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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 clearinghouse and does not assume responsibility for accuracy of the material.

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## 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).

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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).

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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 - Populations 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.

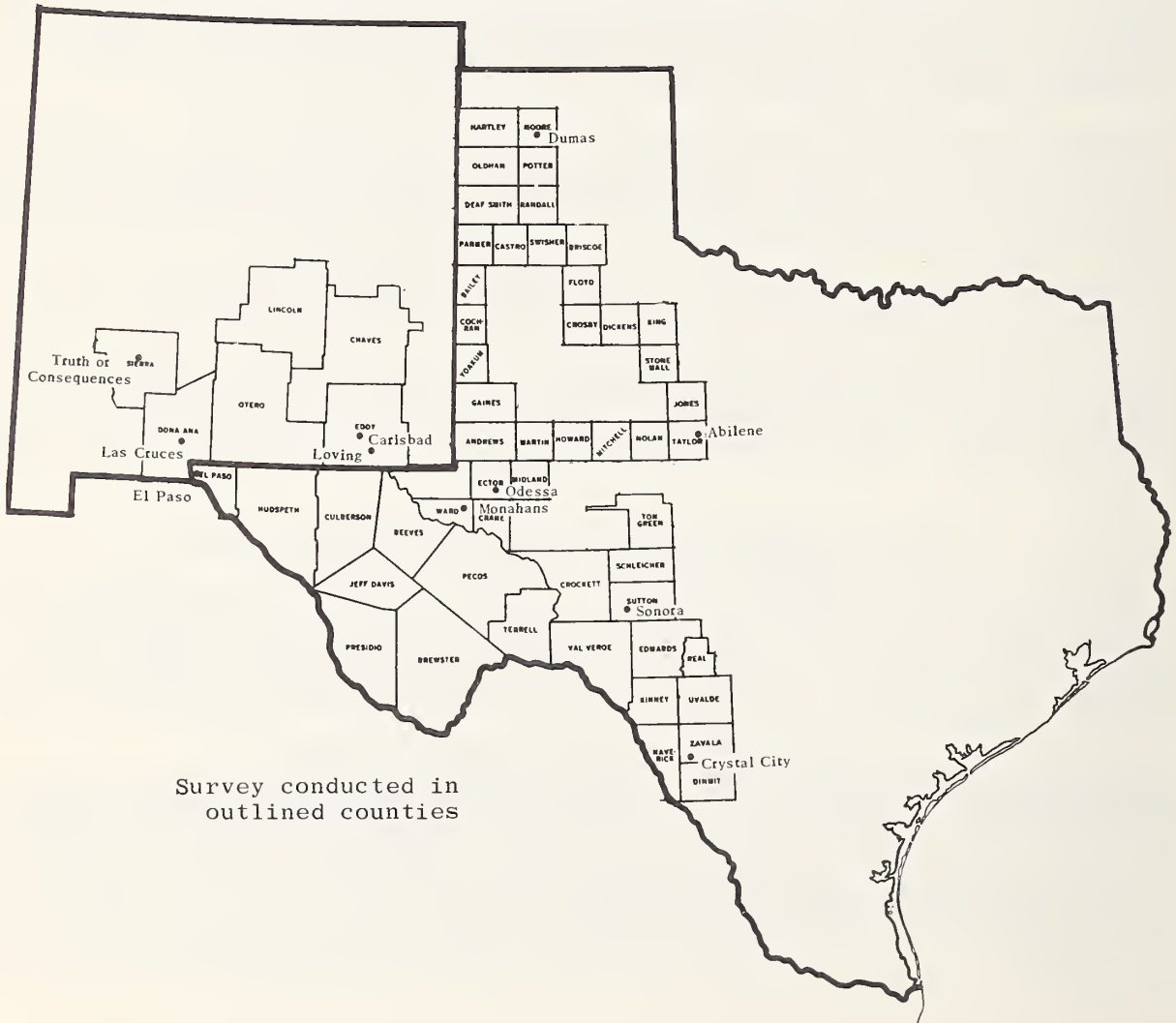
TEXAS - El Paso-Crystal City-Monahans Area - This area produced over 50 percent of the beet leafhoppers found on the entire survey in 1965. Heaviest concentration was in the Pecos area; however, a decided increase was noted in the Crystal City area, a principal spinach-producing area. Counts in the Pecos 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).

BEEF 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:

<u>State</u>	<u>District</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>
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 (Zediatraea 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 alfalfa 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 (Acyrtosiphon 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).



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 hederæ 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 bitter-sweet 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 Lakanawanna, 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 occurrence of unseasonably warm temperatures. (Wis. Ins. Sur., Mar. 18). FLORIDA - Very light to light in Gainesville area, Alachua County, Culex salinarius probably most active biter, 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.

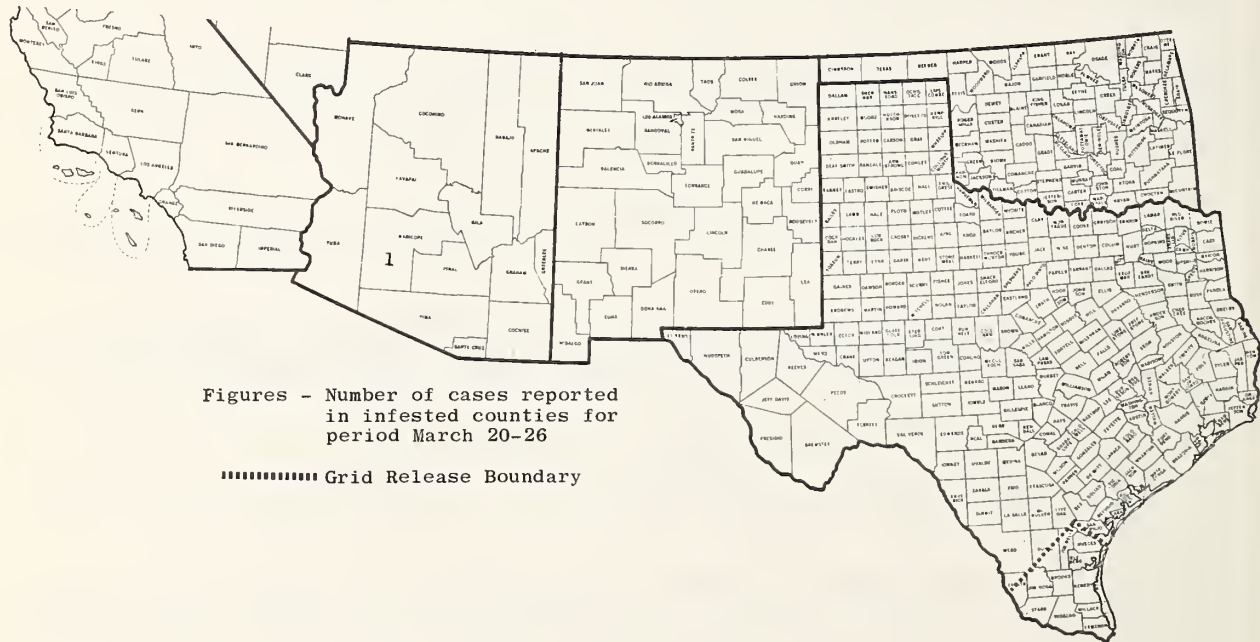
Year	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
1964	4	7	204	701	1.96	0.99
1965	0	4	37	570	0.00	0.70
1966	1	27	78	301	1.28	8.97

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.).



Figures - Number of cases reported in infested counties for period March 20-26  
 ■■■■■■■■■ Grid Release Boundary

INSECT DETECTION

A GRASSHOPPER (Oxya chinensis) - HAWAII - Adults collected in Kamalo constitute 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 ficis) 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. (Kajiwarra).

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 <sup>1/</sup>

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 south-eastern 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 from 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. Breakdown 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 resinosa) 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

<u>Project</u>	<u>Location</u>	<u>Trees treated</u>	<u>Acres sprayed</u>
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 <sup>1/</sup>	
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	<u>75,000</u>	<u>30,000</u>
Total		1,505,000	433,500

REGIONAL OFFICE ADDRESSES

U. S. FOREST SERVICE

<u>Region</u>		<u>Region</u>	
1	U. S. Forest Service Federal Building Missoula, Montana 59801	6	U. S. Forest Service P. O. Box 3623 Portland, Oregon 97208
2	U. S. Forest Service Federal Center Building 85 Denver, Colorado 80225	7	U. S. Forest Service 6816 Market Street Upper Darby, Pennsylvania 19082
3	U. S. Forest Service New Federal Building 517 Gold Street, S. W. Albuquerque, New Mexico 87101	8	U. S. Forest Service 50 Seventh Street, N. E. Atlanta, Georgia 30323
4	U. S. Forest Service Forest Service Building Ogden, Utah 84403	9	U. S. Forest Service 710 N. Sixth Street Milwaukee, Wisconsin 53203
5	U. S. Forest Service 630 Sansome Street San Francisco, California 94111	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.

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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.

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## 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.

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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 COSMOPTE-RIGID 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 (*Thamnosphesia 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 cressphontes*) 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 euonymus in RHODE ISLAND throughout 1965. SPIREA APHID (Aphis spiraeicola) 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 (Hysterozoea 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 Worcester 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 Lacochee, 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 CHRY-SANTHEMUM 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 (Scutigera 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 Angeles, 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. Roads 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 third 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.

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Acrolepia assectella</u> (Zell.) (Yponomeutidae)	<u>Allium porrum</u> (leek)	France, Germany, Italy, Japan, Netherlands	13
<u>Aleurocanthus woglumi</u> Ashby (Aleyrodidae)	<u>Citrus aurantifolia</u> (lime) leaf <u>C. paradisi</u> (grapefruit) leaf <u>Citrus</u> sp. (leaf)	Colombia, Costa Rica, Mexico, Nicaragua, Panama, unknown	24
<u>Anastrepha ludens</u> (Loew) (Tephritidae)	<u>Casimiroa edulis</u> (white sapote) <u>Citrus aurantifolia</u> (lime) <u>C. aurantium</u> (sour orange) <u>C. paradisi</u> (grapefruit) <u>C. reticulata</u> (Mandarin orange) <u>C. sinensis</u> (sweet orange) <u>Cydonia oblonga</u> (quince) <u>Malus sylvestris</u> (apple) <u>Mangifera indica</u> (mango) <u>Prunus persica</u> (peach) <u>Punica granatum</u> (pomegranate) <u>Pyrus communis</u> (pear)	Guatemala, Mexico	335
<u>Anastrepha mombinpraeoptans</u> Sein (Tephritidae)	<u>Anacardium occidentale</u> (common cashew) <u>Annona cherimola</u> (cherimoya) <u>Calocarpum sapota</u> (sapote) <u>Eugenia cuminii</u> (jambolan) <u>Mangifera indica</u> (mango) <u>Psidium guajava</u> (guava) <u>Spondias mombin</u> (yellow mombin) <u>Terminalia catappa</u> (tropical almond)	American Virgin Islands, Brazil, British Honduras, Costa Rica, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Martinique, Mexico, Nicaragua, Puerto Rico.	248
<u>Bruchus ervi</u> Froel. (Bruchidae)	<u>Lens culinaris</u> (lentil) <u>Phaseolus</u> sp. (bean) seed	Greece, Italy, Lebanon, Netherlands, Turkey	13
<u>Bruchus lentis</u> Froel. (Bruchidae)	<u>Lens culinaris</u> (lentil) <u>Phaseolus vulgaris</u> cv. (string bean)	Australia, Canada (?) France, Germany, Greece, Italy, Lebanon, Mexico, Morocco, Netherlands, Scotland, unknown.	24
<u>Bruchus tristiculus</u> Fahr. (Bruchidae)	<u>Lathyrus odoratus</u> (sweetpea) <u>L. sativus</u> (grass peavine) seed <u>Lathyrus</u> sp. (peavine) seed <u>Lens culinaris</u> (lentil) seed <u>Vicia faba</u> (broadbean)	Greece, Italy, Morocco, Portugal	10

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Bruchus tristis</u> Boh. (Bruchidae)	<u>Lathyrus sativus</u> (grass peavine) <u>Lathyrus</u> sp. (peavine) seed <u>Lens culinaris</u> (lentil) <u>Lupinus albus</u> (white lupine) seed	Italy	11
<u>Carposina niponensis</u> Wlsm. (Carposinidae)	<u>Malus sylvestris</u> (apple)	Japan	10
<u>Caryedon gonagra</u> (F.) (Bruchidae)	<u>Acacia</u> sp. <u>Arachis hypogaea</u> (peanut) <u>Cassia</u> sp. (senna) pod and seed <u>Pisum sativum</u> (pea) Seed - unidentified <u>Tamarindus indica</u> (tamarind) pod and seed	American Virgin Islands, Cape Verde Islands, Hawaii, India, Jamaica, Mexico, Philippines, unknown.	32
<u>Ceratitidis capitata</u> (Wied.) (Tephritidae)	<u>Annona</u> sp. (fruit) <u>Calophyllum inophyllum</u> (Indiapoon beautyleaf) fruit <u>Capsicum annuum</u> (pepper) <u>C. annuum</u> var. <u>longum</u> (chili pepper) <u>Carica papaya</u> (papaya) <u>Citrus grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>C. paradisi</u> (grapefruit) <u>C. reticulata</u> (Mandarin orange) <u>C. sinensis</u> (sweet orange) <u>Coffea arabica</u> (Arabian coffee) berry <u>Cydonia oblonga</u> (quince) <u>Diospyros kaki</u> (kaki persimmon) <u>Diospyros</u> sp. (persimmon) <u>Ficus carica</u> (fig) <u>Fortunella</u> sp. (kumquat) <u>Malus sylvestris</u> (apple) <u>Mangifera indica</u> (mango) <u>Mespilus germanica</u> (medlar) <u>Opuntia humifusa</u> (pricklypear) <u>Passiflora</u> sp. (passionflower) fruit <u>Prunus domestica</u> (plum) <u>P. persica</u> (peach) <u>Prunus</u> sp. <u>Psidium guajava</u> (guava) <u>Punica granatum</u> (pomegranate) <u>Pyrus communis</u> (pear) <u>Sorbus domestica</u> 'Appleform' (servicetree mountain-ash) fruit. <u>Synsepalum dulcificum</u> <u>Terminalia catappa</u> (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
<u>Coccus viridis</u> (Green) (Coccidae)	<u>Coffea arabica</u> (Arabian coffee) <u>Gardenia jasminoides</u> (leaf) <u>G. taitensis</u> (leaf) <u>Gardenia</u> sp. (leaf and stem)	Hawaii Tahiti	26
<u>Cochlicella barbara</u> (L.) (Helicellidae)	<u>Humulus japonicus</u> (Japanese hop) seed <u>Phaseolus lunatus</u> (lima bean) seed	Crete, France, Germany, Greece, Italy, Morocco, Netherlands, Spain, Turkey, United Arab Republic	29

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Cochlicella ventrosa</u> (Ferussac) (Helicellidae)	<u>Buxus sempervirens</u> (boxwood) seed <u>Laburnum</u> sp. (seed) Soil with plants ( <u>Asparagus plumosus</u> , <u>Begonia</u> sp., <u>Gardenia</u> sp., and <u>Hyacinthus</u> sp.) <u>Syringa</u> sp. (lilac) seed	Azores, Germany (?) Italy, Lebanon, Morocco, Portugal Spain, unknown.	18
<u>Dacus dorsalis</u> Hend. (Tephritidae)	<u>Annona</u> sp. <u>Averrhoa</u> sp. (fruit) <u>Calocarpum sapota</u> (sapote) <u>Carica papaya</u> (papaya) <u>Mangifera indica</u> (mango) <u>Musa nana</u> (dwarf banana) <u>Musa X paradisiaca</u> (banana) <u>Passiflora edulis</u> (purple granadilla) <u>Passiflora</u> sp. (passionflower) fruit <u>Persea americana</u> (avocado) <u>Prunus armeniaca</u> (apricot) <u>Psidium guajava</u> (guava) <u>Terminalia catappa</u> (tropical almond)	Hawaii, Malaysia, Philippines, Viet-Nam	40
<u>Dacus oleae</u> (Gmel.) (Tephritidae)	<u>Olea europaea</u> (common olive) <u>Olea</u> sp. (olive)	France, Israel, Italy, Lebanon, Portugal, Spain	84
<u>Dialeurodes kirkaldyi</u> (Kot.) (Aleyrodidae)	<u>Gardenia jasminoides</u> (leaf and stem) <u>G. taitensis</u> (leaf) <u>Gardenia</u> sp. (leaf and stem) <u>Jasminum</u> sp. (leaf) <u>Plumeria</u> sp. (frangipani) leaf	Hawaii, Tahiti	16
<u>Frankliniella intonsa</u> (Trybom) (Thripidae)	<u>Calluna vulgaris</u> <u>Centaurea cyanus</u> (cornflower) <u>Chrysanthemum</u> sp. (flower) <u>Dianthus caryophyllus</u> (carnation) Flowers (mixed) <u>Gladiolus</u> sp. <u>Rosa</u> sp. (rose) flower <u>Tagetes</u> sp. (marigold) petal	Czechoslovakia, Denmark, England, Europe (country(?)), Germany Hungary, Italy, Poland, Scotland, Sweden	29

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Helicella caperata</u> (Montagu) (Helicellidae)	Herb--unidentified <u>Humulus japonicus</u> (Japanese hop) seed <u>Lathyrus odoratus</u> sweetpea)seed Soil with conex box, <u>Hyacinthus sp.</u> , and <u>Lonicera sp.</u>	Crete, Germany, Greece, Italy, Netherlands, unknown	10
<u>Helicella cretica</u> (Ferussac) (Helicellidae)	<u>Asparagus sp.</u> <u>Lactuca sativa</u> (lettuce) Soil with plants (cactus, <u>Gardenia sp.</u> , <u>Jasminum</u> <u>sp.</u> , <u>Lonicera sp.</u> , <u>Pelargonium sp.</u> , and unidentified plant .	Crete, Greece, Lebanon, Turkey.	26
<u>Helicella derbentina</u> (Andrz.) (Helicellidae)		Turkey	15
<u>Helicella maritima</u> (Draparnaud) (Helicellidae)	<u>Brassica chinensis</u> (Chinese cabbage) <u>Citrus paradisi</u> (grapefruit) <u>Pelargonium sp.</u> (geranium) <u>Vicia sativa</u> (vetch) seed	Azores, France, Israel, Italy, Libya, Spain	19
<u>Helicella variabilis</u> (Draparnaud) (Helicellidae)	<u>Buxus sempervirens</u> (boxwood) seed <u>Malus sylvestris</u> (apple) <u>Vicia sativa</u> (vetch)	France, Italy, Spain	14
<u>Helix aperta</u> Born (Helicidae)	<u>Brassica oleracea</u> var. <u>botrytis</u> (cauliflower) <u>B. oleracea</u> var. <u>capitata</u> (cabbage) <u>Cynara scolymus</u> (artichoke) <u>Humulus japonicus</u> (Japanese hop) seed <u>Lactuca sativa</u> (lettuce) <u>Petroselinum crispum</u> (parsley)	France, Italy, Netherlands, Spain	11
<u>Helix aspersa</u> Müller (Helicidae)	<u>Brassica oleracea</u> var. <u>capitata</u> (cabbage) <u>Delphinium sp.</u> (flower) Flowers (mixed) Herb--unidentified Soil with <u>Asparagus plumosus</u>	Bermuda, England, France, Greece, Haiti, Italy, Mexico, Portugal, Spain	13
<u>Laspeyresia splendana</u> (Hbn.) (Olethreutidae)	<u>Castanea sativa</u> (European chestnut) <u>Castanea sp.</u> (chestnut) <u>Quercus suber</u> (cork oak) seed	Azores, Canary Islands, France, Germany, Greece, Italy, Portugal, Yugoslavia	61
<u>Mamestra brassicae</u> (L.) (Noctuidae)	<u>Apium graveolens</u> var. <u>dulce</u> (celery) <u>Brassica oleracea</u> var. <u>acephala</u> (collard) <u>B. oleracea</u> var. <u>botrytis</u> (cauliflower) <u>B. oleracea</u> var. <u>capitata</u> (cabbage)		

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Mamestra brassicae</u> --continued	<u>Chrysanthemum</u> sp. (flower) Flowers (mixed) <u>Lactuca sativa</u> (lettuce)	England, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain	35
<u>Maruca testulalis</u> (Geyer) (Pyraustidae)	<u>Cajanus cajan</u> (pigeonpea) pod <u>Canavalia microcarpa</u> (mauna loa) <u>Phaseolus vulgaris</u> cv. (string bean)	Angola, Colombia, Dominican Republic, Hawaii, Ivory Coast, Japan, Puerto Rico, Venezuela, unknown	17
<u>Metamasius hemipterus sericeus</u> (Oliv.) (Curculionidae)	<u>Musa X paradisiaca</u> (banana)	Ecuador, Honduras, Panama	14
<u>Monacha carthusiana</u> (Müller) (Helicellidae)	<u>Buxus sempervirens</u> (boxwood) seed <u>Clematis viticella</u> (Italian clematis) seed <u>Cotinus coggyria</u> (common smoketree) seed <u>Hibiscus syriacus</u> (shrub- althea) seed <u>Lathyrus sativus</u> (grass peavine) bean Soil with <u>Hyacinthus</u> sp. (bulb), unidentified plant	England, Greece, Italy Liberia, Italy, unknown	14
<u>Morganella longispina</u> (Morg.) (Diaspididae)	<u>Chaenomeles</u> sp. (flowering quince) <u>Citrus aurantifolia</u> (lime) <u>C. grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>C. paradisi</u> (grapefruit) <u>C. reticulata</u> (Mandarin orange) <u>C. sinensis</u> (sweet orange)	American Samoa, Brazil, Japan, Tahiti, unknown	26
<u>Nephotettix apicalis</u> (Motsch.) (Cicadellidae)		Canton Island, India, Japan, Philippines, Thailand, Viet-Nam, Wake Island, unknown	11
<u>Otala vermiculata</u> (Müller) (Helicidae)	<u>Brassica oleracea</u> var. <u>botrytis</u> (cauliflower) <u>B. oleracea</u> var. <u>capitata</u> (cabbage)	Cuba, France, Greece, Italy	13
<u>Parlatoria cinerea</u> Hadden (Diaspididae)	<u>Citrus aurantifolia</u> (lime) <u>C. grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>C. paradisi</u> (grapefruit) <u>C. reticulata</u> (Mandarin orange) <u>C. sinensis</u> (sweet orange)	American Samoa, Brazil, Formosa, Guatemala, Honduras, Hong Kong, Italy, Japan, Mexico, Nicaragua, Panama, Spain, Surinam, Tahiti, Trinidad, unknown	58
<u>Parlatoria zizyphus</u> (Lucas) (Diaspididae)	<u>Citrus aurantifolia</u> (lime) <u>C. grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>C. mitis</u> (calamondin orange) <u>C. paradisi</u> (grapefruit) <u>C. reticulata</u> (Mandarin orange) <u>C. sinensis</u> (sweet orange) <u>Citrus</u> 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

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Pectinophora gossypiella</u> (Saund.) (Gelechiidae)	<u>Gossypium tomentosum</u> (Hawaiian cotton) <u>Gossypium</u> sp. (cotton) boll, seed, and waste. <u>Hibiscus esculentus</u> (okra)	Albania, Antigua, Bahamas, British West Indies (Is- land (?)), Dominican Republic, Ghana, Grenada, Haiti, Hawaii, Jamaica, Mexico, Trinidad, Turkey	60
<u>Pheidole megacephala</u> (F.) (Formicidae)	<u>Ananas comosus</u> (pineapple) bean, <u>Bromeliad</u> , <u>Cibotium</u> sp. (tree fern) log, <u>Citrus</u> sp. (leaf), <u>Cordyline</u> <u>terminalis</u> (ti) stem <u>Dalbergia</u> sp. (rosewood) log <u>Fragaria</u> sp. (strawberry) plant <u>Hibiscus</u> sp. (flower) <u>Lycopersicon esculentum</u> tomato orchid, <u>Pisum sativum</u> (pea) plant material--unidentified <u>Saccharum officinarum</u> (sugarcane) soil with grass <u>Zingiber officinale</u> (ginger)	American Samoa, Australia (?), Bahamas, Bermuda, British Honduras, Dominican Republic, Fiji, France, Guam, Guatemala, Hawaii, Honduras, Philippines, Republic of South Africa,	29
<u>Phytomyza rufipes</u> Meig. (Agromyzidae)	<u>Brassica oleracea</u> var. <u>botrytis</u> (cauliflower) <u>B. oleracea</u> var. <u>capitata</u> (cabbage) <u>B. rapa</u> (turnip) <u>Cichorium endivia</u> (endive) <u>Lactuca sativa</u> (lettuce) <u>Raphanus sativus</u> (radish)	Algeria, Belgium, Denmark, England, France, Germany, Malaysia, Netherlands, Scotland	20
<u>Rhagoletis cerasi</u> (L.) (Tephritidae)	<u>Prunus cerasus</u> (sour cherry) <u>Prunus</u> sp. (cherry)	Europe (country(?)), France, Germany, Hungary, Italy, Poland, Switzerland	34
<u>Sinoxylon conigerum</u> Gerst. (Bostrichidae)	<u>Cassia fistula</u> (goldenshower senna) seed <u>Cocos nucifera</u> (coconut) leaf hats <u>Eugenia</u> sp. (stem) <u>Swietenia mahagoni</u> (mahogany)	Hawaii, India, Pakistan, Portugal, unknown	27
<u>Stenoma catenifer</u> Wlsm. (Stenomidae)	<u>Persea americana</u> (avocado) <u>P. americana</u> var. <u>drymifolia</u> (Mexican avocado) seed in fruit	Argentina, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru, Venezuela	40
<u>Sternochetus mangiferae</u> (F.) (Curculionidae)	<u>Mangifera indica</u> (mango)	Africa (country(?)), Australia, Hawaii, India, Philippines	40
<u>Taeniothrips atratus</u> (Hal.) (Thripidae)	<u>Aster</u> sp. (flower) <u>Calluna vulgaris</u> (heather) <u>Centaurea cyanus</u> (cornflower) <u>Chrysanthemum</u> sp. (flower)	Czechoslovakia, Denmark, England, Europe (country(?)), Germany, Ireland, Italy, Poland, Scotland, Sweden,	

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Taeniothrips atratus</u> - continued	<u>Dahlia</u> sp. (leaf and stem) <u>Dianthus caryophyllus</u> (carnation) Flowers (mixed) <u>Freesia</u> sp. (flower) <u>Gladiolus</u> sp. (flower) <u>Lathyrus odoratus</u> (sweetpea) <u>Lavandula</u> sp. (lavender) <u>Liatis</u> <u>scariosa</u> (tall gayfeather) <u>Mentha</u> sp. (mint) <u>Rosa</u> sp. (rose) flower	Switzerland, unknown	57
<u>Taeniothrips hawaiiensis</u> (Morg.) (Thripidae)	<u>Chrysanthemum</u> sp. (flower) <u>Gardenia jasminoides</u> (flower) <u>Plumeria rubra</u> (Mexican frangipani) <u>Polianthes tuberosa</u> (tuberose)	Hawaii, Japan	62
" <u>Targionia</u> " <u>hartii</u> (Ckll.) (Diaspididae)	<u>Zingiber officinale</u> (ginger)	Fiji, Philippines	33
<u>Theba pisana</u> (Müller) (Helicidae)	<u>Althaea rosea</u> (hollyhock) seed <u>Cedrus</u> sp. (cedar) seed Soil with <u>Hyacinthus</u> sp. (bulb) <u>Tropaeolum</u> sp. (nasturtium) seed	Azores, France, Greece, Italy, Libya, Morocco, Spain, Turkey, United Arab Republic	57
<u>Thrips flavus</u> Schrank (Thripidae)	Flowers - ( <u>Bellis perennis</u> , <u>Calluna vulgaris</u> , <u>Chrysanthemum</u> sp., <u>Dianthus caryophyllus</u> , <u>Fuchsia</u> sp., <u>Rosa</u> sp., and <u>Tagetes</u> sp.).	Czechoslovakia, England, Europe (country(?)), France, Germany, Hungary, Ireland, Netherlands, Norway, Poland, Scotland, Switzerland	42
<u>Trichia hispida</u> (L.) (Helicellidae)	<u>Amorpha fruticosa</u> (indigobush amorpha) seed <u>Buxus sempervirens</u> (boxwood) seed <u>Chrysanthemum</u> sp. <u>Cotinus coggygria</u> (common smoketree) seed <u>Laburnum</u> sp. <u>Rosa</u> sp. Soil with <u>Cotoneaster</u> sp., <u>Iris</u> sp., and <u>Juniperus</u> sp. (plants)	Belgium, England, France, Germany, Ireland, Italy	13
<u>Trogoderma granarium</u> Everts (Dermestidae)	<u>Acacia senegal</u> (gum arabic and gum hashabi) <u>Apium graveolens</u> var. <u>dulce</u> (celery) seed <u>Arachis hypogaea</u> (peanut) <u>Astragalus gummifer</u> (gum tragacanth) <u>Bixa orellana</u> (annatto-tree) seed <u>Cajanus cajan</u> (pigeonpea) <u>Castanea</u> sp. (chestnut) <u>Cicer arietinum</u> (chickpea) <u>Cinnamomum</u> sp. (cinnamon) bark <u>Citrus aurantifolia</u> (lime) dried <u>Coffea</u> 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

<u>Pest</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Trogoderma granarium</u> --continued	<u>Coriandrum sativum</u> (coriander) seed		
	<u>Cucumis</u> sp. (seed)		
	<u>Cuminum cyminum</u> (cumin) seed		
	<u>Cyanopsis tetragonoloba</u> (guar gum)		
	<u>Foeniculum vulgare</u> (fennel) seed		
	<u>Gossypium</u> sp. (cottonseed and raw cotton)		
	<u>Lens culinaris</u> (lentil)		
	<u>Manihot esculenta</u> (common cassava)		
	<u>Oryza sativa</u> (rice)		
	<u>Phaseolus vulgaris</u> (bean)		
	<u>Piper nigrum</u> (black pepper)		
	<u>Pistacia</u> sp. (pistache) nut		
	<u>Pisum sativum</u> (pea) dried		
	<u>Plantago psyllium</u> (husk)		
	<u>Prunus amygdalus</u> (almond)		
	<u>Sterculia urens</u> (gum karaya)		
	<u>Tamarindus indica</u> (tamarind) seed powder		
	<u>Terminalia</u> sp. (myrabolan) nut		
	<u>Theobroma cacao</u> (cacao) bean		
	<u>Zea mays</u> (corn)		
<u>Tydeus kochi</u> Oud. (Tydeidae)	<u>Calluna vulgaris</u> (heather)	Argentina, Brazil, England, Nicaragua, Panama, Venezuela	10
	<u>Chrysanthemum</u> sp. (plant)		
	<u>Citrus</u> sp. (plant)		
	<u>Dianthus</u> sp. (flower)		
	<u>Malus sylvestris</u> (apple)		
	<u>Orchid</u> (flower)		
<u>Rosa</u> sp. (rose) flower			
<u>Unaspis yanonensis</u> (Kuw.) (Diaspididae)	<u>Citrus aurantifolia</u> (lime)	Australia, Hong Kong, Japan, Okinawa	424
	<u>C. aurantium</u> (sour orange)		
	<u>C. grandis</u> (pummelo)		
	<u>C. ichangensis</u> X <u>C. reticulata</u> (ichandarin)		
	<u>C. limon</u> (lemon)		
	<u>C. paradisi</u> (grapefruit)		
	<u>C. paradisi</u> X <u>C. reticulata</u> (tangelo)		
	<u>C. reticulata</u> (Mandarin orange)		
	<u>C. sinensis</u> (sweet orange)		
	<u>Citrus</u> sp.		
	<u>Fortunella</u> sp.		
<u>Vinsonia stellifera</u> (Westw.) (Coccidae)	<u>Broughtonia sanguinea</u> (orchid)	Bahamas, Brazil, British Guiana, British Honduras, Canal Zone, Colombia, Costa Rica, Dominica, Dominican Republic, Guatemala, Jamaica, Panama, Puerto Rico, Surinam, Trinidad, Venezuela	58
	<u>Broughtonia</u> sp. (orchid) leaf		
	<u>Epidendrum nocturnum</u> (orchid) leaf		
	<u>Epidendrum</u> sp. (leaf)		
	<u>Gardenia jasminoides</u>		
	<u>Ionopsis</u> sp. (orchid) leaf		
	<u>Ixora</u> sp. (leaf)		
	<u>Oncidium luridum</u> (orchid)		
	<u>O. papilio</u> (butterfly orchid)		
	<u>Oncidium</u> sp. (orchid) leaf		
	<u>Orchid</u>		
	<u>Phaius</u> sp. (orchid)		



