BL							3	35													
ILLINOIS (county)																								
Champaign 4/21-27	37-72	1.81		8														7		63				
MISSISSIPPI																								
Stoneville 4/21-27	45-82	2.02	2BL	21			12		3		1							30	6	97				
Rolling Fork 4/21-27	59-78	1.04	BL	18					5		6				1			4	4	14				
Tunica 4/21-27	43-85	2.79	BL	7			4											5		12				
OHIO (counties)																								
Franklin 4/22-28			BL	24														1		20				
Wayne 4/20-25			BL	1																2				
SOUTH CAROLINA																								
Charleston 4/20-26	48-78	2.00	BL				3		1		2								2	7				
Charleston 4/21-5/1	60-84	0.19	BL	2					1											1				
TEXAS																								
Brownsville 4/16-22	62-90	0.41	2BL	18			5		173	1	69				7	5		99	6	18		2	24	
Brownsville 4/23-29	71-83	0.01	2BL	4			5		65		38							21		2			24	
Waco 4/23-29			BL	10			1		10		13							23	8	19			9	

CORRECTIONS

See note under STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST on page 397 of this issue.

Weather continued from page 380.

WEATHER OF THE WEEK ENDING MAY 2

HIGHLIGHTS: (1) Dallas downpours kill 31. (2) Dry Southwest, wet Southeast, snow Northern Plains. (3) Northeast drought eased.

PRECIPITATION: Wide areas west of the Continental Divide received no rain during the past week. A few western areas (southern California and southwestern Arizona, for instance) have received no rain for several weeks. Some light rain fell in the Puget Sound area and along the Oregon Coast and a few scattered light sprinkles and snow flurries occurred in Idaho and nearby States but totals were of little consequence. Moderate to heavy rains fell over a wide band from eastern Texas across Arkansas, Tennessee, Kentucky, the northern portions of the Gulf States, and West Virginia. Violent weather occurred almost daily from eastern Texas to Alabama. In Texas, where heavy rains began April 22, Dallas received 12.4 inches in the last 9 days of the month. Rains in the Dallas area flooded all major streams and caused at least 31 deaths. Several tornadoes occurred in the Southland. A tornado near Saltillo, in northeastern Mississippi, caused considerable property damage. Most sections of Kentucky received some rain every day of the week and a few Kentucky localities have received rain every day for two weeks. An inch or more of rain fell along the Middle Atlantic Coast, in Pennsylvania, and over southern New England. Precipitation was generally light over northern New York and northern New England. Many parts of Florida received no rain. Up to 11 inches of snow fell at some locations in the northern portions of North Dakota and Minnesota with lighter falls farther west, south and east. Flurries occurred in Iowa on the 28th.

TEMPERATURE: For the second week, temperatures continued cool in the West and mild in the Southeast. Freezing occurred on several nights in the northern and central Great Plains and on one or two nights over the southern Rocky Mountains. Aberdeen, South Dakota, with 5° on Saturday reported one of the coldest temperatures of the week. North Dakota and nearby portions of Montana and Minnesota averaged more than 12° colder than normal. Temperatures averaged more than 5° warmer than normal from Louisiana to South Carolina. (Summary supplied by Environmental Data Service, ESSA).

Standard Survey Procedures for the Alfalfa Weevil

By C. C. Blickenstaff

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In 1964 a subcommittee of the Eastern Branch Survey and Losses Committee, ESA, was established to develop recommendations for a standard survey procedure for the alfalfa weevil, *Hypera postica* (Gyllenhal). This report was prepared for publication at the request of the National ESA Survey and Losses Committee following acceptance of their recommendations to the Governing Board of the Society at the Philadelphia Meeting in December 1964. To determine current survey procedures and to solicit suggestions for preferred or better methods, questionnaires were sent to 43 workers in 25 States. This group of workers included survey, extension, and research personnel in about equal numbers in most of the States where the weevil is a problem, but primarily consisted of workers in the East. Twenty-four questionnaires were returned, 11 of which were from survey entomologists. These sometimes reflected the opinions of more than one person. Issues of the Cooperative Economic Insect Report (CEIR) were also consulted to determine current methods of reporting.

The following summary of terms used in 1964 issues of CEIR to indicate alfalfa weevil populations and damage demonstrates well the need for a standard method of reporting. Observations of all stages were reported:

Eggs: None, first, present, underway, recently laid, continuing, most hatched, number per 10 and 25 tips checked.

Larvae: Per 1, 10, 25. and 100 sweeps; per pan count; per 1, 10, and 25 tips; percent of tips infested; light, moderate, and heavy populations; first; peak.

Pupae: First, 50%, 70%, well underway.

Adults: Abundant, numerous, declining, per 1 and per 100 sweeps.

Damage: Very light, light, moderate, heavy, severe; in percentage.

Many of these observations are worthwhile, but often they do not readily allow for comparisons either within or among States.

On questionnaires returned, as shown in Table 1, both survey and nonsurvey entomologists reported the use of the same sampling methods, but not to the same extent. Survey entomologists primarily used stems in sampling for eggs (81.8%), sweeps for larvae (90.9%), and sweeps for adults (72.7%). Nonsurvey entomologists also made extensive use of these methods but in addition utilized the square-foot technique more often than the other methods, except in sampling for adults. The following refers only to replies from survey entomologists:

Eggs: Although a high percentage reported surveying for eggs, this trend was not reflected numerically in CEIR reports.

Larvae: The number of sweeps per sample ranged from 1 to 100, with 10 and 100 predominating. The number of samples per field ranged from 1 to 20, with 1 and 10 predominating. Two entomologists reported tip counts, one pan counts, and two square-foot counts.

Pupae: 18.2% reported sampling on a square-foot or square-yard basis.

Adults: A rather high percentage (72.7%) reported sampling by sweeps and 27.3% by the square-foot method.

Damage: 36.4% reported some sort of measurement and indicated that an estimate of foliage damage would be valuable.

Table 1. Percentage of entomologists who use indicated method of sampling to determine number of eggs or other stages of the alfalfa weevil present in a representative area.[a]

Sampling method	Percentage of Survey entomologists	Nonsurvey entomologists	Both
	Eggs		
Stem	81.8	69.2	75.0
Square-foot	9.1	38.5	25.0
Both	9.1	23.1	16.7
	Larvae		
Sweep	90.9	92.3	91.7
Tip	27.3	7.7	16.7
Pan	9.1	7.7	8.3
Square-foot	18.2	23.1	20.8
	Adults		
Sweep	72.7	76.9	79.2
Square-foot	27.3	23.1	37.5
	Pupae		
Square-foot or square-yard	18.2	46.2	33.3

[a] Of 24 questionnaires returned, 11 were from survey entomologists and 13 from nonsurvey entomologists.

The numbers of eggs present are not often reported because they are difficult to find and conducting an adequate survey is very time consuming. Surveying for numbers of pupae entails the same problems. Adults are so greatly influenced in their activities by temperature and sunlight that sweep counts of them for comparative abundance are almost meaningless. It is therefore suggested that numerical reporting of these stages should not be attempted in general survey work.

The larval stages are relatively immobile and concentrated in plant tips. Since they are easily swept, they are the most readily available and stable stage for sampling. Plant damage, easily detected and readily estimated in terms of percentage of foliage eaten, is of immediate use. It is recommended that these two criteria be used in all survey work with supporting observations of the presence and development of eggs, larvae, pupae, and adults.

Since timing control measures is often based on the percentage of tips infested, this information should be recorded during the early surveys. It is felt that plant

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height early in the season and stage of development late in the season (early bud, full bloom, etc.) should be recorded. For plant height, marks on the net handle are handy.

The recommended sampling procedures that follow are not based upon statistical evidence of adequacy. Until such data are available, we can only suggest procedures that, in our opinion and experience, would improve the current situation and at least allow for uniformity. The need for uniformity was strongly expressed in several replies to the questionnaire.

The aforementioned considerations, supplemented by advice from extension entomologists at the University of Maryland, lead to the recommendation that the reporting units and sampling procedures be as follows:

1. *Percentage of tips infested* (early in the season).—Examine 50 tips per field, taking 5 samples of 10 tips each.
2. *Number of larvae per sweep.*—Take 10 sweeps per sample, and up to 5 samples per field with a minimum of 3, depending upon severity of infestation and differences among counts. In surveying for new infestations to establish the presence or absence of larvae, use at least 100 sweeps per field in units of 10 sweeps.
3. *Plant height in inches,* and *stage of development* (early bud, mid-bloom, full-bloom, stubble).
4. *Percentage of foliage eaten.*—Estimate by visual observation at location of each sweep sample. Use increments of 10%, and if foliage eaten is less than 10%, use smaller increments of 2, 4, 6, and 8%.
5. Whether *treated* with insecticide *or not.*
6. *Descriptive statements* on presence and abundance of eggs, pupae, and adults.

It is considered that more information would be gained by surveying the same series of fields repeatedly throughout the season than by substituting new or different fields each time. It is important, however, that representative fields be chosen to start with. The number of fields on which averages are based should always be given.

It is also recommended that the sweeping method be standardized as much as possible. The following suggestions are submitted to aid in attaining this goal:

1. Net: 15-inch diameter opening.
2. Sweep: 180 degree arc.

This type of survey would allow the following to be determined:

1. Timing of spring treatments.
2. Relative abundance of larvae from year to year and among areas affected.
3. Larval buildup and decline, and time and duration of damaging populations.
4. Development of larvae in relation to that of host plant.
5. General record of life history.
6. General effectiveness of controls.
7. Rough estimates of damage.

Committee members were J. U. McGuire, Biometrical Services, Agr. Res. Serv., USDA and J. L. Huggans, Entomology Research Division, Agr. Res. Serv., USDA, Beltsville, Md.

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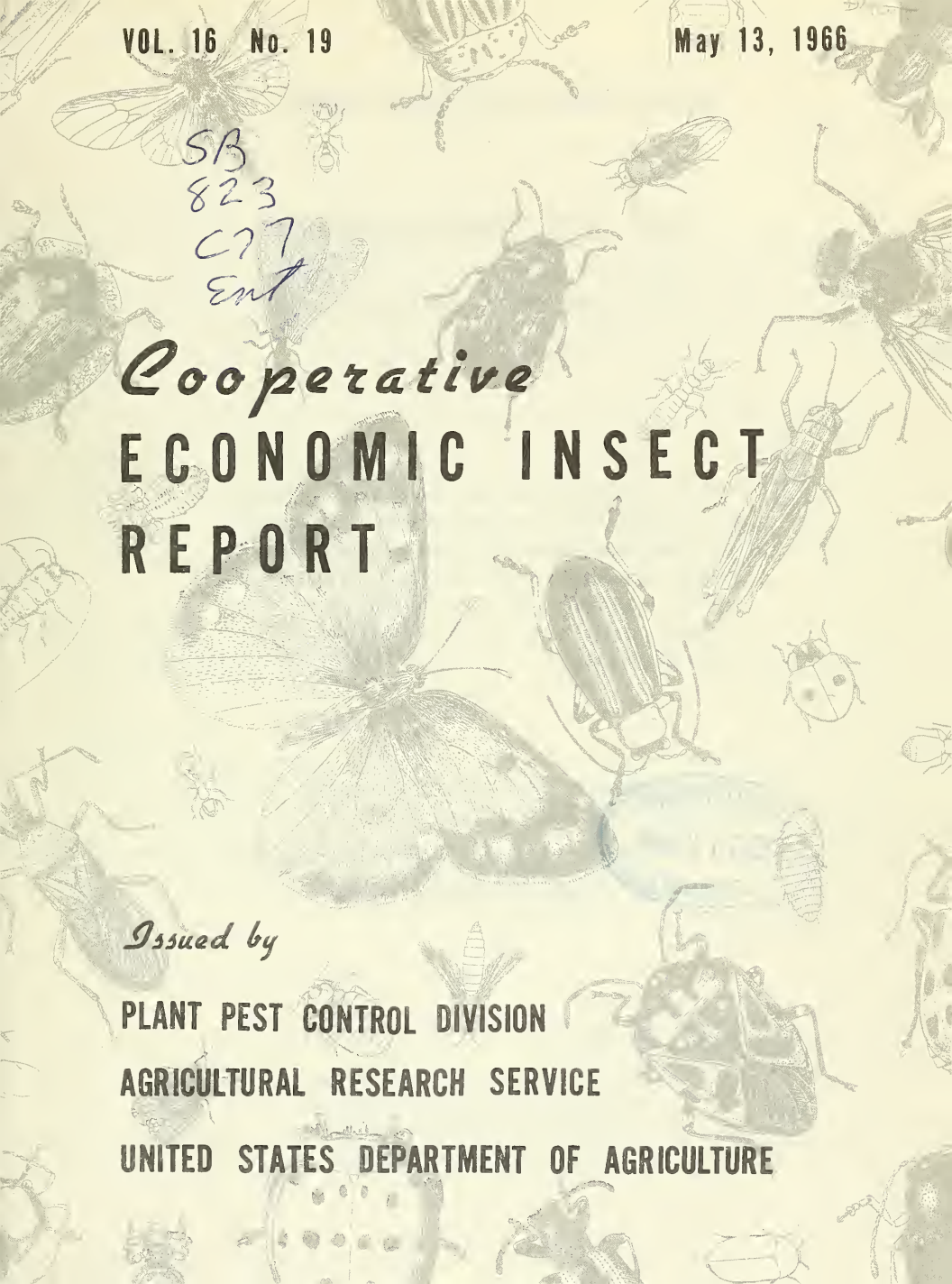

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Volume 16 May 13, 1966 Number 19

COOPERATIVE ECONOMIC INSECT REPORT

Current Conditions

ARMYWORM larvae appearing in Illinois and Missouri; Heliothis spp. larvae and adults increasing on several crops in southern areas. (p. 405). EUROPEAN CORN BORER overwintering survival highest since 1959 in New Jersey. SOUTHWESTERN CORN BORER pupating in Mississippi. ARMY CUTWORM and PALE WESTERN CUTWORM destructive to small grains in Colorado. (p. 406). ALFALFA WEEVIL continues destruction in many areas of the Nation. (pp. 407-408). GRASSHOPPERS hatching in Utah and Oklahoma. (p. 418). WHITE-FRINGED BEETLES destroyed stands of cotton, corn and beans in Alabama. (p. 419). CABBAGE LOOPER and BEET ARMYWORM heavy in cotton in Arizona. (p. 411).

Pupation of CODLING MOTH nearly over in Indiana. (p. 412). PLUM CURCULIO egg laying underway in Alabama. EUROPEAN RED MITE building up on orchards in several States. WHITE PEACH SCALE crawlers active in North Carolina. (p. 413).

EUROPEAN PINE SAWFLY hatched in Ohio but not in Michigan. Damage to various hardwoods by TENT CATERPILLARS very noticeable throughout the Nation. (p. 415).

Populations of MOSQUITOES expected to increase in most States. (p. 416). HORN FLY populations building up in several states. LONE STAR TICK averaged 400 per head on cows in Oklahoma. (p. 417).

Predictions

Numerous egg deposits of VARIEGATED CUTWORM indicate possible heavy infestations in Willamette Valley of Oregon. (p. 411).

Detection

PEAR SAWFLY (Hoplocampa brevis) reported for the first time from RHODE ISLAND. (p. 412).

A BRACONID (Apanteles crambi) reported for the first time in Delaware. (p. 418).

Additional new county records for other species reported on page 422.

● Detection Reminder - Look for these Apple Pests. (p. 423).

Reports in this issue are for week ending May 6 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING MAY 9

HIGHLIGHTS: (1) Very cold weekend. North Central and Northeast. (2) Heavy showers again in Texas.

TEMPERATURE: The week averaged warm in the West and cool in the East. This followed 2 weeks of rather cool conditions in the Rocky Mountains and northern Plains areas. The strong, warming trend in the West sent temperatures into the 80's and 90's from Mexico to Montana by Friday. Temperatures were at record high levels in the lower Missouri Valley. The East remained cool but at the weekend a new mass of cold air affected the northern Plains and east to New England. Near record low temperatures were occurring late Sunday from Montana to Maine and local snows occurred in Pennsylvania and other areas.

Weather continued on page 422.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - MISSOURI - Adult observed in Columbia, Boone County, April 21. Two larvae observed in pasture in Jasper County on May 4. (Thomas). Hatching in southern Pemiscot and Dunklin Counties May 5. Larvae ranged 0-3 per square foot. (Houser). ILLINOIS - None found in wheat in southern area but occasional small larvae swept from grass. (White, Moore). TEXAS - Light but increasing on small grains in Kaufman, Denton, Collin and Rockwall Counties. (Turney). FLORIDA - Larvae very light on oats at Gainesville, Alachua County. (Mead).

CORN EARWORM (Heliothis zea) - ALABAMA - Numerous larvae 2-15 days old feeding in fields of crimson clover and vetch and along roadsides in Montgomery, Dallas, Marengo and Perry Counties; about 25,000 per acre. Few adults of TOBACCO BUDWORM (H. virescens) in flight around lights in Lee County. Heliothis spp. larvae abundant on various hosts near cotton; about 25,000 to 30,000 per acre based on sweep counts. (McQueen). MISSISSIPPI - First and fourth instars of H. zea light on alfalfa in Holmes County. (Dinks). TEXAS - Heliothis spp. eggs and/or larvae found on following in host plant survey: Indian paintbrush, bluebonnets, wild verbena, Texas star, wild geranium, evening-primrose and spiderwort. Heaviest on Indian paintbrush and Texas star; 73 specimens collected as eggs or larvae from Indian paintbrush and Texas star determined as H. zea when reared to fifth instar. (Cowan et al.). OKLAHOMA - First H. zea adults of season taken in light trap near Altus, Jackson County, May 3. (Okla. Coop. Sur.). H. zea larvae damaged some fruits in grapefruit grove on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Long-distance movement reached to 5 miles north of Elberta, Utah County, where 6 pale adults including 2 males, taken on Cheririnia repanda and other hosts in 400 sweeps. (Knowlton, Murphy).

GREENBUG (Schizaphis graminum) - MISSOURI - Causing severe damage to bluegrass in small spots throughout western half of State. Apparently originated with overwintering aphids. (Thomas, Craig). MINNESOTA - First record for season April 29 in counties bordering Iowa; collected in windsock trap on same date at St. Paul. Extremely low throughout area. (Minn. Ins. Rpt.).

POTATO LEAFHOPPER (Empoasca fabae) - ILLINOIS - One specimen, apparently this species, swept from alfalfa in southern area. (White).

SIX-SPOTTED LEAFHOPPER (Macrosteles facifrons) - MISSOURI - Averaged 500 per square foot in barley in 2 fields near Newburg, Phelps County, April 28. Ten percent adults. Barley severely stunted and yellowed. Heavy in occasional wheat field in southwestern district. (Houser, Thomas). WISCONSIN - Females range 1-4 per 100 sweeps in grain in Spring Green and La Crosse-Trempealeau regions. (Wis. Ins. Sur.). MINNESOTA - Appeared in alfalfa and small grains after 2 days of strong south winds. Generally low in east central and central districts; highest counts 1 per 10 sweeps in alfalfa in central district. First reported week of April 25 in extreme southern counties. Reported for first time in central and east central counties May 5. (Minn. Ins. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Light buildup noted in alfalfa in most areas of Cochise County, especially in Steward district. (Ariz. Coop. Sur.). OKLAHOMA - Ranged 50-500 per 10 sweeps in most alfalfa in northwest and north central areas. Up to 2,400 per 10 sweeps in Major County field. Heavy in Blaine County. Averaged 5 per 10 sweeps in sweetclover in Garfield County. (Okla. Coop. Sur.). VIRGINIA - Winged form collected from alfalfa in Prince Edward County; also in 2 fields of clover in Cumberland County. First report of season. (Pienkowski, Isakson).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEW JERSEY - Average overwintering survival of larvae in 105 corn fields throughout State highest since 1959. (Ins.-Dis. Newsltr.). NORTH DAKOTA - Reported for the first time in Rolette County. Survey in Dickey and Sargent Counties showed 20 percent mortality of overwintering larvae. Mortality appears lower than in 1965. (Brandvik).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - MISSISSIPPI - Pupating in old corn stubble in Oktibbeha County. Emergence beginning. (Davis). First moth of overwintering generation caught in light trap May 5 in county. (Douglas).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - ALABAMA - Larvae noted in isolated fields of young corn in Montgomery and other counties. Entering stalks below ground line and feeding on lower bud section causing center 2 or 3 leaves to die. (McQueen).

NORTHERN CORN ROOTWORM (Diabrotica longicornis) - ILLINOIS - Field averages for number of eggs per pint of soil ranged 0.8 to 36.4 in northern area. (Weekman, Petty).

CHINCH BUG (Blissus leucopterus) - TEXAS - Heavy on corn 3-12 inches high in following counties: Gonzales, Bastrop, Karnes, Goliad, Live Oak, Jim Wells, Refugio, Victoria, Wharton, Colorado and Austin. Heaviest near good overwintering sites. (Parker).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - MINNESOTA - Winged forms and small nymphs in winter grains, roadside grasses and emerging spring grains. Generally low in east central and central districts. Ranged 5-22 per linear foot of row on oats in Scott County. Yellow feeding spots very evident on seedlings. Few lady beetles in some fields. (Minn. Ins. Rpt.). WISCONSIN - Alates and nearly full-grown apterae range 1-10 per 100 sweeps in grain in Spring Green area. Ranged 4-12 per 100 sweeps in La Crosse-Trempealeau area; about 50 percent alates. (Wis. Ins. Sur.). ILLINOIS - Varied 160-1,360 (average 552) per 100 sweeps in wheat just heading in southeast district. (White). OHIO - Low levels in 11 wheat fields in northwestern and western areas. Averaged 4 per 50 sweeps. (Rose). ARKANSAS - Continues numerous in wheat in northeast. Lady beetles building up. (Boyer).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - MINNESOTA - In extreme southern counties April 27. Ranged 1-2 per 100 sweeps in small grain. (Minn. Ins. Rpt.).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Light to moderately heavy in barley fields in Dona Ana County. (Elson, Nielsen).

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Larvae require control in scattered wheat fields in Baca, Bent, Crowley, Otero and Prowers Counties. (Fitzsimmons et al.).

PALE WESTERN CUTWORM (Agrotis orthogonia) - COLORADO - Required replanting and controls in barley in Weld County. (Urano).

A THRIPS (Frankliniella bispinosa) - FLORIDA - Abundant on oats and rye at Gainesville, Alachua County. (Mead).

TURF, PASTURES, RANGELAND

A CHINCH BUG (Blissus insularis) - TEXAS - Medium to heavy on St. Augustine lawns throughout Travis County area. Earlier than usual this year with rapid buildup. (Thompson).

A LEAFHOPPER (Dikraneura carneola) - UTAH - Very numerous on range grasses and lighter on fall wheat about 10 miles north of Elberta in Utah County. (Knowlton).

A CERAMBYCID BEETLE (Derobrachus brevicollis) - GEORGIA - Large numbers in some Bahia grass pastures in south section. (Jordan, May 1).

FRIT FLY (Oscinella frit) - CONNECTICUT - Larvae attacking developing whorls of reed canarygrass at Storrs. (Savos).

A MAY BEETLE (Phyllophaga congrua) - MISSOURI - Emerging in Columbia, Boone County. Det. by W. S. Craig. (Peters).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - IDAHO - Adults and egg deposition general in Cherry Lane and Lenore, Nez Perce County. Third instars indicate continual activity in spite of plant-damaging freeze April 18. (Kambitsch, O'Keeffe, Portman). WYOMING - Adult activity increasing in alfalfa fields of Hot Springs, Washakie, Big Horn and Park Counties. Ranged 2-3 adults per sweep. Mating noted in all areas. (Pfadt, Marks). UTAH - Adults ranged 1-5 per 25 sweeps in Cache County alfalfa fields. (Knowlton). COLORADO - Larvae light to moderate; 0-250 per 100 sweeps in scattered alfalfa fields in Baca, Bent, Crowley, Otero and Prowers Counties. (Colo. Ins. Sur.). MISSOURI - Nearly all alfalfa fields in "delta" area of southeastern district treated. Early to late instars ranged 200-500 per 10 sweeps. Pupation well underway; adults ranged 5-10 per 10 sweeps in Pemiscot County. First cutting in some fields destroyed. In all other fields, 80-100 percent of terminals damaged. Larvae ranged 100-150 per 10 sweeps near Cape Girardeau; 50-70 percent of terminals damaged. Larvae ranged 10-15 per 10 sweeps near Farmington, St. Francois County. Ten percent of terminals damaged. Larvae ranged 0-15 per 10 sweeps in Jefferson, Washington, Crawford, Gasconade, and Franklin Counties. Less than one percent of terminals showed damage in those counties. St. Francois, Jefferson, Washington, Crawford, Gasconade and Franklin are new county records. (Houser). ILLINOIS - Adults 0-69 per 100 sweeps in alfalfa in southern half of State. Larvae varied 0-80 per sweep. Heaviest in southern two tiers of counties where estimated 75 percent of first cutting lost. Badly damaged square foot in Hardin County revealed 144 cocoons. Larvae in that field averaged 80 per sweep. All stages found in most fields. Adults still mating and laying eggs. Examination of 25 cocoons showed 4 percent contained dead larvae, 48 percent living larvae or prepupae and 48 percent contained living pupae. (White, Petty, Moore). INDIANA - Following new county records reported: Putnam, Warren, Marion, Hamilton, Hancock, Union and Fayette. (Matthew, Huber). Untreated alfalfa severely damaged in Harrison County; first cutting total loss in many instances. Heavy (70-100 percent terminal injury) in areas of Washington, Vanderburgh, Knox and Switzerland Counties. (Huber, Wilson). All populations reaching economic proportions in fields in southern quarter of State. Northernmost measurable infestations in Greene County (33 percent terminal injury in one field) and Franklin County (25 percent terminal injury). (Huber, Matthew).

OHIO - Spread of economic populations evident in counties with moderate damage to crop last year. Clinton and Brown Counties in southwest now may require treatment. (Fladt). Stand in Brown County averaged 25 larvae per sweep. Adult numbers low (9 per 50 sweeps). All instars present in southern area. (Rose). In Washington County, larvae built up at very rapid rates past week. Where spraying at recommended rates, some excellent control obtained. High on untreated alfalfa; 300 larvae and 30 adults per 10 sweeps. Feeding caused estimated 50 percent leaf damage and whitish-gray cast. (Gehres). Larvae active in Fairfield County; many farmers spraying. (Taylor). Heavy rain past weekend washed some insecticide off treated alfalfa in Jackson County. (Marhoover). MASSACHUSETTS - Adults, first instars and eggs in 4 fields in Hampden and Hampshire Counties first week of May. In spite of low temperatures, activity appears normal. Some adult feeding damage noted. (Miller). First, second and fourth instars present in West Bridgewater area; fourth instars badly hurt by frost last week. (Wave). RHODE ISLAND - No foliage feeding evident. Examination of 50 stems in field in Kingston yielded one batch of eggs; 45 adults per 100 sweeps of same field; no larvae. (Mathewson). CONNECTICUT - Adults appearing on alfalfa in Storrs; 3 adults collected in 75

sweeps. (Savos). NEW YORK - Small larvae found at base of 3 to 5-inch alfalfa in Ulster County; adults found occasionally. (N. Y. Wkly. Rpt., May 3). NEW JERSEY - Larval injury more apparent in many Salem and Gloucester County alfalfa fields. Larvae ranged 100-1,000 (averaged 402) per 100 sweeps in 14 fields. Larvae ranged from newly hatched to third instars. In same fields, adults ranged 2-250 per 100 sweeps. Larval feeding varies, but generally 50-75 percent terminal buds show damage. In field near Cranbury, larvae averaged 10 and adults 40 per 100 sweeps. Feeding injury on about 25 percent of terminal buds. (Ins.-Dis. Newsltr.). DELAWARE - Larval populations increased greatly on alfalfa in Kent and Sussex Counties. Averaged 100 per 10 sweeps; feeding injury moderate to rather heavy in areas. Larvae much less numerous on alfalfa in New Castle County. Adults very common on alfalfa throughout State; daytime counts averaged 10 per 10 sweeps. (Burbutis). MARYLAND - Hatch reached peak in central sections. Terminal injury from larvae ranged 30-100 percent of plants in Frederick County. (U. Md., Ent. Dept.). VIRGINIA - All stages in alfalfa in Cumberland and Buckingham Counties. Larvae ranged 11-120 per sweep, averaged 40. Fields badly damaged with tops turning white. Alfalfa 10-12 inches high (Isakson). Larvae averaged 10 per sweep in several locations in Bedford County. Few adults noted. (Saucier). NORTH CAROLINA - Caused moderate damage to one-half of 13-acre field of ladino clover in Union County. Det. by D. A. Mount. (Simpson). MISSISSIPPI - Larval populations dropped to very low level in Holmes and Leflore Counties. Newly emerged adults increased; very high in both counties. (Dinkins).

CLOVER LEAF WEEVIL (Hypera punctata) - VIRGINIA - Averaged 5 larvae per 10 sweeps in clover in Cumberland County. (Isakson). Larvae severe in spots of red clover in Northumberland County. (Isakson, Coggsdale). OHIO - Larvae noted in Mercer, Columbiana, Madison, Greene, and Preble Counties. (DeBrosse et al.). Reports during last few weeks indicate that either populations have increased this year or concern over spread of H. postica brought pest to repeated inquiry. (Rose). UTAH - Occasionally found in alfalfa fields in northern section. (Knowlton).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - ILLINOIS - Adults varied 0-80 (average 27) per 100 sweeps; larvae infested 100 percent of stems in 3 red clover fields in the southeast district. (White). IDAHO - Overwintering adults occasionally in sweeping alfalfa fields in Cherry Lane and Lenora, Nez Perce County. (Kambitsch, O'Keeffe, Portman).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Larvae continue heavy in crimson clover fields where blooming delayed due to late grazing in Greene, Geneva and other central counties. Controls applied in some fields where harvested seed crop anticipated. (Johnson et al.).

SWEET CLOVER WEEVIL (Sitona cylindricollis) - UTAH - Conspicuously damaging sweetclover at Penrose, Box Elder County, and moderately damaging at Camp Williams, Salt Lake County. (Knowlton). IDAHO - Few adults and some leaf feeding in several alfalfa fields near Cherry Lane Bridge and Lenore, Nez Perce County. (Kambitsch, Portman, O'Keeffe).

CLOVER ROOT CURCULIO (Sitona hispidula) - IDAHO - Adults general in all sweep collections in alfalfa in Cherry Lane and Lenore areas, Nez Perce County. (Kambitsch, O'Keeffe, Portman).

PEA LEAF WEEVIL (Sitona lineata) - CALIFORNIA - Adult light on vetch in Dublin, Alameda County. This is a new county record. (Cal. Coop. Rpt.).

WEEVILS (Sitona spp.) - MINNESOTA - In alfalfa in east central and central districts. First activity this season; counts very low. (Minn. Ins. Rpt.).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - VIRGINIA - Averaged 20 per sweep in Cumberland County. Light on alfalfa in Buckingham and Roanoke Counties. Ranged 10-25 per sweep. (Isakson).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSOURI - Adults ranged 0-3 per 10 sweeps in alfalfa in southern two-thirds of State. (Jackson, Houser, Thomas).

THREE-LINED POTATO BEETLE (Lema trilineata) - INDIANA - First adult of season on alfalfa May 4 in Hancock County. (Huber).

VETCH BRUCHID (Bruchus brachialis) - CALIFORNIA - Single adult, collected at San Ramon, Contra Costa County, April 13, 1966, by F. L. Blanc, is a new county record and the first find in central section of State. Also known in Del Norte, Siskiyou and Butte Counties. (Cal. Coop. Rpt.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Increasing rapidly in alfalfa fields in all areas of Cochise County. Averaged 1,200 per 100 sweeps. Heavy in old stands in Graham County. (Ariz. Coop. Sur.). NEW MEXICO - Building up in alfalfa fields in Chaves and Valencia Counties; mostly light. (Mathews, Kloepfer). TEXAS - Heavy in untreated vetch in Rockwall County. (Turney). ARKANSAS - Low in alfalfa in Miller County; apparently reduced by extremely heavy rains; 18-20 inches in April. (Boyer). OKLAHOMA - Ranged 175-800 per 10 sweeps in most fields of unsprayed alfalfa in Major, Alfalfa, Grant, Garfield, and Payne Counties. Field in Major County averaged 1,550 per 10 sweeps. Averaged 450 per 10 sweeps in sweetclover in Garfield County. Ranged 5-45 per 10 sweeps in alfalfa in Woods, Harper, and Woodward Counties. Parasites and predators very numerous in all areas. (Okla. Coop. Sur.). MISSOURI - Ranged 100-500 per 10 sweeps in alfalfa in the east central, southeastern and southwestern districts. Syrphid fly larvae ranged 200-300 per 10 sweeps in red clover in east central and southeastern districts. (Houser, Thomas). ILLINOIS - Low, 10-600 per 100 sweeps in 10-12 inch clover and alfalfa in the southeast district. (White). MICHIGAN - Adults and nymphs widely distributed but low. Expected rapid buildup on alfalfa. (Dowdy). WISCONSIN - Remains low; parasitism high, better than 30 percent in many fields. Mummies evident in southern counties. (Wis. Ins. Sur.). MINNESOTA - In alfalfa in east central and central districts. First activity of season; counts very low. (Minn. Ins. Rpt.). SOUTH DAKOTA - Low, 50 per 100 sweeps in early alfalfa field near James River at Olivet, Hutchinson County. At least 2 percent parasitism by Hymenoptera in sample. Alfalfa generally behind growth compared with 1965. (Jones). WYOMING - First appearance of season in alfalfa fields of Hot Springs County. (Pfadt, Marks). IDAHO - Suprisingly low numbers in Canyon County, alfalfa fields. Lacewings, lady beetles and parasitized aphids in numbers. (Homan). VIRGINIA - Averaged 20 per sweep in Cumberland County. Light on alfalfa in Buckingham and Roanoke Counties. Ranged 10-25 per sweep. (Isakson). MARYLAND - Ranged 5-25 per sweep on alfalfa in Ann Arundel and Talbot Counties. (U. Md., Ent. Dept.). DELAWARE - Increased considerably on alfalfa in most areas; ranged 20-300 per 100 sweeps; highest in Kent County. (Burbutis).

COWPEA APHID (Aphis craccivora) - OKLAHOMA - Continues in isolated fields. Averaged 100 per 10 sweeps in alfalfa field in Major County and 35 per 10 sweeps in sweetclover in Garfield County. (Okla. Coop. Sur.).

YELLOW CLOVER APHID (Therioaphis trifolii) - ILLINOIS - Ranged 0-1,240 (averaged 413) per 100 sweeps in 10 to 12-inch red clover in southeast district. (White).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Adults rather common on alfalfa throughout State. (Burbutis). VIRGINIA - Adults ranged 3-6 per 10 sweeps of alfalfa and clover in Cumberland County. (Isakson). ILLINOIS - Adults ranged 0-60 per 100 sweeps in clover and alfalfa in southeast district. (White). WISCONSIN - Adults of L. lineolaris and recently hatched nymphs, possibly Adelphocoris lineolatus, becoming common in more advanced alfalfa fields. (Wis. Ins. Sur.). ARKANSAS - L. lineolaris increased in legumes in southwest but noneconomic. Adults ranged 50-100 per 100 sweeps. No nymphs found. (Boyer).

LYGUS BUGS (Lygus spp.) - MINNESOTA - In alfalfa in east central and central districts. First activity of season; counts very low. (Minn. Ins. Rpt.). UTAH - Ranged 1-5 per 25 sweeps in Cache County alfalfa fields. (Knowlton). ARIZONA - Nymphs increased but remain below normal in alfalfa and safflower fields in Maricopa, Yuma, Pinal, Cochise and Graham Counties. (Ariz. Coop. Sur.).

RAPID PLANT BUG (Adelphocoris rapidus) - ILLINOIS - Nymphs varied 10-20 per 100 sweeps in 3 red clover fields in southeast district. (White).

SUPERB PLANT BUG (Adelphocoris superbus) - ARIZONA - Nymphs ranged 30-60 per 100 sweeps in alfalfa fields of Graham County. (Ariz. Coop. Sur.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - OKLAHOMA - First of season taken in alfalfa in Garfield County; averaged 0.5 per 10 sweeps. (Okla. Coop. Sur.). NEW MEXICO - Common in alfalfa fields in most southern counties. Ranged 3-14 per 50 sweeps in Dona Ana County alfalfa. (Elson, Neilsen). Ranged 0-4 per 50 sweeps in Chaves County alfalfa. (Mathews). ARIZONA - Continues light in alfalfa in Cochise and Pima Counties. Some increases noted in Pinal and Maricopa Counties. (Ariz. Coop. Sur.).

MEADOW SPITTLEBUG (Philaenus spumarius) - WISCONSIN - Hatching in southern counties. (Wis. Ins. Sur.). IDAHO - Third instars in several alfalfa fields near Cherry Lane Bridge and Lenore, Nez Perce County. (Kambitsch, Portman, O'Keeffe).

ARMY CUTWORM (Chorizagrotis auxiliaris) - WYOMING - Larvae ranged 0-0.75 per square foot in alfalfa fields of Hot Springs, Washakie, Big Horn and Park Counties. (Pfadt, Marks).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Early instars ranged 0-2 per 20 sweeps in alfalfa in Montgomery and Gasconade Counties. (Houser).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Larvae ranged 2-5 per 50 sweeps in southern Dona Ana County alfalfa fields. (N. M. Coop. Rpt.). UTAH - Small numbers near Salt Lake City, Salt Lake County. (Knowlton).

CLOVER HEAD CATERPILLAR (Grapholitha interstinctana) - ILLINOIS - Adults varied 0-20 per 100 sweeps in clover and alfalfa in southeast district. (White). MICHIGAN - Few adults and larvae in Monroe County alfalfa. (Dowdy).

GREEN CLOVERWORM (Plathypena scabra) - ILLINOIS - Larvae varied 0-30 per 100 sweeps in clover and alfalfa in southeast district. (White).

A SPIDER MITE (Petrobia apicalis) - TEXAS - Attacking 20-acre field of white clover near New Boston, Bowie County. Lower leaves of most plants killed; many top leaves lost considerable color. (Lynch).

BROWN WHEAT MITE (Petrobia latens) - COLORADO - Numerous in some alfalfa in Otero County. No damage evident. (Schweissing, Hantsbarger, Jenkins).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - One specimen found in field of seedling cotton in McLennan and Falls County area; 7 weevils collected from 12 flight screens installed April 11. First weevil collected April 18. In 1965, 14 weevils collected during this period. Only 1 weevil collected during entire 1964 season. Weevils removed from hibernation cages beginning May 2; survival percentage as follows: 0.2 in 2 cages containing 1,000 field collected weevils installed November 1, 1965; 0 in cage containing 137 weevils removed from ground trash and rehibernated on December 15, 1965; and 9.1 in a cage containing 33 weevils removed from ground trash and rehibernated in March 1966. Two weevils were removed from 3 cages containing green bolls collected in November and placed on soil surface and 2 from 3 cages containing green bolls placed on screens 6 inches above the soil surface in November. Two weevils removed from 6 cages containing bollie cotton collected from standing stalks in March. (Cowan et al.). ALABAMA - Surveys on 4 cotton demonstration farms in Dallas County where overwintering weevil counts made in March show farm A - 0, farm B - 0, farm C - 1 per 1,000 feet or 13 per acre, and farm D - 11 per 1,000 feet or 143 per acre. Cotton in 2-5 leaf stage; oldest cotton on farm D. (McQueen).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Heavy in scattered areas throughout Pinal and Maricopa Counties. Some replantings necessary; controls used on many fields. Heaviest in West Chandler and Buckeye areas, Maricopa County. (Ariz. Coop. Sur.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Heavy damage in 10 percent of cotton fields of Pinal and Maricopa Counties. Light to moderate in Yuma County. (Ariz. Coop. Sur.).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Inspections of croton and horsemint plants during March, April and first week of May show gradual buildup on these hosts. Inspections in 5 fields of seedling croton plants showed 5 per 100 plants; averaged 5.7 per 100 horsemint plants and 2 per sweep. Average in 4 fields of evening-primrose 3.4 per 100 plants. Average of 2.9 per sweep found in field of wild verbena. (Cowan et al.).

FLEAHOPPERS - TEXAS - Increased in Rio Grande Valley especially in areas of Hidalgo County. (Parker, Hanna).

COTTON APHID (Aphis gossypii) - ALABAMA - Light to extremely heavy on 2 farms where no controls applied. None on 2 farms where systemic insecticides applied. (McQueen).

APHIDS - NEW MEXICO - Aphids, probably Aphis craccivora, appearing on seedling cotton in most cotton fields in southern Dona Ana County. Small number parasitized. (Elson, Nielsen). ARIZONA - Aphids present on seedling cotton in Graham and Pima Counties. Natural enemies giving controls in most fields. (Cott. Ltr.). TEXAS - Increasing in some fields in Rio Grande Valley. (Parker, Hanna).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Moderate to heavy damage in Pinal and Maricopa Counties. Serious damage in Queen Creek, Picacho, West Chandler and Casa Grande areas. Lighter in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Thrips, mostly F. occidentalis, relatively light on emerging cotton foliage in southern Dona Ana County. (Elson, Nielsen).

TOBACCO

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - VIRGINIA - Very light to medium damage to tobacco seedlings around margins of several plant beds in Pittsylvania County. (Dominick, Apr. 28). NORTH CAROLINA - Damaging tobacco in beds and fields throughout Columbus County. (Read).

FLEA BEETLES - GEORGIA - Heavy on tobacco throughout growing area. (Jordan). SOUTH CAROLINA - Damaging tobacco in Clarendon County. (Benton).

TOBACCO WIREWORM (Conoderus vespertinus) - NORTH CAROLINA - Damaged few fields of tobacco in Columbus County April 29. First reports of damage this season. (Read).

SUGAR BEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Pupae found in 1965 sugar beet fields; adults expected soon in new plantings. (Horn, Urano).

MISCELLANEOUS FIELD CROPS

VARIEGATED CUTWORM (Peridroma saucia) - OREGON - Numerous deposits of eggs in Willamette Valley field crops indicate possible heavy infestation later. (Morrison).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - OREGON - Moderate on hops in Josephine County. (Westigaard).

GARDEN SYMPHYLAN (Scutigerella immaculata) - OREGON - Appearing in some areas of Willamette Valley for first time this year. (Morrison).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - MARYLAND - First adults of season noted May 5 on small potato plants in Anne Arundel County. (U. Md., Ent. Dept.).

FLEA BEETLES (Epitrix sp.) - MARYLAND - Adults moderate to heavy on newly set tomatoes and young potato plants in Anne Arundel County. (U. Md., Ent. Dept.).

COLE CROPS

DIAMONDBACK MOTH (Plutella maculipennis) - UTAH - Numerous on wild mustards in Thatcher-Penrose area, Box Elder County, Elberta and north in Utah County, and Camp Williams, Salt Lake County. (Knowlton).

CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) - CALIFORNIA - Adults medium on radish plants in Redding, Shasta County. (Cal. Coop. Rpt.).

CUCURBITS

STRIPED CUCUMBER BEETLE (Acalymma vittata) - ALABAMA - Heavy and damaging on cucumbers in Perry and De Kalb Counties. (Bates, Smith).

TOBACCO WIREWORM (Conoderus vespertinus) - NORTH CAROLINA - Damaged 20 percent of 1.25 acres of cucumbers in Nash County. Plants 2-3 inches high. Feeding on sides of stems allowed disease organisms to enter. This is first report in State of this species attacking cucumbers. (Hughes, Mount).

DECIDUOUS FRUITS AND NUTS

PEAR SAWFLY (Hoplocampa brevis) - RHODE ISLAND - Adult female taken from sticky board trap in pear orchard May 3 in Providence, Providence County. Det. by D. R. Smith. This is a new State record. (Mathewson).

CODLING MOTH (Carpocapsa pomonella) - INDIANA - About 90 percent of overwintering larvae pupated by May 3 in Knox County area. (Dolphin).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - WISCONSIN - Larvae feeding on opening buds of apples in Dane County. (Wis. Ins. Sur.). MICHIGAN - Early instars infesting 25 percent of apple buds checked in Monroe County home orchard May 2. (Dowdy).

TENT CATERPILLARS (Malacosoma spp.) - OREGON - Larger number of tents of M. pluviale than last year on apples, pears, sweetgum, hawthorn, rose and alder throughout the Willamette Valley. (Larson, Bluhm). MICHIGAN - Six to eight larval colonies of M. americanum per 7-foot wild cherry tree noted May 4; all first instars. (Newman). NEW YORK - Larvae observed in young orchard in Essex County April 27. (N. Y. Wkly. Rpt.).

APHIDS - ALABAMA - Anuraphis rosea and Aphis pomi continue heavy on many isolated apple trees in Lee and other central Counties. (Bagby et al.). WISCONSIN - Rhopalosiphum fitchii fundatrices producing offspring in more advanced area of western Dane County. Not quite reached maturity in other areas. (Wis. Ins. Sur.). MICHIGAN - Stem mothers of R. fitchii common on apple foliage in Ingham and Monroe Counties. (Dowdy).

PLUM CURCULIO (Conotrachelus nenuphar) - NORTH CAROLINA - Eggs and larvae light on peaches near Ellerbe in Sandhills May 3. (Smith). ALABAMA - Egg laying underway on plums and peaches in home orchards and on wild fruit in Dallas, Greene, Lee and other counties. (McQueen).

SHOT-HOLE BORER (Scolytus rugulosus) - NORTH CAROLINA - Severe on peaches in 2 blocks of trees near Wadesboro, Anson County. Controls recommended. (Smith).

EUROPEAN RED MITE (Panonychus ulmi) - NEW JERSEY - Larvae quite plentiful on trees at Bridgeton and Masonville. (Ins.-Dis. Newsltr.). PENNSYLVANIA - Five percent hatched on apples in Adams County. (Asquith). OHIO - Overwintering eggs hatching over most of State. (Still et al.). INDIANA - Many larvae and proto-nymphs present on apple foliage in Knox County area; majority of eggs unhatched. (Dolphin).

PEAR LEAF BLISTER MITE (Eriophyes pyri) - MICHIGAN - First injury noted May 2 in Monroe County on pear foliage approximately 1.5 inches long. (Dowdy).

PECAN NUT CASEBEARER (Acrobasis caryae) - ALABAMA - Larvae of overwintered genera-tion entering stems of new growth shoots in central counties. (Johnson, Bagby et al.). LOUISIANA - First moth caught in light trap at Shreveport, Caddo Parish, May 8. (Calcote). TEXAS - Larvae continue in Wilbarger County; no pupation. (Boring). Larvae in Brazos County; large numbers of pupae found in shoots and on cardboard bands. (Parker).

PECAN SHUCKWORM (Laspeyresia caryana) - TEXAS - Marked increase during last few days. (Parker).

A PECAN PHYLLOXERA (Phylloxera sp.) - TEXAS - Heavy near Rockwall, Rockwall County. (Corbin).

BLACK-MARGINED APHID (Monellia costalis) - OKLAHOMA - Heavy on pecan trees in Choctaw County. (Okla. Coop. Sur.).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - NORTH CAROLINA - Eggs and crawlers on peaches in Sandhills and Wake County areas May 4. Ranged light to heavy. (Smith).

A XYELID SAWFLY (Megaxyela sp.) - SOUTH CAROLINA - Damaging pecan foliage in Allen-dale County. Det. by R. C. Fox. (Nettles, May 3).

CITRUS

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Continues heavy in citrus areas of Maricopa and Yuma Counties. Controls necessary. (Ariz. Coop. Sur.).

COTTONY CUSHION SCALE (Icerya purchasi) - ARIZONA - Continues spread in citrus groves in Yuma County. (Ariz. Coop. Sur.).

OTHER TROPICAL AND SUBTROPICAL FRUITS

AN ERMINE MOTH (Argyresthia eugeniella) - FLORIDA - Severe on guava at Marco Island, Collier County. (Williams, Apr. 28).

SMALL FRUITS

APHIDS - MARYLAND - Chaetosiphon sp. abundant on new growth of strawberries at Glendale, Prince Georges County. (U. Md., Ent. Dept.). CALIFORNIA - Amphorophora sp. probably rubi medium on Olallie blackberry bushes in Watsonville, Santa Cruz County. Chaetosiphon fragaefolii heavy on strawberry nursery stock in Arroyo Grande, San Luis Obispo County. (Cal. Coop. Rpt.).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - NEVADA - First instars present on grapes in Las Vegas, Clark County. (Zoller). ARIZONA - Adults moderate to heavy on backyard grape plantings in Phoenix area, Maricopa County. Egg colonies numerous. (Ariz. Coop. Sur.).

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - OREGON - Adults moderate in Washington County strawberry fields last week of April. (Goeden).

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) - MICHIGAN - Egg masses common in some blueberry plantings in southwestern area. (Nelson, Newman).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - OREGON - Larvae infesting 5 percent of strawberry field in Washington County. (Torvend, Apr. 28).

RASPBERRY CANE MAGGOT (Pegomya rubivora) - OREGON - Injury to new canes noted in raspberry fields of Linn County. (Rosensteil).

GENERAL VEGETABLES

ASPARAGUS BEETLE (Crioceris asparagi) - DELAWARE - Adult feeding injury and egg laying noted in several areas. (Burbutis). CONNECTICUT - Feeding on emerging asparagus spears. (Savos).

ONION MAGGOT (Hylemya antiqua) - TEXAS - Heavy in several onion fields in Hale County. (Rummel).

ONION THRIPS (Thrips tabaci) - MARYLAND - Infesting onions in Anne Arundel and Prince Georges Counties. (U. Md., Ent. Dept.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - NEW MEXICO - Ranged 1-20 adults and nymphs per plant in Dona Ana County onion fields. (Elson).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Continues heavy in lettuce throughout Pinal and Maricopa Counties. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Moderate on vegetables and melons in Deer Valley and Goodyear areas, Maricopa County. (Ariz. Coop. Sur.).

ORNAMENTALS

ARMORED SCALES - FLORIDA - Adults of Diaspis boisduvalii and Gymnaspis aechmeae moderate to severe on leaves of 10 bromeliads (Billbergia pyramidalis) and adults of Ischnaspis longirostris moderate to severe on leaves of 5 bromeliads (Aechmea fulgens) in nursery at Miami, Dade County. (Sloan, Apr. 12). All stages of Fiorinia theae severely damaging leaves on 100 of 105 Burford hollies in nursery at Fernandina Beach, Nassau County. (King, Apr. 27). Aonidiella taxus moderate to severe on leaves of 76 of 760 Podocarpus macrophylla at nursery in Hialeah, Dade County. (Sloan, Apr. 25). Diaspis minima found on juniper in nursery at Fort Pierce, St. Lucie County (Campbell, Apr. 19). This is a new county record. (Fla. Coop. Sur.). MARYLAND - Aspidiotus perniciosus heavy on Japanese cherry and pyracantha at Annapolis, Anne Arundel County. (U. Md., Ent. Dept.).

FLORIDA WAX SCALE (Ceroplastes floridensis) - FLORIDA - All stages heavy on Ixora coccinea in nursery at Winter Haven, Polk County. (Eisenschenk, Apr. 26).

A PIT SCALE (Asterolecanium pustulans) - FLORIDA - Adults severe on stems of 36 of 45 Nerium oleander in nursery at Hialeah, Dade County. (Sloan, Apr. 25).

APHIDS - NEVADA - Cinara spp. medium to heavy on several spruce trees in Reno, Washoe County. (Cooney). OKLAHOMA - C. tujafilina continues heavy on evergreens in Stillwater, Payne County. Macrosiphum euphorbiae heavy on iris in Perry, Noble County, for past 3 weeks; probably M. euphorbiae, heavy on roses in Noble County. Hymenopterous parasites numerous. (Okla. Coop. Sur.). ARIZONA - Macrosiphoniella sanborni damaging chrysanthemum plants in Casa Grande and Coolidge areas, Pinal County, and Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

AZALEA WHITEFLY (Pealius azaleae) - MARYLAND - All stages heavy on several large azaleas in Takoma Park, Montgomery County. (U. Md., Ent.Dept.).

SPRUCE NEEDLE MINER (Taniva albolineana) - NEVADA - Five infested spruce trees from 2 out-of-state nurseries found in Winnemucca, Humboldt County. This is a new county record. (Bechtel, Martinelli). Survey negative in Hawthorne, Mineral County. (Cooney).

A LEAF BEETLE (Chrysomela interrupta) - OKLAHOMA - Adults and larvae damaging ornamental willows in Noble County. (Okla. Coop. Sur.).

FOREST AND SHADE TREES

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - WISCONSIN - Examination of samples of pine collected in Sheboygan, Manitowoc and Door Counties revealed some winter survival. Populations evidently still low. (Wis. Ins. Sur.). MICHIGAN - Larval mortality 30 percent in 25 infested shoot samples from Livingston County Scotch pine plantation May 4; most in second instar. (Newman). OHIO - About 60-80 percent of tips infested in stand of red pine near Remmington, Hamilton County; 20 trees 15 to 25 years old involved. (Rose).

SPRUCE NEEDLE MINER (Taniva albolineana) - NEBRASKA - Overwintering larvae pupating in southeast. (Roselle, Rhine).

EUROPEAN PINE SAWFLY (Neodiprion sertifer) - OHIO - Hatch began in Delaware County about April 25 on Scotch and red pines. (Hay). Larvae about 1 cm. in Hamilton County; some damage apparent. Larvae feeding on 70 percent of needles in block of small pine trees. Damage light. (Rose). Larvae active in Summit County; very small; damage not noticeable. (Rings). MICHIGAN - No hatching apparent May 4 in infested Scotch pine plantation in Livingston County. (Newman).

A CONIFER SAWFLY (Neodiprion pratti pratti) - MARYLAND - First and second instars on Virginia pines at Laurel, Prince Georges County. (U. Md., Ent. Dept.).

COOLEY SPRUCE GALL APHID (Adelges cooleyi) - OREGON - Large numbers on needles of spruce and Douglas-fir in Marion County. (Bluhm). NEW YORK - Heavy on spruce in Orange County April 25. (N.Y. Wkly. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - RHODE ISLAND - First hatch in Bristol and Cumberland April 12. More numerous in Providence area. (Veilleux, King, Mathewson). MARYLAND - Widespread and heavy on wild cherry in eastern and southern section. (U. Md., Ent. Dept.). VIRGINIA - Tents numerous statewide, 5-20 webs per tree in some central areas. (Isakson). OHIO - Active in Warren, Hamilton, Clermont and Brown Counties. Apparently widespread over southern third of State. (Rose). ILLINOIS - Very abundant in several southern areas. (White). OKLAHOMA - Pupation completed in northwest. (Okla. Coop. Sur.).

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) - UTAH - Damage to poplars in Washington County extensive and severe along Virgin River. (Dorst, Knowlton). Severe at Moab, Grand County. (Knowlton).

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Medium on oaks in Greene Valley, Solano County. Due to dry season and high daytime temperatures early in year, pest may cause loss of native oak trees. (Cal. Coop. Rpt.).

A CASEBEARER MOTH (Coleophora sp.) - CALIFORNIA - Larvae heavy and severely damaging native madrone trees locally along highway in Garden Valley area near Georgetown, El Dorado County. (Cal. Coop. Rpt.).

A GRACILLARIID MOTH - CALIFORNIA - Larvae probably Gracillaria sp. heavy on oak trees on campus of Stanford University, Santa Clara County. (Cal. Coop. Rpt.).

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) - NEVADA - Larvae heavy and damaging elms in Las Vegas, Clark County. (Zoller).

ELM LEAF BEETLE (Pyrrhalta luteola) - OKLAHOMA - Egg laying underway in Harper and Woodward Counties. Adults moderate on elms in Marshall and Cleveland Counties. (Okla. Coop. Sur.). NEVADA - Laying eggs in Hawthorne, Mineral County, and Reno-Sparks area, Washoe County. (Cooney). Adults active and feeding on elm leaves in Winnemucca, Humboldt County, and Lovelock, Pershing County. No eggs observed. (Bechtel, Martinelli). IDAHO - Larval feeding evident in Parma area, Canyon County; first adult feeding April 19 (Scott).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - MISSOURI - Emerging in Columbia, Boone County, April 28. (Williams).

MAN AND ANIMALS

MOSQUITOES - FLORIDA - Mansonia perturbans light in some sections of Gainesville, Alachua County, moderate to heavy in other sections. (Mead). NORTH CAROLINA - Aedes sollicitans no problem along coast at present; however, large numbers of first instars present in Onslow County April 29. Adults expected soon. (Ashton). OHIO - Aedes spp. pupating May 1-5 in Seneca County. First adults expected May 7-12. (Hintz). MICHIGAN - Pupae and late instar larvae of Aedes sp. numerous May 1 in Shiawassee County wooded area; adults expected during coming week. (Dowdy). WISCONSIN - Aedes sp. larvae nearly full grown (no pupae May 4); numerous in pools along Wisconsin River. Estimated 30 per square foot. Sporadic with many pools free of larvae. (Wis. Ins. Sur.). MINNESOTA - During week ending April 30, total of 1,342 larval collections made by Metropolitan Mosquito Control District. Of these 539 samples contained Aedes excrucians, 266 A. fitchii, 248 A. stimulans, 139 A. cinereus, 110 A. riparius, 61 A. aberratus, 55 A. implicatus, 40 A. flavescens, 43 A. canadensis, 20 A. punctor, 7 A. spencerii, 6 A. vexans, 5 A. sticticus, 2 A. dorsalis and one each of A. intrudens and A. trichurus. Total of 406 samples contained second instar Aedes too small to identify. Culiseta minnesotae found in 6, Culiseta morsitans in 2 and Culiseta spp. in 3 collections Pupation rapid during week of May 6. First emergence of male Aedes spp. May 4. Majority of spring Aedes will emerge by May 13 if present warm weather continues. (Minn. Ins. Rpt.). COLORADO - Adults appearing in many areas of Crowley County. (Wilshusen). UTAH - Moderately numerous in Thatcher-Penrose area, Box Elder County, and north of Elberta, Utah County. (Knowlton). OKLAHOMA - Fourth instars of Aedes nigromaculis taken in ditch in Hunter area, Garfield County. (Okla. Coop. Sur.). MISSOURI - Culiseta inornata heavy in affluent areas of sewage lagoons in Boone County. (Smith). LOUISIANA - Jefferson Parish Department of Mosquito Control larval collection first week of May yielded Aedes vexans, Culex pipiens quinquefasciatus and C. salinarius. Light trap collections increased with flood-water species A. sollicitans, A. vexans and Psorophora confinnis taken. (Stokes).

FACE FLY (Musca autumnalis) - MARYLAND - Adults averaged one per head on dairy herds on 2 farms and 7 per head on beef animals in Montgomery County; adults averaged 2 per head on 2 dairy herds and 13 per head on one dairy herd in Howard County. (Fales, May 6).

HOUSE FLY (Musca domestica) - OKLAHOMA - Increasing rapidly in Payne County; up to 100 per Scudder grid in favorable areas. (Okla. Coop. Sur.). ALABAMA - Large numbers of adults at farm home near cattle barns in Dallas County. Considerable

infestations at public building dairy barn in Lee County. (McQueen).

HORN FLIES (Haematobia irritans) - MISSOURI - Adults ranged up to 300 per animal on cattle which had shed winter coats, in Bollinger County. (Houser). OKLAHOMA - Averaged 1,500 per head on steers and 2,500 per head on bulls in Payne County. Heavy in Noble and Stephens Counties; moderate in Choctaw County. (Okla. Coop. Sur.). SOUTH CAROLINA - Sudden buildup April 24-30 at Pendleton, Anderson County. (Nettles). ALABAMA - Quite heavy on beef cattle in Greene and other western counties. Controls necessary in many instances. (McQueen).

STABLE FLY (Stomoxys calcitrans) - OKLAHOMA - First of season on cattle in Payne County; averaged 2 per head. (Okla. Coop. Sur.).

COMMON CATTLE GRUB (Hypoderma lineatum) - MISSOURI - Ovipositing in Crawford County. (Houser).

TICKS - OKLAHOMA - Amblyomma americanum averaged 400 per head on cows and 300 per head on calves in Atoka County. Heavy on cattle in Mayes, Sequoyah and Choctaw Counties and light in Stephens County. Dermacentor variabilis ranged up to 14 per head on dogs in Payne County; heavy on dogs in Sequoyah County and averaged 1 per head on cows in Atoka County. (Okla. Coop. Sur.). MISSOURI - First specimen of Dermacentor variabilis this season collected April 30 in Columbia, Boone County. (Wingo).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - ARKANSAS - Specimens from Hempstead County determined this species. This is a new county record. (Ark. Ins. Sur.).

HOUSEHOLDS AND STRUCTURES

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - NORTH CAROLINA - Serious problem in Guilford County school system; 42 schools in system; about half reported spotted infestations. (Kelly).

STORED PRODUCTS

Stored-Product Insects in Nevada - Sitophilus granarius and Oryzaephilus surinamensis infested barley in Lovelock, Pershing County. Rhyzopertha dominica and Tribolium castaneum medium to heavy in stored wheat in same area. (Bechtel, Ferraro, Martinelli).

Stored-Product Insects in California - Adults of Carpophilus lugubris, C. marginellus, C. hemipterus, C. freemani heavy on prunes in storage in Yuba City, Sutter County. C. humeralis and Cadra cautella heavy in dry garlic in processing plant in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

ALMOND MOTH (Cadra cautella) - TEXAS - Heavy in stored cotton seed near La Grange, Fayette County. (Bippert).

BENEFICIAL INSECTS

LADY BEETLES - ALABAMA - Hippodamia convergens adults and larvae extremely heavy and feeding on aphids in clovers and vetch in Covington, Dallas, Greene and other counties. (Stephenson et al.). MISSISSIPPI - Very high numbers of adults in delta wheat fields. Highest concentration in Leflore County wheat. Majority H. convergens. (Dinkins). ARKANSAS - Increasing in all areas; helping control aphids. Buildup should be of value as predators in young cotton. (Ark. Ins. Sur.). ILLINOIS - Adults mostly Coleomegilla maculata fuscilabris varied 0-100 per 100 sweeps in clover and alfalfa in southeast district. No larvae observed. (White).

GOLDEN-EYE LACEWING (Chrysopa oculata) - ILLINOIS - Adults varied 0-10 per 100

sweeps in clover and alfalfa; few observed in wheat in southeast district. (White).

DAMSEL BUGS (Nabis spp.) - ILLINOIS - Adults ranged 0-60 per 100 sweeps in clover and alfalfa in southeast district. Occasional nymph observed. (White).

A FLOWER BUG (Orius insidiosus) - ARKANSAS - Increasing in legumes. (Ark. Ins. Sur.).

FLOWER FLIES - ILLINOIS - Larvae varied 0-20 per 100 sweeps in clover and alfalfa in southeast district. (White). ARKANSAS - Continue active in legumes (Ark. Ins. Sur.).

A BRACONID (Apanteles crambi) - DELAWARE - Adult collected from pasture at Milford, Sussex County; July 22, 1964 by P. P. Burbutis and L. P. Kelsey. This is a new State record. Parasite of Crambus spp. det. by P. M. Marsh. (Burbutis).

AN ICHNEUMON WASP (Bathyplectes curculionis) - COLORADO - Emerging in Larimer County. (Simpson).

Beneficial Insects in Utah - Orius tristicolor, Nabis alternatus, Geocoris spp., Collops sp. adults and larvae of 3 species of lady beetles and adults of Chrysopa spp. becoming common in alfalfa in northern section of State. (Knowlton).

Beneficial Insects in New Mexico - Counts per 25 sweeps in alfalfa fields as follows: Belen, lady beetles 5-8 adults and Tucumcari, 1-3; nabids - Belen, 5-10 and Roswell 2-4; and minute pirate bugs 4-7 in Belen area. (N. M. Coop. Rpt.).

Beneficial Insects in Florida - Parasites and predators swept from rye and oats at Gainesville, Alachua County include adults and larvae of Orius insidiosus, Hippodamia convergens, Chilocorus stigma and Cycloneda spp., Chrysopa spp. and crab spiders. (Mead).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - INDIANA - In the La Porte-St. Joseph County area low temperatures and 10-15 m.p.h. winds curtailed adult activity. Little movement of adults from wheat to oats; oviposition very light to May 3. Egg counts per linear foot of row averaged 1.8 in wheat and 0.9 in oats. (Shade). OHIO - Adults appearing in Wood County. (Jones). MICHIGAN - Hatching delayed by general cool weather. No larvae observed in southwestern area fields by May 5. Frosty nights and desiccating winds caused high mortality of early eggs. Adults still most common stage in wheat. General movement to oats anticipated with favorable weather. Oats approaching susceptible state. Egg laying continues at rather low rate. Field-collected females show capabilities of high egg deposition. (Dowdy).

GRASSHOPPERS - MINNESOTA - Melanoplus femurrubrum eggs showed more coagulation in east central and central districts. Few M. sanguipes eggs found in Chisago County; most well-coagulated; few showed early eye-spot stage. M. differentialis eggs in clear stage. Egg predators very rare in areas checked. (Minn. Ins. Rpt.). WYOMING - Cordillacris occipitalis hatched April 28 at Lingle, Goshen County. (Thornley). UTAH - Early hatching becoming common in many localities (Thornley, Knowlton). Nymphs, 75 percent first instar, numerous in some range areas west of Utah Lake in Utah County and in Penrose area, Box Elder County. Pardalophora haldemanii adults moderately numerous in Elberta area and north in Utah County. (Knowlton). CALIFORNIA - Oedaleonotus enigma fourth instars and adults heavy in range grasses in Coalinga, Fresno County. (Cal. Coop. Rpt.). NEW MEXICO - Grasshoppers averaged 5-12 first and second instars per 25 sweeps in alfalfa fields in Belen area, Valencia County. (Heninger). OKLAHOMA - Nymphal surveys show several species hatching in crop margins and rangeland in Carter, Garvin, Johnson, Murray, Harmon and Beckham Counties. First instars ranged 1-12 per square yard. Predominant species hatching: M. bivittatus, Ageneotettix deorum, Aulocara elliotti,

and Amphitornus coloradus. (Okla. Coop. Sur.).

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Larvae severe on wild cotton at Sanibel Island, Lee County. (Williams, Apr. 28). Pupae and adults also found. (Fla. Coop. Sur.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - ALABAMA - Destroying stand of cotton in Houston County. (West). Larvae destroying stand of corn; replanting necessary in Black community, Geneva County. (Stephenson, Reynolds, Hartzog). Destroying stand of butterbeans in Covington County. (Stephenson).

HAWAII INSECT REPORT

Special Insects of Regional Significance - A STINK BUG (Coptosoma xanthogramma) - All stages medium to heavy in two 6-foot rows of pole snap beans in garden at Makiki Heights, Honolulu, Oahu, elevation 500 feet. Many eggs and recently hatched nymphs throughout plants. Approximately 250-300 adults in each row. Two rows of lima beans and row of bush beans in immediate vicinity not infested. (Higa).

Beans and Tomatoes - A LEAFMINER FLY (Liriomyza sp.)- Larvae and adults heavy in 0.5 acre of tomatoes in Kahuku, Oahu. Medium to heavy on yard-long beans and light on snap beans in Waimanalo, Oahu. (Kitagawa, Nakao).

Fruits - ORIENTAL FRUIT FLY (Dacus dorsalis) light in guava orchards and on wild guavas in Waimanalo, Oahu. Oviposition and hatch occurring in ripe fruits. (Haw. Ins. Rpt.).

General Vegetables - IMPORTED CABBAGEWORM (Pieris rapae) moderately damaging broccoli. Medium to heavy infestations in all onion growing areas. (Haw. Ins. Rpt.)

Ornamentals - A THRIPS (Thrips hawaiiensis) - Heavy infestation continuing on gardenia blossoms in wet regions on Oahu. Also heavy on gardenias in Hilo, Hawaii Island. (Chong, Yoshioka, Shiroma).

Forest and Shade Trees - CITRUS MEALYBUG (Planococcus citri) - Varying numbers of all stages on 90 percent of monkey pod trees along Kapiolani Boulevard, Honolulu, Oahu. Det. by J. W. Beardsley. Large numbers of Cryptolaemus montrouzieri (a lady beetle) were feeding on mealybugs. (Higa). AN ERIOPHYID MITE (Aceria sp.) - Nymphs and adults medium on a native tree Diospyros sp., at the Hawaii Volcanoes National Park, Hawaii Island, elevation 2,000 feet. Det. by F. Haramoto. (Haw. Ins. Rpt.). A MIRID BUG (Orthotylus iolani)- Adults heavy in 5 acres of scattered Erythrina sandwicensis (wiliwili) at 200 feet elevation, along access road to Mount Kaala, Oahu, April 14. Feeding by 50 or more per leaf caused 80 to 100 percent foliar damage to 12 trees. (Haw. Ins. Rpt.).

Beneficial Insects - A CERAMBYCID BEETLE (Plagiohammus spinipennis) - Total of 20 adults noted in one hour on weed, Lantana camara var. aculeata near Pahala, Kau District, Hawaii Island. (Harley). A GALL MIDGE (Zeuxidiplosis giardi) - Appreciable spread observed on Mount Hualalai, Hawaii Island, elevation 8,250 feet. This insect purposely introduced in February, 1965 from New Zealand to aid in control of Klamath weed. (Yoshioka).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period May 1-7, a total of 23 cases was reported in the Southwestern Eradication Area by States and counties as follows: TEXAS - Culberson 1, Frio 1; ARIZONA - Maricopa 4, Cochise 8, Santa Cruz 3, Yuma 3, Gila 1; NEW MEXICO - Grant 1; CALIFORNIA - Imperial 1. The Republic of Mexico reported 133 cases: Territorio sur de Baja California 4, Sonora 103, Chihuahua 2, Nuevo Leon 6, Tamaulipas 18. A total of 214 cases was reported in Mexico south of the Barrier Zone. Sterile screw-worm flies released: Texas 25,415,850, Arizona 24,804,000, New Mexico 5,040,000, California 1,000,000, Mexico 42,853,600.

Table 1. Comparison of screw-worm samples identified during corresponding weeks in the United States.

Year	Positive Cases		Negative Cases	
	Current	Cumulative	Current	Cumulative
1964	6	54	325	2597
1965	22	51	211	1709
1966	23	90	140	1027

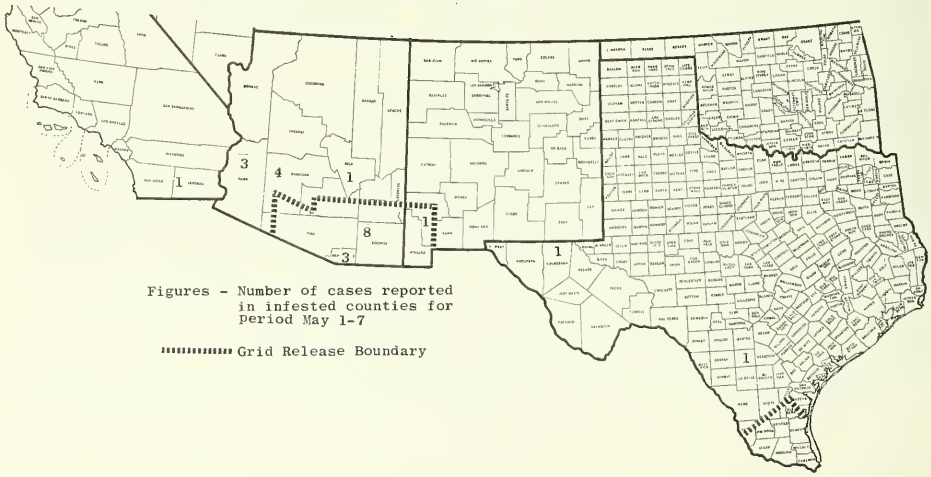
Table 2. Comparison of United States screw-worm cases by State

State	1964		1965		1966	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
Texas	5	42	9	32	2	41
Ariz.	1	6	10	16	19	46
N. M.	0	0	3	3	1	1
Calif.	0	6	0	0	1	2

Table 3. Comparison of screw-worm cases inside and outside the United States portion of the Barrier Zone.*

Year	Inside Barrier Zone		Outside Barrier Zone	
	Current	Cumulative	Current	Cumulative
1965	10	28	2	7
1966	22	84	1	6

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. Effective May 23, 1965, portions of Arizona and California were added to the Barrier Zone. (Anim. Health Div.).



LIGHT TRAP COLLECTIONS

	Temperature °F./inches	Precipitation	Type of trap (BL = blacklight, I = incandescent, M = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (variegated armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (garden webworm)	Loxostege sticticalis (alfalfa webworm)	Loxostege similalis (beet webworm)	Mamestra configurata (bertha armyworm)	Mamestra picta (tomato hornworm)	Manduca quinquemaculata (tobacco hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA																										
Gainesville 5/1,3,4			BL	3					5																	
GEORGIA																										
Tifton 4/27-5/4	64-82	0.75	BL								1						1									
ILLINOIS (County)																										
Champaign 4/28-5/4	32-65	0.02																			20					
MISSISSIPPI																										
Stoneville 4/28-5/4	49-85	1.73	2BL	17			1		1		1						1		7	1	23					
Rolling Fork 4/28-5/4	49-86	0.48	BL	46					3	1	3								5	3	9					
Tunica 4/28-5/4	47-81	4.78	BL	25							1								11		40					
MISSOURI																										
Portageville 4/24-30			BL																3		24					
Portageville 4/30-5/5			BL																1							
NEBRASKA																										
Lincoln 4/29-5/5				4				1											16		5					
North Platte				5		4													23							
OHIO (Counties)																										
Franklin 4/29-5/5			BL	17															4		10					
Brown 4/27-5/2			BL	12																	9					
Washington 4/27-5/2			BL	20																	11					
TENNESSEE (Counties)																										
Maury 4/26-5/2				9															32	15	27					
Robertson 4/20-5/2				4															8	8	48					
Cumberland 4/26-5/2																			3	3	13					
Greene 4/26-5/2				8															10	12	66					
Johnson 4/26-5/2				1															1		7					
TEXAS																										
Brownsville 4/30-5/6	62-86	5.68	BL	5					47										2					6		
Waco 4/30-5/6				2			2		8		3								13	8	19			3		

INSECT DETECTION

PEAR SAWFLY (Hoplocampa brevis) - RHODE ISLAND - Reported for the first time in State (p.412).

A BRACONID (Apanteles crambi) - DELAWARE - Reported for the first time in State (p. 418).

ALFALFA WEEVIL (Hypera postica) - INDIANA - Found for the first time in Putnam, Warren, Marion, Hamilton, Hancock, Union and Fayette Counties. MISSOURI - Found for the first time in St. Francois, Jefferson, Washington, Crawford, Gasconade and Franklin Counties. (p. 407).

PEA LEAF WEEVIL (Sitona lineata) - CALIFORNIA - Found for the first time in Alameda County. (p. 408).

EUROPEAN CORN BORER (Ostrinia nubilalis) - NORTH DAKOTA - Found for first time in Rolette County. (p. 406).

VETCH BRUCHID (Bruchus brachialis) - CALIFORNIA - Found for the first time in Contra Costa County. (p. 409).

AN ARMORED SCALE (Diaspis minima) - FLORIDA - Found for the first time in St. Lucie County. (p. 414).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - ARKANSAS - Found for the first time in Hempstead County. (p. 417).

SOME FIRST APPEARANCES OF SEASON

Southwestern corn borer moths in Mississippi. Greenbug in Minnesota. Spotted alfalfa aphid in Virginia. Colorado potato beetle adults in Maryland. Smaller European elm bark beetle emergence in Missouri.

Weather continued from page 404.

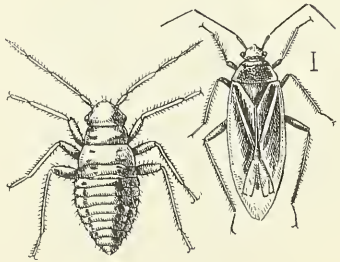
PRECIPITATION: Except for some northwestern coastal areas, the western half of the Nation had little or no rain during the week. Precipitation was light in much of the Great Lakes area and in the Northeast. Heavy thundershowers drenched the Gulf Coast of Texas for 6 days with weekly rain totals up to 9 inches in the Lower Rio Grande Valley. The Carolina Coast had substantial showers early in the week; Florida received theirs later. Cold air moving southward set off light showers from Nebraska to southern New England on Sunday as snow flurries were reported from the upper Great Lakes to northern New England. Scattered snows also occurred in northern Applachian Highlands.

STORMS: Tornadoes struck northern Florida early in the week with no reported injuries or damages. On Sunday a tornado caused damage 20 miles southwest of Chicago. (Summary supplied by Environmental Data Service, ESSA).

LOOK FOR THESE APPLE PESTS

Winter Moth Larvae feed on buds, fruit and leaves of trees in orchards and on other hardwoods during the spring. They can cause complete defoliation. The full-grown larva is about one inch long, green with a dark dorsal line and 3 yellow stripes along each side; head is dark brown. Adults are active in the winter; the male is attracted to lights. Operophtera brumata has been known in Nova Scotia, Canada, since 1949, where it has caused serious damage in outbreak years. It occurs in most of Europe, parts of North Africa, and Japan. This defoliator has been regarded as an important pest in Europe for many years.

Apple Sucker Large quantities of honeydew on foliage in apple orchards may indicate presence of this psyllid. The pale yellowish green nymphs feed in opening buds, fruit stems (peduncles) and leaves. Adults are active throughout summer. The general appearance is pale green. Psylla mali is small, about 4 mm. from head to tip of folded wings. P. mali is a serious pest in Europe and it has caused trouble in some years in Nova Scotia and New Brunswick, Canada. The pest also occurs in Australia and Japan. As much as 70 percent damage to an apple crop has been recorded in England. Infestation causes shriveling of blossoms and loss of foliage. Apple is the preferred host.



Apple Capsid Severely deformed fruit, dead shoots and deformed ragged leaves in apple orchards may be caused by this mirid. Nymphs and adults are active from early spring into summer. The adult is 6 mm. long, bright green with yellow head, pronotum and legs. Nymphs resemble the adults. Plesiocoris rugicollis has been recorded on several kinds of trees and shrubs, but apple, currant and willow are preferred. It has been called the most serious pest of apple in Britain. Its range includes the more northern areas of Europe and Asia. In North America, it has been recorded in Alaska.

Coop. Econ. Ins. Rpt.
16(19):423

Preparation of Notes for Cooperative Economic Insect Report

Requests have been received relative to the type of information desired for the Cooperative Economic Insect Report and suggestions made for revision in the format.

The report will be reorganized on a principal crop basis. This will simplify present format and make the material more accessible and useful. It is hoped this approach will also stimulate greater participation by pointing out lack of reporting on individual crop problems. Efforts will be made to evaluate and present the information in ways to make it more useful in insect control.

Forecasting statements will be developed wherever field reports support such action. Reporters are encouraged to include this vitally important information in their notes. Emphasis of the Cooperative Economic Insect Report will be on the important insect problems of a regional nature, notes on routine insect occurrence will be kept to a minimum. Routine notes submitted on common insects will be added to the National insect files as warranted, however.

The following guidelines are suggested for preparation of notes. It is realized that all of the information outlined will not be available in each situation, but give the following information when possible.

1. Common (if available) and scientific name of species involved. Stages of insect involved. (If a taxonomic problem exists, it should be noted).

2. Location (definite, recognized area within state, such as region, county or town), date, name of observer or reporter. If note is for period other than current reporting period, give date of observation.

3. Host involved, scope and extent of infestation in number of counties, acres, trees, animals, etc. Also stage of host.

4. Quantitative evaluation of infestation according to recognized survey methods. Where such methods are not available, give numerical data such as number per linear foot, per plant, per sweep or per animal. These data should be based on a representative sampling. An adjectival rating should be accompanied by a numerical rating.

5. Estimation of extent of injury or damage.

6. Comparisons with previous infestations, outlook or predictions for future infestations, unusual influences.

7. Status of natural or applied control.

8. When reporting new State, United States, or North America records, include the above information insofar as applicable, as well as name of taxonomist making determination.

Examples of notes including these data are as follows:

EUROPEAN RED MITE (Panonychus ulmi) - Egg populations have reached point where protective sprays are warranted in 10 percent of apple orchards in Knox County. Counts on June 30 showed 0 to 4.8 live mites per leaf and 0 to 37.6 eggs per leaf. Further increase and spread expected with continued favorable weather. (Jackson, July 2).

EUROPEAN CORN BORER (Ostrinia nubilalis) - Oviposition and hatch practically complete in central counties. Fifty egg masses per 100 stalks in northwest area. In southern counties, all corn 35 inches or taller, 70 to 100 percent infested with 2 to 22 larvae per stalk. Larvae from first to third instar. (Smith).

Coop. Econ. Ins. Rpt. 16(7):126

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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All correspondence pertaining to additions, deletions and changes of addresses for the mailing list for this report should be sent to:

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Washington, D. C. 20250

Reports and inquiries pertaining to this release should be mailed to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

Volume 16 May 20, 1966 Number 20

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM favored by present conditions on Eastern Shore of Virginia, with possibility of heavy infestations in grains and grasses in late May; very heavy damage to small grains anticipated in "delta area" of Missouri. GREENBUG and SIX-SPOTTED LEAFHOPPER may develop problems in Minnesota. (p. 427). VARIEGATED CUTWORM damaging sorghums in Arizona and ENGLISH GRAIN APHID poses threat in Minnesota. (p. 428).

ALFALFA WEEVIL continues serious in several areas, increasing in others. (pp. 429, 430). CLOVER ROOT BORER damaging red clover in Willamette Valley of Oregon. PEA APHID heavy in Kansas, increasing in Ohio and Nevada, decreasing in Oklahoma; populations low in other areas. (p. 431).

NOCTUIDS and THRIPS of concern on cotton in Arizona; some controls necessary. (p. 433). A CONIFER APHID (Cinara curvipes) heavy and damaging Christmas trees in Washington. GREAT BASIN TENT CATERPILLAR damage increased along Virgin River in Utah and SILVER-SPOTTED TIGER MOTH heavy on spruce north of Coos Bay, Oregon. (p. 439). HORN FLY heavy and increasing in Alabama. (p. 441).

CEREAL LEAF BEETLE egg mortality high in southwest Michigan; egg counts increased in Indiana. GRASSHOPPER nymphs appearing in several areas. (p. 442). Single PINK BOLLWORM adult males taken at 2 locations in California. (p. 443).

Predictions

Highest WHEAT HEAD ARMYWORM populations since 1955 anticipated in Nebraska. (p. 428). ONION MAGGOT populations apparently greater than in last 6 years in Idaho; second generation may be damaging and few pupae expected to diapause until fall. (p. 438). Strong potential for SOUTHERN PINE BEETLE problem exists again in Virginia if dry summer prevails in many parts of northern portion of epidemic area despite high overwintering mortality. (p. 439).

Detection

A PLANT BUG (Atractotomus mali) reported from Connecticut. (p. 435).

An OLETHREUTID MOTH (Eucosma gloriola) reported for first time from Michigan. (p. 439).

A BRACONID (Cardiochiles explorator), a parasite of Loxostege similalis (garden webworm), reported for first time from Delaware. (p. 442).

Additional new county records for alfalfa weevil and sweetclover weevil reported on page 434.

Special Reports

The Use of Sticky Board Traps in Insect Surveys. (p. 446).

Reports in this issue are for week ending May 13 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING MAY 16

HIGHLIGHTS: (1) Widespread severe freezes, Iowa to New Jersey. (2) Cloudy, showery, stormy week in mid-America.

TEMPERATURE: It was a cold, cloudy, and showery week in most areas. Low pressure and storminess persisted in central sections. Temperatures plunged early in the week and many locations from Iowa to New Jersey registered the coldest May temperatures on record. On May 10, Detroit and Indianapolis broke May temperature records of 90 or more years duration with airport lows of 24° and 28° respectively. The sub-freezing temperatures caused widespread damage to fruit, tender vegetables, and other crops. Some warming occurred late in the week but weekly mean temperatures were below normal over almost the entire Nation and 10° to 15° below in northcentral and northeastern areas.

PRECIPITATION: Rainfall was light to moderate over most of the 48 States with heaviest amounts in central portions including all of the Great Lakes area. Snow and cold rain fell early in the week from the northern Rocky Mountains to New England. Thundershowers produced some generous rains from eastern Texas to New York; numerous spots received more than 1 inch. Heavy showers late Friday dumped

Weather continued on page 445.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - VIRGINIA - Favored by present conditions on Eastern Shore; strong possibility that rather heavy infestations could develop in corn, rye and other grasses sometime during latter part of May. (Hofmaster). GEORGIA - Infesting small grain and corn in Randolph County (Trussell); damaging same crops in Washington County (Andrews). ARKANSAS - Recent hatch in northeast; larvae small and noneconomic. (Boyer). MISSOURI - Few early instars present in Jasper County wheat. No counts made. (Ham). Early instars ranged to 250 per square foot in "downed areas" in barley in Pemiscot County; 2-10 per square foot in all small grain fields in New Madrid and Pemiscot Counties. Very heavy damage anticipated in "delta area" small grains. (Keaster, Harrendorf, Jones). COLORADO - Adults in flight near Eaton, Weld County. (Titensor). MICHIGAN - Total of 28 moths taken from blacklight traps in Berrien, Jackson and Livingston Counties. (Newman).

BOLLWORM (Heliothis zea) - TEXAS - Few feeding in cotton terminals in Rio Grande Valley, southwest and coastal bend sections. (Parker, Hanna, May 10). Total of 22 specimens collected on Indian paintbrush, Texas star and bluebonnets reared to fifth instar determined this species in McLennan and Falls County area; 95 H. zea to date from all host plants; one larva found in field of cotton. (Cowan et al.).

BOLLWORMS (Heliothis spp.) - ALABAMA - Rather high numbers of young larvae feeding on buds and leaves of 6-leaf stage cotton on Henry County demonstration farm. Beneficial insects apparently killed larvae before maturity. Few eggs observed. Several H. virescens and H. zea moths in flight in cotton, corn and peanut fields. Only occasional small larva observed in other cotton fields. (Barefield et al.). GEORGIA - Light in Tift County tobacco. (French).

CORN EARWORM (Heliothis zea) - ALABAMA - Larvae medium to heavy in large corn field in Henry County. Several adults observed in whorls. (Trawick).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Generally light on barley; some spotted, heavy infestations in scattered fields throughout Dona Ana County. (Durkin, Clayshulte).

GREENBUG (Schizaphis graminum) - MINNESOTA - Migrated into State. Found as far north as St. Paul. Confined mainly to roadside grasses. Averaged around 2 per 100 sweeps in some oat fields in southern counties. May develop into problem this month. (Minn. Ins. Rpt.). KANSAS - Decreased to less than 100 per foot in south. Wheat in areas where overwintering populations "exploded" now in boot stage; populations low. Oats and barley still maintain populations. (Gates, Brooks).

POTATO LEAFHOPPER (Empoasca fabae) - MISSOURI - Adults 1-5 per 10 sweeps in southwest area in alfalfa; observed north to Pulaski County. (Houser).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MINNESOTA - Appeared week of April 25. Ranged 0-10 per 100 sweeps in alfalfa and winter grains in southeast and south central districts. May develop into problem this month. (Minn. Ins. Rpt.). WISCONSIN - Higher than normal in south; 2-8 per 100 sweeps; all females. Several early planted oat fields infested. (Wis. Ins. Sur.). MICHIGAN - First adults of season taken May 6 in Livingston County alfalfa sweepings; extremely early date. First collection in 1965 May 19. (Dowdy).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Ranged 40-60 per 10 sweeps in alfalfa in Cotton and Tillman Counties; very light in northeast. (Okla. Coop. Sur.). MISSISSIPPI - Up to 15 adults and nymphs per square foot of crown in Pontotoc County alfalfa. (Dinkins).

TOMATO FRUITWORM (Heliothis zea) - ALABAMA - Of 14 tomato fields examined in Houston County, larvae heavy and attacking tomatoes in 3, medium in 7, none found in 4. Controls necessary. (Brown et al.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NORTH DAKOTA - Mortality survey of overwintering larvae in southeast lower than in 1965. Percent mortality in 5-county area 21; percent survival 79; compared with 72 percent mortality and 73 percent survival in 1965. No pupation noted. Number of borers per acre, 3,388. (Brandvik). MINNESOTA - Limited checks showed overwintering mortality very low; ranged 0-4 percent. Number of overwintering borers lowest of many years. Pest not likely to be economically important this year. (Minn. Ins. Rpt.). NEBRASKA - No pupation of overwintering larvae. (Rhine). MISSOURI - Pupation 100 percent in Pemiscot and New Madrid Counties. Few adults emerged. First light trap catch at Portageville, Pemiscot County, May 7. (Keaster). NEW YORK - Larvae readily found in stalks of sweet corn at Poughkeepsie; 46 larvae but no pupae. (N. Y. Wkly. Rpt., May 9). VIRGINIA - Only 1 moth taken to date on Eastern Shore. Normal hatch usually about this time; considerably behind schedule. (Hofmaster).

VARIEGATED CUTWORM (Peridroma saucia) - ARIZONA - Heavy and damaging sorghums in Yuma, Maricopa, Pinal and Graham Counties. (Ariz. Coop. Sur.).

CUTWORMS - GEORGIA - Heavily damaging corn in Appling County. (Purdom, French).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - SOUTH CAROLINA - Seriously damaged corn in Pee Dee area. (Nettles et al.). GEORGIA - Heavily damaging corn in Appling and Jeff Davis Counties. (Purdom, Stewart, French). ALABAMA - Larvae damaging isolated fields in Houston, Geneva and other southeast counties. (Reynolds, White et al.).

SUGARCANE BEETLE (Euetheola rugiceps) - ALABAMA - Adults causing considerable damage to young corn in field in Conecuh County. (Huggins).

BILLBUGS - GEORGIA - Caused light to heavy damage to corn across southern section of State. (Weathersby, Purdom, French). ALABAMA - Sphenophorus maidis adults causing light to heavy damage in several fields of young corn in Geneva, Conecuh, and Henry Counties. (Stephenson et al.).

See also Special Insects of Regional Significance, page 427.

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - MINNESOTA - Winged forms, indicating migration from southern States, and newly formed nymphs present in winter grains and emerging spring grains; 0-25 per linear foot in southeast and south central districts. Yellow feeding spots found on some seedlings due to small colonies. May develop into problem this month. (Minn. Ins. Rpt.). WISCONSIN - Ranged 2-6 per 100 sweeps in overwintering grain fields in western Dane and Iowa Counties. Mostly winged; few nymphs full grown. Little parasitism appearing. (Wis. Ins. Sur.). MARYLAND - Light on barley and wheat in Dorchester and Talbot Counties. (U. Md., Ent. Dept.).

APHIDS - CALIFORNIA - Macrosiphum euphorbiae and Rhopalosiphum padi complex medium on barley plantings in Helm, Fresno County. (Cal. Coop. Rpt.).

A GRASS BUG - UTAH - Black species seriously damaging 125 acres of wheat west of Cedar City, Iron County. Very abundant on large acreages of grass on soil bank lands in county, including much acreage near Kanarraville. (Knowlton, Sjoblom).

RICE STINK BUG (Oebalus pugnax) - MISSISSIPPI - Averaged 16 adults per 100 sweeps on oats in Pontotoc County. (Dinkins).

WHEAT HEAD ARMYWORM (Faronta diffusa) - NEBRASKA - Highest populations since 1955 anticipated. (Pruess).

ARMYWORMS - TENNESSEE - Appearing on small grains in several fields; largest about 0.5 inch. (Johnson).

PALE WESTERN CUTWORM (Agrotis orthogonia) - KANSAS - Present in scattered fields in Stanton County; 3-4 per square foot, with wheat showing damage in some spots. (Gates, Brooks).

CUTWORMS - WASHINGTON - Abundant in sagebrush areas. Migrating and nuisance aroung Post Office Building at Roosevelt, Klickitat County; attacking wheat and alfalfa at Goldendale. (Klostermeyer, Telford, May 9). OREGON - Larvae, possibly Euxoa spp., general in spring barley throughout central section; controls necessary. (Every).

RICE WATER WEEVIL (Lissorhoptrus oryzophilus) - ARKANSAS - Adults normally begin feeding on rice 4 to 6 inches high after first flooding. Heavy rains in April flooded small seedling plants in some fields. Adult feeding heavy on some fields in Lafayette County. Small plants suffered more than larger plants normally suffer. (Barnes, Boyer).

BROWN WHEAT MITE (Petrobia latens) - KANSAS - Heavy at Hays before rain; up to 1,000 per foot of row in some spots. (Gates, Brooks).

See also Special Insects of Regional Significance, page 425, and Federal-State Plant Protection Programs, page 442.

TURF, PASTURES, RANGELAND

MAIZE BILLBUG (Sphenophorus maidis) - ARKANSAS - Larvae collected on roots of Bahia grass in Columbia County pastures; 25 per square foot. Damage occurred in 25 percent of area in several Bahia grass pastures. Det. by J. R. Phillips. (Boyer).

APHIDS - WASHINGTON - Severely injuring orchardgrass in pastures at Prosser, Benton County, and Othello, Grant County. Feeding on midrib and killing terminal third of leaf. Lady beetles abundant. (Klostermeyer, May 9).

BERMUDAGRASS MITE (Aceria neocynodonis) - ARIZONA - Damaging Bermuda grass in Pima County, particularly on grasses planted in heavy sod soil. (Ariz. Coop. Sur.).

BROWN WHEAT MITE (Petrobia latens) - UTAH - Heavy on several hundred acres of dry-farm wheat in Cedar Valley before recent storms; 60 acres sprayed. (Knowlton, Barlow).

CLOVER MITE (Bryobia praetiosa) - NEVADA - Damaging new lawns in Reno, Washoe County. (Cooney).

See also Federal-State Plant Protection Programs, page 442.

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEW MEXICO - Ranged 3-5 young larvae per 25 sweeps on alfalfa in Bernalillo County. (Henninger, Kloepfer). COLORADO - Larvae increased in many fields; 40-80 per 100 sweeps; 20-30 parasitized by Bathyplectes curculionis (an ichneumon). (Bulla). WYOMING - Egg survey in alfalfa in Big Horn Basin area showed following percents of stems infested: Big Horn County 8-40, Washakie County 0-6, Hot Springs County 3, Fremont County 2-25. Eggs in stems in lower areas of Big Horn County blackened, appear frozen. Estimated 30 percent of alfalfa in County winter-killed. (Fronk, Gale). UTAH - Active but not damaging in Washington County alfalfa fields. (Thornley). NEVADA - Larvae varied 50-75 per sweep in alfalfa fields in alfalfa fields in Reno-Sparks area, Washoe County. (Cooney).

VERMONT - Adults averaged 2 per 10 sweeps at Bennington, May 5; no larvae found. No activity found in Orwell, Addison and Weybridge. (MacCollom). RHODE ISLAND - Egg masses found in 6 of 77 stems examined in field in Kingston, Washington County. (Mathewson). NEW YORK - Feeding easily found in Ulster County on 6-8-inch high alfalfa in fields with sandy soil and southern exposure. Found in Washington County despite cold temperatures and slow alfalfa growth. (N. Y. Wkly. Rpt., May 9). NEW JERSEY - Recent collections of larvae and adults per 100 sweeps on alfalfa as follows: Middlesex County 200 first-third instars, 160 adults; Burlington County (May 10) 500 first-third instars, 55 adults; Morris County (May 6) 150 first-second instars, 40 adults; Sussex County (May 6) ranged 0-300 first-third instars, adults ranged 50-150. About 25 percent terminal bud injury in Middlesex, Burlington and Sussex Counties; little injury in Morris County. (Ins.-Dis. Newsltr.). MARYLAND - Larvae ranged 50-200 per sweep; reaching peak numbers during second week of May on untreated alfalfa in eastern and central sections. Damage to untreated first growth ranged moderate to heavy. Numerous cocoons found May 10 on first growth alfalfa at Cambridge, Dorchester County. (U. Md., Ent. Dept.) VIRGINIA - Larvae heavily infesting field of ladino and red clovers in Lee County; most feeding on ladino clover; much damage. (Isakson, Lyle). SOUTH CAROLINA - Still serious in all fields; adults now present in large numbers. (Thomas, May 9). GEORGIA - Adults causing heavy damage to second-cutting alfalfa in Houston County. (Tippins).

ALABAMA - Continues damaging to alfalfa in Madison and Cherokee Counties. (Young, Magnusson). MISSISSIPPI - Larval counts low; 7 per square foot in Pontotoc County alfalfa. Adult counts still high in Pontotoc County. (Dinkins). TENNESSEE - Larvae continue to keep new growth of recently cut alfalfa pruned in Dyer and Henry Counties. Feeding will delay second cutting. (Johnson). OHIO - Severe feeding damage on alfalfa continues in about one-half of State. Counties with economic infestations roughly east of line bisecting State from Hamilton and Ashtabula Counties. First pupal cases in southeast May 4. (Fessel). Weevil feeding damage requiring treatments in Fayette County, (Grover). One 30-acre field in county with 25 percent loss, 8 larvae per plant. Controls used immediately. (Harper, Willibey). Increased generally in central, southwestern and northeastern areas from 1965 levels. In Fairfield County, 90 percent of all fields inspected showed damage. Most plants with 4 or more larvae. Spraying in progress. (Taylor). Populations in east and southeast ranged 8 to approximately 150 per sweep. Heaviest destruction and largest numbers in field in Washington County where about 60 percent of crop destroyed. Other fields in Tuscarawas, Belmont and Monroe Counties averaged 15-20 larvae per sweep; estimated 10-20 percent crop damage. Adults continue common in fields. (Rose).

ILLINOIS - No economic damage north of line from Robinson, Crawford County, to Carlyle, Clinton County. South of this line, especially in triangle formed by Robinson, Mount Vernon and Mount Carmel, few fields showing whitish color; production of first crop probably reduced 10-20 percent. Larvae varied 0-19 per sweep. Alfalfa in area varies 10-20 inches. (White). In extreme southern area, several farmers removed severely damaged first crop and treated stubble. (Luckmann). Survey made under poor conditions negative in Iroquois, Ford, Piatt, De Witt, Logan and Jersey Counties. (Randall, Petty, White). Two larvae found in 800 sweeps in Sangamon County. (Moore). Sangamon is a new county record (White). MISSOURI - Larvae ranged 0-5 per 10 sweeps in alfalfa in Barry, Stone, Lawrence, Greene, Pulaski, Miller, Camden, and Cole Counties. These are new county records. (Houser). ARKANSAS - Single larva collected in Carroll County in April; reared to adult (Miner). This is a new county record. (Boyer).

CLOVER LEAF WEEVIL (Hypera punctata) - KANSAS - Larvae continue in crowns of alfalfa plants in central area; some reduction by fungus since rain. (Gates, Brooks)

SWEETCLOVER WEEVIL (Sitona cylindricollis) - CALIFORNIA - Collected at Oakland, Alameda County, March 31; Oakley, Contra Costa County, April 14; Yreka, Siskiyou County, April 21; and Isleton, Scramento County, April 15. These are new county records; infestations light except for medium in Contra Costa County. Species

also known to occur in Alpine, Sierra, Plumas, Lassen, Modoc and Humboldt Counties. (Cal. Coop. Rpt.). MINNESOTA - Roadside sweetclover shows weevil feeding notches. (Minn. Ins. Rpt.).

CLOVER ROOT BORER (Hylastinus obscurus) - OREGON - Causing extensive damage in red clover fields in parts of the Willamette Valley. (Every).

PEA APHID (Acyrthosiphon pisum) - OHIO - Starting buildup in east and southeast. Generally noneconomic. Alfalfa and clover fields in Tuscarawas, Belmont, Monroe, and Washington Counties yielded averages of 1-4 per sweep. Highest in alfalfa in Washington County; averaged about 13 per sweep. (Rose). ILLINOIS - Remains very low; parasites abundant. (White). WISCONSIN - Averaged 3 per 10 sweeps in nearly all alfalfa fields sampled in southern part of State. Parasitism remains fairly high, ranged 10-50 percent; mummies common in many fields. Low number of smaller nymphs developing wing pads. (Wis. Ins. Sur.). MINNESOTA - Cool weather (some snow) held down populations. Counts in southeast and south central districts ranged 0-20 per 100 sweeps in alfalfa. No winged forms noted. (Minn. Ins. Rpt.). SOUTH DAKOTA - Generally low in alfalfa fields east of Yankton in Yankton and Clay Counties; damaging numbers in one field in area. Numbers ranged 50-1,000 per 100 sweeps in 4-6 inch high alfalfa. Winged forms less than 1 percent of population. Apparent parasitism 1-3 percent. Lady beetle adults and larvae averaged 2 per 100 sweeps. (Jones). MISSOURI - Remains low in central and southwestern districts; averaged 100 per 10 sweeps in alfalfa. Predators and parasites plentiful. (Houser). KANSAS - Heavy on alfalfa from Reno to Dickinson Counties. Counts in Riley and Ellis Counties about 25 per sweep. Lady beetles present in most fields. Tiny wasps quite abundant. (Gates, Brooks). OKLAHOMA - Decreasing around State. Ranged 60-125 per 10 sweeps in alfalfa in Cotton and Tillman Counties; 1-30 per 10 sweeps in Tulsa and Adair Counties. Greatly decreased in alfalfa and Austrian winterpeas in northwest, central and north central areas. Decrease due mainly to predators, especially Hippodamia convergens and parasitic Hymenoptera. (Okla. Coop. Sur.). NEW MEXICO - Light throughout State. (N. M. Coop. Rpt.). NEVADA - Increasing but still light on alfalfa in Reno-Sparks area, Washoe County; varied 5-25 per sweep. (Cooney). UTAH - Ranged 1-7 per 10 sweeps in Cache and Box Elder County alfalfa fields. (Knowlton). COLORADO - Remains light; 20-40 per 100 sweeps. (Bulla).

BEAN APHID (Aphis fabae) - KANSAS - Aphids, particularly this species, heavy on alfalfa in Neosho County. (Gates, Brooks).

MEADOW SPITTLEBUG (Philaenus spumarius) - MARYLAND - Nymphs heavy; caused noticeable injury to red clover near Trappe, Talbot County. (U. Md., Ent. Dept.). OHIO - Hatched in central area by April 29. First instars on same day in Delaware County. (Gibson). Counts per 25 sweeps in alfalfa in Tuscarawas County 9, and Belmont County 31 on May 10. (Rose). WISCONSIN - Hatched in southern counties but doubtful if completed. (Wis. Ins. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - ILLINOIS - Adults varied 0-200 (average about 20) per 100 sweeps in clover and alfalfa in southern half of State. (Petty, Moore, White). Occasional nymph observed. (White).

LYGUS BUGS (Lygus spp.) - NEVADA - Mostly nymphs; varied 20-120 per sweep in alfalfa fields in Reno-Sparks area, Washoe County. (Cooney).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Light to medium in alfalfa in Pinal, Maricopa and Yuma Counties. Light in Cochise and Graham Counties. (Ariz. Coop. Sur.).

PLANT BUGS (Adelphocoris spp.) - WISCONSIN - A. lineolatus nymphs common in some more advanced alfalfa in southern counties; 1-3 per 10 sweeps. (Wis. Ins. Sur.). ILLINOIS - A. lineolatus nymphs in clover and alfalfa for first time this season in southern area. A. rapidus nymphs 0-30 per 100 sweeps.

VARIEGATED CUTWORM (Peridroma saucia) - ARIZONA - Heavy and damaging alfalfa in Yuma, Maricopa, Pinal and areas of Graham Counties. (Ariz. Coop. Sur.). MISSOURI - Early instars ranged 1-10 per square foot in alfalfa nearly ready for harvest in southwestern district. (Houser). Larvae averaged 10-12 per square foot in newly harvested alfalfa in Pemiscot and New Madrid Counties. Causing moderate to severe damage to new growth in many fields. (Keaster, Harrendorf, Jones). ILLINOIS - Larvae varied 0-30 per 100 sweeps in clover and alfalfa in southern half of State; larvae small. (White).

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEVADA - Larvae heavy and causing heavy damage to 2 alfalfa fields in Orovada, Humboldt County. (Hilbig, Lundahl).

CUTWORMS - WASHINGTON - Abundant in sagebrush areas. Migrating and nuisance around Post Office Building at Roosevelt, Klickitat County; attacking alfalfa at Goldendale, Klickitat County. (Klostermeyer, Telford, May 9).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Flights becoming heavy in alfalfa fields in Cochise, Graham, Pinal and Maricopa Counties. Larvae light; ranged 0-15 per 100 sweeps. (Ariz. Coop. Sur.).

THRIPS - UTAH - Very numerous in alfalfa fields in "Dixie" area, Washington County. (Thornley).

SPIDER MITES (Tetranychus spp.) - NEVADA - Heavy on alfalfa; required controls in Pahrump Valley, Nye County. (Miller, Zoller).

See also Special Insects of Regional Significance, page 425, and Federal-State Plant Protection Programs, page 442.

COTTON

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Counts per 1,000 linear feet of 4 to 6-leaf stage cotton on 4 demonstration farms in Henry County revealed average of about 11 per acre; relatively light compared with this time in 1965. Additional emergence will bring on normal to less than normal egg laying in late May and early June. (Barefield et al.). TEXAS - Weevils found in 5 of 77 fields in McLennan and Falls Counties; averaged 5 per acre. Two collected on flight screens. Survival percentage in hibernation cages as follows: 0.2 in 2 cages containing 1,000 field collected weevils installed November 1, 1965; 0.7 in cages containing 137 weevils removed from ground trash and rehibernated December 15, 1965; and 15.2 in cage containing 33 weevils removed from ground trash and rehibernated in March. None emerged from cages containing green bolls collected in November or from cages containing bollie cotton collected from standing stalks in March. (Cowan et al.).

COTTON APHID (Aphis gossypii) - ALABAMA - Relatively light on 4 demonstration farms in Henry County. (Barefield et al.). TEXAS - General but light over McLennan and Falls Counties; light in 37 and none in 3 untreated fields; heavy in 1, light in 22 and none in 14 treated fields. (Cowan et al.).

COWPEA APHID (Aphis craccivora) - NEW MEXICO - Generally light on cotton in Dona Ana County. Some fields show heavier buildups. (Durkin, Elson, Clayshulte).

APHIDS - TEXAS - Moderate to heavy in spots in Fort Bend and Brazoria Counties; spotted and damaging terminals of young cotton in Washington and Burleson Counties; medium, spotted infestations in Walker, Madison and Houston Counties; some heavy and damaging first true leaves in El Paso and Hudspeth Counties; few aphids feeding in terminals in Rio Grande Valley, southwest and coastal bend sections. (Parker, Hanna, May 10).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Averaged 0.3 (range 0-5) per 100 linear feet of row in 77 cotton fields in McLennan and Falls Counties; averaged 1.1 per sweep in 2 fields of horsemint and 0.6 per sweep in 7 fields of evening-primrose. (Cowan et al.).

FLEAHOPPERS - TEXAS - Ranged 3-12 per 100 terminals on cotton in Rio Grande Valley, southwest, and coastal bend sections, and 2-18 in Bee County. (Parker, Hanna, May 10).

CABBAGE LOOPER (Trichoplusia ni) - NEW MEXICO - Small larvae perforating leaves of young cotton, Dona Ana County. (Durkin, Elson, Clayshulte). ARIZONA - Moderate to heavy in some cotton fields in Pinal, Maricopa and Yuma Counties. (Ariz. Coop. Sur.). TEXAS - Occasional specimen found in 15 fields inspected in McLennan and Fall Counties. (Cowan et al.).

VARIEGATED CUTWORM (Peridroma saucia) - ARIZONA - Heavy and damaging cotton in Yuma, Maricopa and Pinal Counties. Several fields heavily damaged in Thatcher and Pima areas, Graham County. (Ariz. Coop. Sur.). MISSOURI - Larvae ranged up to 12 per hill in marginal rows of some cotton in Pemiscot County. (Jones).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - TEXAS - Found in 2 of 15 fields inspected in McLennan and Falls Counties. (Cowan et al.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Heavy infestations persist in Pinal, Maricopa, and Yuma Counties. Controls necessary in many fields. Hatching in Cochise and Graham Counties; damage moderate to heavy in scattered areas throughout both counties. (Ariz. Coop. Sur.).

THRIPS - ALABAMA - Relatively light on 4 demonstration farms in Henry County. (Barefield et al.). TEXAS - Damaging in several fields in McLennan and Falls Counties; heavy in 8, medium in 11, light in 20 and none in 1 of 40 untreated fields. Light in 18, medium in 2 and none in 17 treated fields. (Cowan et al.). Medium on cotton in El Paso and Hudspeth Counties. (Parker, Hanna, May 10). NEW MEXICO - Light to medium on cotton in Dona Ana and Eddy Counties. (Durkin, Clayshulte, Mathews). ARIZONA - Frankliniella occidentalis heavy and damaging untreated seedling cotton in Maricopa, Pinal, Pima, Cochise, Yuma and Graham Counties. Controls necessary in many fields. (Ariz. Coop. Sur.).

See also Special Insects of Regional Significance, page 425, and Federal-State Plant Protection Programs, page 442.

TOBACCO

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - SOUTH CAROLINA - Larvae noted in several plant beds in Williamsburg and Horry Counties; controls recommended. (Nettles et al., May 10).

FLEA BEETLES - SOUTH CAROLINA - Practically all tobacco fields now infested. (Nettles et al.).

POTATO TUBERWORM (Phthorimaea operculella) - GEORGIA - Light in Bulloch County. (Dollar).

SUGAR BEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adults range 1-5 per square yard on sugar beets in Weld County. Egg laying on new beets expected in 7-14 days. (Jenkins).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - OKLAHOMA - Adults ranged 0-6 per plant on potatoes in Mayes County; egg laying underway. Light on potatoes in Cleveland County. (Okla. Coop. Sur.). ALABAMA - Adults damaging field of tomatoes in Houston County. Infestations on potatoes light in Houston and Henry Counties.

Larvae numerous, adults light; feeding on potatoes in Covington County. (Barefield et al.). VIRGINIA - Overwintering forms present in potatoes on Eastern Shore; numerous egg masses observed. (Hofmaster).

CABBAGE LOOPER (Trichoplusia ni) - NEVADA - Larvae light to heavy on tomatoes in Moapa Valley, Clark County. (Zoller).

BEET ARMYWORM (Spodoptera exigua) - NEVADA - Larvae light to heavy on tomatoes in Moapa Valley, Clark County. (Zoller).

CUTWORMS - MARYLAND - Seriously injured field of newly set tomatoes in Worcester County. (U. Md., Ent. Dept.).

See also Special Insects of Regional Significance, page 427.

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - ALABAMA - Very light on beans in few home gardens in Henry and Houston Counties. Numerous larvae and few adults damaging beans near Florala, Covington County. Adult emergence from overwintered hibernation quarters much lighter than in 1965. Increase expected. (Barefield, White, Stephenson). GEORGIA - Damage and eggs noted on snap beans in Candler County. (Parker).

PEA APHID (Acyrthosiphon pisum) - DELAWARE - Averaged about 2 per 20 sweeps on peas. (MacCreary).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - TENNESSEE - Infesting cabbage in several areas. (Johnson).

HARLEQUIN BUG (Murgantia histrionica) - OKLAHOMA - Light and damaging greens in Cleveland County; first report of season. (Okla. Coop. Sur.).

INSECT DETECTION

AN OLETHREUTID MOTH (Eucosma gloriola) - MICHIGAN - Adults collected May 6 in Muskegon County pine plantation constitute new State record. (Newman, Wallner). (p. 439).

A BRACONID (Cardiochiles explorator) - DELAWARE - Numerous adults of this parasite of Loxostege similalis (garden webworm) collected from June through August 1964 constitute a new State record. (Burbutis). (p. 442).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Collected for first time in Carroll County. (Miner, Boyer). MISSOURI - Collected for first time in Barry, Stone, Lawrence, Greene, Pulaski, Miller, Camden and Cole Counties. (Houser). ILLINOIS - Collected for first time in Sangamon County. (Moore, White). (pp. 429, 430).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - CALIFORNIA - Collected for first time in Alameda, Contra Costa, Siskiyou and Sacramento Counties. (Cal. Coop. Rpt.). (p. 430).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Carpocapsa pomonella) - OREGON - Overwintering brood emerging May 7 in apple orchards in lower Hood River Valley. (Zwick). COLORADO - First adult taken in attractant trap May 1 in Delta County area; 28 males taken in attractant trap and 11 males in bait traps in same orchard in Clifton area May 4. Main flight underway. Peak flight in Mesa County May 6; high of 45 per 5 bait traps in Clifton area. Moths expected active in all areas in next few days. (Bulla). NEW YORK - First pupa of season found under tree band at Lagrangeville, May 6; average date for 28 years April 20. Flight not expected before May 25 unless higher temperatures occur. (N.Y. Wkly. Rpt.).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - NEW YORK - First adult taken in bait trap at Claverack May 2; about 2 weeks later than normal. (N. Y. Wkly. Rpt.). MICHIGAN - First egg mass of season noted May 5 in Allegan County. Adults noted recently in several southwestern orchards. (Thompson, Carpenter).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - NEVADA - Larvae light to medium on apple and plum in southern Washoe County. (Christner, Cooney, Deady).

ROSY APPLE APHID (Dysaphis plantaginea) - CONNECTICUT - Active on apples. (Savos, May 14). DELAWARE - Present on apples locally in Kent County. (MacCreary).

APHIDS - UTAH - Numbers far above normal in apple orchards. (Barlow, Knowlton). OHIO - Leaf curling by Dysaphis plantaginea and Aphis pomi showing in apple orchard in Wayne County. Some buds heavily infested. Syrphid fly larvae feeding on aphids. (Forsythe). GEORGIA - Yellow species heavy on pecan foliage in Ben Hill County. (McGlohon). MISSISSIPPI - Undetermined green species increasing rapidly on pecan trees in southern area. (Hammer). CONNECTICUT - A. pomi active on apples. (Savos, May 14).

TARNISHED PLANT BUG (Lygus lineolaris) - VERMONT - Few observed on apple trees in Burlington area May 8. (MacCollom).

A PLANT BUG (Atractotomus mali) - CONNECTICUT - Specimens collected from apple trees at Mount Carmel. Det. by D. E. Leonard; confirmed by J. A. Slater. (Johnson). Previously published as new United States record. Jour. Econ. Ent. 58(5):1031, 1965. (PPC).

PERIODICAL CICADAS (Magicicada spp.) - IOWA - Brood XXVI of 17-year race emerging in southeast last week of May. Brood VI expected in late May or early June. (Gunderson).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Hatched week of May 8. (Savos).

ROSE CHAFER (Macrodactylus subspinosus) - ALABAMA - Heavy, isolated adult populations defoliating apples and pecans at Marshall County location. (Woods).

A SAWFLY (Hoplocampa sp.) - COLORADO - Numbers high in Mesa County pear orchard. Larvae numerous and feeding on leaves April 26. Controls applied. (Bulla).

EUROPEAN RED MITE (Panonychus ulmi) - CONNECTICUT - Hatched on apples week of May 8. (Savos). NEW JERSEY - Hatch continues in southern counties; considerable numbers in orchard in Burlington County. (Ins.-Dis. Newsltr). OHIO - Heavy frost May 9 killed much of apple crop and reduced larval numbers in Wayne County; however, hatch not complete; more expected. (Forsythe). Count on apple leaves in Athens County yielded average of 1 mite per leaf. Hatch incomplete in county. (Rose). MICHIGAN - Very few nymphs in western area; hatch underway since early May; eggs still common in many apple and plum orchards. (Carpenter, Wooley).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - COLORADO - Flight continues; 30 taken in bait traps May 3. (Bulla). CALIFORNIA - Larvae medium in purple leaf plum nursery stock in Fresno, Fresno County. (Cal. Coop. Rpt.).

PEACH TWIG BORER (Anarsia lineatella) - COLORADO - Taken in traps in Mesa County area. (Bulla).

PLUM CURCULIO (Conotrachelus nenuphar) - DELAWARE - First adults of season jarred from peach trees in Kent County May 6 and from plum trees in Sussex County May 10. (MacCreary). ALABAMA - Light egg laying widespread on peaches and plums in Houston and Henry Counties. (McQueen).

CLIMBING CUTWORMS - MICHIGAN - Larvae injuring peaches in southwestern area. (Carpenter, Wooley). OHIO - Larvae tentatively identified as Abagrotis alternata and Agrotis badinodis full grown and active on crab apple in Cincinnati area. (Rings).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Abundant in peach orchards where early controls not applied; 10-15 colonies per tree. (Bulla). ARIZONA - Light to moderate on peach trees in Cochise and Graham Counties. (Ariz. Coop. Sur.).

A SPITTLEBUG (Aphorphora permutata) - CALIFORNIA - Adults, probably this species, medium on apricot trees locally in Salinas, Monterey County. (Cal. Coop. Rpt.).

A CHERRY FRUIT FLY (Rhagoletis cingulata indifferens) - OREGON - Adults emerged in cherry orchards at The Dalles, Wasco County, May 9. (Zwick).

FALL WEBWORM (Hyphantria cunea) - ALABAMA - Numerous colonies in pecans in Houston County; 1-5 per tree. Larvae apparently first and second instars. (McQueen).

PECAN LEAF CASEBEARER (Acrobasis juglandis) - ALABAMA - Overwintered larvae pupating on pecans in Houston County; appear extremely light. (McQueen).

SAWFLIES - GEORGIA - Larvae heavy and feeding on pecan foliage in Ware County. (Boland).

See also Federal-State Plant Protection Programs, page 442.

CITRUS

Citrus Insect Situation in Florida - End of April - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 65 percent of groves (norm 56 percent); 31 percent economic (norm 35 percent). Populations will decrease on old leaves and increase on new leaves and fruit. Overall population will show upward trend at end of May. Highest districts south and east. CITRUS RED MITE (Panonychus citri) infested 45 percent of groves (norm 48 percent); 17 percent economic (norm 16 percent). Near normal; in low range. Gradual increase and scattered heavy infestations expected in all districts. Highest district East. TEXAS CITRUS MITE (Eutetranychus banksi) infested 46 percent of groves (norm 42 percent); 19 percent economic (norm 19 percent). Will decrease until mid-May, then start rapid rise. Expected near normal until June. Highest district south. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) recently developed heavily in few groves that continuously harbor these mites. Most infestations will diminish after mid-May. Population much below average in survey groves throughout State. BLACK SCALE (Saissetia oleae) infested 28 percent of groves (norm 24 percent); 17 percent economic (norm 9 percent). At low level but above normal for April. Crawlers will appear in increasing numbers and disperse over canopy in May. Highest districts east and south. GLOVER SCALE (Lepidosaphes gloverii) infested 79 percent of groves, 22 percent economic. Reached high range and will increase slightly over current level. Highest districts central, south and east. YELLOW SCALE (Aonidiella citrina) infested 69 percent of groves, 12 percent economic. Above average but nearly all infestations light to moderate. Further decrease expected. Highest district central. PURPLE SCALE (L. beckii) and CHAFF SCALE (Parlatoria pergandii) below normal abundance. Neither expected to increase before June. WHITEFLY adults peaked above normal level late in April, left abnormally high number of eggs. High egg count provides bases for high population of destructive

larval form; however, other conditions may affect ultimate abundance of larvae. MEALYBUGS very scarce; slightly more egg masses present than is normal for April. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Damaging in many citrus groves in Maricopa and Yuma Counties. Controls still necessary. (Ariz. Coop. Sur.).

See also Federal-State Plant Protection Programs, page 442.

SMALL FRUITS

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - UTAH - Moderate in Utah County strawberry patches. (Barlow, Knowlton).

CLIMBING CUTWORMS - MICHIGAN - Larvae damaging to grapes and strawberries in southwestern plantings. (Carpenter, Wooley).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - UTAH - Killed most of strawberry patch at Providence, Cache County. Damage conspicuous in field south of Ogden, Weber County, and obvious in numerous strawberry beds in Utah County. (Dorst, Barlow, Knowlton). Strawberry bed plowed at Logan, Cache County, due to severe damage. (Knowlton).

ROSE CHAFER (Macrodactylus subspinosus) - ALABAMA - Heavy isolated adult population defoliating grapes at Marshall County location. (Woods).

APHIDS - MARYLAND - Chaetosiphon sp. buildup on strawberries continues at Glendale, Prince Georges County. (U. Md., Ent. Dept.). CALIFORNIA - Amphorophora sp. medium on Olallie blackberries in Watsonville, Santa Cruz County. (Cal. Coop. Rpt.).

TARNISHED PLANT BUG (Lygus lineolaris) - MICHIGAN - Adults common in southwestern area strawberry plantings; no nymphs observed to date. (Carpenter).

SPIDER MITES (Tetranychus spp.) - MARYLAND - Built up to destructive levels on new growth of strawberries at Glendale, Prince Georges County. (U. Md., Ent. Dept.). OREGON - T. urticae general and damaging strawberry fields in northern Willamette Valley. (Every).

GENERAL VEGETABLES

ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) - OREGON - Causing 20 percent loss to field of artichokes near Astoria, Clatsop County. (Every).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Moderate to heavy on lettuce in Pinal and Maricopa Counties. Light in Yuma County. (Ariz. Coop. Sur.).

VARIEGATED CUTWORM (Peridroma saucia) - ARKANSAS - Larvae heavier than usual in sweetpotato plant beds in Faulkner County, but noneconomic. (Tucker).

ASPARAGUS BEETLE (Crioceris asparagi) - CALIFORNIA - Heavy in asparagus plantings in Santa Cruz, Santa Cruz County. (Cal. Coop. Rpt.).

DARKLING BEETLES (Blapstinus spp.) - ARIZONA - Heavy populations migrating into some lettuce fields in areas of Maricopa County. (Ariz. Coop. Sur.).

FLEA BEETLES - GEORGIA - Severe on eggplant in Spalding County. (Dupree).

GREEN PEACH APHID (Myzus persicae) - VIRGINIA - Held in check again by fungus prevalent past 4 years on Eastern Shore. (Hofmaster).

THRIPS - NEW MEXICO - Medium to heavy on onions in Dona Ana County. Spraying in progress. (Durkin).

ONION MAGGOT (Hylemya antiqua) - IDAHO - Pupation underway in Parma area, Canyon County; all stages present. Numbers apparently greater than in last 6 years. Unusually high soil temperature in area this spring; second generation may be damaging. Few pupae expected to diapause until fall. (Scott).

ORNAMENTALS

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - COLORADO - Larvae feeding on foliage of ornamental crab apple, cottoneaster and fruit trees in west Denver. (Weise).

A NOCTUID MOTH (Zotheca tranquilla) - OREGON - Heavy on some ornamental elderberry plants in Salem, Marion County. (Goeden).

APHIDS - CALIFORNIA - Neophyllaphis podocarpi nymphs and adults heavy on podocarpus nursery stock in Fresno, Fresno County; this is new county record. Macrosiphoniella sanborni nymphs medium on chrysanthemum nursery stock in Selma. (Cal. Coop. Rpt.). WASHINGTON - Cinara curvipes damaging Christmas trees (Abies concolor, A. grandis, A. procera) at Vancouver, Clark County. Heavy on many trees; honeydew heavy on trunks and needles. (Shanks, May 9). WISCONSIN - Neoceruraphis viburnicola hatched April 14 at Middleton; migrated immediately to opening buds. (Wis. Ins. Sur.). MARYLAND - Aphis gossypii heavy on rose-of-Sharon on several Prince Georges County properties. (U. Md., Ent. Dept.). FLORIDA - Cinara tujafilina adults severe on stems of arborvitae in Bartow nursery, Polk County. (Schmidt, May 2).

ROSE LEAFHOPPER (Edwardsiana rosae) - UTAH - Discoloring rose foliage at Logan, Providence and Wellsville, Cache County, and Brigham City, Box Elder County. (Knowlton).

ARMORED SCLAES - MARYLAND - Leucaspis japonica heavy on dogwood at Salisbury, Wicomico County. (U. Md., Ent. Dept.). FLORIDA - Temnaspidiotus excisus infested 50 of 1,000 Aglaonema commutatum nursery plants at Plymouth, Orange County. (Van Pelt, May 4). OKLAHOMA - Unaspis euonymi egg hatch essentially complete in Payne County; crawlers active. (Okla. Coop. Sur.). CALIFORNIA - Dynaspidiotus britannicus locally heavy on boxwood nursery stock in Danville, Contra Costa County. (Cal. Coop. Rpt.).

SOFT SCALES - CALIFORNIA - Coccus hesperidum heavy on yucca nursery stock in Merced, Merced County. (Cal. Coop. Rpt.). MICHIGAN - Lecanium fletcheri nymphs moderate to heavy on several varieties of yew in Kalamazoo County. (Thompson).

NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) - NEW JERSEY - Adults not emerged in quantity in central counties; activity expected soon. (Ins.-Dis. Newsltr). MARYLAND - Adult emergence noted May 12 at College Park, Prince Georges County. (U. Md., Ent. Dept.).

SPRUCE SPIDER MITE (Oligonychus ununguis) - MARYLAND - Active on white and Norway spruces in Prince Georges County. (U. Md., Ent. Dept.).

FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (Malacosoma americanum) - VERMONT - Nests common in Chittenden County May 1. Hatching observed at Milton May 3. (MacCollom). VIRGINIA - Active throughout most of State, especially on cherry. Defoliation

moderate to heavy in Amherst and Nelson Counties. (Va. Div. For., Apr.). OHIO - Very abundant on wild cherry in Belmont, Monroe and Washington Counties. Most trees appear nearly defoliated. Larvae smaller at northern end of range than in Washington County, toward southern extent of populations. Infestations spotty in Muskingum, Coshocton and Tuscarawas Counties and parts of Belmont County; generally less severe on individual trees than in more southern counties. (Rose). Fairfield and Pickaway Counties apparently edge of activity in central area. These counties nearly free of infestations. (Walker). WISCONSIN - Webs becoming noticeable on chokecherry trees with opening buds and on few chokecherry trees showing evidence of florets. Larvae range from first to second instar, more advanced in Madison area than in Spring Green area. (Wis. Ins. Sur.).

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) - UTAH - Increased damage along Virgin River, from Rockville to Santa Clara; defoliating poplar trees. (Thornley, Knowlton).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - MICHIGAN - Larval feeding on new growth evident in infested Lower Peninsula pine plantations. (Dowdy).

SPRUCE NEEDLE MINER (Taniva albolineana) - IDAHO - Larvae feeding on green needles in Moscow, Latah County. (O'Keeffe). NEVADA - Emerging in Douglas, Ormsby and Washoe Counties. (Bechtel).

OLETHREUTID MOTHS - MICHIGAN - Eucosma gloriola adults collected May 6 in Muskegon County pine plantation. Det. by J. H. Newman. New state record. May be same species that caused considerable injury to jack pine in western section of Upper Peninsula and in Wexford, Grand Traverse, Kalkaska, Crawford and Missaukee Counties on Lower Peninsula in 1965. (Newman, Wallner). CALIFORNIA - Rhyacionia pasadenana adults medium on Monterey pine trees in Oceano, San Luis Obispo County, and in San Francisco, San Francisco County. (Cal. Coop. Rpt.).

PINE TIP MOTHS - VIRGINIA - Overwintering moths emerged first week of May in New Kent district; generally 7-10 days behind normal. (Va. Div. For., Apr.).

SPRING CANKERWORM (Paleacrita vernata) - WISCONSIN - Hatched on elm near Mazomanie May 10. Larvae small. No injury evident on new leaves. Few trees heavily infested. (Wis. Ins. Sur.).

SILVER-SPOTTED TIGER MOTH (Halisidota argentata) - OREGON - Heavy on spruce along U.S. Highway 101 north of Coos Bay, Coos County. Many yard trees being defoliated. (Kline).

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) - NEVADA - Larvae light to heavy on elms and willows in Reno-Sparks area, Washoe County. (Cooney).

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - VIRGINIA - Strong potential for epidemic problem again this year if dry summer prevails despite 95 percent overwintering mortality in many parts of northern section of epidemic area. (Va. Div. For., Apr.).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEVADA - Eggs present in Winnemucca, Humboldt County. (Lundahl). ARIZONA - Damaging elm trees in Pinal County and in some areas of Yavapai and Coconino Counties. (Ariz. Coop. Sur.). OKLAHOMA - Hatching on elms in Delaware County; eggs heavy but not hatching in Major County. (Okla. Coop. Sur.).

COTTONWOOD LEAF BEETLE (Chrysomela scripta) - ALABAMA - Larvae and adults continue feeding on leaves of cottonwood and willow throughout State. (Rutledge et al.).

A LEAF-MINING WEEVIL (Odontopus calceatus) - OHIO - Feeding on yellow-poplar in Lawrence County. (Crawford, Holdsworth). Heavy on sassafrass and yellow-poplar in southern area in 1965. (Rose).

PINE BARK APHID (Pineus strobi) - WISCONSIN - Overwintering populations appear higher than in 1965 on white pine near Mazomanie. Eggs not hatched May 10. (Wis. Ins. Sur.).

BALSAM WOOLLY APHID (Adelges piceae) - OHIO - Infesting 200 Douglas-firs 2-5 feet tall in northeast. Inner branches of denser trees most seriously affected, but infestation generally light. Females ovipositing. (Kelly, Walker).

APHIDS - CALIFORNIA - Nymphs and adults of Myzocallis alhambra medium on cork oak trees in Moreno, Riverside County. Essigella californica heavy on Monterey pine nursery stock in Halycon, San Luis Obispo County. Prociphilus fraxinifolii medium on Modesto ash trees in Petaluma, Sonoma County, and heavy in ash nursery stock in Fresno, Fresno County. Lachnus salignus adults heavy on willow trees in Hayward, Alameda County. (Cal. Coop. Rpt.). WISCONSIN - Rhopalosiphum fitchii increased noticeably on ornamental Prunus sp. in western Dane County. Nymphs feeding on leaves; honeydew becoming more evident. Few younger nymphs developing wing pads; migration expected within week. Some disease noted in older specimens. (Wis. Ins. Sur.).

SARATOGA SPITTLEBUG (Aphrophora saratogensis) - MICHIGAN - First hatch and nymphal activity of season observed May 6 in Livingston County pine plantation. (Dowdy).

PLANT BUGS (Neoborus spp.) - NEVADA - Nymphs and adults causing heavy damage to ash trees in Las Vegas, Clark County. (Zoller). CALIFORNIA - Neoborus illitus medium on Modesto ash trees in Altaville, Calaveras County. (Cal. Coop. Rpt.).

MARGARODID SCALES - CALIFORNIA - Matsucoccus acalyptus pupae and adults heavy on pinyon pine trees in Frazier Park, Ventura County. Stomacoccus platani medium on sycamore trees in Los Banos, Merced County; heavy in Sacramento, Sacramento County. (Cal. Coop. Rpt.). COLORADO - Matsucoccus sp. heavy on pinyon pines throughout vicinity of Fort Collins. (Kincaid).

WALNUT SCALE (Aspidiotus juglansregiae) - CALIFORNIA - Locally heavy on birch trees in Arlington, Riverside County. (Cal. Coop. Rpt.).

THRIPS - CALIFORNIA - Frankliniella occidentalis, Thrips madronii, Rhipidothrips brunneus and Orothrips kelloggii medium on madrone trees (Arbutus menziesi) in Darlingtonia, Del Norte County. (Cal. Coop. Rpt.).

A PINE RESIN MIDGE (Retinodiplosis inopis) - OREGON - General on lodgepole pine throughout Willamette Valley; causing dead needles on current shoot growth. Adults emerging. (Kline).

BIRCH LEAF MINER (Fenusa pusilla) - DELAWARE - Eggs and very young larvae present on white and gray birches in New Castle County; appear rather heavy. (Burbutis). CONNECTICUT - Egg laying underway in Stamford area (Savos, May 14).

EUROPEAN PINE SAWFLY (Neodiprion sertifer) - MICHIGAN - Hatch underway in 2 Livingston County Scotch pine plantations; one plantation showed approximately 25 percent hatch and other about 5 percent by noon May 6. Practically all hatching on sunny, southern exposure. Few first instars noted May 7 in Clinton County plantation. Hatch more widespread in Lower Peninsula after May 9. (Wallner, Flink, Carpenter). OHIO - First instars feeding on needles of Scotch, red and Austrian pines in Wayne County May 5. Heavy in block of 100 trees. (Kelly, Walker). Some second instars present on pines in central area (Gibson), and in Columbiana County. (Neiswander).

CONIFER SAWFLIES (Neodiprion spp.) - VIRGINIA - Annual N. pratti pratti egg survey in January indicates lowest population since epidemic of 1958-1960. Larvae hatched over unusually long period of 3 weeks in Ferncliff area, Louisa County, March 29 through April 18. (Va. Div. For., Apr.). MISSISSIPPI - N. taedae linearis heavy on approximately 30 acres of pine trees in Lowndes County. (Barry).

OREGON - Neodiprion spp. larvae common in western section on ponderosa pine; pupating. (Kline).

See also Federal-State Plant Protection Programs, page 442.

MAN AND ANIMALS

MOSQUITOES - MARYLAND - Aedes sollicitans adults active May 10 in Kent and Somerset Counties. (U. Md., Ent. Dept.). MICHIGAN - Emergence of undetermined species rather general in Lower Peninsula woodland ponds; cold weather prevented annoyance. (Lawson). WISCONSIN - Adults reported in Madison area probably a species which overwintered in this stage. Larvae of Aedes sp., but no pupation, observed May 4 Populations sporadic; numbers high in some floodwater pools; no larvae in others. (Wis. Ins. Sur.) OKLAHOMA - Fourth instars of Aedes triseriatus noted in tree holes and third instars of Culex pipiens quinquefasciatus in permanent pools in Payne County. (Okla. Coop. Sur.). LOUISIANA - Larval collections by Jefferson Parish Dept. of Mosquito Control yielded Culex pipiens quinquefasciatus, C. restuans, C. salinarius and Psorophora ciliata. Light trap collections increased due to warmer weather; mainly C. salinarius. (Stokes). UTAH - Annoying about homes at Brigham City, Box Elder County, and at Grantsville and Burmester, Tooele County. Extremely annoying about St. George, Washington, Santa Clara and elsewhere in Washington County. (Knowlton). NEVADA - Adults heavy in Gerlach, Washoe County; biting humans and livestock. (Bechtel, Martinelli).

HORN FLY (Haematobia irritans) - MISSOURI - Adults 10-20 per animal in cattle herd in Boone County, April 25. (Nelms). OKLAHOMA - Ranged 88-1,000 per head on cows in Major County; heavy in Mayes County. (Okla. Coop. Sur.). MISSISSIPPI - Averaged 75 per animal on 25 head of cattle in Pontotoc County. No controls used. (Dinkins). ALABAMA - Adults extremely high on registered beef cattle herd in Houston County; 800-1,000 per animal. Building up on untreated animals in Bibb and Wilcox Counties. (White et al.).

DEER FLIES (Chrysops spp.) - OKLAHOMA - Heavy and annoying cattle, horses and people in Mayes County. (Okla. Coop. Sur.).

COMMON CATTLE GRUB - (Hypoderma lineatum) - OKLAHOMA - Adults light but active on and around cattle in Payne County. Annoying 2 of 60 steers checked. (Okla. Coop. Sur.).

HOUSE FLY (Musca domestica) - OKLAHOMA - Cool weather decreased numbers in Payne County; up to 10 per Scudder grid in favorable areas. (Okla. Coop. Sur.). GEORGIA - Nuisance around dairy barns in Spalding County. (Snoddy).

A SPHAEROCERID FLY (Leptocera sp.) - IDAHO - Two potato processing plants in Burley, Cassia County, shut down because fly emergence heavy from adjacent tare dirt and cull potato dump; entered plants and interfered with processing. Species of Sciaridae, Heleomyzidae and Drosophilidae also present. Det. by C. W. Sabrosky and H. W. Smith. (Rinebold).

TICKS - WISCONSIN - First Dermacentor variabilis of season reported in Washburn County. (Wis. Ins. Sur.). MARYLAND - D. variabilis numerous on children near wooded area at Oxon Hill, Prince Georges County, May 13. (U. Md., Ent. Dept.). ARKANSAS - Ticks, primarily Amblyomma americanum, heavy in most upland wooded areas of State. (Boyer).

BENEFICIAL INSECTS

A BRACONID (Cardiochiles explorator) - DELAWARE - Numerous adults collected in sweepings from alfalfa and lima beans at Milford, Sussex County, June 28 to August 13, 1964. Parasite of Loxostege similalis (garden webworm). Collected by P. P. Burbutis and L. P. Kelsey. Det. by P. M. Marsh. This is new State record. (Burbutis).

A SPHECID WASP (Pemphredon tenas) - COLORADO - Numerous in nursery in Boulder. Storing aphids in burrows in pith of rose canes. (Gilmore).

HONEY BEE (Apis mellifera) - MINNESOTA - Winter losses rather light. Of most colonies not surviving, losses due to inadequate food stores or faulty queens. (Minn. Ins. Rpt.).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - INDIANA - Eggs per linear foot of row on oats increased from 4.0 to 11.6 May 4-11. One larva observed May 8 on wheat in New Carlisle area of La Porte and St. Joseph Counties. (Shade, Anderson). MICHIGAN - No larvae taken in State. Intensive checking in southwestern research plots revealed 99 percent of eggs laid before May 7 now dead. Cold nights and drying effects of air movement, with relative humidities of 30-40 percent led to additional egg mortality. Very little adult activity except on sunny days. Egg deposition continues at relatively low rate. Aerial spraying for suppression hampered by weather, although 701,211 acres treated by May 11. Excellent kill obtained in all areas except small spot in Eaton County. Trial spray during marginal flying weather showed less than acceptable control; retreatment necessary. (Gomulinsky, Moore, Jantz).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Total of 5,326 adults taken in McPhail traps week ending May 6. Of these, 4,587 caught in Dade County, 519 in Broward, 213 in Palm Beach and 7 in St. Lucie Counties. In 1965, total of 234 flies caught May 4-27. Surinam-cherry (Eugenia uniflora) principal host plant at this time (Fla. Coop. Sur.).

GRASSHOPPERS - OREGON - Localized infestations, probably Chorthippus longicornis and Melanoplus spp., found in bent grass fields of Marion County. About 90 percent apparently first instar; 3-30 per square yard. (Lawson). UTAH - Conspicuous numbers hatched in orchards at Hurricane; common in peach orchards at Toquerville and Pintura, Washington County. Hatch continues in Cache County on farms and rangeland. (Thornley, Knowlton). OKLAHOMA - Nymphal surveys show 6-20 first and second instars of several species per square yard in rangeland in Ellis and Roger Mills Counties; up to 2 per square yard in Cimarron, Texas and Beaver Counties. Amphitornus coloradus, Aulocara elliotti and Ageneotettix deorum dominant species. Grasshoppers ranged 8-15 per 10 sweeps in alfalfa in Cotton and Tillman Counties, 6-25 per square yard on rangeland in Tillman County. (Okla. Coop. Sur.). MISSOURI - Occasional small nymph probably Melanoplus sp., swept from alfalfa in Springfield-Joplin area. (Houser). SOUTH DAKOTA - Survey west of Keldron, Corson County, May 5-6, revealed numerous eggs of Melanoplus bivittatus and M. differentialis. Most in coagulated and eye-spot stages; very few segmented. (Burge). In western area, first instar M. confusus and Ageneotettix deorum nymphs less than 1 per square yard May 9. In Pennington County, one first instar M. bivittatus found during 16 man-hours of surveying May 10. (Zimmerman). MINNESOTA - Checks in southeast and south central districts revealed only Melanoplus femurrubrum eggs; all in early coagulated stage. Very few egg predators found. (Minn. Ins. Rpt.). WISCONSIN - Dissosteira carolina nymphs appearing in sandy textured soil near the Wisconsin River. (Wis. Ins. Sur.).

GYPSY MOTH (Porthetria dispar) - NEW YORK - Hatching began May 7 in Hurley area. (N.Y. Wkly. Rpt.). CONNECTICUT - Overwintering eggs hatched in many areas. (Savos, May 14). VERMONT - Hatching expected soon in warmer areas. (Hinesburg, May 3).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Single adult males taken in sex lure traps (Frick adaptation) in Winterhaven, Imperial County, and Blythe, Riverside County. (Cal. Coop. Rpt.). TEXAS - In McLennan and Falls County area, 3 cages containing green bolls collected in November and placed on screens 6 inches above soil yielded 1 moth. In 6 cages containing bollie cotton collected in March from standing stalks, one moth emerged. (Cowan et al.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

Total cases reported in U.S. May 7-14: 25. Location: Texas: La Salle, Frio, Zavala, Kinney, Uvalde and Hidalgo one each. Arizona: Maricopa 4, Cochise 7, Yuma 2, Santa Cruz 2, Pima 1, Yavapai 1, Pinal 1. New Mexico: Hidalgo 1.

Current	Cumulative	Current	Cumulative	Current	Cumulative

Table 1. Comparison of screw-worm samples identified during corresponding weeks in the United States.

Year	Positive Cases		Negative Cases	
1964	15	69	253	2850
1965	21	74	248	1957
1966	25	115	118	1145

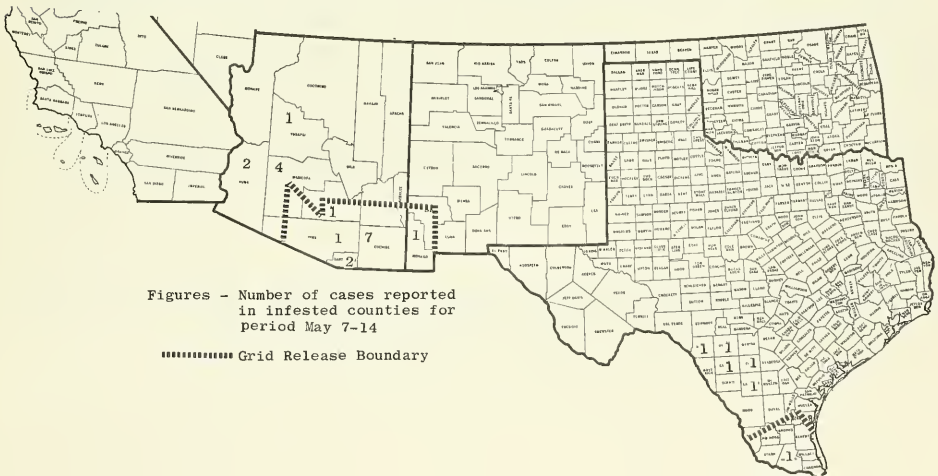
Table 2. Comparison of United States screw-worm cases by State.

State	1964		1965		1966	
Texas	15	57	6	38	6	47
Ariz.	0	6	14	30	18	64
N. M.	0	0	1	4	1	2
Calif.	0	6	0	2	0	2

Table 3. Comparison of screw-worm cases inside and outside the United States portion of the Barrier Zone.*

Year	Inside Barrier Zone		Outside Barrier Zone	
1965	6	34	1	8
1966	23	107	2	8

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. Effective May 23, 1965, portions of Arizona and California were added to the Barrier Zone. (Anim. Health Div.).



Figures - Number of cases reported in infested counties for period May 7-14

Grid Release Boundary

HAWAII INSECT REPORT

Special Insects of Regional Significance - A GRASSHOPPER (Schistocerca vaga) - Large specimens reported feeding on pummelo leaves in Waianae, Oahu. None observed upon investigation. Foliar damage noticeable. Description fits S. vaga. SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) - Noticeable buildup of nymphs and adults on Crotalaria sp. (rattlebox) at Keaau Macadamia Orchard in Hilo, Hawaii Island. Adults heavily parasitized by Trichopoda pennipes var. pilipes (a tachinid fly). On Maui, nymphs and adults caused light damage to terminals of watercress in Pauwela and light to moderate damage to growing terminals of mature potato plants on 9 acres in Ulupalakua. (Yoshioka, Miyahira). ORIENTAL FRUIT FLY (Dacus dorsalis) - Collections of papaya from Kapoho in March 1966 yielded 19,907 larvae from 1,681 pounds of fruits; heavy for papaya. (ARS). Collections of Momordica balsamina (wild momordica) fruits between December 1965 and February 1966 highly infested by MELON FLY (Dacus cucurbitae). (ARS). MEDITERRANEAN FRUIT FLY (Ceratitis capitata) heavy; 145 larvae per pound of fruit in Solanum pseudocapsicum (Jerusalem-cherry). Collected December 1965 to February 1966 at Mauna Loa Truck Trail; elevation 4,250 feet. (ARS).

Fruits and Nuts - AN OLETHREUTID MOTH (Cryptophlebia ombrodelta) - Larvae light to medium on macadamia nuts in Kainaliu, Hawaii Island. Damage mainly to husks. (Yoshioka). A TORTRICID MOTH (Agonoxena argaula) - Light to medium outbreaks of this coconut leafminer in Wailua, Kauai, in March. Recent surveys indicate populations now at trace levels. (Au). A SCARAB BEETLE (Protaetia fusca) - Adults light on litchi in Moanalua, Oahu and on wild olive in Waimea, Hawaii Island at 2,400 feet elevation. (Kajiwara, Fullaway).

Ornamentals - AN ARMORED SCALE (Pinnaspis buxi) heavy on red varieties of Cordyline terminalis (ti) in Kaneohe, Oahu; about 140 per square inch of leaf surface. (Haw. Ins. Rpt.). CHINESE ROSE BEETLE (Adoretus sinicus) adults medium and causing moderate to heavy foliar damage to Hibiscus tiliaceus (hau) and guava throughout Kukuiula and Poipu, Kauai, at 20-400 feet elevation. (Au).

Forest and Shade Trees - AN APHID (Thoracaphis fici) heavy on large banyan tree, Ficus benghalensis (Indian banyan) in Honolulu, Oahu. All leaves infested and blackened with sooty mold. Numerous larvae of Bothrocalvia pupillata (a lady beetle) observed on leaves. (Haw. Ins. Rpt.).

Man and Animals - MOSQUITOES - During April 45 light traps on Oahu collected 538 Aedes vexans nocturnus and 4,717 Culex pipiens quinquefasciatus. Average counts per station for April and March, respectively, as follows: A. vexans nocturnus 11.9 and 28.1; C. pipiens quinquefasciatus 104.8 and 118.3. Light trap in Nanakuli had highest collection of both species, 154 A. vexans nocturnus and 1,154 C. pipiens quinquefasciatus. (Mosq. Cont. Branch, Dept. of Health).

Household - AN ANOBIID BEETLE (Tricorynus herbarium) damaging numerous books in government building in Honolulu, Oahu. Many tunnels in book bindings. (Masaki).

Beneficial Insects - A BRACONID WASP (Apanteles militaris) - Several pupae found under thistle plants on Mount Hualalai, Hawaii Island at 4,000 feet elevation; approximately 29 miles from original release point in Kamuela. Adults emerged 2-3 days later. This insect introduced in 1951 and 1960 to aid in control of armyworm (Pseudaletia unipuncta). (S.H.A.).

CORRECTIONS

CEIR 16(18):389 - A SCARAB (Anomala undulata) - Change "Developing berries injured" to read "Developing berries not injured." (Fla. Coop. Sur.).

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA																								
Key West 4/28			BL						5									2						
Gainesville 5/10			BL						3															
GEORGIA																								
Tifton 5/4-11	60-80	1.19	BL							0	2				0	0								
MISSISSIPPI																								
Tunica 5/5-11	40-80		BL	27			1		7		1									11				
Stoneville 5/5-11	44-88		2BL	28			2		1									1	2	1				
Rolling Fork 5/5-11	54-85	0.01	BL	8					7		2				1	1			3	4				
MISSOURI																								
Portageville 5/7-13			BL														1	1		20				
NEBRASKA																								
Bushnell 5/1-5						1												1						
North Platte 5/3-5				6		28		18										120		7				
Ogallala 5/2-4																		7						
SOUTH CAROLINA																								
Charleston 5/2-8	54-84	1.48	BL	2			0		0	0	0				0	0		0	1	3		0	0	
TENNESSEE (counties)																								
Maury 5/3-9				2														3	1	7				
Cumberland 5/3-9				6														4						
Greene 5/3-9				3														2	1	26				
Johnson 5/3-9				8														3		8				
TEXAS																								
Waco 5/7-13				7					18		10							24	13	18	1		19	
WISCONSIN																								
Madison 5/4-12			BL															1		0				

Weather continued from page 426.

up to 5 inches of rain along the Texas Upper Coast. The Pacific Northwest received almost daily rains. In parts of New England, this was the 3rd or 4th consecutive week with beneficial rains. Most of the 4-week totals in New England are 70-100 percent of the normals.

<u>SEVERE STORMS</u>: More than a dozen tornadoes occurred Wednesday afternoon and evening in Kansas, Oklahoma, and Missouri. Damage was comparatively light. Other tornadoes, wind, and hail storms occurred over portions of the same States Sunday night. At least 3 persons in Kansas City, Kansas, were injured by a tornado which caused light to moderate damage in the City. Hail as large as baseballs fell at Gardner, Kansas, about 25 miles southwest of Kansas City. (Summary supplied by Environmental Data Service, ESSA).

THE USE OF STICKY BOARD TRAPS IN INSECT SURVEYS

Traps, utilizing a sticky material to catch and hold insects, have been used for years. Variations of these may be useful for numerous kinds of insect surveys. As the traps are inexpensive and easy to manufacture regular replacement with new ones is facilitated. Reclaiming used traps has proven to be costly, except where very few are in operation.

Some of the advantages of the sticky board traps, especially when used in large numbers, are as follows: (1) The exposure time is unlimited as they are effective as long as the barrier material remains sticky; (2) the traps function at all times of the night and day when temperatures are optimum; (3) they are compact, easy to handle and place in operation, require very limited space when transported; and (4) inspection is rather easy. The principal objection by users is the handling of finished traps but the free use of solvent readily overcomes the problem.

The traps may be checked in the field, moved to a central inspection station, or collected and stored for inspection at a more desirable time. Under actual field conditions when these traps were used for pear psylla, a small insect, the specimens were adequately preserved and could be readily identified when removed after a lapse of 5 months. Inspection time is reduced and efficiency improved by marking each side of the board with two black lines to divide it into thirds. Colors and lures greatly improve the effectiveness of this trap. Some collections may result from normal insect flight, but in general, tests have shown that a board that is painted yellow with a tinge of orange will catch more insects. In special cases, where synthetic or food lures have been used, color seems to be of little significance.

The basic trap, generally 5 X 10 inches in size and 1/4 inch or less in thickness, may be manufactured from wood, plastic or treated paper. It is imperative that the carrier will not absorb the sticky material. Suitable hangers may be made from 18-gauge soft iron wire passed through a centered hole 1 inch from the top of the board. The adhesive material may be applied by hand (spatula or tile cement spreader) or by passing the boards between two rollers such as a washing machine wringer. One pound of most materials will coat 35 or 40 traps. When coating during cold weather, the consistency of the sticky material may be improved by placing the containers in a 60-70° water bath.

Specimens are readily removed from the adhesive material with a small stick or flattened object after first applying a suitable solvent directly on the specimen. When the specimens are removed, they should be placed in vials containing the solvent. After a short time the sloshing motion of the solvent will remove any remaining sticky material and the specimens are ready for determination and transfer to alcohol or another preservative.

When the sticky material is placed on a surface that has been made impervious to oily substances by means of paint, lacquer, or shellac, the effectiveness quality of the adhesive is generally retained indefinitely. Highway marking lacquer serves well for coloring traps yellow. It may be brushed, rolled or sprayed. At temperatures below which most insect flight ceases, the average substance will still be sticky. When temperatures are near or below the freezing point, the surface becomes semi-tacky but returns to its original condition in warm weather. Light rains and showers do not affect the stickiness or other qualities of the substances. Heavy, beating rains which may result in white milky spots and streaks on the surface, slow up inspection. Heavy dust storms frequently cover the traps to the extent of turning them black with dirt. The affected surface may first be cleaned with solvent applied with an atomizer in order to aid in the inspection of such boards. (Survey and Detection Operations, PPC).

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Cooperative ECONOMIC INSECT REPORT

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AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 May 27, 1966 Number 21

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

BEET LEAFHOPPER migration reported in northern Utah. CORN EARWORM moths appearing in Washington, larvae damaging sweet corn in Texas. POTATO LEAFHOPPER adults in clover and alfalfa in Illinois and Indiana. SIX-SPOTTED LEAFHOPPER increased in small grains and alfalfa in Minnesota; also reported on grain in Wisconsin. (p. 449). SPOTTED ALFALFA APHID locally heavy on alfalfa in Oklahoma; winged adults abundant in New Mexico. EUROPEAN CORN BORER winter mortality and total number of live larvae lower than average in Iowa; adult flights unusually low in Delaware. (p. 450).

ALFALFA WEEVIL damage ranges moderate to severe; populations increasing in some areas due to warmer weather; reported for first time in several sections. (p. 452). CLOVER LEAF WEEVIL populations may be higher than last year in Ohio. (p. 453). CUTWORMS damaging alfalfa in western States; severe in California. PEA APHID increasing markedly on alfalfa in Midwest. (p. 454). MEADOW SPITTLEBUG nymphal populations highest in recent years in Maryland. (p. 455).

BUDWORMS on tobacco in North Carolina earlier than usual. (p. 456). BEET ARMYWORM and CABBAGE LOOPER problems on cotton in Arizona, VARIEGATED CUTWORM damaging in southeast Missouri. BOLL WEEVIL adults appearing in cotton fields in Alabama and Texas. (p. 459).

Severe twig injury by ORIENTAL FRUIT MOTH reported in Missouri; adults active in other areas. PLUM CURCULIO active on peaches in New Jersey. PEAR PSYLLA nymphs heavy on pear in Oregon. EUROPEAN RED MITE eggs hatching in Eastern and Midwestern States. (p. 461). STRAWBERRY LEAF ROLLER damaging strawberries in Utah and Ohio. (p. 463). GIANT AFRICAN SNAIL (Achatina fulica) spreading extensively and buidling up in Hana area of Maui, Hawaii; many eggs observed in banana groves. (p. 473).

Detection

- A GELECHIID MOTH (Chrysopora stipella) taken in blacklight trap at Friendship Airport, Maryland is New North American record. Probably not economic species; known hosts include Atriplex, Chenopodium and Amaranthus. (p. 471).

For additional new county records see page 471.

Reports in this issue are for week ending May 20 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING MAY 23

HIGHLIGHTS: (1) Warm or mild most of Nation. (2) Spotty rains East; little rain West.

TEMPERATURE: The week was cool in the Northwest and rather warm from the southern Plains to California. Most other areas had temperature averages near normal. Temperatures in the 90's were common in Texas and reached the Dakotas at the weekend. Some east coastal areas had the warmest week since September 1965; Washington D. C., reported 80° or warmer on 6 of 7 days. Cloudiness, high humidity, and showery weather in the East and in north central areas caused poor drying conditions and small daily temperature ranges. Most western and southwestern areas had sunny and dry weather with low humidity and large diurnal temperature ranges. Some blowing dust was reported in agricultural areas in Arizona.

PRECIPITATION: Little or no rainfall occurred west of the Continental Divide. Parts of the Great Plains continued dry; much of an area extending from the Texas Panhandle and western Oklahoma northward through Nebraska had a rainfall deficiency

Weather continued on page 459.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - ILLINOIS - Hatching in small grains in southern area. Small larvae per 100 sweeps in wheat, 0-10 in southeast, 20-50 (average 30) in southwest. As many as 8 per square foot found in lodged wheat. (White). MISSOURI - Nearly half developed larvae ranged 0-23 per square foot in small grains in southeast. Damage ranged from minor leaf feeding to some head feeding in isolated cases. Treatment underway; will increase. (Jones). GEORGIA - Light on small grain, Schley County. (Wilson, Weathersby, French). TENNESSEE - Controls underway in western area small grains. (Mullett).

ARMYWORMS - LOUISIANA - Caused some damage to small grain in Tallulah area, Madison Parish. (Cleveland et al., May 13). ARKANSAS - Larvae 5-10 per 100 sweeps in wheat checked in northwest section. (Ark. Ins. Sur.).

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Migration reached northern section of State. One dark overwintered female, one half-grown nymph and 5 pale females taken in 250 sweeps on mustard at Promontory Point, Box Elder County. (Knowlton).

CORN EARWORM (Heliothis zea) - TEXAS - Considerable numbers of full-grown larvae attacking late maturing ears of sweet corn in 60-acre field near Edinburg, Hidalgo County. (Page). Light on potatoes near Angleton, Brazoria County. (Teetes). OKLAHOMA - Small larvae lightly damaged 12-15 inch corn in Carter County. (Okla. Coop. Sur.). NEW MEXICO - Larvae 0-12 per 50 sweeps in alfalfa in northern Dona Ana County, depending on field checked. (Elson, Nielsen). WASHINGTON - Four males collected in light trap at Prosser, Benton County, May 5; month earlier than any previous collections. (Klostermeyer, May 13). For Bollworms, see page 458.

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Remains problem in small grains in southern half of State. (N. M. Coop. Rpt.). TEXAS - Medium to heavy on several grain fields throughout Nueces County. (Parker).

GREENBUG (Schizaphis graminum) - NEBRASKA - Economic populations causing some damage to grains in parts of Nuckolls and Gage Counties. (Tremain, McClure). WISCONSIN - Appearing in oat fields in southwest. Most oats late; difficult to determine extent of infestation; percent of viruliferous aphids not known. Few winged aphids found in earlier planted oats near Monroe, Green County, and in western Rock County; counts as high as 6 per 100 sweeps in oats in Brodhead area. Nymphs at latter location indicated earlier appearance in State. Numbers scarce; about 1 per 200 sweeps. None found in grain checked in La Crosse, Trempealeau and Vernon Counties. (Wis. Ins. Sur.). SOUTH DAKOTA - Counts of 54 per 40 linear feet of row in oats at Centerville, Clay County, May 16, and 2 at Highmore, Hyde County. (Jones).

POTATO LEAFHOPPER (Empoasca fabae) - ILLINOIS - Adults ranged 0-20 per 100 sweeps in clover and alfalfa in southern area, 0-60 in central area, 0-5 in northern area. (White, Petty, Moore). INDIANA - Adults present on alfalfa in Orange, Lawrence, Hendricks and Boone Counties; 1-4 per 100 sweeps. (Huber, Matthew).

POTATO PSYLLID (Paratrioza cockerelli) - WYOMING - Small number of eggs found on potato plants on cull piles at Torrington, Goshen County. Weather prevented adult counts. Time comparable with date when eggs first found in 1965. (Robb, Marks).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - WISCONSIN - Ranged 2-14 per 100 sweeps in grain in Dane, Rock and Green Counties; none found in Trempealeau, Vernon or La Crosse County areas. Most common in older oats when present; nearly 20 percent males. (Wis. Ins. Sur.). MINNESOTA - Increased in small grain and alfalfa in central and southwest districts; 10-800 per 100 sweeps. Highest on rye in Renville County. Also high on roadside grasses; generally higher than in alfalfa and small grains. No nymphs found, indicating migrating populations present. (Minn. Ins. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ILLINOIS - Varied 0-50 (average 10) per 100 sweeps in southeast district alfalfa. (White). NEBRASKA - Of counties surveyed in southwestern and southern areas, found only in Furnas County; 2 per 100 sweeps. (Manglitz). COLORADO - Found in alfalfa northeast of Walsh, Baca County; 30-60 per 100 sweeps. Only 16 percent winged forms. (Schweissing). OKLAHOMA - Occasionally heavy locally in northwest area alfalfa; 1-10 per 10 sweeps in Garvin and McClain Counties. (Okla. Coop. Sur.). NEW MEXICO - Winged adults relatively abundant in numerous alfalfa fields in northern Dona Ana County. No young aphids observed. (Elson, Nielsen). Very light to light in Socorro and Lea County alfalfa. (Mathews, Kloepfer, Heninger).

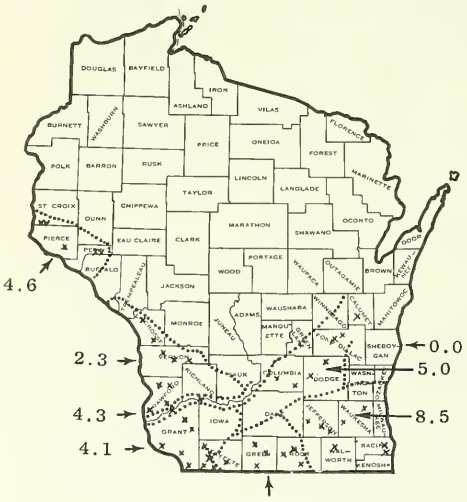
CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - IOWA - Winter mortality lower than average, but total number of live borers also much lower than average. Live borers per acre of oat ground surveyed 871 compared with 3,146 in 1965. First pupa of 1966 found at Ankeny May 13; 100 day-degrees ahead of average, perhaps due to high temperatures of previous week. (Iowa Ins. Inf., May 16). DELAWARE - Adult flights remain unusually low in Sussex County; blacklight trap collections averaged less than one per night during last week. (Burbutis).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Larvae severe in corn at Citra, Marion County. (Douglass, May 10).

VARIEGATED CUTWORM (Peridroma saucia) - ARIZONA - Moderate and damaging sorghum in many fields in Coolidge area, Pinal County, and in scattered areas of southern Maricopa County. (Ariz. Coop. Sur.). MISSOURI - Damaging marginal rows of corn in southeast. (Jones).

CORN ROOTWORMS (Diabrotica spp.) - WISCONSIN - Accompanying map shows results of spring survey to ascertain infestation potential. The "X" indicates approximate location of soil sample from field where corn grown in 1965. Boundaries (·····) approximate certain topographical areas based largely upon glaciation or gross surface structure. Number indicates average number of eggs in samples in these areas. No attempt made to select fields except in northwest where few fields selected on basis of high adult counts in 1965 and where D. virgifera (western corn rootworm) present. Highest number of eggs in any one sample was 59 (sample comprised of 8.8 cubic inches of top soil). Regardless of species involved, sufficient evidence has been found by research entomologists to indicate localized populations have built up resistance to chlorinated hydrocarbon insecticides. For this and other reasons, only phosphate insecticides recommended for control if rotation not contemplated. (Wis. Ins. Sur.). SOUTH CAROLINA - Damage to corn appearing in southern part of State. (Thomas, May 17).



CORN FLEA BEETLE (Chaetocnema pulicaria) - KANSAS - Damaged seedling corn in Sedgwick and Chase Counties. (Ins. Sur. Rpt., May 16). DELAWARE - First adults of season noted on young corn in Sussex County; injury very light. (Burbutis).

SUGAR-BEET WIREWORM (Limonius californicus) - WASHINGTON - Damage light to 25 acres of corn, and heavy in small patches (up to 75 percent loss of thinned stand) on portion of 30-acre field of sugar beets at Toppenish, Yakima County. (Onsager, May 13).

SEED-CORN MAGGOT (Hylemya platura) - NEW JERSEY - Total of 1,006 taken on 9 sticky board traps at Cedarville. (Ins.-Dis. Newsltr.). SOUTH CAROLINA - Adults numerous on corn in Georgetown County. (Nettles et al., May 17).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Extensively damaged 10-acre sweet corn field near Edinburg, Hidalgo County. Leaves almost completely stripped; crop considered complete loss. (Texas Coop. Rpt.).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - ILLINOIS - Counts per 100 sweeps, 40-800 (average 280) in southeast and 0-40 (average 20) in southwest. Wheat in both districts now in head but no aphids observed on heads. (White). WISCONSIN - Populations vary according to age of grain samples; as high as 30 per 25 sweeps in some rye or barley; generally 10-20 per 100 sweeps in larger oats. Ranged 1-2 per 100 sweeps in late oats; most winged forms. (Wis. Ins. Sur.). MINNESOTA - Population low in nearly all small grain fields in central and southwest districts. Ranged 0-45 per 100 sweeps; highest counts in rye in central district. Damage evident in high count fields. (Minn. Ins. Rpt.). SOUTH DAKOTA - Counts of 17 per 40 linear feet of row in oats at Centerville, Clay County, May 16, and 5 at Highmore, Hyde County. (Jones).

RICE STINK BUG (Oebalus pugnax) - MISSISSIPPI - Appears unchanged; 14 adults per 100 sweeps on wheat in Oktibbeha County. (Dinkins). ARKANSAS - Ranged 5-8 per 100 sweeps in wheat in northwest. (Ark. Ins. Sur.).

SAY STINK BUG (Chlorochroa sayi) - UTAH - Heavy in fields in St. George-Washington area, Washington County; 500 acres of barley conspicuously damaged; 4-5 per head. (Knowlton, Huber, May 17).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - OREGON - Nymphs, probably this species, heavy in small grains in Douglas County. (Vertrees).

SORGHUM WEBWORM (Celama sorghiella) - GEORGIA - Heavy in rye heads on field borders in Schley County. (Weathersby, French).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - MISSISSIPPI - Light on wheat in Leflore County, average of 2 larvae per square foot. Infestation appears spotty in fields; third, fourth and fifth instar larvae found. (Dinkins).

PALE WESTERN CUTWORM (Agrotis malefida) - COLORADO - Damaged wheat in Two Buttes area, Baca County; ranged 0-2 per linear foot. (Schweissing).

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Reported in wheat in Holly and Hartman areas, Prowers County. (Schweissing).

BROWN WHEAT MITE (Petrobia latens) - WYOMING - Adults and nymphs averaged 15 per linear foot of row in Platte County winter wheat; averaged 45 in Goshen County. High counts of 1,000-2,000 per linear foot of row occurred in fields with large amounts of cheatgrass (Bromus tectorum). (Robb, Marks). COLORADO - Low in wheat in Prowers and Baca Counties; 0-5 per linear foot. (Schweissing). KANSAS - Decreasing in western area, Ottawa County and south central area. Continues heavy in Hays area, Ellis County. (Ins. Sur. Rpt., May 16).

TURF, PASTURES, RANGELAND

LYGUS BUGS (Lygus spp.) - WASHINGTON - Adults and nymphs heavy on hoary cress and Russian knapweed at Toppenish, Benton County. (Landis, May 13).

PLANT BUGS (Labops spp.) - UTAH - Discoloring range grasses at 9,500 feet elevation on Assay Bench, east of Cedar Breaks in Iron-Kane County area. More than 400 acres conspicuously infested. (Thornley, Knowlton, May 13).

GRASS BUGS - UTAH - Black species damaging planted grasses in fields and pastures from Kanab through Johnson Canyon north to Alton, Kane County; reseeded areas damaged east to Hatch, Garfield County. (Knowlton, Lindsay, May 17).

SAY STINK BUG (Chlorochroa sayi) - NEVADA - This and Nysius sp. heavy on tansy mustard in all areas of Hiko-Pahranagat Valley, Lincoln County. (Bechtel, Zoller).

MEADOW SPITTLEBUG (Philaenus spumarius) - OREGON - Nymphs, probably this species, heavy in grasses in Douglas County. (Vertrees).

A LEAFHOPPER (Dikraneura carneola) - WASHINGTON - Extremely abundant in Alpine meadows, Klickitat County. (Hagel, Landis, May 13).

WESTERN HARVESTER ANT (Pogonomyrmex occidentalis) - NORTH DAKOTA - Topsoil blowing and drifting from cleared areas around 23 nests in Slope County pasture. Experimental control measures applied. (Oberfoell, Post).

PAINTED LADY (Vanessa cardui) - NEVADA - Larvae moderate to heavy on native malvaceous plants in Lincoln and northern Clark Counties. (Bechtel, Zoller). WYOMING - Large flights noted throughout State during May. Larvae caused extensive damage to Canada thistle (Cirsium arvense) in 1965. (Marks).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - VERMONT - No larvae found in alfalfa tips from experimental field in Bennington. Stems show adult activity; fresh egg masses found in green growing alfalfa. (MacCollom, May 16). RHODE ISLAND - Of 100 stems examined from planting in Kingston, Washington County, 21 contained eggs. No larvae or larval feeding noted. (Mathewson). CONNECTICUT - Examination of 25 stems showed 7 with eggs; 33 adults collected in 100 sweeps. No larvae or foliar feeding evident. (Savos). NEW JERSEY - In 6 fields in Gloucester, Salem and Cumberland Counties, counts per 100 sweeps ranged 0-85 adults and 200-3,200 larvae. Larvae ranged 15-180 per 25 tips. Injured tips ranged 64-96 percent. Four fields treated before count. Middlesex County population reached 1,000 per 100 sweeps. Larvae 0-200 per 100 sweeps in Morris County. (Ins.-Dis. Newsltr.). PENNSYLVANIA - Sharp increase in numbers generally, due to warmer weather. Alfalfa growth at least 10 days late. (Udine). DELAWARE - Larvae severely damaged alfalfa in most fields in Kent and Sussex Counties, counts ranging 190-320 per 10 sweeps. Injury less in New Castle County, counts range 50-170 per 10 sweeps. (Burbutis). MARYLAND - Larvae caused moderate to heavy damage to untreated first-growth alfalfa in central sections. New adults on second-growth alfalfa in Dorchester County. (U. Md., Ent. Dept.). VIRGINIA - Larval populations high in east central area; 40-170 (average 80) per sweep in 9 fields in Hanover, Louisa, Fluvanna and Montgomery Counties. Adults 10-115 per 100 sweeps. (Isakson).

NORTH CAROLINA - Adult emergence largely completed in Piedmont area; beginning in mountains. Damaging ladino clover in McDowell County field. (Campbell, Love, May 13). TENNESSEE - Infestation declining, alfalfa being plowed rapidly. (Mullett). MISSISSIPPI - Larval counts remain very low, 5 per square foot, in Oktibbeha County alfalfa. (Dinkins). OHIO - Found for first time in Ottawa, Hancock, Putnam and Allen Counties May 12-17. Only 6 northwestern counties yet to be surveyed. Adults and larvae very low. Counts per 100 sweeps by county as follows: Ottawa 3, Wood 2, Hancock 3, Putnam 2, Allen 2. Economic numbers built

up in Delaware County; 17 larvae per sweep in one field sampled. (Rose). Another report of larval damage in Delaware County indicates large numbers and 10-20 percent crop damage; 50 percent leaf damage in 1 field. Larvae quite small. (Irvin). Estimated 25 percent crop damage in Fairfield County; growers applying controls. Some poor spraying results due to cool, rainy weather. (Taylor). Problems reported in Preble County. (Petteys, Blair). INDIANA - Moderate to severe in alfalfa throughout southern quarter of State; some scattered economic infestations in northern counties of southern third of State. In south central district, larvae 30-50 per sweep in untreated alfalfa; 40-100 percent of terminals damaged. Total loss, first cutting common throughout area. All larval instars present. (Huber, Matthew). New county records include Brown, Monroe, Hendricks and Boone Counties. (Huber). ILLINOIS - New adults abundant in southern area; heavy late hatch also occurred. Old adults still laying eggs. First and second-cutting alfalfa being damaged. Adults 0-3,200 (average 668) and larvae 890-7,500 (average 2,564) per 100 sweeps in alfalfa in southeast. Heaviest adult counts found 6:30-8:00 p.m. and 8:00 to 9:00 a.m. In both instances, plants drying, following heavy rain. Most adults newly emerged. Many young larvae observed. Alfalfa 0-19 inches in height; zero in fields where first crop removed and second crop being eaten as fast as green shoots emerge. Few second-crop fields making some growth, but severely damaged. Weather too wet for treatments. (White). Eggs still present in alfalfa stems in Edwards County. (Armburst). No adults found in Logan or De Witt Counties; 4 larvae found in Piatt County, new county record. (Petty).

NEBRASKA - Larvae light in Keith (3 per 100 sweeps) and Dundy (16 per 100 sweeps) Counties. (Manglitz). KANSAS - Numerous larvae and damage to plant tips noted in Finney County. (Ins. Sur. Rpt., May 16). COLORADO - Larvae 0-1,000 per 100 sweeps in alfalfa in Otero and Pueblo Counties. Populations very erratic, high counts being exception rather than rule. (Schweissing). WYOMING - Adults 0-12 per 10 sweeps in alfalfa in Platte and Goshen Counties; larvae appearing. Eggs found in 1-6 percent of alfalfa stems in Goshen County fields. (Robb, Marks). UTAH - Larvae abundant, damage conspicuous in Grand County, particularly at Moab. (Thornley, Knowlton, May 13). NEVADA - Larvae averaged 50 per sweep in alfalfa with up to 85 per sweep in several fields in Panaca, Lincoln County; damage moderate to heavy. Counts low in Hiko-Pahranagat Valley area; damage very light. (Bechtel, Zoller). IDAHO - Larvae 25 per sweep in alfalfa in vicinity of Notus, Canyon County; 20 percent of plant buds show feeding. (Homan, May 12). Larvae, first to third instar, averaged less than 0.5 per sweep at Lenore, Nez Perce County. Adults 1-2 per sweep; mating and laying eggs. Egg development in last stages. Major hatch will come with first warm weather. Larval injury minor. Parasites active. (Portman, Kambitsch, O'Keeffe).

CLOVER LEAF WEEVIL (Hypera punctata) - OHIO - Populations may be higher than last year. Numerous inquiries and reports indicate possible increase. Larval counts in north central and northwest varied greatly. Highest count, 14 larvae per 50 sweeps in Ottawa County field. Larvae averaged 8 per 50 sweeps in 6 Ottawa County fields, and 2 per 50 sweeps in several fields in Wood, Hancock, Putnam, and Allen Counties. Increase may be local; some diseased, dead larvae noted. (Rose). IDAHO - Nearly full-grown larvae observed in Idaho County alfalfa field. (Gephart).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - ILLINOIS - Adults 0-140 per 100 sweeps in clover and alfalfa in southern two-thirds of State. (Petty, White).

CLOVER HEAD WEEVIL (Hypera meles) - TEXAS - Increasing rapidly in east section on crimson clover. Heavy damage reported from Houston, San Augustine and Tyler Counties. (Parker).

A SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) - NEW MEXICO - Adults 0-4 per 50 sweeps in alfalfa near Lovington, Lea County. (Mathews).

VARIEGATED CUTWORM (Peridroma saucia) - INDIANA - Heavy population destroyed 90 percent of red clover in Parke County field. (Matthew). ILLINOIS - Larvae per 100 sweeps in clover and alfalfa, 0-100 (average 22) in southeast and southwest districts, 0-14 (average 4) in central and east districts. (White, Petty).

MISSOURI - Larvae ranged to 15 per square foot in alfalfa stubble in southeast. In most untreated fields, larvae destroying new growth. Also damaging lawns and gardens. (Jones). CALIFORNIA - Locally heavy in alfalfa in Bard, Imperial County. (Cal. Coop. Rpt.).

ALFALFA LOOPER (Autographa californica) - NEVADA - Larvae and damage moderate to heavy in alfalfa in Hiko and northern Pahranagat Valley, Lincoln County; 2-15 per sweep. Counts decreased toward southern end of Pahranagat Valley. (Bechtel, Zoller).

RED-BACKED CUTWORM (Euxoa ochrogaster) - IDAHO - Severe in several Canyon County alfalfa fields. Treatments failed where irrigation water not available. (Homan, Waters).

CUTWORMS - CALIFORNIA - Larvae heavy and damaging approximately 4,000 acres of alfalfa in Lancaster area, Los Angeles County. Severe in some fields, spotty in others. (Cal. Coop. Rpt.). OREGON - Damaging alfalfa in Klamath Falls area, Klamath County. (Jendrzejewski). UTAH - Damaging alfalfa in several areas of Wayne County. (Knowlton, Chapman, May 17). Moderate in some alfalfa in Washington, Tooele, Cache and Box Elder Counties. (Knowlton, May 17).

CLOVER HEAD CATERPILLAR (Grapholitha interstinctana) - ILLINOIS - Adults 0-500 (average 40) per 100 sweeps and larvae common in clover and alfalfa in southeast and southwest. (White). Adults 0-5 per 100 sweeps in central and east districts. (Petty).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Larvae 1-7 per 50 sweeps in alfalfa in northern Dona Ana County. (Elson, Nielsen).

PEA APHID (Acyrthosiphon pisum) - MINNESOTA - Averaged 50 per 100 sweeps in alfalfa in southwest district, 70 per 100 sweeps in central district. No winged forms noted. (Minn. Ins. Rpt.). WISCONSIN - Increased markedly in alfalfa in Dane, Iowa, La Crosse, Green and Rock Counties. Ten-fold increase evident in several fields observed 2 consecutive weeks. Ranged 3-4 per sweep in areas indicated. Parasites common in most fields; about 10 percent of larger aphids parasitized. Alates 1 per 10 sweeps in alfalfa in southern counties. No alates noted in La Crosse area. (Wis. Ins. Sur.). IOWA - Averaged 1 adult per sweep in southern area alfalfa May 5. (Iowa Ins. Inf.). ILLINOIS - Varies 0-1,600 (average around 200) per 100 sweeps in alfalfa and clover throughout the State. (White, Petty, Moore). INDIANA - Increased considerably in southern half of State; 800-1,500 per 100 sweeps. (Huber). MICHIGAN - Seasonal buildup underway on alfalfa. Rapid buildup anticipated. (Dowdy). OHIO - Increasing rapidly on alfalfa over State. Counts per sweep by county as follows: Delaware 8, Ottawa 2-8, Wood 4-16, Hancock 3-16, Putnam 3-17, Allen 6. Populations varied greatly in individual fields. Parasitized aphids appearing. (Rose). NEW JERSEY - Ranged 8-30 per 20 sweeps in 6 fields in Gloucester, Salem and Cumberland Counties. (Ins.-Dis. Newsltr.).

VIRGINIA - Ranged 4-50 per sweep on alfalfa in Hanover, Louisa, Fluvanna and Montgomery Counties. (Isakson). ARKANSAS - Numbers declined in all areas. (Ark. Ins. Sur.). OKLAHOMA - Very light (0-17 per 10 sweeps) in alfalfa in central and south central areas. (Okla. Coop. Sur.). NEBRASKA - Light to very light in Keith, Dundy, Furnas, Gosper and Dawson Counties. (Manglitz). WYOMING - Counts 30-85 per 100 sweeps in alfalfa in Platte and Goshen Counties. (Robb, Marks). COLORADO - Populations 20-1,100 per 100 sweeps of alfalfa in Baca, Prowers, Bent, Otero and Pueblo Counties. (Schweissing). NEW MEXICO - Light to heavy in alfalfa near Luis Lopez, Socorro County. (Heninger). Light in alfalfa near Lovington, Lea County. (Mathews). Minor problem in Dona Ana County alfalfa. (Elson). UTAH - Very numerous in alfalfa at Moab, Grand County; light to moderate from Salt Lake to Box Elder Counties. (Thornley, Knowlton, May 13). NEVADA - Light in all alfalfa checked in Lincoln County. Predators and parasites numerous. (Bechtel, Zoller). WASHINGTON - Up to 1 per sweep on forage alfalfa; all stages present at Othello and vicinity, Adams County. (Halfhill, May 13).

YELLOW CLOVER APHID (Therioaphis trifolii) - ILLINOIS - Counts per 100 sweeps in red clover, 0-120 (average 45) in southeast, 0-140 (average 70) in southwest. (White). None found in central district. (Petty).

TARNISHED PLANT BUG (Lygus lineolaris) - OKLAHOMA - Ranged 1-15 per 10 sweeps in alfalfa in Garvin, Murray, Bryan, Lincoln and McClain Counties. (Okla. Coop. Sur.). ARKANSAS - Ranged 40-50 per 100 sweeps in alfalfa in northwest; nymphs about 50 percent of population. (Ark. Ins. Sur.). IOWA - Averaged 1 per sweep in southern area alfalfa May 5. (Iowa Ins. Inf.). ILLINOIS - Adults 0-100 (average about 20) per 100 sweeps in clover and alfalfa throughout State; nymphs 0-80 per 100 sweeps in southeast and southwest. (White, Petty, Moore). OHIO - Populations vary on alfalfa in northwest; most counts in Ottawa, Hancock, Delaware, Putnam and Allen Counties ranged 7-17 adults per 50 sweeps; 70 per 50 sweeps found in 1 Hancock County field. (Rose). NEW HAMPSHIRE - Active in alfalfa at Concord May 5. (Sutherland).

LYGUS BUGS (Lygus spp.) - ARIZONA - Increasing in alfalfa in all counties with normal to slightly less than normal populations. (Ariz. Coop. Sur.). NEW MEXICO - Counts per 50 sweeps in alfalfa by county as follows: Dona Ana 4-20, Socorro 10-64, Lea 15-25. (N. M. Coop. Rpt.). COLORADO - Occurring to some extent in Baca, Prowers, Bent, Otero and Pueblo Counties. (Schweissing). NEVADA - Heavy on seed alfalfa in Dixie Valley, Pershing County; required treatments. (Wolf). Adults and nymphs 8-47 per sweep in alfalfa hay in Hiko-Pahranagat Valley areas and Panaca, Lincoln County. (Bechtel, Zoller). WASHINGTON - Adults and first and second instar nymphs ranged 1-5 per sweep on forage alfalfa at Othello and vicinity, Adams County. (Halfhill, May 13).

RAPID PLANT BUG (Adelphocoris rapidus) - INDIANA - Nymphs ranged 20-200 per 100 sweeps on alfalfa in scattered locations throughout south-central district. (Huber). ILLINOIS - Nymphs 0-80 per 100 sweeps in clover and alfalfa in southern area; no adults observed. (White). WISCONSIN - Nymphs common in some alfalfa; as high as 4 per 10 sweeps noted. (Wis. Ins. Sur.).

ALFALFA PLANT BUG (Adelphocoris lineolatus) - ILLINOIS - Nymphs 0-40 per 100 sweeps in alfalfa in southern area. No adults observed. (White).

THREE-CORNORED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Increase continues in alfalfa in Yuma, Maricopa, Pinal and Pima Counties; medium to heavy in most fields. Light in Graham and Cochise Counties. (Ariz. Coop. Sur.).

MEADOW SPITTLEBUG (Philaenus leucopthalmus) - MARYLAND - Nymphal populations highest in recent years on red clover and clovergrass mixtures in central and western sections. (U. Md., Ent. Dept.). OHIO - Spittle masses appearing on alfalfa in central area. About 30 percent of plants inspected in Delaware County field with 2-4 early instar nymphs. Eggs hatching in northwest; populations still very light. (Rose). INDIANA - Nymphal populations average 4 masses per square foot on alfalfa in south central area. First adults of season collected on alfalfa in southern Lawrence County. (Huber). WISCONSIN - Spittle masses more evident in alfalfa in southern area. Highest count 7 per 10 stems; 1-2 per 10 stems in most fields. (Wis. Ins. Sur.). OREGON - Nymphs, probably this species, heavy on alfalfa in Douglas County. (Vertrees).

CHINCH BUG (Blissus leucopterus) - OHIO - Adults appearing in small numbers on alfalfa in northwest. (Rose).

THRIPS - NEW MEXICO - Probably Frankliniella occidentalis very abundant in Dona Ana County alfalfa. Damage especially pronounced in seedling fields. (Elson, Nielsen). Also problem in Socorro County. (Kloepfer, Heninger).

A LEAF MINER FLY (Liriomyza trifolii) - CALIFORNIA - Larvae medium in clover dairy pasture in Los Alamitos, Orange County. (Cal. Coop. Rpt.).

SOYBEANS

MEXICAN BEAN BEETLE (Epilachna varivestis) - SOUTH CAROLINA - Feeding on young soybeans in Hampton County. (Thomas, May 17).

PEANUTS

A CERAMBYCID BEETLE (Derobrachus brevicollis) - GEORGIA - Larvae heavy in peanuts in Mitchell County; reduced stand 10 percent. (Lee, French).

THRIPS (Frankliniella spp.) - ALABAMA - F. tritici and F. fusca seriously damaged isolated peanut plantings in Houston County. (Roney).

See also, white-fringed beetles, page 471.

TOBACCO

BUDWORMS (Heliothis spp.) - NORTH CAROLINA - Small larvae present on small tobacco plants in Tabor City area, Columbus County, May 17; 10 days to 2 weeks early. (Mistric, Smith).

WIREWORMS (Conoderus spp.) - NORTH CAROLINA - C. falli and C. vespertinus damaged 70-75 percent of acre of tobacco in southeast Bladen County May 6. Det. by D. A. Mount. (Sasser).

SUGAR BEETS

RED-BACKED CUTWORM (Euxoa ochrogaster) - WASHINGTON - This and other cutworms abundant and damaging sugar beets in Yakima Valley. (Klostermeyer, May 13).

BEET ARMYWORM (Loxostege sticticalis) - UTAH - Moths moderately numerous on range plants from Penrose to Promontory Point, Box Elder County. (Knowlton).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adults active in all beet fields surveyed in Weld County; 1-5 per square yard. No eggs found. (Jenkins).

SUGAR-BEET WIREWORM (Limonius californicus) - WASHINGTON - Damage heavy in small patches (up to 75 percent loss of thinned stand) on portion of 30-acre field of sugar beets at Toppenish, Yakima County. (Onsager, May 13).

FLEA BEETLES - NEVADA - All but 30 acres of sugar beets treated in Fallon, Churchill County; most fields treated in Lovelock, Pershing County. (Wolf).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - CALIFORNIA - Heavy on sugar beet plantings in Calexico, Imperial County. (Cal. Coop. Rpt.).

CARMINE SPIDER MITE (Tetranychus telarius) - CALIFORNIA - Heavy on sugar beet plantings in Calexico, Imperial County. (Cal. Coop. Rpt.).

MISCELLANEOUS FIELD CROPS

RED-BACKED CUTWORM (Euxoa ochrogaster) - WASHINGTON - This and other cutworms abundant and damaging on peppermint and hops in Yakima Valley. (Klostermeyer, May 13). Caused light to moderate damage to peppermint at Othello, Adams County. (Landis, May 13).

LYGUS BUGS (Lygus spp.) - ARIZONA - Moderate populations increasing in safflower in Maricopa and Pinal Counties. (Ariz. Coop. Sur.). UTAH - Largely L. elisus, moderately numerous on mustard, Russian thistle and other weeds from Corinne to Promontory Point, Box Elder County. (Knowlton).

ONION MAGGOT (Hylemya antiqua) - NEW JERSEY - Total of 322 taken on 7 sticky board traps at Cedarville. Adults appearing on onion leaves. (Ins.-Dis. Newsltr.).

STRIPED FLEA BEETLE (Phyllotreta striolata) - GEORGIA - Ranged 12-15 per leaf on turnips in Spalding County. (Dupree).

STRIPED CUCUMBER BEETLE (Acalymma vittatum) - DELAWARE - First adult of season collected near watermelons in southwestern Sussex County. (Burbutis).

TOBACCO BUDWORM (Heliothis virescens) - FLORIDA - First instar larvae 1-4 per 120 watermelon flowers at Leesburg, Lake County. (Adlerz).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - WASHINGTON - First egg masses found on potato at Toppenish, Benton County May 12. (Landis). DELAWARE - - First eggs of season on potatoes in one area of Sussex County. (Burbutis). MARYLAND - Adults heavy in several home garden potato and tomato plantings on lower Eastern Shore. (U. Md., Ent. Dept.). VIRGINIA - Hatching well underway over much of Eastern Shore. Activity of overwintered adults decreased considerably; eggs still being deposited. (Hofmaster). GEORGIA - Larvae defoliating tomatoes, Spalding County. (Dupree).

POTATO FLEA BEETLE (Epitrix cucumeris) - DELAWARE - Adults on potatoes in most areas; injury generally light. (Burbutis).

FLEA BEETLES (Epitrix spp.) - MARYLAND - Heavy on home garden potatoes and tomatoes in sections of Worcester and Somerset Counties. (U. Md., Ent. Dept.).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Adults damaging tomato plants in Henry County. (Bashear). NORTH CAROLINA - Severely damaged several newly set pepper fields in Wayne County May 3. Severely damaged 50 row feet of small cabbage plants in Columbus County. (Baker, Read, May 13).

A TORTOISE BEETLE (Gratiana pallidula) - CALIFORNIA - Adults medium on potato vines in Potrero, San Diego County. (Cal. Coop. Rpt.).

GRANULATE CUTWORM (Feltia subterranea) - ALABAMA - This and other species unusually damaging to commercial tomato plantings in St. Clair County. (Jackson, Rutledge). FLORIDA - Larvae infesting stems of 1 percent of 960,000 tomato plants at Bartow, Polk County. (Schmidt, May 3).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - FLORIDA - Young larvae skeletonizing leaves of 1 percent of one million tomato plants at Bereah, Polk County. (Schmidt, J. C. Denmark, May 5).

BEANS AND PEAS

BEAN LEAF BEETLE (Cerotoma trifurcata) - MARYLAND - Adults active on snap beans in Worcester County. (U. Md., Ent. Dept.). OKLAHOMA - Heavily damaged beans in Payne County home garden. (Okla. Coop. Sur.). TENNESSEE - Heavy on beans in several areas. (Johnson, May 23).

PEA APHID (Acyrthosiphon pisum) DELAWARE - Counts on peas throughout State range 5-20 per 10 sweeps. (Burbutis).

SEED-CORN MAGGOT (Hylemya platura) - OREGON - Heavy in some pole bean fields, Polk County. Complete replanting necessary in fields where insecticide resistance high. (Brown).

VARIEGATED CUTWORM (Peridroma saucia) - ALABAMA - Larval numbers, probably this species, very high in isolated fields of caley peas in Wilcox and Greene Counties. (Farquhar, Cunningham, Seale et al.).

COLE CROPS

CABBAGE MAGGOT (Hylemya brassicae) - VERMONT - Adults active. (Nielsen, May 16). MASSACHUSETTS - Adults laying eggs wherever cole crops planted. First egg laying noted in Waltham area May 12. (Crop Pest Cont. Mess., May 16). RHODE ISLAND - Eggs abundant on cabbage sets in Kingston, Washington County. (Mathewson). CONNECTICUT - Eggs found on cabbage May 10 in New Haven County. (Savos, May 18).

CABBAGE APHID (Brevicoryne brassicae) - NEW JERSEY - Abundant and curling leaves of young cabbage plants near Lumberton. (Ins.-Dis. Newsltr.). DELAWARE - Remains light on commercial cabbage plantings; about one infested head per 50. (Burbutis).

IMPORTED CABBAGEWORM (Pieris rapae) - MARYLAND - Larvae destructive on large cabbage planting near Snow Hill, Worcester County. (U. Md., Ent. Dept.).

A FLEA BEETLE (Phyllotreta cruciferae) - DELAWARE - First adults of season noted on cabbage in New Castle County. (Burbutis).

COTTON

THRIPS - TENNESSEE - Much injury apparent in several fields checked. (Johnson, May 23). LOUISIANA - Damage generally light in Madison Parish but high infestations in some fields; averaged 0.61 per plant in 21 treated fields and 1.68 in 9 untreated fields. (Cleveland et al.). TEXAS - Continue to damage cotton in McLennan and Falls Counties. Infestations in 16 untreated fields were heavy in 3, medium in 8, light in 4 and none in 1. In 22 treated fields infestations were medium in 1, light in 14 and none in 7. (Cowan et al.). ARIZONA - Large populations of Frankliniella occidentalis continue to cause moderate to heavy damage in Maricopa, Pinal, Pima, Santa Cruz, Cochise and Graham Counties. (Ariz. Coop. Sur.).

COWPEA APHID (Aphis craccivora) - NEW MEXICO - Light to moderate spotted infestations, probably this species, noted on seedling cotton in many northern Dona Ana County fields. (Elson).

COTTON APHID (Aphis gossypii) - ARIZONA - Light to moderate in some fields in Kansas Settlement area and in Stewart district, Cochise County. Very light in Elfrida-McNeal areas. (Ariz. Coop. Sur.). TEXAS - Population continues decline in McLennan and Falls Counties; light in 24 fields and none in 14. (Cowan et al.).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Ranged 0-3 and averaged 0.2 per 100 linear feet of row in 38 fields in McLennan and Falls Counties. Average per sweep on wild hosts as follows: 1.3 in 3 fields of wild verbena, 0.4 in 5 fields of evening primrose and 3.3 in field of horsemint. (Cowan et al.).

BOLLWORMS (Heliothis spp.) - GEORGIA - Adults emerging in cages and caught in light traps in Spalding County. (Beckham). TEXAS - Total of 133 H. zea larvae reared from host plants and 2 reared from cotton in McLennan and Falls Counties. First H. virescens moth of season collected in light trap at Waco, McLennan County, during week. (Cowan et al.).

ALFALFA LOOPER (Autographa californica) - CALIFORNIA - Larvae medium on cotton plantings in Pumpkin Center, Kern County. (Cal. Coop. Rpt.).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Continues heavy in Maricopa, Pinal, Pima, Graham and Cochise Counties. Some decrease noted in many central area fields. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Moderate numbers major problem on cotton in Yuma County. Some controls necessary. Light to moderate in some areas of Maricopa County. (Ariz. Coop. Sur.).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Damaging cotton in southeast. (Jones).

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Counts on 1,000 linear feet of 4-6 leaf stage cotton in Montgomery County averaged about 8 per acre. Adults emerging in widespread areas over south and central sections in lesser numbers than in 1965. Medium to normal infestation of squares expected. (Thompson et al.). GEORGIA - One adult emerged in hibernation cage in Spalding County. (Beckham). TEXAS - Averaged 4 per acre in 3 of 38 fields in McLennan and Falls Counties. Six collected on flight screens. Survival percentage in hibernation cages as follows: 0.2 in 2 cages containing 1,000 field collected weevils installed November 1, 1965; 1.5 in cage containing 137 weevils removed from ground trash and rehibernated on December 15, 1965; and 27.3 in cage containing 33 weevils removed from ground trash and rehibernated in March, 1966. One emerged during week from 3 cages containing green bolls collected in November and placed on soil surface. (Cowan et al.).

For Pink Bollworm, see Federal-State Plant Protection Programs page 471.

Weather continued from page 448.

of 2 to 3 inches in the 7 weeks since April 4. Showers were extremely spotty from the Rocky Mountains to the Atlantic Ocean. Local downpours dumped 2 to 3 inches of rain on small areas over the southeastern quarter of the Nation. Houston, Texas, received about 5 inches and Tallahassee, Florida, received slightly more than that amount. Some 3- and 4-inch totals fell in the Southeast, but many points received no rain. Beneficial rains fell in New England, with coastal areas from Nantucket to central New Jersey reporting more than 2 inches; the heaviest rains of the spring. From 2 to 3 inches fell locally in Vermont.

SEVERE STORMS: Violent weather, including tornadoes, occurred over eastern Kansas, Missouri, Oklahoma, Arkansas, Illinois, Texas, Georgia, and Florida. Perhaps the most damaging tornado struck Columbus, Georgia, on the 17th. This tornado unroofed a motel and destroyed or severely damaged 200 to 300 trailers. Several persons were injured but no fatalities were reported. (Summary supplied by Environmental Data Service, ESSA).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Carpocapsa pomonella) - IDAHO - Overwintering larvae pupating in Moscow area, Latah County. (Manis). MISSOURI - No activity except for some adults captured at windows in packing sheds several weeks prior to May 18. (Wkly. Rpt. Fruit Growers). INDIANA - Adult emergence about one-third completed as of May 16. (Dolphin, May 10-16). DELAWARE - Adult emergence began May 13 in cage in Kent County. (MacCreary). MARYLAND - Larvae present May 18 in the Hancock area, Washington County. (U. Md., Ent. Dept.). VIRGINIA - First emerging adults noted May 14-15 at Charlottesville, Albemarle County. (Bobb).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - PENNSYLVANIA - Adults active in peach trees in Adams County May 13. (Asquith). NEW JERSEY - Total of 10 taken at Glassboro, Gloucester County May 16 and 19. (Ins.-Dis. Newsltr.). GEORGIA - Five adults taken from 6 bait traps in Peach County. (Jacklin). MISSOURI - Severe twig injury reproted in orchard in Kansas City area. Pupation underway at Cape Girardeau; second brood adults expected soon. (Wkly. Rpt. Fr. Grs., May 18).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - IDAHO - Very abundant and causing heavy damage in abandoned apple orchard at Moscow, Latah County. All larval stages present; pupation underway. (Manis).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - INDIANA - First generation adults collected for first time this season in Vincennes area. (Dolphin, May 10-16). MARYLAND - Egg masses, but no larvae on apples at Hancock, Washington County. (U. Md., Ent. Dept.).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - IDAHO - Very abundant with damage heavy in abandoned apple orchard at Moscow; larvae first to third instar. (Manis).

SPRING CANKERWORM (Paleacrita vernata) - PENNSYLVANIA - Observed in some apple orchards in Lehigh County May 19. (Tetrault).

PEACH TWIG BORER (Anarsia lineatella) - UTAH - Moderately injurious in stone fruit orchards in Moab, Grand County. (Thornley, May 13). Observed in peach and apricot orchards in Tooele-Erda area, Tooele County. (Knowlton, May 17).

FALL WEBWORM (Hyphantria cunea) - OREGON - First adult of season noted in Marion County blacklight trap. (Goeden).

PLUM CURCULIO (Conotrachelus nenuphar) - NEW JERSEY - Adults active in peach blocks in southern counties. Total of 18 taken at Pitman and Glassboro, Gloucester County. (Ins.-Dis. Newsltr.). SOUTH CAROLINA - Only insect found on peaches in Orangeburg County. (Nettles et al., May 17). MISSOURI - Very light in southeast. Cherries heavily damaged at Columbia. Signs of earlier activity near Kansas City. (Wkly. Rpt. Fr. Grs., May 18).

SHOT-HOLE BORER (Scolytus rugulosus) - INDIANA - First adults of the season collected as they emerged from an infested peach branch in the Vincennes area. (Dolphin, May 10-16).

A FALSE POWDER-POST BEETLE (Melalgus confertus) - OREGON - Causing economic damage to most of major fruit trees, as well as few raspberry canes, in Douglas County. Adults emerging. (Vertrees).

ROSY APPLE APHID (Dysaphis plantaginea) - MARYLAND - Populations building up; leaf curling conspicuous in unsprayed apple orchards at Hancock, Washington County. (U. Md., Ent. Dept.). SOUTH CAROLINA - Causing much curling of apple leaves. Probably heaviest ever observed at foot of mountains in Oconee County. (Nettles et al., May 17).

LEAF CURL PLUM APHID (Anuraphis helichrysi) - OREGON - Probably this species heavy on prunes in Douglas County. Controls necessary in most orchards. (Vertrees).

Also economic in prunes in Yamhill County. (Stephenson).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Moderate on peach trees in Bowie area, Cochise County; lighter in surrounding areas. (Ariz. Coop. Sur.). UTAH - Numerous but below normal in peach orchards at Moab, Grand County. (Knowlton, May 13). Small numbers observed in peach orchards in Tooele-Erda area, Tooele County. (Knowlton, May 17).

BLACK CHERRY APHID (Myzus cerasi) - UTAH - Curling cherry foliage in some Utah, Washington and Box Elder County orchards. (Knowlton, May 17). DELAWARE - Common on black cherry in New Castle County, causing considerable leaf curl. (Bray).

DUSKY STINK BUG (Euschistus tristigmus) - MARYLAND - Adults active May 19 in peach orchard at Fairland, Montgomery County. (U. Md., Ent. Dept.).

PERIODICAL CICADAS (Magicicada spp.) - NORTH CAROLINA - Adults reported in Burke, Buncombe, Caldwell, Polk and McDowell Counties. Emergence began May 5-6. (Wray, May 13). MARYLAND - Emergence noted in Silver Spring, Montgomery County, May 22. (J. Fluno).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Most early spring laid eggs hatched in Storrs. Large numbers of nymphs on pear foliage. (Savos, May 18). RHODE ISLAND Adults and eggs on pear in East Greenwich, Kent County. (Mathewson). MASSACHUSETTS Earliest-laid eggs hatched in Amherst May 10 and in South Hadley May 11. Heavy egg laying occurring on expanding leaf buds. Cool weather kept adult activity to minimum but full complement of eggs expected regardless of weather. (Crop Pest Cont. Mess., May 16). OREGON - Heavy nymphal populations appearing in Yamhill County pear orchards. (Stephenson).

PEAR LEAF MIDGE (Dasyneura pyri) - OREGON - Damage to terminal leaves appearing in unsprayed pear orchards of northern Washington County. (Goeden).

CALIFORNIA PEAR-SLUG (Pristiphora abbreviata) - OREGON - Larvae light on leaves of Bartlett pears in northern Washington County. (Goeden).

EUROPEAN RED MITE (Panonychus ulmi) - CONNECTICUT - Overwintering eggs hatched in New Haven. Hatch continues very slowly in Storrs, where ordinarily complete at this stage of bud development. (Savos, May 18). MASSACHUSETTS - Hatched May 14; 12 days later than in 1965. (Crop Pest Cont. Mess., May 16). MARYLAND - Increasing, with egg laying underway May 18 on apple foliage in Washington County. (U. Md., Ent. Dept.). OHIO - Increasing in Wayne County; 41 taken in 150-leaf sample from Cortland apple trees. (Forsythe, McKee). INDIANA - Egg hatch nearly completed in Vincennes area; all active stages present. (Dolphin, May 10-16). MISSOURI - Active in Columbia area; oviposition underway. Very low numbers observed in southeast. (Wkly. Rpt. Fr. Grs., May 18). VERMONT - Eggs hatching in all areas. (Nielsen, May 23).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - OREGON - Heavy on pear and apple in Roseburg area, Douglas County. Control underway. (Vertrees). Heavy populations building up on filberts in Yamhill, Washington and Clackamas Counties. (Stephenson).

A FRUIT-TREE MITE (Bryobia rubrioculus) - UTAH - Moderate in apple, peach and cherry orchards in Washington, Tooele, Box Elder and Weber Counties. (Knowlton, May 17). CALIFORNIA - Medium on peach tree nursery stock in one location and heavy on apple tree nursery stock in another nursery in Marysville, Yuba County. (Cal. Coop. Rpt.).

PEAR LEAF BLISTER MITE (Eriophyes pyri) - IDAHO - Heavy in abandoned apple orchard and in windbreak planting of mountain ash at Moscow, Latah County. Entire leaf on mountain ash trees almost solid mass of "blisters" in many instances. (Manis).

PECAN NUT CASEBEARER (Acrobasis caryae) - ALABAMA - Pupation occurred and moths ready to lay eggs in Choctaw County; extremely high on some young trees. Light in

Covington County. (Deavours, Pike et al.).

PECAN LEAF CASEBEARER (Acrobasis juglandis) - GEORGIA - Heavy on pecan trees in Wilcox County. (Hudson).

BLACK PECAN APHID (Myzocallis caryaefoliae) - GEORGIA - Heavy on pecan trees in Seminole County. (Fletcher).

CITRUS

Citrus Insect Situation in Florida - Mid-May - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 56 percent of groves (norm 47 percent); 30 percent economic (norm 28 percent). Population slightly above normal but still in moderate range Statewide. Current upward trend will continue. Highest districts are south and east. TEXAS CITRUS MITE (Eutetranychus banksi) infested 45 percent of groves (norm 50 percent); 16 percent economic (norm 26 percent). Populations below average for May; will increase rapidly and soon be present in majority of groves. Highest districts are north, west and east. CITRUS RED MITE (Panonychus citri) infested 43 percent of groves (norm 53 percent); 15 percent economic (norm 28 percent). Population below average; only scattered infestations important. Little change expected. Highest districts are west and north. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 5 percent of groves; less than 1 percent economic. Population nearing annual peak period is below normal level for May. Decrease expected. BLACK SCALE (Saissetia oleae) infested 34 percent of groves (norm 31 percent); 17 percent economic (norm 14 percent). Spring increase underway will extend through June. Population above normal and will soon enter high range. Highest districts are south and east. GLOVER SCALE (Lepidosaphes gloverii) infested 82 percent of groves; 26 percent economic. Population above average and at high level. Little change expected. Highest districts central and south. PURPLE SCALE (L. beckii) infested 70 percent of groves; 7 percent economic. Population below average and at moderate level. Little change expected. Highest district is central. CHAFF SCALE (Parlatoria pergandii) infested 66 percent of groves; 11 percent economic. Population near average and at moderate level. Increase expected. Highest district is central. YELLOW SCALE (Aonidiella citrina) infested 70 percent of groves; 16 percent economic. Population above average and increasing. Highest district is central. Larval form of WHITEFLIES building up on leaves in most groves. Population will increase but expected to be below normal in May and June. MEALYBUGS will increase in May, but expected to be less numerous than in past 2 years. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

BROWN SOFT SCALE (Coccus hesperidum) - ARIZONA - Very heavy infestation on 100 acres of grapefruit trees in northwest Phoenix. Damage quite heavy on many trees. (Ariz. Coop. Sur.).

AN ARMORED SCALE (Unaspis citri) - FLORIDA - All stages present. Severely damaged stems of citrus plants at Lake Monroe, Seminole County. (Kipp, May 13)

FERN SCALE (Pinnaspis aspidistrae) - FLORIDA - All stages present. Light to moderate damage on leaves of 960 of 1,200 sweet orange and 280 of 400 grapefruit in nursery at West Melbourne, Brevard County. (Levan, May 13). Light on leaves of 500 of 1,000 Valencia orange in nursery at Davie, Broward County. (Shirah, May 4).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Heavy populations requiring controls in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - CALIFORNIA - Infesting citrus orchards in Fresno County. (Cal. Coop. Rpt.).

A LEAF ROLLER MOTH (Platynota stultana) - ARIZONA - Infestations continue in citrus nurseries and groves; second control application made for plant protection. (Ariz. Coop. Sur.).

SMALL FRUITS

RED-BACKED CUTWORM (Euxoa ochrogaster) - WASHINGTON - This and other cutworms abundant; damaging grapes in Yakima Valley. (Klostermeyer, May 13).

GRANULATE CUTWORM (Feltia subterranea) - ALABAMA - Large infestation found in strawberries in Morgan County. (Jackson, Rutledge).

GRAPE LEAF FOLDER (Desmia funeralis) - CALIFORNIA - First-generation larvae appearing in vineyards in scattered Fresno County locations. Pest on increase. (Cal. Coop. Rpt.).

STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) - UTAH - Moderate damage to some strawberries in Weber and Washington Counties. (Knowlton, May 17). OHIO - Infestation involving 1,000 strawberry plants in Scioto County. (Mowbray, Holdsworth May 11).

BLUEBERRY BUD MITE (Aceria vacinii) - NORTH CAROLINA - Heavy on some blueberries in Duplin County. (Wellons, Mount).

SPIDER MITES (Tetranychus spp.) - NORTH CAROLINA - Moderate to severe damage to some commercial strawberries in Piedmont and mountain Counties. (Mount).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - OREGON - Nymphs, probably this species, heavy in small fruits in Douglas County. (Vertrees).

GENERAL VEGETABLES

CABBAGE LOOPER (Trichoplusia ni) - NEW MEXICO - Remains serious in Dona Ana County lettuce. Continuous treatment necessary to prevent injury. (N. M. Coop. Rpt.).

CORN EARWORM (Heliothis zea) - NEW MEXICO - Eggs unusually common in Dona Ana County lettuce. (N. M. Coop. Rpt.).

IMPORTED CABBAGEWORM (Pieris rapae) - NEW HAMPSHIRE - Adults active at Durham May 14. (Sutherland).

LYGUS BUGS (Lygus spp.) - OREGON - Nymphs medium in table beet seed fields, Douglas County. (Vertrees).

ONION MAGGOT (Hylemya antiqua) - COLORADO - Larvae and adults noted on onion transplants near Fort Lupton, Weld County. Oviposition underway. Control necessary in some fields. (Jenkins, Urano). Larvae in Vineland area, Pueblo County; damage about 5 percent but much greater in specific spots. (Schweissing)

ONION THRIPS (Thrips tabaci) - IDAHO - Sufficiently abundant to require treatment in Canyon County onion seed. (Bechtolt).

ASPARAGUS BEETLES (Crioceris spp.) - RHODE ISLAND - Adults common and injuring asparagus in large planting in East Greenwich, Kent County. (Mathewson, Hannah). MASSACHUSETTS - Adults leaving hibernation; damage to emerging spears expected soon. (Crop Pest Cont. Mess., May 16).

ORNAMENTALS

BAGWORM (Thyridopteryx ephemeraeformis) - TEXAS - Larvae hatched at several sites in College Station area, Brazos County. Localities checked in Panhandle showed hatching not yet underway in area. (Parker). OKLAHOMA - Small larvae active on junipers in Oklahoma County; first report of year. (Okla. Coop. Sur.).

CORN EARWORM (Heliothis zea) - ALABAMA - Severe on rose and dahlia buds in home

and commercial plantings in Lee, Macon and other counties. (Hays et al.).

A NOCTUID (Xerociris wilsoni) - TEXAS - Caused extensive damage to jonquil and daffodil in Quitman area, Wood County. (McDaniel).

AN OLETHREUTID MOTH (Eucosma gloriola) - MICHIGAN - Adults still active in Christmas tree plantations in Muskegon and Ottawa Counties; egg laying underway. (Newman).

PAINTED LADY (Vanessa cardui) - NEVADA - Larvae moderate to heavy on hollyhock in Caliente, Hiko, Panaca and Pioche areas of Lincoln County. (Bechtel, Zoller).

COFFEE BEAN WEEVIL (Araecerus fasciculatus) - FLORIDA - Ruined 75 percent of Acacia sp. seed in nursery at Tampa, Hillsborough County. (Hale, May 4).

A BARK BEETLE (Pityophthorus carmeli) - CALIFORNIA - Larvae and adults heavy on Monterey pines in Lake Merced golf course, Daly City, San Mateo County. (Cal. Coop. Rpt.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - WISCONSIN - Populations on ornamental Prunus sp. at site in western Dane County higher than week ago; 50-90 percent have wing pads. No winged forms present May 16. Numbers high enough on Crataegus sp. at Beloit to cause leaf distortion. (Wis. Ins. Sur.).

ARMORED SCALES - NEW JERSEY - Diaspis carueli severely damaged red-cedar in Millville area. (Ins. -Dis. Newsltr). MARYLAND - Fiorinia externa crawlers active May 18 on hemlock at Pikesville, Baltimore County. (U. Md., Ent. Dept.). ALABAMA - F. theae crawlers moving from old to new leaves on camellia and Burford holly; most noticeable on camellia in Choctaw County. (Sexton et al.).

THRIPS - ALABAMA - Frankliniella tritici and F. fusca extremely heavy on open rose buds in gardens in Choctaw, Lee and other south and central counties. (Deavours, et al.).

ANGULAR-WINGED KATYDID (Microcentrum retinerve) - ALABAMA - Heavily damaged new growth of camellias over Dauphin Island and Cottage Hill areas, Mobile County. (Bolton, Seibels).

BIRCH LEAF MINER (Fenusa pusilla) - OREGON - Heavy in leaves of white birch at Junction City, Lane County; first found on older trees. (Larson). Leaf mining also heavy on cultivated varieties of white birch in Gresham area, Multnomah County. (McNeilan)

A SPIDER MITE (Tetranychus marianae) - CALIFORNIA - Locally heavy on Solanum sp. nursery stock in Azusa, Los Angeles County. New county record. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - NORTH CAROLINA - New damage observed in upper Piedmont. Populations moderate in Forsyth, Yadkin, Iredell, Rowan, Davie, Davidson, Randolph and Guilford Counties. (H. J. Green, May 13).

ENGRAVER BEETLES (Ips spp.) - ARKANSAS - Activity increasing in logged and burn areas in a few localities; were most active in southern counties. (Ark. For. Pest Rpt., May).

WHITE-PINE WEEVIL (Pissodes strobi) - PENNSYLVANIA - Very abundant on white pine in Neffs Mills area, Huntingdon County, May 13; 1-8 per terminal. (Kearby).

DOUGLAS-FIR ENGRAVER (Scolytus unispinosus) - CALIFORNIA - Damaging 30-40 Douglas-fir trees in Van Horn Peak area, Six Rivers National Forest. (E. D. Perry, USFS).

PONDEROSA-PINE CONE BEETLE (Conophthorus ponderosae) - CALIFORNIA - Severely damaging ponderosa pine cones in Mad River area, Trinity National Forest; approximately 50 percent of cones on ground. (R.E. Dresser, USFS).

A TWIG BEETLE (Pityophthorus sp.) - CALIFORNIA - Damaging ponderosa pine leaders and twigs in 30-year-old plantation trees in Middle Creek area, Eldorado National Forest. (G. DuPree, USFS).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - MICHIGAN - A 25-infested shoot sample taken May 18 from two Livingston County plantings showed 16 live larvae; 75 percent second instars and 25 percent third instars. (Newman).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - ARKANSAS - Emergence of adults from overwintering pupae complete; first larval brood actively feeding; too early to tell extent of infestation. (Ark. For. Pest. Rpt., May).

PINE TUSSOCK MOTH (Dasychira plagiata) - WISCONSIN - Larval populations very light, feeding in Douglas County May 10. Hibernation previous week; occurred April 23 last year. A fungus disease apparently responsible for keeping populations in check. (Wis. Ins. Sur.).

SPRUCE NEEDLE MINER (Taniva albolineana) - NEVADA - Survey results negative in Caliente, Panaca and Pioche areas of Lincoln County. (Bechtel, Zoller).

SPRUCE GALL APHIDS (Adelges spp.) - PENNSYLVANIA - A. cooleyi stem mothers laying eggs on blue spruce in Centre County May 10; very late this season. (Kearby). CONNECTICUT - A. abietis eggs hatching; new nymphs feeding. (Savos, May 18).

LARCH APHID (Cinara laricis) - PENNSYLVANIA - Nymphs observed on larch May 10 in Centre County. (Kearby).

PINE SPITTLEBUG (Aphorphora parallela) - MARYLAND - Spittle masses conspicuous on Virginia pines over wide area in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.).

EUROPEAN PINE SAWFLY (Neodiprion sertifer) - OHIO - Infestations continue moderate on white and Scotch pines in Guernsey County. (Galford); red and Austrian pines about Franklin County home also infested (Spilker). Larvae very active on Scotch and Austrian pines in Portage County. (Gilbertson). MICHIGAN - All larvae taken May 17 in Saginaw County Scotch pine planting first instars. (Dowdy).

CONIFER SAWFLIES (Neodiprion spp.) - MARYLAND - Light to medium on Virginia pines over wide area in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.). NEVADA - N. edulicolis larvae and damage heavy on pinyon pine in Clover Valley Mountain and other areas in Lincoln County. (Munk).

A CYPRESS SAWFLY (Susana cupressi) - CALIFORNIA - Locally heavy on Cupressus sp. in Oroville, Butte County, and locally in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - VERMONT - Widespread on roadside cherry. (Nielsen, May 16). In third instar and growing rapidly at Burlington. (Neilsen, May 23). VIRGINIA - Defoliating wild cherry throughout State; severe in few instances. (Isakson). OHIO - Continues to defoliate wild cherry through southern and southeastern areas. Numbers in Washington County appear greater this year; larvae annoying on sides of homes and on sidewalks. (Gehres) Damage heavy in Lawrence County (Crawford); common on wild cherry on Muskingum, Guernsey, Morgan and Noble Counties. (Wollerman). RHODE ISLAND - Tents noticeable. (Mathewson). WISCONSIN - Webs increasingly more evident despite apparent lack of larval growth. Populations near Janesville appear highest in many years. Larvae 1-2 inches long May 10 near Melrose, Jackson County, about quarter inch in Oneida County May 5. (Wis. Ins. Sur.).

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) - UTAH - Forming conspicuous tents in poplar trees but less damaging in Grand County through Washington County. (Thornley, Knowlton, May 13).

FOREST TENT CATERPILLAR (Malacosoma disstria) - UTAH - Observed in shade trees at Tooele, Tooele County. (Knowlton, May 17). MINNESOTA - Hatching began on May 17 in Kabetogama area with 1-5 percent of egg masses showing new larvae. (Minn. Ins. Rpt.).

TENT CATERPILLARS (Malacosoma spp.) - CALIFORNIA - Defoliating and killing leaders in mountain mahogany and deer bush on 10 acres in Manzanita Ridge area, Shasta-Trinity National Forest. (W. J. Case, USFS). MASSACHUSETTS - Larvae developing rapidly; tents very noticeable. (Crop Pest Cont. Mess., May 23).

SPRING CANKERWORM (Paleacrita vernata) - OKLAHOMA - Heavy and damaging elm trees in Noble County. (Okla. Coop. Sur.). WISCONSIN - Larvae on elms in Mazomanie area remain small, but "shot-hole" feeding evident in opened leaves. (Wis. Ins. Sur.).

FALL CANKERWORM (Alsophilia pometaria) - NORTH CAROLINA - Feeding on all trees except evergreens on 500-acre site near Nags Head. Det. by D. A. Mount. (Bryant, May 13).

CALFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Causing severe defoliation of oak trees in Green Valley, Solano County; trees completely defoliated; midribs consumed. (Cal. Coop. Rpt.).

A LEAFHOPPER (Keonolla confluens) - WASHINGTON - Heavy on willows; gnarling leaves at Goldendale, Klickitat County. (Hagel, Landis).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - VERMONT - Adults emerging from elm branches May 22 at Burlington. (Nielsen). TEXAS - Recent survey showed damaging populations in all areas of Panhandle where elms abundant. Infestations seemed heavier than in 1965; distribution increased throughout several new counties. No evidence of Dutch elm disease found. (Parker).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Adults taken from elm at Fargo, Cass County. New county record. (Brandvik).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEVADA - Adults, eggs and young larvae heavy on elms in Caliente, Lincoln County. (Bechtel, Zoller). OKLAHOMA - Hatching about complete in northwest and northcentral areas; larvae heavy. Hatching light in eastern areas. (Okla. Coop. Sur.). VIRGINIA - Adults active; eggs noted on elms in Fluvanna County. (Isakson, Watts). VERMONT - Adults feeding on young elm leaves at Burlington. (Nielsen, May 23).

LOCUST LEAF MINER (Xenochalepus dorsalis) - OHIO - Adults noted on black locust March 14; however, frost destroyed most foliage. (Galford).

A LEAF-MINING WEEVIL (Odontopus calceatus) - OHIO - Adults active since mid-April across south central and southeastern areas. Damage on yellow-poplar evident in early May. Ovipositon not observed in Vinton County by May 8. Many deciduous trees with severe leaf kill due to frost May 10 in southern area. Foliage development set back on oak, hickory, walnut, ash and yellow-poplar. (Hay).

BIRCH LEAF MINER (Fenusa pusilla) - NEW HAMPSHIRE - First adults of season noted at Dover, May 15. (Mason). VERMONT - Oviposition on newly expanded birch leaves observed May 15. Continues heavy in Burlington area, May 23. (Nielsen). MASSACHUSETTS - Larvae mining birch leaves in Amherst area. (Crop. Pest Cont. Mess., May 23). RHODE ISLAND - Ovipositon observed on birch in Kingston, Exeter, North Kingston and East Greenwich. (Mathewson) CONNECTICUT - Adults active in most of State; egg laying underway. (Savos, May 18). OHIO - Adult observed ovipositing in white birch leaves in Portage County; some leaf discoloration occurred; eggs not yet hatched. (Gilbertson).

ELM LEAF MINER (Fenusa ulmi) - DELAWARE - Larval mines fairly abundant in one area of Sussex County. (MacCreary).

MAN AND ANIMALS

MOSQUITOES - CALIFORNIA - Populations show considerable variation from week to week. Current populations increased due to light rains. (Cal. Coop. Rpt.). UTAH More troublesome in several Box Elder, Tooele, Millard and Davis County localities. Aedes dorsalis numerous west of Great Salt Lake along Promontory to Promontory Point, Box Elder County. (Knowlton, May 17). TEXAS - Populations considerably higher than at similar period of 1965. Aedes vexans larvae widespread in woods in Beaumont area April 6. Culex salinarius breeding throughout salt marshes. Psorphora confinnis breeding in fallow rice fields April 14. Salt marshes in Sabine Pass area showed heavy breeding of Aedes sollicitans April 18-19. Anopheles crucians common in southern Jefferson County; A. quadrimaculatus taken in small numbers throughout county. High trap counts showed two-night total of 500 Aedes sollicitans in Port Arthur; during one night in north Beaumont, 100 Psorophora ciliata and 2,000 P. confinnis trapped. P. ciliata occurring in unprecedented numbers this year. Culiseta inornata larvae found along Nueces River as late as April 12. Culex restuans also breeding along river. (Thompson, Jefferson County Mosquito Control Report.). ARKANSAS - Mosquito populations higher than normal due to heavy rains followed by frequent showers. (Ark. Ins. Sur.). LOUISIANA - Larval collections in Jefferson Parish yielded Aedes vexans, Anopheles crucians, Culex pipiens quinquefasciatus, C. salinarius, Psorophora ciliata and P. confinnis. Light trap collections predominately Culex salinarius; Uranotaenia sapphirina collected in light trap for first time this year. (Stokes). FLORIDA - Biting generally light at Gainesville, Alachua County, but definitely at nuisance level some nights. Principal species still Mansonia perturbans; Anopheles crucians and Aedes vexans also biting. (Mead). MINNESOTA - During week ending May 7, total of 1,288 larval samples collected in Metropolitan Mosquito Control District. Of these Aedes excrucians in 500, A. fitchii in 422, A. stimulans in 231, A. cinereus in 2 255, A. flavescens in 121, A. riparius in 100, A. canadensis in 91, A. abserratus in 40, A. vexans in 21, A. sticticus in 14 and A. dorsalis in 13; Culiseta inornata larvae found in 56, Culiseta morsitans in one. Cold weather during week ending May 13 suppressed adult emergence; larval samples contained Aedes excrucians, A. fitchii, A. cinereus, A. flavescens, A. riparius, A. vexans, A. sticticus, A. abserratus, A. dorsalis, A. punctor, A. implicatus, A. spencerii, Culiseta inornata and C. mortisans. Emergence of spring Aedes spp. unusually slow because of continued cool weather. (Minn. Ins. Rpt.). WISCONSIN - Small larvae noted in pools in St. Croix Falls area May 11. High larval numbers noted in pools in Oneida County where ice present along margins; many of these found in high ground areas rather than floodwater area. Few adults seen in Calumet and Kenosha Counties; no general emergence noted, however. (Wis. Ins. Sur.). MICHIGAN - Annoyance rather general in many parts of Lower Peninsula. (Janes, Vasold). VERMONT - Annoying in all areas. (Nielsen, May 23).

HORN FLY (Haematobia irritans) - OKLAHOMA - Up to 1,000 per head on cows in northwest; heavy in north central, northeast, southwest and southeast, moderate in east central area. (Okla. Coop. Sur.). MISSISSIPPI - In Oktibbeha County, 85 per animal observed on 20 head of untreated cattle. (Dinkins). ALABAMA - Medium and widespread on cattle in Covington, St. Clair and Dallas Counties; light in Choctaw and Marengo Counties. (Pike et al.).

STABLE FLY (Stomoxys calcitrans) - OKLAHOMA - Averaged 8 per head on mature dairy cows in Payne County; moderate in Choctaw County. (Okla. Coop. Sur.).

A DEER FLY (Chrysops fluvaster) - UTAH - Numerous and annoying to man and livestock along east shore of Promontory to Brigham City, Box Elder County. (Knowlton).

BLACK FLIES - NEW HAMPSHIRE - Becoming numerous at Durham, May 14 (Conklin). VERMONT - Annoying in all areas. (Nielsen, May 23). CONNECTICUT - Present in large numbers. (Savos, May 18). MICHIGAN - Reported biting in Ingham, Shiawassee,

Saginaw and Cheboygan Counties. (Janes, Vasold). WISCONSIN - Adults numerous and biting in southern Rock County; reported in Calumet County. (Wis. Ins. Sur.).

FACE FLY (Musca autumnalis) - IDAHO - Adults collected while sweeping western balsam poplar (Populus trichocarpa) on north side of Craters of the Moon National Monument, Butte County, August 27, 1965. New County record. (Horning). WISCONSIN Active in Calumet County. (Wis. Ins. Sur.). VERMONT - Prevalent on pastured cattle (Nielsen, May 23).

HOUSE FLY (Musca domestica) - OKLAHOMA - Averaged 7 per Scudder grid in untreated barns, but up to 100 per Scudder grid in favorable areas in Payne County. (Okla. Coop. Sur.). WISCONSIN - Scarce or absent in barns and milkhouses throughout State. (Wis. Ins. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - GEORGIA - Heavy on white leghorn layers in Dodge and Pierce Counties. (Massey).

AMERICAN DOG TICK (Dermacentor variabilis) - OKLAHOMA - Ranged 20-30 per head on dogs in rural areas of Payne County; becoming very annoying to people. Averaged 20 per head on cows in Noble County, 5 per head in Atoka County. (Okla. Coop. Sur.). MICHIGAN - Recent infestations in southwest section indicate major period of activity underway. (Dowdy).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Averaged 500 per head on untreated cattle in Atoka County; about 95 percent adults, 5 percent nymphs. Heavy on cattle in Mayes County (Okla. Coop. Sur.). VIRGINIA - Adults found in edge of woods in Mathews County. (Isakson, Dinwiddie).

A BROWN SPIDER (Loxosceles reclusa) - OKLAHOMA - Active throughout many homes in State. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

SALT-MARSH CATERPILLAR (Estigmene acrea) - ARIZONA - Migrating populations annoying homeowners in Casa Grande and Toltec areas, Pinal County. (Ariz. Coop. Sur.).

A GROUND BEETLE (Calosoma sp.) - NEVADA - Adults heavy in southern Nye and Clark Counties; entering homes and other structures, causing concern to residents. (Nichols).

CIGARETTE BEETLE (Lasioderma serricorne) - ALABAMA - Large numbers emerging from kitchen foods in several Choctaw County homes. (Sexton et al.).

STORED PRODUCTS

GRANARY WEEVIL (Sitophilus granarius) - NEW MEXICO - Moderately heavy in stored barley and milo in Deming area, Luna County; damage light. (Hare).

BENEFICIAL INSECTS

LADY BEETLES - NEVADA - Larvae and adults, mostly Hippodamia convergens, heavy in all alfalfa checked in Lincoln County. (Bechtel, Zoller). COLORADO - Lady beetles and damsel bugs noted in all areas in Arkansas Valley. (Schweissing). IOWA - Averaged 2 per 10 sweeps in southern area alfalfa May 5. (Iowa Ins. Inf.).

DAMSEL BUGS - MINNESOTA - Low populations present in some fields in southwest district. (Minn. Ins. Rpt.).

BIG-EYED BUGS (Geocoris spp.) - WYOMING - Averaged 8-13 per 10 sweeps in alfalfa in Platte and Goshen Counties. (Robb, Marks).

HONEY BEE (Apis mellifera) - RHODE ISLAND - First swarm of season reported from Narragansett, Washington County. (Bannister).

A PARASITIC WASP - NEVADA - Parasitizing Acyrthosiphon pisum in all alfalfa checked in Lincoln County. (Bechtel, Zoller).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - INDIANA - Egg hatch delayed approximately 2 weeks compared with 1964 and 1965. No hatch in wheat or oats as of May 17. (Shade). MICHIGAN - No larvae observed; extremely cool spring weather delayed development. Adult activity and egg laying increased on warm days this period. (Moore, Gomulinski).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae infesting pitomba, Eugenia luschnathiana, in nursery at Fort Lauderdale, Broward County May 16, (Clinton). This is a new DPI host record. (Fla. Coop. Sur.). Larvae infesting 14 of 16 kumquats at residence in Hialeah, Dade County (Bingaman, May 16).

GRASSHOPPERS - UTAH - Nymphs numerous in peach orchards at Moab, Grand County. (Thornley, Knowlton, May 13). Eggs hatching in warmer areas of Garfield and Kane Counties. (Knowlton, Lindsay, May 17). TEXAS - Nymphs and adults heavy and damaging cotton plants in Five Points, Fresno County. (Cal. Coop. Rpt.). OKLAHOMA - Surveys in Comanche, Cotton, Jackson, Greer, Tillman, Kiowa and Caddo Counties showed 3-10 nymphs per square yard in rangeland. Dominant species Ageneotettix deorum, Melanoplus bivittatus and M. sanguinipes; 95 percent first-instar nymphs. Ranged 4-10 per square yard on rangeland in Ellis and Roger Mills Counties. A. deorum, Philibostroma quadrimaculatum and Amphitornus coloradus dominant species; 90 percent first instar. Hatch just beginning in Cherokee and Muskogee Counties. (Okla. Coop. Sur.). WYOMING - Small number of range species hatched at Glendo, Platte County, May 18; most still eggs. First and second instars per 100 square feet as follows: Acrolophitus hirtipes 0.5, Ageneotettix deorum 0.5, Amphitornus coloradus 3, Aulocara elliotti 1.5, Cordillacris occipitalis 5.5, Melanoplus occidentalis 2. Psoloessa delicatula adults averaged 3.5 per 100 square feet. (Pfadt). SOUTH DAKOTA - Grasshopper survey was conducted in Tripp, Gregory, Charles Mix, Hutchinson, Hanson, Davison, Aurora, Jerauld, Sanborn, Beadle, Spink and Clark Counties. First instar Melanoplus confusus observed in Tripp County. No other grasshopper hatch evident. Eggs of Melanoplus bivittatus, ranged from coagulated to segmented, but 2 of Melanoplus differentials and Melanoplus femurrubrum all coagulated. (Burge). WISCONSIN - More Dissosteira carolina nymphs noted in sandy-textured fields in Rock County. Few Arphia sp. adults probably conspersa, noted along roadsides in western Dane County. (Wis. Ins. Sur.). ILLINOIS - Newly emerged Melanoplus spp. 0-80 (average 20) per 100 sweeps in clover and alfalfa in southeast and southwest. (White). None found in northern half of State. (Petty, Moore). UTAH - Hatch conspicuous from Promontory Monument to Promontory Point and about alfalfa fields from Corinne to Brigham City, Box Elder County. Nymphs range 5-25 per square yard on range at Promontory Point; occasional mature Aulocara elliotii.

GYPSY MOTH (Porthetria dispar) - RHODE ISLAND - Egg hatch general in Johnston and North Smithfield, Providence County. (Veilleus). VERMONT - Egg masses hatching; few larvae noted feeding on apple in Sterling area where no insecticides applied. (Crop Pest Cont. Mess., May 23).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - MISSISSIPPI - Flights observed in several areas of Oktibbeha County. Two acres of watermelons reported destroyed in Lamar County. (Dinkins).

JAPANESE BEETLE (Popillia japonica) - CALIFORNIA - Survey underway in Sacremento area, Sacramento County, and adjacent counties. Traps being placed. Pest eradicated from Sacramento, Sacramento County, and West Sacramento, Yolo County, areas. Lack of rainfall and unseasonably warm weather factors in early detection efforts. (Cal. Coop. Rpt.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

Total of 37 cases reported in the U. S. May 15-21 as follows: TEXAS - Madison 1, Uvalde 2, Frio 3, La Salle 2, McMullen 1, Bee 1, Webb 2, Starr 1, Hidalgo 1; ARIZONA - Yavapai 1, Yuma 3, Maricopa 1, Pima 2, Pinal 2, Santa Cruz 6, Cochise 6, Graham 1; NEW MEXICO - Hidalgo 1.

Current	Cumulative	Current	Cumulative	Current	Cumulative

Table 1. Comparison of screw-worm samples identified during corresponding weeks in the United States.

Year	Positive Cases		Negative Cases	
1964	7	76	211	3061
1965	13	85	171	2128
1966	37	152	140	1285

Table 2. Comparison of United States screw-worm cases by State.

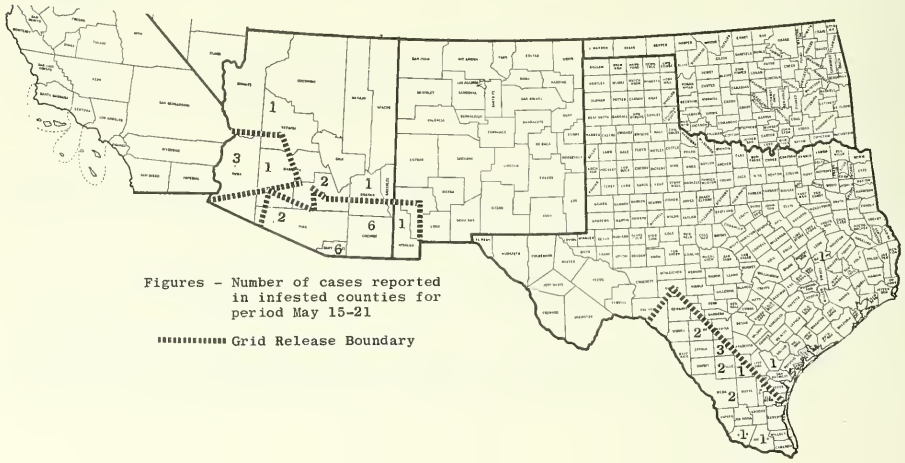
State	1964		1965		1966	
Texas	7	64	7	45	14	61
Ariz.	0	6	5	35	22	86
N.M.	0	0	1	5	1	3
Calif.	0	6	0	0	0	2

Table 3. Comparison of screw-worm cases inside and outside the United States portion of the Barrier Zone.*

Year	Inside Barrier Zone		Outside Barrier Zone	
1965	5	39	3	11
1966	30	137	7	15

Total of 114 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Baja California 2, Territorio sur de Baja California 1, Sonora 84, Chihuahua 5, Coahuila 2, Nuevo Leon 3, Tamaulipas 17. Total of 470 cases reported from Mexico south of the Barrier Zone.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. Effective May 23, 1965, portions of Arizona and California were added to the Barrier Zone. (Anim. Health Div.).



MORMON CRICKETS (Anabrus simplex) - ARIZONA - Infestation found May 10 in vicinity of Page, northern Coconino County. (Ariz. Coop. Sur.).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Total of 9 moths collected from 3 cages containing green bolls collected in November and placed on screens 6 inches above soil. Total of 7 emerged in 6 cages containing 100 pounds of bollie cotton collected in March from standing stalks. (Cowan et al.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - ALABAMA - Larvae destroying stand of corn in Belleville Community, Conecuh County. (Lemons). Medium, local larval populations, 1-2 per plant, damaging tomatoes and peas in Houston County. (Roney). GEORGIA - Larvae moderate in peanuts in Wilcox County. (Hudson).

INSECT DETECTION

A GELECHIID MOTH (Chrysopora stipella) - MARYLAND - Adults collected August 6, 1964, in blacklight trap at Friendship Airport, Anne Arundel County. Det. by R. W. Hodges. This is new North American record. (U. Md., Ent. Dept.). Previously reared from Chenopdium collected by J. M. Kingsolver and reared by D. M. Weisman at Silver Spring, Montgomery County. This is probably not an economic species; known hosts include: Atriplex, Chenopodium and Amaranthus. (ARS).

ALFALFA WEEVIL (Hypera postica) - Found for first time in Ottawa, Hancock, Putnam and Allen Counties May 12-17. (Rose). (p. 452). INDIANA - Found for first time in Brown, Monroe, Hendricks and Boone Counties. (Huber). ILLINOIS - Larvae found in Piatt County, a new county record. (Petty). (p. 453).

A SPIDER MITE (Tetranychus marianae) - CALIFORNIA - Locally heavy on Solanum sp. in Azusa, Los Angeles County. This new county record. (Cal. Coop. Rpt.). (p. 464).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Adults taken from elm at Fargo; new record for Cass County. (Brandvik). (p. 466).

FACE FLY (Musca autumnalis) - IDAHO - Collected for first time in Butte County, August 27, 1965. (Horning). (p. 468).

A SNAIL (Rumina decollata) - CALIFORNIA - Collected in Solano Beach, San Diego County. This is new county record. (Cal. Coop. Rpt.).

TEXAS CITRUS MITE (Eutetranychus banksi) - HAWAII - Heavy on lima beans in Kahului, Maui. This new host and island record. (Haw. Ins. Rpt.). (p. 473).

SOME FIRST APPEARANCES OF SEASON

Striped cucumber beetle adults in Delaware. Colorado potato beetle egg masses in Washington and Delaware. Tobacco budworm adults in Texas. Red-banded leaf roller adults in Indiana, egg masses in Maryland. Periodical cicada adults in Maryland and North Carolina. Small European elm bark beetle adults in Vermont. Birch leaf miner adults in Northeast.

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
ARKANSAS																								
Hope 5/5-18				36						0	15							18		15				
Kelso 5/12-18				0						0	5							0		0				
Fayetteville 5/5-18				39						0	13							56		264				
FLORIDA																								
Gainesville 5/17			BL						2	1									1					
GEORGIA																								
Tifton 5/11-18	55-93	1.48	BL							0	3				0	0								
ILLINOIS (county)																								
Champaign 5/12-19	45-72	0.25		2															1	48				
MISSISSIPPI																								
Stoneville 5/12-18	55-88	0.89	2BL	31			2		3		9				1	3		7	10	30				
Rolling Fork 5/12-18	57-88	1.88	BL	9						1	7				1	6		8	10	4				
Tunica 5/12-18	50-84	3.27	BL	40					2		4					2		2	12	14				
MISSOURI																								
Portageville 5/14-20			BL	4													5	3		6				
NEBRASKA																								
Chappell 5/8-12						3		91										6		1				
Lincoln 5/6-12				2				5										6		5				
Lincoln 5/13-19				3				7										10		28				
North Platte 5/6-11				4		38		91										206		4				
Oggllala 5/5-11						1		9										27						
NEW JERSEY																								
Aura 5/19																				1				
New Brunswick 5/17				29														2		106				
OHIO (counties)																								
Franklin 5/13-19			BL	12			11											1		34				
Washington 5/10-16			BL	13			1											3		19				
Licking 5/9-17			BL	4																12				
SOUTH CAROLINA																								
Charleston	45-81	1.33	BL	4			0		1	0	1				0	0		0	0	0		0	0	
TEXAS																								
Brownsville 5/7-13	62-86	0.01	2BL	10			1		31	1	9							22	8		1		11	
Brownsville 5/14-20	71-87	0.27	2BL				2		4		11							2					1	
Waco 5/14-20				10			5		26	1	50							70	57	166	3		30	
WISCONSIN																								
Madison 5/13-17			BL	2														4		18				
WYOMING																								
Cheyenne 5/4-11				1		9		2										28						

HAWAII INSECT REPORT

Special Insects of Regional Significance - SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) - On Oahu, populations increasing in Waianae. Nymphs and adults moderate in mustard, cabbage and tomato plantings. On Hawaii Island, very light on wild hosts on the northern region from Hilo to Waipio Valley. (Yamamoto, Gaddis). ORIENTAL FRUIT FLY (Dacus dorsalis) - Adults light to medium in 25-acre guava orchard in Umauma, Hawaii Island. Harvested fruits showed numerous oviposition punctures. (Kim).

Turf - A BILLBUG (Sphenophorus venatus vestitus) - Adults medium in 2 acres of Bermuda grass on golf course in Kailua-Kona, Hawaii Island (Iwane, Fukunaga).

Tomatoes - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - Medium on tomato in Kohala area, Hawaii Island and in Waianae area of Oahu. Medium to heavy in 0.25 acre of tomato in Anahola, Kauai. (Yoshioka, Yamamoto, Fujimoto).

Beans - BEAN BUTTERFLY (Lampides boeticus) - Larvae light and adults medium on Dolichos lablab (hyacinth beans) in Honkaa, Hawaii Island. (Haw. Ins. Rpt.). TEXAS CITRUS MITE (Eutetranychus banksi) heavy on lima beans in Kahului, Maui. Feeding damage conspicuous on dorsal surface of leaves. This is new host and island record. (Haw. Ins. Rpt.).

General Vegetables - AN APHID (Micromyzus formosanus) - Moderate on green onions in Pepeekeo, Hawaii. Heavy on green onions in backyard garden in Kaneohe, Oahu. (Gaddis, Sato).

Forest and Shade Trees - A PSYLLID (Trioza sp.) - Heavy on native tree, Metrosideros collina (Ohia-lehua) in Hilo Forest Reserve, Hawaii Island at 3,000-4,000 feet elevation. Counts of 20-30 galls on some leaves. On Kauai, light infestation on M. collina at 3,000-4,000 feet elevation in Kokee State Park. (Gaddis, Au).

Beneficial Insects - AN ARCTIID MOTH (Selca brunella) - Rapid spread of this beneficial insect, introduced to control Melastoma malabathricum (Indian rhododendron), occurring from Hilo to Olaa, Hawaii Island. Heavily damaged plants observed 2.5 miles from release sites. (Yoshioka).

Miscellaneous - GIANT AFRICAN SNAIL (Achatina fulica) - Large snail found in yard in Lihue, Kauai. Search for additional snails negative. Limited infestation in Poipu is near eradication. (Au). In Hana, Maui, extensive spread and alarming buildup occurring. Very conspicuous adjacent to highways in some localities. Many eggs observed in banana groves; some hatching. (Haw. Ins. Rpt.).

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Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM and VARIEGATED CUTWORM numbers continue high in Missouri. ARMYWORM threatening in southern Illinois. (pp. 477, 478). Armyworm adults numerous in Tennessee light traps. (p. 501). CEREAL LEAF BEETLE larvae active in Michigan. (p. 497). First CORN EARWORM moth of season taken at Portageville, Missouri; larvae feeding in corn in Alabama and Mississippi. CORN LEAF APHID moderate on mosaic virus diseased Johnsongrass in Mississippi; migrating to field corn. POTATO LEAFHOPPER adults active in Mississippi, Illinois and Wisconsin. SIX-SPOTTED LEAFHOPPER migratory adults found in North Dakota. (p. 477). EUROPEAN CORN BORER moths emerging in central Missouri and central Illinois and abundant in Delaware light traps; adult emergence expected to be heavier in Hudson Valley of New York than in past 2 years. FLEA BEETLES heavy and economic on corn in some States. (p. 478). WIREWORMS and BILLBUGS damaging corn in scattered areas. (p. 479).

ALFALFA WEEVIL remains problem in alfalfa; adults becoming abundant in several areas, larvae damaging in others; spread to new areas continues. (pp. 480,481). CLOVER SEED WEEVIL adults appearing several weeks earlier than last year in Oregon. (p. 481). SOUTHERN CORN ROOTWORM adults present in South Dakota alfalfa. (p. 482). PEA APHID counts in alfalfa highest in West; some increase reported in Midwest. (pp. 482,483). LYGUS BUGS numerous in alfalfa in western States. (p. 483).

BOLL WEEVIL adults appearing in cotton; emergence heavier than last year in Florence area, South Carolina. BOLLWORM moth emergence lighter than last year at this time in same area; eggs and young larvae found in cotton in Arizona. LEAFHOPPERS increasing in cotton in Arizona. (pp. 483,484). SUGAR-BEET ROOT MAGGOT adults active in Colorado sugar beets. (p. 485). First-generation CODLING MOTH adults emerging in Maryland, Ohio, Colorado and Oregon. (p. 487). First PLUM CURCULIO adults of season noted in Connecticut and Rhode Island. (p. 488). Total of 25,000 adults of a CUBAN MAY BEETLE taken in single blacklight trap at Kendall, Florida; infested area in Dade County extended 1.1 miles. (p. 497).

Detection

HORSE SUCKING LOUSE (Haematopinus asini) reported from first time in North Carolina. (p. 496).

AN APHID (Neophyllaphis podocarpi) reported from Louisiana. This is first ARS record from State. (p. 500).

For additional new county records see page 500.

Reports in this issue are for week ending May 27 unless otherwise indicated.

CONTENTS

WEATHER BUREAU'S 30-DAY OUTLOOK

JUNE 1966

The Weather Bureau's 30-day outlook for June calls for temperatures to average below seasonal normals in the Atlantic Coast and Gulf States and also in areas west of the Continental Divide. Above normal temperatures are indicated from the northern and central Plains eastward to the upper Great Lakes. In areas not specified near normal temperatures are in prospect. Precipitation is expected to exceed normal over the gulf coast and the middle and south Atlantic coast, as well as over the Great Basin, the Rocky Mountains and western portions of the Great Plains. Subnormal rainfall is indicated over the upper and middle Mississippi Valley eastward to the Appalachians and also over the south Pacific coast and the southern Plateau. Near normal totals are anticipated for unspecified areas.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

Weather continued on page 490.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - MARYLAND - Larvae appearing in some small grains in Worcester and Wicomico Counties. Week of May 29 expected to be critical period. (U. Md., Ent. Dept.). VIRGINIA - Medium on corn and small grains in southern half of Virginia Beach City area. (Cockrell). Present in Loudoun County corn field. (Isakson, Brown, May 20). INDIANA - Few early instar larvae observed in small grains in southern third of State. Economic infestation reported from Vanderburgh County. (Huber, Matthew). ILLINOIS - Larvae 0-6 per linear foot of row in wheat in southwest and west-southwest districts. Leaf notching noted but no damage. Larvae in south mostly 0.5 inch with few up to 0.75 inch in length; larvae farther north 0.25-0.5 inch. (White, Moore). In central and west districts, populations 0-3 small larvae per linear foot in wheat (Moore); larvae 0-10 per 100 sweeps in east and east-southeast districts. (Petty). MISSOURI - Larvae in southeast decreased from over 200 per square foot in small grains; now 10-20. Pupation started. Most fields requiring treatment now treated. All leaves stripped in some fields; head clipping beginning. Heavy damage anticipated in untreated fields where infestations economic. (Harrendorf, Keaster). Small larvae 2-12 per square foot in small grains in central third of State; hatch continues. Only few fields now have economic infestations of 5 or more larvae per square foot. (Houser, Craig, Thomas). ARKANSAS - Numbers declined in northwest area wheat. Only occasional larva found. (Ark. Ins. Sur.).

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Noted on wild mustards near Gunnison, Sanpete County; 2 in 25 sweeps on Sophia sp. (Knowlton). WYOMING - Adults very scarce in Washakie County beet fields. Averaged 0.30 per square foot on weed hosts. (Marks). COLORADO - Increased to 2-3 per square foot on sugar beets in 4-6 leaf stage in Delta County. Controls applied. Ranged 0.6-1 per square foot in Mesa County. (Bulla).

CORN EARWORM (Heliothis zea) - ALABAMA - Larvae so heavy on 8-acre field in Monroe County that controls applied twice. (Lemons). MISSISSIPPI - Third and fourth instars feeding in whorls of corn plants in Oktibbeha and Yazoo Counties. Larvae average 10 per 100 linear feet in Oktibbeha County. (Dinkins). MISSOURI - First light trap catch of season occurred at Portageville, Pemiscot County, May 24. (Harrendorf, Keaster). ARIZONA - Light on sweet corn in Graham County, heavy in Maricopa County. (Ariz. Coop. Sur.). For Bollworm, see page 484.

CORN LEAF APHID (Rhopalosiphum maidis) - MISSISSIPPI - Moderate on mosaic virus diseased Johnsongrass. Alate forms becoming abundant on Johnsongrass in Yazoo County; migration from diseased Johnsongrass to field corn resulting in spread of mosaic virus. Alates also moving into corn in Oktibbeha County. (Dinkins). OKLAHOMA - Averaged 30 per plant on sweet corn beginning to tassel in McCurtain County. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - COLORADO - Counts of 2 per plant in field near Wiggens, Morgan County; controls applied. None found in other fields totaling 1,060 acres. (Cox). NORTH DAKOTA - Trace numbers of alates observed at Fargo. (Schulz, Coupe). MINNESOTA - None found in small grain and roadside grasses. (Minn. Ins. Rpt.). WISCONSIN - Up to 3 per 50 sweeps in oats in few Sauk and Lafayette County locations. None noted in central area. (Wis. Ins. Sur.). IOWA - In oats at Newell. (Iowa Ins. Inf., May 23).

POTATO LEAFHOPPER (Empoasca fabae) - MISSOURI - Adults 10-20 per 20 sweeps in alfalfa in central and northeastern areas. (Houser). NEBRASKA - In Lancaster County alfalfa, 5 per 100 sweeps. (Kindler). ILLINOIS - Adults 0-170 per 100 sweeps in alfalfa in southern two-thirds of State. (Petty, Moore, White). WISCONSIN - Common in alfalfa field margins in Waushara, Portage and Marquette Counties; less than 1 per 10 sweeps in Lafayette, Grant and Iowa Counties. (Wis. Ins. Sur.).

POTATO PSYLLID (Paratrioza cockerelli) - UTAH - Numerous on matrimony-vine in Gunnison-Centerfield area, Sanpete County, with 11 adults in 50 net sweeps; 3 in 50 sweeps on Chrysothamnus spp. near Nephi, Juab County. (Knowlton).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - INDIANA - Adults and nymphs common on wheat in southern third of State; 2-26 per 10 sweeps. (Huber). WISCONSIN - Very low in southwest but up to 15 per 50 sweeps in few grain fields in central area. Some highest counts near Montello, Marquette County, where large acreage of lettuce is grown. (Wis. Ins. Sur.). MINNESOTA - Counts in alfalfa and small grain relatively high early in week; up to 600 per 100 sweeps. By May 26, dropped to 10-100 per 100 sweeps (average 60) in central district after 2 days of 80 plus temperatures. (Minn. Ins. Rpt.). NORTH DAKOTA - Trace numbers of migratory adults found on grass at Fargo. (Schulz, Coupe).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Light in alfalfa in all areas of Cochise County. No increase noted. (Ariz. Coop. Sur.). NEW MEXICO - Very light, spotted infestations in Hondo Valley, Lincoln County. (Mathews, Nielsen). Light to moderate in Dona Ana County alfalfa. (N. M. Coop. Rpt.). ARKANSAS - Surveys continue negative in northwest. (Ark. Ins. Sur.). ILLINOIS - Small numbers (maximum 8 per sweep) observed in many alfalfa fields in west, central and west-southwest districts. (White). INDIANA - Ranged up to 400 per 100 sweeps in Greene County. Approximately 5 percent alates. (Matthew).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEBRASKA - Pupation 29.8 percent in Grand Island area, Hall County. No moths caught at light traps to May 27. (Hill, Rhine). MISSOURI - Adult emergence 100 percent in southeast; beginning in central third of State. Pupation complete in central area, 60-80 percent in extreme northern area. (Keaster, Thomas, Houser). IOWA - No new pupae found at Ankeny May 20, indicating development 14 days behind 1965. (Iowa Ins. Inf., May 23). MINNESOTA - No pupation of overwintering larvae found in central district. (Minn. Ins. Rpt.). WISCONSIN - Populations too low to determine percent pupation. (Wis. Ins. Sur.). ILLINOIS - Pupation well underway in southern three-fourths of State; moth emergence occurring in central area. (White). DELAWARE - Adults abundant in blacklight traps in Sussex County and in woods around edges of most fields throughout State. (Burbutis). NEW YORK - Larvae about 5 percent pupated on sweet corn in Hudson Valley May 18. Heavier adult emergence than in 1964 or 1965 predicted. (N. Y. Wkly. Rpt.).

CUTWORMS - NEW YORK - Probably Euxoa messoria very abundant on weeds in sweet corn at New Paltz, Ulster County. (N. Y. Wkly. Rpt., May 23). MARYLAND - Unspecified species light to moderate on young field corn following sod in Kent County. (U. Md., Ent. Dept.). ALABAMA - Spodoptera frugiperda light in whorls of corn in some Mobile County fields. Few larvae observed in corn as far north as Lee County. (Diller et al.). COLORADO - Agrotis orthogonia ranged 2-10 per 100 feet of drill row in corn field west of Greeley, Weld County. (Boyes).

CORN FLEA BEETLE (Chaetocnema pulicaria) - INDIANA - Economic in Kosciusko, Randolph, Monroe and Greene Counties; adults 2-5 per leaf on seedling corn plants. (Lehker, Matthew). MARYLAND - Light to moderate on field corn in Anne Arundel and Talbot Counties. Heavy on garden sweet corn near Annapolis, Anne Arundel County. (U. Md., Ent. Dept.). DELAWARE - Adults numerous on young corn in several areas; injury heavy in some fields. (Burbutis). NEW JERSEY - Becoming abundant on sweet corn in central and southern counties. (Ins.-Dis. Newsltr.). NEW YORK - Up to 5 per 100 plants found on sweet corn seedlings at New Paltz, Ulster County, May 16. (N. Y. Wkly. Rpt.).

FLEA BEETLES - OHIO - Probably Chaetocnema spp., reported in field corn in major corn-growing areas, involving 16 counties in glaciated region of State. Damage varies but young plants few inches tall severely damaged in some fields. (Blair et al.). KANSAS - Heavy on corn in south central area. Some spraying done. (Gates). ALABAMA - Epitrix cucumeris adults heavy on young corn in gardens in Morgan County. (Rutledge et al.). ARIZONA - Increasing populations of Chaetocnema ectypa causing light damage to sorghum in Yuma and western Maricopa County. (Ariz. Coop. Sur.).

SUGARCANE BEETLE (Euetheola rugiceps) - ALABAMA - Adults attacking isolated fields of corn in Monroe and Tallapoosa Counties. (Lemons, Webb).

WIREWORMS - SOUTH DAKOTA - Damaged first-year corn near Flandreau, Moody County; one or more larvae in 5 of 7 hills of corn. Field treated, corn replanted; planted on 2-year sweetclover. (Kantack). NEBRASKA - Damaging corn in Hall County. (Clausen). ALABAMA - Caused serious stunting and dwarfing of several acres of corn in 100-acre field in Monroe County. (Lemons). NORTH CAROLINA - Melanotus communis caused significant damage in 3-4 fields of corn in peat-muck soil in Washington County. Some damage observed in 1 field, but evaluation impossible due to extremely wet conditions. (Whitford, Mount).

BILLBUGS - SOUTH CAROLINA - Much damage noted in lower part of State. Generally much heavier in Florence area than for several years. Isolated damage reported in Hampton County. (Nettles et al., May 24).

SEED-CORN MAGGOT (Hylemya platura) - NEW JERSEY - Total of 1,736 taken on 8 sticky boards at Cedarville and 154 on 2 boards at Smithburg on May 26. (Ins.-Dis. Newsltr.).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - OREGON - Heavy in Wocus barley in several fields west of Roseburg and near Canyonville, Douglas County. Plants showing damage due to heavy feeding and honeydew. Controls underway. (Vertrees). MINNESOTA - Population in spring grains down again in central district; completely absent in most fields checked. Only rye fields in area with 20-40 per 100 sweeps. (Minn. Ins. Rpt.). IOWA - In oats at Newell. (Iowa Ins. Inf., May 23). WISCONSIN - Counts 4-12 per 50 sweeps in grain throughout southwest; 1-6 per 100 sweeps in central area. (Wis. Ins. Sur.). ILLINOIS - Varies 150-500 per 100 sweeps in wheat throughout southern two-thirds of State. (White, Petty, Moore). OHIO - Ranged 3-4 per sweep in 2 wheat fields in Butler and Preble Counties. No significant damage occurred. (Rose). MARYLAND - Small colonies conspicuous on barley and wheat foliage in Anne Arundel and Montgomery Counties. (U. Md., Ent. Dept.).

CHINCH BUG (Blissus leucopterus) - ALABAMA - Unusual and extremely heavy infestation of adults migrating from clover and grass to field of millet on dairy farm in Russell County. (Andrews, Wood).

STINK BUGS - UTAH - Chlorochroa sayi numerous and damaging fall grains between Richfield, Sevier County, and Gunnison, Sanpete County. Light on wheat and rye in Nephi-Levan area, Juab County. (Knowlton). ARKANSAS - Oebalus pugnax 8-10 per 100 sweeps in northwest area wheat. (Ark. Ins. Sur.).

A DELPHACID PLANTHOPPER - WASHINGTON - Adults of undetermined species severely damaging 100 acres of fall wheat at Lacrosse, Whitman County. (Telford).

ARMYWORMS - TENNESSEE - These and cutworms observed in several fields of small grain. (Johnson, May 23).

A PSYCHID MOTH (Apterona crenulella) - UTAH - Larvae very numerous at Fountain Green, destroying green color in 3 acres of barley. Present on other plants. (Knowlton).

SAWFLIES (Dolerus spp.) - ILLINOIS - Larvae, mostly D. unicolor, 0-50 per 100 sweeps in wheat in southern two-thirds of State; heaviest in west and lightest in south. (White, Petty, Moore).

BROWN WHEAT MITE (Petrobia latens) - KANSAS - Counts decreased to about 100 per foot of row in Barton County. (Harvey). COLORADO - Heavy on malting barley in Windsor, Harmony, Fort Collins and Wellington areas of Weld and Larimer Counties. Controls applied. (Caubin). UTAH - Populations lower in Nephi-Levan area, Juab County, since recent rains; damage light. (Knowlton).

TURF, PASTURES, RANGELAND

PAINTED LADY (Vanessa cardui) - WASHINGTON - Migrations diminished in Yakima Valley; 20 percent of former numbers. Birds taking heavy toll. (Landis, May 13). Brewer's blackbird preying heavily on adults along highways in Whitman County. (Telford, May 13). Adults still searching for hosts, decrease continues at Toppenish, Yakima County. (Landis, May 24). OREGON - Larvae through third instar appearing in increasing numbers on several species of thistle and other weedy plants throughout western area. Migrations, from 50-acre barley field recently sprayed with herbicide for control of fiddleneck, entered nearby homes and gardens causing considerable concern. (McKorkle et al.). IDAHO - Unusually abundant adult migration in Moscow, Latah County, area May 7-8; cool weather stopped flights. Populations normal in Lenora, Nez Perce County, alfalfa May 17. (Kambitsch et al.). NEVADA - Variable, spotted, light to heavy on Scotch thistle (Onopordum acanthium), a noxious weed, in Virginia City, Storey County. (Cooney). UTAH - Approximately 200 evidently feeding on nectar of large black currant bush at Promontory Monument, Box Elder County. Migration less conspicuous May 17-18 than during preceding days. (Knowlton, May 20). Adult migration still observed but only 10 percent as many flying as 10 days before. (Knowlton).

A SOD WEBWORM (Crambus bonifatellus) - NEVADA - Adults numerous in lawns in Caliente, Lincoln County. (Bechtel, Zoller).

TEN-LINED JUNE BEETLE (Polyphylla decemlineata) - WASHINGTON - Larvae, 75 percent first instar and mostly this species, feeding on 40 acres of irrigated orchard grass at Winchester, Adams County; 4 per square foot. About 30 percent on roots, remainder 4-9 inches below soil surface. (Onsager).

A GRASS BUG - UTAH - Black species severely damaging planted grasses over 42,000 acres of Forest Service lands and 16,000 acres of Bureau of Land Management rangelands in Garfield County. (Knowlton, Landis). Damaging grasses and some small grains in area of Juab-Sanpete and south of Levan, Juab County. Largest concentration on planted wheat grasses over several hundred acres of soil bank lands, largely intermediate wheat grass. (Knowlton).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - VERMONT - Eggs collected in Bennington County May 12 hatched in 6 days in laboratory. No larvae found in field, but anticipated coming week. Adults readily found in Addison County; 1 per 10 sweeps or less. (Nielsen, May 23). MASSACHUSETTS - Adults 20-40 and larvae 3-5 per 100 sweeps in 8 Berkshire County fields May 24. Adults 3-20 and larvae 0-72 per 100 sweeps in 7 Franklin County fields May 25. Little damage seen at either location. (Miller). RHODE ISLAND - Egg masses found in 13 of 77 stems in Kingston, Washington County; same field reported in CEIR 16(21):452. Apparently leveling off. No larval feeding evident in field. Larvae collected and some feeding in another field in same town. Larval feeding increasing in Johnston area, Providence County. (Mathewson). CONNECTICUT - At Storrs, 25 stems yielded 17 egg masses; 135 adults in 100 sweeps; no larvae found, no foliar feeding evident. Larvae and feeding found in Litchfield. (Savos, May 25). NEW YORK - Activity continues at very slow pace in Ulster County. (N. Y. Wkly. Rpt., May 23). PENNSYLVANIA - Most eggs hatched in southeast area alfalfa; erratic in some sections. Infestation heavy. (Udine, Tetrault). NEW JERSEY - In 5 fields in Gloucester, Salem and Cumberland Counties counts per 100 sweeps ranged 0-65 adults and 450-5,200 larvae, with 25-220 larvae per 25 tips. In 6 fields from Burlington County to Middlesex County, counts per 100 sweeps ranged 30-160 adults and 880-4,800 larvae, with 78-328 larvae per 25 tips. (Ins.-Dis. Newsltr.). DELAWARE - Feeding injury to first growth heavy in most areas. (Burbutis). VIRGINIA - Larvae heavy on alfalfa in 3 Virginia Beach area fields. (Allen). TENNESSEE - Larvae and adults damaging second-growth alfalfa; damage will delay second cutting. (Johnson, May 23).

OHIO - First new generation weevils appearing in Meigs County. In Columbiana County, larvae entering pupation; some currently prepupae. Populations in northeastern section about 2 weeks slow in development this year. New areas of severe damage include Richland County. (Flessel). Most counties east of line from Hamilton County in southwest to Ashtabula County in northeast had buildup to economic populations. Typical untreated field in Adams County averaged about 26 larvae per sweep and 70-90 percent foliage eaten. In Clark County, populations still relatively low, less than one larva per sweep. (Rose). INDIANA - All stages present in more northern counties of southern third of State. Larvae 6-13 per sweep in Johnson, Brown, Monroe, Jackson, Dearborn and Ripley Counties. Cocoons 2-43 per square foot throughout these counties; mating pairs common in alfalfa. Found for first time in Henry, Randolph and Tippecanoe Counties. (Huber). ILLINOIS - Newly emerged adults very abundant in alfalfa; larval numbers decreasing, although first-instars still found. Damage to first and second-crop alfalfa evident in southeast district. (Armburst). New county records include Jersey, Calhoun, Greene, Pike, Scott, Morgan, Brown, Cass, Menard and Fulton. MISSOURI - Pupation complete in southeast, adults emerging. (Jones). Larvae 5-25 per 100 sweeps in Callaway, Warren, Montgomery, St. Charles, St. Louis, Lincoln and Pike Counties. All new county records. (Houser). ARKANSAS - Over 75 percent of population adults in northeast. (Ark. Ins. Sur.). KANSAS - Larvae found in several fields in Scott and Haskell Counties. These new county records. Counts high, 1-4 per 10 sweeps. (DePew).

SOUTH DAKOTA - Mainly adults in alfalfa east of Belle Fourche, Butte County. In light stands (4-6 inches high) adults 10-20 per 100 sweeps; in heavier stands (6-7 inches high) up to 72 adults per 100 sweeps. First and second-instar larvae present, but less than one per 100 sweeps. Adult numbers equal to last year; alfalfa should be watched for damage before first cuttings. (Jones). WYOMING - Larvae appearing in alfalfa in Hot Springs and Washakie Counties. Counts per 10 sweeps, larvae 2-12 and adults 8-15. Larvae not present yet in alfalfa in Big Horn, Park and Fremont Counties; adults 6-10 per 10 sweeps. (Marks). COLORADO - Larvae light, 80-100 per 100 sweeps, and trace damage showing on alfalfa in Milliken area, Weld County. (Boyes, Urano). UTAH - Larvae numerous and damaging in eastern Millard County; lighter in western part of county. Damaging in Milford and Minersville areas. Some alfalfa being harvested in northern part of State with little damage. (Knowlton). NEVADA - Larvae 50 or more per sweep in many fields in Douglas, Lyon and Washoe Counties; damage evident, controls applied. (Batchelder et al.). Spraying in Lyon County started May 16, week earlier than past 2 years. (Batchelder). OREGON - Larvae appearing in Klamath County alfalfa. Too early to determine extent of infestation. (Jendrzejewski).

CLOVER LEAF WEEVIL (Hypera punctata) - CALIFORNIA - Adults light on 100 acres of alfalfa in Kerman, Fresno County. (Cal. Coop. Rpt.).

PEA LEAF WEEVIL (Sitona lineata) - CALIFORNIA - Medium on legumes locally in Crescent City area, Del Norte County. This is new county record. (Cal. Coop. Rpt., May 13).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NORTH DAKOTA - Adults averaged 3 per 10 sweeps on alfalfa in Morton, Grant, Hettinger, Slope and Billings Counties. (Brandvik).

CLOVER SEED WEEVIL (Miccotrogus picirostris) - OREGON - Adults emerging on white clover in Marion County; 10 per 30 sweeps. Appearance several weeks earlier than last year. (Every).

WEEVILS - CALIFORNIA - Hypera brunneipennis heavy on native clovers in pastureland in San Luis Rey, San Diego County, and on native clovers and buildings in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.). SOUTH DAKOTA - Sitona scissifrons adults 30 per 100 sweeps in alfalfa in northern Yankton County. (Jones). WISCONSIN - S. scissifrons apparently became more common in legumes in sandy soil areas past year or two. Adults 3-6 per 10 sweeps in grain throughout State. Exact damage unknown. (Wis. Ins. Sur.).

VETCH BRUCHID (Bruchus brachialis) - CALIFORNIA - Adults light on vetch at Pleasanton, Alameda County. New county record. (Cal. Coop. Rpt.).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - SOUTH DAKOTA - Adults 2 per 100 sweeps in alfalfa near James River, northern Yankton County. These first of season. (Jones).

VARIEGATED CUTWORM (Peridroma saucia) - CALIFORNIA - Larvae heavy in alfalfa in Mojave, Kern County. (J. H. Black). MISSOURI - Pupating in southeast, but larval counts remain high; 10-40 per square foot in alfalfa, home gardens and various truck crops throughout area. Controls being applied. Damage heavy to severe in untreated crops. (Harrendorf, Keaster). ILLINOIS - Larvae 0-40 per 100 sweeps in clover and alfalfa throughout southern two-thirds of State. Most larvae about 0.5 inch in length; few up to 1 inch. (Petty, Moore, White).

CUTWORMS - OREGON - Damaging seed alfalfa at Adrian, Malheur County. Large spots detected in several fields where feeding stopped plant growth. (Bailey). SOUTH DAKOTA - Second to fourth-instar Plathypena scabra larvae in alfalfa in Butte and Yankton Counties. (Jones). MASSACHUSETTS - Three-quarters grown larvae, probably Amathes c-nigrum, abundant in alfalfa of 1965 seeding in Franklin County, May 16. (Wheeler).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Larvae 4-10 per 50 sweeps in Hondo Valley alfalfa, Lincoln County. (Mathews, Nielsen).

A PSYCHID MOTH (Apterona crenulella) - UTAH - Larvae very numerous at Fountain Green, destroying green color in 4 acres of alfalfa. Present on other plants. (Knowlton).

PEA APHID (Acyrthosiphon pisum) - NEVADA - Generally light in all alfalfa in Douglas and Lyon Counties. (Batchelder, Martinelli, Weaver). UTAH - Light to moderately damaging alfalfa in Ephraim-Manti and Gunnison-Centerfield areas of Sanpete County. (Knowlton). WYOMING - Averaged 12-30 per 10 sweeps in alfalfa in Fremont, Hot Springs, Washakie, Big Horn and Park Counties. (Marks). COLORADO - Ranged 250-500 per 100 sweeps in Milliken area, Weld County. (Boyes, Urano). NEW MEXICO - Moderate in alfalfa in Hondo Valley, Lincoln County. (Mathews, Nielsen). Generally light in Dona Ana County alfalfa. (Elson, Campbell). OKLAHOMA - Averaged 75 per 10 sweeps in alfalfa checked in McCurtain County. Alfalfa being cut in many areas. (Okla. Coop. Sur.). ARKANSAS - Nearly disappeared from legumes in northwest area. (Ark. Ins. Sur.). MISSOURI - Very low in alfalfa, lightest in several years; 100-200 per 20 sweeps in central and northeastern sections. (Houser). KANSAS - Low in Scott County (35 per sweep) (DePew) and Ellis County (10 per sweep) (Harvey). Parasites and predators primarily responsible for reduction. (Simpson). SOUTH DAKOTA - Damaging numbers present in some alfalfa in southeast areas; particularly in Yankton and Clay Counties. In fields sampled in northern Yankton County, where alfalfa 12-15 inches high, counts 200-1,000 per 100 sweeps. Predators present in high numbers; counts per 100 sweeps as follows: Lady beetle adults 45-106, larvae 10; damsel bugs 15-30; lacewings 2; hymenopterous parasites 10-20. (Jones). NORTH DAKOTA - Averaged 8 per 10 sweeps on alfalfa in Slope and Billings Counties. (Brandvik). MINNESOTA - Ranged 30-100 per 100 sweeps in central district alfalfa. Winged forms present in most fields. Lady beetle and damsel bug numbers relatively high; 60 per 100 sweeps in most fields. (Minn. Ins. Rpt.). WISCONSIN - Increase apparently continues despite high incidence of parasites and parasitized individuals. Lady beetles more common in scattered fields; damsel bugs present in many instances. Winged aphids nearly 10 percent of population in some cases. Counts per sweep in alfalfa by county as follows: Green Lake 1, Portage 5.5, Iowa 4, Marquette 12, Columbia 15, Grant 4, Waushara 19, Sauk 4, Lafayette 4, Rock 4. (Wis. Ins. Sur.).

ILLINOIS - Increased slightly in alfalfa throughout southern two-thirds of State; still at noneconomic levels. (White, Petty, Moore). INDIANA - Populations on alfalfa heaviest in central areas; 10-50 per sweep. (Huber, Matthew). OHIO - Increase continues on alfalfa and clover in west central and southwestern areas;

9-44 per sweep. Parasitized aphids common; predators include damsel bugs, lady beetles and hunting spiders. (Rose). VIRGINIA - Remains low in east central area; lady beetles noted in all fields checked. (Isakson). NEW JERSEY - Ranged 0-135 per 20 sweeps (average 43) in 5 fields in Gloucester, Salem and Cumberland Counties, 28-310 per 20 sweeps (average 129) in 6 fields from Burlington to Middlesex Counties. (Ins.-Dis. Newsltr.).

TARNISHED PLANT BUG (Lygus lineolaris) - VIRGINIA - Mostly adults, 20-300 per 100 sweeps (average 70) in clover and alfalfa in Campbell, Appomattox, Prince Edward, Dinwiddie and Bedford Counties. (Isakson). ARKANSAS - Nymphs and adults continue very active; 40-50 per 100 sweeps. (Ark. Ins. Sur.). MISSOURI - Adults and nymphs 10-100 per 20 sweeps in alfalfa in central and northeastern areas. (Houser). NORTH DAKOTA - Trace adult numbers appeared in alfalfa in southwest. (Brandvik).

LYGUS BUGS (Lygus spp.) - NEVADA - Appear more numerous than usual in all alfalfa in Lyon County this year. (Batchelder). UTAH - Adults and nymphs, largely L. elisus, moderately numerous on Sophia sp., abundant in many alfalfa fields in Sanpete and northern Sevier Counties. (Knowlton). ARIZONA - Nymphs continue to increase in alfalfa in Yuma, Maricopa, Pinal and Cochise Counties. (Ariz. Coop. Sur.). NEW MEXICO - Adults 22-38 and nymphs 40 to over 100 per 50 sweeps in alfalfa checked in Hondo Valley, Lincoln County. (Mathews, Nielsen). Heavy in alfalfa in Quay, Socorro and Dona Ana Counties. (Kloepfer, Elson, Campbell).

RAPID PLANT BUG (Adelphocoris rapidus) - MISSOURI - Adults and nymphs 10-75 per 20 sweeps in alfalfa in central and northeast areas. (Houser).

MEADOW SPITTLEBUG (Philaenus spumarius) - VIRGINIA - Nymphs and adults heavy on clover in Campbell County. (Isakson). OHIO - Nymphs 3-4 per sweep in alfalfa sampled in southwestern section. (Rose). INDIANA - Spittle masses 4-10 per 10 stems in south central and southeastern areas. (Huber).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Increased slightly although still light to moderate in alfalfa in Yuma, Maricopa, Pinal, Pima, Cochise and Graham Counties. (Ariz. Coop. Sur.).

THRIPS - NEW MEXICO - Abundant in Lincoln County alfalfa. (Mathews, Nielsen). Heavy in Dona Ana County alfalfa sweepings. (N. M. Coop. Rpt.). NEVADA - Heavy enough to require control on timothy in Smith Valley, Lyon County. (Batchelder). Damaging same host with silvering evident in Minden, Douglas County. Controls recommended. (Arnett, Lauderdale). Medium to heavy numbers of Frankliniella occidentalis damaging several alfalfa fields in Hiko-Pahranagat Valley areas, Lincoln County. (Bechtel, Zoller).

SPRINGTAILS - OHIO - Unusually high populations noted in 2 alfalfa fields in Ottawa and Wood Counties; approximate counts per 50 sweeps 5,000 in Ottawa County and 3,000 in Wood County; averaged 800 per 50 sweeps in Hancock County field. Very few present in most alfalfa in northeast. (Rose, May 20).

PEANUTS

CORN EARWORM (Heliothis zea) - GEORGIA - Heavy on peanuts across peanut belt. (Weathersby, Dollar, French).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Increased catch on flight screens over previous week reflected in number found in cotton fields in McLennan and Falls

Counties. Overwintered weevils found in 10 of 24 untreated fields and 1 of 17 treated fields. Averaged 78 per acre in untreated fields (maximum 250), 3 in treated fields (maximum 125). Overall average 50 per acre, compared with 48 during corresponding week in 1965. (Cowan et al.). LOUISIANA - Only 4 fields of older cotton checked in Madison Parish; 1 weevil recovered. Eighteen recovered from 150 trap cotton plants placed near hibernating areas May 19. (Cleveland et al.). ALABAMA - Although no counts of live adults made on per acre basis in cotton in extreme northern area, first live weevil of season reported in Morgan County May 10. (Rutledge). TENNESSEE - Several adults found on seedling cotton. (Johnson). SOUTH CAROLINA - Emergence heavier than last year in Florence area. Total of 121 adults emerged on 9 groups of 10 potted plants at trap plot, compared with 5 in 1965. (Taft et al., May 25).

FLEA BEETLES - TENNESSEE - Phyllotreta striolata and other species light to heavy on cotton. (Johnson). ALABAMA - Damage by P. striolata and other species contributed to serious condition of cotton in west and north sections. (Williams et al.).

BOLLWORM (Heliothis zea) - ARIZONA - Eggs and first-instar larvae found in Yuma County cotton. Small numbers of eggs found in Maricopa County. (Ariz. Coop. Sur.). TEXAS - Of 10 larvae collected on spiderwort, Indian paintbrush and Texas star in McLennan and Falls Counties, all H. zea; 14 H. zea larvae also collected on corn, bringing total identified to 157. One larva collected on cotton. (Cowan et al.). LOUISIANA - Very few moths collected in light trap in Madison Parish due to mechanical trouble. (Cleveland et al.). SOUTH CAROLINA - Moth emergence lighter than at same time last year in Florence area. (Taft et al., May 25).

CUTWORMS - MISSISSIPPI - Causing heavy damage to 75 acres of cotton in Tallahatchie County. Stand would probably have been destroyed in another 4-5 days if controls not applied. (Dinkins). Problem in many fields in delta counties due to vegetative growth in skip rows. (Pfrimmer et al., May 26). LOUISIANA - Damage reported by several Madison Parish growers. (Cleveland et al.). Outbreak of Agrotis ipsilon developed on cotton in Ouachita Valley, Macon Ridge section of State. (Newsom).

APHIDS - SOUTH CAROLINA - Heavy to very heavy on cotton in Florence area. (Taft et al., May 25). TENNESSEE - Light in most fields surveyed. (Johnson). ALABAMA - Damage by A. gossypii contributed to serious condition of cotton in north and west sections. (Williamson et al.). TEXAS - A. gossypii light in 31 of 41 fields inspected in McLennan and Falls Counties. (Cowan et al.). NEW MEXICO - Probably Aphis craccivora, light to heavy on cotton in Eddy and Dona Ana Counties. Some fields being treated. (Campbell). ARIZONA - Light to moderate infestations of A. gossypii appear to be increasing in Kansas Settlement and Stewart district, Cochise County. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Adults moving into cotton in Maricopa and Yuma Counties; 2 per 100 sweeps. (Ariz. Coop. Sur.).

LEAFHOPPERS - ARIZONA - Empoasca spp. increasing in most cotton throughout Graham County. (Ariz. Coop. Sur.). TEXAS - Psallus seriatus adults moving from wild hosts to cotton in McLennan and Falls Counties; averaged 1 per 100 terminals in 41 fields. (Cowan et al.).

THRIPS - TEXAS - Damaging infestations found in late-planted cotton in McLennan and Falls Counties while older cotton recovering. In treated fields medium in 2, light in 12 and none in 3. In untreated fields heavy in 2, medium in 3 and light in 19. (Cowan et al.). LOUISIANA - Damage extensive in some Madison Parish fields; thrips 1-14.5 per plant (average 4) in 18 untreated fields. Ranged 0-3.82 (average 0.9) in 29 treated fields. (Cleveland et al.). MISSISSIPPI - Frankliniella fusca heavy in many untreated fields in delta counties, particularly on heavier soils. Systemic insecticides giving good control when used at recommended rates. (Pfrimmer et al., May 26). ALABAMA - Damage by several species contributed to serious condition of cotton in north and west sections. Other insects, disease, weather and other natural factors combined to cause replanting of 10-50 percent of cotton acreage. (Williamson et al.). TENNESSEE - Moderate to heavy on seedling

cotton. Control important since cotton is late. (Johnson). SOUTH CAROLINA - Light to medium on cotton in Florence area. (Taft et al., May 25).

SPIDER MITES (Tetranychus spp.) - ARIZONA - Spotted infestations on cotton in many fields in Yuma, Maricopa and Pinal Counties. Spot treatments necessary in some areas. (Ariz. Coop. Sur.). CALIFORNIA - T. urticae locally medium on cotton in Fresno, Fresno County. (Cal. Coop. Rpt.).

TOBACCO

BUDWORMS (Heliothis spp.) - NORTH CAROLINA - Larvae noted on small tobacco plants near Clayton, Wake County, May 24; about second instar. Same size larvae reported from Columbus County May 17. (Mistric). GEORGIA - Light to heavy across tobacco belt. (Dollar, French).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - MARYLAND - Adults appearing on newly transplanted tobacco in Anne Arundel County. (U. Md., Ent. Dept.).

A WIREWORM (Conoderus sp.) - NORTH CAROLINA - Damaged 25 percent of tobacco plants in 8-acre field in Craven County. (Jackson).

SUGAR BEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adults noted in many sugar beet fields in Weld and Larimer Counties. No eggs observed. (Jenkins). Adults caught in bait traps in Larimer County increased from 0.9 to 10.7 per trap per day; numbers ranged 17-115 per trap. (Gaskill).

AN EPHYDRID FLY (Psilopa leucostoma) - WASHINGTON - Eggs appearing in many sugar beet fields at Toppenish, Yakima County, although less abundant than Pegomya hyoscyami. (Landis).

GREEN PEACH APHID (Myzus persicae) - WASHINGTON - Colonies of apterae established on sugar beets, wild mustard, morning-glory and lambquarters at Toppenish, Yakima County. Migrating to spring hosts later than usual. (Landis).

A CARRION BEETLE (Silpha bituberosa) - WYOMING - Larvae destroyed approximately 8 acres of sugar beet seedlings in Hot Springs County. (Marks).

A FLEA BEETLE - COLORADO - Black species damaging sugar beets north of Fort Lupton, Weld County; 1-5 per 10 feet of row. (Urano).

MISCELLANEOUS FIELD CROPS

CORN EARWORM (Heliothis zea) - ARIZONA - Very heavy on safflower in Yuma County and areas of Maricopa County. (Ariz. Coop. Sur.).

SALT-MARSH CATERPILLAR (Estigmene acrea) - ARIZONA - Very heavy on safflower in Yuma County; requiring artificial barriers to protect adjacent cantaloup field. (Ariz. Coop. Sur.).

VARIEGATED CUTWORM (Peridroma saucia) - OREGON - This and an undetermined species light on peppermint in Jefferson County. Some growers applying controls. (Capizzi).

HOP APHID (Phorodon humuli) - OREGON - Light on hops in Marion and Benton Counties. About six weeks early. (Morrison).

LYGUS BUGS (Lygus spp.) - ARIZONA - Heavy in most safflower fields in Yuma, Maricopa, Pinal and Cochise Counties. (Ariz. Coop. Sur.).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - OREGON - Light on hops in Marion and Benton Counties. About six weeks early. (Morrison).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - RHODE ISLAND - Adults appearing in fields in Kingston area, Washington County. Plants not yet emerged from ground. (Mathewson, Stessel). NEW JERSEY - First adults of season found in Cumberland, Camden and Middlesex Counties. (Ins.-Dis. Newsltr.). DELAWARE - Adults common on potatoes and tomatoes in many areas; fresh egg masses common on both crops. (Burbutis). MARYLAND - Adults and eggs abundant on potatoes and tomatoes in several Wicomico County fields. (U. Md., Ent. Dept.). MISSOURI - Adults and larvae feeding on potatoes in southern half of State. Population size not determined. (Houser). OKLAHOMA - All stages heavy and damaging potatoes in home gardens in Payne and McCurtain Counties. (Okla. Coop. Sur.). COLORADO - Depositing eggs on groundcherry in Weld County. (Jenkins).

POTATO FLEA BEETLE (Epitrix cucumeris) - NEW JERSEY - Becoming numerous in central and southern counties. (Ins.-Dis. Newsltr.). DELAWARE - Adults and feeding injury increased noticeably on potatoes in New Castle County and on tomatoes in most areas. (Burbutis). ALABAMA - Adults heavy on tomatoes in gardens in Morgan County. (Rutledge et al.). MISSOURI - Adults feeding on potatoes in central area. Size of population not determined. (Houser). NORTH CAROLINA - Severely damaged recently transplanted tomato, pepper and cabbage plants, and emerging radishes at Watauga County location May 20. (Wray).

A FLEA BEETLE (Epitrix fuscula) - ALABAMA - Caused considerable damage to eggplants in Lee County. (Guyton).

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - First egg masses of season found on peppers May 24 in seed beds in Sussex County; adults very common in area. (Burbutis).

CUTWORMS - WASHINGTON - Severely damaged potatoes 15 miles south of Toppenish on Satus Creek, Yakima County. (Landis). UTAH - Caused moderate damage to potatoes and other garden plants in Nephi area Juab County. (Knowlton, Esplin).

BEANS AND PEAS

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSISSIPPI - Adults caused moderate leaf damage on young peas in Oktibbeha County. (Dinkins). ARKANSAS - Continues to feed heavily on snapbeans in northeast. (Ark. Ins. Sur.). MARYLAND - Adult feeding evident on young snap beans in Anne Arundel and Worcester Counties. (U. Md., Ent. Dept.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - GEORGIA - Light to heavy on beans in southern area. (French). ALABAMA - Damage moderate to beans in southern Mobile County. Controls widespread in Houston, Henry and other southeast counties. (Seibels, Bolton et al.).

PALE-STRIPED FLEA BEETLE (Systena blanda) - ALABAMA - Adults caused light to medium damage to beans and leafy vegetables in southern area gardens, especially Mobile County. Numbers extremely high in northern area, especially Morgan County. (Seibels et al.).

PEA APHID (Acyrthosiphon pisum) - ALABAMA - Abundant on peas and beans in Mobile and other southern counties. (Seibels et al.). DELAWARE - Increased on peas in

New Castle County; 30 per 10 sweeps. (Burbutis). WISCONSIN - Few winged forms found in pea fields. (Wis. Ins. Sur.).

BEAN APHID (Aphis fabae) - DELAWARE - Present on young snap beans in area of New Castle County. (Burbutis).

COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) - NEW MEXICO - Moderate to heavy in Dona Ana County lettuce. Spraying necessary in fields still being cut. (N. M. Coop. Rpt.). OKLAHOMA - Moderate on cabbage in McCurtain County, light in Choctaw County. Pupation beginning. (Okla. Coop. Sur.).

IMPORTED CABBAGEWORM (Pieris rapae) - MARYLAND - Larvae very destructive to large planting of cabbage near Annapolis, Anne Arundel County. (U. Md., Ent. Dept.).

FLEA BEETLES - NEW YORK - Found in cabbage seedbeds in Genesee, Orleans and Niagara Counties and on cabbage in Erie County. (N. Y. Wkly. Rpt., May 23). MARYLAND - Phyllotreta cruciferae adults heavy on large cabbage planting near Annapolis, Anne Arundel County. (U. Md., Ent. Dept.).

CABBAGE MAGGOT (Hylemya brassicae) - OHIO - Populations large in some cabbage fields in Sandusky County. Insignificant in other fields. (Sleesman).

CUCURBITS

STRIPED CUCUMBER BEETLE (Acalymma vittatum) - MARYLAND - Adults heavy on young garden acorn and zucchini squash and pumpkin at Brinklow, Montgomery County. (U. Md., Ent. Dept.).

DARKLING BEETLES (Blapstinus spp.) - ARIZONA - Heavy and damaging cantaloups in Yuma County; some controls required. (Ariz. Coop. Sur.).

SQUASH BUG (Anasa tristis) - OKLAHOMA - Adults moderate on cucumbers in McCurtain County; egg laying underway. (Okla. Coop. Sur.).

SPIDER MITES (Tetranychus spp.) - ARIZONA - Scattered infestations appearing in cantaloup fields throughout Yuma County. No controls applied. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Carpocapsa pomonella) - OREGON - First-generation adults emerging in record numbers for May in Jackson County pear orchards. (Westergard). COLORADO - Adults taken in all areas. (Bulla). NEW MEXICO - Apple orchards checked in Hondo Valley were mostly free of damage to fruit. (Mathews, Nielsen). MISSOURI - No activity reported as of May 25. New entries expected momentarily. (Wkly. Rpt. Fr. Grs.). OHIO - First-generation adults emerging in Wayne County. (Forsythe, McKee). MARYLAND - First adults emerged in cages May 23 at Hancock, Washington County. (U. Md., Ent. Dept.).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - NEW JERSEY - New larvae entering tender terminals in abandoned peach orchard in Camden County; also appearing in Burlington County. Total catch at Pitman and Glassboro, Gloucester County, 22 on May 23 and 21 on May 26. (Ins.-Dis. Newsltr.). MISSOURI - Definitely between broods in southeast section, all larvae left twigs. Second brood adults expected in 7-10 days. (Wkly. Rpt. Fr. Grs., May 25).

VARIEGATED CUTWORM (Peridroma saucia) - CALIFORNIA - Larvae heavy on apricot fruit and leaves in Daggett, San Bernardino County. (Cal. Coop. Rpt.).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - WISCONSIN - Larvae emerged from overwintering nests May 21-22 and feeding on buds of apple trees in Door County. (Wis. Ins. Sur.).

PEACH TREE BORER (Sanninoidea exitiosa) - OKLAHOMA - Larvae moderate on peach trees in Idabel area, McCurtain County. (Okla. Coop. Sur.).

TENT CATERPILLARS (Malacosoma spp.) - OHIO - M. americanum larvae reported feeding on apple and cherry trees in all areas. Heaviest in southern half of State. (Heazlit et al.). OREGON - M. pluviale larvae full grown in Portland area, Multnomah County; leaving tents, seeking pupation sites. (Goeden). UTAH - M. disstria infesting orchard trees in several parts of Cache County. (Call, Knowlton).

SHOT-HOLE BORER (Scolytus rugulosus) - WASHINGTON - Larvae, adults and moderate to heavy damage noted on peaches, cherries and apples at Wenatchee, Chelan County. (Anthon). COLORADO - Injuring some young trees and weakened older trees adjacent to brush piles. (Bulla). NORTH CAROLINA - Continues very active in peach-growing area of Sandhills. (Smith).

A WEEVIL (Peritelinus oregonus) - OREGON - Adults heavy on foliage of recent cherry grafts in Salem area, Marion County. (Stephenson).

PLUM CURCULIO (Conotrachelus nenuphar) - CONNECTICUT - First observed in Storrs May 24 on apples. Continuing warm weather should bring out large numbers. (Savos, May 25). PENNSYLVANIA - Cutting plum fruit in Centre County May 24. (Gesell). RHODE ISLAND - First adult of season collected in Allenton, Washington County. (Mathewson).

ROSY APPLE APHID (Dysaphis plantaginea) - MARYLAND - Populations and numbers of curled apple leaves increased almost 100 percent over previous week in Hancock area, Washington County. (U. Md., Ent. Dept.). COLORADO - Colonies noted in some orchards in Delta and Montrose Counties; light to moderate. (Bulla).

GREEN PEACH APHID (Myzus persicae) - NEW MEXICO - Moderate to heavy populations curling peach leaves in orchards near Socorro, Socorro County. (Heninger).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - NORTH CAROLINA - Hatching on peaches in Sandhills area; most nymphs settled. (Smith). FLORIDA - Second and third-stage nymphs active on peach at Gainesville, Alachua County. (Kuitert). Infested 710 of 1,000 peach trees at Balm, Hillsborough County, (Evans, May 19) severely damaged 5 persimmon trees at Interlachen, Putnam County, (Custead, May 14).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - WISCONSIN - Eggs on apple tree in Madison area just hatched; few crawlers in vicinity of mother scales May 19. (Wis. Ins. Sur.).

APHIDS - OREGON - Anuraphis helichrysi increasing and continues problem on prunes in Douglas County. (Vertrees). CALIFORNIA - Hyalopterus pruni heavy on plum in Colma; San Mateo County. (Cal. Coop. Rpt.). ARIZONA - Hysteroneura setariae heavy on plum trees in Sunsite area, Cochise County. Terminal growth heavily damaged. (Ariz. Coop. Sur.). COLORADO - Few Eriosoma lanigerum colonies noted in Olathe area. (Bulla). KANSAS - E. lanigerum heavy on apples in Barton County. (Gates, Harvey).

PEAR PSYLLA (Psylla pyricola) - OREGON - Populations higher now in Jackson County pears than last year in spite of dormant treatments; however, populations even higher in orchards where no dormant sprays used. More resistance apparent this year. (Westergard).

CHERRY FRUIT FLY (Rhagoletis cingulata) - WASHINGTON - Adults emerged May 12 at Parker Heights, Yakima County, (Hudson), and May 17 at Prosser, Benton County, (Klostermeyer).

EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) - CONNECTICUT - First activity observed in Storrs May 18 on pear blossoms. More specimens also collected on pears May 20. (Savos).

EUROPEAN RED MITE (Panonychus ulmi) - NEW YORK - Hatched in Monroe County May 21. (N. Y. Wkly. Rpt.). CONNECTICUT - Most overwintering eggs hatched; nymphs on foliage. Much less abundant than in past years. (Savos, May 25). NEW JERSEY - Adults and freshly laid eggs unusually abundant in apple orchard in Camden County; over 100 eggs on one leaf. In other southern counties, adults and eggs spotty and generally very light. (Ins.-Dis. Newsltr.). MARYLAND - Increasing in unsprayed apple orchards but under control in most commercial orchards in Hancock area, Washington County. (U. Md., Ent. Dept.). OHIO - First adults of season noted in Wayne County May 20. Oviposition by new adults began May 23. Populations on apple leaves low in Wayne County; 0.3-0.5 per leaf. (Forsythe, McKee). Hatch 60-70 percent complete in Fairfield County orchard; averaged 1 mite per leaf. Populations decreased May 11-22 in this orchard while predators built up. (Holdsworth). Low population (0.3 per leaf) observed in Licking County orchard; less than half of eggs hatched. (Rose). INDIANA - Eggs common on underside of apple leaves in Vincennes area. Majority of overwintering generation now adults; 0.01 to 0.35 per leaf in research plots. (Dolphin).

ORCHARD MITES - OREGON - Tetranychus urticae and Eotetranychus carpini increasing to economic levels in most pear orchards in Jackson County. Panonychus ulmi more of problem in area than previously. (Westergard). CALIFORNIA - Eriophyes emarginatae locally heavy on Prunus sp. in Sonora, Tuolumne County. (Cal. Coop. Rpt.). MISSOURI - No buildup of spider mites noted in any part of State. Averaged less than 3 per leaf in central area. (Wkly. Rpt. Fr. Grs., May 25).

PECAN PHYLLOXERAS (Phylloxera spp.) - ALABAMA - Few isolated, heavy infestations of P. devastatrix and P. notabilis occurred on young pecan and hickory trees throughout State, especially in Calhoun, Marengo and Coosa Counties. (Jones, Mathews, Walls). OKLAHOMA - Heavy on isolated pecan trees in Payne County; adults emerging from opening galls. Moderate on pecan trees in southeast area. (Okla. Coop. Sur.).

PECAN NUT CASEBEARER (Acrobasis caryae) - ALABAMA - First feeding signs of first-generation larvae noted in clusters of young pecan nuts in Houston County. (Roney et al.).

FALL WEBWORM (Hyphantria cunea) - ALABAMA - Light on pecan, persimmon and other trees in southeast, especailly Mobile County. Quite heavy in Henry and Houston Counties. (Diller et al.).

CITRUS

CITRUS FLAT MITE (Brevipalpus lewisi) - ARIZONA - Found on commercial orange, tangerine and lemon plantings in Yuma County. (Ariz. Coop. Sur.).

SMALL FRUITS

PLUM CURCULIO (Conotrachelus nenuphar) - NEW JERSEY - First egg puncture found on Weymouth blueberries May 24, about 10 days later than normal. Total of 17 trapped at Pitman and Glassboro, Gloucester County, May 26. (Ins.-Dis. Newsltr.).

EASTERN RASPBERRY FRUITWORM (Byturus rubi) - RHODE ISLAND - Adults numerous on raspberry in Peace Dale, Washington County. (Mathewson).

A WIREWORM (Cardiophorus tumidicollis) - CALIFORNIA - Heavy adult feeding noted on strawberry fruit in Loomis, Placer County. (Cal. Coop. Rpt.).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Heavy larval populations damaging backyard grape plantings in Maricopa County. No infestations found in commercial grapes. (Ariz. Coop. Sur.).

GRAPE BERRY MOTH (Paralobesia viteana) - OHIO - Adults emerging in Wayne County. (Still).

ELDER SHOOT BORER (Achatodes zeae) - OHIO - Larvae have left lateral shoots and are attacking ground shoots in commercial planting of elderberries in Jefferson County. Similar activity occurring in Wayne County. (Still).

CUTWORMS - MASSACHUSETTS - Abundant in some strawberry plantings in Amherst area. Controls recommended. (Crop Pest Cont. Mess.). MISSOURI - Troublesome in southeast section, especially in strawberries. (Wkly. Rpt. Fr. Grs., May 25).

SPITTLEBUGS - NEW YORK - Infesting strawberries in Niagara and Erie Counties. (N. Y. Wkly. Rpt., May 23).

EUROPEAN RED MITE (Panonychus ulmi) - OHIO - Present on grape leaves in Ashtabula County. (Still).

Weather continued from page 476.

WEATHER OF THE WEEK ENDING MAY 30

HIGHLIGHTS: (1) Heavy rains Southeast, mostly sunny and dry elsewhere. (2) Freezing, Great Lakes and northern Rockies.

A summer pattern kept low pressure activity north of the Canadian border so that large portions of the 48 States had a sunny and dry week. Persistent low pressure aloft just north of the Great Lakes caused recurrent showers over the eastern third of the Country.

TEMPERATURE: Weekly temperature averages were above normal in the northern Rockies and also over northern New England; most other areas averaged near normal. A cold Canadian air mass early in the week brought subfreezing temperatures to the intermountain region as far south as central Utah. This interrupted a record-breaking heat wave in the area. Warm air returned to the Rockies by midweek and afternoon temperatures in the Great Plains and mountain areas were in the upper 80's from then on. The Deep South had consistently warm days. Cold air advanced from ice-covered Hudson Bay and affected the Northeast after midweek. On Sunday, Detroit reported a low of 32° and Indianapolis a high of 60°.

PRECIPITATION: Moderate to heavy showers fell over parts of Iowa, Illinois and Wisconsin on Monday but otherwise there was very little rain over northern and western portions of the Country. Parts of the central Great Plains are rather dry. In the Northeast, there was little rain in the St. Lawrence Valley but moderate to heavy amounts along the coast. Nantucket has reported nearly 7 inches in 2 weeks bringing the 1966 total to near normal. It was the 4th dry week in much of Kentucky. In the Southeast, there was persistent shower activity from the Texas coast eastward and from Florida to Virginia. Weekly rainfall averaged 2 to 3 inches over the Carolinas with as much as 8 inches in parts of North Carolina. Daily rains in most of Florida dropped up to 4 inches on the East Coast.

SEVERE STORMS: Tornado activity occurred mostly on May 23 and affected an 8-State area from Texas to Wisconsin. There was considerable property damage and some injuries but no reported fatalities. (Summary supplied by Environmental Data Service, ESSA).

GENERAL VEGETABLES

SALT-MARSH CATERPILLAR (Estigmene acrea) - CALIFORNIA - Medium larval populations damaging onion plants in Shingle Springs, El Dorado County. (Cal. Coop. Rpt.).

ASPARAGUS BEETLES (Crioceris spp.) - PENNSYLVANIA - First eggs on asparagus May 22 in Centre County. (Gesell). RHODE ISLAND - C. duodecimpunctata active in asparagus planting in Johnston, Providence County. (King).

FLEA BEETLES - CONNECTICUT - Feeding on variety of newly set vegetable plants. (Savos, May 28). ALABAMA - Epitrix cucumeris adults heavy on leafy vegetables in gardens in Morgan County. (Rutledge et al.).

WIREWORMS - WASHINGTON - Larvae destroyed 2 peppermint fields at Zillah, Benton County. (Landis). OREGON - Anchastus cinereipennis adults and larvae light on planted seeds of garbanzo beans in field south of Junction City, Lane County. (Morrison).

A CUTWORM (Euxoa sp.) - CALIFORNIA - Locally heavy in asparagus fields in Lodi area, San Joaquin County. This second year species a problem. (Cal. Coop. Rpt.).

THRIPS - NEVADA - Required controls on garlic in Smith Valley, Lyon County. (Batchelder).

ONION MAGGOT (Hylemya antiqua) - NEW JERSEY - Total of 53 caught on 7 sticky board traps at Cedarville May 26. (Ins.-Dis. Newsltr.). MICHIGAN - First adult noted in Allegan County onion field May 23 when temperature 82°. Numerous adults seen May 24 when temperatures in 70's. Adults expected to be common in all onion areas. (Thompson). COLORADO - Heavy in set onions in Fort Lupton area, Weld County. Loss of sets ranged 5-40 percent due to bulb rot which attracts H. antiqua. (Urano).

ORNAMENTALS

BAGWORM (Thyridopteryx ephemeraeformis) - OKLAHOMA - Larval activity increasing. Noted on juniper in McIntosh County and on willow in Lincoln County. (Okla. Coop. Sur.). VIRGINIA - Larvae heavy on Pfitzer juniper at Richmond. (Freund, May 21).

LEAF ROLLER MOTHS - NEVADA - Choristoneura zapulata heavy on pyracantha in Reno, Washoe County. (Lauderdale). Unspecified species heavy on ornamental junipers in Reno; mostly pupae, some dead larvae present. Plants treated. (Bechtel, Ting).

HOLLYHOCK WEEVIL (Apion longirostre) - UTAH - Adults active in Nephi-Mona area, Juab County. (Knowlton).

CHAFERS - TENNESSEE - Heavy infestations of Macrodactylus subspinosus appearing in some middle counties. (Mullett). CALIFORNIA - Hoplia oregona adults locally heavy on roses in Turlock, Stanislaus County. (Cal. Coop. Rpt.).

A ROSE CURCULIO (Rhynchites bicolor wickhami) - NEVADA - Adults heavy on ornamental roses in Reno, Washoe County. (Cooney).

ARMORED SCALES - CALIFORNIA - Diaspis manzanitae heavy locally on manzanita shrubs in Paradise, Butte County. Lepidosaphes ulmi heavy locally on lilac shrubs in Salinas, Monterey County. Chrysomphalus dictyospermi heavy on Kentia palm nursery stock in Fresno, Fresno County. (Cal. Coop. Rpt.). COLORADO - Eggs of L. ulmi hatching in Weld County. Controls recommended. (Urano). NORTH DAKOTA - Lepidosaphes ulmi eggs found on cotoneaster at Ellendale. Emergence expected in 1-3 weeks. (McBride). FLORIDA - Aspidiotus perniciosus severely damaging stems of 30 of 100 Photinia glabera at Raiford State Prison, Union County. (Collins, May 12).

CONNECTICUT - Crawlers of Lepidosaphes ulmi, Phenacaspis pinifoliae and Unaspis euonymi should hatch within week. (Savos, May 28).

SOFT SCALES - CALIFORNIA - Pulvinaria hydrangeae locally heavy on hydrangea plants in San Jose, Santa Clara County. Lecanium cerasorum light to medium on elm nursery stock in Fremont, Alameda County. (Cal. Coop. Rpt.). FLORIDA - Pulvinaria psidii and Saissetia coffeae severe on Ixora coccinea in nursery at Deerfield Beach, Broward County. (Clinton).

APHIDS - CALIFORNIA - Cinara sibiricae heavy on Juniperus conferta nursery stock in Turlock, Stanislaus County. New county record. (Cal. Coop. Rpt.). UTAH - Aphis viburnicola conspicuously curled foliage of snowball bushes at Mona and Nephi, Juab County. (Knowlton). NEW MEXICO - Cinara tujafilina continues problem on arborvitae throughout most of State. Honeydew also problem on walks and around buildings. (N. M. Coop. Rpt.). ALABAMA - Myzocallis kahawaluokalani light on crapemyrtle throughout central and southern areas. Honeydew light. Occurrence of sooty mold associated with honeydew expected to be heavier by August. (Ballew et al.). FLORIDA - Macrosiphoniella sanborni moderate to severe on 50 chrysanthemum plants in nursery at Bartow, Polk County. (Schmidt). MARYLAND - Myzus cerasi heavy on ornamental cherry at 2 Prince Georges County locations. Aphis pomi heavy on terminals of many flowering crabs in College Park area. (U. Md., Ent. Dept.).

A FLATID PLANTHOPPER (Anormenis septentrionalis) - ALABAMA - Nymphs quite heavy on tender growth of camellia, azalea, crapemyrtle, redbud and many other shrubs. Damage light throughout most of State. Nymphs reaching last instar but no adults reported. (Ballew et al.).

BOXWOOD PSYLLID (Psylla buxi) - PENNSYLVANIA - Nymphs nearly full grown on boxwood in Centre County. (Gesell).

NATIVE HOLLY LEAF MINER (Phytomyza ilicicola) - NEW JERSEY - Adults active on holly in central counties. (Ins.-Dis. Newsltr.).

SPIDER MITES (Tetranychus spp.) - VIRGINIA - Adults and eggs severe on Japanese hollies, junipers and arborvitae in Chesapeake. (Allen). KANSAS - Heavy on junipers in many areas. (Gates).

FOREST AND SHADE TREES

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - MISSOURI - Active in southern area. Population will probably be slightly higher than in 1965. (Gass). OKLAHOMA Last-instar larvae and pupae light in Le Flore County pine plantation. (Okla. Coop. Sur.).

PINE TUSSOCK MOTH (Dasychira plagiata) - WISCONSIN - Larvae still in second instar in northwest May 20; populations decreasing in same areas. (Wis. Ins. Sur.).

AN OLETHREUTID MOTH (Eucosma gloriola) - MICHIGAN - Newly emerged adults still flying May 20 in Ottawa County Christmas tree plantations. Peak egg hatch expected in 7-10 days in area. (Newman).

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - OKLAHOMA - Noted in several large pine trees in Antlers area, Pushmataha County. (Okla. Coop. Sur.).

ENGRAVER BEETLES - OKLAHOMA - Ips calligraphus, I. grandicollis, I. avulsus and Ips spp. breeding in recently cut pine logs in Pushmataha County. I. grandicollis most common; also taken in fire damaged tree and log in Haworth area, McCurtain County. (Okla. Coop. Sur.).

WHITE PINE WEEVIL (Pissodes strobi) - RHODE ISLAND - Very common on white pine leaders in Peace Dale and Kingston, Washington County. (Mathewson).

PINE BARK APHID (Pineus strobi) - CONNECTICUT - Increasing in abundance on many trees. (Savos, May 28). WISCONSIN - Some eggs hatched on white pine in Madison area by May 20; few crawlers moved to new growth. (Wis. Ins. Sur.). CALIFORNIA - Heavy on pine trees on local golf course in Fallbrook, San Diego County. (Cal. Coop. Rpt.).

EASTERN SPRUCE GALL APHID (Adelges abietis) - PENNSYLVANIA - Hatching on spruce generally; about 2 weeks late. (Udine).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - COLORADO - Eggs hatching in Larimer County; controls for crawlers recommended. (Wellso). WISCONSIN - Eggs not yet hatched in Madison area May 26. (Wis. Ins. Sur.).

BALSAM GALL MIDGE (Dasineura balsamicola) - WISCONSIN - First adults of season taken in traps near Antigo, Langlade County, May 19; new growth on balsam fir 0.125 inch that date. (Wis. Ins. Sur.).

EUROPEAN PINE SAWFLY (Neodiprion sertifer) - MICHIGAN - Most colonies in Shiawassee County Scotch pine planting have second-stage larvae. (Dowdy). OHIO - Larvae active in Fulton, Lucas, Stark, Columbiana, Guernsey, Logan, and Ashland Counties. Light to heavy in Scotch pine. (Ball, Thompson, Soine). Large number of red and Scotch pines colonized in Mohican State Forest May 16-18. Infestations well above ground on large trees. Hatch not yet complete. (Soine). About 50 percent of block of 60 Scotch pines infested in Hamilton County. (Rose). Infested pines also in Licking County. (J. Davidson).

CONIFER SAWFLIES (Neodiprion spp.) - VIRGINIA - General on pine in southeastern Fairfax County. (Blair). OHIO - Light infestation of N. pinetum larvae feeding on white pine in Williams County. (Herrett). Also noted in Knox and Licking Counties.(J. Davidson). WISCONSIN - N. nanulus nanulus eggs hatching near Wisconsin Rapids, Wood County, May 25, populations low. (Wis. Ins. Sur.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OHIO - In Hamilton, Butler and Clermont Counties, populations appear larger than in previous years. Similar increases suspected in other counties along Ohio River. Number of infestations apparently quite high in Fairfield County. Larval growth complete in southern part of State; pupal cases common. (Rose). INDIANA - Larvae migrating from wild cherry throughout southern third of State; severely to completely defoliated wild cherries in south central and southeastern areas where webs range 4-26 per tree. (Huber). SOUTH DAKOTA Young larvae defoliating cherry and other shrubs in Lawrence and Butte Counties. (Jones).

Major Distribution of M. americanum in Ohio

Larvae feeding on wild cherry and apple

Abundant populations and extensive damage

TENT CATERPILLARS (Malacosoma spp.) - SOUTH DAKOTA - Appearing in some areas of State (Jones). UTAH - Damage to poplar foliage by M. fragile less than during recent years. (Knowlton). VIRGINIA - Last instar M. disstria larvae noted on red oak in Hanover County. (Matheny).

SPRING CANKERWORM (Paleacrita vernata) - SOUTH DAKOTA - Spraying underway in various areas of State, including Yankton and Lawrence Counties. (Jones).

A WEBWORM (Macalla thrysisalis) - FLORIDA - Larvae moderate to severe on 50 of 100 West Indies mahogany trees in nursery at Fort Lauderdale, Broward County. (Clinton, May 10).

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) - NEVADA - Larvae heavy on elms, poplars and willows in southern Washoe County. More numerous than usual this year. (Nev. Coop. Rpt.).

ELM LEAF BEETLE (Pyrrhalta luteola) - RHODE ISLAND - Adults appearing on elm foliage. (Mathewson). DELAWARE - Adults on elms in most areas; injury rather heavy in area of Sussex County. (Burbutis). MARYLAND - Adults and eggs present on American elms at 2 Prince Georges County locations. (U. Md., Ent. Dept.). OKLAHOMA - Moderate to heavy on elms in Choctaw, McCurtain, McIntosh and Cleveland Counties. (Okla. Coop. Sur.). NEW MEXICO - Probably this species, becoming abundant on Chinese elm at Socorro, Socorro County. (Heninger, Kloepfer). ARIZONA - Heavy populations defoliating elm trees throughout Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

IMPORTED WILLOW LEAF BEETLE (Plagiodera versicolora) - ALABAMA - Adults and larvae continue feeding on willows in considerable numbers in Cherokee County. (Moody).

LOCUST LEAF MINER (Xenochalepus dorsalis) - MARYLAND - Adults active on black locust at several locations in Anne Arundel and Prince Georges Counties. (U. Md., Ent. Dept.).

A WEEVIL (Odontopus calceatus) - VIRGINIA - Adults, probably this species, feeding on new foliage of magnolia, tulip-poplar and sassafras in 4 Norfolk area cities. Shows preference for Magnolia grandiflora. (Allen).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Adults collected in window trap in tourist park at Valley City. First record for Barnes County. (Brandvik).

APHIDS - MARYLAND - Myzocallis ulmifolii increasing on street American elms in Carrollton, Prince Georges County. (U. Md., Ent. Dept.). CALIFORNIA - Prociphilus fraxinifolii medium on Modesto ash trees in Buellton, Santa Barbara County. (Cal. Coop. Rpt.).

EUROPEAN ELM SCALE (Gossyparia spuria) - WASHINGTON - Damaging elm at Dayton, Columbia County. (Telford, Sunderland). NEVADA - Heavy on many elms with much honeydew in Elko, Elko County, and Reno, Washoe County. (Cooney, Earnist). NEW MEXICO - Moderate on American elm trees in plaza at Socorro, Socorro County. (Heninger, Kloepfer).

COTTONY MAPLE SCALE (Pulvinaria innumerabilis) - NEVADA - Heavy on boxelder in Reno and Sparks, Washoe County. (Lauderdale).

A MARGARODID SCALE (Stomacoccus platani) - CALIFORNIA - Heavy on sycamore trees in Sutter, Sutter County. (Cal. Coop. Rpt.).

BIRCH LEAF MINER (Fenusa pusilla) - CONNECTICUT - Eggs hatched in Stamford area; adults active and laying eggs in Storrs. (Duda, Savos, May 25). Some control difficulties anticipated. (Savos, May 28). NEW YORK - Noted in nurseries in Suffolk County. (N. Y. Wkly. Rpt., May 23).

MAN AND ANIMALS

MOSQUITOES - CALIFORNIA - Adult occurrence decreased, probably due to cool evenings and considerable wind. Rice fields late this season; have not contributed to mosquito problem as yet. Gambusia affinis now being placed in rice paddies. (Cal. Coop. Rpt.). NEVADA - Aedes dorsalis adults light in Tonopah, Nye County. (Bechtel, Zoller). UTAH - Unspecified species in areas of Juab and Grand Counties. (Knowlton). OKLAHOMA - Psorophora spp. adults extremely heavy in wooded areas in McCurtain County. P. ciliata and P. cyanescens most common. (Okla. Coop. Sur.). LOUISIANA - Larval collections in Jefferson Parish May 20-27 contained Aedes vexans, Culex pipiens quinquefasciatus, Psorophora confinnis and P. howardii.

Aedes vexans and P. confinnis increased in light trap collections. (Stokes). IOWA Aedes vexans larvae light in rain pools near Ames. (Iowa Ins. Inf., May 23). MINNESOTA - During week ending May 21, 951 larval collections made in Metropolitan Mosquito Control District. In these, most abundant was Aedes fitchii. Larvae of Culiseta inornata found in 348 samples and C. morsitans in 2. Light trap catches extremely light. During same period, of 53 females taken, 38 were Culiseta inornata, 4 C. minnesotae and 2 C. morsitans. Owing to effective control, little nuisance expected from early spring-hatching species. A large hatch of A. vexans may appear at any time following heavy rains. (Minn. Ins. Rpt.). WISCONSIN - Few adult mosquitoes appearing and reported as far north as Iron, Bayfield and Vilas Counties. Although males and females common in high grasses in parts of Marquette County, none of latter biting as yet. Long range prediction calling for somewhat higher than normal populations this spring. (Wis. Ins. Sur.). MICHIGAN - Aedes spp. and Culex spp. widespread. Newly emerged males and females very numerous in wooded, swampy area of Shiawassee County, but most females not agressive until May 20. (Dowdy). INDIANA - Unspecified adults severely annoying in Evansville area, Vanderburgh County. (Lehker). RHODE ISLAND - Aedes sp. adults annoying locally in Peace Dale, Washington County. (Mathewson).

HORN FLY (Haematobia irritans) - OKLAHOMA - Ranged 600-800 per head on cattle in McIntosh County; heavy in Mayes, Noble and Choctaw Counties, moderate in Cleveland County. (Okla. Coop. Sur.). KANSAS - Averaged 100 per head on cattle at Hays Experiment Station, Ellis County. (Harvey). MISSOURI - Light, up to 100 per animal on cattle in east central and northeastern areas; 300 on one bull in Andrew County (Houser, Thomas). SOUTH DAKOTA - Averaged 10 or more per head on Hereford bulls May 22 at Lake Andes, Charles Mix County. (Sperl). INDIANA - Adults 12-160 per animal on cattle in Johnson and Jackson Counties. (Huber). SOUTH CAROLINA - Populations above average on beef cattle for time of year in Clemson area. (Nettles, May 24).

DEER FLIES (Chrysops spp.) - MARYLAND - Adults annoying humans in tidewater area. (U. Md., Ent. Dept.). NORTH CAROLINA - Biting viciously in several areas of New Hanover County. (Ashton). WISCONSIN - Appearing in southern counties. (Wis. Ins. Sur.).

BLACK FLIES - WISCONSIN - Increasingly more common along southern streams; noted as far north as Vilas County. (Wis. Ins. Sur.). SOUTH CAROLINA - Biting people in lower Spartanburg County. (Martin, May 24). MARYLAND - Simulium spp. very annoying to humans in suburb of Cumberland, Allegany County. (U. Md., Ent. Dept.).

STABLE FLY (Stomoxys calcitrans) - MISSOURI - Adults active in northwest; no counts taken. (Thomas). WISCONSIN - Most noticeable fly on cattle in southern counties, but affecting cattle very little. (Wis. Ins. Sur.).

FACE FLY (Musca autumnalis) - WISCONSIN - Reported on cows in Langlade County. (Wis. Ins. Sur.). SOUTH DAKOTA - Averaged 5 per head on Hereford bulls May 22 at Lake Andes, Charles Mix County. New county record. (Sperl). MISSOURI - Adults averaged less than one per face on cattle in Boone County. (Thomas).

SPHAEROCERID FLIES (Leptocera spp.) - MASSACHUSETTS - L. hirtula and L. gracilipennis extremely high on manure in caged layer houses in western section. Abundance may be associated with decaying vegetation from recent clearing of wooded, wet area. (Wheeler, May 21).

MARCH FLIES - NEW HAMPSHIRE - First adult of season noted at Durham May 15. (Sutherland). RHODE ISLAND - Bibio sp. common in shore areas over weekend but declined during week. (Mathewson, May 20). CONNECTICUT - B. albipennis and B. femoratus very active everywhere in State. (Savos, May 21). PENNSYLVANIA - Bibio xanthopus very abundant and annoying over most of State. (Udine, May 20). NEW JERSEY - Decreasing but still active in central and northern counties. (Ins.-Dis. Newsltr).

CHIGGER MITES - WISCONSIN - First of season reported from Chippewa and Columbia Counties. (Wis. Ins. Sur.).

HORSE SUCKING LOUSE (Haematopinus asini) - NORTH CAROLINA - Collected from native horse in Wake County April 18, 1966. No previous record for State found in available records. Det. by R. C. Axtell, New State record. (Falter).

AMERICAN DOG TICK (Dermacentor variabilis) - NEBRASKA - Very active in eastern areas. (Rhine). OKLAHOMA - Numerous and annoying people in wooded areas in eastern third of State. (Okla. Coop. Sur.). RHODE ISLAND - Continues nuisance in rural and suburban areas. (Mathewson, Veilleux).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Numerous and annoying people in wooded areas in eastern third of State. Continues heavy on cattle in area. (Okla. Coop. Sur.).

BROWN DOG TICK (Rhipicephalus sanguineus) - IOWA - Engorged females noted in Des Moines. (Iowa Ins. Inf., May 23).

HOUSEHOLDS AND STRUCTURES

CARPENTER BEE (Xylocopa virginica) - MARYLAND - Complaints concerning adults boring into porch and shed beams numerous in suburban areas. (U. Md., Ent. Dept.).

FALSE CHINCH BUGS (Nysius spp.) - NEVADA - Nymphs migrating from drying range vegetation; entering yards and homes in southern Washoe County. (Nev. Coop. Rpt.).

WESTERN DRYWOOD TERMITE (Incisitermes minor) - NEVADA - Light infestation in mud sill of home in Hawthorne, Mineral County. (Haas). Det. by R. C. Bechtel. New county record. (Bechtel).

BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Generally heavy in all alfalfa fields checked in State. (N. M. Coop. Rpt.). COLORADO - Range 0-20 per 100 sweeps in Milliken area, Weld County. (Boyes, Urano). In Larimer County numbers range 0-10 per 100 net sweeps. (Simpson). FLORIDA - Chilocorus stigma larvae feeding on Pulvinaria psidii infesting Ixora spp. at Deerfield Beach, Broward County. (Clinton). ARKANSAS - Primarily Hippodamia convergens, continue active in small grain but numbers low in alfalfa in northwest. (Ark. Ins. Sur.). ILLINOIS - Adults, mostly Coleomegilla maculata fuscilabris, abundant in wheat in western and southwestern districts; larvae becoming more abundant in wheat and legumes. (White, Moore).

MELYRID BEETLES (Collops spp.) - UTAH - Adults moderate in alfalfa in Mona-Nephi area, Juab County. (Knowlton).

AN OSTOMATID BEETLE (Temnochila virescens) - OKLAHOMA - Adults numerous on recently cut pine logs supporting populations of Ips spp. near Antlers, Pushmataha County. (Okla. Coop. Sur.).

A PRYALID MOTH (Laetilia coccidivora) - FLORIDA - Larvae predaceous on Toumeyella numismaticum infesting sand pine at Keysville, Hillsborough County. (Evans, May 6).

LACEWINGS - NEW MEXICO - Abundant in all alfalfa checked in State. (N. M. Coop. Rpt.). UTAH - Chrysopa spp. adults moderate in alfalfa in Mona-Nephi area, Juab County. (Knowlton).

DAMSEL BUGS (Nabis spp.) - UTAH - Adults moderate in alfalfa in Mona-Nephi area, Juab County. (Knowlton). COLORADO - Increasing on alfalfa in Larimer County. (Simpson).

ANTHOCORID BUGS (Orius spp.) - ARKANSAS - O. insidiosus increasing in northwest

area. (Ark. Ins. Sur.). UTAH - O. tristicolor adults moderate in alfalfa in Mona-Nephi area, Juab County. (Knowlton).

SYRPHID FLIES - ILLINOIS - Larvae abundant in wheat fields in western and southwestern districts. (Moore, White). ARKANSAS - Numbers declined, apparently due to decrease in aphid populations. (Ark. Ins. Sur.). UTAH - Adults of 2 predaceous species moderate in alfalfa in Mona-Nephi area, Juab County. (Knowlton).

AN ENCYRTID WASP (Trechnites insidiosus) - OREGON - Larvae light in hard-shell stage of Psylla pyricola in Jackson County. (Westergard).

A EULOPHID WASP (Tetrastichus incertus) - ILLINOIS - This parasite of Hypera postica released in Fayette, Bond, Madison, St. Clair, Randolph, Jackson, Edwards, White, Gallatin and Hardin Counties. (White, Armburst).

AN ICHNEUMON WASP (Bathyplectes curculionis) - COLORADO - This parasite of Hypera postica increased in Larimer County. (Simpson).

HONEY BEE (Aphis mellifera) - RHODE ISLAND - Swarming in various parts of State. (Mathewson, Veilleux). NEW MEXICO - Began strong in spring; however, needs good rain at present in Dona Ana County. (Campbell).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - MASSACHUSETTS - Delimiting survey in Provincetown-Truro area revealed spread of approximately 1 mile. (PPC East. Reg., Apr. Rpt.).

CEREAL LEAF BEETLE (Oulema melanopus) - MICHIGAN - First larvae of season collected May 20 in Berrien County. Egg hatch increased during warm period since then. First and second-instar larvae common in infested fields. Weather and biological information indicate larvae noted May 20 were from eggs laid during second week of May. Little natural mortality among spring-brood adults. Widespread egg laying underway in nonsprayed fields. Migration from wheat to oats continues where young oats available. Some movement from wheat in boot and early head stages to young wheat fields also noted. (Jantz, Moore). OHIO - Population sampling in Logan County yielded 1 adult per 500 sweeps in one wheat field and 1 per 300 sweeps in another. (Wheeler).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Chemical Control Zone - In Hermosillo, Sonora, 4,397 trees inspected on 408 properties. In Baja California, 780 trees inspected in Municipios, Tecate, Tijuana and Mexicali; trees also inspected at Municipio Ensenada. In Nuevo Leon, 29,565 trees inspected on 1,101 properties, in Tamaulipas, 4,177 trees inspected on 888 properties. All surveys negative. At Linares, Nuevo Leon, third treatment applied to 3,028 trees on 502 properties in infested area and second to 1,376 trees on 250 properties in protective zone. All treatment completed; all known infestations in Nuevo Leon considered eradicated. Biological Control Zone - Inspection of 18,500 trees on 83 properties in Municipios Villagran and Hidalgo, Tamaulipas revealed 95 lightly infested trees on 24 properties. Total of 55,000 specimens of Prospaltella opulenta (a eulophid) captured in Municipio Guemez and liberated in Padilla, Tamaulipas. About 70 percent of parasites captured in March and kept in cold storage at Victoria died. Survivors released in Padilla. (PPC Mex. Reg., Apr. Rpt.). TEXAS - Limited surveys in Dimmit, Maverick, Starr, Zapata and Zavala Counties negative. (PPC South. Reg., Apr. Rpt.).

A CUBAN MAY BEETLE (Phyllophaga bruneri) - FLORIDA - Total of 25,000 adults caught in one blacklight trap at Kendall, Dade County. Heavily damaging West Indies mahagony, royal poinciana, spodilla, Bombax ellipticum and several other kinds of trees including pongamia. Population about same as last year at this time. (Habeck). Few found on Trema micrantha at Medley, Dade County, May 10; an extension of the infested area by 1.1 miles. (Sloan, Swanson).

EUROPEAN CHAFER (Amphimallon majalis) - OHIO - Survey in Cleveland May 23 resulted in average of 2.28 larvae per square foot from 30 samples of one-third square foot each. (Davidson).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae heavy in mangoes on tree at Miami (DeHaven, May 20); larvae taken from grapefruit in dooryard in southwestern Miami (Dillion, May 18); 3 larvae taken from 1 grapefruit in dooryard at North Miami (Swanson, May 18). Over 5,900 adults recovered from 109 McPhail traps in Dade County May 14-20; specimens also common in Broward and Palm Beach Counties. Two adults trapped in Fort Myers area, Lee County, first trapped in county since February. (Fla. Coop. Sur.).

GRASSHOPPERS - OREGON - Nymphs medium in alfalfa at Cold Spring Reservoir, Umatilla County. (Bierman). NEVADA - Mostly Oedaleonotus enigma, with some Melanoplus spp. and other genera, 25-40 per square yard on 4,000 acres of cheatgrass which is drying up in Pumpernickel Valley, Humboldt County; grasshoppers migrating. (Earnist et al.). Aulocara elliotti and O. enigma 3-4 per square yard on 1,000 acres of rangeland in Orovada-Rebel and Rock Creek areas, Humboldt County. Mostly A. elliotti and O. enigma 7-8 per square yard on 4,000 acres of shadscale-cheatgrass rangeland south of Battle Mountain, Lander County. Potential exists for movement to cultivated crops. (Maloney). Mostly Camnula pellucida and Melanoplus spp. medium to heavy (25 plus per square yard) in Spring Valley and west of Ely, White Pine County; currently moving into native pasture and hay meadows as range land dries up. (Joy). UTAH - Aircraft spraying at Hanksville, Garfield County. (Knowlton, Lindsay). Grasshoppers serious in Granite-Callao area, western Juab County. (Knowlton). Threateningly numerous in Fisher Valley and Moab areas, Grand County. (Knowlton, Argyle). Largely second instar in Gunnison-Manti area, Sanpete County; not yet generally numerous. (Knowlton). WYOMING - Nymphs active on Johnson County rangeland; Amphitornus coloradus, Melanoplus spp. in first and second instar, Aulocara elliotti and Ageneotettix deorum in first instar. Nymphs 10-36 per square yard in alfalfa in northern Big Horn and Fremont Counties. (Marks). COLORADO - Several species moderate to high on rangeland in some areas of Mesa County. (Bulla). Several species 100-150 per 100 sweeps in alfalfa near Milliken, Weld County. (Boyes, Urano). OKLAHOMA - Threatening population (12-20 per square yard) found on rangeland in Greer, Tillman, Comanche and Caddo Counties. Heaviest on 15,000 acres of grassland west of Mangum, Greer County Lighter in Jackson, Kiowa,Grady and McClain Counties. Ageneotettix deorum, Phlibostroma quadrimaculatum, Boopedon nubilum and Hesperotettix sp. dominant. Nymphs 75 percent first and 25 percent second instar. Other stops in Beckham, Custer, Roger Mills Washita and Harmon Counties show heaviest populations in southwest Beckham County where counts 8-30 per square yard on 35,000 acres of rangeland. A. deorum, P. quadrimacultum, Hesperotettix speciosus dominant. Populations light in Cherokee, Wagoner and Muskogee Counties; only few isolated spots show threatening numbers; 95 percent of nymphs in first instar. (Okla. Coop. Sur.). MISSOURI - Melanoplus spp. hatching in central third of State; 1-3 per 100 sweeps in alfalfa. (Houser). KANSAS - Eggs hatching in Riley and Pottawatomie Counties; predominantly Melanoplus sanguinipes and M. bivittatus. Populations along roadsides and in bromegrass pastures. High M. sanguinipes populations expected since long 1965 season permitted 2 complete generations. (Campbell). SOUTH DAKOTA - Averaged less than 1 nymph per square yard in alfalfa in Butte County. Nymphs of various species, including Melanoplus differentialis in first and second instars. (Jones). Nymphal survey made in western half of State week ending May 23. Weather cool and unfavorable for grasshopper development. Melanoplus bivittatus and M. sanguinipes, hatched in southwestern counties; counts very low. (Burge). NORTH DAKOTA - Hatch light in southwest. First-stage nymphs of Melanoplus bivittatus and M. sanguinipes observed emerging in road ditches of lighter soil areas in Hettinger and Golden Valley Counties; less than 1 per square yard. (Brandvik). MINNESOTA - Only eggs of Melanoplus femurrubrum found in central district; all well coagulated. Present warm weather should increase egg development but hatch not expected until after first cutting of alfalfa in late June and early July. (Minn. Ins. Rpt.). WISCONSIN - Arphia conspersa adults and pigmy locusts very common along roadsides in parts of Marquette County. First and second-instar nymphs of Melanoplus bivittatus and few nymphs of Eritettix sp. noted in Adams County area. M. sanguinipes eggs not yet hatched. (Wis. Ins.Sur.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

Total of 30 cases reported in the U. S. May 22-28 as follows: TEXAS - Hidalgo 1, Webb 2, Bee 1, Frio 2, Maverick 1, Uvalde 1, Brewster 1, La Salle 1, Goliad 1, Zapata 1, Val Verde 1, De Witt 2, McMullen 1. ARIZONA - Santa Cruz 1, Maricopa 5, Yavapai 1, Cochise 4, Greenlee 1, Gila 1. NEW MEXICO - Hidalgo 1. Sterile screw-worm flies released: Texas 15,236,250, Arizona 29,129,000, New Mexico 5,900,000, California 980,000, Mexico 61,304,000.

	Current	Cumulative	Current	Cumulative	Current	Cumulative

Table 1. Comparison of screw-worm samples identified during corresponding weeks in the United States.

Year	Positive Cases		Negative Cases	
1964	11	87	168	3229
1965	34	119	214	2342
1966	30	182	141	1426

Table 2. Comparison of United States screw-worm cases by State.

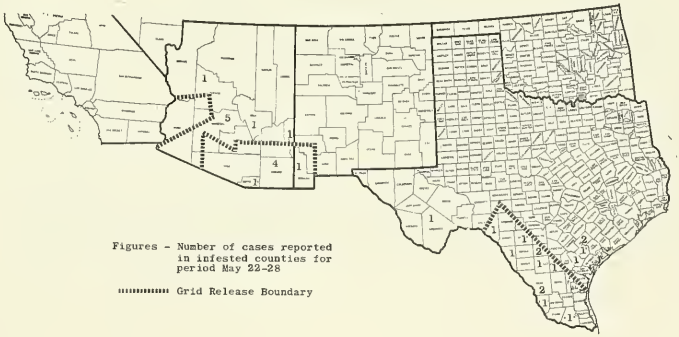
State	1964		1965		1966	
Texas	7	71	21	66	16	77
Ariz.	0	6	10	45	13	99
N. M.	0	0	3	8	1	4
Calif.	4	10	0	0	0	2

Table 3. Comparison of screw-worm cases inside and outside the United States portion of the Barrier Zone.*

Year	Inside Barrier Zone		Outside Barrier Zone	
1965	25	64	9	20
1966	21	158	9	24

Total of 112 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 7, Baja California 7, Sonora 63, Chihuahua 15, Coahuila 6, Nuevo Leon 1, Tamaulipas 13. No cases reported from Mexico south of the Barrier Zone.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. Effective May 23, 1965, portions of Arizona and California were added to the Barrier Zone. (Anim. Health Div.).



GYPSY MOTH (Porthetria dispar) - NEW JERSEY - Surveys revealed infestations in Woodland Township, Burlington County, and Kingwood Township, Hunterdon County. (PPC East. Reg., Apr. Rpt.).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - First larval infestation of season found in dooryard grapefruit in McAllen, Hidalgo County. Inspections on other properties in Hidalgo County and Cameron County negative. (PPC South. Reg., Apr. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - First adult of season in Waco area collected in light trap May 23. (Cowan et al.). ARIZONA - Moths emerging from fields infested during 1965 in Rainbow Valley area, Maricopa County. Moth collected in sex-lure trap at Topock, Mohave County. (Ariz. Coop. Sur.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - FLORIDA - Larval damage scattered over 50-60 acre field of peanuts in Jackson County. (Fla. Coop. Sur.).

INSECT DETECTION

HORSE SUCKING LOUSE (Haematopinus asini) - NORTH CAROLINA - Collected from native horse in Wake County April 18, 1966, for new State record. Det. by R. C. Axtell. (Falter). (p. 496).

AN APHID (Neophyllaphis podocarpi) - LOUISIANA - Widespread on Podocarpus in New Orleans for past 2 months, at least, and probably longer. Heavy populations have reduced growth. As result, plants becoming covered with sooty mold. Det. by H. B. Boudreaux. (Newsom). According to ARS records, this is first report from State. As far as known, species has been recorded in the United States only from California. Other known distribution includes Japan and China. (PPC).

ALFALFA WEEVIL (Hypera postica) - INDIANA - Reported for first time in Henry, Randolph and Tippecanoe Counties. (Huber). ILLINOIS - New county records include Jersey, Calhoun, Greene, Pike, Scott, Morgan, Brown, Cass, Menard and Fulton Counties. (White). MISSOURI - New county records include Callaway, Warren, Montgomery, St. Charles, St. Louis, Lincoln and Pike Counties. (Houser). KANSAS - Reported for first time in Scott and Haskell Counties. (DePew). (pp. 480, 481).

PEA LEAF WEEVIL (Sitona lineata) - Reported for first time in Del Norte County. (Cal. Coop. Rpt.). (p. 481).

VETCH BRUCHID (Bruchus brachialis) - CALIFORNIA - Found for first time in Alameda County. (Cal. Coop. Rpt.). (p. 482).

A CONIFER APHID (Cinara sibiricae) - CALIFORNIA - Found for first time in Stanislaus County. (Cal. Coop. Rpt.). (p. 491).

WESTERN DRYWOOD TERMITE (Incisitermes minor) - NEVADA - Found in home in Mineral County, for new county record. (Bechtel). (p. 496).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Adults collected in Barnes County for new record. (Brandvik). (p.494).

FACE FLY (Musca autumnalis) - SOUTH DAKOTA - Collected for first time in Charles Mix County. (Sperl). (p. 495).

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Cropa
ARKANSAS																								
Hope 5/10-25				11							8							15						
Kelso 5/19-25											8									2				
Fayetteville 5/19-25				21							35							12		193				
FLORIDA																								
Gainesville 5/24			BL	1					7	1									3			1	1	
GEORGIA																								
Tifton 5/18-25	63-84	1.41	BL								3													
ILLINOIS (County)																								
Champaign 5/20-26	51-81	1.25		9													1	3		117			1	
MISSISSIPPI																								
Rolling Fork 5/19-25	63-89	1.24	BL	18					2	1	22				1	22		22	15	17			45	
Stoneville 5/19-25	60-89	0.65	2BL	34			1		1	1	17				1			17	12	110			4	
Tunica 5/19-25	55-89	0.29	BL	49					1		7				1	6		2	32	25				
MISSOURI																								
Portageville 5/21-27			BL	6							2						1	4	3	7				
OHIO																								
Marietta 5/16-23				14				12												51				
Reynoldsburg 5/18-24				5														3		16				
Vickery 5/16-23								3												10				
SOUTH CAROLINA																								
Charleston 5/16-22	55-83	3.70	BL	15					1		2									1				
Florence 5/19-25											42												2	
TENNESSEE (Counties)																								
Maury 5/17-23				20					9		1							15	1	150				
Robertson 5/17-23				36					4									20	4	125				
Cumberland 5/17-23				8					4									12	2	88				
Greene 5/17-23				44					22									12	6	144				
Knox 5/17-23				52					2		2							3	10	224				
Johnson 5/17-23				18					2									10	8	75				
TEXAS																								
Brownsville 5/21-27	73-90	0	2BL				22		11	7	6							7						
Waco 5/21-27				20			3		61		39							175	56	257			32	
WISCONSIN																								
Madison 5/18-27			BL	1														2		17				

HAWAII INSECT REPORT

New State of Hawaii Insect Record - A TEPHRITID FLY (Dioxyna sororcula) - Several specimens were collected from pigeon pea buds at Pearl Harbor Naval Shipyard, Oahu, April 14-22, 1966, by C. J. Davis and J. Kajiwara and at Waipio Peninsula District, Oahu, May 4, 1966, by J. W. Beardsley. Host plants are Bidens, Coreopsis and probably other composites. (Hardy).

Special Insects of Regional Significance - A PLATASPID BUG (Coptosoma xanthogramma)- All stages heavy on 12 six-foot pigeon pea plants in Kaimuki, Oahu; 350-400 nymphs and adults per plant. Also heavy on pigeon pea plants in Kalihi, Oahu. (Melendez, Hironaka). SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) - Adults medium on snap bean and corn plantings on school farm in Wailuku, Maui. All stages medium in 1 acre of sweet corn in Aiea, Oahu. Bugs noted two weeks after tasseling. (Ignacio, Lau).

Pineapple - ARGENTINE ANT (Iridomyrmex humilis) - Adults medium in pineapple field at Waikakalaua Gulch, in Waipio, Oahu, at 1,000 feet elevation. (Higa, Sakimura).

Sugarcane - NEW GUINEA SURGARCANE WEEVIL (Rhabdoscelus obscurus) - Infesting few sugarcane stalks in Hilo, Hawaii Island. One pupa heavily parasitized by Microceromasia sphenophori (a tachina fly) which was introduced to aid in control of this weevil. M. sphenophori adults numerous alongside cane field.

Beans, Tomatoes, Cucumbers - A LEAF MINER FLY (Liriomyza sp.) - All stages heavy on tomato and cucumber in Kohala and Olaa, Hawaii Island, and in 30 square yards of snap beans in Aiea, Oahu. Larvae medium and adults heavy in 1.5 acres of tomato in Pupukea, Oahu. (Yoshioka, Lau, Kitagawa).

Taro - TARO LEAFHOPPER (Tarophagus proserpina) light in 5 acres of taro in Wailua, Maui. An introduced predaceous CAPSID BUG (Cyrtorhinus fulvus) much in evidence. (Miyahira).

Fruits - A SCARAB (Protaetia fusca) medium to heavy on litchi fruits at various localities on Oahu. This beetle is attracted to and feeds on sweet fluid of fruit which seeps through shell after initial injury by mechanical means or insects such as Cryptophlebia spp. and Dacus dorsalis. (Kajiwara, Mitchell). A MEALYBUG (Pseudococcus obscurus) medium to heavy in 85 acres of passion fruit in Kahului, Maui, at 200 feet elevation; 10 acres of plants heavily damaged. Infesting stems and midribs of leaves and clustered under tendrils entwined around stems. Det. Dr. J. W. Beardsley. (Haw. Ins. Rpt.).

Ornamentals - Larvae of A CECIDOMYIID (Contarinia maculipennis) medium to heavy on hibiscus in Lanikai, Oahu. Infesting 50 percent of flower buds and believed causing buds to blight and fall off. (Haw. Ins. Rpt.).

Forest and Shade Trees - AN APHID (Cinara sp.) medium on Pinus tenuifolia, P. patula and P. pseudostrobus at 6,000 feet elevation in Polipoli Springs, Mt. Haleakala, Maui; heavy on some branches. Identity of aphid pending confirmation. (Schubert, Whitewell). CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) very light on Chinese banyan trees in Hakalau and Honokaa, Hawaii Island. The introduced anthocorid bug (Montandoniola moraguesi) (predaceous on G. ficorum) not noticed in Hakalau but many nymphs observed in curled banyan leaves in Honokaa. (Yoshioka, Gaddis).

Miscellaneous Pests - A GIANT AFRICAN SNAIL (Achatina fulica) - A large snail (shell measuring 3.75 inches in length) found on hotel grounds in Kukuiula, Kauai, May 19, 1966. Thorough search failed to uncover other snails. This is third snail found this year on Kauai; 2 others picked up in Lihue, Kauai, one February 25 and one May 8. (Au). Heavy populations noted in school farm corn field in Wailuku, Maui. (Ignacio).

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Cooperative ECONOMIC INSECT REPORT

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UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 June 10, 1966 Number 23

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM increasing in small grains on Eastern Shore of Maryland and considered threatening in southwest Illinois; no longer serious in southeast Missouri. BEET LEAFHOPPER increased in Colorado, moderate numbers taken on mustards in Utah. First POTATO LEAFHOPPER adult of season in Michigan. (p. 505).

EUROPEAN CORN BORER adults appearing in several corn-growing areas; egg laying underway in southwest Illinois. (p. 506). HESSIAN FLY very severe in wheat field in Indiana. (p. 507). ARMY CUTWORM severely damaging 2,000 acres of alfalfa in Utah; keeping 100 acres bare. (p. 509). ALFALFA WEEVIL caused 70-80 percent loss of first-cutting alfalfa in Kentucky; continues to spread in Ohio, Indiana and Illinois. (pp. 508, 509). PEA APHID increasing in alfalfa in Ohio, Wisconsin, Minnesota and Colorado, with PREDATORS high in some areas. (p. 510). Various PLANT BUGS of concern on legumes in several areas. (pp. 510, 511). SAY STINK BUG damaging alfalfa in Utah; more common than in several years. BEAN LEAF BEETLE adults heavy on soybeans in Indiana and MEXICAN BEAN BEETLE very widespread and damaging this crop in South Carolina. (p. 511).

Early season BOLL WEEVIL populations very heavy in South Carolina; heaviest in 10 years in area of North Carolina; also heavy in Tift County, Georgia. (p. 512). THRIPS heavy and damaging some cotton. (p. 513). COLORADO POTATO BEETLE common on emerging commercial potatoes in Rhode Island, heavy in North Carolina. (p. 514). Several pest species of LEPIDOPTERA appearing in orchards. (pp. 516, 517). ELM LEAF BEETLES expected to be heavier than in 1965 in Kansas; damaging elms in nearby States. (p. 521).

MOSQUITOES at lowest level in several years in St. Paul area, Minnesota; adults heavy in other States. HORN FLY heavy on cattle in several areas. (pp. 522, 523). CEREAL LEAF BEETLE adult counts high on oats in Indiana; larval development in Michigan research plots slowed by unseasonably cool weather. (p. 525). GRASSHOPPERS threatening in some areas of Oklahoma; counts becoming high in some other areas. Heavy JAPANESE BEETLE adult populations causing severe foliage damage will likely occur in Ashe and Watauga Counties, North Carolina. WHITE-FRINGED BEETLES caused severe damage to cotton in Alabama; larval numbers greater than usual in southern area of State. (p. 526).

Detection

A LACE BUG (*Stephanitis takeyai*) and an OLETHREUTID MOTH (*Sereda lautana*) are new State records from Delaware. (p. 528).

A TEPHRITID FLY (*Dioxyna sororcula*) reported for first time in Hawaii in CEIR 16 (22):502.

For additional new county records see page 528.

Special Reports

Infestation by Sugarcane Borer and Crop Loss in Louisiana Higher in 1965 Than in Preceding 5 Years. (p. 506).

Survey Method for Insects in Heads of Combine-Type Grain Sorghum. (pp. 531, 532).

Reports in this issue are for week ending June 3 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING JUNE 6

HIGHLIGHTS: (1) Warm Central; freezes in Appalachians. (2) Driest week of season, Southeast. (3) First hurricane of season.

TEMPERATURE: Temperatures continued above normal over the Eastern Slope of the Rockies and the western Great Plains for the third consecutive week. Parts of the Plains averaged 5° or more warmer than normal. The western and eastern parts of the Nation averaged cooler than normal. A large High brought warm, moist air northward across mid-America and cool air southward over the Eastern States. Freezing temperatures occurred in the Appalachians as far south as North Carolina. At midnight Thursday, Sioux City, Omaha, and Kansas City were as warm as Tampa. As the High moved to the Atlantic, sweltering temperatures occurred over the Atlantic Coastal States. New York City registered 90° on Sunday afternoon. At the end of the week, a new surge of cool air spread down across the northern Great Plains ending the 3-week spell in that area. Weather continued on page 528.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - DELAWARE - Larvae common on grain crops in areas of Kent and Sussex Counties. (Burbutis). MARYLAND - Increasing and becoming conspicuous in small grains, especially barley, on Eastern Shore. (U. Md., Ent. Dept.). NORTH CAROLINA - Heavily damaged several fields of small grain in Camden County, but not general throughout county; 2-3 heads per square foot lying on ground in 10-acre field. Larvae three-quarters to full grown May 31. (Tuten, Mount). MISSOURI - No longer serious problem in southeastern district; most heavily infested fields sprayed; pupation underway. Larvae 3-10 per square foot in small grains in east central district. Only occasional specimen found in small grains in remainder of State. (Houser, Peters, Craig). ILLINOIS - Larvae (0.25-1.25 inches long) 0-11.5 (average 1.43) per linear foot in standing wheat and 0-12 (average 2.77) per square foot in lodged wheat in southwest; heaviest in Washington and Clinton Counties. More than 6 per linear foot in 8.7 percent of fields; this considered danger point. (White). In west-southwest, larvae (0.25-1 inch long) 0-7 (average 1.8) per linear foot in standing wheat and up to 15 per square foot in lodged wheat; more than 6 per linear foot of row in 7 percent of fields. (Moore, White). Few larvae in both districts off color, indicating presence of disease or parasites. (White). MICHIGAN - Total of 83 adults taken from 2 Berrien County blacklight traps and 73 in Jackson County trap, week ending May 22. Adults common at lights in southern area on warm nights; 108 taken at 4 blacklight traps, week ending May 30. (Newman).

BEET LEAFHOPPER (Circulifer tenellus) - COLORADO - Increased in Delta and Mesa Counties; 2-3 per square foot, controls used where counts high. Most acreage sprayed in these counties. Lower counts in Montrose County, with occasional field needing controls. (Bulla). Very small number appearing in Bent, Crowley, Otero, Prowers and Pueblo Counties. (Schweissing). UTAH - Ranged 3-7 per 25 sweeps on mustard weeds at Venice, Sevier County, and 2 in 25 sweeps on tansy mustard at Sutherland, Millard County. (Knowlton). Adults 4 per 10 sweeps on Sophia sp. in Delta to Hinckley area, Millard County; 2-7 in 25 sweeps in Circleville area, Piute County; 7-9 in 25 sweeps at Marysvale. (Knowlton, May 28).

CORN EARWORM (Heliothis zea) - MISSISSIPPI - Larvae feeding in whorls of young corn in Yazoo County; about 5 percent of plants infested. (Dinkins). ARKANSAS - Ranged 8-10 per 100 sweeps in alfalfa in Conway County. (Stewart). TEXAS - Medium to heavy in 2 fields of safflower in Reeves County. (Neeb). ARIZONA - Moderate to heavy in safflower in Yuma and Maricopa Counties. Light in alfalfa in Pima and Cochise Counties. (Ariz. Coop. Sur.). For Bollworm, see page 512.

GREENBUG (Schizaphis graminum) - WISCONSIN - Definite increase noted in oats in Green and Rock Counties. Nymphs up to one per sweep in some seedling oats. More than 50 per sweep in rye and older oats in Spring Green and Sauk City areas. (Wis. Ins. Sur.). MINNESOTA - None found in small grain in central, southeast, and southwest districts. Few found northwest district on bluegrass. (Minn. Ins. Rpt.).

POTATO LEAFHOPPER (Empoasca fabae) - MISSOURI - Adults light (10-20 per 20 sweeps) in alfalfa in central, west central and northwestern districts. (Houser). ILLINOIS - Adults per 100 sweeps in first-crop alfalfa, 0-60 (average 12.8) in northeast and 40-240 (average 103) in east district. (Petty, Armburst). None observed in 2 fields of second-crop alfalfa in southwest. (White). WISCONSIN - No nymphs noted; adults continue low in occasional alfalfa fields; up to 3 adults per 10 sweeps along margin of Rock County alfalfa field. (Wis. Ins. Sur.). MICHIGAN - First adult of season taken from alfalfa in Monroe County May 20. (Nevel).

POTATO PSYLLID (Paratrioza cockerelli) - COLORADO - Ranged 0-4 per 100 sweeps on potatoes in Bent, Otero and Prowers Counties. Averaged 0-1 per 100 sweeps in most fields; 3-4 in untreated fields. (Schweissing). Counts on matrimony-vine at Ault, Weld County 60 per 100 sweeps; no eggs or nymphs observed. (Jenkins). UTAH - Total of 2 in 25 sweeps on matrimony-vine at Salina, Sevier County. (Knowlton).

WYOMING - Adults 8-10 per 25 sweeps on matrimony-vine at Pine Bluffs, Laramie County. Eggs 2 per 100 leaves. (Marks).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MINNESOTA - Counts in central, southeast and southwest lower, especially in alfalfa. Average per 100 sweeps by district as follows: Central 40, southeast 30, southwest 5. On small grain as follows: Central 40, southeast 50, southwest less than one. Migration has reached northern border. Counts of 50-75 per 100 sweeps found in Roseau County. (Minn. Ins. Rpt.). WISCONSIN - Adults continue high in oats in Rock, Dane and Green Counties; 15 per 50 sweeps not unusual. Somewhat lower in areas adjacent to Wisconsin River in Iowa and Sauk Counties; less than one per 50 sweeps. (Wis. Ins. Sur.). MICHIGAN - Adults 0.2 per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. (Dowdy).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Light to moderately heavy in seedling alfalfa; treatments required. (Campbell, Mathews). COLORADO - Vary 0-10 per 100 sweeps in Prowers County. New county record. (Schweissing). KANSAS - Low, 10-15 per 10 sweeps, in some alfalfa in Jefferson and Douglas Counties. Predators numerous. Many fields being cut. (Simpson). WISCONSIN - Populations so low that infestation in State expected no longer existent. Few wingless specimens swept from margins of 2 alfalfa fields in Brodhead area where populations highest in previous years. (Wis. Ins. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEW YORK - Corn stalks, wintered in open at Highland, Ulster County, yielded 16 larvae and 4 pupae May 26. (N. Y. Wkly. Rpt.). NEW JERSEY - Six egg masses found on 100 corn plants near Medford. (Ins. -Dis. Newsltr.). DELAWARE - Adults average 7 per night in blacklight traps in Sussex County week ending May 30. (Burbutis). OHIO - Pupation noted in Wayne County May 27. (Barry). INDIANA - Adults taken in black light traps in Posey and Vanderburgh Counties. (Huber). ILLINOIS - Percent moth emergence by district as follows: Central 20.0, east 8.7, east-southeast 10, southwest 30, southeast 80. Percent pupation ranges from 10 in northeast to 100 in south. Egg laying underway in southwest; 0-20 (average 13) egg masses per 100 plants in extreme southwest; corn 14-34 inches high. (White). MISSOURI - Emergence of spring generation adults complete in southeastern area; oviposition underway. Emergence 5 percent in central area, just starting in northern area. (Houser, Jones, Thomas). NEBRASKA - Pupation 35 percent in northeast May 26-27. Few moths appearing at light traps in eastern area. (Hill, Rhine). NORTH DAKOTA - No pupation observed as of June 1. (Frye). MINNESOTA - Overwintering borer populations too low to determine percent pupation. Only larvae found; pupation expected soon. (Minn. Ins. Rpt.).

STALK BORER (Papaipema nebris) - MISSOURI - Larvae entering corn in northern area; first taken May 25. (Thomas).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - MISSOURI - First moth of season trapped at Portageville, Pemiscot County, June 2. (Keaster, Jones, Harrendorf).

Infestation by Sugarcane Borer (Diatraea saccharalis) and Crop Loss in Louisiana Higher in 1965 than in Preceding 5 Years - The annual harvesttime survey to determine degree of infestation and crop loss showed 18 percent of the joints (internodes) of sugarcane bored, with an estimated crop loss of 14 percent. Infestations, indicated in percentages of internodes bored, in the last 5 years were as follows: 11 in 1964, 12 in 1963, 6 in 1962, 9 in 1961, and 13 in 1960. For the 30-year period 1935-64 percentage of internodes bored averaged 16 percent. As in 1964, the sugarcane crop was heavily damaged by a tropical hurricane with winds of 170-180 miles per hour which swept through the area on September 9, about 1 month before the beginning of the harvest season. The 4,400 stalks examined in 1965 and 1964 had 47,482 and 46,817 internodes, respectively, compared with 52,836 internodes for a similar number of stalks examined in hurricane-free 1963. These are reductions of 10 and 11 percent for the respective years. It has been estimated

that an average of 3 to 7 tons of sugarcane per acre have been left in the fields during the 1965 harvest season as a result of stalk-breakage and lodging caused by hurricane Betsy. (Ent. Res. Div., Houma, La.).

CORN ROOT WEBWORM (Crambus caliginosellus) - MARYLAND - Larvae caused serious injury to large acreage of young field corn planted after sod near Centerville, Queen Annes County. (U. Md., Ent. Dept.).

A SOD WEBWORM (Crambus sp.) - VIRGINIA - Killed over 50 percent of stand in 15-acre field of seedling corn in New Kent County. Field in pasture sod for 10 years; plowed up in February. (Isakson, Settle).

FLEA BEETLES (Chaetocnema spp.) - MARYLAND - Chaetocnema pulicaria adults light to moderate on field corn in Talbot and Queen Annes Counties; heavy on young sweet corn near Largo, Prince Georges County. (U. Md., Ent. Dept.). OHIO - Probably Chaetocnema spp. continue infesting field corn over many counties from central section northward and westward; widespread in Delaware County, as high as 20-40 beetles per plant. (Irvin). Also infesting field corn in Lucas, Medina and Wayne Counties. (Kittle et al.). ILLINOIS - C. pulicaria 1-4 per plant in southwest district. (White). ARIZONA - C. ectypa continues to increase in sorghum and corn in Yuma, Maricopa and Pinal Counties. (Ariz. Coop. Sur.).

CORN ROOTWORMS (Diabrotica spp.) - SOUTH CAROLINA - Adults very numerous in corn in Orangeburg and Bamberg Counties. No damage noted. (Thomas, May 31). MISSOURI - Observations of corn roots in northwest district indicate eggs probably not yet hatched. (Houser). TEXAS - Diabrotica undecimpunctata howardi larvae medium in several fields in Huntsville area, Walker County. (Teetes).

WIREWORMS - SOUTH DAKOTA - Damaging first-year corn in northwestern Yankton County. (Jones). NORTH CAROLINA - Melanotus communis causing considerable damage to corn in numerous Camden County fields. Observations since 1952 indicate species much more of problem during last 3 years. No pupation observed May 31; large numbers of larvae collected. Pupation observed May 27 in Camden County field in 1965. (Tuten, Mount).

CHINCH BUG (Blissus leucopterus) - OHIO - Heavy in Mercer County cornfield. (DeBrosse). First activity of season. (Rose).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - OHIO - Averaged over 18 per sweep with slight damage in field of oats in Van Wert County. (Rose). Probably this species infesting wheat in Coshocton County. (Bogle, Blair). WISCONSIN - Counts in oats somewhat higher than those of Schizaphis graminum; few winged forms continue present. Rye and older grains in sandy areas with more than 150 per 50 sweeps. In portions of Green and Rock Counties, S. graminum more numerous than M. avenae, but only 1 per 100 sweeps in other fields. (Wis. Ins. Sur.). MINNESOTA - Varied greatly in fields checked; highest in early seedings. Average number per 100 sweeps by district as follows: Central 30, southeast 60, southwest 9, northwest trace. (Minn. Ins. Rpt.).

SAY STINK BUG (Chlorochroa sayi) - UTAH - More common in grain fields in Juab, Millard, Piute, Sanpete and Sevier Counties than for several seasons; injury occurred in some areas. Ranged 4-6 per head and damaging on 80 acres of dryland wheat near Fillmore, Millard County; 1-4 per head and moderately damaging on wheat and barley south of Levan, Juab County. (Knowlton, June 1).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - CALIFORNIA - Nymphs and adults heavy on oats in Madera, Madera County. (Cal. Coop. Rpt.).

HESSIAN FLY (Mayetiola destructor) - INDIANA - Very severe in Posey County wheat field. (Sanders).

BROWN WHEAT MITE (Petrobia latens) - WYOMING - Adults and nymphs 25-40 per linear foot in Laramie County winter wheat. (Marks).

TURF, PASTURES, RANGELAND

PAINTED LADY (Vanessa cardui) - NEBRASKA - Large numbers destroying musk thistle in Greeley County pasture. (Voboril). COLORADO - Larvae feeding on Canada thistle in Delta, Montrose, Larimer, Weld and Boulder Counties. Considerable defoliation occurred; controlled thistle in some areas. (Bulla, Fults, Fields). UTAH - Larvae on thistles at Gunnison, Sanpete County. (Knowlton, June 1).

DIAMONDBACK MOTH (Plutella maculipennis) - UTAH - Larvae 60-85 per 25 sweeps on Sophia spp. mustards at Abraham, Millard County. (Knowlton). Larvae very numerous on wild mustards in Venice area of Sevier County. (Knowlton, June 1).

A CERAMBYCID BEETLE (Derobrachus brevicollis) - GEORGIA - Infesting carpetgrass in Miller County. (Henning, French).

BILLBUGS (Sphenophorus spp.) - MARYLAND - Injured Meyer zoysia turf on several properties in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.).

CHINCH BUG (Blissus leucopterus) - TEXAS - Heavy on several St. Augustine grass lawns throughout Bryan and College Station area, Brazos County. Appeared heavier than in previous years. (Newton).

A THRIPS (Chirothrips sp.) - ARIZONA - Very heavy in Bermuda grass fields in Yuma County. Controls necessary. (Ariz. Coop. Sur.).

BROWN WHEAT MITE (Petrobia latens) - ARIZONA - New infestation found on Bermuda grass in Yuma Valley, Yuma County. Earlier infestations reported in Gila Valley. (Ariz. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - IDAHO - Larvae 5-8 per sweep in most Canyon, Owyhee and Elmore County fields. Adults 1-2 per sweep; still laying eggs. Adult damage 5-20 percent. Previously reported field near Notus with 25 larvae per sweep and 20 percent damage May 12, now nearly 100 percent damaged. (Homan, O'Keeffe). Adults 1 per sweep in alfalfa in Hammett and Glenns Ferry, Elmore County. Larvae 10 per sweep; 90 percent fourth and fifth instars. Third-stage larvae 15-18 per sweep in one field. (Portman, O'Keeffe). NEVADA - Larvae and damage heavy on alfalfa hay; required treatment month earlier than normal in Preston-Lund, White Pine County. (Joy). Larvae over 70 per sweep requiring controls in Douglas County, (Weaver), and in Lovelock, Pershing County, (Martinelli). Larvae 10-15 per sweep in Dixie Valley, Pershing County, alfalfa seed fields. (Martinelli). WYOMING - Difficult to find in Laramie County alfalfa; 0-2 per 10 sweeps. No larvae taken. (Marks). COLORADO - Larval counts in various areas indicate considerable variation in populations. In Crowley, Otero and Pueblo Counties, decrease observed; vary 0-600 per 100 sweeps. On Western Slope, 500-1,000 per 100 sweeps, with considerable foliage damage. In Weld and Larimer Counties, 100-300 larvae per 100 sweeps. Controls would be more effective as stubble treatment following cutting of alfalfa. (Bulla et al.). MISSISSIPPI - Only occasional larva found; damage negligible in Washington County second-growth alfalfa. (Dinkins). ARKANSAS - Only one adult collected in few hundred sweeps in Conway County. (Stewart). This number smaller than expected since species known to be present in area for one year. (Ark. Ins. Sur.). KENTUCKY - Loss to first-cutting alfalfa 70-80 percent. (Miller, May 30). ILLINOIS - Larvae 0-6 per 100 sweeps in Iroquois, Ford, Livingston, Kankakee, Will, Cook and Lake Counties. These new county records. (Pett, Armburst). In southwest district, 1.6 larvae and 0.2 adult per sweep in field of 6-inch alfalfa and 2 larvae and 0 adults per sweep in field of 3-inch alfalfa. Injury light to severe on 100 percent of terminals. Few first-stage larvae still present. (White).

INDIANA - New county records, Montgomery and Fountain Counties. Larvae 27 per sweep (40 percent early instars) in Harrison County second-growth alfalfa (4-6 inches). Larvae 1-4 per sweep on first-growth alfalfa in Vermillion, Parke, Clay and Putnam County areas. (Huber). OHIO - Larvae per 50 sweeps, 6 in Paulding, 11 in Defiance and 4 in Henry Counties. These new county records. (Rose). Some feeding damage occurring in Wayne County. (Glass). VIRGINIA - Adults damaging ladino clover field in Nansemond County. (Isakson). NEW JERSEY - Many growers applying stubble sprays to control larvae in southern counties. Pupating near Pittstown. One field in Hunterdon County with 2,500 larvae per 100 sweeps. In Morris County, 125-250 per 100 sweeps. In 5 fields in Gloucester, Salem and Cumberland Counties, counts per 100 sweeps ranged 20-50 adults and 24-6,100 larvae, with 175-235 larvae per 25 tips. In 5 fields in Burlington-Middlesex County area, counts per 100 sweeps ranged 26-178 adults and 630-2,850 larvae with 42-278 larvae per 25 tips. (Ins.-Dis. Newsltr.). NEW YORK - Adults 4-5 per 100 sweeps in Steuben County; very few egg masses or small larvae; no damage noted. In Broome County, adults increased to 2-3 per sweep May 21-24; larvae easily found May 26-27. In Ulster County, adults and larvae 2-4 each per sweep in 18 to 22-inch-high alfalfa. (N. Y. Wkly. Rpt., May 31). CONNECTICUT - Examination of 25 stems in Storrs yielded 15 stems with eggs; 18 adults and over 200 larvae collected in 100 sweeps. Larval feeding just beginning. (Savos, June 1). RHODE ISLAND - Examination of 32 stems from Kingston field yielded 12 batches of unhatched eggs. About 10 percent foliage feeding evident in fields in Kingston, Washington County, and Johnston, Providence County. Alfalfa growth rapid despite cold weather, while weevils apparently held back. (Mathewson, King). VERMONT - Not yet serious; mostly adults in Windham and Bennington Counties; averaged 1 adult and 2 larvae per sweep in Shoreham area. (MacCollom, May 31).

CLOVER LEAF WEEVIL (Hypera punctata) - MICHIGAN - Larvae 0.2 per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. (Dowdy). WISCONSIN - Larvae common in alfalfa near Illinois border; nearly full grown. (Wis. Ins. Sur.). OKLAHOMA - Adults appearing in alfalfa in many areas. (Okla. Coop. Sur.). TEXAS - Heavy on alfalfa near Chillicothe, Hardeman County. (Boring). UTAH - Caused slight damage to alfalfa in 2 fields at Monroe, Sevier County. (Knowlton, June 1).

CLOVER HEAD WEEVIL (Hypera meles) - TEXAS - Caused heavy damage to crimson clover in several fields near Gilmer, Upshur County. (Henry).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NORTH DAKOTA - Adults causing light damage to sweetclover in Richland County; 200 per 100 sweeps in 24-inch stand. (Brandvik, Kaatz).

A WEEVIL (Sitona scissifrons) - SOUTH DAKOTA - Generally low in alfalfa in Hamlin, Grant and Day Counties; 10-20 adults per 100 sweeps. Up to 35 adults per 100 sweeps in few fields near Estelline, Deuel County. (Jones). NORTH DAKOTA - Adults 50 per 100 sweeps in alfalfa near Carrington, Foster County, (Frye); up to 150 (average 40) in alfalfa in Cass and Richland Counties (Brandvik, Kaatz).

VETCH BRUCHID (Bruchus brachialis) - CALIFORNIA - Light on vetch in Yuba City, Sutter County. New county record. (Cal. Coop. Rpt.).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Remains problem in delta area although pupation underway. Damage light to heavy in alfalfa. (Jones). Counts in alfalfa and red clover ranged from 5-11 per square foot in central area to only occasional specimen in northwest, north central and southwest districts. (Houser, Peters, Craig). KANSAS - Averaged 1 per 10 sweeps in recently cut alfalfa in Riley County. (Simpson). NEW MEXICO - Probably this species, severely defoliated alfalfa in field near Artesia, Eddy County. (Campbell).

ARMY CUTWORM (Chorizagrotis auxiliaris) - UTAH - Keeping more than 100 acres of alfalfa bare and severely damaging 2,000 acres more in area from Loa to Fremont, Wayne County. (Knowlton, May 28).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Counts in alfalfa per 25 sweeps: 0-2 in northern Eddy County (Mathews), 0-5 at Isleta, Bernalillo County, and 1-2 at Belen, Valencia County, (Heninger).

PEA APHID (Acyrthosiphon pisum) - OHIO - Increasing on alfalfa in northwest and other areas; 50-80 per sweep in Defiance and Paulding Counties. Most numerous predators lady beetles, mostly Coleomegilla maculata, and hunting spiders. (Rose). MICHIGAN - Adults and nymphs 150 per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. No parasitized individuals found. Rapid build-up underway; approximately 1 percent winged May 31. (Dowdy). INDIANA - Averaged 1,200-1,600 per 100 sweeps on alfalfa in central areas. (Huber). ILLINOIS - Counts per 100 sweeps by district: Northeast - 800-16,000 (average 3,982); east - 100-2,200 (average 1,388) in first crop alfalfa. (Armburst, Petty). In southeast, counts 0 and 20 per 100 sweeps in 2 fields of second-cutting alfalfa. (White). WISCONSIN - Increased more than 30-fold in alfalfa past 2 weeks. Populations in south central counties, 25-30 per sweep, with up to 100 per sweep in some fields. Counts in alfalfa in sandy-soiled regions of Spring Green and Sauk City, 10-35 per sweep. Parasitism high with well over 50 percent of aphids showing evidence of parasites. Lady beetles more noticeable, Hippodamia convergens most common; up to 2 per sweep. (Wis. Ins. Sur.). MINNESOTA - Increased on alfalfa; average counts per 100 sweeps by district: Central 80, southeast 400, southwest 160. (Minn. Ins. Rpt.). NORTH DAKOTA - Adults and nymphs 50 per 100 sweeps in alfalfa at Carrington, Foster County. (Frye). In Richland and Cass Counties, 100 per 100 sweeps in alfalfa and 240 per 100 sweeps in single sweetclover field. (Brandvik, Kaatz). SOUTH DAKOTA - Low (less than 200 per 100 sweeps) in alfalfa in Deuel, Hamlin, Day, Grant and Codington Counties. Alfalfa 8-14 inches high. Predators per 100 sweeps: Lady beetles 10-27, damsel bugs 5-30. (Jones). KANSAS - Extremely light on alfalfa in Jefferson, Douglas and Johnson Counties. Predator populations remain high. (Simpson). OKLAHOMA - Averaged 200 per 10 sweeps in alfalfa in northern Le Flore County; 1-50 per 10 sweeps in Tulsa, Mayes, Wagoner and Adair Counties; 70 per 10 sweeps in Johnston County. (Okla. Coop. Sur.).

NEW MEXICO - Populations in alfalfa: Artesia area, Eddy County, light (Mathews); Tucumcari area, Quay County, light (Kloepfer); Isleta, Bernalillo County, light, and Belen area, Valencia County, light to moderate (Heninger); southern Dona Ana County, light to moderate (Elson); heavy in some alfalfa in northern Dona Ana County (Garcia). COLORADO - Continues increase in eastern area; light in western area. Counts in Crowley, Otero and Pueblo Counties 100-5,000 per 100 sweeps. In Weld County, 100-400 per 100 sweeps and on Western Slope, 25-50 per 100 sweeps. (Bulla et al.). WYOMING - Adults and nymphs 80-100 per 10 sweeps in alfalfa in Laramie County. (Marks). NEVADA - Varied 2-5 per sweep in alfalfa seed fields in Dixie Valley, Pershing County. (Martinelli). NEW JERSEY - Ranged 55-215 per 20 sweeps in 5 fields in Gloucester, Salem and Cumberland Counties; 26-128 per 20 sweeps in 5 fields in Burlington-Middlesex County area. (Ins.-Dis. Newsltr.). RHODE ISLAND - Scarce on alfalfa in Kingston, Washington County, and Johnston, Providence County. (Mathewson).

TARNISHED PLANT BUG (Lygus lineolaris) - OHIO - Adults 5 per 10 sweeps on alfalfa in Defiance and Paulding Counties; nymphs 1 per sweep in Paulding County field. (Rose). MICHIGAN - Averaged 2.3 per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. (Dowdy). ILLINOIS - Adults per 100 sweeps in first-crop alfalfa, 0-40 (average 11.7) in northeast district and 0-40 (average 15.6) in east district (Petty, Armburst); 0-20 (average 10) adults and 40 nymphs per 100 sweeps in 2 fields of second-crop alfalfa in southwest district. (White). NORTH DAKOTA - Adults 20 per 100 sweeps in alfalfa in Cass and Richland Counties. (Brandvik, Kaatz). OKLAHOMA - Ranged 4-7 per 10 sweeps in alfalfa in northeast, east central and southeast counties, 0-3 in Johnston and Lincoln Counties. (Okla. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Counts per 25 sweeps in alfalfa: 6-8 in Artesia area, Eddy County, (Mathews); 3-6 at Belen, Valencia County, and 5-15 at Isleta, Bernalillo County, (Heninger); 12-14 in seed alfalfa in northern Dona Ana County (Garcia); 1-2 per sweep at Tucumcari, Quay County, (Kloepfer).

ARIZONA - Continue to increase in alfalfa in Yuma, Maricopa, Pinal and Pima Counties. Nymphs increasing on alfalfa in Graham and Cochise Counties. (Ariz. Coop. Sur.). NEVADA - Varied 2-5 per sweep in alfalfa seed fields in Dixie Valley, Pershing County. (Martinelli). UTAH - Adults and nymphs, largely L. elisus, very abundant in alfalfa where mustards unusually numerous in Delta to Abraham to Desert area of Millard County. (Knowlton, May 28). Largely L. elisus, 4-13 adults and 7-10 nymphs per 10 sweeps on mustards in Delta, Millard County, alfalfa field. (Knowlton, June 1). WYOMING - Adults 10 per 10 sweeps in alfalfa in Laramie County. Nymphs very numerous, 100 per 10 sweeps. (Marks).

PLANT BUGS - MINNESOTA - Eggs of Adelphocoris lineolatus and A. rapidus hatching in alfalfa and red clover in southeast. (Minn. Ins. Rpt.). ILLINOIS - A. lineolatus adults 0 and 60 and nymphs 40 and 60 per 100 sweeps in 2 fields of second-crop alfalfa in southwest district. (White). INDIANA - A. lineolatus nymphs 40-400 per 100 sweeps on alfalfa in southern half of State. Few adults present. (Huber). MICHIGAN - Unspecified nymphs 5.5 per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. (Dowdy). MISSOURI - Lygus lineolaris, A. rapidus and A. lineolatus continue to build up on alfalfa and red clover in bloom stage. Adults and nymphs per 20 sweeps ranged from 50 in northwest district and 100-150 in central district. (Houser).

STINK BUGS - UTAH - Chlorochroa sayi more common in alfalfa in Juab, Millard, Piute, Sanpete and Sevier Counties than for several seasons. Injurious in some areas. (Knowlton, June 1). IDAHO - Acrosternum hilare adults and nymphs 1 per sweep in alfalfa in Hammett, Elmore County. (O'Keeffe, Portman).

MEADOW SPITTLEBUG (Philaenus spumarius) - DELAWARE - Nymphs very common on alfalfa in areas of New Castle County. (Burbutis). VIRGINIA - Adults 10 per sweep on clover in Beford County. (Isakson). MICHIGAN - Averaged 1 nymph per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. (Dowdy). INDIANA - Adults up to 1,200 per 100 sweeps on alfalfa in south central quarter of State. (Huber). WISCONSIN - Spittle masses increasing in southern counties. Many nymphs in third instar; moved to upper portions of alfalfa plants. Counts in Rock and Green Counties generally 1-2 per 10 stems; in one field 14 per 10 stems. Populations somewhat higher in portions of Lafayette and Grant Counties. (Wis. Ins. Sur.).

FALSE CHINCH BUG (Nysius ericae) - UTAH - Numerous, 90 percent adults, in alfalfa at Sutherland, Millard County. (Knowlton, June 1). IDAHO - Adults and nymphs 10 per sweep in weedy alfalfa field at Hammett, Elmore County; up to 100 per sweep in spots. (O'Keeffe, Portman).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - CALIFORNIA - Nymphs and adults heavy on alfalfa in Madera, Madera County. (Cal. Coop. Rpt.).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - INDIANA - Adults heavy on newly emerged soybeans in Jackson County areas, 2 per linear foot of row; 100 percent of plants show damage. (Huber). KANSAS - Moderate on seedling soybeans in Johnson County; 1-3 per plant. Controls applied although damage not severe. (Simpson).

MEXICAN BEAN BEETLE (Epilachna varivestis) - SOUTH CAROLINA - Very widespread and damaging young soybeans. (Thomas, May 31). Heaviest populations ever observed injuring soybean leaflets in some fields in Chesterfield County. (Willis, May 31).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Remains problem in delta area of southeast although pupation underway. Damage light to heavy in soybeans. (Jones).

GREEN STINK BUG (Acrosternum hilare) - MISSISSIPPI - One adult per 5 feet of row on 12-inch soybeans in Washington County. (Dinkins).

PEANUTS

A CERAMBYCID BEETLE (Derobrachus brevicollis) - GEORGIA - Heavy on peanuts in Early County. (Henning, French).

THRIPS - GEORGIA - Light to heavy across peanut belt. (French).

COTTON

BOLL WEEVIL (Anthonomus grandis) - NORTH CAROLINA - Large numbers on 2-leaf cotton in Wake County field near Clayton. Heaviest infestation of emerging weevils noted during past 10 years. Three fields of 4-leaf cotton in Northampton County with estimated 1,000+ weevils per acre. (Mistric, Robertson). SOUTH CAROLINA - Total of 86 taken on 9 groups of 10 potted plants in Florence area. Counts in field ranged 16-311 per acre in treated plots, 75-896 in untreated plots. Early season populations very heavy. (Taft et al., June 1). TENNESSEE - Active in southern tier of counties; 9 found in field of less than 1 acre in Fayette County. Most weevils feeding in terminal buds at this time. All hibernating weevils should be in fields by July 1 as in past years. (Locke). GEORGIA - Extremely heavy on cotton in Tift County. (Mitchel). ALABAMA - Row count of live weevils on 6-leaf cotton near wooded area suitable for winter survival revealed 3 per 100 feet or average of 400 per acre. Considerably higher than 15-20 days earlier in counties further south. (Odom). MISSISSIPPI - Found in 3 fields in delta counties. In one field very close to experiment station, population very heavy for this early in season. (Pfrimmer et al., June 2.). Overwintered weevils noted in terminal buds in Washington and Bolivar Counties, and on cotton in Pontotoc and Panola Counties. (Dinkins). LOUISIANA - Three overwintered weevils found in 20 fields of cotton checked in Madison Parish; average 7.8 per acre. Three recovered from 150 trap cotton plants. (Cleveland et al., June 2). TEXAS - Two overwintered weevils collected on flight screens in McLennan and Falls Counties; found in 8 of 21 untreated and 3 of 19 treated fields inspected. Averaged 59 per acre in 21 untreated fields (maximum 118); averaged 3 in 19 treated fields (maximum 125). Overall average 52, compared with 68 per acre during corresponding week in 1965. (Cowan et al.). Also see Federal-State Plant Protection Programs, page 525.

FLEA BEETLES - TENNESSEE - Very light to heavy over western area; causing considerable damage as cotton slow growing. (Locke).

BOLLWORM (Heliothis zea) - SOUTH CAROLINA - Total of 29 moths taken in Florence area light trap; no H. virescens taken. (Taft et al., June 1). TEXAS - One egg and 3 larvae collected on cotton in McLennan and Falls Counties. (Cowan et al.).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Still problem in delta area of southeast although pupation underway. Damage light to heavy in cotton. (Jones). MISSISSIPPI - Cutworms, mostly P. saucia, troublesome in occasional cotton field in delta counties. (Pfrimmer et al., June 2).

BLACK CUTWORM (Agrotis ipsilon) - MISSISSIPPI - Moderate in scattered fields in Washington, Bolivar and Sunflower Counties. (Dinkins).

CABBAGE LOOPER (Trichoplusia ni) - NEW MEXICO - Buildup in few seedling cotton fields required treatment in Artesia area, Eddy County. (Campbell). Small larvae doing some damage to young cotton in Dona Ana County. (Garcia).

APHIDS - SOUTH CAROLINA - Heavy on cotton in Florence area. (Taft et al., June 1). TENNESSEE - Considered light, although weather favorable for buildup; however, present in most cotton fields. (Locke). TEXAS - Light in 15 of 29 fields checked in McLennan and Falls Counties. (Cowan et al.). NEW MEXICO - Probably Aphis craccivora, light to moderate in several fields in northern Eddy County. Some fields also infested with thrips treated. (Campbell). Spotted infestations noted in cotton in Dona Ana County. (Garcia).

LYGUS BUGS (Lygus spp.) - ARIZONA - Counts appear light in all areas; however, some increase noted in Pinal and Maricopa Counties. (Ariz. Coop. Sur.). MISSISSIPPI - L. lineolaris increasing on cotton in Sunflower, Washington and Bolivar Counties. (Dinkins).

COTTON FLEAHOPPER (Psallus seriatus) - TEXAS - Averaged 2.1 per 100 terminals in 19 treated fields (maximum 8) and 4.3 (maximum of 11) in 21 untreated fields in McLennan and Falls Counties. Few adults appearing in cotton fields from host plants; nymphs "hatching out" on cotton. (Cowan et al.).

A BLACK FLEAHOPPER (Spanogonicus albofasciatus) - ARIZONA - Light numbers appearing on cotton in many areas of Pinal and Maricopa Counties. (Ariz. Coop. Sur.).

THRIPS - SOUTH CAROLINA - Light on cotton in Florence area. (Taft et al., June 1). TENNESSEE - Very light to heavy over western area; causing considerable damage as cotton slow growing. (Locke). GEORGIA - Light to heavy on cotton across southern part of State (French); damage moderate in Spalding and Putnam Counties (Beckham). MISSISSIPPI - Frankliniella fusca continues very heavy in many fields in delta counties. Combination of heavy thrips population, cool temperatures, seedling disease and, in some cases, overdosing with controls killing cotton in few fields. (Pfrimmer et al., June 2). Thrips heavy on cotton in Washington, Bolivar and Sunflower Counties. Some treatment throughout delta region and in northern hill country. (Dinkins). LOUISIANA - Severe damage evident in several cotton fields in Madison Parish receiving late treatment or no treatment. Thrips per plant - 0.37-13.86 in 27 fields of untreated cotton (average 4.4). Averaged 1.5 thrips per plant in 36 treated fields in parish; range 0.02 to 8.54. (Cleveland et al., June 2). TEXAS - Heavily damaged late-planted, untreated cotton in McLennan and Falls Counties; however, most growers treating when fields up to stand. (Cowan et al.). NEW MEXICO - Light to moderate on cotton in Dona Ana County. (Garcia). ARIZONA - Continue heavy on cotton in Cochise and Graham Counties. Controls required in many fields. (Ariz. Coop. Sur.). CALIFORNIA - Frankliniella occidentalis medium on cotton plantings in Madera, Madera County. (Cal. Coop. Rpt.).

TOBACCO

BUDWORMS (Heliothis spp.) - SOUTH CAROLINA - General in tobacco fields. (Benton, May 31). GEORGIA - Light to heavy across tobacco belt. (French). FLORIDA - H. virescens light on unsprayed flue-cured tobacco in Alachua County; some larvae fifth and sixth instars. (Kuitert, May 25).

TOBACCO HORNWORM (Manduca sexta) - FLORIDA - Larvae scarce, rarely beyond third instar; probably restricted by natural controls on unsprayed flue-cured tobacco in Alachua County. (Kuitert, May 25).

CORN ROOT WEBWORM (Crambus caliginosellus) - TENNESSEE - Attacking few fields of tobacco in middle and eastern sections of State. (Mullett, June 1).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - MARYLAND - Adults 2-10 per plant on newly transplanted tobacco near Largo, Prince Georges County. (U. Md., Ent. Dept.). VIRGINIA - Adults 3-6 per plant in field of untreated tobacco in Pittsylvania County. Generally light to date where adequate controls used in Pittsylvania and Halifax Counties. (Dominick, May 27).

WIREWORMS - SOUTH CAROLINA - Damage noted on tobacco in Marion County. (Thomas, May 31). VIRGINIA - Conderus sp. damaged 80 percent of plants in 3-acre field and 10 percent of plants in 4-acre field in Halifax County; damaged 25 percent of plants in 2.5-acre field of newly set tobacco in Pittsylvania Count. (Dominick, May 27).

TOBACCO THRIPS (Frankliniella fusca) - MARYLAND - Conspicuous on young tobacco near Largo, Prince Georges County. (U. Md., Ent. Dept.).

SUGAR BEETS

BEET ARMYWORM (Spodoptera exigua) - NEVADA - Larvae medium, causing heavy damage to sugar beets in Fallon, Churchill County. Controls required. (York).

BLACK CUTWORM (Agrotis ipsilon) - NEVADA - Larvae light in sugar beets in Fallon, Churchill County, (York), and Lovelock, Pershing County, (Martinelli).

BEET WEBWORM (Loxostege sticticalis) - COLORADO - Adults numerous in and around sugar beet fields in Weld County; no eggs found. (Jenkins). Catch in light trap increased from 6 to 49 per night. (Reynolds).

ALFALFA WEBWORM (Loxostege commixtalis) - COLORADO - Light trap catches increased from 3 to 58 per night. (Reynolds).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adult numbers decreased in bait traps in Larimer County; 6 traps yielded 42 or 1 per trap per day. (Gaskill, Nelson). Egg deposition occurring in Weld and Larimer Counties. Numbers found do not indicate damage that may be expected. (Jenkins, Sorenson).

SPINACH LEAF MINER (Pegomya hyoscyami) - IDAHO - Eggs abundant in Hammett area, Elmore County, sugar beet fields. Some mining and blotching of outer leaves. (Edwards, Homan, O'Keeffe).

MISCELLANEOUS FIELD CROPS

LYGUS BUGS (Lygus spp.) - ARIZONA - Continue increase in safflower in Yuma, Maricopa, Pinal and Pima Counties. (Ariz. Coop. Sur.).

SUNFLOWER MOTH (Homoeosoma electellum) - TEXAS - Larvae light to medium in 3 fields of safflower in Reeves County. (Neeb).

AN ARCTIID MOTH (Callarctia phyllira) - FLORIDA - Larvae reported infesting corn, gallberry, beans, blackberry and centipede grass in Chipley, Washington County, May 19. Det. by F. Mead. (R. E. Brown, J. E. Davis).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - COLORADO - Increasing numbers observed on nightshade; depositing eggs. (Titensor, Jenkins). KANSAS - Light on potatoes in Riley County; egg masses quite numerous. (Simpson). NORTH CAROLINA - Heavy on 2 fields of potatoes in Camden County; 10-15 larvae per foot between rows in heaviest infested fields following treatment. Species not ordinarily problem in area. (Tuten, Mount). NEW JERSEY - Adults appearing in central and southern counties on potatoes and tomatoes. (Ins.-Dis. Newsltr.). NEW YORK - Activity at high level in Orange County. (N. Y. Wkly. Rpt., May 31). RHODE ISLAND - Adults common on emerging potatoes in large commercial fields in North Kingston, Washington County. (Mathewson).

RED-BACKED CUTWORM (Euxoa ochrogaster) - IDAHO - Damaged 3-5 percent of sprouts in 160-acre potato field on Rising River Project, Blackfoot, Bingham County. Control initiated. (Bryan).

TOMATO FRUITWORM (Heliothis zea) - GEORGIA - Small larvae noted in small tomato fruits in Spalding County. (Dupree).

BEANS AND PEAS

PEA APHID (Acyrthosiphon pisum) - WISCONSIN - Increased much more slowly in early plantings of peas than on alfalfa. Some southern fields with counts averaging 2

per 10 sweeps; in sandy soil areas populations somewhat less than 1 per 100 sweeps. (Wis. Ins. Sur.).

MEXICAN BEAN BEETLE (Epilachua varivestis) - GEORGIA - Adults feeding and laying eggs on lima beans in Spalding County. (Dupree).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - MICHIGAN - Adults active in Lower Peninsula counties since April 23; few larvae taken recently from weeds in alfalfa. (Dowdy, May 27). NEW YORK - Small numbers of adults flying in Ontario County for over 7 days. (N. Y. Wkly. Rpt., May 31).

CABBAGE LOOPER (Trichoplusia ni) - NEW MEXICO - Damaging cabbage in Dona Ana County. (Campbell).

FLEA BEETLES - NEW YORK - Continuing problem on cole crops in Orleans and Genessee Counties; numerous on early set cabbage in Niagara County; appearing on cabbage in Nassau and Suffolk Counties; active in Ontario County, and in Brussels sprouts seed beds in Madison and Oneida Counties; appearing in Oswego, Onondaga and Cayuga Counties. (N. Y. Wkly. Rpt., May 31).

CABBAGE MAGGOT (Hylemya brassicae) - CALIFORNIA - Heavy in Chinese cabbage in planting in Union City, Alameda County. (Cal. Coop. Rpt.).

ROOT MAGGOTS (Hylemya spp.) - NEW YORK - Becoming troublesome in Suffolk County; very high H. brassicae egg count, 30-40 per plant, on most transplanted cabbage in Orleans, Genesee and Niagara Counties. (N. Y. Wkly. Rpt., May 31).

CUCURBITS

SQUASH BUG (Anasa tristis) - OKLAHOMA - Adults heavy in Tulsa County. Mating, but egg laying light. Moderate in Okmulgee County and light in Washita County. (Okla. Coop. Sur.).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - OKLAHOMA - Adults moderate to heavy on squash in Tulsa County. (Okla. Coop. Sur.).

GENERAL VEGETABLES

ONION MAGGOT (Hylemya antiqua) - COLORADO - Damage 25-30 percent on onions in Vineland area, Pueblo County; less than 1 percent in areas away from Vineland. (Schweissing).

SEED-CORN MAGGOT (Hylemya platura) - TEXAS - Found in onion fields in Lubbock, Hale, Floyd and Crosby Counties. Damage light in most instances. (Parker, Rummel, May 20).

ONION THRIPS (Thrips tabaci) - COLORADO - Building up; in Arkansas Valley counts on seeded onions average 4 per 5 leaves and 5 to 6 per plant on set onions. (Schweissing). IDAHO - Infestations, probably this species, in most Gooding County onion seed fields; average one per plant. Too early for control in area. (Bechtolt).

ASPARAGUS BEETLES (Crioceris spp.) - MICHIGAN - C. asparagi and C. duodecimpunctata adults active on asparagus spears during warm weather in southwest. (Belter, Carpenter).

CELERY LOOPER (Anagrapha falcifera) - MICHIGAN - Total of 44 adults taken from 3 blacklight traps in Berrien and Jackson Counties during week ending May 25;

exceptionally early but lighter sampling previous week in several counties. (Newman).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Caused moderate damage to lettuce in Redrock area, Pinal County. (Ariz. Coop. Sur.).

AN ERIOPHYID MITE (Aceria peucedani) - IDAHO - Severely infesting small carrot seed planting near Parma, Canyon County. (Scott).

A NYMPHALID BUTTERFLY (Vanessa sp.) - CALIFORNIA - Larvae, probably V. carye, medium and damaging artichokes in Watsonville, Santa Cruz County. (Cal. Coop. Rpt.).

A PSYCHID MOTH (Apterona crenulella) - UTAH - Common about Richfield, Sevier County, on crop plants. (Rickenbach, Knowlton, June 1).

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) - MARYLAND - Adults very heavy and destructive to newly transplanted sweetpotatoes in Wicomico County. (U. Md., Ent. Dept.).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Carpocapsa pomonella) - UTAH - Eight adults in bait trap near Brigham City night of May 26-27 and 3-6 caught in bait traps in orchards in nearby communities of Box Elder County. (Knowlton, May 28). COLORADO - Spray dates posted in all areas of Delta, Mesa and Montrose Counties for first cover spray. Moth count dropped to few per trap in Mesa County area. (Bulla). OHIO - Larger numbers of first-generation adults emerging. (Forsythe). MICHIGAN - First adult of season emerged May 29; 2 adults appeared in Van Buren County cage in sheltered location. General emergence in orchards not expected for 7 or more days due to late season. (Carpenter). NEW YORK - First adult taken in bait trap at Lagrangeville, Dutchess County, May 23. Trapped at Lagrangeville and Plattekill, Ulster County, May 25. Larval entrance into fruit expected about June 8. Total of 25 adults found in emergence cages in Hilton and Spencerport, Monroe County, May 28. (N. Y. Wkly. Rpt.). MASSCAHUSETTS - Moths active in Amherst area. (Crop Pest Cont. Mess., June 6).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - CONNECTICUT - Pupating at Storrs. (Savos, June 1). WISCONSIN - Larvae nearly full grown in "nests" in Madison area. No pupation to May 31. (Wis. Ins. Sur.).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - MISSOURI - Few attacking water sprouts in Kansas City area; only occasional larvae of various sizes observed. (Wkly Rpt. Fr. Grs., June 1). MICHIGAN - Hatch about complete in infested orchards in southwest; relatively few orchards infested. (Carpenter). NEW YORK - Adults and eggs found in Monroe County May 31. (N. Y. Wkly. Rpt.). MASSACHUSETTS - Quite scarce this year but may increase later. Few egg clusters found week ending May 31. Larvae present on trees by June 6. (Crop Pest Cont. Mess.).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - MASSACHUSETTS - Fairly prevalent this season; some orchards will require sprays. (Crop Pest Cont. Mess., May 31). CONNECTICUT - Hatching in Storrs, Bantam and Glastonbury; second and third instars very abundant in New Haven area. (Savos, June 1).

GREEN FRUITWORM (Lithophane antennata) - VERMONT - Active on unsprayed fruit trees. (MacCollom, May 31). MASSACHUSETTS - Larvae damaging small apples in Amherst area June 6. (Crop Pest Cont. Mess.)

CIGAR CASEBEARER (Coleophora serratella) - WISCONSIN - Unusually high population feeding on apple foliage on untreated trees at Madison site. (Wis. Ins. Sur.).

PEACH TWIG BORER (Anarsia lineatella) - COLORADO - Hatching in Mesa County; spray posted for June 10-15. (Bulla).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - KANSAS - Larvae leaving twigs in orchards at Wichita, Sedgwick County. (Thompson, Eshbaugh). MISSOURI - New entries in peach terminals in southeast section; between broods over rest of State. (Wkly. Rpt. Fr. Grs., June 1). NEW JERSEY - Larvae abundant in abandoned peach orchard near Glassboro. (Ins.-Dis. Newsltr.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OHIO - Larvae infesting apple and peach trees in Monroe County. Most larvae seeking pupation sites. (Pollock).

UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) - MISSOURI - Heavy in orchard in central section; larvae about half grown May 26. (Wkly. Rpt. Fr. Grs.)

GREEN PEACH APHID (Myzus persicae) - NEW JERSEY - Extremely abundant on peach trees in central and southern counties. Winged adults indicate impending migration to summer host plants; need for control doubtful. (Ins.-Dis. Newsltr.).

BLACK CHERRY APHID (Myzus cerasi) - MICHIGAN - Colonies common in sweet and tart cherry orchards in southwest; cool weather delayed spray application. (Carpenter).

ROSY APPLE APHID (Dysaphis plantaginea) - VIRGINIA - Causing much curling of apple leaves at home apple orchards in Nansemond and Isle of Wight Counties. Heaviest observed for several years. (Isakson, Miller, Jones).

PERIODICAL CICADAS (Magicicada spp.) - MARYLAND - Light emergence noted June 1 on 2 properties in Hyattsville, Prince Georges County. (U. Md., Ent. Dept.).

PLANT BUGS - MASSACHUSETTS - Still threatening developing fruit; apples, pears and peaches will require protection to prevent injury. (Crop Pest Cont. Mess., May 31). VERMONT - Lygus lineolaris active on unsprayed fruit trees. (MacCollom, May 31).

PLUM CURCULIO (Conotrachelus nenuphar) - CONNECTICUT - Another adult collected in Storrs May 30. Considerable egg laying on pears but not on apples or peaches in New Haven. Few egg-laying scares found on apples only in Storrs. Activity low, but expected to increase. (Savos, June 1). NEW YORK - Feeding on sweet cherries at Lagrangeville, Dutchess County, May 23. No oviposition noted. (N. Y. Wkly. Rpt.). WISCONSIN - Adults appearing at Madison. (Wis. Ins. Sur.). OKLAHOMA - All stages heavy on wild plums in Payne County. (Okla. Coop. Sur.). KANSAS - Present in small peaches at Mound Valley, Labette County. (Thompson, Eshbaugh).

CURCULIOS - MASSACHUSETTS - Now most important pests on apples, peaches and pears; feeding punctures found week of May 31. Egg laying will be heavy with next period of high temperatures. (Crop Pest Cont. Mess.).

PLUM GOUGER (Anthonomus scutellaris) - OKLAHOMA - All stages heavy on wild plums in Payne County. (Okla. Coop. Sur.).

EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) - CONNECTICUT - Eggs hatched and larvae already leaving first apples attacked and moving to others. (Savos, June 1). MASSACHUSETTS - Young larvae entering fruits June 6. (Crop Pest Cont. Mess.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - CALIFORNIA - Adults medium on apple trees in Shaver Lake, Fresno County. (Cal. Coop. Rpt.).

EUROPEAN RED MITE (Panonychus ulmi) - OHIO - Hatching of overwintering eggs nearly complete at Wooster, Wayne County; summer eggs becoming more common. Current counts average about one mite per leaf. (Forsythe). NEW JERSEY - Hatching in apple orchards in southern counties. (Ins.-Dis. Newsltr.). NEW YORK - Nymphs found on unoiled apple trees in Clinton and Essex Counties May 23. (N. Y. Wkly. Rpt.). CONNECTICUT - Adults and newly laid eggs noted at New Haven. Infestations

still spotty around State and within individual orchards but expected to increase. (Savos, June 1). MASSACHUSETTS - Developing nymphs prevalent in untreated orchards May 31. Summer eggs being laid week ending June 6. (Crop Pest Cont. Mess.).

PECAN NUT CASEBEARER (Acrobasis caryae) - OKLAHOMA - First eggs of season hatching in Bryan County. Red eggs present in Pontotoc, Stephens, Carter and Creek Counties. Eggs found in Lincoln, Pottawatomie and Seminole Counties; mostly white, but some changing color. (Okla. Coop. Sur.).

PECAN BUD MOTH (Gretchena bolliana) - TEXAS - Larvae on pecans in Burleson County causing some damage to terminal growth. (Van Cleave).

PECAN PHYLLOXERA (Phylloxera devastatrix) - OKLAHOMA - Light to occasionally moderate on pecan trees in central, north central and east central areas. (Okla. Coop. Sur.).

BLACK PECAN APHID (Myzocallis caryaefoliae) - NEW MEXICO - Probably this species, heavy in some orchards in Dona Ana County. Some controls applied. (N. M. Coop. Rpt.).

CITRUS

Citrus Insect Situation in Florida - End of May - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 38 percent of groves (norm 36 percent); 20 percent economic (norm 19 percent). Population normal for period and not expected to exceed average level. Current population moderate but upward trend started which will continue through July. Highest district south; east district very low. TEXAS CITRUS MITE (Eutetranychus banksi) infested 53 percent of groves (norm 54 percent); 29 percent economic (norm 35 percent). Population near average and at moderate level statewide. Increase expected through June with all districts developing some heavy infestations. Highest districts east and north. CITRUS RED MITE (Panonychus citri) infested 43 percent of groves (norm 60 percent); 21 percent economic (norm 38 percent). Population below average. Increase will occur through June but will not exceed normal summer level. Some heavy infestations expected in all districts. Highest districts north and west. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 8 percent of groves; less than 2 percent economic. Attained spring peak below normal level and will not decrease. BLACK SCALE (Saissetia oleae) infested 48 percent of groves (norm 48 percent); 29 percent economic (norm 29 percent). Strong increase underway; will continue into July and result in above normal population. Highest districts east, south and central. GLOVER SCALE (Lepidosaphes gloverii) infested 83 percent of groves; 32 percent economic. Above average and in high range; increase expected. Highest districts central, south, east and north. PURPLE SCALE (L. beckii) infested 78 percent of groves; 8 percent economic. Below average and in moderate range. Expected to become more numerous but very few will be heavy. Highest district central. CHAFF SCALE (Parlatoria pergandii) infested 67 percent of groves; 17 percent economic. Near average and in moderate range. Little change expected. Highest districts central and east. YELLOW SCALE (Aonidiella citrina) infested 71 percent of groves; 21 percent economic. Much above average and will continue above normal. Although present in all districts, heavy infestations mostly confined to highest districts, central and south. WHITEFLY larvae infested 54 percent of groves; 16 percent economic. Currently below normal. Adults appearing in great numbers to start summer brood. Highest districts east and central. MEALYBUGS infested 26 percent of groves; 5 percent economic. Population lower than in past 2 years, but some heavy infestations now present. Will increase through June, then subside. Highest districts east and central. (W. A. Simanton (Citrus Expt. Sta. Lake Alfred)).

COTTONY-CUSHION SCALE (Icerya purchasi) - ARIZONA - Numerous infestations persist in commercial citrus groves in Yuma County and in areas of Maricopa County. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Decreased on citrus in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

SMALL FRUITS

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Heavy populations damaging backyard grape plantings in Tucson area, Pima County. (Ariz. Coop. Sur.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OHIO - Larvae infesting strawberries in Monroe County; most seeking pupation sites. (Pollock).

SALT-MARSH CATERPILLAR (Estigmene acrea) - CALIFORNIA - Medium larval populations damaging strawberry foliage in San Mateo, San Mateo County. (Cal. Coop. Rpt.).

A LEAF ROLLER MOTH (Ptycholoma peritana) - CALIFORNIA - Larvae light in fruit bunches in 20-acre vineyard in Kingsburg, Fresno County. (Cal. Coop. Rpt.).

FRUITWORMS - NEW JERSEY - Moth flights of Acrobasis vaccinii (cranberry fruitworm) and Grapholitha packardi (cherry fruitworm) underway on blueberries. First treatment recommended. (Ins.-Dis. Newsltr.).

APHIDS - NEW JERSEY - Flight of alatae occurred from old strawberry beds to new beds. Controls urged to keep new plantings virus free. (Ins.-Dis. Newsltr.).

ORNAMENTALS

BAGWORM (Thyridopteryx ephemeraeformis) - ARKANSAS - Active in Fayetteville area. (Roberts). Species has been very heavy in northwest area for some time; could cause heavy damage this year. (Ark. Ins. Sur.). MISSOURI - Now hatched over State; first larvae observed April 22 at Lebanon, Laclede County, on juniper. (Houser, Gass).

ARBORVITAE LEAF MINER (Argyresthia thuiella) - VERMONT - Damage becoming more noticeable. Lack of larvae in mines indicates adults flying. (MacCollom, May 31).

LILAC LEAF MINER (Gracillaria syringella) - VERMONT - Mines now conspicuous in lilac. (MacCollom, May 31).

LEAF ROLLER MOTHS - KANSAS - Larvae of Choristoneura houstonana heavy on juniper in Smith Center. (Heinrichs). NEVADA - Larvae, probably Argyrotaenia cockerellana, caused light to heavy damage to ornamental juniper, especially those which were pruned, in southwest Reno, Washoe County. Adults emerging. (Bechtel, Cooney). CALIFORNIA - Larvae of Ptycholoma peritana medium and damaging azalea nursery stock in Modesto, Stanislaus County. (Cal. Coop. Rpt.).

A PSYCHID MOTH (Apterona crenulella) - UTAH - Common about Richfield, Sevier County, on ornamental plants. (Rickenbach, Knowlton, June 1).

A SUNFLOWER MOTH (Suleima helianthana) - CALIFORNIA - Larvae medium in sunflower in Blythe, Riverside County. (Cal. Coop. Rpt.).

PAINTED LADY (Vanessa cardui) - CALIFORNIA - Medium on hollyhock plants in Redding, Shasta County. This is migration year; infestations will be widespread. (Cal. Coop. Rpt.)

ARMORED SCALES - VERMONT - Lepidosaphes ulmi common on lilac and ash; egg hatch expected shortly. (MacCollom, May 31). ILLINOIS - L. ulmi eggs hatched and crawlers active. (Ins. Sur. Bul.). ALABAMA - Fiorinia theae widespread and medium to heavy on camellia and Burford holly in Covington, Conecuh and Coffee Counties. Discoloring new growth in central and southern areas. (Dean et al.). FLORIDA - All stages of F. theae severely damaged leaves of Chinese holly; moderate damage noted on leaves of camellia and Burford holly in nursery at Longwood, Seminole County. All stages of Diaspis boisduvalii severely damaged leaves of 50 queen palm plants in nursery at Longwood. (Kipp, May 25).

SOFT SCALES - FLORIDA - Adults of Ceroplastes floridensis severely damaging 350 Ixora coccinea in nursery at Winter Haven, Polk County. Adults of Saissetia coffeae severely damaged stems and leaves of 80 percent of 3,500 Gardenia sp. in nursery at Winter Haven, Polk County. (Eisenschenk, May 19).

AZALEA BARK SCALE (Eriococcus azaleae) - ALABAMA - Locally heavy on azalea in Conecuh County; sooty mold on heavy honeydew deposits. (Dean).

APHIDS - CALIFORNIA - Cerataphis orchidearum heavy on orchid plants in Auburn, Placer County. This a new county record. (Cal. Coop. Rpt.). CONNECTICUT - Various species attacking wide range of ornamental plants. (Savos, June 4).

WHITEFLIES - RHODE ISLAND - Pealius azaleae adults apparent on azalea in Washington County. Puparia of Aleurotuberculatus similis extremely numerous on foliage of Japanese holly in Kingston, Washington County. No adults evident. (Mathewson).

A LACE BUG (Stephanitis takeyai) - DELAWARE - Abundant and severely damaged andromeda (Pieris japonica) in Wilmington, New Castle County, May 23, 1966. Collected and determined by W. A. Connell. This is new State record. (Burbutis).

A FLATID PLANTHOPPER (Anormenis septentrionalis) - ALABAMA - Medium to heavy on camellia, azalea, spirea and other plants in Covington and Conecuh Counties; feeding on new growth. (Dean).

A SPITTLEBUG (Clastoptera juniperina) - NEVADA - Nymphs light to heavy on various ornamental juniper in Reno, Washoe County. (Bechtel, Cooney).

HOLLYHOCK WEEVIL (Apion longirostre) - CALIFORNIA - Adults medium on hollyhock plants in Corning, Tehama County. This a new county record. (Cal. Coop. Rpt.)

A BLISTER BEETLE (Epicauta unicolor) - COLORADO - Defoliating some hedges and ornamentals in Grand Junction, Mesa County; controls necessary. (Bulla).

EUROPEAN EARWIG (Forficula auricularia) - UTAH - Becoming problem, damaging flower transplants at Logan, Cache County. (Knowlton, June 1).

SPIDER MITES (Tetranychus spp.) - OKLAHOMA - Moderate to heavy on poppies in Tulsa County and narrow-leaf evergreens in Kay County. (Okla. Coop. Sur.). GEORGIA - Heavy on pyracantha foliage in Talbot County. (J. F. Parker).

FOREST AND SHADE TREES

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - MICHIGAN - Pupation underway June 1 in Livingston and Oakland Counties; second-stage larvae to pupae present. High degree of larval mortality apparent. (Newman). RHODE ISLAND - Larvae and pupae recovered from Mugho pine in Kingston, Washington County. (Mathewson).

WHITE-PINE WEEVIL (Pissodes strobi) - VIRGINIA - Abundant on white pine in Montgomery County; 1-6 adults per terminal. (Isakson).

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - MISSOURI - Active on shortleaf pine in Ste. Genevieve County May 16 and Iron County May 2. (Gass).

PINE BARK APHID (Pineus strobi) - VERMONT - Eggs hatching in cottony masses near twig terminals at Burlington. (MacCollom, May 31).

A CONIFER APHID (Cinara coloradensis) - NEVADA - Increasing on spruce trees in Reno-Sparks, Washoe County. (Cooney).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - VERMONT - Hatching and crawlers observed on Mugho pine in warm site at Burlington. (MacCollom, May 31). RHODE ISLAND - Hatching in Warwick, Kent County, May 27. Crawlers active in Kingston area, Washington County, June 2. (Veilleux, Mathewson). MICHIGAN - Few new crawlers noted June 1 in Ingham County. (Wallner). WISCONSIN - Hatch complete on spruce at Beloit May 31. New growth complete, but no crawlers noted. Over 80 percent of emerged crawlers turned dark, but no movement noted. (Wis. Ins. Sur.).

PINE TORTOISE SCALE (Toumeyella numismaticum) - WISCONSIN - Eggs present in Wood County on Scotch pine Christmas trees. (Wis. Ins. Sur.).

CONIFER SAWFLIES - OHIO - Neodiprion sertifer active on various pines over most of State. Some severe defoliation of red pine near Loudonville, Ashland County. Larvae about one inch long in northern counties. (Rose). MICHIGAN - Larval damage by N. sertifer increasing as late stages become apparent in number of Lower Penisula counties; 22-38 larval clusters per 12-15 foot tree observed June 1 in 2 Livingston County Scotch pine plantations. (Wallner, Newman). WISCONSIN - N. nanulus nanulus eggs hatched in Polk County area May 26. First Diprion similis males observed in Polk County May 26; majority remain in cocoons, emergence expected soon. (Wis. Ins. Sur.).

A CYPRESS SAWFLY (Susana cupressi) - CALIFORNIA - Larvae heavy and defoliating cypress trees in Palo Alto, San Mateo County. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - RHODE ISLAND - Nests breaking up. (Hannah, Mathewson, King). MICHIGAN - Most larvae in last stage; moderate to heavy feeding on wild cherry continues over most of Lower Peninsula. (Stehr, Belter). WISCONSIN - Larvae nearly three-quarters grown in Janesville area; feeding severe, smaller chokecherry trees completely defoliated. (Wis. Ins. Sur.). NORTH DAKOTA - Moderate defoliation observed on plum in shelterbelt near Wyndmere. (Stein). OKLAHOMA - Adults emerging in Payne County. (Okla. Coop. Sur.).

TENT CATERPILLARS (Malacosoma spp.) - UTAH - Damage to poplars at Caineville, Wayne County, decreased as larvae matured. (Knowlton, May 28). COLORADO - M. disstria damaging foliage of shade trees in Larimer County. (Cronkhite, Jenkins).

CANKERWORMS - MINNESOTA - Paleacrita vernata observed in St. Paul area. (Minn. Ins. Rpt.). NORTH DAKOTA - Light feeding evident on shade and shelterbelt trees in southeast. Neither Alsophila pometaria nor P. vernata expected to be problem this year. (Frye).

SATIN MOTH (Stilpnotia salicis) - IDAHO - Unusually abundant; defoliating silver leaf poplar in Bonners Ferry area, Boundary County. (Studer).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEVADA - Larvae appeared week of May 27 in Winnemucca, Humboldt County. (Cooney). TEXAS - Adults and larvae causing heavy defoliation of many elms in Collingsworth, Hall and Donley Counties. (Thomas). OKLAHOMA - Defoliation heavy on some trees in Major and Alfalfa Counties; light to moderate in west central, central and north central areas. (Okla. Coop. Sur.). KANSAS - First-generation larvae feeding in southern area; expected to be heavier than in 1965. (Thompson). Large numbers of larvae on Chinese elm in Hays, Ellis County. (Harvey). MISSOURI - First-generation eggs hatching over State. Small larvae present on hybrid elms in extreme northern section; oviposition continues. (Houser). ARKANSAS - Active in northwest; larvae in first to third stages. (Roberts, Warren). ALABAMA - First-generation larvae light on elm leaves in Lee County. (McQueen). VERMONT - Eggs present on elm foliage; adult feeding conspicuous. (MacCollom, May 31).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - WISCONSIN - Peak flight usually expected about June 6 in Madison area will fall on later date. (Wis. Ins. Sur.). NEW YORK - Emerging in rearing containers in Erie County May 28. (N.Y. Wkly. Rpt.).

BLACK ELM BARK WEEVIL (Magdalis barbita) - WISCONSIN - Males and females common on young elms near Brodhead May 31. No feeding occurred. (Wis. Ins. Sur.).

LOCUST LEAF MINER (Xenochalepus dorsalis) - MARYLAND - Adults very active on black locust in southern sections. (U. Md., Ent. Dept.).

A LEAF-MINING WEEVIL (Odontopus calceatus) - WEST VIRGINIA - First of season on yellow-poplar in Wayne and Lincoln Counties May 2; heavy in Mason County May 30. Moderate on young yellow-poplar plantation at Ravenswood, Jackson County, May 31. Heavy frost damage to yellow-poplar may prevent population from being as large as in 1965. (Neel). OHIO - Abundant on yellow-poplar in Mohican State Forest in Ashland County. Adults ovipositing and larvae active for some time. (Donley).

POPLAR-AND-WILLOW BORER (Sternochetus lapathi) - IDAHO - Several heavily infested willow trees at Kamiah, Lewis County, cut down. (Dailey).

EUROPEAN ELM SCALE (Gossyparia spuria) - KANSAS - Heavy on elm trees in Hays, Ellis County. Large numbers of adult lady beetles associated with infestations. (Harvey). VERMONT - Large nymphs abundant on street elms. (MacCollom, May 31).

TULIPTREE SCALE (Toumeyella liriodendri) - OHIO - Female scales still growing, males pupating in Mohican State Forest, Ashland County. (Burns).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - MINNESOTA - Crawlers appearing in Minneapolis-St. Paul area. (Minn. Ins. Rpt.). UTAH - Damaging willow and ash in area from Nephi to Mona in Juab County. (Knowlton, June 1).

EUROPEAN FRUIT LECANIUM (Lecanium corni) - KANSAS - Crawlers emerging on elm, maple, oak and other shade trees throughout State. (Thompson).

A PERIODICAL CICADA (Magicicada sp.) - OKLAHOMA - Light numbers emerging in Payne County. (Okla. Coop. Sur.).

A PSYLLID (Trioza alacris) - CALIFORNIA - Locally heavy on bay trees in Yuba City, Sutter County, and in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

A TREEHOPPER (Vanduzea triguttata) - CALIFORNIA - Nymphs and adults light to medium on sycamore trees in Anaheim, Orange County. (Cal. Coop. Rpt.).

CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) - FLORIDA - Adults infesting 79 Ficus retusa in nursery at Sarasota, Sarasota County. (Bickner, May 24).

MAPLE BLADDER-GALL MITE (Vasates quadripedes) - NORTH DAKOTA - Light to severe foliage deformation of maple evident throughout southeast. (Frye). NEBRASKA - Infestations more prevalent than normal in southeast. (Roselle). RHODE ISLAND - Galls becoming noticeable on cut-leaf maples statewide. (Mathewson, Hannah).

AN ERIOPHYID MITE (Eriophyes tiliae) - CALIFORNIA - Heavy on Tilia cordata nursery stock in Mill Valley, Marin County. (Cal. Coop. Rpt.).

BIRCH LEAF MINER (Fenusa pusilla) - NEW YORK - Adults abundant in Nassau County May 21-26; small mines observed at same time. (N.Y. Wkly. Rpt.). MICHIGAN - Larval mines appeared in infested foliage June 1 in Ingham County. (Wallner).

MAN AND ANIMALS

MOSQUITOES - VERMONT - Adults severely annoying in all areas. (MacCollom, May 31). FLORIDA - New emergence of mosquitoes that breed in temporary pools nuisance in Gainesville area. Psorophora confinnis and P. ciliata among species involved. One of wettest months of May on record for area. (Mead). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control for the period May 26 - June 2 yielded Aedes vexans, Anopheles crucians, Culex pipiens

quinquefasciatus, C. salinarius, and Psorophora confinnis. Light trap collections show increase in floodwater species; Aedes sollicitans, A. vexans, and Psorophora confinnis collected. (Stokes). MICHIGAN - Annoyance by Aedes spp. and Culex spp. adults reduced in many areas by cool evening temperatures. Adult populations still high in several wooded, swampy areas of Ingham and Shiawassee Counties. (Dowdy). MINNESOTA - During week ending May 28, 795 larval collections made by Metropolitan Mosquito Control District. Of these Aedes vexans found in 264, Culiseta inornata in 450 and Culex restuans in 18. In 16 light traps operated same period, 263 female mosquitoes taken. Culiseta inornata accounted for 146 specimens, Culex tarsalis for 15. Mosquito numbers lowest for several years in Twin City area, but very high in areas immediately outside the Metropolitan Mosquito Control District. (Minn. Ins. Rpt.). WISCONSIN - Mosquito adults reported in Price, Shawano, Waupaca, Iron and Washburn Counties, with most annoyance in Waupaca and Shawano Counties. Larvae nearly full grown in southern Dane County pond water. (Wis. Ins. Sur.). MISSOURI - Counts high in east central and southeast districts. (Thomas). KANSAS - Adults of various species heavy in Labette County. (Eshbaugh). UTAH - Adults numerous and very annoying in area from Delta and Deseret to Abraham and annoying in Hinckley to Sutherland areas of Millard County. (Knowlton, May 28). Very numerous and annoying in Kanosh and Delta to Sutherland areas and at Scipio Resevoir, Millard County. Also in Koosharem to Koosharem Resevoir area of Piute County. (Knowlton, June 1). NEVADA - Aedes dorsalis adults heavy in Lovelock, Pershing County. (Martinelli).

HORN FLY (Haematobia irritans) - ALABAMA - Continues heavy on cattle in Bullock County; beef cattlemen report considerable difficulty in maintaining satisfactory controls. (Stone). ARKANSAS - Numbers higher than normal. Estimated 2,000 observed on bull in Fayetteville area. (Simco). OKLAHOMA - Ranged 400-1,200 per head (average 500) on cattle in Major County. Heavy in Mayes and Stephens Counties and light to moderate in Osage and Cleveland Counties. (Okla. Coop. Sur.). MISSOURI - Adults 100-300 per animal on cattle in central, west central and northwest districts. (Houser). NORTH DAKOTA - Counts on Hereford heifers in Dunn County ranged up to 30 (average 10) per animal. (Frye). VERMONT - Exceptionally heavy on pastured cattle. (MacCollom, May 31).

STABLE FLY (Stomoxys calcitrans) - KANSAS - Heavy in Manhattan, Riley County. (Brooks).

DEER FLIES (Chrysops spp.) - OKLAHOMA - Increasing on horses in Payne County. (Okla. Coop. Sur.). MISSOURI - Adults abundant in wooded areas in Boone County, present in Clark County. (Craig). MICHIGAN - Adult activity of undetermined species light in Delta County. (Mattson, May 27).

BLACK FLIES - MICHIGAN - Females continue biting in Upper and Lower Peninsula counties. (Mattson, Newman, Janes, May 27). VERMONT - Numbers diminished during week ending May 31. (MacCollom).

FACE FLY (Musca autumnalis) - OHIO - Generally low on cattle. Counts in Wayne County average slightly over one per face. (Miller). MICHIGAN - Adults on cattle pasturing in Shiawassee County May 24 ranged 0-10 per face; averaged 1. (Dowdy). VERMONT - Light on cattle. (MacCollom, May 31).

LITTLE HOUSE FLY (Fannia canicularis) - GEORGIA - Large numbers around poultry houses in Jackson County. (Welborn, Nolan, May 27). VIRGINIA - Swarms active at several homes in Baskerville area, Mecklenburg County. (Isakson, May 27).

NORTHERN CATTLE GRUB (Hypoderma bovis) - MICHIGAN - Sample taken May 23 from local cattle in Ingham County showed 75 percent in fifth instar. (Stehr).

CATTLE LICE - UTAH - Moderate on some cattle in Garfield County. (Lindsay, Knowlton, June 1). Total of 9,000 cattle dipped this spring in Emery County for lice and tick control. (Knowlton, Day, June 1).

AMERICAN DOG TICK (Dermacentor variabilis) - TENNESSEE - Prevalent in eastern part of State. One case of Rocky Mountain spotted fever reported from area. (Mullett, June 1). MARYLAND - Adults common in tall grass near wooded areas in Prince Georges County. (U. Md., Ent. Dept.). CONNECTICUT - Unusually abundant in some parts of State. (Savos, June 4). RHODE ISLAND - Normal seasonal complaints from various sections of State. (Hannah, Mathewson, Veilleux). MICHIGAN - First of season reported in Upper Peninsula from Menominee County. (Mattson, May 27).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Continues heavy on cattle in eastern areas. (Okla. Coop. Sur.).

BLOODSUCKING CONENOSE (Triatoma sanguisuga) - FLORIDA - Adult collected in home at Gainesville, Alachua County. First adult of season. (Mead, May 26).

BUCK MOTH (Hemileuca maia) - FLORIDA - Larvae feeding on oak, resulting in severe stings to children; 2 children taken to physician. Apparently some larvae dropped to ground making contact easier. Severe infestations reported in Maitland-Altamonte areas of Orange and Seminole Counties. Ordinarily, species rare in State. (Desin, May 24).

GRAIN THRIPS (Limothrips cerealium) - NORTH CAROLINA - Caused some irritation and considerable concern to employees of furniture factory in Moore County. Relatively small numbers actually present in building. Det. by B. Hemming. (Mount).

HOUSEHOLDS AND STRUCTURES

AN EARWIG (Labidura riparia) - ARIZONA - Heavy numbers troublesome to homeowners in Pima, Pinal and Maricopa Counties. (Ariz. Coop. Sur.).

ARGENTINE ANT (Iridomyrmex humilis) - CALIFORNIA - Locally medium in Oroville, Butte County. Several species of ants prevalent this season. (Cal. Coop. Rpt.).

WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) - IDAHO - Severe infestation in home in Genesse, Latah County. Wooden floor joists in contact with soil nearly destroyed. (O'Keefe).

BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Heavy in all Dona Ana County alfalfa. (N. M. Coop. Rpt.). COLORADO - Populations high on alfalfa in all areas. (Bulla, Schweissing, Jenkins). NORTH DAKOTA - Adults per 100 sweeps in alfalfa averaged 20 in Foster County (Frye); 30 in Cass and Richland Counties (Brandvik, Kaatz). MINNESOTA - Numbers relatively high in central, southeast and southwest districts in small grain and alfalfa. (Minn. Ins. Rpt.). ILLINOIS - Adults 0-100 (average 44) per 100 sweeps in northeast and 1-80 (average 23) in east in first-crop alfalfa (Armburst, Petty). Ranged 0-10 in 2 fields of second-crop alfalfa in southwest. (White). MICHIGAN - Adults of various species 1.5 per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. (Dowdy).

DAMSEL BUGS - NEW MEXICO - Heavy in Dona Ana County alfalfa. (N. M. Coop. Rpt.). COLORADO - Populations high on alfalfa in all areas of State. (Bulla, Schweissing, Jenkins). WYOMING - Nabis spp. adults 24 per 10 sweeps in alfalfa in Laramie County. (Marks). NORTH DAKOTA - Trace numbers of Nabis spp. found in alfalfa near Carrington; averaged 10 adults per 100 sweeps in alfalfa in Cass and Richland Counties. (Frye). MINNESOTA - Numbers relatively high in central, southeast and southwest districts in small grain and alfalfa. (Minn. Ins. Rpt.). MICHIGAN - Adults of various species average 0.2 per 10 sweeps in 6 fields of alfalfa 18 inches high in Livingston County May 31. (Dowdy). ILLINOIS - Nabis spp. per 100 sweeps ranged 0-20 (average 7.1) in northeast and 0-10 (average 2.9) in eastern district in first-crop alfalfa. (Petty, Armburst). Ranged 0-10 in 2 fields of second-crop alfalfa in southwest. (White).

BIG-EYED BUGS - NEW MEXICO - Ranged 4-6 per 25 sweeps in Dona Ana County alfalfa. (N. M. Coop. Rpt.). RHODE ISLAND - Geocoris spp. common in turf in Kingston, Washington County. (Skogley).

LACEWINGS - MINNESOTA - Numbers relatively high in central, southeast and southwest districts in small grain and alfalfa. (Minn. Ins. Rpt.). NEW MEXICO - Populations high in all alfalfa checked in Dona Ana, Eddy and Chaves Counties. (N. M. Coop. Rpt.).

A DERMESTID BEETLE (Trogoderma parabile) - NEVADA - Large numbers of adults emerging from nests of Megachile rotundata in Dixie Valley, Pershing County. Bee mortality heavy. (Martinelli).

A LEAFCUTTING BEE (Megachile frigida) - IDAHO - Occurring in soda straws used for nesting by M. rotundata. Det. by G. E. Bohart. Adults emerged May 27 in Parma area, Canyon County. (Waters, June 3).

AN ICHNEUMON WASP (Bathyplectes curculionis) - WYOMING - Adults 2-4 per 10 sweeps in alfalfa in Laramie County. (Marks).

A TORYMID (Monodontomerus obscurus) - IDAHO - Emerging in large numbers in incubators containing overwintering nests of Megachile rotundata (a leafcutting bee) in Canyon County. (Waters).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL COMPLEX (Anthonomus grandis complex) - ARIZONA - Adults found in fields heavily infested in 1965 in Stanfield area, Pinal County, and in western Maricopa County. (Ariz. Coop. Sur.).

CEREAL LEAF BEETLE (Oulema melanopus) - INDIANA - Adults 400-500 per 100 sweeps on oats and eggs 33 per linear foot of row in New Carlisle area. Movement from wheat to oats 90 percent completed. Oviposition on oats expected to continue at high rate for another week. (Shade). MICHIGAN - Larval development in Berrien County research plots slowed by unseasonably cool weather. Few in second stage May 27, but overall growth exceptionally slow. Development should be quite rapid now; oats in areas where economic infestations suspected should be checked for feeding signs. Due to highly effective suppression program, little spraying by farmers expected to be necessary. Wheat in southwestern counties will escape major larval injury except in few late fields. Most adults migrated from wheat to oats. Relatively low numbers of beetles found in southern counties. (Gomulinski, Turner).

A CUBAN MAY BEETLE (Phyllophaga bruneri) - FLORIDA - Collected in blacklight trap at Biscayne Park, Dade County; extension of eastern boundary of infestation. (Sheehan, May 25).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - CALIFORNIA - Single pupa taken from Japanese red pine tree in Ornamental Horticulture Gardens at University of California at Davis. This one of 35 nursery stock trees from nursery in Sacramento, Sacramento County; brought from out-of-state nursery last winter. All trees burned and nursery sprayed with insecticide. This is eradication pest. No established infestation known in State. Collected May 17, 1966, by Mr. Stephens, University of California, Davis. Det. by G. Okumura, confirmed by V. Carolin and D. Weisman. (Cal. Coop. Rpt.).

A FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae collected in fruits of Ceylon peach, Surinam-cherry, peach, sour orange and Valencia orange at dooryard localities in Greater Miami area May 22-24. (Swanson).

GRASSHOPPERS - CALIFORNIA - Trimerotropis sp. (probably pallidipennis), T. rebellis and Oedaleonotus enigma nymphs medium to heavy on range grass in Coalinga; Psoloessa thamnogaea nymphs heavy on range grass in Five Points, Fresno County. O. enigma heavy on cotton plantings in Five Points. (Cal. Coop. Rpt.). ARIZONA - Infesting about 4,000 acres of crop and rangelands in Springerville-Alpine area of Apache County. Averaged 20, but ranged 10-50 per square yard. (Ariz. Coop. Sur.). NEVADA - Melanoplus sanguinipes nymphs heavy in alfalfa and adjacent rangeland in Buffalo Ranch area, Pershing County. (Martinelli). UTAH - Numerous in and about some alfalfa fields in eastern Millard County. (Knowlton, June 1). OKLAHOMA - Surveys show approximately 10,000 acres of grassland in Johnston County infested with 8-20 nymphs of several species per square yard. Threatening infestations of 6-8 nymphs per square yard found on smaller acreages in portions of Carter, Love, Pontotoc and Pittsburg Counties. Populations in these areas appear lighter than in 1965. Check in 18,000-acre control area in Pittsburg County showed less than 1 per square yard. Dominant species on rangeland in these areas: Melanoplus bivittatus, M. occidentalis, Hesperotettix speciosus and Ageneotettix deorum. Ranged first instar to adult. Crop margin populations in these areas ranged 4-12 per square yard. Dominant species M. bivittatus, Hesperotettix sp. and M. sanguinipes. In Jefferson, Stephens and Cotton Counties, range populations light; 1-6 per square yard. In Kiowa and Tillman Counties, counts 4-20 per square yard. Dominant species: A. deorum, Phlibostroma quadrimaculatum and Boopedon nubilum. In Roger Mills County, 15,000 contiguous acres of rangeland infested with 8-30 nymphs per square yard. Dominant species A. deorum, P. quadrimaculatum, M. bivittatus, H. speciosus and Aulocara elliotti; ranged first to fourth instars. Counts in Blaine, Dewey and Washita Counties generally below threatening level. Unspecified grasshoppers moderate in pastureland in Payne and Craig Counties. M. differentialis and M. bivittatus second to third-instar nymphs 10-20 per 10 sweeps in alfalfa in the central area. (Okla Coop. Sur.). SOUTH DAKOTA - Grasshopper hatch checked May 24-27 in Perkins, Corson, Walworth, Potter, Sully and Hughes Counties. First instars of M. bivittatus averaged 1 per 10 sweeps in one field in Corson County and one field in Walworth County. (Burge). NORTH DAKOTA - Small numbers of first and second instars of Hypochlora alba, Hesperotettix viridis and Melanoplus dawsoni noted in sandhills area in southeast. (Toczek). MINNESOTA - Melanoplus femurrubrum eggs in southwest district in coagulation and and early eye-spot stages. One first instar found in Lyon County . Few reports of adults flying in central and east central districts; probably noneconomic species that overwinters in nymphal stage. (Minn. Ins. Rpt.). WISCONSIN - Single M. sanguinipes second instar noted along margin of alfalfa field in Brodhead area. (Wis. Ins. Sur.).

JAPANESE BEETLE (Popillia japonica) - NORTH CAROLINA - First prepupae found in Ashe and Watauga Counties May 27. First adult emergence expected week of June 13. Overwintering grub populations throughout area comparatively high; heavy beetle populations causing severe foliage injury will likely occur in area. (Hamilton, June 6).

WHITE-FRINGED BEETLES (Graphognathus spp.) - ALABAMA - Larvae destroyed 17-acre field of cotton in Washington County. (Estes). Larvae occurred in southern area in greater numbers than usual. Infestation appears to equal that of 1963. Considerably damaged many field and garden crops and seriously damaged 15-acre field of cotton in Semirah Springs community, Monroe County. Another 17-acre field near Leroy plowed and replanted because of larval damage to root systems and other factors which reduced cotton to questionable stand. (Lemons, Welch, May 27).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

Total of 15 cases reported in the U. S. May 29 - June 4 as follows: TEXAS - Bee 2, Live Oak 3, Jim Wells 1, Val Verde 1, Terrell 1, Nueces 1, Pecos 1. ARIZONA - Cochise 3, Yavapai 1. NEW MEXICO - Hidalgo 1. Sterile screw-worm flies released: Texas 14,374,250, Arizona 28,506,000, New Mexico 5,100,000, Mexico 62,568,000.

	Current	Cumulative	Current	Cumulative	Current	Cumulative

Table 1. Comparison of screw-worm samples identified during corresponding weeks in the United States.

Year	Positive Cases		Negative Cases	
1964	14	91	187	3416
1965	39	168	160	2502
1966	15	198	150	1576

Table 2. Comparison of United States screw-worm cases by State.

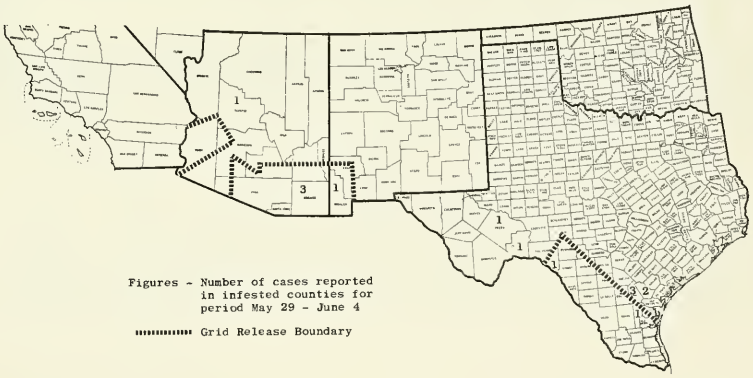
State	1964		1965		1966	
Texas	6	77	22	88	10	87
Ariz.	8	14	8	53	4	103
N. Mex.	0	0	9	17	1	5
Calif.	0	0	0	10	0	3

Table 3. Comparison of screw-worm cases inside and outside the United States portion of the Barrier Zone.*

Year	Inside Barrier Zone		Outside Barrier Zone	
1965	23	87	16	36
1966	7	165	8	33

Total of 63 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 8, Sonora 28, Chihuahua 6, Nuevo Leon 2, Tamaulipas 19. Total of 577 cases reported from Mexico south of the Barrier Zone.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. Effective May 23, 1965, portions of Arizona and California were added to the Barrier Zone. (Anim. Health Div.).



INSECT DETECTION

AN OLETHREUTID MOTH (Sereda lautana) - DELAWARE - Adult collected by R. W. Lake while sweeping in Summit area of New Castle County April 15, 1966. This is a new State record. Det. by D. R. Davis. (Burbutis).

A LACE BUG (Stephanitis takeyai) - DELAWARE - Abundant and severely damaged andromeda (Pieris japonica) in Wilmington, New Castle County, May 23, 1966. Collected and determined by W. A. Connell. This is new State record. (Burbutis). (p. 521).

A TEPHRITID FLY (Dioxyna sororcula) - HAWAII - Collected on buds of pigeon pea at 2 locations on Oahu in April and May 1966. This is new State record reported in CEIR 16(22):502.

SPOTTED ALFALFA APHID (Therioaphis maculata) - COLORADO - Reported for first time in Prowers County. (Schweissing). (p. 506).

ALFALFA WEEVIL (Hypera postica) - ILLINOIS - Reported for first time in Iroquois, Ford, Livingston, Kankakee, Will, Cook and Lake Counties. (Petty, Armburst). OHIO - Reported for first time in Paulding, Defiance and Henry Counties. (Rose). INDIANA - Reported for first time in Montgomery and Fountain Counties. (Huber). (pp. 508, 509).

VETCH BRUCHID (Bruchus brachialis) - CALIFORNIA - Reported for first time in Sutter County. (Cal. Coop. Rpt.). (p. 509).

AN APHID (Cerataphis orchidearum) - CALIFORNIA - Heavy on orchid plants in Auburn, Placer County. This is new county record. (Cal. Coop. Rpt.). (p. 521).

HOLLYHOCK WEEVIL (Apion longirostre) - CALIFORNIA - Adults medium on hollyhock in Corning, Tehama County. This new county record. (Cal. Coop. Rpt.). (p. 521).

Weather continued from page 504.

PRECIPITATION: Moderate to heavy rains affected the Missouri Valley and northern areas from Wisconsin to eastern Washington. Most other areas received little or no rain, although heavy showers came to the Miami area and to the Texas Panhandle. Rains in the latter area and northward to Nebraska were badly needed. Dry weather was very welcome in southeastern Texas which had the driest week since early April. In fact this was the driest week in several months in much of the area from Texas eastward. Some of the showers over the northern and central Great Plains were produced by thunderstorms which also brought damaging hail. Hail up to 2.5 inches in diameter pounded fields west of Great Falls, Montana, and hail the size of golf balls pelted an area near Wilmington, North Carolina, on Monday afternoon. Tornadoes occurred in several central Plains States near the end of the week. Damage was variable with no fatalities reported.

Early on June 7, Hurricane Alma was located in the northwestern Caribbean 275 miles south-southwest of Havana and moving northward toward western Cuba. This is the earliest hurricane in 15 years and only the 3rd storm to reach hurricane strength as early as this in records back to 1886. (Summary supplied by Environmental Data Service, ESSA).

LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
ARKANSAS																								
Hope 5/26-6/1				13							17							12						
Fayetteville 5/26-6/1				2							2									30				
FLORIDA																								
Gainesville 5/31			BL	2															2					
ILLINOIS (County)																								
Champaign 5/27-6/2	43-84	0.1		5														5		150				
LOUISIANA																								
Tallulah 5/27-6/2	49-90	0	BL								6													
MISSISSIPPI																								
Stoneville 5/26-6/2	47-90		2BL	6					1		2					2		187	16	1049		1		
Tunica 5/26-6/2	46-89		BL	9			1		1	1	4				1	4		6	8	53				
Rolling Fork 5/26-6/2	50-92		BL	6			1		2	3	8					37		9	11	53			21	
MISSOURI																								
Portageville 5/28-6/3			BL	4							1						2		1	1				
NEBRASKA																								
Lincoln 5/20-27				8		2		5										37	1	134				
North Platte 5/14-30				9		152		120			1							133		29				
Scotts Bluff Expt. Sta. 5/9-15						1		3										4						
NORTH DAKOTA																								
Bowman 5/20-6/1														8										
OHIO (Counties)																								
Franklin 5/27-6/2				8				6												10				
Washington 5/23-30				3				16			1					1		1		10				
Brown 5/23-31				1				4												1				
SOUTH CAROLINA																								
Charleston 5/23-29	65-86	0.73	BL	7			1		3		2									2		3		
Charleston 5/30-6/5	51-88	0	BL	2							4							7	1	3		1	1	
TENNESSEE (Counties)																								
Maury 5/24-30				2															2					
Cumberland 5/24-30				8														4		4				
Johnson 5/24-30				16														4		8				
TEXAS																								
Brownsville 5/28-6/3	62-91	0.09	2BL				6		18	3	28				3	1		4						
Waco 5/28-6/3				8			1		16		30							35	14	35	4		17	
WISCONSIN																								
Madison 5/25-31			BL	1	1													6						
WYOMING																								
Cheyenne 5/12-18						9												7						

HAWAII INSECT REPORT

Insects of Regional Significance - All stages of MELON FLY (Dacus cucurbitae) medium in 1 acre of tomatoes in Wailua, Kauai. Populations reported light in most areas during first part of year. (Fujimoto).

Turf Insects - LAWN ARMYWORM (Spodoptera mauritia acronyctoides) - All stages light to medium in Tifton lawns in Kaneohe, Oahu. Fresh egg clusters on walls of homes more evident than in previous months. (Leong).

Tomatoes, Beans - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - All stages heavy in 1 acre of young tomato plants in Omaopio, Maui; light on snap beans in Makawao. (Haw. Ins. Rpt.). CARMINE SPIDER MITE (Tetranychus telarius) continues medium to heavy on snap beans in Waianae, Oahu. (Yamamoto).

General Vegetables - ONION THRIPS (Thrips tabaci) light on bulb onions in Omaopio, Maui, and on lettuce in Koko Head, Oahu. (Miyahira, Sato).

Ornamentals - AN ORCHID WEEVIL (Orchidophilus aterrimus) very active on orchids in Paia and Wailuku, Maui. Larvae, pupae and adults moderate on and in various Vanda, Dendrobium and Cattleya species. Damage moderate to heavy. (Miyahira).

Forest and Shade Trees - Larvae of a NOCTUID MOTH (Polydesma umbricola) medium to heavy on monkeypod trees in Makiki area of Honolulu, Oahu. Trees 25-75 percent defoliated. Further increase and spread expected. (Haw. Ins. Rpt.).

Households and Structures - FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) - New infestations continue to appear in Wailuku, Maui. A home, utility pole and tree stump recently found infested. Species first discovered on Maui in 1963. (Miyahira).

Beneficial Insects - A STEM-BORING WEEVIL (Apion antiquum) - Light numbers of adults on Emex spinosa (emex) in Omaopio, Maui; 2 per leaf. (Haw. Ins. Rpt.). A LEAF BEETLE (Octotoma scabripennis) - 80 adults collected from Origanum sp., possibly O. vulgare, at Captain Cook, about 1.5 miles south of Kealakekua, Hawaii Island. This new host record. Adults feeding on leaves. O. scabripennis purposely introduced to aid in control of Lantana. (Harley). A BRACONID (Apanteles militaris) - Numerous cocoon clusters found throughout Waimea and Kahua, Hawaii Island. Absence of Pseudaletia unipuncta suggests this introduced wasp and other parasites or predators exerting strong pressure on P. unipuncta population. (Yoshioka).

CORRECTIONS

CEIR 16(18):388 - PEACH TREE BORER (Sanninoidea exitiosa) - NEVADA - should read: WESTERN PEACH TREE BORER (Sanninoidea exitiosa graefi). (Nev. Coop. Rpt.).

CEIR 16(21):465 - EASTERN TENT CATERPILLAR (Malacosoma americanum) - WISCONSIN - should read: "Tents 1-2 inches in diameter May 10 near Melrose, Jackson County...". (Wis. Ins. Sur.).

CEIR 16(21):465 - PINE TUSSOCK MOTH (Dasychira plagiata) - WISCONSIN - Sentence beginning "A fungus disease..." should read: "A fungus disease evident on dead larvae; exact role of disease unknown." (Wis. Ins. Sur.).

Survey Method for Insects in Heads of Combine-Type Grain Sorghum[1/]

W. P. Boyer, Survey Entomologist
University of Arkansas

The production of short stalk combine grain sorghum is on the increase in Arkansas. This results in the need for an insect survey method that can be used in the field by farmers and county agents as well as entomologists.

Potential economic damage from several species of insects has been recognized for many years in Arkansas. Survey to evaluate insect populations was by field examination of the heads of the plants, without the use of any special equipment. The result was that many insects, especially small immature forms, fell to the ground and were not counted due to difficulty of recovery.

A survey method for determining populations of insects in heads of combine-type grain sorghum was developed and used in Arkansas in 1965. The method does not require cutting heads off the plants and removing them from the field for further examination.

Buckley and Burhardt (1962) demonstrated that corn earworm or cotton bollworm (Heliothis zea) could cause severe damage to grain sorghum. This work showed the importance of accurately determining the population and the age of the larvae. Laster and Furr (1962) referred to the difficulty of recovering insects from the heads of sorghum without the use of special equipment. They developed a method to use in connection with insecticide tests but it required cutting off the heads of the plants.

The survey method used in Arkansas makes use of the drop sheet employed in soybean insect survey as described by Boyer and Dumas (1963). When the surveyor enters the field, he selects a site at random. After the ground is marked at the starting place on a row, 25 consecutive heads are examined. Then the number of row feet involved is recorded, the drop sheet laid on the ground in the middle between the rows, and a plant bent over with the head above the sheet. The head is then thoroughly opened, handled and shaken to dislodge the insects which fall on the sheet where they can be counted. After examining the 25 heads, the surveyor selects other sites at random to provide field coverage and repeats the operation. Four sites are examined making a total of 100 heads. Measuring and recording row feet make the data quantitative. Insect populations may then be recorded as to numbers per head or numbers per row foot or acre. Numbers per row foot are more meaningful than numbers per head or 100 heads. Arkansas workers prefer the row foot count and recommendations for treatment are being based on this type of count.

This method was successful in recovering small insects. For example, bollworm larvae recovered were preserved and measured. Various lengths were: 0.25 inch - 26 percent; 0.5 inch - 32 percent; 0.75 inch - 25 percent; 1 inch - 13 percent; and 1+ inch - 4 percent. Head capsule measurements to determine instars were not made on all larvae. Measurements of most of the larger larvae showed them to be full grown. This indicates that larvae of this species in grain sorghum do not reach lengths of 1.5 inches or more as they often do in corn and cotton.

In the case of at least one hybrid sorghum grown in Arkansas the base of some of the heads does not clear the sheath. This area under the sheath is a favorite location for small bollworm larvae and requires special attention by the surveyor. In one case, when small larvae were found at the rate of 13,000 per acre, more than 50 percent were found on the base of the heads under the sheath. A study made 2

1/ Published with the approval of the Director, Arkansas Agricultural Experiment Station.

weeks later showed that the bollworm and other species had apparently gained protection from predation in this location. Fifty heads that had cleared the sheath and 50 heads which had not, all randomly selected, were examined for insects. Results are presented in Table 1.

Table 1. Insects Recovered From Sorghum Heads, 1965.

	Bollworm	Fall Armyworm[1/]	Sorghum Webworm[2/]	European Corn borer[3/]
50 heads cleared sheath	42	4	1	1
50 heads not cleared sheath	103	36	8	2

These data show the importance of checking under the sheaths of this type of sorghum.

This survey method could be adapted to tall sorghum by adapting the cloth drop sheet to a frame fastened to the surveyor's body at waist level. The heads of the tall sorghum could be bent over the cloth and the surveyor could stand upright and recover the insects.

Literature Cited

Boyer, W. P. and Dumas, B. A. 1963. Soybean insect survey as used in Arkansas. USDA Coop. Econ. Ins. Rpt. 13(6):91-92.

Buckley, B. R. and Burkhardt, C. C. 1962. Corn earworm damage and loss in grain sorghum. J. Econ. Ent. 55(4):439-41.

Laster, M. L. and Furr, R. E. 1962. A simple technique for recovering insects from sorghum heads in insecticide tests. J. Econ. Ent. 55(5):799.

1/ Spodoptera frugiperda

2/ Celama sorghiella

3/ Ostrinia nubilalis

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AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 June 17, 1966 Number 24

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN EARWORM active in whorls of corn as far north as Missouri. (p. 535). POTATO LEAFHOPPER adults active over wide areas, damage in some Missouri alfalfa. POTATO PSYLLID populations heavy on wild hosts in Wyoming and Colorado. (p. 535). EUROPEAN CORN BORER moths active in Michigan, more abundant than usual in northeast Illinois, first larval activity of season in Missouri and Maryland. BLACK CUTWORM serious in eastern Maryland corn, of concern also in Missouri and Delaware. (p. 536). STALK BORER unusualy heavy in corn in northwest Missouri. (p. 537).

GRASS BUGS causing severe damage on planted wheatgrass in Utah. (p. 538). BROME-GRASS SEED MIDGE, reported for the first time in U. S. earlier this year, active in Nebraska. (p. 539). CEREAL LEAF BEETLE summer adults expected in Michigan about July 1. New records for six counties in Indiana. (p. 556).

ALFALFA WEEVIL reported from Michigan for first time, statewide in Ohio. Reports on activity of this destructive pest in 26 States. (pp. 539, 540). BOLL WEEVIL populations high at Florence, South Carolina, and Tift County, Georgia. Weevils active in cotton fields other areas. (p. 543).

GREEN PEACH APHID heavy on peaches in areas of Nevada, New Mexico and Pennsylvania. (p. 548). A LEAF ROLLER causing severe defoliation of red oak in areas of Pennsylvania; mortality on 1,000 acres from successive defoliations. (p. 552).

GRASSHOPPERS infesting 650,000 acres rangeland in Lea County, New Mexico; economic populations also in roadsides and crop margins in some areas of Oklahoma but noneconomic at present in most cropland areas of southwestern North Dakota. Reports from several other States. (pp. 556, 557). First JAPANESE BEETLE adults of season in Virginia and Tennessee. WHITE-FRINGED BEETLE damage to crops continues in Alabama. Some damage to peanuts in Florida. (p. 557).

Detection

● FORMOSAN SUBTERRANEAN TERMITE found in Louisiana for first time; also reported from Texas. (p. 555). Background on this pest. (pp. 562-564).

ALFALFA WEEVIL (Hypera postica) reported for first time in Michigan and PEAR SAWFLY (Hoplocampa brevis) reported for first time in Pennsylvania. (p. 558).

For additional new county records see page 558.

Reports in this issue are for week ending June 10 unless otherwise indicated.

CONTENTS

WEATHER OF THE WEEK ENDING JUNE 13

HIGHLIGHTS: (1) Hurricane Alma in Southeast; early season record. (2) Very severe tornado, Topeka, Kansas.

TEMPERATURE: Temperature averaged near normal in most areas but somewhat cooler than normal in North Central areas and in the Southeast. Temperatures were fairly constant during the week except in the Northeast where a warm spell was cut off late in the week.

PRECIPITATION: Most of the areas from the Pacific Ocean to the western Great Plains received only spotty light showers. It was also dry in Louisiana and nearby southern areas; repeated heavy thunder shower activity affected Oklahoma and the four State areas of Kansas, Nebraska, Missouri and Iowa. A few spots in Texas also received 2+ inch thunder showers. Heaviest rains came to Florida and extreme southern Georgia and to the coastal fringes of the Carolinas.

TORNADOES: On Wednesday evening June 8, a tornado left a path of destruction 5 hundred to 1 thousand feet wide from southwest to northeast across Topeka, Kansas. The tornado killed 17 persons, injuring more than 5 hundred and costing more than 1 million dollars property damage. All major structures of the Washburn University were damaged and some were destroyed. The storm caused heavy damage to the

Weather continued on page 561.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - NORTH DAKOTA - Full-grown larvae causing moderate damage to sugar beets and sunflower in Hunter area, Cass County; averaged less than 1 per linear foot. (McBride). WYOMING - Adults appearing in Goshen, Laramie and Albany Counties. (Robb, Marks). UTAH - Larvae mostly full grown, ceased holding back alfalfa in Loa-Lyman area, Wayne County. (Knowlton).

ARMYWORM (Pseudaletia unipuncta) - MARYLAND - Over 800 acres of small grains on Eastern Shore treated for developing infestations. (U. Md., Ent. Dept.). VIRGINIA - Larvae severe on several acres of corn in Montgomery County; required replanting. (Isakson). INDIANA - Larvae 4-10 per 100 sweeps on wheat in Tippecanoe, Benton and Newton Counties. Only one economic infestation reported to date. (Huber). ARKANSAS - Moth collections at Fayetteville light trap dropped sharply; only 8 taken week ending June 11. Total of 169 taken in 4 nights on trap recently installed at Manila, Mississippi County. (Boyer).

BEET LEAFHOPPER (Circulifer tenellus) - UTAH - Counts per 25 sweeps on Russian thistle, 4 adults and 1 nymph at Caineville and 5 adults at Hanksville, Garfield County. (Knowlton).

CORN EARWORM (Heliothis zea) - GEORGIA - Caused very light damage on corn leaves in Hall County. (Harris). ALABAMA - Larvae heavy in corn in Covington County. Full-grown larvae and some pupation noted in Henry and Houston Counties. Eggs very heavy on silks of early corn in Houston, Henry, Lee and other counties. (Linder et al.). MISSISSIPPI - Increasing on young corn in Yazoo County. Feeding in whorls continues. Approximately 10 percent of plants infested. (Dinkins). MISSOURI - Larvae in whorls of corn in southeast. First to third instars feeding in whorls of about 2 percent of early corn (30-40 inches high) in southwest. (Houser, Keaster). ARIZONA - Continues heavy in safflower in Yuma and Maricopa Counties. Damaging numbers moving to adjacent cotton. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - NORTH DAKOTA - Adults and nymphs found in wheat near Hunter, Cass County; 5 per linear foot. (McBride). MINNESOTA - Very light in oats in southwest and south central districts; 7-9 per 100 sweeps. (Minn. Ins. Rpt.). WISCONSIN - Population increase continues; counts range from zero per 50 sweeps in Trempealeau County to 3 per sweep in Walworth County. Winged aphids more common in southeast, probably second migration into State. (Wis. Ins. Sur.).

POTATO LEAFHOPPER (Empoasca fabae) - MISSOURI - Ranged 10-20 per 10 sweeps in alfalfa in southwestern district. No damage visible in established stands, but stunting and heavy yellowing occurring in spring-seeded fields. (Houser). ILLINOIS - Adults in first-crop alfalfa 50-920 per 100 sweeps in northeast and 80-740 in central districts. No nymphs observed. (White). MICHIGAN - Adults 7.2 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7. (Dowdy). VIRGINIA - Nymphs on birdsfoot trefoil June 8; first observed this year. (Pienkowski). MARYLAND - First adults of season averaged 2 per 10 sweeps on alfalfa near Easton, Talbot County, June 7. First adults of season noted June 7 on snap beans near Preston, Caroline County. (U. Md., Ent., Dept.). DELAWARE - Present on snap beans in one area of New Castle County. (Burbutis, Davis). PENNSYLVANIA - Averaged 1 per sweep on potatoes and 1 per 10 sweeps on alfalfa in south central area. (Menusan).

POTATO PSYLLID (Paratrioza cockerelli) - UTAH - Averaged 3 per 50 sweeps on matrimony-vine at Hanksville, Garfield County, and 4 at Centerfield, Sanpete County. (Knowlton). WYOMING - Large numbers of adults present on matrimony-vine at Laramie, Albany County; 3-4 per 50 sweeps. (Marks). COLORADO - Adults and eggs heavy on matrimony-vine (Lycium spp.) in Weld County. (Urano, Hantsbarger).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MICHIGAN - Adults 4 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7. (Dowdy). WISCONSIN - Remains low in western counties; noticeable increase in southeastern counties where counts range up to 1 per sweep in many oat fields. (Wis. Ins. Sur.). MINNESOTA - Counts per 100 sweeps in alfalfa as follows: Southwest 13, south central 15. Counts higher in small grains: Southwest 90, south central 280; present in only few scattered fields in northwest. (Minn. Ins. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Increasing rapidly in alfalfa in Dona Ana County; ranges light to heavy. (Garcia). OKLAHOMA - Ranged 0-32 per 10 sweeps in alfalfa in Woods, Woodward, Major, Dewey and Logan Counties. (Okla. Coop. Sur.). MISSOURI - Counts in alfalfa in southwestern section averaged 10 per 10 sweeps. (Houser). ILLINOIS - Varied 0-50 per 100 sweeps in alfalfa in northeast and 0-20 in the central districts. (White). MICHIGAN - Single winged adult, first of season, taken in Lenawee County June 7. Identified for first time in State from Shiawassee County September 7, 1965. Subsequent surveys revealed light infestations in number of southern counties. (Newman). Averaged 0.2 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7. (Dowdy).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - ARKANSAS - Very little corn tall enough to attract moths for oviposition. Egg survey negative in one Madison County field. (Boyer). MISSOURI - "Pin-hole" damage on leaves of less than one percent of plants in early corn (30-40 inches high) in southwestern area. First report of larval activity in State this season. (Houser). NEBRASKA - Few moths taken at light traps in eastern area. About 7-10 days late this year. (Rhine). IOWA - Pupation 20 percent complete May 25 at Ankeny. (Iowa Ins. Inf., May 31). ILLINOIS - Percent emergence ranged from 100 in southwest district to zero in northeast. Moths more abundant than usual in alfalfa and alfalfa-grass mixtures in northeast with up to 40 per 100 sweeps in Grundy-Kendall County area. Tallest corn in area (about 4 percent) now 10-15 inches extended height. Moths present in alfalfa-grass mixtures as far north at State Route 173 in McHenry County. (White). MICHIGAN - First adults of season taken at blacklight traps in Lenawee, Branch, Berrien, Jackson, Livingston and Gratiot Counties. (Newman). OHIO - Males emerged at Wooster, Wayne County, June 5; males and females emerged by June 6. (Barry). Adults collected from blacklight traps in central and southern areas. (Rose). MARYLAND - First larvae of season noted June 7 in whorls of early field corn near Preston, Caroline County. (U. Md., Ent. Dept.). NEW JERSEY - Egg masses on sweet corn in Burlington County totaled 4 per 100 plants. Several adults collected in light trap near New Market. (Ins.-Dis. Newsltr.). NEW YORK - Development unusually retarded in Hudson Valley. Examination of corn stalks from 1965 season revealed 12 larvae and 16 pupae June 1 and 4 larvae and 11 pupae June 3. Three adults emerged June 4-6. (N. Y. Wkly. Rpt.). MASSACHUSETTS - Began laying eggs last week; egg masses easily found on bottom of lower leaves of 10-12 inch corn in Hampden County. Some will hatch this week. (Crop Pest Cont. Mess., June 13).

BLACK CUTWORM (Agrotis ipsilon) - DELAWARE - Larvae causing considerable injury to corn in Sussex County. (Burbutis, Davis). MARYLAND - Serious outbreak occurring in many corn fields regardless of land history over most of Eastern Shore. Several fields replanted. (U. Md., Ent. Dept.). MISSOURI - Causing light to heavy stand reduction in corn over State in isolated cases. Pupation underway in southern third of State. (Houser). CALIFORNIA - Heavy on 200 acres of field corn in Stockton, San Joaquin County. (Cal. Coop. Rpt.).

CUTWORMS - NEW YORK - Euxoa messoria common in fields and gardens in Hudson Valley area, causing superficial damage to sweet corn. (N. Y. Wkly. Rpt., June 6). KANSAS - Unspecified larvae damaged bases of corn plants up to 12 inches high in Lyons,

Coffey and Miami Counties. Some fields replanted. (Ins. Sur. Rpt., June 6). COLORADO - Agrotis orthogonia heavy on corn in field near Milliken, Weld County. Destroyed 2 earlier plantings; now damaging third planting. Control underway. (Hantsbarger).

STALK BORER (Papaipema nebris) - MISSOURI - Larvae heavier in northwest quadrant of State than in past several years. Larvae about one-third developed and infesting 0-30 percent of corn in marginal rows in some fields with weedy margins in Saline County. (Peters).

CORN ROOT WEBWORM (Crambus caliginosellus) - VIRGINIA - Caused moderate to severe damage to corn in numerous fields in Spotsylvania, Rockbridge, Warren, Culpeper, Augusta, Charles City, New Kent and Loudoun Counties. Some fields so severely damaged, replanting necessary. (Isakson).

SOD WEBWORMS (Crambus spp.) - MARYLAND - Heavy in 11 acres of young silage corn planted after sod near Lewistown, Frederick County. (U. Md., Ent. Dept.).

CORN ROOTWORMS (Diabrotica spp.) - MISSOURI - First instars collected June 7 in Atchison County; estimated 10 percent of eggs hatched. (Suttle, Musick). NEBRASKA - D. undecimpunctata howardi adults feeding and ovipositing on corn in eastern area. (Weekman). IOWA - D. undecimpunctata howardi adults in weeds near corn May 26; first adults at Ames May 24 on squash exposed to attract beetles. (Iowa Ins. Inf., May 31).

CORN FLEA BEETLE (Chaetocnema pulicaria) - MARYLAND - Adults abundant and causing conspicuous injury to young field corn in central sections of Allegany County. (U. Md., Ent. Dept.). DELAWARE - Remains common on much corn in New Castle County; causing noticeable injury. (Burbutis, Davis). NEW JERSEY - Found on sweet corn throughout State. (Ins.-Dis. Newsltr.). NEW YORK - Numbers declining; average per 100 plants 2 at Poughkeepsie and 4 at New Paltz. (N. Y. Wkly. Rpt., June 6).

FLEA BEETLES - NEW YORK - Heavy on unsprayed early sweet corn in Orange and Rockland Counties. (N. Y. Wkly. Rpt.). OHIO - Damage, probably by Chaetocnema spp., to young corn particularly common this year. Infestations on sweet and field corn continue; reported on corn in Lorain and Wyandot Counties. First appeared in Lorain County about May 24. (Limbird, Courtright).

WIREWORMS - MARYLAND - Heavy in 35 acres of young field corn in Stockton-Pocomoke area, Worcester County. (U. Md., Ent. Dept.). VIRGINIA - Melanotus communis damaging 2 to 3-inch corn at 2 locations in Floyd County. (Isakson, Talley). ALABAMA - Larvae of unspecified species very heavy locally on corn in Clarke County; 394 per stalk. Larvae more widespread in corn examined in Choctaw County. (Lemons, Bently).

CHINCH BUG (Blissus leucopterus) - OKLAHOMA - Heavy in sorghum in Cotton County. (Okla. Coop. Sur.).

THRIPS - MARYLAND - Continue to increase on young corn in all sections. (U. Md., Ent. Dept.).

LEAF MINER FLIES - MISSOURI - Agromyza parvicornis larvae 1-2 per plant in leaves of 2 percent of corn observed in southwest. (Houser). FLORIDA - Either Cerodontha dorsalis or Liriomyza sorosis uniformly infesting 35 acres of field corn in Hamilton County, (Henderson, May 25); 4-5 leaves per stalk usually infested, with 2-3 larvae per leaf. Det. by C. F. Stegmaier. (Fla. Coop. Sur.).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - NORTH DAKOTA - Trace adult numbers found in field margins of wheat and barley in Traill and Grand Forks Counties. (McBride). MINNESOTA - Counts per 100 sweeps in small grain as follows: Southwest 18, south central 15. (Minn. Ins. Rpt.). OHIO - Increased in small grains; 10 per sweep in Henry County. Probably M. avenae infesting wheat, rye and oats in Pickaway, Delaware and Union Counties. (Hamrick, Irvin, Wilson). Grain mostly too advanced for ground insecticide application. (Blair). Involving about 75 percent of plants in Delaware County wheat field. (Irvin). Very heavy flight in Wayne County night of June 7-8; taken in blacklight trap. (Rings, Nault).

SAY STINK BUG (Chlorochroa sayi) - COLORADO - Adults and nymphs damaging winter wheat in Prowers County; as high as 4 per plant. (Hantsbarger, Fitzsimmons). UTAH - Damaged small grains in Washington, Sanpete, Sevier, Juab, Wayne and Millard County areas. Flight into lights at Moab, Grand County, also reported. (Knowlton).

MEADOW SPITTLEBUG (Philaenus spumarius) - INDIANA - Adults numerous on wheat (up to 70 per sweep) in areas of southeast where wheat adjacent to clover and alfalfa. (White).

BROWN WHEAT MITE (Petrobia latens) - WYOMING - Counts somewhat reduced by rains in Goshen County wheat; 20-22 per linear foot. (Marks).

TURF, PASTURES, RANGELAND

GRASS BUGS - UTAH - Black species caused severe damage to 65,000 acres of planted wheatgrasses in Garfield and Kane Counties; Labops hesperius suspected most damaging species in higher mountain areas; other species probably causing damage in Bureau of Land Management and private planted grass areas of lower elevations. (June 1). Black species severely damaged planted crested wheatgrass and intermediate wheatgrass over more than 100,000 acres in State. Most severe damage occurred in Garfield, Kane, Iron and Washington Counties; damage less extensive in Box Elder, Kane, Juab, Piute and Sanpete Counties. (June 9). Black species severely discolored 90 acres of barley, 3 miles north of Fountain Green, Sanpete County. Crested wheatgrass in area also injured; 60 acres of planted grass pastures at Alton, Kane County, and fields and range for 10 miles south, badly discolored to tops, largely dry. This fifth year of severe damage to crested and intermediate wheatgrass in area of Alton and South to Johnson Canyon. (June 9). (Knowlton). Specimens from Garfield County determined as Labops hesperius by R. C. Froeschner. (PPC).

CHINCH BUG (Blissus leucopterus) - PENNSYLVANIA - Ranged 3-4 per square yard in turf in Butler County. (Adams). Light in turf in Delaware County. (Tetrault).

PAINTED LADY (Vanessa cardui) - COLORADO - Adult migratory flight noted May 1 in area between Greeley, Colorado, and Farmington, New Mexico. Butterflies first noted in small numbers in vicinity of Greeley and Platteville. Larger numbers observed farther south; particularly numerous in area around Pueblo and Walsenburg. All butterflies traveling in northeasterly direction; many noted flying in same direction at summit of Wolf Creek Pass, Mineral County, approximately 10,000 feet. Migration in progress in vicinity of Farmington, New Mexico, in late afternoon May 1; continued through May 5, but with diminishing numbers. Migration still in progress May 6 at Greeley, but numbers greatly diminished from those observed earlier. (Harmston). NEBRASKA - Larvae destroying thistles in numerous areas. (Rhine, Roselle). WYOMING - Larvae damaging Canada thistle, hollyhock and nettles in Fremont County area. (Robb). IDAHO - Larvae mostly in third stage and generally on thistles in Moscow area, Latah County. (Manis, Portman). OREGON - First-stage to full-grown larvae continue to appear in increasing numbers on thistle throughout western area. Reported invading greenhouse near Aurora, Clackamas County. Damaged foliage of young cherry trees near Amith, Yamhill County. Parasites and predators, however, taking heavy toll of larvae in most areas. (Roberts, Goeden). CALIFORNIA - Larvae medium on milk-thistle in Hanford, Kings County. (Cal. Coop. Rpt.).

WESTERN TUSSOCK MOTH (Hemerocampa vetusta) - NEVADA - Larvae spotted, light to heavy on bitterbrush (Purshia tridentata) south of Reno, Washoe County, and south and west of Carson City, Ormsby County. Larvae migrating from defoliated plants in many areas. (Bechtel, Cooney, Joost).

SAGEBRUSH DEFOLIATOR (Aroga websteri) - NEVADA - Heavy on sagebrush south of Battle Mountain, Lander County. Many moths present. (Ernist).

A PSYCHID MOTH (Apterona crenulella) - UTAH - Moderate on sagebrush and range plants in Provo-Santaquin area, Utah County; much more numerous at Richfield and elsewhere, largely on range in Sevier County. (Knowlton).

A BROMEGRASS SEED MIDGE (Stenodiplosis bromicola) - NEBRASKA - Averaged 56 per 100 sweeps on May 26 and 20 per 100 sweeps on June 3 in bromegrass field in Saunders County. (Neiman).

A SOD WEBWORM (Crambus sp.) - RHODE ISLAND - Heavy populations observed in turf in Kingston, Washington County. (Skogley, Kerr).

CLOVER MITE (Bryobia praetiosa) - IOWA - Heavy on lawns and outside walls of houses at Rock Rapids. (Iowa Ins. Inf., May 31).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - WASHINGTON - Early stage larvae abundant throughout alfalfa hay field at Pullman, Whitman County; widespread initial feeding injury. (Johansen, June 3). IDAHO - Small numbers of adults collected in 3 Bonner County alfalfa fields. This new county record. (Portman, O'Keeffe). OREGON - Adults and larvae general in alfalfa in New Pine Creek area, Lake County; 350-400 per 10 sweeps. (Larson). NEVADA - Varied 10-20 per sweep in few seed fields in Orovada, Humboldt County. (Lundahl). Averaged 2 per sweep in alfalfa hay south of Battle Mountain, Lander County. (Ernist). NEW MEXICO - Larvae range 12-100 per 25 sweeps in alfalfa near Isleta, Bernalillo County. (Heninger). Larvae heavy and causing considerable damage to alfalfa in Espanola area, Rio Arriba County; several growers cutting alfalfa early because of this pest. (Trujillo). UTAH - Damage increasing in uncut alfalfa in Wayne, Emery, Carbon, Juab, Garfield, Piute and Millard Counties. Much control on stubble after removal of first crop hay underway. (Knowlton). Damage at Escalante, Garfield County, and in many fields in Beaver-Milford area of Beaver County. (Knowlton, June 10). WYOMING - Adults 0-11 and larvae 0-8 per 10 sweeps in Goshen County alfalfa. Probability of extensive damage in Goshen County area appears slight at this time. (Marks). NORTH DAKOTA - Adults up to 10 per 100 sweeps (average less than 1) in first-growth alfalfa in Bowman, Dunn, Golden Valley and Slope Counties. Highest in soil bank fields with heavy stands of alfalfa and in fields not cut for hay for several years. No larvae or foliar feeding evident. Surveys negative in 7 other southwestern counties. Dunn County new county record. (Brandvik, Kaatz). ALABAMA - Heavy damage on alfalfa in Limestone County. (Agee).

ARKANSAS - Surveys in Madison and Crawford Counties negative. (Boyer). Single adult found in alfalfa in Mississippi County, where counts have been heavy. Apparently entered aestivation. (Ark. Ins. Sur.). MISSOURI - Adults 3 per 10 sweeps in second cutting alfalfa in Pemiscot County. Early instars swept from alfalfa in area averaged 1 per 10 sweeps in one field. (Jones). ILLINOIS - Larvae found in 12 new counties as follows: Adams, Hancock, McDonough, Tazewell, De Witt, Logan, McLean, Woodford, Marshall, La Salle, Grundy and Kane. None found in Warren, Peoria, Schuyler, Mason (Randell, Kuhlman), Putnam, Kendal, Du Page or McHenry Counties. (White, Randell, Kuhlman). Ranged 0-15 (average 4.1) per 100 sweeps in central and 0-2 (average 0.13) in northeast districts. (White). Larvae still present in southern area (up to 1 per sweep) and adults plentiful. Adult collected in Coles County June 9 laid 8 eggs by following morning. (Armburst). INDIANA - Damaging second-growth alfalfa throughout southern quarter of State. Larvae 2

per sweep on alfalfa 2-5 inches high. (White). New County records: Benton, Adams, Jay, Madison and Delaware. (Huber, Matthew). MICHIGAN - Single adult collected May 31 from Livingston County alfalfa field. Det. R. E. Warner. This new State record. (Dowdy). OHIO - Survey completed; collections indicate species present statewide. Adults and larvae found in Lucas, Fulton and Williams Counties. Larvae per 50 sweeps: Lucas 2, Fulton 12, and Williams 20; figures for individual fields only; do not necessarily represent populations throughout counties. Relatively high population observed in Williams County indicates potential severe crop damage within 2 years throughout State. (Rose). Low in Lorain County; damage light. (Limbird). VIRGINIA - Adults 30-40 and larvae 70-120 per 100 sweeps in alfalfa in Nottoway County; slight damage noted. (Isakson). MARYLAND - New generation weevils very abundant in uncut alfalfa in Allegany County. (U. Md., Ent. Dept.). PENNSYLVANIA - Not as serious as in 1964 and 1965 in south central area. Alfalfa stubble sprayed in most instances. (Menusan). New adults and all other stages present in Elk County; eggs found in red clover stems. (Adams). Heavy in southwest; late first-cutting alfalfa required second spray. (Udine). NEW YORK - Activity increased markedly in Dutchess County last 7-10 days. (N. Y. Wkly. Rpt., June 6). CONNECTICUT - Larval feeding evident on 90 percent of tops of uncut alfalfa. Much of crop cut before significant damage occurred. (Savos, June 8). RHODE ISLAND - Approximately 250 larvae taken in 25 sweeps in unsprayed field in Kingston, Washington County. Up to 60 percent feeding noted in fields in Kingston and Johnston. Some cutting underway. (Mathewson, Kerr, King).

MASSACHUSETTS - Activity increased during week ending June 3. Adults 17-74 and larvae 2-252 per 100 sweeps in 6 Berkshire County fields. Adults 0-10 and larvae 128-1,924 per 100 sweeps in 4 Hampshire County fields. Damage light to moderate in Berkshire County, moderate to heavy in Hampshire County. (Miller, June 3). VERMONT - Present in greater numbers than previous years. Infestations of concern in Windham, Bennington, Rutland, and Addison Counties. (MacCollom, June 6). NEW HAMPSHIRE - Larvae infested one percent of alfalfa terminals at Concord and 5 percent in Exeter June 1. First economic infestations found June 3; 6 adults and 175 larvae per 10 sweeps, 75 percent of terminals infested. (Hollis). Several other fields in Amherst, Hollis and Milford with 15-75 percent of terminals infested. Highest counts in each area on stands established several years. (Sutherland).

CLOVER LEAF WEEVIL (Hypera punctata) - WISCONSIN - Larvae, most nearly full grown, common in most alfalfa checked in southeastern counties. (Wis. Ins. Sur.).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - WISCONSIN - Adults common in most alfalfa checked in southeastern counties. (Wis. Ins. Sur.).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - CALIFORNIA - Medium in alfalfa in Saugus, Los Angeles County. (Cal. Coop. Rpt.).

CLOVER SEED WEEVIL (Miccotrogus picirostris) - IDAHO - Adults 0.5-5 per sweep in individual Boundary County white clover fields. Clover just blooming; major movement to flower heads not yet underway. (Studer, Portman, O'Keeffe).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - MINNESOTA - Severely damaged new seeding of sweetclover in Polk County. Clover in 3-leaf stage; most leaves destroyed. Established sweetclover stands show some feeding signs but growing extremely well. New seedings should be checked. (Minn. Ins. Rpt.). NORTH DAKOTA - Up to 50 adults (average 10) per 100 sweeps in some sweetclover fields in southern area. (Brandvik, Kaatz). UTAH - Damage conspicuous on sweetclover foliage at Caineville, Hanksville, Wales, Sterling and Ephraim. (Knowlton). CALIFORNIA - Light on melilotus in Grass Valley, Nevada County. This first record for county. (Cal. Coop. Rpt.).

CLOVER ROOT CURCULIO (Sitona hispidula) - WISCONSIN - Adults common in most alfalfa checked in southeastern counties. (Wis. Ins. Sur.).

A WEEVIL (Sitona scissifrons) - NORTH DAKOTA - Evident in alfalfa in southern third of State; up to 50 per 100 sweeps (average 2) in all fields. (Brandvik).

ASH-GRAY BLISTER BEETLE (Epicauta fabricii) - NORTH DAKOTA - Adults 1 per 100 sweeps in alfalfa in southwest. Severe defoliation evident on few individual plants. (Brandvik, Kaatz).

CLOVER ROOT BORER (Hylastinus obscurus) - ILLINOIS - Adult numbers very low in several alfalfa-clover mixtures in northeast district. (White).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - NORTH DAKOTA - Trace adult numbers found in alfalfa in Adams and Golden Valley Counties. These new county records. (Brandvik, Kaatz).

VARIEGATED CUTWORM (Peridroma saucia) - MISSOURI - Pupation complete in "delta" area of southeast. Only occasional specimen found in alfalfa in southwestern district. Heavy (10-20 per square foot) under alfalfa trash in some fields in Sedalia area, Pettis County; destroying all new growth in fields. Pupation in central area well underway. Parasites and disease destroying many larvae in central area. (Houser).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Larvae continue to increase in alfalfa in Maricopa, Yuma and Pinal Counties; 110 per 100 sweeps. Light in Cochise and Graham Counties. (Ariz. Coop. Sur.). NEW MEXICO - Larvae 3-8 per 25 sweeps in alfalfa in Albuquerque, Bernalillo County, (Heninger); 2-4 per 25 sweeps in Artesia area, Eddy County, (Mathews).

GREEN CLOVERWORM (Plathypena scabra) - ILLINOIS - Larvae 0-10 per 100 sweeps in alfalfa in northeast and 0-20 in central districts. (White). MINNESOTA - Larvae appearing in alfalfa; counts very low. (Minn. Ins. Rpt.).

ALFALFA LOOPER (Autographa californica) - UTAH - Moderately numerous in alfalfa in Sevier, Piute, Wayne, Emery and Carbon Counties. Numerous in alfalfa at Caineville and Hanksville. (Knowlton).

PEA APHID (Acyrthosiphon pisum) - RHODE ISLAND - Increasing slowly in alfalfa at Kingston, Washington County. (Skogley, Kerr). VIRGINIA - Light on alfalfa in Nottoway County; 20-30 per 10 sweeps. (Isakson). ARKANSAS - Continues low in northwest area alfalfa. Medium to heavy in vetch and alfalfa in upper Arkansas River Valley. (Boyer). OHIO - Generally high on alfalfa in central and northwestern areas; counts per sweep, 72 in Union County, 66 in Fulton County, 210 in Williams County and 60 in Franklin County. Usual predator numbers and parasitism lagging far behind A. pisum buildup. (Rose). MICHIGAN - Adults and nymphs 700 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7; parasitized aphids 3. Rapid buildup continues; 10 percent winged adults; migration to other hosts underway. (Dowdy). INDIANA - Ranged 27-78 per sweep on first-growth alfalfa in northern third of State. (Huber). ILLINOIS - Increasing but should not cause problems in first-crop alfalfa; 130-2,000 (average 1,206) per 100 sweeps in alfalfa in northeast district and 800-2,200 (average 1,225) in central district. (White). WISCONSIN - Very high, 30-100 per sweep, in alfalfa in southeastern counties. High percentage of parasitism, mummies as high as 15 per plant, but parasites not unusually prevalent; lady beetles about 2 per 25 sweeps in most fields. A. pisum populations lower in Green and Rock Counties and 6-30 per sweep in Sauk, La Crosse and Trempealeau Counties. Parasites more numerous in these counties. (Wis. Ins. Sur.). MINNESOTA - Counts per 100 sweeps on alfalfa by district as follows: Southwest 466, south central 771, west central 80, northwest 100. Predators, especially lady beetles and damsel bugs, very numerous in southwest and south central districts. NORTH DAKOTA - Low in most southern areas; 10 per 100 sweeps in southern third of State. Counts of 300 per 100 sweeps found in alfalfa in several south central counties. (Brandvik, Kaatz). WYOMING - Adults and nymphs 35-40 per 10 sweeps in Goshen County alfalfa. (Marks). NEVADA - Ranged 5-10 per sweep in most alfalfa seed fields in Orovada, Humboldt County, (Lundahl); 18 per sweep in alfalfa hay south of Battle Mountain, Lander County, (Ernist).

TARNISHED PLANT BUG (Lygus lineolaris) - NORTH DAKOTA - Adults 10 per 100 sweeps in alfalfa in southern third of State. (Brandvik, Kaatz). ILLINOIS - Adults in first-crop alfalfa varied 10-40 per 100 sweeps in northeast and 10-60 in the central district. Nymphs not found in northeast; 0-60 in central district. (White). MICHIGAN - Averaged 4 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7. (Dowdy). OHIO - Adult numbers declined on alfalfa in central and northwest areas; however, nymphs increasing. Adults 1-7 and nymphs 9-30 per 10 sweeps. (Rose). ARKANSAS - Decreased in alfalfa in northwest and west central areas; 25-50 per 100 sweeps. (Boyer).

LYGUS BUGS (Lygus spp.) - WYOMING - Adults and nymphs 38-62 per 10 sweeps in Goshen County alfalfa. (Marks). NEVADA - Mostly nymphs, 50 plus per sweep in alfalfa seed fields south of Reno, Washoe County, (Yamamoto); 10-20 per sweep in several alfalfa seed fields in Orovada, Humboldt County, (Lundahl). Averaged 6 per sweep in alfalfa hay south of Battle Mountain, Lander County. (Ernist). NEW MEXICO - Nymphs and adults 15-80 per 25 sweeps in most alfalfa in Albuquerque area, Bernalillo County; well over 100 per 25 sweeps in one field. (Heninger).

PLANT BUGS - MICHIGAN - Nymphs 14 and adults 0.6 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7. (Dowdy). OHIO - Adelphocoris rapidus and A. lineolatus adults and nymphs present on alfalfa in northwest and probably other regions of State. Populations generally low in Fulton and Williams Counties. Highest numbers of A. rapidus nymphs in field in Williams County 2 per sweep. (Rose.) ILLINOIS - Adults per 100 sweeps in alfalfa as follows: Northeast - A. lineolatus 0-20, A. rapidus 0-40; central - A. lineolatus 10-20, A. rapidus 10-70. Nymphal counts as follows: A. lineolatus 10-80 in northeast, 20-360 in central area; A. rapidus 0-40 in northeast, 0-70 in central area. (White). MINNESOTA - Eggs of Adelphocoris spp. continue to hatch in southern half of State; nymphs 6-34 per 100 sweeps. (Minn. Ins. Rpt.).

MEADOW SPITTLEBUG (Philaenus spumarius) - MARYLAND - New adults very heavy in red clover in Allegany and Washington Counties. (U. Md., Ent. Dept.). OHIO - Adults appearing on legume forage statewide. Numbers small on alfalfa in northwest and central areas, but adults abundant in Athens County. (Ellis). Nymphs 7-40 per 10 sweeps in fields sampled in central and northwest counties. (Rose). MICHIGAN - Nymphs 6.4 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7. (Dowdy). INDIANA - Adults common in alfalfa in southern two-thirds of State. Spittle masses 1-4 per 10 stems on alfalfa and red clover in northern third. (Huber, White). ILLINOIS - Varied 0-20 per 100 sweeps in first crop alfalfa in northeast and 3-40 in central districts. Nymphs still present in both districts. (White). IOWA - Averaged 1 per 15 stems in Johnson County; half-grown in Marion County. (Iowa Ins. Inf., June 6).

WESTERN BROWN STINK BUG (Euschistus impictiventris) - ARIZONA - Moderate on seed alfalfa in most areas of Yuma County. (Ariz. Coop. Sur.).

A LEAFHOPPER - ILLINOIS - Nymphs 0-2,500 per 100 sweeps in few alfalfa fields in Kendall County. (White).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - DELAWARE - First adults of season on soybeans, with only light injury in southern New Castle County. (Burbutis, Davis). MARYLAND - Adults caused heavy foliage injury to 10 acres of young soybeans near Easton, Talbot County. (U. Md., Ent. Dept.). TENNESSEE - Damage light to moderate on foliage of soybeans. (Johnson, June 6).

MEXICAN BEAN BEETLE (Epilachna varivestis) - DELAWARE - First adults of season on soybeans causing light injury in Sussex County. (Burbutis, Davis). SOUTH CAROLINA - Remains numerous on soybeans in coastal section. (Thomas, June 7).

GREEN CLOVERWORM (Plathypena scabra) - MISSISSIPPI - Light on soybeans in Washington and Leflore Counties. (Dinkins).

PAINTED LADY (Vanessa cardui) - NEBRASKA - Larvae moved into soybeans when thistles sprayed; causing some damage in field margins. (Roselle).

THRIPS - DELAWARE - Common on soybeans in some areas of New Castle County; 3 per leaf. (Burbutis, Davis). MARYLAND - Building up generally on young soybeans on Eastern Shore. Expected to become problem during hot dry weather. (U. Md., Ent. Dept.).

PEANUTS

THRIPS - GEORGIA - Light to heavy across peanut belt. (French).

COTTON

BOLL WEEVIL (Anthonomus grandis) - SOUTH CAROLINA - Field populations very high in Florence area. Total of 72 adults taken on 9 groups of 10 potted plants. None found in treated plots; ranged 74-550 per acre in untreated plots. (Taft et al., June 8). TENNESSEE - Weevils feeding on terminal buds in many fields in southern tier of counties. Not all fields infested. More weevils found in those fields heavily infested last season. Further emergence expected as weather becomes warmer. (Locke). GEORGIA - Heavy on cotton in Tift County (Mitchell); up to 6 percent punctured squares, many weevils in fields in Screven County (Hodges); very light emergence in Putnam County (Beckham). ALABAMA - Overwintered weevils noted in 10 cotton fields in Houston and Henry Counties June 2-4. Square infestation 3-28 percent; higher in fields where few squares present. Very few 2 to 4-day-old larvae found in 2 early fields, first light hatch expected June 20-24. Egg laying occurring in fields where squares old enough; first-generation adults will appear in staggered relationship to these developing fields June 24-July 4. Cotton later than normal in area; first appearance of first generation will be late. Live weevils 1,500-2,200 per acre in Limestone County field; infestations very high and coincide with hibernation survey in March. (Sanford, Guthrie). Weevils plentiful in Lee County. (Teague et al.). Percent square infestation in few Montgomery County fields: 5, 2, 6, 3 and 10. (Wilder). None found in 2 fields in Calhoun County. (Johnson et al.). MISSISSIPPI - Individual weevils found in 2 experimental plots in delta area. (Pfrimmer et al., June 9). LOUISIANA - None found in 16 fields checked in Madison Parish; 25 recovered from 150 trap plants at 10 different locations. (Cleveland et al., June 9). TEXAS - Two overwintered weevils collected on flight screens in McLennan and Falls County area. Overwintered weevils found in 4 of 42 treated fields and in 3 of 14 untreated fields. Averaged 6 per acre in 42 treated fields (maximum 83) and 18 per acre in 14 untreated fields (maximum 83). Overall average 9. This compares with 26 per acre during corresponding week last year. (Cowan et al.).

BOLLWORMS (Heliothis spp.) - SOUTH CAROLINA - Total of 116 H. zea moths taken in light trap at Florence; no H. virescens collected. (Taft et al., June 8). ALABAMA - Eggs on cotton in southeast section 3-25 per 100 terminals and small larvae 1-5 per 100 terminals, indicating survival rate low due to predators and parasites. Larvae heavy and feeding on leaves of cotton in 1 large field in Lee County. Several adults of H. virescens observed depositing eggs on cotton in Henry and Houston Counties. (McQueen). Counts of 2, 3 and 5 per 100 terminals in fields in Montgomery County. (Wilder). None found in 2 fields in Calhoun County. (Johnson). LOUISIANA - Eggs appearing in most early planted cotton in Madison Parish. Eggs from one field examined microscopically and determined as follows: H. virescens 46, H. zea 9, Trichoplusia ni 2. (Cleveland et al., June 9). TEXAS - Larvae previously collected from hosts other than cotton determined as 55 H. zea. Total to date from all hosts 212 H. zea; larvae previously collected on cotton also H. zea. Total of 6 eggs collected in 4 fields and 13 larvae in 7 fields of cotton. (Cowan et al.). ARIZONA - H. zea light in cotton in Yuma, Maricopa and Pinal Counties. Moderate infestations found in fields adjacent to safflower. (Ariz. Coop. Sur.).

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - TENNESSEE - Larvae present in many fields and causing isolated damage to terminal buds in western area. Controls not justified. (Locke).

BEET ARMYWORM (Spodoptera exigua) - CALIFORNIA - Medium on cotton in Blythe, Riverside County. (Cal. Coop. Rpt.).

CELERY LEAF TIER (Udea rubigalis) - CALIFORNIA - Medium on cotton in Blythe, Riverside County. (Cal. Coop. Rpt.).

APHIDS - TENNESSEE - Increasing slightly but control not needed. Present hot weather should reduce infestations. (Locke). GEORGIA - Very light on cotton in Screven County. (Hodges). MISSISSIPPI - Few found in delta county fields; not damaging. (Pfrimmer et al., June 9). MISSOURI - Light in cotton in "delta" area of southeast. (Jones, Harrendorf, Keaster). TEXAS - Aphis gossypii light in 32, medium in 2, and absent in 11 of 45 fields in Falls and McLennan Counties. (Cowan et al.).

PLANT BUGS - MISSISSIPPI - Psallus seriatus very light in Sharkey, Itawamba, and Chickasaw Counties; heavy in Yazoo County. Lygus lineolaris heavy on composites surrounding cotton fields in Chickasaw and Itawamba Counties. (Dinkins). L. lineolaris found in several early delta county fields; numerous in one field. (Pfrimmer et al., June 9). LOUISIANA - In 41 cotton fields checked in Madison Parish, Lygus lineolaris ranged 0-20 (average 3.9) per field in 30 fields; Psallus seriatus ranged 0-2 (average 0.27). (Cleveland et al., June 9). TEXAS - P. seriatus continued to increase on cotton in Falls and McLennan Counties; however, increase due primarily to emergence of nymphs in cotton rather than movement of adults from host plants to cotton. In 42 treated fields, averaged 5 per 100 terminals (maximum 13.8); in 14 untreated fields, averaged 8.9 per 100 terminals (maximum 15.5). (Cowan et al.).

THRIPS - TENNESSEE - These and flea beetles continue to cause light to rather heavy damage to slow growing cotton in western area. Very little control applied, even in heavier infestations. These fields quite evident over area. (Locke). GEORGIA - Moderate to heavy on cotton in Spalding and Putnam Counties. (French). ALABAMA - Heavy in few late fields in Lee, Chambers, Madison, St. Clair and some other northern counties. (Jackson et al.). MISSISSIPPI - Populations very high in most cotton in delta counties; 10-20 per plant not unusual in experimental plots. Cotton not protected very ragged. Many plants in check plots with no true leaves; cotton in systemic plots in 4 to 6-leaf stage. Counts in experimental plots indicate movement from unprotected cotton onto plants which have previous protection. (Pfrimmer et al., June 9). LOUISIANA - Continue to damage young cotton in Madison Parish. Counts 0.12-2.4 per plant in 15 untreated fields (average 0.63). Ranged 0.02-3.75 (average 1.44) per plant in 48 seed treated fields. (Cleveland et al., June 9). TEXAS - Heavy in 3, medium in 1 and light in 8 of 12 untreated fields in Falls and McLennan Counties. None found in 9 and light in 24 of 33 treated fields. (Cowan et al.). OKLAHOMA - Frankliniella spp. ranged 265-305 per 20 cotton plants in Jackson County. (Okla. Coop. Sur.). ARKANSAS - Thrips heavier than normal in most areas. (Ark. Ins. Sur.). MISSOURI - Counts on cotton in southeast variable. Economic populations occurring in some fields, but generally light over area. (Jones, Harrendorf, Keaster). CALIFORNIA - Frankliniella occidentalis medium on cotton in Firebaugh, Fresno County. (Cal. Coop. Rpt.).

SPIDER MITES - GEORGIA - Light on cotton in Early County (French); very light in Screven County. (Hodges).

TOBACCO

BUDWORMS (Heliothis spp.) - NORTH CAROLINA - Causing considerable damage to young tobacco. (Scott et al., June 8). SOUTH CAROLINA - General in fields in tobacco area. (Nettles et al., June 7). GEORGIA - Light to heavy across tobacco belt. (French).

HORNWORMS (Protoparce spp.) - GEORGIA - Very light on tobacco in Cook and Lowndes Counties. (Thompson).

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Larvae moderate to severe on flue-cured tobacco at Cross City, Dixie County; Jasper, Hamilton County; Mayo, Lafayette County. (Strayer et al.). Moderate on shade-grown tobacco at Quincy, Gadsden County. (Tappan).

SUGAR BEETS

BEET WEBWORM (Loxostege sticticalis) - COLORADO - Adults numerous in sugar beets in all areas of Larimer and Weld Counties. Trace numbers of eggs being deposited; one egg mass per 20 plants. Few larvae observed. (Jenkins).

GARDEN WEBWORM (Loxostege similalis) - WASHINGTON - First eggs, probably this species, on sugar beets in Toppenish area, Yakima County; adults present for some time. (Landis).

DIAMONDBACK MOTH (Plutella maculipennis) - CALIFORNIA - Infesting sugar beets in Fresno County. Apparently more prevalent than past years. (Cal. Coop. Rpt.).

A CUTWORM - WASHINGTON - Undetermined species damaging sugar beets in Yakima Valley. (Menke).

WIREWORMS - NORTH DAKOTA - Damaging sugar beets near Kindred, Cass County; 2 per square foot. (McBride).

SAY STINK BUG (Chlorochroa sayi) - UTAH - Damaging sugar beet seed crop in St. George-Washington area, Washington County. (Knowlton, Huber).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - COLORADO - Adults decreased in bait traps; in 6 days ending June 6, averaged 0.25 per trap per day. (Gaskill). Trace numbers of adults active in sugar beets in Larimer and Weld Counties; 1 per 100 plants. Egg masses 0-9 per 10 plants (average 2). (Jenkins). NORTH DAKOTA - Pupating in Pembina County. (Dogger).

SPINACH LEAF MINER (Pegomya hyoscyami) - COLORADO - Eggs very common on leaves of sugar beets in Larimer and Weld Counties; some leaf damage by observed. (Jenkins).

SEED-CORN MAGGOT (Hylemya platura) - WASHINGTON - This species and other files infested with Entomophthora muscae (a fungus) on sugar beets in Yakima Valley. (Landis, Tamaki).

AN EPHYDRID FLY (Psilopa leucostoma) - Eggs of this species now outnumber those of Pegomya hyoscyami on sugar beets at Toppenish, Yakima County, and many have hatched. (Landis, June 3).

MISCELLANEOUS FIELD CROPS

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - WASHINGTON - Control required on some spearmint and peppermint fields in Yakima County (Menke); infesting hops and migrating to sugar beets earlier than usual in Toppenish area, Yakima County. (Landis).

A CUTWORM - WASHINGTON - Undetermined species damaging spearmint and peppermint in Yakima Valley. (Menke).

LYGUS BUGS (Lygus spp.) - ARIZONA - Large populations noted in safflower fields in Maricopa and Yuma Counties; 300 per 100 sweeps. (Ariz. Coop. Sur.).

WESTERN BROWN STINK BUG (Euschistus impictiventris) - ARIZONA - Moderate on safflower in most areas of Yuma County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - NEW HAMPSHIRE - First adults found on potato at Durham. (Sutherland, May 29). MASSACHUSETTS - Now laying eggs on potato in Connecticut Valley. (Crop Pest Cont. Mess., June 6). MARYLAND - Larvae very destructive to unprotected potatoes and tomatoes in Caroline and Dorcester Counties. (U. Md., Ent. Dept.). INDIANA - Heavy on potatoes in one area of Ohio County. (White). COLORADO - Larvae active on nightshade. Egg masses increased. (Jenkins).

POTATO FLEA BEETLE (Epitrix cucumeris) - NEW HAMPSHIRE - Adults feeding on potatoes at Durham. (Sutherland, May 29). MARYLAND - Heavy injury noticed on potatoes in Cumberland area. (U. Md., Ent. Dept.).

FLEA BEETLES - VERMONT - Injury noticeable on tomatoes. (MacCollom). MASSACHUSETTS - Attacking newly set tomatoes and peppers. (Crop Pest Cont. Mess., June 6). NEW YORK - Damaging tomato and potato plantings in Orange and Rockland Counties; serious on some tomatoes in Orange, Genesee and Niagara Counties. (N. Y. Wkly. Rpt., June 6).

EUROPEAN CORN BORER (Ostrinia nubilalis) - MARYLAND - First larval entries of season found June 8 on potatoes at Cambridge, Dorchester County. (U. Md., Ent. Dept.).

TOMATO FRUITWORM (Heliothis zea) - GEORGIA - Small larvae numerous in first tomato fruit set in Spalding County, parasites present. (Dupree).

POTATO APHID (Macrosiphum euphorbiae) - PENNSYLVANIA - Present on third and fourth terminals of tomato plants in south central area; parasites and predators noted. (Menusan). NEW JERSEY - Abundant on tomatoes from Warren County south. (Ins.-Dis. Newsltr.). DELAWARE - Appearing on potatoes and tomatoes in many areas. (Burbutis, Davis). MARYLAND - Light but not expected to build up on potatoes and tomatoes on Eastern Shore. (U. Md., Ent. Dept.).

GREEN PEACH APHID (Myzus persicae) - DELAWARE - Common on potatoes in New Castle County. (Burbutis, Davis). NEW JERSEY - Appearing on peppers, tomatoes and potatoes at various locations throughout State. (Ins.-Dis. Newsltr.).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Numerous on tomatoes and potatoes in many areas. (Burbutis, Davis). MARYLAND - Adults common on potatoes in bloom in Allegany and Dorchester Counties. (U. Md., Ent. Dept.).

SEED-CORN MAGGOT (Hylemya platura) - WASHINGTON - This and other flies infested with Entomophthora muscae on potatoes in Yakima Valley. (Landis, Tamaki).

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - PENNSYLVANIA - Medium to heavy on beans in Berks County. (Tetrault). DELAWARE - Adults on early snap beans in New Castle and Sussex Counties; injury light. (Burbutis, Davis). MARYLAND - Adults evident on snap beans near Preston, Caroline County. (U. Md., Ent. Dept.).

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) - IDAHO - Third-stage larvae scattered throughout pea field at Genesee, Latah County. Damage from these larvae as well as presence of other pests indicates immediate control needed. (O'Keeffe).

PEA APHID (Acyrthosiphon pisum) - WISCONSIN - Unusually low in early peas, less than 1 per 10 sweeps in Columbia, Sauk and Trempealeau Counties; 3 per 10 sweeps in Walworth and Dane Counties. Apparently increasing in midseason peas in Dane County, 2 per 7 feet of row in 2-inch peas. (Wis. Ins. Sur.). MINNESOTA - Ranged 30-50 per 100 sweeps in few fields of canning peas in Brown County. (Minn. Ins. Rpt.).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Numerous on peas in many areas. (Burbutis, Davis).

COLE CROPS

DIAMONDBACK MOTH (Plutella maculipennis) - CALIFORNIA - Causing severe damage to cole crops in Salinas, Monterey County; apparently more prevalent than past years. (Cal. Coop. Rpt.).

IMPORTED CABBAGEWORM (Pieris rapae) - MASSACHUSETTS - Adults in most newly set cabbage fields; laying eggs. (Crop Pest Cont. Mess., June 6).

FLEA BEETLES - VERMONT - Injury noticeable on crucifers. (MacCollom, June 6). NEW YORK - Serious in some cabbage fields in Orleans, Genesee and Niagara Counties; damaging broccoli plantings in Rockland and Orange Counties. (N. Y. Wkly. Rpt., June 6). NEW JERSEY - Heavy populations injuring radishes and turnips near Delphia. (Ins.-Dis. Newsltr.).

CABBAGE MAGGOT (Hylemya brassicae) - MASSACHUSETTS - Present in larger than usual numbers in many areas; cool weather earlier in season retarded plant growth and delayed adult activity. Egg masses still being deposited. (Crop Pest Cont. Mess., June 13). NEW YORK - Infestations heavier than in past years; adults still ovipositing. (N. Y. Wkly. Rpt., June 6).

CUCURBITS

STRIPED CUCUMBER BEETLE (Acalymma vittatum) - MASSACHUSETTS - Continues very active on newly emerged cucurbits. (Crop Pest Cont. Mess., June 13). DELAWARE - Adults abundant on cucurbits, causing considerable injury in many Sussex County fields. (Burbutis, Davis). MARYLAND - Adults abundant and above normal on cantaloups and cucumbers in Wicomico County. (U. Md., Ent. Dept.).

SPRINGTAILS - MASSACHUSETTS - Extremely abundant and damaging newly emerging cucumbers, squash and other plants. (Crop Pest Cont. Mess., June 6).

GENERAL VEGETABLES

ASPARAGUS BEETLES (Crioceris spp.) - DELAWARE - C. asparagi larvae and eggs abundant on young asparagus in New Castle County. (Burbutis, Davis). UTAH - C. duodecimpunctata adults numerous in Spring Glenn-Helper area, Carbon County. (Knowlton).

WESTERN BLACK FLEA BEETLE (Phyllotreta pusilla) - IDAHO - Numerous on radish in Parma area, Canyon County; 2-4 per plant noted in small planting. (Scott).

BLACK CUTWORM (Agrotis ipsilon) - OREGON - Infesting commercial table beets in Lane County. Controls necessary. (Bigelow).

CABBAGE MAGGOT (Hylemya brassicae) - IDAHO - Damaging small commercial radish planting in Parma area, Canyon County; 20-30 percent of radishes tunnelled. (Scott).

SPINACH LEAF MINER (Pegomya hyoscyami) - MASSACHUSETTS - Laying eggs on beets and spinach in some areas. Extremely high populations apparently present, based on numbers of eggs and percent of plants with eggs. (Crop Pest Cont. Mess., June 6).

BULB MITE (Rhizoglyphus echinopus) - IDAHO - Possibly this species, damaging seed onions in southwest area. More prevalent on bulbs which went into storage in poor condition in fall of 1965. (Scott).

DECIDUOUS FRUITS AND NUTS

BLACK CHERRY APHID (Myzus cerasi) - PENNSYLVANIA - Infesting 50-60 percent of leaves on sour cherries in Venango County. (Adams). OHIO - Moderate in unsprayed sweet cherry tree in Franklin County. Some leaf distortion observed. (Rose). WISCONSIN - Colonies numerous on sour cherry leaves in Dane and Walworth Counties. Some leaf distortion occurring. Winged specimens common as crowding increases. (Wis. Ins. Sur.).

GREEN PEACH APHID (Myzus persicae) - NEW MEXICO - Severely curling leaves of peach trees in Socorro and southern Bernalillo Counties. (Heninger). Damage severe in many peach orchards as first leaves formed. Where not adequately controlled, foliage unable to mature properly. (Trujillo). NEVADA - Heavy on peach and plum in Churchill, Lyon, Pershing, Ormsby and southern Washoe Counties. Leaf curl heavy. (Coop. Rpt.). PENNSYLVANIA - Heavy on peaches in Lehigh County. (Tetrault).

ROSY APPLE APHID (Dysaphis plantaginea) - OHIO - Problem on apple foliage in two locations in Wayne County and one in Columbiana County. (Forsythe). NEW YORK - More common than usual on nursery stock at Geneva, Ontario County. (N.Y. Wkly. Rpt., June 6). CONNECTICUT - Still very abundant in New Haven but generally spotty or absent in other orchards. (Savos, June 8).

WOOLLY APPLE APHID (Eriosoma lanigerum) - NEW MEXICO - Apparent buildup, especially in untreated orchards, noted in Espanola-Velarde area, Rio Arriba County. (Nielsen). Light on apple trees in Belen-Los Lunas area, Valencia County. (Heninger).

CODLING MOTH (Carpocapsa pomonella) - MASSACHUSETTS - Eggs found June 12 in unsprayed orchard at Amherst; larval entry observed. (Crop. Pest Cont., Mess.) OHIO - Adults emerged; pupation past peak at Wooster, Wayne County. Moths numerous in Columbiana County. (Forsythe). INDIANA - Adults continue in bait traps; first brood will be extended. Several week-old entries found in Vincennes area. (Cleveland, June 6). MICHIGAN - Five moths emerged in Kent County cage June 7; 6 emerged June 8. (Gilmore). WISCONSIN - Adults appearing in Dane County, 1 caught June 3; 2 on June 4. (Wis. Ins. Sur.). MISSOURI - New entries 1-2 days old in St. Joseph area, Buchanan County, June 2; first report of actual entries this year. (Wkly. Rpt. Fr. Grs.). UTAH - Flying at Logan, Cache County, May 31 to June 2. (Waldron, Knowlton).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - PENNSYLVANIA - Caused spotted terminal injury to peach in south central area. (Menusan). NEW JERSEY - Larvae injuring terminals and fruit in poorly sprayed peach block in Warren County. (Ins.-Dis. Newsltr.).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - CONNECTICUT - Very abundant on unsprayed trees throughout State. Larvae attacking fruit in New Haven. Commercial control very good where prebloom sprays applied. (Savos, June 8). NEW MEXICO - Probably this species, light to moderately heavy and damaging apple foliage. (Trujillo). Most pupated, very little larval activity noted. (Nielsen).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - INDIANA - First-brood adults still taken in bait traps in Vincennes area; some fruit feeding and leaf injury found. (Cleveland, June 6). NEW YORK - Egg masses found in 2 Niagara County locations. (N.Y. Wkly. Rpt., June 6).

PEACH TREE BORERS - NEW MEXICO - Sanninoidea sp. light to heavy and damaging peach and apricot trees at Socorro, Socorro County, and in orchards near Isleta, Bernalillo County. (Heninger). INDIANA - Synathedon pictipes adult emergence continues at good rate, but not yet peaked in Vincennes area. (Cleveland, June 6).

PEACH TWIG BORER (Anarsia lineatella) - NEW MEXICO - Light to moderate in terminal growth of peach trees in Belen-Los Lunas area, Valencia County. (Heninger). NEVADA - Larvae light in apricot fruits in North Las Vegas, Clark County. (Zoller).

PLUM CURCULIO (Conotrachelus nenuphar) - MICHIGAN - Egg laying and adult feeding underway in southwest since June 2; 21 adults jarred from Livingston County plum tree June 8; temperature 74 degrees. (Wooley, Newman). OHIO - Of 354 plums examined in orchard at Wooster, Wayne County, 23.7 percent showed feeding and oviposition scar damage. On cherries, 17.4 percent of 345 fruits injured. (Forsythe). VERMONT - Active and expected to continue for the next week or more, particularly during warm weather. (MacCollom, June 6). CONNECTICUT - Very active on plums, pears, peaches and apples. Numerous egg-laying scars on fruit; expected to remain at high level if temperatures remain over 75 degrees. (Savos, June 8). GEORGIA - Light on plums in Hall County. (Harris).

SHOT-HOLE BORER (Scolytus rugulosus) - CALIFORNIA - Heavy on apricots in several locations in Contra Costa County. (Cal. Coop. Rpt.).

PEAR SAWFLY (Hoplocampa brevis) - PENNSYLVANIA - Collected from pears in Lebanon County May 23. Det. by D. R. Smith. This is new State record. (Maxwell). Probably this species, quite noticeable on pear in Berks County June 8. (Tetrault). Probably this species also noted in York County. (Maxwell). CONNECTICUT - Adults collected on sticky board traps in Hamden and Wallingford, New Haven County; New Hartford and Washington, Litchfield County; and Berlin, Hartford County, June 2-8. Litchfield and Hartford are new county records. (Johnson).

PEAR-SLUG (Caliroa cerasi) - CALIFORNIA - Medium locally on plums in Chula Vista, San Diego County. (Cal. Coop. Rpt.).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Large numbers of adults active in Storrs; nymphs very easy to find on foliage. First spots of honeydew appearing. (Savos, June 8). WISCONSIN - Adults common but not unusually abundant on pear trees in Walworth and Jefferson Counties. Trees sprayed. (Wis. Ins. Sur.).

CATFACING INSECTS - INDIANA - Catfacing very common on peaches in Vincennes area this season. (Cleveland).

EUROPEAN RED MITE (Panonychus ulmi) - MISSOURI - Counts as high as 2-3 mites per leaf on apples on occasional tree in southeast area. (Wkly. Rpt. Fr. Grs., June 8). INDIANA - Ranged 0-5 per leaf on apples in experimental plots in Vincennes area (Cleveland). OHIO - This season's eggs hatching on apple leaves in Wayne County; first summer larvae appearing. Counts on apple in Wayne County 1-2 mites per leaf. (Forsythe). Counts in apple orchard in Licking County averaged one larva per leaf. Adults declined; few seen. Eggs numerous on apple leaves; most leaves with 20-40 summer eggs. (Rose). NEW YORK - Adults and summer eggs found in Clinton and Essex Counties May 31; found June 6 in Monroe County. (N.Y. Wkly. Rpt.). CONNECTICUT - Little more abundant in Storrs; large numbers of eggs laid. Carryover from 1965 small. (Savos, June 8).

SPIDER MITES (Tetranychus spp.) - GEORGIA - Moderate on unsprayed pecan trees in Clarke County (Harris); moderate in Lowndes County (Kessler). SOUTH CAROLINA - Numerous on apples in foothills area of Oconee County. (Nettles et al., June 7). NEW YORK - Red and two-spotted species appearing in Orange County; red species active in Columbia, Oswego, Onondaga and Cayuga Counties; two-spotted species found in Dutchess County. (N.Y. Wkly. Rpt., June 6). INDIANA - Very light on apples in experimental plots in Vincennes area. (Cleveland).

PECAN LEAFROLL MITE (Aceria caryae) - OKLAHOMA - Heavy on pecan trees in Norman area, Cleveland County. (Okla. Coop. Sur.).

PECAN NUT CASEBEARER (Acrobasis caryae) - OKLAHOMA - Eggs moderate on pecans in Mayes County and light in Oklahoma County. (Okla. Coop. Sur.).

CITRUS

CITRUS FLAT MITE (Brevipalpus lewisi) - ARIZONA - Light to moderate; problem on citrus throughout most of Maricopa County and on Yuma Mesa in Yuma County. (Ariz. Coop. Sur.).

EASTERN LUBBER GRASSHOPPER (Romalea microptera) - FLORIDA - Adults present in Polk County but no damage to citrus observed by June 7. (Brogdon, Eden).

SMALL FRUITS

LEAF ROLLER MOTHS - CONNECTICUT - Large numbers of larvae damaging strawberries in Fairfield County and around Willimantic. (Savos, June 8).

A PYRRHOCORID BUG (Largus cinctus californicus) - CALIFORNIA - Heavy and damaging strawberry plants in Arroyo Grande, San Luis Obispo County. (Cal. Coop. Rpt.).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - NEW HAMPSHIRE - Destroyed 85 percent of 0.1 acre of strawberries at Litchfield, June 3. Larvae approximately 50 percent pupated, no adults seen. (Sutherland).

MITES - NEW JERSEY - Building up rapidly in raspberries and blackberries. Hot weather increased population on strawberries. (Ins.-Dis. Newsltr.). MINNESOTA - Spider mites threatening some strawberry crops. (Minn. Ins. Rpt.). OHIO - Steneotarsonemus pallidus heavy in spots on strawberries in Columbiana County. (Ellis).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Numerous infestations found in commercial grapes throughout Maricopa County. Heavy and damaging backyard grapes in Pinal and Maricopa Counties. (Ariz. Coop. Sur.).

GRAPE CANE GIRDLER (Ampeloglypter ater) - OHIO - Damage in form of broken new shoots or canes becoming apparent in vineyards in Lake County. (Still).

CUTWORMS - NEW HAMPSHIRE - Several species damaging low bush blueberries at New Durham. (Conklin, June 2).

ORNAMENTALS

WESTERN TUSSOCK MOTH (Hemerocampa vetusta) - NEVADA - Larvae migrating from bitterbrush, causing serious damage and defoliating various ornamental shrubs, including dogwood, laurel, plum and pyracantha, in Carson City area, Ormsby County. (Bechtel, Cooney, Ting).

PAINTED LADY (Vanessa cardui) - UTAH - Larvae damaging hollyhock foliage at Caineville, Wayne County, Hanksville, Garfield County, and Junction, Piute County. (Knowlton).

BAGWORM (Thyridopteryx ephemeraeformis) - TENNESSEE - Hatching underway on evergreens. (Mullett, June 8). VIRGINIA - Larvae active on juniper in Blacksburg, Montgomery County, June 4. Control recommended. (Isakson).

A PINE NEEDLE-SHEATH MINER(Zellaria haimbachi) - OREGON - Larvae heavy on most species of ornamental pines in some nurseries near Troutdale, Multnomah County; many pupating. (Larson).

CRESCENT-MARKED LILY APHID (Neomyzus circumflexus) - CALIFORNIA - Light on Crocus sp. in nursery in Fresno, Fresno County. First record for Fresno County. (Cal. Coop. Rpt.).

A CONIFER APHID (Cinara tujafilina) - CALIFORNIA - Locally heavy on thuja in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

AZALEA BARK SCALE (Eriococcus azaleae) - OREGON - Spotty on Hinodegiri azalea plantings in Gresham area, Multnomah County. Crawlers emerging from egg masses. (McNeilan).

OBSCURE SCALE (Melanaspis obscura) - VIRGINIA - Severe on dogwood in Virginia Beach area. Apparently killed several trees. (Allen, June 4).

FOUR-LINED PLANT BUG (Poecilocapsus lineatus) - MASSACHUSETTS - Appeared about 10 days later than in 1965. (Crop Pest Cont. Mess., June 13).

SPIDER MITES (Tetranychus spp.) - OKLAHOMA - Moderate to heavy and damaging various flowers and shrubs in many areas of State. (Okla. Coop. Sur.). ARIZONA - Heavily damaged evergreens in Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

PINE ROOT COLLAR WEEVIL (Hylobius radicis) - MINNESOTA - High population and damage on Scotch, jack and red pines in plantations and windbreaks north of Twin Cities. All trees infested 1-6 inches in diameter; trees under 1 inch not attacked. (Minn. Ins. Rpt.).

CONIFER WEEVILS - ARKANSAS - Normal increase in activity of Hylobius pales, Pachylobius picivorus and Pissodes nemorensis noted; greatest increase in vicinity of burned areas and lightning-struck trees. (Ark. For. Pest Rpt., June).

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - ARKANSAS - Normal seasonal increase in activity; salvage operations underway where feasible. (Ark. For. Pest Rpt., June).

WESTERN PINE BEETLE (Dendroctonus brevicomis) - CALIFORNIA - Infestations developing at several locations on Six Rivers National Forest along Klamath River. (D. Osterhoute, USFS).

ENGRAVER BEETLES (Ips. spp.) - ARKANSAS - Normal seasonal increase in activity. Salvage operations underway where feasible. (Ark. For. Pest Rpt., June).

A BARK BEETLE (Pityogenes hopkinsi) - NEW HAMPSHIRE - Adults in weakened white pines at Derry. (Sutherland, May 26).

JACK-PINE BUDWORM (Choristoneura pinus) - WISCONSIN - Observations in northwestern counties indicate development about second instar. Still too early to evaluate extent of infestation; heaviest infestation 30 larvae per 30 shoots. (Wis. Ins. Sur.). MINNESOTA - Larvae in third stage. Control spray planned for Badoura Nursery and Blackberry Hill recreational areas June 16; 500 acres of jack pine to be treated. (Minn. Ins. Rpt.).

JUNIPER WEBWORM (Dichomeris marginella) - NEW YORK - Larvae active in central section of State. (N.Y. Wkly. Rpt., June 6).

SPRUCE NEEDLE MINER (Taniva albolineana) - NEW YORK - Seriously damaged specimen trees in Ithaca area, Tompkins County. (N.Y. Wkly. Rpt., June 6).

EUROPEAN PINE SAWFLY (Neodiprion sertifer) - PENNSYLVANIA - Severe stripping of old foliage of Scotch and red pines in several southeastern counties and in Monroe County. Larvae in southern areas full grown June 3. Polyhedral virus killed many colonies. (Pa. For. Pest Rpt., June 7).

RED-HEADED PINE SAWFLY (Neodiprion lecontei) - WISCONSIN - Egg laying on Lakewood District, Nicolet National Forest, May 27. None hatched to June 3. (Wis. Ins. Sur.).

CONIFER SAWFLIES (Neodiprion spp.) - ARKANSAS - Feeding activity of N. taedae linearis ceased; entered cocoon stage. No activity by N. lecontei reported. (Ark. For. Pest Rpt., June).

PINE BARK APHID (Pineus strobi) - NEW YORK - Hatching in Ithaca, Tompkins County, June 2; observed in Westchester County. (N.Y. Wkly. Rpt., June 6).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - IOWA - Hatched at Ames May 25; on schedule. (Iowa Ins. Inf.). OHIO - Overwintering egg hatch complete in Tuscarawas County. Hosts include white pine and spruce. (Ellis). NEW YORK - Crawlers active under old scales at Geneva, Ontario County; observed at Ithaca, Tompkins County. (N.Y. Wkly. Rpt., June 6).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - WISCONSIN - Larvae nearly full grown; considerable migration in Dane, Rock and Walworth Counties. (Wis. Ins. Sur.). OHIO - Infested roadside crab apple trees through much of Hardin County. About 20-40 percent of trees in one area infested with one or more tents. Trees not severely defoliated. Some pupating and others up to 2.5 inches long and feeding. (Rose). PENNSYLVANIA - Localized outbreaks developed near Mechanicsburg, Cumberland County, and in Dauphin County. Apple and cherry trees stripped and larvae migrated to residential areas and damaging shrubbery. (Pa. For. Pest Rpt., June 7).

FOREST TENT CATERPILLAR (Malacosoma disstria) - MINNESOTA - Larvae in International Falls area in late second stage. Weather favorable for rapid development. Defoliation June 1, less than 5 percent. Leaf development about half size or larger. Heavy defoliation expected in area about June 9. (Minn. For. Pest Newsltr., June 2).

A TENT CATERPILLAR (Malacosoma sp.) - CALIFORNIA - Causing severe defoliation on oak trees and native shrubs in Redding area, Shasta County. (Cal. Coop. Rpt.).

CANKERWORMS - WISCONSIN - Mixed populations of Paleacrita vernata and Alsophila pometaria causing noticeable defoliation of elms near Oxford, Adams County, and Montella, Marquette County. (Wis. Ins. Sur.).

FALL CANKERWORM (Alsophila pometaria) - PENNSYLVANIA - Heavy defoliation expected in northern tier of counties did not develop. Freeze of May 10 reduced hatch and killed many exposed larvae. Hatch of 20-40 percent; light to moderate defoliation. (Pa. For. Pest Rpt., June 7).

FALL WEBWORM (Hyphantria cunea) - ARKANSAS - Small nests observed in southwest as far north as Hot Spring County. (Warren, Tadic).

MIMOSA WEBWORM (Homadaula albizziae) - ALABAMA - First-generation larvae light on mimosa trees in ornamental plantings in central section. (McQueen).

AN OAK LEAF ROLLER (Croesia semipurpurana) - PENNSYLVANIA - This and other oak leaf rollers causing severe defoliation to red oaks in southern York, northern Lebanon, Bucks, Northumberland, and Columbia Counties. Defoliation nearly complete in many spots. In northern Lebanon County, about 1,000 acres suffered oak mortality as result of successive defoliations. (Pa. For. Pest Rpt., June 7).

LEAF ROLLER MOTHS - CONNECTICUT - Complex of species number one problem around State; attacking wide variety of trees and shrubs; particularly oak and maple. (Savos, June 11).

UGLY-NEST CATERPILLAR (Archips cerasivoranus) - OREGON - Heavy on branches of chokecherry trees along roads in Gold Hill area, Josephine County. (Berry, Larson, Goeden).

OLETHREUTID MOTHS (Rhyacionia spp.) - ARKANSAS - First larval brood about finished feeding in all areas. Second adult brood emerging in southern section. (Ark. For. Pest Rpt., June).

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) - IOWA - Overwintered eggs hatched at Iowa City May 30. (Iowa Ins. Inf.).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEW MEXICO - Moderate to heavy, damaging Chinese elm trees at Tucumcari, Quay County. (Kloepfer). Collected on Chinese elm at Socorro, Socorro County, last week of May. This is new county record. (N.M. Coop. Rpt.). OKLAHOMA - Larvae light to moderate, occasionally heavy, on elm trees across State. Pupating in Major County. (Okla. Coop. Sur.). ARKANSAS - Larvae active in south section; eggs ready to hatch in north section. (Ark. For. Pest Rpt., June). MISSOURI - Pupating in southern third of State; hatching in northern two-thirds. Infestations variable but generally appears lighter than in past 2 years. (Houser). OHIO - Hatch underway; first instars present on foliage of Chinese elm trees in suburban Franklin County. (Rose). NEW YORK - Adults and eggs numerous at Geneva, Ontario County; no hatching observed. Egg laying expected nearly on schedule at Ithaca, Tompkins County. (N.Y. Wkly. Rpt., June 6).

LARGER ELM LEAF BEETLE (Monocesta coryli) - GEORGIA - Adults feeding on elms in Spalding County. (Dupree).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - IOWA - Pupation 55 percent complete in bark on sunny side of elm logs, May 21 at Dubuque; first emergence May 25. Adults flying and feeding June 1. (Iowa Ins. Inf.). MICHIGAN - First active adults June 3 in Genesee County; pupae predominated. (Ruth).

A FLEA BEETLE (Altica bimarginata) - CALIFORNIA - Heavy on alder in Chico, Butte County. (Cal. Coop. Rpt.).

POPLAR-AND-WILLOW BORER (Sternochetus lepathi) - DELAWARE - Young larvae heavy in willow at Newark, New Castle County, June 8, 1966. Adults also present. Collected and determined by D. F. Bray. This is new State record. (Burbutis).

A MAY BEETLE (Phyllophaga sp.)- ARKANSAS - Caused considerable defoliation of oaks in many counties. No permanent or serious damage. (Ark. For. Pest Rpt., June).

A LEAF-MINING WEEVIL (Odontopus calceatus) - CONNECTICUT - Feeding, mating and ovipositing on young sassafras trees in Stamford and New Canaan area. Many eggs hatched; young larvae mining midribs of leaves. (Savos, June 8).

A WEEVIL (Tachypterellus consors) - ALABAMA - Adults Heavy; emerging from maturing wild cherry seed in Autauga, Lee and other counties. (Scott et al.).

BIRCH LEAF MINER (Fenusa pusilla) - MINNESOTA - Larvae appearing in leaves of birch trees in southern half of State. (Minn. Ins. Rpt.). WISCONSIN - Damage appearing in Outagamie and Dane Counties. First larval feeding in Madison May 30. (Wis. Ins. Sur.). NEW YORK - Some leaves completely mined at Highland, Ulster County. Development 2-3 weeks behind previous years at Ithaca, Tompkins County, due to cool weather. Larvae fairly heavy in Westchester County. Apparently slow in developing in Oneida County. (N.Y. Wkly. Rpt., June 6).

ELM LEAF MINER (Fenusa ulmi) - NEW YORK - Development 2-3 weeks behind previous years at Ithaca, Tompkins County. (N.Y. Wkly. Rpt., June 6).

A PAMPHILID SAWFLY (Pamphilius phyllisae) - PENNSYLVANIA - Large numbers of adults in Westmoreland County area June 1. Severe defoliation expected in 3 weeks. Det. by D. C. Eidt. (Pa. For. Pest Rpt., June 7).

MAPLE PETIOLE BORER (Caulocampus acericaulis) - WISCONSIN - Heavy damage on hard maples in local area in Sauk County. (Wis. Ins. Sur.).

EASTERN SPRUCE GALL APHID (Adelges abietis) - WISCONSIN - About 3 per needle; galls nearly half grown on spruce in Dane and Ozaukee Counties. (Wis. Ins. Sur.).

WOOLLY ALDER APHID(Prociphilus tessellatus) - GEORGIA - Severe on silver maple in Spalding County. (Tippins). ALABAMA - Heavy on maple trees in Morgan, De Kalb and other northern counties. (McQueen). TENNESSEE - Infested maples in Knox County. (Mullett, Williams et al.)

EUROPEAN ELM SCALE (Gossyparia spuria) - ARIZONA - Heavy on elm trees in Flagstaff area, Coconino County. (Ariz. Coop. Sur.).

OBSCURE SCALE (Melanaspis obscura) - DELAWARE - Very heavy on pin oak in New Castle County; causing severe injury and apparently killing many limbs. (Bray).

ASH PLANT BUG (Neoborus amoenus) - MINNESOTA - Active on ash leaves in Minneapolis-St. Paul and southern areas. (Minn. Ins. Rpt.).

MAN AND ANIMALS

MOSQUITOES - LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control for period May 3 - 10 yielded: Aedes sollicitans, A. stictícus, A. triseriatus, Culex erraticus, C. pipiens quinquefasciatus, C. salinarius and Psorophora confinnis. Light trap collections continue predominantly floodwater species A. vexans and P. confinnis. P. ferox collected for first time this year. (Stokes). NEW MEXICO - Aedes vexans very annoying to workers in alfalfa fields in Belen area, Valencia County, and Isleta, Bernalillo County. (Heninger). UTAH - Mosquitoes annoying in Hanksville-Caineville and Kingston areas. Larvae very numerous in some waters in Helper-Price area, Carbon County, and Oasis-Delta area, Millard County. Troublesome at Fruita, Panguitch, Hatch, Alton and Price-Wellington area. (Knowlton). COLORADO - Aedes dorsalis, A. increpitus and A. schizopinax annoying in vicinity of Fairplay, Park County, in May; A. dorsalis heavy in Gunnison County. (Harmston). OREGON - Anopheles freeborni larvae heavy in few ponds in northern Marion County. (Hellie). IOWA - Adults emerged at Ames June 2. Flying and biting near woods in west Ames; many complaints June 3. Probably result of heavy rain May 23. (Iowa Ins. Inf.). WISCONSIN - Annoyance to humans increasingly severe, particularly in wetland and woodland areas; increased annoyance to cattle in some locations. (Wis. Ins. Sur.). MINNESOTA - During week ending June 4, 112 larval collections made in Metropolitan Mosquito Control District. Culiseta inornata found in 63 of these. In 16 light traps, 1,011 females taken in same period; Aedes abserratus accounted for 370, Anopheles walkeri for 190 and C. inornata for 203. On northern border of Anoka County, 714 females taken in one trap. In daytime and evening bite collections A. abserratus accounted for 20 of 31 females; in 19 (15-minute) daytime collections and 96 of the 332 taken in 43 (5-minute) evening biting collections. Total of 106 A. stimulans taken in evening bite collections. Heavy hatch of A. vexans followed 1-2 inch rains. Emergence expected June 17 or 18. (Minn. Ins. Rpt.). MICHIGAN - Annoyance at seasonal high; Aedes vexans, especially, moved into populated areas. (Galvin et al.).

BITING MIDGES (Culicoides spp.) - MARYLAND - Very annoying in suburban areas of Cumberland, Allegany County. (U. Md., Ent. Dept.)

HORN FLY (Haematobia irritans) - UTAH - Moderate on cattle in Hanksville-Caineville area; 25 to over 2,000 on cattle in Alton area. (Knowlton). OKLAHOMA - Heavy on cattle in Mayes and Payne Counties; moderate in Cleveland and Bryan Counties. (Okla. Coop. Sur.). MISSOURI - Ranged 100-300 per animal in 3 cattle herds in southwest; 75-200 on cows and 400 on bull in herd in Boone County. (Houser, Peters). IOWA - Six herds of cattle checked from Ames to Iowa City May 31; 4 herds west of Johnson County with 2-3 per head. Herd near Oxford and another near Tiffin, Johnson County, with 5-10. Cattle showed evident annoyance. (Iowa Ins. Inf.). NEBRASKA - Light in pastures in sandhills area. Cool weather held down populations. (Roselle). SOUTH DAKOTA - Ranged 35-50 per side on cattle in

Lake Andes area. (Kantack). NORTH DAKOTA - Remains low on range cattle in southwest; up to 34 (average 10) per animal. (Brandvik, Kaatz). INDIANA - Ranged 26-180 per head on cattle in west central area. (Huber). MARYLAND - Averaged 20 per head on beef cattle near Wittman, Talbot County. (U. Md., Ent. Dept.). NEW JERSEY - Building up in many areas. (Ins.-Dis. Newsltr.). MISSISSIPPI - Heavy on untreated animals; 640 per animal on 12 head of cattle in Oktibbeha County. (Dinkins).

DEER FLIES - WISCONSIN - Bothering cattle slightly in few locations. (Wis. Ins. Sur.). MISSOURI - Chrysops callidus annoying to man and animals around ponds in Columbia area, Boone County. (Wingo). OKLAHOMA - Silvius pollinosus adults annoying people in northwest area. Unspecified species heavy around streams in Jackson County. (Okla. Coop. Sur.).

STABLE FLY (Stomoxys calcitrans) - IOWA - First adult of season at Ames May 27; 5-15 days later than average for central area. Ranged 1-2 per head on 2 herds in Johnson County. (Iowa Ins. Inf., June 6). WISCONSIN - Continues gradual increase. (Wis. Ins. Sur.). NEW JERSEY - Building up in many areas. (Ins.-Dis. Newsltr.).

CATTLE GRUBS (Hypoderma spp.) - UTAH - Adults running cattle at Caineville, Wayne County, Hatch, Garfield County, and Alton, Kane County. (Knowlton).

BLACK FLIES - PENNSYLVANIA - Annoying humans in Franklin, Venango County. (Adams).

HORSE BOT FLY (Gasterophilus intestinalis) - OKLAHOMA - Adults annoying horses in Payne County. Egg laying underway. (Okla. Coop. Sur.).

AMERICAN DOG TICK (Dermacentor variabilis) - MARYLAND - Taken on humans in Prince Georges and Somerset Counties; 4 cases of Rocky Mountain spotted fever reported from Baltimore County by State Health Department. (U. Md., Ent. Dept.).

HOUSEHOLDS AND STRUCTURES

FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) - LOUISIANA - Found in port area of New Orleans, May 30 by commercial pest control operator. Det. by T. E. Snyder. Subsequent cooperative surveys show infestations scattered in a four square mile area with focal point in U. S. Army Camp Leroy Johnson. Infestations reported June 6 from West Lake by commercial pest control operator. These are new State records. TEXAS - Collected in shipyard at Houston, June 6. Det. by T. E. Snyder. This is same location this termite was found in 1965; however, a different structure is involved. The 1965 infestation was treated. (ARS).

BENEFICIAL INSECTS

ALKALI BEE (Nomia melanderi) - WASHINGTON - First males emerged in Touchet area, Walla Walla County, about May 30. (Johansen). Pupating in alfalfa seed areas of Yakima County; 7-10 days later than normal. (Menke). IDAHO - Adults first emerged in Wilder area, Canyon County, June 7. (Waters).

A LEAFCUTTING BEE (Megachile rotundata) - WASHINGTON - First males emerged in Touchet area, Walla Walla County, about May 25. (Johansen). NEVADA - Adults emerging in Reno area, Washoe County. (Yamamoto).

DAMSEL BUGS - ILLINOIS - Adults and nymphs 0-20 in northeast and 0-30 per 100 sweeps in central districts on first-crop alfalfa. (White). INDIANA - Nabis spp. common on alfalfa throughout State. Adults range 3 per 10 sweeps to 2 per sweep. (Huber). WYOMING - Nabis spp. adults 6-8 per 10 sweeps in Goshen County alfalfa. (Marks). MISSISSIPPI - Nabis spp. increasing in cotton throughout State. (Dinkins).

LADY BEETLES - WYOMING - Adults 12-14 per 10 sweeps in Goshen County alfalfa. (Marks). IOWA - Averaged 1 per 5 alfalfa stems. (Iowa Ins. Inf., June 6).

MICHIGAN - Adults 0.2 per 10 sweeps in 5 fields of alfalfa 24 inches high in Monroe and Lenawee Counties June 7. (Dowdy). ILLINOIS - Mostly Hippodamia convergens and Coleomegilla maculata fuscilabris 10-50 per 100 sweeps in first-crop alfalfa in northeast and central districts; few larvae observed. (White). MISSISSIPPI - Several species increasing on cotton throughout State. (Dinkins).

GOLDEN-EYE LACEWING (Chrysopa oculata) - ILLINOIS - Adults varied 0-10 in northeast and 0-20 per 100 sweeps in central districts in first-crop alfalfa; few larvae observed in both districts. (White).

SYRPHID FLIES - INDIANA - Larvae 7 per 10 sweeps on wheat in west central and central areas. (Huber).

A PHYTOSEIID MITE (Typhlodromus occidentalis) - WASHINGTON - All stages on apple in Wenatchee area, Chelan County; this predator controlled heavy, early season populations of Tetranychus mcdanieli in several ochards. (Hoyt).

FEDERAL STATE PLANT PROTECTION PROGRAMS

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Few larvae taken from fruit of Flordawam peach and sapodilla at dooryard situations in Greater Miami area May 26-31. (Swanson).

CEREAL LEAF BEETLE (Oulema melanopus) - MICHIGAN - Some natural mortality of overwintering adults noted in Berrien County research plots. Eggs still abundant in some Berrien County oat fields. Larvae heavy in few fields in Galien area; all larval stages common, with second and third predominating. No pupae found. With normal weather, first summer adults should appear about July 1. Intensive survey shows relatively low infestation levels in Eaton, Ionia, Lenawee, Monroe, Hillsdale, Branch, St. Joseph, Calhoun, Jackson and Clinton Counties. Of counties surveyed to date, sampling of 25+ beetles per 100 sweeps taken only in Berrien County. (Gomulinski, Moore). INDIANA - Reported for first time in Fountain, Parke, Putnam, Rush, Franklin and Dearborn Counties. (PPC).

CUBAN MAY BEETLE (Phyllophaga bruneri) - FLORIDA - Adults infesting leaves of Florida trema between Miami and Sweetwater, Dade County, May 21. (Meyer, Swanson). Extension of infested area by 0.5 mile to west. (Fla. Coop. Sur.).

EUROPEAN CHAFER (Amphimallon majalis) - NEW YORK - Prepupae found May 27 and pupae June 3 at Geneva, Ontario County. (N.Y. Wkly. Rpt.).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - OREGON - Very light infestation found on pine in nursery near Troutdale, Multnomah County. All pines on property subject to infestation fumigated or destroyed. (Larson)

GRASSHOPPERS - OREGON - Nymphal infestation general on range area between Baker and Halfway, Baker County; 50-100 per square yard in several spots. Development ranges from first instar Melanoplus sanguinipes to fourth instar Oedaleonotus enigma, third and fourth instar Aulocara elliotti and second and third instar Camnula pellucida. (Larson). CALIFORNIA - Oedaleonotus enigma and Trimerotropis pallidipennis medium on barley fields in Five Points and on safflower in Coalinga, Fresno County. Medium and damaging 40-acre sugar beet field in Five Points, Fresno County. Medium on cotton in Five Points, Fresno County. (Cal. Coop. Rpt.). NEVADA - Grasshoppers, mostly Oedaleonotus enigma (second instar to adult, with 20 percent of adults mating) and few Aulocara elliotti and Melanoplus sanguinipes, 8-10 per square yard on rangeland south of Battle Mountain, Lander County. Hesperotettix viridis, M. bivittatus and O. enigma, in about equal numbers, ranged 60-80+ per square yard in abandoned meadow with Russian knapweed in same area. Population mostly of M. bivittatus in 1965. Grasshoppers dying from starvation due to drying of all vegetation in area. No gravid females found. Mostly Camnula pellucida, with about 20 percent A. elliotti, 20-40 per square yard in Pumpernickel Valley, Humboldt County. (Earnist). UTAH - Aircraft spraying of Hanksville,

Wayne County area, gave fair control of range and farm grasshoppers. (Knowlton). Grasshoppers on Podunk Creek and Kane Creek areas of Garfield and Kane Counties, out from Bryce Canyon area, range 3-800 per square yard. High populations, largely Camnula spp., confined to limited areas or hatching grounds. Some grasshoppers winged and some mating occurring. (Thornley, Knowlton). Camnula pellucida moderate in meadows and Aulocara elliotti moderate in planted grass pastures at Alton, Kane County; 25 percent winged. (Knowlton). ARIZONA - First and second instar Melanoplus sp. nymphs damaging new growth of citrus on Yuma-Mesa. (Ariz. Coop. Sur.). NEW MEXICO - Grasshoppers severe on estimated 3,500 acres of cropland on Zuni Indian Reservation headquarters, McKinley County; nymphs 5-10 per square yard on 1,200 acres of rangeland adjacent to cropland in area. Nymphs 5-10 on approximately 1,000 acres in small valley south of U. S. Highway 66 about 3 miles east of State line in McKinley County; moderate on approximately 1,000 additional acres in same general area. Hatch of Camnula pellucida heavy at dry-lake bed on Navajo Indian Reservation west of Crystal, San Juan County. Infested rangeland area in Lea County expanding; estimated 650,000 acres to June 10. Populations light to 50 or more per square yard. (N.M. Coop. Rpt.). Mostly first and second instar nymphs 2-7 per 25 sweeps in alfalfa between Belen, Valencia County, and Isleta, Bernalillo County, (Heninger); 5-9 per 25 sweeps in alfalfa near Tucumcari, Quay County, (Kloepfer). OKLAHOMA - Ranged 3-8 per square yard on rangeland in Ellis and Harper Counties; 3-20 on 20,000 acres of rangeland in Woodward County. Ageneotettix deorum, Phlibostroma quadrimaculatum, Aulocara elliotti and Melanoplus bivittatus present. Development ranged second to fourth instar. Little change noted in Kiowa, Comanche, Tillman and Caddo Counties during past 2 weeks; economic populations found on roadsides and associated crop margins and on grassland in isolated areas. Grasshoppers ranged 1-5 per square yard in crop margins and grassland in Muskogee County; M. bivittatus, M. differentialis and Boopedon nubilum dominant. Unspecified grasshoppers 8-12 per square yard in pastures in Washita and Grady Counties. (Okla. Coop. Sur.). KANSAS - Averaged 5-6 per square yard in recently cut alfalfa in Riley County. (Ins. Sur. Rpt., June 6). MISSOURI - Melanoplus spp. nymphs now present over entire State. Counts variable; average 1-20 per square foot in margins in southwestern area. Nymphs range first to third instars; not migrated from hatching beds. (Houser). SOUTH DAKOTA - M. bivittatus, M. sanguinipes and Ageneotettix deorum, mostly first instar with occasional second instar; very light hatching in Grant, Day, Brown, Edmunds, Walworth, Potter, Sully and Hughes Counties; never more than 1 per square yard; none in many locations. (Burge). NORTH DAKOTA - Nymphs noneconomic in most cropland areas in southwestern counties. Marginal counts up to 20 (average 3) per square yard; field counts up to 6 (average less than 1) per square yard. Highest populations found in Golden Valley and Sioux Counties. Development first through fourth instars; mostly first and second. Melanoplus bivittatus, M. sanguinipes, M. differentialis, M. packardii and M. femurrubrum present; M. bivittatus and M. sanguinipes dominant. (Stoltenow). MINNESOTA - Melanoplus femurrubrum eggs in early coagulation to early eye-spot stage in west central and northwest districts. First cutting of alfalfa underway; hay removal should increase grasshopper egg development. (Minn. Ins. Rpt.).

JAPANESE BEETLE (Popillia japonica) - TENNESEE - First adults emerged June 8 in Monroe County, compared with June 1, 1965. NEW JERSEY - Pupation began June 7-13 in Burlington County. First adult emergence anticipated about June 26 in southern area. (Hamilton). VIRGINIA - First adult of season observed on flowers of tulip-poplar in Nansemond County May 30. (Pierce).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Adult flights continue heavy in Rainbow Valley; larvae found in cotton blooms in eastern and western Maricopa County. (Ariz. Coop. Sur.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - FLORIDA - Damaging peanuts in Marianna area, Jackson County. (Rhoades). ALABAMA - Larvae continue damaging field crops. Medium to heavy and injuring widespread area of corn around suburban Dothan, Houston County. (Roney).

INSECT DETECTION

New State Records

FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) - LOUISIANA - Collected in New Orleans in May 1966 and at West Lake in June 1966. (p.).

POPLAR-AND-WILLOW BORER (Sternochetus lapathi) - DELAWARE - Young larvae heavy in willow at Newark, New Castle County, June 8, 1966. Adults also present. Collected and determined by D. F. Bray. (Burbutis). (p.).

A PSYLLID (Psylla uncatoides) - HAWAII - Two specimens collected in March and April, 1966, in light trap at Honolulu International Airport, Oahu. (Joyce). (p.).

ALFALFA WEEVIL (Hypera postica) - MICHIGAN - Single adult collected May 31 in Livingston County alfalfa. Det. by R. E. Warner. (Dowdy). (p. 540).

PEAR SAWFLY (Hoplocampa brevis) - PENNSYLVANIA - Collected from pears in Lebanon County May 23. Det. by D. R. Smith. (Maxwell). (p.).

New County Records

ALFALFA WEEVIL (Hypera postica) - OHIO - Lucas, Fulton and Williams Counties. Distribution now statewide. INDIANA - Benton, Adams, Jay, Madison and Delaware Counties. ILLINOIS - Adams, Hancock, McDonough, Tazewell, De Witt, Logan, McLean, Woodford, Marshall, La Salle, Grundy and Kane Counties. NORTH DAKOTA - Dunn County. IDAHO - Bonner County. (pp. 539, 540).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - CALIFORNIA - Nevada County. (p. 540).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - NORTH DAKOTA - Adams and Golden Valley Counties. (p. 541).

CRESCENT-MARKED LILY APHID (Neomyzus circumflexus) - CALIFORNIA - Fresno County. (p.).

PEAR SAWFLY (Hoplocampa brevis) - CONNECTICUT - Litchfield and Hartford Counties. (p.).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEW MEXICO - Socorro County. (p.).

CEREAL LEAF BEETLE (Oulema melanopus) - INDIANA - Fountain, Parke, Putnam, Rush, Franklin and Dearborn Counties. (p.).

HAWAII INSECT REPORT

New State of Hawaii Insect Record - A PSYLLID (Psylla uncatoides) - Two specimens caught in March and April, 1966, in light trap at Honolulu International Airport, Oahu. Species described from New Zealand; also known from California where it is injurious to Acacia and Albizia. Det. by L. M. Russell. (Joyce).

Special Insects of Regional Significance - A GRASSHOPPER (Schistocerca vaga) increasing in Waianae area of Oahu; 10 adults and 7 nymphs observed on 0.5 acre of weed host, Desmanthus virgatus (slender mimosa). Many reports of sightings of large grasshoppers. (Yonamine). STINK BUGS - Thyanta accerra nymphs and adults light on swollen-finger grass in Nankuli, Oahu. No increase nor spread noted. (Haw. Ins. Rpt.). All stages of Coptosoma xanthogramma heavy on Canavalia cathartica (maunaloa) in Kaneohe, Oahu. Adults observed on windows of homes and automobiles. Population appears on increase. (Kumabe, Kawamura).

Beans, Tomatoes - CHINESE ROSE BEETLE (Adoretus sinicus) heavily skeletonized leaves of snap beans in Kohala, Hawaii Island, and in Kaneohe, Waimanalo and Waianae, Oahu. (Haw. Ins. Rpt.). Larvae of a LEAF MINER FLY (Liriomyza sp.) medium to heavy on tomatoes and bean plantings throughout Waianae, Oahu. (Yamamoto).

Cucurbits - MELON APHID (Aphis gossypii) adults medium on 0.5 acre of cucumbers in Waimanalo, Oahu. (Sato).

Fruits - All stages of a MEALYBUG (Pseudococcus obscurus) in 200-acre passion-fruit orchard in Kahului, Maui; infestation light to heavy. First of 3 shipments of Cryptolaemus montrouzieri (a lady beetle) received and released in orchard to aid in control; these shipments total approximately 30,000 beetles. (Haw. Ins. Rpt.). Adults of a SCARAB (Protaetia fusca) heavy and feeding on blossoms of mango trees in Kohala, Hawaii Island. (Yoshimoto). RED WAX SCALE (Ceroplastes rubens) very heavy on numerous mango trees in Waianae, Oahu; medium on mango trees in Kaunakakai, Molokai. (Kim). NEW GUINEA SUGARCANE WEEVIL (Rhabdoscelus obscurus) heavy in Samoan coconut palm in Hilo, Hawaii Island; adults readily detected on flowering clusters. (Yoshioka).

Ornamentals - An APHID (Cerataphis lataniae) moderate on cattleya orchids in a nursery in Hilo, Hawaii Island. (Yoshioka). An ARMORED SCALE (Pinnaspis buxi) heavy on orchid leaves in Kaneohe, Oahu; 130-150 scales per square inch of leaf surface. (Haw. Ins. Rpt.). Adults of a NITIDULID BEETLE (Conotelus mexicanus) heavy in gardenia and rose blossoms in Waianae, Oahu; as many as 52 counted in one gardenia blossom. (Haw. Ins. Rpt.).

Man and Animals - Total of 140 Aedes vexans nocturnus and 7,413 Culex pipiens quinquefasciatus adults taken in 46 light traps on Oahu during May. Culex counts unusually high in light traps in Laie (1,924) and Hauula (1,374). Breeding sources at Laie, lowland area in plantation cane field and sewer treatment plant; breeding sources at Hauula, miscellaneous tin cans and tires. (Mosq. Control Branch, Dept. Hlth.).

Beneficial Insects - All stages of a CHRYSOMELID BEETLE (Octotoma scabripennis) moderate on lantana throughout Hookena in South Kona, Hawaii Island. (Yoshioka).

LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	*Agrotis ipsilon* (black cutworm)	*Carpocapsa pomonella* (codling moth)	*Chorizagrotis auxiliaris* (army cutworm)	*Estigmene acrea* (salt-marsh caterpillar)	*Faronta diffusa* (wheat head armyworm)	*Feltia subterranea* (granulate cutworm)	*Heliothis virescens* (tobacco budworm)	*H. zea* (bollworm, corn earworm, tomato fruitworm)	*Loxostege commixtalis* (alfalfa webworm)	*Loxostege similalis* (garden webworm)	*Loxostege sticticalis* (beet webworm)	*Manduca quinquemaculata* (tomato hornworm)	*Manduca sexta* (tobacco hornworm)	*Ostrinia nubilalis* (European corn borer)	*Peridroma saucia* (variegated cutworm)	*Prodenia ornithogalli* (yellow-striped armyworm)	*Pseudaletia unipuncta* (armyworm)	*Spodoptera exigua* (beet armyworm)	*Spodoptera frugiperda* (fall armyworm)	*Trichoplusia ni* (cabbage looper)	Crops
ARKANSAS																								
Hope 6/2-8				5							7							3		4				
Fayetteville 6/2-8				4							3							8		8				
COLORADO																								
Two Buttes 5/30														402						114				
FLORIDA																								
Gainesville 6/7,9			BL						11		2							2	4			3	2	
GEORGIA																								
Tifton 6/1-6	53-88	None	BL								1													
ILLINOIS (County)																								
Champaign 6/3-9	49-81	0.13		9													58	28	9	133				
MICHIGAN (Counties)																								
Berrien 5/31-6/6			BL														3			3				
Livingston 5/31-6/6			BL														5			6				
Sanilac 5/31-6/6			BL																	11				
MISSISSIPPI																								
Rolling Fork 6/3-9	58-90	0.04	BL	5					2		15					19		77	8	51			41	
Stoneville 6/3-9	61-95	Trace	2BL	20			8		3	1	26					5		345	51	447			1	
Tunica 6/3-9	53-94	0.25	BL	2							3					1		20	10	39			7	
MISSOURI																								
Portageville 6/4-10			BL								4							25	12	121				
NEBRASKA																								
North Platte 5/21-27				10		1942		108					Spp.					135		97				
Scotts Bluff Exp. Sta. 5/16-22						16		22					2077					6		2				
Scotts Bluff Exp. Sta. 5/23-29				1		106		5					604					3		4				
NEW JERSEY																								
Aura 6/7,9																	15			1				
NORTH DAKOTA																								
Bismarck 6/3						1								14						11				
Fargo 6/9						1														85				
OHIO (Counties)																								
Brown 5/31-6/6								14									14							
Licking 6/1-8				2				2												38				
TENNESSEE (Counties)																								
Maury 5/31-6/6				8														4	4	32				
Cumberland 5/31-6/6				1														1		1				
Greene 5/31-6/6				8					4		4									12				

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap (BL = blacklight, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Chrysopa pomonella (codling moth)	Choristoneura auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (garden webworm)	Loxostege sticticalis (beet webworm)	Mamestra oleracea (tomato hornworm)	Manduca quinquemaculata (tobacco hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia praefica (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
TEXAS																							
Brownsville 6/4-10	69-90	None	2BL	1			7		6	1	21				3	2		5	2				38	
Waco 6/4-10				1					7		1							5	1	2			6	
WISCONSIN																								
Platteville 5/28-6/6			BL															2		44				
Madison 6/1-8			BL																	8				
WYOMING											Spp.													
Cheyenne 5/25-31					149						6													

Weather continued from page 534.

central business district of the city. About a score of other tornadoes occurred in Kansas, Oklahoma and eastward to Illinois. One tornado injured 25 persons at Manhattan, Kansas. Another destroyed half the town of Jarbalo, Kansas. Early Thursday morning tornadoes hit northwestern suburban areas of Chicago injuring many persons and causing extensive damage.

HURRICANE ALMA: The 1966 hurrican season was off to a fast start with Alma the earliest hurricane of record to cross a U. S. coastline. Alma moved inland just 25 miles east of Apalachicola, Florida. On June 9, the second storm crossed southern Georgia and moved into the Atlantic on the 10th. Since June 10, Alma has been moving northeast along the coast causing gale winds and high tides in coastal areas. The storm no longer of hurricane intensity was centered about 120 miles east-southeast of Atlantic City, New Jersey, on the 13th.

Rainfall averaged from 2 to 5 inches over most of the Florida Peninsula and parts of Florida particularly the Lake Okeechobee area. The heavy rain was beneficial. Five tornadoes were reported associated with Alma's circulation. (Summary supplied by Environmental Data Service, ESSA).

Formosan Subterranean Termite

Economic Importance - No other insect in Hawaii has caused as much damage to wooden structures as Formosan subterranean termite (Coptotermes formosanus Shiraki). It attacks all kinds of wood and cellulose products. When ample moisture is not available, the termite will turn to growing plants including trees, corn and sugarcane. Severe damage to structures can be caused in a short time. Walls of new buildings have been hollowed out in three months' time in Hawaii without exterior signs of damage. This pest causes an estimated loss of 2-3 million dollars annually at Honolulu.

Distribution: Formosa, Japan, China Coast, Canton Islands, Guam, Marshall Islands, Philippines, South Africa, Hawaii. Found Houston, Texas, July 1965 (infestation treated); additional infestations found in June 1966. Collected in Louisiana at New Orleans in May 1966 and at West Lake in June 1966.

Biology and Habits - Optimum moisture is essential for development. Normally this termite has subterranean nests but if moisture is available in buildings, even several stories above ground, no contact with the soil is needed for construction of a nest. Incipient colonies generally start in or near the soil where moisture and damp wood are available. The nests are normally built in soil near the base of tree stumps, utility poles or other underground food sources but may be found almost anywhere under favorable circumstances. Colonies have been observed in such places as boats, ships, barges, dredges, water tanks, piers and floating dry docks. The structure of the nest is characteristic and made of "carton." This is a term applied to the friable substance constructed of soil and masticated woody substances cemented together by saliva and excrement of the termites. The runways are constructed in a similar fashion. Nests may be several cubic feet in size. A single colony may contain several hundred thousand individuals. As many as a thousand eggs per day are laid by the queen when the colony is well established. A large colony can cause great damage in a short time. Runways extending from 150 to 200 feet horizontally beneath soil and burrows as deep as 10 feet in the soil have been found. Heavy flights of reproductives are common in spring and early summer in Hawaii and Japan. The evenings of warm, sultry days are favorable for extensive flights, especially following rains. Flights usually begin at sundown and end before midnight. The first indication of the presence of C. formosanus may be the appearance of large numbers of reproductives around lights.

Description: Male: Medium size. Head hexagonal and brown. Frons irregularly concave at center in which a globular projection is present. Antenna yellow, 20-jointed and one and one-half times as long as head; 3rd joint smallest; the second about half as long as head. Pronotum semicircular, as broad as head. Wings large, hyaline, about 3 times as long as abdomen and one-third as broad as long. Legs short, large and yellowish brown; hind legs extending beyond end of abdomen. Abdomen short, elliptical and yellowish brown. Body 5.5 mm. long. Wings 10.6 mm. long.

Female: Similar to male but body larger and with minute spots. Body 7 mm. long. Wings 12.14 mm. long.

Soldier: Body slender, head oval and yellow. Eyes absent. Antenna 15-segmented, pale yellowish white. Labrum slender, projected forward. Pronotum narrower than head, short, elliptical and with a notch at middle of frontal margin. Small short tube-like process extends from the frontal gland. A milky, acidulous secretion exudes from this protuberance. Legs short and do not reach end of abdomen. Abdomen slender, entirely pubescent and with caudal appendage composed of 3 clearly segmented joints. Body 5.8 mm long.

Worker: General color, grayish white. Head pale yellow with a white mark in center and a dark brownish spot on each side of clypeus. Pronotum nearly twice as broad as long. Legs hairy, slender. Hind legs not reaching end of abdomen.

Coptotermes formosanus differs from other termites found in Continental United States in 2 principal ways:

1. C. formosanus is larger.

2. The soldier has the tube-like process described above on the frontal gland. This is a generic character.

Major references:

1. Hozawa, S. 1915. College of Science Imperial Univ. J. 35(7):1-161.

2. Oshima, M. 1919. Philippine J. Sci. 15(4):319-383.

3. Shiraki, T. 1909. Ent. Soc. Japan Trans. 2(10):239-240.

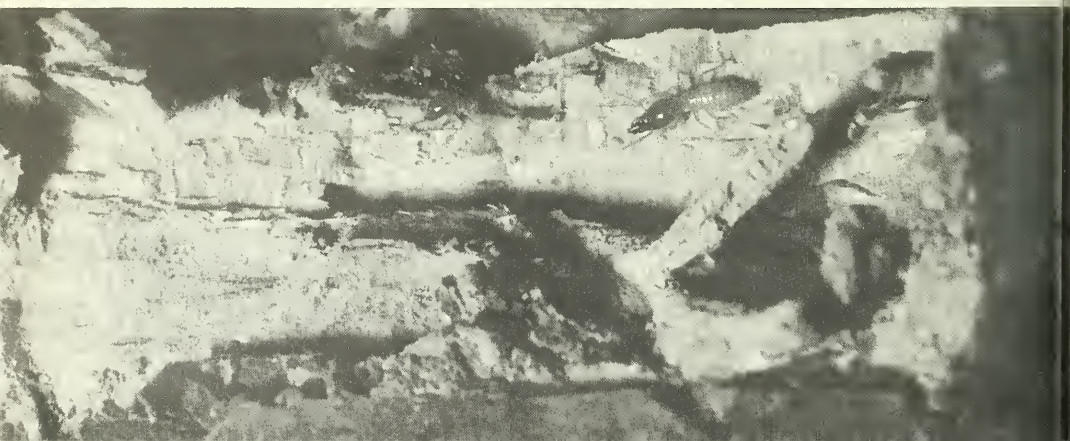
4. Snyder, T. E. 1966. Personal communication

5. Snyder, T. E. 1956. Smithsonian Misc. Coll. 130:1-305.

6. Zimmerman, E. C. 1948. Insects of Hawaii. Vol. 2:172-187.

See illustrations of damage on following page.

Damage by
Formosan Subterranean Termite



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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 16 June 24, 1966 Number 25

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM damaging some small grains in Midwest; adult flights heavy in some areas. (p. 567). EUROPEAN CORN BORER eggs hatching in southern Illinois; whorl infestations gradually increasing in Maryland, appearing in sweet corn in New Jersey. (p. 568). GRASS BUGS (apparently Irbisia spp.) continue damaging in Utah. (p. 570). For observations in Utah, see page 596 . ALFALFA WEEVIL damaging second-growth alfalfa in several areas, some populations decreasing, however. (pp. 570, 571). PEA APHID increases in alfalfa noted in Nevada, Utah and Minnesota; heavy in Oklahoma and Michigan (p. 572); little change noted in peas in Wisconsin (p. 577).

BOLL WEEVIL heaviest ever observed for this time of year in areas of Georgia; increasing in Alabama and Mississippi, heavy in Tennessee and South Carolina. (p. 574). BOLLWORM larvae present in cotton terminals in Coastal Plain of South Carolina; moth flights heavy in Alabama with large number of eggs in cotton. (p. 574). THRIPS damaging cotton in some areas. (p. 575).

Several TOBACCO PESTS of concern on shade-grown tobacco in Florida; TOBACCO HORNWORM noticeable for first time in 4 years and GREEN PEACH APHID more troublesome than any time since 1946. (p. 576). SPIDER MITES serious threat in orchards in southeast Missouri if weather becomes hot and dry. (p. 581).

EUROPEAN PINE SHOOT MOTH heavier than in several years in northern Indiana. (p. 584). SPRUCE SPIDER MITE heavier in Kansas than during past 10 years. ELM LEAF BEETLE increasing in Oklahoma; continues damaging in Kansas, Texas, New Mexico and Utah. (p. 585).

Spring flight of fresh-water MOSQUITOES extremely heavy in Texas; flights of this size and extent not recorded in number of years. Mosquitoes also extremely annoying in several other States. (p. 586). HORN FLY an increasing problem on cattle in several areas. (p. 586). HOUSE FLY serious problem in caged poultry in South Carolina and Mississippi. (p. 587). LADY BEETLE populations high in several crops. (p. 588).

GRASSHOPPERS economic on large acreages of rangeland and some grasslands in Oklahoma; also economic on seeded crested wheatgrass and rangeland in California; hatch continues high in Utah; reported in alfalfa in several States. (p. 588). CARIBBEAN FRUIT FLY damaging peaches in Florida. (p. 589). EUROPEAN CHAFER adults emerging in Pennsylvania and New York and JAPANESE BEETLE adults present in Rhode Island and Virginia. PINK BOLLWORM infesting 80-90 percent of blooms in some Arizona fields. (p. 590).

Detection

- MEDITERRANEAN FRUIT FLY infestation found in Brownsville, Texas; first time in State. (p. 588).

New State records include WHEAT CURL MITE in Indiana, CALIFORNIA PEAR-SLUG in Rhode Island, ARBORVITAE LEAF MINER in Delaware, a WEEVIL (Brachyrhinus cribricollis) in Texas and LONE STAR TICK in Illinois. (p. 592).

For additional new county records see page 592.

Special Reports

Black Grass Bug Observations in Utah. (596).

Reports in this issue are for week ending June 17 unless otherwise indicated.

CONTENTS

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-JUNE TO MID-JULY 1966

The Weather Bureau's 30-day outlook for mid-June to mid-July calls for temperatures to average below seasonal normals over the eastern half of the Nation. Above normal temperatures are in prospect from the Rockies westward except for northern border States and the California coast where near normal values are indicated. In unspecified areas near normal temperatures are predicted. Rainfall is expected to exceed normal over the east gulf coast, the Atlantic Coast States, and the Great Lakes region. Subnormal rainfall is indicated for the western half of the Nation except for near normal amounts over the Pacific Northwest. In unspecified areas near normal precipitation is predicted.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D. C. 20250. Price $5.00 a year.

Weather of the Week page 579.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - ARKANSAS - Moths continue very high in northeast, few in northwest; very few in other areas. Wide variation probably results from cropping system in different areas. Larvae light to heavy generally on large wheat acreage in northeast. Not heavy enough for treatment. Current moths apparently from larvae present earlier. Sugar lines observed at night in Mississippi County showed high numbers of moths in area. Many new moths observed. (Boyer). MISSOURI - Larvae 8-40 per square foot in dense growth and downed areas of small grains in Lewis County. Heavy in orchardgrass pastures in St. Charles County area. (Thomas). Moth flights heavy in Pemiscot County. (Keaster, Harrendorf, Jones). KENTUCKY - Damaging small grains, especially barley. (Miller, June 13). INDIANA - In Starke County, 20 acres of timothy stripped and adjacent 25 acres of pasture heavily damaged. (Gould). Statewide infestations very light. (Huber). ILLINOIS - Larvae 0-6.5 per linear foot in standing wheat and up to 11.5 per square foot in lodged wheat in east-southeast district; larvae small to full grown. Larvae full grown and left fields in southeast. Moths abundant at light traps in northern area. (White et al.). WISCONSIN - Few early instars feeding on corn in Iowa County; populations insignificant. (Wis. Ins. Sur.). MINNESOTA - Adults increased in blacklight trap collections. Growers should check small grains for larvae. (Minn. Ins. Rpt.). DELAWARE - Larvae common on barley in one area of Sussex County. (Burbutis, Davis). MASSACHUSETTS - One moth in blacklight trap at Wareham, Plymouth County, June 7. (Tomlinson).

BEET LEAFHOPPER (Circulifer tenellus) - WYOMING - No adults found in sugar beets in Washakie County; 4 found in 10 square feet on weed hosts. (Pfadt). COLORADO - Small numbers continue on sugar beets throughout Arkansas Valley. (Schweissing).

CORN EARWORM (Heliothis zea) - FLORDIA - Larvae severely damaging corn at Ruskin, Hillsborough County. (Hale, June 1). GEORGIA - Light on corn in Tift County. (Leuck). ALABAMA - Larvae heavy in whorls of older corn in Limestone County. (Ledbetter, Agee). OKLAHOMA - Infesting 50 percent of terminals in Jackson County corn; occasional specimen seen in alfalfa in southwest area. (Okla. Coop. Sur.). ARIZONA - Light in alfalfa in areas of Cochise County; 2 per 25 sweeps. Light to moderate in Yuma County alfalfa and sorghum. (Ariz. Coop. Sur.). OREGON - First adults of season noted at Milton-Freewater, Umatilla County, June 7. (Goeden).

CORN LEAF APHID (Rhopalosiphum maidis) - KANSAS - Heavy in sorghum and corn in Montgomery, Cherokee and Crawford Counties. Extremely light in corn in northeast and east central districts. (Simpson). OKLAHOMA - Killing small sorghum plants in Grady County; heavy in Okfuskee County. Up to 200 per plant in Craig and 40 per plant in corn and sorghum in Jackson and Tillman Counties; moderate in sorghum in Ottawa County. (Okla. Coop. Sur.). TEXAS - Medium to heavy, widespread on grain sorghum throughout Kaufman, Collin and Hunt Counties. (Turney). NEVADA - Varied 1-7 per sweep in grain fields in Douglas and Lyon Counties. (Cooney).

GREENBUG (Schizaphis graminum) - KANSAS - Very light in wheat in Finney, Haskell and Stevens Counties; 0-7 per foot of row. Lady beetles and other predators abundant. (DePew, June 1). NORTH DAKOTA - Adults and nymphs up to 50 (averaged 20) per 100 sweeps in margins of small grain in eastern and southeastern counties. (McBride). MINNESOTA - Counts in small grain per 100 sweeps by district as follows: Southwest 31, southeast trace, south central 12, central 10, west central 13, northwest trace. Parasitized individuals appearing in some fields in west-central district. (Minn. Ins. Rpt.). WISCONSIN - Little change noted; averaged about 1 per sweep; occasionally more numerous than Macrosiphum avenae. (Wis. Ins. Sur.).

POTATO LEAFHOPPER (Empoasca fabae) - KANSAS - Moderate in alfalfa in Nemaha, Brown and Jackson Counties. (Simpson). ILLINOIS - Adults 50-360 per 100 sweeps in alfalfa in east-southeast district; 30-180 in southeast. No nymphs observed in east-southeast; 0-80 in southeast. (White). IOWA - Ranged 10-15 per 10 sweeps in

8 alfalfa fields between Fort Dodge and Sioux City June 7. (Iowa Ins. Inf.). MINNESOTA - Found as far north as the Red River Valley; counts generally low. Counts highest in central, south central and southeast districts; 8-13 per 100 sweeps in alfalfa. (Minn. Ins. Rpt.). MARYLAND - Adults 2-10 per 10 sweeps on second-growth alfalfa in Dorchester and Wicomico Counties. Adults evident on commercial snap beans in Wicomico and Worcester Counties. (U. Md., Ent. Dept.).

POTATO PSYLLID (Paratrioza cockerelli) - WYOMING - None found on matrimony-vine (Lycium sp.) at Worland, Washakie County. (Pfadt). COLORADO - Less than 1 adult per 100 sweeps on potatoes in 27 fields checked in Otero, Bent and Prowers Counties. (Schweissing).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - MINNESOTA - Increased slightly in all districts; nymphs appearing in southern counties. (Minn. Ins. Rpt.). NORTH DAKOTA - Up to 15 adults per 100 sweeps in small grains and grasses west of Voss, Walsh County. (Schulz). Up to 10 (averaged 5) per 100 sweeps in small grains in Ransom and Richland Counties. (Brandvik, Kaatz).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEVADA - Heavy in alfalfa at Stillwater, Churchill County. (York). NEW MEXICO - Several heavy infestations reported in Dona Ana County alfalfa. (N. M. Coop. Rpt.). OKLAHOMA - Ranged 1-20 per 10 sweeps in most alfalfa checked in southwest area; up to 240 per 10 sweeps in occasional field. (Okla. Coop. Sur.). KANSAS - Very light in alfalfa in Wabaunsee, Lyon and Labette Counties; less than 1 per sweep. (Simpson, Wilde, June 10). ILLINOIS - Remains low, 0-10 per 100 sweeps, in second-crop alfalfa in southeast. (White). WISCONSIN - Slight buildup noted in alfalfa fields in Spring Green and Arena areas. As high as 2 per sweep in one field; nearly 50 percent winged forms. (Wis. Ins. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - KANSAS - Few adults still flying; damage noted on 80-85 percent of corn examined in Doniphan County. (Eshbaugh). MISSOURI - Infestation in early corn in the southeastern "delta" area 50-80 percent. Most larvae second to fourth instar and entering leaf midribs and stalks. Oviposition nearly complete in St. Genevieve County; small larvae feeding in whorls of 40-60 percent of plants. Oviposition underway in central area. Egg masses 4-27 per 100 plants in early corn. (Houser). ILLINOIS - Moth emergence zero in northeast, 100 percent in west-southwest, southwest and southeast districts. (White). Egg masses 0-50 per 100 corn plants 24-59 inches extended height in southwest district; approximately 75 percent hatched but average of 4 percent of plants infested by small larvae. (Randell). In east-southeast district, egg masses 0-110 per 100 plants 27-53 inches high with 59 percent hatched; average of 2 percent of plants infested by first instars. In southeast district, on corn 36 inches extended height, egg masses 0-90 per 100 plants with average of 53 percent hatched and 0-40 percent of plants infested with first instars. Few moths observed in corn in east-southeast and southeast districts. (White). INDIANA - Adults taken in blacklight traps throughout State. Egg masses on corn in south central and southwest districts. (Huber). MICHIGAN - Blacklight trap collections show high adult population. (Newman).

MINNESOTA - First pupation of season observed in southern counties; 35 percent in southwest district. (Minn. Ins. Rpt.) NORTH DAKOTA - Pupation underway in southeastern counties. In 1965, pupation first observed June 1. Pupation of overwintering larvae 24 percent in Richland, Ransom and Sargent Counties; 19 percent in Cass County. (Brandvik, Kaatz). MARYLAND - Whorl infestations gradually increasing on more advanced corn in eastern and southern sections. (U. Md., Ent. Dept.). DELAWARE - Adults 5 per night in blacklight trap in Sussex County. Eggs and early larvae present on 2-50 percent of corn. (Burbutis, Davis). NEW JERSEY - Appearing in sweet corn later than usual this year; egg masses ready to hatch in southern counties. Egg masses 16 per 100 corn plants near New Market. Adults collected in traps throughout State. (Ins.-Dis. Newsltr.).

STALK BORER (Papaipema nebris) - KANSAS - Few larvae found in border rows of corn in northeast, east central and southeast districts. (Simpson). IOWA - First larvae of season collected in Fremont County. (Iowa Ins. Inf.). ILLINOIS - In festing 0-15 percent of corn plants in 1-2 marginal rows of corn in east-southeast district; none in southeast. (White). INDIANA - Fairly common in border row corn in south-central and southeastern areas. (Huber).

CUTWORMS - VERMONT - Continue to cause spotted damage. (Nielsen). DELAWARE - Agrotis ipsilon continues to damage corn in some areas. (Burbutis, Davis). VIRGINIA - Unspecified species heavily damaging seedling field corn in Tazewell County. (Isakson, McDonald). MISSOURI - Subterranean cutworms, mostly A. ipsilon, causing 20-50 percent damage in occasional field of late corn in central and east-central districts. (Thomas). MINNESOTA - Crymodes devastator damaged corn in Winona and Fillmore Counties. Infested fields in sod last year. (Minn. Ins. Rpt.).

WEBWORMS - VIRGINIA - Crambus caliginosellus severely damaged field corn in Franklin and Montgomery Counties. (Isakson). MARYLAND - Crambus spp. larvae caused moderate to heavy injury to seedling corn planted after sod in Queen Annes, Talbot and St. Marys Counties. (U. Md., Ent. Dept.). KANSAS - Loxostege spp. heavy, 3-5 per corn plant, in Edwards County. (Simpson).

CORN ROOTWORMS (Diabrotica spp.) - TEXAS - D. longicornis infestations expanded into Gonzales, Nueces, Washington, Guadalupe, Fayette, Bee and Austin Counties. Larvae feeding on developing root systems of young corn and grain sorghum and, in several cases, economic damage quite high; 3-5 larvae on many individual plants; however, damage unusually erratic or spotted throughout field. (Texas Coop. Rpt.). NEBRASKA - First larva of D. virgifera found in Dawson County June 14. (Weekman, Lawson). D. undecimpunctata howardi adults light, feeding on corn foliage in eastern area. (Roselle).

WIREWORMS - MISSOURI - Present in occasional field of late corn in central area; causing some stand reduction. (Peters, Fairchild). MINNESOTA - Continue to cause scattered damage to corn; no heavy damage reported. (Minn. Ins. Rpt.). WISCONSIN - These and Agrotis ipsilon causing some stand reduction of corn. (Wis. Ins. Sur.). NORTH CAROLINA - Melanotus communis destroyed over 50 percent of stand in 18-acre field of corn in peat-muck soil, Washington County; corn 8-12 inches high. Larvae feeding at base of plants; pupation not observed. (Mount, June 9). VERMONT - Limonius agonus and Agriotes mancus damaging corn in Franklin County. (Nielsen).

CORN ROOT APHID (Anuraphis maidiradicis) - IOWA - Ranged 25-30 per seedling corn plant in Guthrie County. (Iowa Ins. Inf.). OHIO - First of season reported from Fayette County. (Lockman, Blair). MARYLAND - Conspicuously stunting 10 percent of stand in 10-acre field of field corn in Talbot County. (U. Md., Ent. Dept.).

CHINCH BUG (Blissus leucopterus) - OKLAHOMA - Heavy numbers killing young sorghum plants in Muskogee County. Moved to sorghum when near-by barley and wheat cut. Moderate in Garfield County. (Okla. Coop. Sur.). ALABAMA - Adults 2-6 per stalk on corn in Autauga County field. (Sanford et al.).

CORN BLOTCH LEAF MINER (Agromyza parvicornis) - DELAWARE - Common in corn in many areas of State. (Burbutis, Davis). NORTH CAROLINA - Probably this species, heavily mining leaves of corn in several Columbus County fields. (Raper, Mount).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - ILLINOIS - Varied 0-500 (averaged 142) per 100 sweeps in wheat in east-southeast district. (White). WISCONSIN - Little change noted; averaged about 1 per sweep. (Wis. Ins. Sur.). MINNESOTA - Average counts per 100 sweeps by districts as follows: Southwest 24, south central 45, southeast 16, central 277, west central 32, northwest trace. (Minn. Ins. Rpt.). NORTH DAKOTA - Adults and nymphs 2 per 100 sweeps in wheat west of Voss, Walsh County. (Schulz). NEVADA - Varied 1-7 per sweep in grain fields in Douglas and Lyon Counties. (Cooney).

SAY STINK BUG (Chlorochroa sayi) - UTAH - This species and Irbisia spp. damaging dryland wheat south of Fillmore, Millard County. (Hall, Knowlton).

GRASS BUGS - CALIFORNIA - Thyrillus pacificus and Irbisia solani medium on oats in Kitchen Creek, San Diego County. (Cal. Coop. Rpt.).

THRIPS - MARYLAND - Nymphs and adults moderate to heavy on barley and wheat heads in Kent County. (U. Md., Ent. Dept.). NORTH DAKOTA - Migrating Limothrips denticornis adults severe in barley field north of Gwinner, Sargent County; up to 8 per stem. Barley in boot stage. (Brandvik, Kaatz).

HESSIAN FLY (Mayetiola destructor) - KANSAS - Survey conducted June 1-2 in 14 counties: Percent infestation ranged 0-28; pupae per 100 stems ranged from 58 in Reno County location to zero at locations in Dickinson, Marion, Reno, Thomas and Russell Counties. (Simpson, June 10).

WHEAT CURL MITE (Aceria tulipae) - INDIANA - Collected from wheat in Lawrence County by D. L. Matthew. Det. by H. H. Keifer. This is a new State record. (Huber).

TURF, PASTURES, RANGELAND

GRASS BUGS - UTAH - Black species, apparently Irbisia spp., damaging several hundred acres of crested and intermediate wheatgrass pastures at Alton; also large acreage in area to south of Alton for 10 miles in Kane County and wheatgrasses in Kanarraville area, Iron County. (Knowlton, June 13). For black grass bug observations in Utah, see page 596.

CHINCH BUG (Blissus leucopterus) - TEXAS - Heavy and attacking several St. Augustine lawns in Columbus area, Colorado County. (Moore).

A SPITTLEBUG (Prosapia bicincta) - FLORIDA - Adults injured young St. Augustine grass on ranch near Belle Glade. (Genung).

PAINTED LADY (Vanessa cardui) - CALIFORNIA - Larvae medium on Canada thistle in South Fork area, Humboldt County. Larvae heavy on Russian and bull thistles in Quincy, Plumas County. Heavy on Onopordum acanthium in Adin, Modoc County. (Cal. Coop. Rpt.). UTAH - Larvae common on burdock in areas of Utah, Juab and Sanpete Counties. (Knowlton). IOWA - Larvae feeding on thistle in scattered areas over State. (Iowa Ins. Inf., June 13).

SPIDER MITES (Tetranychus spp.) - ARIZONA - Spotted infestations appearing in Bermuda grass seed fields in Roll and north Gila Valley areas of Yuma County. (Ariz. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - VERMONT - Populations increased during week, 90 percent of tips showing damage; 25-30 larvae per sweep in Addison; populations higher in Bennington County. (Nielsen). DELAWARE - Larvae abundant in several areas causing considerable injury to some second-growth alfalfa. (Burbutis, Davis). MARYLAND - Adults and larvae causing conspicuous foliage injury to second-growth alfalfa in central Frederick County. (U. Md., Ent. Dept.). VIRGINIA - Many alfalfa fields brown after cutting in Amelia County; large numbers of adults in stubble. Controls applied after cutting. (Holmes, June 7). OHIO - New adults migrating from alfalfa in central and southern areas. Reported on soybeans and other crops as well as in houses in Pickaway and Highland Counties. (Hamrick, Jones). Although forage fields containing much alfalfa difficult to find in southeast, field in Morgan County yielded 28 larvae per sweep. Where alfalfa cut early and some regrowth occurred in Ross County, less than one larva per sweep collected. Few

alfalfa fields remain in southeast as well as some counties in central, southwest and east-central, except where control measures taken. Hay cutting in progress for some time; 50 percent or more of alfalfa, timothy and clover cut. (Rose). INDIANA - On second-growth alfalfa in Ohio River area, 4-67 early instars per sweep, higher in Floyd and Harrison Counties. In more northern areas of southern third of State, larvae 2 per 10 sweeps to 10 per sweep on second-growth alfalfa; 75 percent first to third instars. Day samples show adults 1-6 per 10 sweeps throughout southern third of State. (Huber). ILLINOIS - Found in following new counties: De Kalb, Peoria, Bureau, Knox, Henry. Larvae 2 per 1,000 sweeps in these counties. None found in Stark, Lee, Putnam, Whiteside or Boone Counties although 1,600-2,200 sweeps taken in each county. (Kuhlman). Adults per 100 sweeps 0-8 in east-southeast and 10-100 in southeast district; larvae 0-80 in east-southeast and 50-120 in southeast district. (White). NORTH DAKOTA - Single adult collected from sweetclover field south of Crosby, Divide County. This new county record. (Brandvik, Kaatz). SOUTH DAKOTA - Increase continues in alfalfa in Black Hills area. Up to 1,300 larvae (average 450) per 100 sweeps in Lawrence County areas, mostly first and second instar. Larvae variable from field to field in Meade County; up to 650 per 100 sweeps in some fields; average 100. Larvae 100-400 per 100 sweeps in Pennington County fields, 150-600 in areas of Custer County; averaged 100 per 100 sweeps in areas of Fall River County. Cutting of first-crop alfalfa 95 percent complete south of Hermosa, Custer County; 50 percent in northern Black Hills. Adult counts generally low; 30-60, or less, per 100 sweeps; up to 175 per 100 sweeps in few areas. Second-crop alfalfa should be watched for damage as adult and larval carryover may be quite high in some fields. (Jones).

NEBRASKA - Light infestations, 20-50 per 100 sweeps in Keith County. (Hagen). Larvae 2 per 250 sweeps May 19 in Gosper County. This is new county record. Det. by D. M. Anderson. (Manglitz). WYOMING - Larvae numerous in alfalfa fields in Big Horn Basin area. Average counts per 10 sweeps in county: 410 in Hot Springs, 420 in Washakie, 480 in Big Horn and 330 in Park. Largest numbers found at Shell, Big Horn County, where larvae averaged 1,100 per 10 sweeps. Fremont County alfalfa fields averaged 340 larvae per 10 sweeps. (Pfadt). COLORADO - First cutting of alfalfa being completed; larvae 500-1,000 per 100 sweeps in heavily infested fields in Mesa, Delta and Montrose Counties. (Bulla). Larval numbers continue to decrease in all areas of Arkansas Valley. (Schweissing). Parasitism by Bathyplectes curculionis 30-40 percent in Larimer County. Undetermined hyperparasite appearing. (Simpson). NEVADA - Larval populations low in treated fields checked in Churchill, Douglas, Lyon and southern Washoe Counties. Untreated fields in same areas yielded 120+ per sweep and damage was severe. (Cooney). CALIFORNIA - Heavy on alfalfa in Manteca, San Joaquin County. (Cal. Coop. Rpt.).

CLOVER HEAD WEEVIL (Hypera meles) - TEXAS - This relatively new insect to State reported from following counties: Upshur, Houston, San Augustine, Tyler, Jasper, Nacogdoches and Rusk. Pest established in eastern area; increasing distribution rapidly. Heavy on several late fields of crimson clover near Henderson, Rusk County. (Taylor).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NORTH DAKOTA - Up to 100 per 100 sweeps in some Richland County sweetclover fields. Up to 60 per 100 sweeps in sweetclover in Burke County with trace numbers in other northwestern counties. (Brandvik, Kaatz).

ASH-GRAY BLISTER BEETLE (Epicauta fabricii) - ILLINOIS - Ranged 0-20 per 100 sweeps in southeast area alfalfa; first of season. (White). WISCONSIN - Few adults in alfalfa in sandy-soiled areas of western Dane County. (Wis. Ins. Sur.). SOUTH DAKOTA - Up to 40-50 adults per 100 sweeps in alfalfa in Black Hills area and in Stanley, Jackson, Washabaugh, Bennett and Shannon Counties. (Jones). NORTH DAKOTA - Trace numbers found in alfalfa in northwestern area. (Brandvik, Kaatz).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Larvae 3-5 per 25 sweeps in alfalfa near Roswell, Chaves County. (Mathews). UTAH - Common in alfalfa in areas

of Washington County. (Knowlton). COLORADO - Small numbers continue to appear in some alfalfa in Arkansas Valley. (Schweissing). MINNESOTA - Noted in alfalfa. (Minn. Ins. Rpt.). IOWA - Larvae 5 per 10 sweeps in 8 alfalfa fields between Fort Dodge and Sioux City June 7. (Iowa Ins. Inf.). MARYLAND - Larvae light on alfalfa in Dorchester and Wicomico Counties. (U. Md., Ent. Dept.). DELAWARE - Larvae noted on alfalfa in Kent and New Castle Counties. (Burbutis, Davis).

GREEN CLOVERWORM (Plathypena scabra) - DELAWARE - First larvae of season present on alfalfa in Kent County. (Burbutis, Davis). ILLINOIS - Mostly very young larvae 0-40 per 100 sweeps in second-crop alfalfa in southeast. (White). MINNESOTA - Noted in alfalfa. (Minn. Ins. Rpt.).

ALFALFA WEBWORM (Loxostege commixtalis) - TEXAS - Building up on alfalfa near Bryan, Brazos County, but noneconomic. (Texas Coop. Rpt.).

A LEAF ROLLER MOTH (Platynota stultana) - CALIFORNIA - Larvae increasing on alfalfa at several locations in Fresno County. (Cal. Coop. Rpt.).

PEA APHID (Acyrthosiphon pisum) - NEVADA - Infestations increased rapidly and counts varied from 40-500+ per sweep averaging 150+ per sweep in Churchill, Douglas, Lyon and southern Washoe County alfalfa fields. (Cooney). Averaged 50+ per sweep in untreated alfalfa seed fields in Orovada, Huboldt County. (Lundahl). UTAH - Increasing in some alfalfa in areas of Millard County. (Knowlton). NEW MEXICO - Mostly light, occasionally moderate to heavy, in alfalfa in Dona Ana, Chaves and Eddy Counties. (Mathews, Garcia). OKLAHOMA - Heavy in isolated alfalfa fields in Sequoyah County; 25 per 10 sweeps in Payne County. (Okla. Coop. Sur.). COLORADO - Remains light on first-cutting alfalfa in Mesa, Delta and Montrose Counties; 5-100 per 100 sweeps. (Bulla). Decreased in recently cut fields in Arkansas Valley; 10-100 per 100 sweeps. In uncut fields, 1,000-7,000 per 100 sweeps. (Simpson). Lady beetles, damsel bugs and lacewing larvae numerous in all areas. (Schweissing). WYOMING - Adults and larvae per 10 sweeps in Big Horn Basin alfalfa as follows: 340 in Hot Springs County, 290 in Washakie County, 410 in Big Horn County, 230 in Park County. (Pfadt). NORTH DAKOTA - Up to 400 adults and nymphs per 100 sweeps in Richland County alfalfa. Ranged up to 300 per sweep but averaged 100 per 100 sweeps in alfalfa and sweetclover in northwest counties. (Brandvik, Kaatz). MINNESOTA - Increased on alfalfa in all districts; counts per 100 sweeps as follows: Southwest 1,161, south central 691, southeast 461, central 1,380, west central 791, northwest 300. Predators numerous but have not kept pace with aphids. Alfalfa could be cut early where A. pisum populations high; controls not recommended. (Minn. Ins. Rpt.). IOWA - Range 10-20 per 10 sweeps in 8 alfalfa fields between Fort Dodge and Sioux City June 7. (Iowa Ins. Inf.). WISCONSIN - Little change noted in alfalfa. Winged aphids appearing although high percent parasitized. (Wis. Ins. Sur.). ILLINOIS - Light in alfalfa in southwest. (White). INDIANA - Generally light on second-growth alfalfa in southern half of State. (Huber). MICHIGAN - Continues heavy in uncut alfalfa in Ingham County; parasitism high. (Newman).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - Numerous on alfalfa and other crops in most areas. (Burbutis, Davis). MARYLAND - Adults about 2 per sweep on second-growth alfalfa near Cambridge, Dorchester County. (U. Md., Ent. Dept.). NORTH DAKOTA - Ranged up to 30 (averaged 10) per 100 sweeps in alfalfa in northwestern counties. (Brandvik, Kaatz).

LYGUS BUGS (Lygus spp.) - NEVADA - Averaged 30-40 per sweep in alfalfa seed fields where no treatments applied. (Lundahl). Heavy in alfalfa in Pahrump Valley, Nye County. (Slater). COLORADO - Increased in uncut alfalfa in Arkansas Valley; 1,000 per 100 sweeps throughout area. (Schweissing). WYOMING - Adults and nymphs per 10 sweeps in alfalfa in Big Horn Basin as follows: 42 in Hot Springs County, 38 in Washakie County, 44 in Big Horn County, 26 in Park County. Averaged 32 per 10 sweeps in Fremont County. (Pfadt). KANSAS - Nymphs 15-20 per 10 sweeps in alfalfa in Nemaha, Brown and Jackson Counties. (Simpson).

ALFALFA PLANT BUG (Adelphocoris lineolatus) - DELAWARE - Adults and nymphs common in area of Kent County; 60 per 100 sweeps. (Burbutis, Davis). INDIANA - Adults range 4 per 10 sweeps to 7 per sweep on alfalfa in southern half of State. (Huber). IOWA - Averaged 10 per 10 sweeps in 8 alfalfa fields between Fort Dodge and Sioux City June 7. (Iowa Ins. Inf.). SOUTH DAKOTA - Nymphs 200 per 100 sweeps in Lawrence County alfalfa. (Jones, June 9).

PLANT BUGS - NEW MEXICO - Common in alfalfa in Dona Ana County. (Garcia). MINNESOTA - Nymphs of Adelphocoris lineolatus, A. rapidus and Lygus lineolaris appearing rapidly in some fields. Counts per 100 sweeps by district as follows: Southwest 128, south central 82, southeast 53, central 118, west central 80, northwest 5. (Minn. Ins. Rpt.). WISCONSIN - Populations remain high in alfalfa fields; about 15-20 per sweep. Adults of A. lineolatus, A. rapidus and L. lineolaris noted in advanced areas although nymphs predominate. (Wis. Ins. Sur.). OHIO - Some random high populations of L. lineolaris and A. lineolatus in legume forage fields in southeast. Some clover in Gallia County with 8 L. lineolaris per sweep and 2 alfalfa fields in Ross and Morgan Counties with 1-2 A. lineolatus per sweep. (Rose).

MEADOW SPITTLEBUG (Philaenus spumarius) - OHIO - Adults 2-14 per sweep on clover and alfalfa in south and southeast counties. Highest numbers in uncut clover field in Gallia County. (Rose). INDIANA - Adults dispersed from alfalfa and clover throughout southern third of State. (Huber).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Increasing in alfalfa in Yuma, Maricopa and Pinal Counties; 210 per 100 sweeps. Light in Cochise and Graham Counties. (Ariz. Coop. Sur.). OKLAHOMA - Light in most alfalfa in southwest counties and in Payne County. (Okla. Coop. Sur.).

LEAFHOPPERS (Empoasca spp.) - INDIANA - Becoming common on second-growth alfalfa throughout southern two-thirds of State. Adults 5-80 per 100 sweeps. (Huber).

THRIPS - OKLAHOMA - Mostly Frankliniella spp., moderate to heavy in alfalfa in southwest counties and in Payne County. (Okla Coop. Sur.).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - KANSAS - Ranged 4-15 per foot of row on soybeans in Lyon and Wabaunsee Counties, week ending June 10. Considerable damage. (Wilde, Simpson). Ranged 1-3 per linear foot in Cherokee County same period. (Wilde). ILLINOIS - Small number of adults on soybean plants in southeast. (White). MARYLAND - Adults generally above normal and causing moderate to heavy damage on foliage of young soybeans in Wicomico and Worcester Counties. (U. Md., Ent. Dept.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - MARYLAND - Moderate adult feeding noted on soybeans near Snow Hill, Worcester County. (U. Md., Ent. Dept.).

PAINTED LADY (Vanessa cardui) - NEBRASKA - Migrating larvae damaged soybeans along field margins in Cedar County. (Roselle). SOUTH DAKOTA - Larvae present on thistle in some soybean fields. Controls may be necessary if larvae move to soybeans. (Jones). MINNESOTA - Larvae feeding on soybeans in central district; populations low. (Minn. Ins. Rpt.).

PEANUTS

THRIPS - OKLAHOMA - Mostly Frankliniella spp. moderate on peanuts in Bryan County. (Okla. Coop. Sur.). GEORGIA - Light to moderate across peanut belt. (French). ALABAMA - Heavy and widespread throughout Geneva County on peanuts. (Reynolds).

PALE-STRIPED FLEA BEETLE (Systena blanda) - VIRGINIA - Infesting peanut field in Sussex County. (Isakson, Parson).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - One overwintered adult collected on flight screens in McLennan and Falls County areas. Overwintered weevils found in 3 of 37 treated fields and in 2 of 15 untreated fields. Averaged 4 per acre in 37 treated fields (maximum 62); averaged 8 in 15 untreated fields (maximum 62). Overall average 5. This compares with 22 per acre during corresponding week of 1965. (Cowan et al.). LOUISIANA - Weevils found in 4 of 33 fields checked in Madison Parish; 25-75 per acre in 4 fields. Total of 23 weevils recovered from 150 trap cotton plants placed near cotton fields. (Cleveland et al., June 16). MISSISSIPPI - Increase noted in Noxubee and Chickasaw Counties following heavy rains, average 4 per 100 row feet. Average of 9 overwintered weevils per 100 row feet noted in cotton just beginning to square in Itawamba County. Increase in overwintered weevil population evident in Carroll and Yazoo Counties. (Dinkins). ALABAMA - Adult emergence continues; egg laying increasing in central and south sections where squares large enough. Population varies from extremely low to extremely high. Examination of larvae in squares indicates first "hatchout" in older cotton in Lee, Montgomery, Dallas, Autauga and Lowndes Counties will occur June 26 to June 30. First "hatchout" in younger cotton will be correspondingly later in relation to age of squares. Live weevil counts much higher and more noticeable in northern areas than during last 3 years. No egg laying in extreme northern area since cotton 2-4 weeks later than usual and fruiting squares too small to support eggs and larvae. (McQueen).

GEORGIA - Infestations heaviest ever seen at this time of year; up to 31 percent punctured squares in untreated fields, Dooly County. (Fulford). TENNESSEE - Appearing in all counties supporting weevil infestations in 1965. Heaviest in southern tier of counties, especially in southeastern portion of cotton-growing area. Most weevils feeding in terminal buds. (Locke). SOUTH CAROLINA - Weevils easily found in all counties throughout Pee Dee and Savanah River Valley; also found in most Piedmont fields. (Cott. Ltr., June 13). Heavy in practically all unprotected fields in Florence area. Total of 84 trapped on 9 groups of 10 potted plants compared with 137 same time last year. Adults averaged 10 per acre in treated plots; ranged 260-676 per acre in untreated plots. (Taft et al., June 15).

FLEA BEETLES - TENNESSEE - Phyllotreta striolata and other species continue to cause considerable damage to slow growing cotton in western section. Further damage expected until occurrance of favorable weather for growth of cotton. (Locke).

BOLLWORMS (Heliothis spp.) - Light on cotton in Yuma, Maricopa, Pinal and Pima Co. Counties. No control needed. (Ariz. Coop. Sur.). TEXAS - Light in cotton in McLennan and Falls Counties. In 37 treated fields, counts averaged 0.7 egg and 0.1 larva per 100 terminals; maximum 4.2 eggs and 2.3 larvae. In 15 untreated fields, counts averaged 0.5 egg and 0.1 larva per 100 terminals; maximum, 2.2 eggs and 0.1 larva. Three larvae previously collected on cotton determined H. zea; 19 larvae from other hosts also H. zea. Total H. zea to date 231. (Cowan et al.). LOUISIANA - Ten of 12 fields infested in Madison Parish, with 1-7 larvae per field. Eggs found in all 12 fields; 3-11 per terminal. Total of 22 H. zea and 1 H. virescens collected from blacklight trap. (Cleveland et al., June 16). ALABAMA - Occurring in buds and squares of cotton in south and central districts in greater numbers than in several years. Observations indicate predators destroying most small larvae only after considerable "ragging" has occurred and some squares destroyed. Heavy flights of H. virescens observed in cotton in Montgomery, Lowndes, Dallas and Autauga Counties; extremely large numbers of eggs in cotton. Adults of H. zea emerging from 60-acre vetch field in Lee County in extreme numbers. (McQueen). GEORGIA - One larva per 100 terminals, in Worth County (French); a newly hatched larva found on young cotton in Polk County. (Jordan). SOUTH CAROLINA - Found in terminal growth of young cotton in several Coastal Plain counties. (Cott. Ltr., June 13). Total of 3 H. zea taken in light trap at Florence; no H. virescens. (Taft et al., June 15).

PLANT BUGS - ALABAMA - Lygus lineolaris light to medium in some fields of Montgomery, Dallas and Autauga Counties. Some small and medium size square damage. (McQueen). MISSISSIPPI - Light on cotton in Chickasaw, Itawamba and Noxubee Counties. Moderate in Yazoo County. (Dinkins). LOUISIANA - L. lineolaris found in 65 of 67 fields in Madison Parish; ranged 0-29 (average 6.8) per field. Fleahoppers found in 20 fields; ranged 0-18 (average 1) per field. (Cleveland et al., June 16). TEXAS - Reached damaging levels in many fields over McLennan and Falls County area as adults moved from horsemint to cotton. Nymphs heavy in most fields not recently treated. Averaged 14.3 per 100 terminals in 37 treated fields (maximum 71); averaged 54.2 (maximum 92) per 100 terminals in 15 untreated fields. (Cowan et al.). NEW MEXICO - Spanogonicus albofasciatus light in most cotton checked in Eddy and Chaves Counties. (Mathews, Garcia). ARIZONA - Continue to increase and damage cotton in Yuma, Maricopa, Pinal and Pima Counties. Square damage 15-20 percent. (Ariz. Coop. Sur.). NEVADA - Heavy populations present in alfalfa in Pahrump Valley, Nye County, expected to move to cotton after alfalfa cut. (Slater).

COTTON FLEAHOPPER (Psallus seriatus) - ALABAMA - Light to medium in some fields of Montgomery, Dallas and Autauga Counties. Some small and medium size square damage. (McQueen). MISSISSIPPI - Light in Chickasaw, Itawamba and Noxubee Counties. Moderate to heavy on cotton in Yazoo County. (Dinkins). OKLAHOMA - Light numbers active in southwest area; 3 per plant in occasional Jackson County field. (Okla. Coop. Sur.).

THRIPS - SOUTH CAROLINA - Caused untreated cotton seedlings to appear ragged. High populations seriously damaged crop and delayed squaring. Where systemic insecticides used and weather approached normal, control apparent. (Cott. Ltr., June 13). GEORGIA - Light to moderate in Spalding and Putnam Counties (Beckham); damage moderate on older cotton, very little on younger stands in Calhoun and Polk Counties (Jordan). ALABAMA - Light to heavy and general in northern counties where cotton still young. (McQueen). TENNESSEE - Continue to cause considerable damage to slow growing cotton over western area. Further damage expected until weather favorable for cotton growth. (Locke). ARKANSAS - Crop late; buildup may be later than normal. Heavy rain in northeast apparently reduced population on cotton in area. (Boyer). LOUISIANA - Remain heavy in experimental plots in Madison Parish. Average in 14 seed treated plots 3.08 per plant (range 0.44-5.40). In 9 spray treated plots averaged 1.14 per plant (range 0.28-3.50). In 3 untreated check plots averaged 1.4 per plant (range 0.32-3.5). (Cleveland et al.). TEXAS - Continue to damage untreated fields of June planted cotton in McLennan and Falls Counties. (Cowan et al.). OKLAHOMA - Frankliniella spp. up to 365 per 20 cotton plants in Jackson County; heavy in Grady and McCurtain Counties, moderate in Bryan and Okmulgee Counties; 1-6 per plant in Tillman County. (Okla. Coop. Sur.). NEW MEXICO - Frankliniella occidentalis and Thrips tabaci problem on seedling cotton in Chaves County. (Chappell). ARIZONA - Continued to cause light to moderate damage on cotton in Cochise County; appear on decline. (Ariz. Coop. Sur.).

APHIDS - NEW MEXICO - Aphis gossypii light and spotted in cotton near Artesia, Eddy County. (Mathews). OKLAHOMA - A. gossypii ranged up to 15 per plant on some cotton plants in Grady County. Light in Beckham County. (Okla. Coop. Sur.). TEXAS - Aphids occasionally light in cotton in McLennan and Falls Counties. (Cowan et al.). TENNESSEE - Aphids present in most cotton fields in western area, but apparently not increasing. (Locke). SOUTH CAROLINA - Aphids appear more of problem in upper half of State; however, damage noted in all sections. (Cott. Ltr., June 13).

SPIDER MITES (Tetranychus spp.) - MISSOURI - T. atlanticus light on seedling cotton plants around field borders in "delta" area of southeast. (Jones). ALABAMA - Of very little consequence in cotton to date. (McQueen). SOUTH CAROLINA - Appeared on seedling cotton in Spartanburg, Marlboro, Hampton and Edgefield Counties. (Cott. Ltr., June 13).

TOBACCO

BUDWORMS (Heliothis spp.) - FLORIDA - H. virescens heaviest in 3 years, increase continuing on shade-grown tobacco in Quincy area, Gadsden County. (Fla. Coop. Sur.). Fairly numerous on flue-cured tobacco in Gainesville area, Alachua County; not causing severe damage. (Kuitert). GEORGIA - Heliothis spp. light to moderate across tobacco belt. (French).

TOBACCO HORNWORM (Manduca sexta) - FLORIDA - Noticeable on shade-grown tobacco in Quincy area, Gadsden County, for first time in 4 years. (Fla. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Moderate to heavy populations causing about 1.3 percent damage to shade-grown tobacco in Quincy area, Gadsden County. (Fla. Coop. Sur.). GEORGIA - Light to moderate across tobacco belt. (Miles, French). SOUTH CAROLINA - Heavy on tobacco in Georgetown County. (Hardee, June 14). NORTH CAROLINA - Infesting several tobacco fields in Columbus County, and one field in Jones County. (Franck, June 10).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - FLORIDA - Adults common and lightly damaging shade-grown tobacco in Quincy area, Gadsden County. (Fla. Coop. Sur.). MARYLAND - Adults 5-15 per plant on young tobacco near Croom, Prince Georges County. (U. Md., Ent. Dept.).

WIREWORMS - KENTUCKY - Currently damaging tobacco transplants. (Miller, June 13).

GREEN PEACH APHID (Myzus persicae) - FLORIDA - Causing more trouble on shade-grown tobacco in Quincy area, Gadsden County, than anytime since 1946. (Fla. Coop. Sur.).

SUGAR BEETS

BEET WEBWORM (Loxostege sticticalis) - COLORADO - Moths appearing in large numbers in Arkansas Valley light traps; larvae found in sugar beet fields. (Schweissing).

CUTWORMS - UTAH - Injured young sugar beets in several counties. (Knowlton). Damaged young sugar beets at Price, Carbon County; 10 acres may be plowed up; stand much reduced on additional 15 acres. (Argyle, Knowlton).

SPINACH LEAF MINER (Pegomya hyoscyami) - OHIO - This or P. betae infested sugar beets in Putnam County. Heavy on red beets and spinach in Allen County. (Blair, Leimbach). MICHIGAN - Larvae suspected this species, recently injured foliage of sugar beets in Saginaw Valley area. (Guyer). COLORADO - Infesting sugar beets throughout Arkansas Valley. Larvae have left plants in most instances. Generally economically unimportant. (Schweissing).

MISCELLANEOUS FIELD CROPS

HOP APHID (Phorodon humuli) - OREGON - Building up in hops in Malheur, Benton, Polk and Marion Counties. (Morrison).

HARLEQUIN BUG (Murgantia histrionica) - CALIFORNIA - Heavy on mustard in Fruto, Glenn County. (Shaffer).

ALFALFA LOOPER (Autographa californica) - OREGON - First-stage larvae appearing in peppermint fields, Benton County. Numerous adults noted. (Morrison).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - OREGON - Heavy on garden hops at Ontario, Malheur County. (Morrison).

POTATOES, TOMATOES, PEPPERS

TOMATO FRUITWORM (Heliothis zea) - OKLAHOMA - Heavily damaged tomatoes in Bryan County. (Okla. Coop. Sur.). VIRGINIA - Some adult activity noted on Eastern Shore. (Hofmaster).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Heavy numbers feeding on potato tubers in northwest Phoenix; damage 20-25 percent on about 150 acres. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Heavy on potato vines in northwest Maricopa County. (Ariz. Coop. Sur.).

CUTWORMS - UTAH - Damaging potatoes in Castle Dale and other areas of Emery County. (Day, Knowlton).

COLORADO POTATO BEETLE (Leptinotarsa decimlineata) - RHODE ISLAND - Ovipositing in field in Washington County. (Mathewson, June 10). VIRGINIA - Many larvae pupating on Eastern Shore. Few new adults observed. (Hofmaster).

FLEA BEETLES - OHIO - Especially abundant on corn and some garden vegetables over much of State this season. Different species numerous and feeding on eggplant and tomatoes in garden in Delaware County. (Galford). CONNECTICUT - Damaging wide variety of plants, especially tomatoes, in home vegetable gardens. (Savos). VERMONT - Damage easily found. (Nielsen). MAINE - Epitritix cucumeris overwintered adults moved to potatoes in Presque Isle area; feeding damage very light; mating underway. (Shands et al.).

POTATO APHID (Macrosiphum euphoribae) - MARYLAND - Moderate to heavy on unprotected potatoes and tomatoes in Allegany and Dorchester Counties. (U. Md., Ent. Dept.).

Aphids on Potatoes in Maine - Maturation of spring migrants of Aphis nasturtii, Myzus persicae and Macrosiphum euphorbiae from Houlton to Presque Isle began June 4-5, 8 and 8-9, respectively. Survey of colony abundance on Canada plum June 7 and 8 revealed M. persicae in only 2 of 26 thickets examined near Presque Isle and Monticello; noted also in thickets in vicinities of Houlton and Lee. On June 17 in 2 fields near Presque Isle, early planted potatoes ranged 3-6 percent infested. M. euphorbiae predominated, followed by M. persicae. (Shands et al.).

THRIPS - KANSAS - Heavy on tomatoes at Tipton, Mitchell County. (Eshbaugh). CALIFORNIA - Frankliniella occidentalis nymphs and adults on potatoes in Pixley, Tulare County. (Cal. Coop. Rpt.).

TOMATO RUSSET MITE (Aculus lycopersici) - CALIFORNIA - Heavy on tomato plants in Mendota, Fresno County. (Cal. Coop. Rpt.).

BEANS AND PEAS

BEAN APHID (Aphis fabae) - WISCONSIN - Colonies forming on commercial snap beans near Spring Green. (Wis. Ins. Sur.).

PEA APHID (Acyrthosiphon pisum) - WISCONSIN - Little change noted in peas; build-up may again occur in midseason. Majority of winged aphids on peas unparasitized. (Wis. Ins. Sur.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - DELAWARE - Adults, eggs and feeding injury noticeable in many bean fields throughout State. (Burbutis, Davis). MARYLAND - First larva of season observed June 15 on garden snap beans near Snow Hill, Worcester County. (U. Md., Ent. Dept.). ALABAMA - Second-generation larvae causing considerable damage to beans in home gardens in Lee, Tallapoosa, Chambers and Coosa Counties. (Barwood et al.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MARYLAND - Adults heavy on large bean planting near Snow Hill, Worcester County. (U. Md., Ent. Dept.).

POTATO FLEA BEETLE (Epitrix cucumeris) - MAINE - Moderate populations damaging beans in home gardens in Androscoggin County. (Boulanger, June 10).

PALE-STRIPED FLEA BEETLE (Systena blanda) - DELAWARE - First adults of season present on beans in areas of Sussex County. (Burbutis, Davis).

COLE CROPS

DIAMONDBACK MOTH (Plutella maculipennis) - MARYLAND - Larvae moderate on large cabbage planting near Salisbury, Wicomico County. (U. Md., Ent. Dept.).

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - Larvae infesting leaf-stems of horseradish, Kent County. (Burbutis, Davis).

A FLEA BEETLE (Phyllotreta crucifera) - OREGON - Adults abundant since June 1 on wild hosts and cultivated cruciferous crops near Corvallis, Benton County. (Crowell). DELAWARE - Adults abundant on horseradish, causing moderate injury to large commercial field in Kent County. (Burbutis, Davis). VERMONT - Damage easily found. (Nielsen).

IMPORTED CABBAGEWORM (Pieris rapae) - MARYLAND - Larvae very destructive to unprotected cabbage plantings in Snow Hill area, Worcester County. (U. Md., Ent. Dept.).

CUCURBITS

SQUASH BUG (Anasa tristis) - OKLAHOMA - Moderate numbers damaging squash and melons in Okmulgee County. (Okla. Coop. Sur.).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - COLORADO - Noted on cantaloup in all areas of Arkansas Valley; 2 adults per plant in some fields. (Schweissing).

GENERAL VEGETABLES

SWEETPOTATO FLEA VEETLE (Chaetocnema confinis) - MARYLAND - Adults 1-8 per sweetpotato plant in Wicomico and Worcester Counties. (U. Md., Ent. Dept.).

GOLDEN TORTOISE BEETLE (Metriona bicolor) - MARYLAND - Adults caused moderate to heavy foliage injury to sweetpotatoes in Wicomico and Worcester Counties. (U. Md., Ent. Dept.).

SPINACH LEAF MINER (Pegomya hyoscyami) - UTAH - Seriously damaging table beet and Swiss chard foliage in American Fork area, Utah County. (Knowlton, June 13). OHIO - Heavy on red beets and spinach in Allen County. (Blair, Leimbach).

ONION MAGGOT (Hylemya antiqua) - COLORADO - Onion losses in vicinity of Vineland decreasing from 30 percent to 2 percent in outlying fields. Larvae pupating, some adult emergence noted. (Schweissing). MICHIGAN - Larval infestations in commercial plantings in Ingham, Allegan and Newaygo Counties. (Guyer). NEW JERSEY - Total of 18 taken on 7 sticky board traps at Cedarville June 16. (Ins.-Dis. Newsltr.).

THRIPS - COLORADO - Thrips tabaci building up rapidly in many fields of seeded onions in Arkansas Valley; 0-30 per plant, controls advised. Controls already applied in set onion fields; populations low and under control. (Schweissing). NEVADA - Undertermined species continue heavy on garlic in Lyon County. (Batchelder). CALIFORNIA - Frankliniella occidentalis nymphs and adults heavy on onion plantings in Imperial Beach, San Diego County. (Cal. Coop. Rpt.).

SPIDER MITES - CALIFORNIA - Tetranychus urticae medium on 2-acre planting of okra in Fresno, Fresno County. (Cal. Coop. Rpt.). NEVADA - Bryobia or Petrobia spp. continue heavy on garlic in Lyon County. (Batchelder).

CUTWORMS - CONNECTICUT - Damaging many home vegetable plantings. (Savos). VERMONT - Continue damaging in home gardens. (Nielsen, June 13). ARKANSAS - Several species causing light to moderate damage to gardens in numerous areas of State. Severe damage reported from Hancock County. (Boulanger, June 10).

Weather continued from page 566.

WEATHER OF THE WEEK ENDING JUNE 20

HIGHLIGHTS: (1) Hot and dry in Far West; cool, variable showers in most other areas. (2) Widely scattered severe thunderstorms, East Half.

TEMPERATURE: Weekly average temperatures were above normal west of the Rockies and below normal to the east. A heat wave in the Southwest sent the temperature up to 119° at Palm Springs, California, possibly the hottest in the United States so far in 1966. In the East, daytime temperatures ranged from the 60's and 70's in the North to the 80's and 90's in the South. Nights were generally cool in the East.

PRECIPITATION: Rain was light or missing over the western half of the Nation and over the northern Great Plains. More generous showers occurred over the central and eastern sections of the Country. Heavy thunderstorms dumped 2 to 4 inches or more over parts of eastern Texas, southwestern Louisiana, and some localities in Georgia, South Carolina, and Florida. The Northeast had variable light to moderate rains.

SEVERE STORMS: At least 6 tornadoes struck in Illinois Monday afternoon. Tornadoes occurred in Iowa and Texas on Wednesday. A severe thunderstorm in southwestern Kansas dumped 5 inches of hail at Big Bow Saturday night, with a total loss of wheat in the area affected. Hail as large as baseballs fell at Las Vegas, New Mexico. Widely scattered and less-damaging hail fell elsewhere from the Plains in eastern Colorado to New England. Heavy showers at Carrollton, Missouri, produced a weekly total of 5.95 inches. (Summary supplied by Environmental Data Service, ESSA).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Carpocapsa pomonella) - COLORADO - Light to moderate numbers taken in sex attractant traps in Mesa, Delta and Montrose Counties. (Bulla). MISSOURI - Half-grown larvae in unsprayed fruit at Kansas City; very few abortive entries noted. In southeast, unsprayed apples infested with few full-grown larvae; few new entries mostly with larvae about one-fourth grown. Brood scattered; damage will be more or less continuous. Adults in flight near New Franklin June 3. (Wkly. Rpt. Fr. Grs., June 15). WISCONSIN - Total of 5 adults caught in Madison, Dane County, blacklight trap June 11 and 12. (Wis. Ins. Sur.). MICHIGAN - General emergence and activity underway; 92 adults in Kent County cage June 9-15. (Stanton). NEW JERSEY - Total of 2 trapped at Hurffville June 16. (Ins.-Dis. Newsltr.). MASSACHUSETTS - One adult collected in blacklight trap at Wareham, Plymouth County, June 8. (Tomlinson). VERMONT - Emergence continues in Burlington area. (Nielsen, June 13).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - TEXAS - Heavy and damaging peach orchard in Guadalupe County near San Antonia. (New). COLORADO - Second-generation adults taken in bait traps in Mesa, Delta and Montrose Counties. Peak moth emergence occurred June 11; 52 moths taken. (Anderson, Merlin). KANSAS - Damaging twigs of unsprayed peach trees in Doniphan County. (Eshbaugh). INDIANA - adult emergence increased. Terminal flagging conspicuous on many peach trees. (Dolphin, June 13). NEW JERSEY - Total of 10 trapped at Pitman and Glassboro June 13 and 16. (Ins.-Dis. Newsltr.). CONNECTICUT - Larvae injuring terminal growth of peaches in parts of eastern area of State. (Savos, June 15).

LESSER PEACH TREE BORER (Synanthedon pictipes) - MICHIGAN - Widespread emergence underway in all fruit areas of Lower Peninsula. (Wooley). INDIANA - Adult emergence continues to increase. Weekly number of males captured at Patoka orchard increased from 153 to 235. (Dolphin, June 13).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - MISSOURI - Injured Lodi apples; pupating in Kansas City. Occasional specimen found in northwest. Unusually small but pupating. (Wkly. Rpt. Fr. Grs., June 15). INDIANA - Adult captures in bait jars increased from 2 to 23. (Dolphin, June 13).

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) - CONNECTICUT - Very abundant on unsprayed trees throughout State; larvae in fifth instar in New Haven; commercial control appears good. Another species or complex very abundant on unsprayed apples and pears in Storrs area and severely damaged surface of small pears. (Savos, June 15). OREGON - Adults heavy in sweet cherry orchards at The Dalles, Wasco County; 1,788 trapped during one night's blacklight trap operation and 42 taken in one female-baited sticky board trap same night. (Peifer).

FALL CANKERWORM (Alsophila pometaria) - PENNSYLVANIA - Heavy on cherry in Erie County June 6. (Barry).

BLACK ARMY CUTWORM (Actebia fennica) - MAINE - Light to moderate populations and damage found in several locations. Localized injury severe in small areas. (Boulanger, June 10).

CUTWORMS - VERMONT - Several species causing severe damage to apple trees in isolated locations. (Nielsen, June 13).

A PSYCHID MOTH (Apterona crenulella) - UTAH - Larvae damaging apple foliage, with smaller numbers on pear, peach and cherry foliage in orchard north of Providence Canyon, Cache County. Range plants in area also largely infested by these case bearing larvae. (Knowlton).

PLUM CURCULIO (Conotrachelus nenuphar) - RHODE ISLAND - Abundant on unsprayed apple in Kingston and Exeter, Washington County. (Mathewson). CONNECTICUT - Active and laying eggs in New Haven and Storrs. Eggs on pears hatching in Storrs area. (Savos, June 15). MICHIGAN - Adult feeding and egg laying continue; heavy

in unsprayed fruit trees over State. (Newman, Wooley). INDIANA - Oviposition scars obvious on unsprayed apples and peaches. (Dolphin, June 13). MISSOURI - Adults noted in Kansas City. (Wkly Rpt. Fr. Grs., June 15).

APPLE APHID (Aphis pomi) - OHIO - Very high on apple leaves at Wooster, Wayne County; light on about 50 percent of trees in Jackson County apple orchard. This year somewhat unusual as A. pomi and Dysaphis plantaginea particularly high on apple foliage over some parts of State. Foliage badly distorted in some of more severe infestations. Predators include at least 2 species of lady beetles. (Forsythe, Rose). INDIANA - Continues to increase. (Dolphin, June 13). CONNECTICUT - Building up in New Haven; few reported from Woodstock. (Savos, June 15).

ROSY APPLE APHID (Dysaphis plantaginea) - KANSAS - Heavy in northeast; injury found on every tree. Lacewings and lady beetles present. (Eshbaugh). INDIANA - Increase continues. First alates of season noted. (Dolphin, June 13). OHIO - Large numbers on apple foliage in Wayne County. Occurrences on fruit also noted. Many immature forms present and some severe leaf distortion when heavy. (Forsythe). CONNECTICUT - Very abundant only in New Haven area. (Savos, June 15).

WOOLLY APPLE APHID (Eriosoma lanigerum) - MISSOURI - Heavy in orchards in central and northwestern areas. In latter area, heavy population of lady beetles in association with these aphids in young orchard. (Wkly. Rpt. Fr. Grs., June 15). INDIANA - Alates and nymphal colonies on apple foliage past 2 weeks. (Dolphin, June 13). OHIO - Small populations on apple trees in Wayne and Jackson Counties. (Forsythe, Rose). Observations in southern area, where frost damage May 9-10 destroyed most or all of this year's apple crop, indicate spraying restricted in many orchards. Some of orchard pests may build up to very high levels if frequent observations in orchards not made and appropriate controls applied. (Rose). MAINE - Numbers low in most areas. (Boulanger, June 10).

PERIODICAL CICADAS (Magicicada spp.) - MARYLAND - Adult emergence observed June 17 near Hancock, Washington County. (U. Md., Ent. Dept.).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - Continues serious on unsprayed peaches at Gainesville. (Kuitert).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Adults much more numerous in Storrs; many nymphs in last instar. (Savos, June 15).

CALIFORNIA PEAR-SLUG (Pristiphora abbreviata) - RHODE ISLAND - Four adult females caught on sticky boards. Det. by D. R. Smith. This is new State record. (Mathewson).

EUROPEAN RED MITE (Panonychus ulmi) - CONNECTICUT - Few adults and many new eggs noted; eggs hatched May 14. (Savos). MISSOURI - Buildup very slow in southeast. In central area, only occasional specimen found. (Wkly. Rpt. Fr. Grs., June 15). MAINE - Overwintering eggs hatching May 31 in central area. Summer generation eggs found June 13. (Boulanger). MICHIGAN - Adults, nymphs and eggs on apples and plums in many fruit areas; summer hatching underway. (Wooley, Klackle). INDIANA - Increasing on apple and peach leaves. (Dolphin, June 13). OHIO - Increased at Wooster, Wayne County. Current apple leaf counts from trees treated with acaricides indicate up to 5-6 mites per leaf. (Forsythe). Populations relatively unchanged on untreated trees in Fairfield County; 1-2 mites per leaf. (Holdsworth).

SPIDER MITES (Tetranychus spp.) - COLORADO - Building up on bindweed in most apple orchards in Mesa, Delta and Montrose Counties. Very few mites on trees. (Bulla). MISSOURI - No buildup developing in western and northwestern areas but most orchards in central area show very high potential and gradual buildup. Mites appearing in southeast area trees. Serious threat if weather changes to hot and dry. (Wkly. Rpt. Fr. Grs., June 15). VERMONT - T. urticae prevalent in one orchard checked. (Nielsen, June 13). MAINE - Tetranychus spp. unusually heavy. (Boulanger, June 10).

PECAN NUT CASEBEARER (Acrobasis caryae) - GEORGIA - Light to moderate on pecans in Tattnall County. (Smith). ALABAMA - Heavy damage noted on pecans in St. Clair County. Light to medium infestations throughout State with damage in Choctaw and Barbour Counties. (Jackson, Walton, Sexton). OKLAHOMA - Eggs hatched in southern half of State. Damage 50-60 percent on unsprayed pecan trees in Jefferson County, 10-15 percent on sprayed trees. Light in Marshall County. (Okla. Coop. Sur.).

PECAN PHYLLOXERA (Phylloxera devastatrix) - GEORGIA - Severe on pecan in Putnam County; light in Walton County. (Livingston).

CITRUS

Citrus Insect Situation in Florida - Mid-June - CITRUS RUST MITE (Phyllocoptruta oleivora)infested 42 percent of groves (norm 37 percent); 24 percent economic (norm 17 percent). Population above average but still in moderate range. Further increase into high range expected through July. Highest districts south and west. East continues to be very low. TEXAS CITRUS MITE (Eutetranychus banksi) infested 56 percent of groves (norm 66 percent); 34 percent economic (norm 44 percent). Population currently below average and not expected to exceed normal level. Will attain high level of abundance in late June and peak in early July. Highest districts central and east. CITRUS RED MITE (Panonychus citri) infested 57 percent of groves (norm 65 percent); 32 percent economic (norm 44 percent). Population will follow same pattern as E. banksi but will not be as large. Highest districts north, central and west. BLACK SCALE (Saissetia oleae) infested 72 percent of groves; 62 percent economic. Population near record high level of mid-June 1961. Further increase expected to keep population above normal and in high range through July. Highest districts east, south, central and west. GLOVER SCALE (Lepidosaphes gloverii) infested 85 percent of groves; 35 percent economic. Population above normal and in high range; little change expected. Highest districts south, central and east. PURPLE SCALE (L. beckii) infested 80 percent of groves; 8 percent economic. Population below normal and will remain in moderate range. Highest district central. CHAFF SCALE (Parlatoria pergandii) infested 67 percent of groves; 15 percent economic. Population normal and little change expected. Highest districts central, south and east. YELLOW SCALE (Aonidiella citrina) infested 73 percent of groves; 20 percent economic. Above normal abundance; statewide population expected to continue just below high range. Central district will have about 50 percent of groves with moderate to heavy infestations. Population of WHITEFLIES at normal level; increase expected in most districts. MEALYBUGS infested 27 percent of groves; 5 percent economic. Population will enter high range late in June and reach summer peak near normal level in early July. Infestations will be spotty. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS WHITEFLY (Dialeurodes citri) - FLORIDA - Adults abundant on dooryard citrus and persimmon at Gainesville (Mead); moderate on lemon trees in nursery at Sanford, Seminole County, (Kipp, Holley, June 1).

YUMA SPIDER MITE (Eotetranychus yumensis) - ARIZONA - Increasing on lemons on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

CITRUS FLAT MITE (Brevipalpus lewisi) - ARIZONA - Continues to infest citrus in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

SMALL FRUITS

CRANBERRY FRUITWORM (Acrobasis vaccinii) - MASSACHUSETTS - Active in blueberry plantings in Branstable and Plymouth Counties. Moths common in blacklight traps. (Tomlinson, June 10). NEW JERSEY - Larval entries in blueberries at peak; will continue at high rate for next 10 days. (Ins.-Dis. Newsltr.).

CHERRY FRUITWORM (Grapholitha packardi) - NEW JERSEY - Larval entries in blueberries at peak; will continue at high rate for next 10 days. (Ins.-Dis. Newsltr.).

GRAPE BERRY MOTH (Paralobesia viteana) - MICHIGAN - First-brood larvae now "webbed-up" in southwestern vineyards. (Wooley, Carpenter).

GRAPE PLUME MOTH (Pterophorus periscelidactylus) - RHODE ISLAND - Webbing observed on grape in North Kingstown and Exeter, Washington County. (Mathewson).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Heavy on back-yard grape plantings in Sunsite area, Cochise County. (Ariz. Coop. Sur.).

CUTWORMS - MICHIGAN - Late instars of Agrotis ipsilon and Amathes c-nigrum cut most new shoots near ground in Livingston County clean-cultivated raspberry planting; eggs laid in 1965. Blacklight catches past 2 weeks show 1966 adults active. (Newman).

GRAPE FLEA BEETLE (Altica chalybea) - DELAWARE - Larvae common on grapes in New Castle County. (Whiteman).

STRAWBERRY WEEVIL (Anthonomus signatus) - MAINE - Adults active and cutting buds in Monmouth area. (Boulanger, June 10).

BLUEBERRY THRIPS (Frankliniella vaccinii) - MAINE - Light to moderate in various areas on low-bush blueberry. Damage moderate in Waldoboro. (Boulanger, June 10).

BLUEBERRY MAGGOT (Rhagoletis mendax) - NEW JERSEY - First adults caught on baited sticky board traps June 15, seven days later than first catch in 1965. (Ins. Dis. Newsltr.).

A CECIDOMYIID MIDGE (Asphondylia sp.) - ARIZONA - Light numbers damaging grape berries throughout Maricopa County. (Ariz. Coop. Sur.).

TWO SPOTTED SPIDER MITE (Tetranychus urticae) - OREGON - Heavy on garden strawberries in Ontario, Malheur County. (Morrison).

STRAWBERRY SPIDER MITE (Tetranychus altanticus) - MISSOURI - Destructive in strawberries near Fulton. (Wkly. Rpt. Fr. Grs., June 15).

ORNAMENTALS

BAGWORM (Thyridopteryx ephemeraeformis) - DELAWARE - Young larvae present on sycamore, arborvitae and cedar in Sussex County. (Burbutis, Davis). MARYLAND - New larvae noted June 17 on junipers at Carrollton, Prince Georges County. (U. Md., Ent. Dept.). ARKANSAS - Hatch underway for sometime; feeding activity expected to become heavy unless controls applied. (Warren). TEXAS - Extremely heavy; damaging shade trees throughout Fort Worth area, Tarrant County. (Graves).

AZALEA LEAF MINER (Gracillaria azaleella) - CALIFORNIA - Heavy on azalea plants in Coronado, San Diego County. (Cal. Coop. Rpt.).

LILAC LEAF MINER (Gracillaria syringella) - VERMONT - Leaving mines and rolling leaves. (Nielsen, June 13).

ARBORVITAE LEAF MINER (Argyresthia thuiella) - DELAWARE - Heavy infestations noted in Ellesmere, New Castle County, June 8, 1966. Adults emerged, common in area. Collected and determined by L. P. Kelsey. This is new State record. (Burbutis, Davis).

HOLLYHOCK WEEVIL (Apion longirostre) - CALIFORNIA - Adults heavy on Althea sp. in Paradise, Butte County. This is new county record. (Cal. Coop. Rpt.).

A WEEVIL (Brachyrihinus cribricollis) - TEXAS - Adults and larvae heavy on roots of honeysuckle in yard at Midland, Midland County. Collected by C. W. Green. Det. by H. R. Burke, confirmed by R. E. Warner. This is new State record. (Texas Coop. Rpt.).

AZALEA BARK SCALE (Eriococcus azaleae) - OHIO - Nymphs light on azalea in Richland County; but rhododendron plants in Cuyahoga County nearly killed by large numbers. (Rings).

AN ARMORED SCALE (Gymnaspis aechneae) - FLORIDA - Found on Billbergia sp. in a nursery at Palatka, Putnam County. (Graham, June 7). This is new county record. (Fla. Coop. Sur.).

FOREST AND SHADE TREES

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae) - OREGON - Medium in standing, healthy Douglas-fir trees on about 8,000 acres in Silver Falls State Park, Marion County. Buildup believed from windfall missed by salvage operations. (Kline).

ENGRAVER BEETLES (Ips spp.) - CALIFORNIA - I. emarginatus and I. pini heavy on ponderosa pine in Davis Creek and Joseph Creek areas, Modoc National Forest. (Teillon, USFS).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - MICHIGAN - A 25-twig sample taken June 15 from a Livingston County plantation yielded 23 pupae, 1 larva and 1 empty pupal skin; widespread adult emergence expected coming week. (Newman). INDIANA - Infestations heavier than for number of years in northern half of State. Pupation generally complete throughout area. (Chandler, Schuder). OHIO - Infesting 15-acre red pine plantation in Lucas County. (Mauer).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - MICHIGAN - Causing severe injury to new growth of Scotch pine in Wayne County; several pupae noted in mined candles, but mostly larvae observed. (Kidd, Dennis, Wallner). NORTH CAROLINA - Infestations lower than for several years. (Green).

SPRUCE BUD MOTH (Zeiraphera ratzeburgiana) - MAINE - Damaging spruce in Aroostook area. (Boulanger, June 10).

JACK-PINE BUDWORM (Choristoneura pinus) - MINNESOTA - Larvae mostly in third stage. Problem areas extend from Brainerd to Williams. (Minn. Ins. Rpt.).

PITCH MASS BORER (Vespamima pini) - OHIO - Larvae damaged Scotch pine in Vinton County; other occurrences indicate some widespread and destructive activity through other southern counties. Det. by P. Gibson. (Cooley).

EASTERN SPRUCE GALL APHID (Adelges abietis) - MAINE - Damaged spruce in Presque Isle. (Boulanger, June 10).

WHITE-PINE APHID (Cinara strobi) - INDIANA - Damage extensive throughout State. Winter damage and aphid injury combined to make browning of needles conspicuous. (Chandler, Schuder).

A CONIFER APHID (Cinara coloradensis) - NEVADA - Infestations increasing on spruce trees in Yerington, Lyon County. (Cooney).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - CALIFORNIA - Heavy on pine trees in Cuddy Valley, Kern County. (Cal. Coop. Rpt.). UTAH - Very heavy on number of Pinus ponderosa trees at Forest Camp Ground near Pine Valley, Washington County. (Knowlton).

PINE SPITTLEBUG (Aphrophora parallela) - DELAWARE - Abundant on loblolly pine in area of Sussex County. (Burbutis, Davis). WEST VIRGINIA - Nymphs numerous on Scotch pine plantation at Bruceton Mills, Preston County. Also noted but less numerous on red and white pine. (Neel, June 14). WISCONSIN - Nymphs common on white pines in windbreak near Mazomanie; about half grown June 14. (Wis. Ins. Sur.). MINNESOTA - Nymphs in second instar in spittle masses on jack, Scotch and red pines. Populations still high in most areas; some damage apparent, especially in plantations and roadside plantings. (Minn. Ins. Rpt.).

SPRUCE SPIDER MITE (Oligonychus ununguis) - KANSAS - Populations higher throughout State than at any time during last 10 years. (Thompson).

CONIFER SAWFLIES - CONNECTICUT - Larvae very active on evergreens throughout State. (Savos). OHIO - Neodiprion taedae linearis active in Brush Creek and Shawnee State Forests in Scioto County. (Bower, Houf). N. sertifer in prepupal stage; only few larvae remain on pines; feeding stopped. Some severe damage noted in Muskingum County red pine plantation where trees about 50 percent defoliated; nearly all trees damaged. (Gibson, Burns). Activity reported over State. Heaviest infestations in central and northern areas. Definite population increase over 1965 noted in these areas. (Soine). WISCONSIN - N. lecontei egg laying continues on Lakewood District, Nicolet National Forest, but no hatch as of June 6. (Wis. Ins. Sur.).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEVADA - Larvae damaging untreated elms in Fallon, Churchill County, and Yerington, Lyon County. Damage heavy in Douglas County. (Cooney). UTAH - Larvae skeletonizing elm leaves in several areas of Salt Lake County. (Burningham, Knowlton). TEXAS - Unusually heavy and defoliating elm trees throughout Silverton area, Briscoe County. (Boring). OKLAHOMA - Continues to increase in most areas of State. Pupation of first generation complete in Major County. (Okla. Coop. Sur.). KANSAS - Larvae dropping off trees in Doniphan County. (Eshbaugh). IOWA - Very young larvae noted on Chinese elms at Fruitland, Muscatine County. This new county record. (Iowa Ins. Inf., June 13). DELAWARE - Eggs and larvae common on elms with heavy feeding injury in southeast Sussex County. (Burbutis, Davis). MAINE - Reported from Lewiston. (Boulanger, June 10).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - VERMONT - Adults emerging and constructing brood galleries in diseased elms at Bennington June 6. (Nielsen). OHIO - Feeding damage by large populations caused loss or drop of numerous small elm twigs in area of Madison County. (Gibson).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Single adult collected in window trap at city park in Wahpeton, Richland County. This new county record. (Brandvik, Kaatz).

ELM CALLIGRAPHA (Calligrapha scalaris) - KANSAS - Heavy in Reno, Stafford and Barton Counties. (Martinez).

A LEAF MINING WEEVIL (Odontopus calceatus) - OHIO - Pupating in southeast and south. (Burns). Activity widespread in State; occurrences as far north as Ashland County. (Rose).

FOREST TENT CATERPILLAR (Malacosoma disstria) - UTAH - Caused damage to serviceberry and chokeberry in Brazier Canyon, Rich County, and to shrubs in Logan Canyon, Cache County. (Knowlton). VERMONT - Very conspicuous on tree trunks during midday. (Nielsen). MAINE - Infestation and damage light on oak in Deblois. (Boulanger, June 10).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - MAINE - Moderate to heavy statewide; limited to wild cherry and abandoned apple trees. (Boulanger, June 10). RHODE ISLAND - Dispersing larvae causing public concern in Providence, Providence County. (Mathewson).

BUCK MOTH (Hemileuca maia) - MARYLAND - Third-stage larvae damaging young oak trees at Severn, Anne Arundel County. (U. Md., Ent. Dept.).

PERIODICAL CICADAS (Magicicada spp.) - OHIO - Heard in several counties in southeast and central areas. Reported from Muskingum, Vinton, Athens and Delaware Counties. (Burns, Rexrode, Galford). Delaware County report not within Brood V range. (Rose).

COTTONY MAPLE SCALE (Pulvinaria innumerabilis) - PENNSYLVANIA - Very heavy on young maple trees in Indiana County. (Udine). OHIO - Adults heavy on maple trees in Wayne County; somewhat lighter in Portage County. (Rings, Custer). NEVADA - Medium on hawthorn in Yerington, Lyon County. (Cooney).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - NEVADA - Heavy on maple and causing die back of branches in Elko, Elko County. (Earnist).

EUROPEAN FRUIT LECANIUM (Lecanium corni) - PENNSYLVANIA - Severe on maples adjacent to orchard in Delaware County. Det. by G. B. Sleesman. (Tetrault, June 2). Medium on many maples in Indiana County. (Udine).

BIRCH LEAF MINER (Fenusa pusilla) - MAINE - Hatching on gray and white birch in Orono area June 6. (Boulanger). VERMONT - Severe on birches. (Nielsen, June 13). RHODE ISLAND - Mines becoming conspicuous statewide. (Mathewson, Veilleux). MINNESOTA - Blotch mines appearing on birch leaves. (Minn. Ins. Rpt.).

MAPLE BLADDER-GALL MITE (Vasates quadripedes) - WISCONSIN - Common on silver maple and causing considerable concern throughout much of State. (Wis. Ins. Sur.).

MAN AND ANIMALS

MOSQUITOES - MAINE - Aedes spp. peak populations expected June 12 in Orono area. (Boulanger, June 10). NORTH CAROLINA - Lighting 100-150 per minute on Outer Banks, Onslow County, June 1. Rate in same area June 7 was 10 per minute. Aedes atlanticus, Psorophora confinnis and P. howardii lighting 75 per minute near Leechville, Beaufort County. (Ashton). MICHIGAN - Annoyance by biting adults of Aedes spp. and Culex spp. continued at high level over much of State. Breeding areas sampled recently in Ingham and Shiawassee Counties show low numbers of larvae and pupae where high populations present earlier. (Mahaffy, Bierlein). WISCONSIN - Adults increasing with considerable annoyance in scattered areas. (Wis. Ins. Sur.). IOWA - Aedes vexans and A. trivittatus adults extremely annoying although cool evenings held down annoyance. (Iowa Ins. Inf., June 13). LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control May 10-17 contained Aedes vexans, Anopheles crucians, Culex pipiens quinquefasciatus, C. salinarius, C. territans and Psorophora confinnis. Culiseta inornata adult collected June 10 in light trap; extremely unusual for area this time of year. Species usually not present in area from April to October. (Stokes). TEXAS - Majority collected in light traps in Jefferson County in May Psorophora confinnis, with greatest, consistant numbers in southwest and north Beaumont. Total nightly catches of all species commonly exceeded 4,000. Spring flight of fresh-water mosquitoes extremely heavy; flights this size and extent not recorded since formation of Jefferson County Control District. Culex salinarius caused greatest annoyance in Port Arthur area and lesser extent in midcounty area. C. pipiens quinquefasciatus breeding profusely throughout urban areas. C. erythrothorax larvae in roadside ditches. Aedes sollicitans moderate to few in Port Arthur area; observed occasionally in midcounty area. Unimportant in northern part of county. A. taeniorhynchus occurred in midcounty and south Beaumont areas. Psorophora ferox found occasionally in considerable numbers in Tyrell Park and west Beaumont. Anopheles crucians present in south and north Beaumont areas. A. quadrimaculatus more prevalent in south and north Beaumont areas. Mansonia perturbans collected in midcounty south Beaumont and north Beaumont. Pupae and several larvae collected in tree hole. Pupae determined female Toxorhynchites rutilus septentrionalis; first record of this species in Jefferson County. Harris County nearest previous record, approximately 90 miles away. Larvae of Orthopodomyia signifera found in same tree hole. (Jeff. Co. Mos. Rpt., Thompson). UTAH - Still annoying in areas of Millard County and fields around Washington, Washington County. Annoyance moderate along Kanab Creek, Kane County. Annoying in Rich County. (Knowlton). CALIFORNIA - Mosquito populations low. (Cal. Coop. Rpt.).

HORN FLY (Haematobia irritans) - NEW JERSEY - Becoming troublesome to cattle throughout State. (Ins.-Dis. Newsltr.). ALABAMA - Continues heavy on cattle in

Bibb, Shelby and other counties where controls not applied. Very light where good control carried out. (Jackson, Odom). ILLINOIS - Very heavy; 0-1,000 or more (average 350) per animal on cattle in southeast district. (White). NORTH DAKOTA - Up to 60 adults (average 20) per animal on range cows and calves in sandhills area of Richland and Ransom Counties. (Brandvik, Kaatz). SOUTH DAKOTA - Counts 100-200 per side common on many cattle herds. (Jones). IOWA - Ranged 10-15 per animal in 4 herds checked between Fort Dodge and Sioux City June 7. (Iowa Ins. Inf.). KANSAS - Counts 50-100 per side in Jackson County and 150-250 per side in Morris County. (Simpson). OKLAHOMA - Counts per head 550 on cows and 750 on steers in Atoka and Pittsburg Counties; 300-400 per head in Major County. Moderate in northeast, east central, central and west central areas. (Okla. Coop. Sur.). TEXAS - Light to medium, increasing throughout Crockett County. (Neeb). NEW MEXICO - Decreasing rapidly on test cattle in arid rangeland area of Dona Ana County. Previous counts over 150 per animal. Averaged 60 per animal June 10, 20 per animal June 3. Currently less than 1.5 per animal. (Kinzer). UTAH - Increasing problem on cattle in Washington, Kane and Iron Counties; annoying at Wellsville, Cache County. (Knowlton, June 13).

FACE FLY (Musca autumnalis) - NORTH DAKOTA - Up to 4 adults (average 2) per animal on range cows and calves in sandhills area of Richland and Ransom Counties. (Brandvik, Kaatz). IOWA - Ranged 1-2 per animal in 4 cattle herds checked between Fort Dodge and Sioux City June 7. (Iowa Ins. Inf.). NEW JERSEY - Becoming troublesome to cattle throughout State. (Ins.-Dis. Newsltr.).

HOUSE FLY (Musca domestica) - OKLAHOMA - Up to 250 (average 90) per Scudder grid in untreated barns in Payne County. Light to moderate around homes and barns in Cleveland County. (Okla. Coop. Sur.). MISSISSIPPI - Problem in poultry houses throughout State. Control measures applied. (Dinkins). SOUTH CAROLINA - Becoming serious problem in caged poultry. Regular control schedule recommended. (Kissom, June 14). NEW JERSEY - Becoming troublesome to cattle throughout State. (Ins.-Dis. Newsltr.).

STABLE FLY (Stomoxys calcitrans) - IOWA - Ranged 1-5 per animal in 4 cattle herds checked between Fort Dodge and Sioux City June 7. (Iowa Ins. Inf.). OKLAHOMA - Averaged 8 per head on cattle in Payne County. (Okla. Coop. Sur.).

HORSE FLIES (Tabanus spp.) - ILLINOIS - Varied 0-2 per animal on cattle in southeast district. (White). MISSOURI - T. equalis adults observed in central area for first time this season June 1. (Wingo). OKLAHOMA - T. mularis 10-15 per head on cows checked in Payne County. Average counts per head in Atoka and Pittsburg Counties as follows: T. mularis 0.5, T. atratus 0.1, T. equalis 0.1. (Okla. Coop. Sur.). MISSISSIPPI - Tabanus spp. averaging 12 per animal observed on 5 horses in Oktibbeha County. (Dinkins).

DEER FLIES (Chrysops spp.) - NORTH CAROLINA - Very numerous around Newport, Carteret County. (Ashton). NEW MEXICO - Severe nuisance to horses in Silver City area, Grant County. (N. M. Coop. Rpt.).

BLACK FLIES - GEORGIA - Attacking horses in Spalding County. (Snoddy). NORTH DAKOTA - Simulium spp. adults causing considerable annoyance in city park at Wahpeton, Richland County. (Brandvik, Kaatz).

MIDGES - MARYLAND - Chironomus sp. and other midges extremely abundant and annoying to humans near Annapolis and on both sides of North East River, Cecil County. (U. Md., Ent. Dept.).

LONE STAR TICK (Amblyomma americanum) - ILLINOIS - Collected from deer in Williamson County in March 1966 and in Pope County in February or March 1966 by Gerald Montgomery. Det. by L. N. Stannard. These new State and county records. (Stannard). OKLAHOMA - Ranged up to 50 replete and 1,000 unfed or partially fed females per head on cattle in Atoka and Pittsburg Counties. Occasional larva seen. Numbers decreased in Broken Bow area, McCurtain County, probably due to dry weather. (Okla. Coop. Sur.).

PACIFIC COAST TICK (Dermacentor occidentalis) - CALIFORNIA - Locally heavy on horses in Calpella, Mendocino County. One horse affected with tick paralysis. (Cal. Coop. Rpt.).

CHIGGERS (Eutrombicula spp.) - MISSOURI - First activity of season reported June 12 at Columbia. (Stone).

SHEEP KED (Melophagus ovinus) - RHODE ISLAND - Numerous on sheep in Little Compton, Newport County. (Chang, Mathewson).

BENEFICIAL INSECTS

LADY BEETLES - WYOMING - Adults of several species numerous in Big Horn Basin alfalfa; 8-14 per 10 sweeps. (Pfadt). NORTH DAKOTA - Ranged up to 20 per 100 sweeps in alfalfa and sweetclover in northwestern counties. (Brandvik, Kaatz). SOUTH DAKOTA - Adults 20-30 per 100 sweeps in Lawrence County alfalfa. (Jones, June 9). KANSAS - Populations remain very high in most areas. (Simpson, June 10). INDIANA - Few Coleomegilla maculata adults observed in apple trees. (Dolphin, June 13). MISSISSIPPI - Hippodamia convergens and Coleomegilla maculata fuscilabris moderate in cotton in Yazoo County. (Dinkins).

GREEN LACEWINGS (Chrysopa spp.) - MISSISSIPPI - Present in light numbers. (Dinkins). INDIANA - All stages present in apple trees. (Dolphin, June 13). NORTH DAKOTA - Trace numbers found in alfalfa and sweetclover in northwestern counties. (Brandvik, Kaatz).

DAMSEL BUGS (Nabis spp.) - MISSISSIPPI - Moderate to heavy in Yazoo County cotton. (Dinkins).

FEDERAL-STATE PLANT PROTECTION PROGRAMS

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - TEXAS - A single specimen was collected in Brownsville June 13, 1966. This is the first record for this species in State. The collection was made in a detection trap hung in a calamondin tree in the yard of a residence. The site of the initial find was approximately 8 miles from the water port and 5 miles from the international airport. To June 22, adults or larvae had been collected in 9 locations in an area involving approximately 3 sq. miles with one isolated catch about one mile removed. All infestations so far have been found in residential areas. Preliminary indications are that the infestation is of light intensity.

Steps were taken immediately by the Texas Department of Agriculture and Plant Pest Control Division to provide necessary regulatory action to prevent spread and to initiate eradication measures against the infestation. The trapping program is being expanded as rapidly as possible. Preliminary plans called for the installation of 1,000 traps in the south Texas area and 500 in Matamoras, Mexico, which is located just across the Rio Grande from Brownsville. (PPC).

GRASSHOPPERS - ILLINOIS - Melanoplus spp. nymphs averaged 30 per 100 feet of row in soybean field and ranged 0-140 per 100 sweeps in second-crop alfalfa in southeast; all first or second instars. (White). WISCONSIN - Some Melanoplus femurrubrum eggs hatching. Few recently emerged nymphs noted in open areas of alfalfa fields in Mazomanie area. (Wis. Ins. Sur.). MINNESOTA - Few grasshopper nymphs appeared in alfalfa and along roadsides in southwest and central districts. General hatch not expected for about 2 weeks. M. femurrubrum eggs in coagulated to eye-spot stage; M. bivittatus eggs in eye-spot to segmentation stage; M. differentialis eggs in eye-spot stage. Epicauta fabricii (ash-gray blister beetle) appearing in alfalfa; larvae predaceous on grasshopper eggs. (Minn. Ins. Rpt.). NORTH DAKOTA - Grasshopper nymphs noneconomic in cropland areas in central, north central and northwestern counties. Averaged less than 1 per square yard in 11 northwest and north central counties. Ranged first through third instars; mostly first and second.

Species included M. sanguinipes, M. packardii, M. bivittatus, M. femurrubrum and Camnula pellucida. (Scholl, Stoltenow, Nichols). SOUTH DAKOTA - Grasshopper hatch remains light. Nymphal survey conducted June 7-13 in 19 counties. Highest count, 12 per square yard along roadside in Dewey County. Species included M. bivittatus, M. sanguinipes, M. differentialis, M. femurrubrum. (Burge). Grasshopper hatch in Black Hills area light. Various species mostly first to second instar. In fields and roadsides checked in Lawrence, Meade, Pennington, Custer and Fall River Counties, numbers did not exceed one per square yard. (Jones, Walstrom). IOWA - M. differentialis averaged 2 young nymphs per 10 sweeps in 8 alfalfa fields from Fort Dodge to Sioux City June 7. (Iowa Ins. Inf.). NEBRASKA - M. confusus adults present in Garden County. Melanoplus sp. nymphs 15-20 per square yard in same area. (Hagen). KANSAS - Survey made in western two-thirds of State June 6-8. Populations generally light; numbers moderate in some areas. Highest counts 15-20 per square yard found in Wallace County pastureland. Much of area still very dry; grasshoppers appear congregated where foliage still green. Slight damage noted in border rows of corn, Shawnee and Osage Counties. (Simpson). OKLAHOMA - Economic (8-25 per square yard) on 25,000 acres of rangeland in Beaver County, 10,000 acres in Major County, 10,000 acres in Woodward County. Some widely scattered economic populations found on smaller blocks of grassland in Harper, Ellis and Dewey Counties. Phlibostroma quadrimaculatum, Ageneotettix deorum, M. bivittatus, Hesperotettix speciosus, Aulocara elliotti, Amphitornus coloradus and M. packardii dominant. Counts 4-15 per square yard in crop margins and roadsides in area; M. bivittatus, H. speciosus, M. packardii and Aeoloplides turnbulli dominant; no general economic population found in east central or southeast counties; 20 per square yard found in small block of grassland in Atoka County. Elsewhere 2-7 per square yard. Melanoplus bivittatus, M. differentialis, Mermiria maculipennis and Boopedon nubilum dominant species. Moderate to heavy grasshopper populations reported in small areas of rangeland and in crops in most areas of State. (Okla. Coop. Sur.).

ARKANSAS - Early instars more numerous than normal in northwest; too small for determination. (Boyer). WYOMING - Melanoplus spp. nymphs numerous in alfalfa in Park, Fremont and Hot Springs Counties; 10-25 per square yard, average 20. (Pfadt). UTAH - Hatched in large numbers in ranch areas of Juab County. Considerable hatching in several areas of Millard County; more than in many years in Delta and Sutherland areas. Up to 35 percent of Aulocara elliotti and Camnula pellucida winged and numerous in some Kane County areas. Grasshoppers numerous and damaging in several other areas of State. (Knowlton). CALIFORNIA - Melanoplus sp., Amphitornus coloradus ornatus and Oedaleonotus borckii damaging rangelands in Arroyo Grande, San Luis Obispo County. Bradynotes obesa opima 15-25 per square yard infesting 6,000 acres reseeded crested wheatgrass and rangelands in Shinn Meadows near Ravendale, Lassen County. Eighty percent of wheatgrass is defoliated. Control treatment of this rare grasshopper is scheduled. (Thompson). OREGON - Predominantly Melanoplus sanguinipes 8-15 per square yard in 30,000 acres north and east of John Day, Grant County. Development first to fourth instar. More hatches expected in area south and east of John Day and in Fox and Long Creek areas. In eastern Morrow County, first to fifth instars of Aulocara elliotti, M. sanguinipes, M. packardii and M. bivittatus light. (Parkinson).

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae and adults common; many crops of guavas and roseapples spoiled. Peaches, Barbados and Surinam cherries currently attacked in Dade County area. (Wolfenbarger). Larvae collected from fruit of wampi (Clausena lansium) at Homestead, Dade County. (Dowling, Shepard, June 10). Larvae taken on peach and roseapple at Canal Point, Palm Beach County. (Fremb, June 9). Adults taken in Steiner trap at Fort Myers, Lee County. (Crews, June 6).

CEREAL LEAF BEETLE (Oulema melanopus) - MICHIGAN - Larvae more apparent in oats in Berrien County research plots. All instars present in field populations with second and third instars predominating. Larvae in prepupal stage; pupae present also. Overwintering adults laying eggs; deposition decreasing. Natural adult mortality increasing, but sizable populations persist in some Berrien County fields. Some spraying of oat fields, outside area treated under suppression program, in Berrien

and Kalamazoo Counties necessary. Intensive survey shows general increase in larval numbers. Areas where samplings revealed 70 or more larvae per 100 sweeps include: Sherwood Township, Branch County; Lowell Township, Kent County; and Aurelius Township, Ingham County. Areas with low larval numbers included parts of Hillsdale, Lenawee and Monroe Counties. (Gomulinski, Jantz, Moore). INDIANA - Larvae on young oats in New Carlisle area 4-7 per stem. Eggs also present; however, oviposition nearly completed. Summer adults from wheat should be emerging in substantial numbers during June 20-27. In oats, emergence should start in 7-10 days, but not in any great numbers for 2-3 weeks. (Shade). In other areas of St. Joseph, La Porte and Marshall Counties, larvae 22 per 100 sweeps; adults up to 6 per 100 sweeps on oats June 10. (Clark).

EUROPEAN CHAFER (Amphimallon majalis) - PENNSYLVANIA - Adults first emerged in vicinity of Erie June 8. (Hamilton). NEW YORK - Adults appeared in light traps at Geneva June 13. (Fiori).

JAPANESE BEETLE (Popillia japonica) - RHODE ISLAND - First adults of season collected in Kingston, Washington County, and Providence, Providence County. (Mathewson, Veilleux). VIRGINIA - Adults observed in Chesapeake June 13. (Williams). Beetle emergence slow due to weather conditions. Adult found on Ilex in Southampton County June 12; first of year. (Smith).

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Moderate to heavy in rosetted cotton blooms in areas of Maricopa County; as many as 80-90 percent of blooms infested in some fields. (Ariz. Coop. Sur.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

Total of 26 cases reported in the U. S. June 12-18 as follows: TEXAS - Culberson 1, Bandera 2, Uvalde 1, Zavala 1, Willacy 1, La Salle 1, Live Oak 3, Bee 1, Goliad 2, Jim Hogg 2. ARIZONA - Mohave 1, Yuma 1, Yavapai 1, Maricopa 1, Gila 2, Santa Cruz 1. NEW MEXICO - Hidalgo 1, Eddy 3. Sterile screw-worm flies released: Texas 13,426,250, Arizona 26,286,800, New Mexico 6,933,200, California 600,000, Mexico 70,580,000.

	Current	Cumulative	Current	Cumulative	Current	Cumulative

Table 1. Comparison of screw-worm samples identified during corresponding weeks in the United States.

Year	Positive Cases		Negative Cases	
1964	7	111	134	3669
1965	59	259	161	2809
1966	26	242	113	1799

Table 2. Comparison of United States screw-worm cases by State.

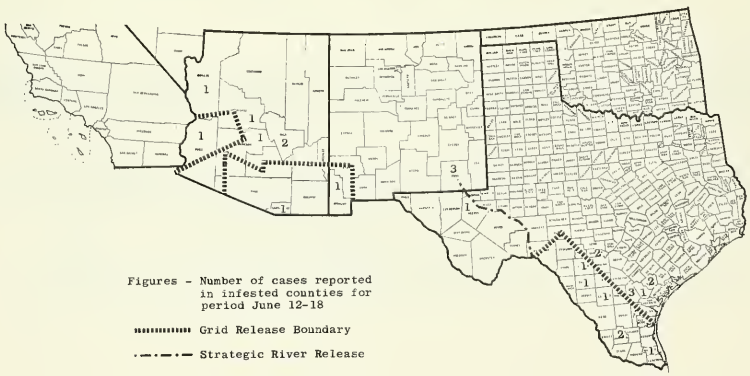
State	1964		1965		1966	
Texas	0	79	46	156	15	106
Ariz.	7	21	10	81	7	118
N. M.	0	1	3	22	4	13
Calif.	0	10	0	0	0	5

Table 3. Comparison of screw-worm cases inside and outside the United States portion of the Barrier Zone.*

Year	Inside Barrier Zone		Outside Barrier Zone	
1965	44	161	15	63
1966	11	186	15	56

Total of 84 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 2, Sonora 48, Chihuahua 14, Coahuila 2, Nuevo Leon 2, Tamaulipas 16. Total of 501 cases reported from Mexico south of the Barrier Zone.

* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. Effective May 23, 1965, portions of Arizona and California were added to the Barrier Zone. (Anim. Health Div.).



INSECT DETECTION

New State Records

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - TEXAS - Infestation found in Brownsville June 13, 1966. Collection made in detection trap in a calamondin trees in yard of residence. (p. 588).

WHEAT CURL MITE (Aceria tulipae) - INDIANA - Collected in wheat in Lawrence County. (p. 570).

CALIFORNIA PEAR SLUG (Pristiphora abbreviata) - RHODE ISLAND - Four females caught on sticky boards. (p. 581).

ARBORVITAE LEAF MINER (Argyresthia thuiella) - DELAWARE - Heavy infestations noted June 8, 1966, in Ellesmere, New Castle County. (p. 583).

A WEEVIL (Brachyrhinus cribricollis) - TEXAS - Adults and larvae heavy on roots of honeysuckle in Midland County. Confirmed by R. E. Warner. (p. 583).

New County and Island Records

ALFALFA WEEVIL (Hypera postica) - ILLINOIS - De Kalb, Peoria, Bureau, Knox and Henry Counties. NEBRASKA - Gosper County. NORTH DAKOTA - Divide County. (pp. 570, 571).

HOLLYHOCK WEEVIL (Apion longirostre) - CALIFORNIA - Butte County. (p. 583).

AN ARMORED SCALE (Gymnaspis aechmeae) - FLORIDA - Putnam County. (p. 584).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Richland County. (p. 585).

A MOSQUITO (Toxorhynchites rutilus septentrionalis) - TEXAS - Jefferson County. (p. 586).

LONE STAR TICK (Amblyomma americanum) - ILLINOIS - Collected from deer in Williamson County in March 1966 and in Pope County in February or March 1966. Det. by L. N. Stannard. (p. 587).

AN APHID (Masonaphis azaleae) - HAWAII - Observed on pansy flowers during May 1966 in Honolulu, Oahu, for new island record. (p. 595).

AN ARMORED SCALE (Diaspis boisduvalii) - HAWAII - Intercepted May 12, 1966, on orchids at Hilo, Hawaii Island, for new island record. (p. 595).

CORRECTIONS

CEIR 16(20):435 - A SAWFLY (Hoplocampa sp.) - COLORADO - Should read: CALIFORNIA PEAR-SLUG (Pristiphora abrreviata) - COLORADO - Numbers high in Mesa County pear orchard. Larvae numerous and feeding on leaves April 26. Controls applied. (Bulla). Det. by D. R. Smith. (ARS).

CEIR 16(24):563 - Paragraph 4 - Should read: Coptotermes formosanus differs from other subterranean termites found in Continental United States in 2 principal ways:

LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
ARKANSAS																								
Kelso 6/10-15				5							8							6						
Hope 6/9-15				3							3									1				
Fayetteville 6/9-15				2							22							24		30				
FLORIDA																								
Gainesville 6/15			BL						2										1					
GEORGIA																								
Tifton 6/8-15			BL								1													
ILLINOIS (County)																								
Champaign 6/3-9				24													12	84	12	961		11		
INDIANA (Counties)																								
Posey 6/2-8			BL	5			2										31	4		32				
Jackson 6/2-8			BL	10			1				1						11	3		22				
Tippecanoe 6/2-8			BL	8			7										4	10		49				
St. Joseph 6/2-8			BL	9													11	5		57				
MICHIGAN (Counties)																								
Berrien 6/7-13			BL	3													52	2		19				
Jackson 6/7-13			BL	1													3			28				
Saginaw 6/7-13			BL														5			7				
MINNESOTA																								
Worthington 6/1-17				3																32				
Fergus Falls 6/1-17				5														1		2				
Shakopee 6/1-17																				12				
MISSISSIPPI																								
Stoneville 6/10-16			2BL	84			21		9	3	19				1	1		185	169	58	1		1	
Rolling Fork 6/10-16			BL	10			5		2	1	12					14		21	28	1			35	
Tunica 6/10-16			BL	12					6	1	41					1		94	64	42			10	
MISSOURI																								
Portageville 6/11-17			BL	47							31						592		73	1777				
NEBRASKA													Spp.											
Lincoln 5/28-6/3				3		5							22					9		17				
Lincoln 6/4-10				4		12							56				10	15		20				
Mead 5/16-21				8									194					4		27				
Scotts Bluff Expt. Sta. 5/30-6/5				5		211					1		418					19		1				
NEW JERSEY																								
Seabrook 6/14, 17											1				2		19		6	13				
Masonville 6/17											8						13			16				
Phillipsburg 6/10																	8			3				
NORTH CAROLINA (County)																								
Vance 5/25-6/1	50-88	3.0									2				12	1								

LIGHT TRAP COLLECTIONS

	Tempera-ture °F.	Precip-itation (inches)	Type of trap (BL = blacklight, I = incandescent, MV = mercury vapor, O = other)	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
NORTH DAKOTA																								
Bowman 10/5, 15																		5		2				
Bismark 10/8				1										1						13				
Fargo 10/16														10				4		58				
OHIO (Counties)																								
Licking 6/8-15			BL	2														3		68				
Brown 6/6-13			BL				57											1						
Wayne 6/6-16			BL																	1				
SOUTH CAROLINA																								
Charleston 6/6-12	57-85	2.12	BL	1						1								29	3	3			6	
TEXAS																								
Brownsville 6/11-17	70-92	0.85	2BL	1			14		6	4	70					1		2	2	2		2	80	
Waco 6/11-17									7		16							4	13	2	4		11	
WISCONSIN																								
Madison 6/9-14			BL	1													3			16				
Plattville 6/7-13			BL	10													6	18		279				
WYOMING																								
Cheyenne 6/1-7				3		1535							Spp. 25					6						
Centennial 5/22-28				1		3																		
Centennial 5/29-6/4						7																		

HAWAII INSECT REPORT

Special Insects of Regional Significance - SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) - Surveys of various hosts on Kauai indicated no significant increase. Nymphs and adults caused light damage to snap beans in Waikapu, Maui. Adults very light on weed and crop hosts in Waimea, Kona, Kohala, Hilo and Pahoa on Hawaii Island. Nymphs and adults light to medium on mustard cabbages, tomatoes and snap beans throughout Waianae, Oahu. (Haw. Ins. Rpt.).

Corn - CORN PLANTHOPPER (Perigrinus maidis) light on young corn in Waikapu, Maui. Cyrtorhinus mundulus, an egg-sucking mirid bug, evident among P. maidis population. (Miyahira).

Tomatoes - Larvae of a LEAF MINER FLY (Liriomyza sp.) medium on tomatoes in Wailua, Kauai, and in Kahului, Maui. (Fujimoto, Miyahira).

Cucurbits - Adults and larvae of a LEAF MINER FLY (Liriomyza sp.) heavy in 15 acres of watermelon in Waianae, Oahu. Larvae medium on cucumbers at Wailua, Kauai, and at Kahului, Maui. (Kitagawa, Fujimoto, Miyahira).

Fruits and Nuts - Nymphs and adults of a LYGAEID BUG (Nysius sp.) heavy on young macadamia nut plantings in Kapoho, Hawaii Island. (Yoshioka, Hu). BARNACLE SCALE (Ceroplastes cirripediformis) nymphs light in 3-acre passion-fruit orchard in Kalaheo, Kauai. (Au).

Citrus - GREEN SCALE (Coccus viridis) medium on citrus trees in Hilo and Pahoa, Hawaii Island. (Haw. Ins. Rpt.).

Ornamentals - Many winged and wingless adults of an APHID (Masonaphis azaleae) observed on pansy flowers during May in Nuuanu Valley, Honolulu, Oahu. This is new island and host record. (Bianchi). GREENHOUSE ORTHEZIA (Orthezia insignis) heavy on purple ornamental lantana in Lihue, Kauai. Heavy growths of sooty mold blackened plants. (Au). An ARMORED SCALE (Diaspis boisduvalii) intercepted May 12 on cattleya orchid plants at Hilo, Hawaii Island, and destined for shipment out of State. This is new island record. (Shiroma, Hu).

Forest and Shade Trees - Nymphs and adults of a LYGAEID BUG (Nysius sp.) heavy on 40 commercial acres of Norfolk-Island pine trees in Kapoho, Hawaii Island. (Yoshioka, Hu).

Beneficial Insects - Larvae of a HISPID BEETLE (Uroplata girardi) observed damaging Lantana camara var. aculeata and L. camara var. mista in Lawai, Kauai. Variety mista only recently recorded in State. (Au).

BLACK GRASS BUG OBSERVATIONS IN UTAH

Species involved: Southern Utah, Labops hesperius; Northern Utah, Labops utahensis, Labops hirtus and Labops spp. Irbisia brachycera and Irbisia spp. also present.

Labops hesperius apparently is the black grass bug infesting the large areas of planted crested wheatgrass, intermediate wheatgrass, other wheatgrasses and miscellaneous grasses in the large areas around Bryce Canyon, in the Asay Bench area and two large areas east of Hatch, all in Garfield County. Recent estimates indicate that approximately 42,000 acres of planted grass areas on Forest Service land in Garfield and Kane Counties, 10,000 acres of Bureau of Land Management land and 6,000 acres of privately planted grass lands were severely injured. In Iron County, the large areas of planted grasses around Kanarraville were severely damaged and grasses in Bear Valley were moderately damaged.

Labops spp. seemed to have been more destructive in the higher elevations, and Irbisia spp. have been commonly destructive in the lower areas. In some areas both genera occurred together. Damage from the latter group was moderate in the Mona-Nephi area of Juab County and severe in 90 acres of barley north of Fountain Green in Sanpete County. This seemed to be the species also involved at Kanarraville in Iron County. Species of this genus were also found in a large area in eastern Millard County and were responsible for the damage to a few thousand acres of several planted grasses in the Alton area in Kane County.

In addition to Labops hesperius, which is quite extensively distributed in Utah, Labops utahensis occurs in Rich County and Labops hirtus has been taken in Cache Valley in Cache County, Ogden Valley of Weber County and Strawberry Valley in Wasatch County. The Irbisia spp. are frequently found on the planted grasses and on rye along roadsides throughout the cultivated areas of Utah. These species have been found on wheat also, and damage on rye has been observed in Pinto areas in Iron County. Irbisia spp. were the species collected in connection with the varying degrees of damage in Pine Valley, Grass Valley and Pinto areas of Washington County and Little Pinto in Iron County.

The Labops, in particular, have been apparently mating, laying eggs and dying off recently. A great many of the females show evidence of egg development. An apparent drop in populations was noted the first two weeks of June. Before the end of May, as many as 200 Labops per square foot were observed in the Blubber Creek-Kanab Creek area of Garfield County, on and beneath wheatgrasses. Irbisia numbers appeared to be greatly reduced by June 14 in the Bear Valley and some fields near Alton. The bugs seem to be rather gregarious; sometimes 5 to 20 can be found on a plant and few, if any, feeding on plants near that infested plant. In 1965, Irbisia completely destroyed all green color from a large growth of giant ryegrass around cultivated fields in an area of Box Elder County, then moved into margins of wheat and barley fields where they fed on the leaves.

Apparently the black grass bugs produce a tiny bleached-out spot each time they feed. There are two or three other species in the grass bug complex which produce larger and more conspicuous bleached-out spots than Labops and Irbisia. With the great number of bugs and much feeding, the green color becomes 50 to 95 percent lost. Early damaged leaves turn brown and become dry. The author does not recall having seen a single crested or intermediate wheatgrass seed head produced in the large area of infested forest rangeland examined in Garfield County. These observations were made before livestock were turned in to graze.

It is believed that if summer rains occur, most of the grass in the affected areas will grow and produce additional feed. Serious as the grass bug situation has been, probably it would take several years of heavy attack to kill the grass out. The damage would be more like cutting off the tops. With moisture, the plants should be able to produce additional growth this season. (G. F. Knowlton).

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