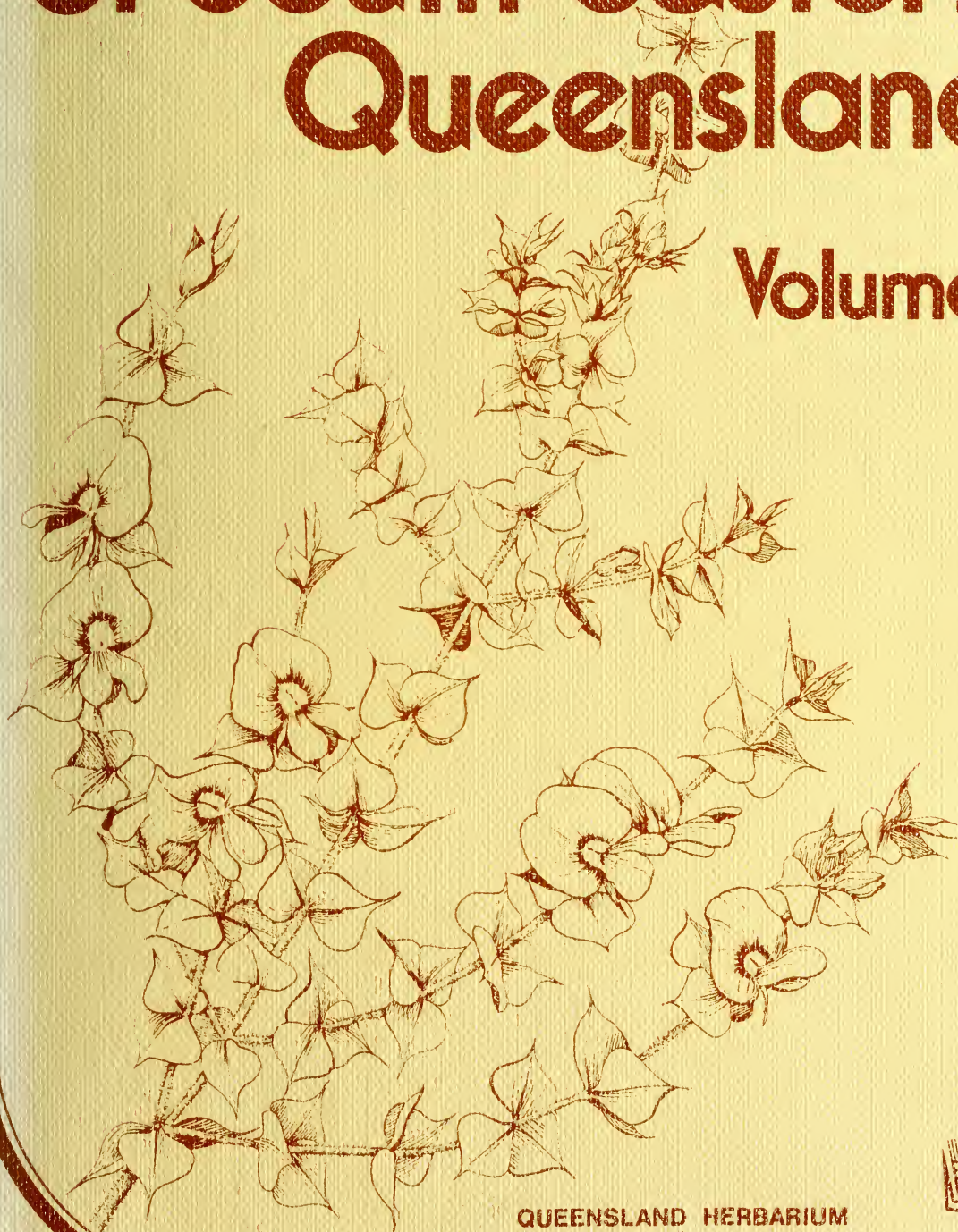


Stanley
& Ross

FLORA

of South-eastern Queensland

Volume 1



QUEENSLAND HERBARIUM

QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES



Flora of south-eastern Queensland
Volume I

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Flora of south-eastern Queensland

Volume I

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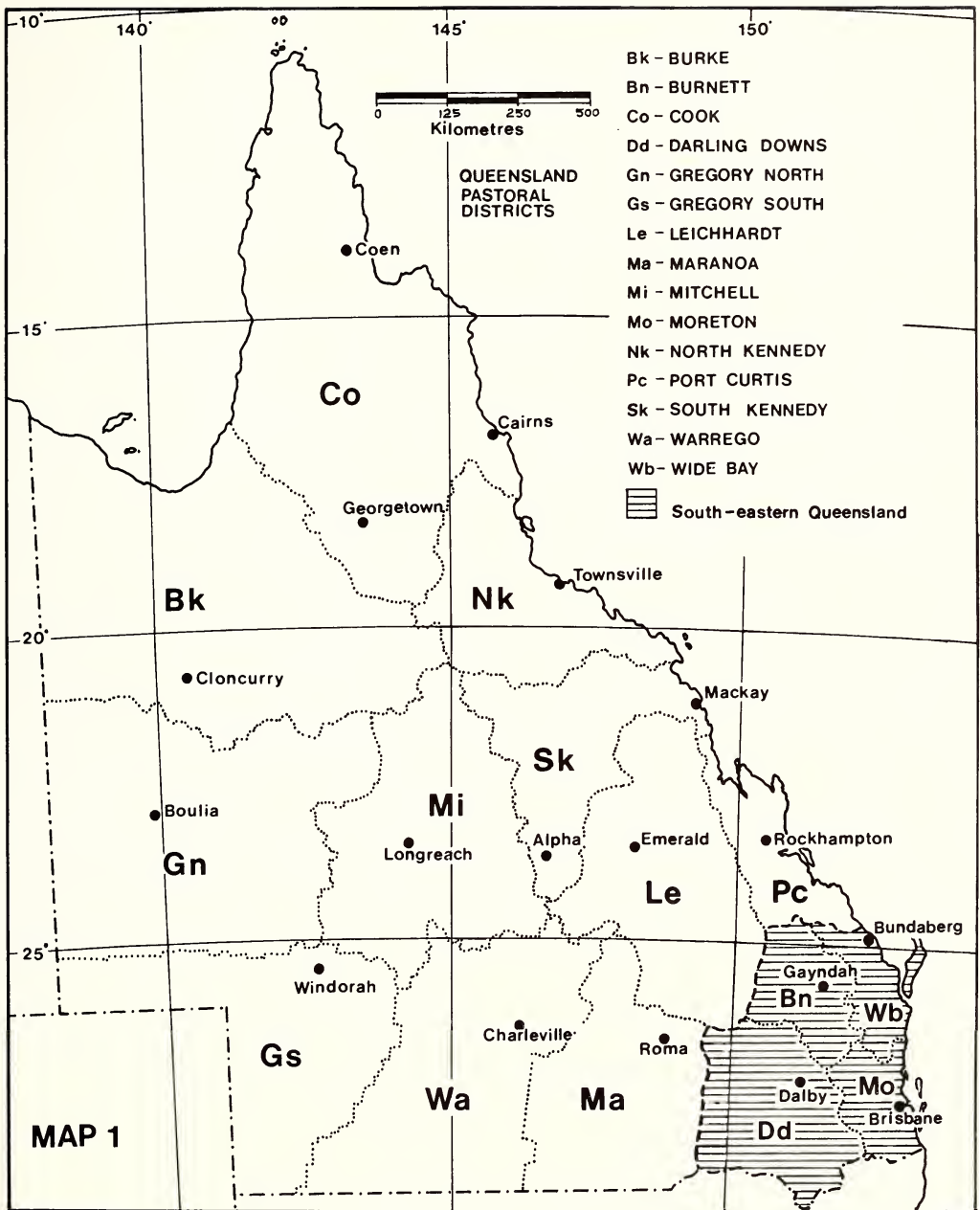
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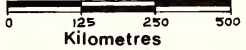
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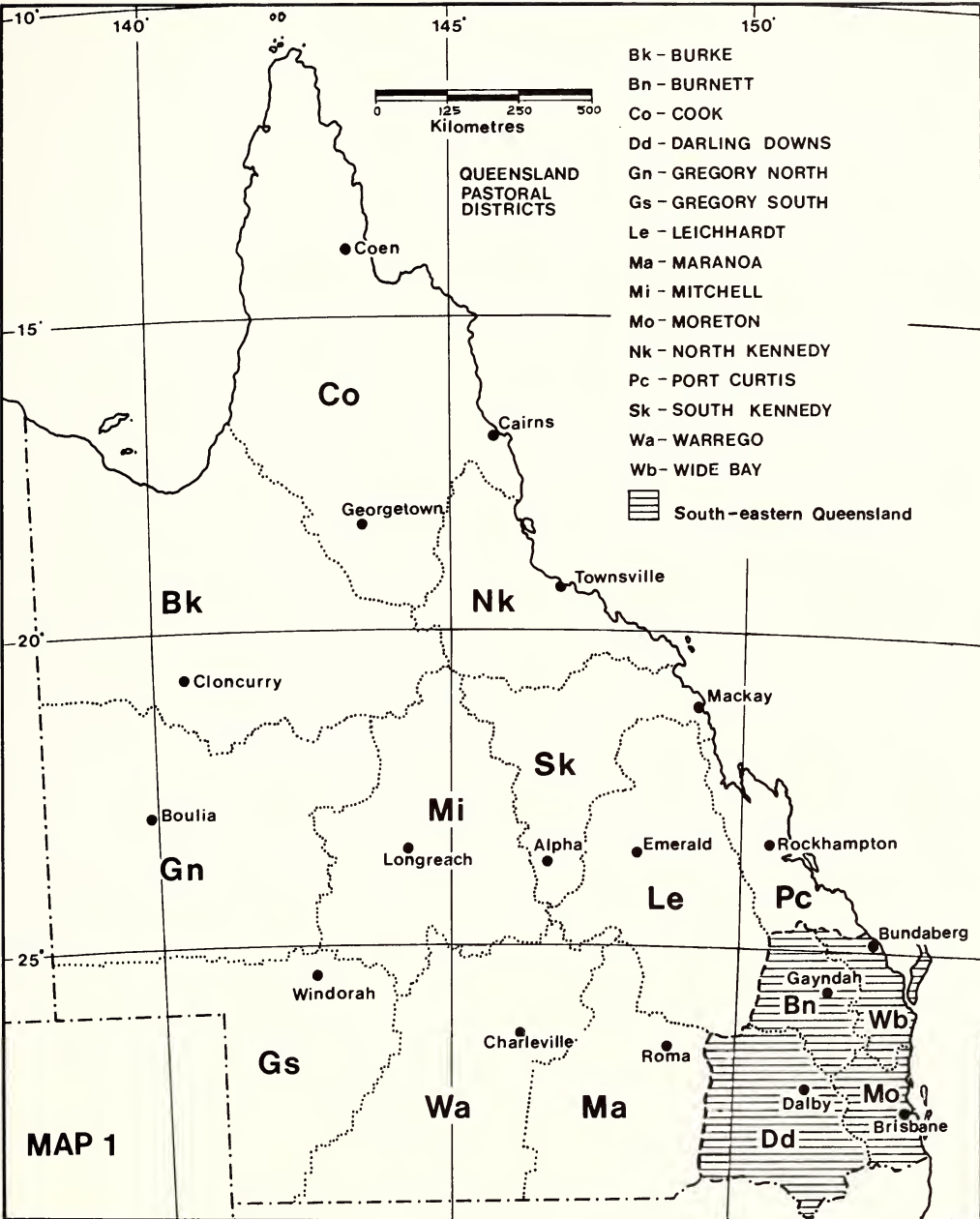
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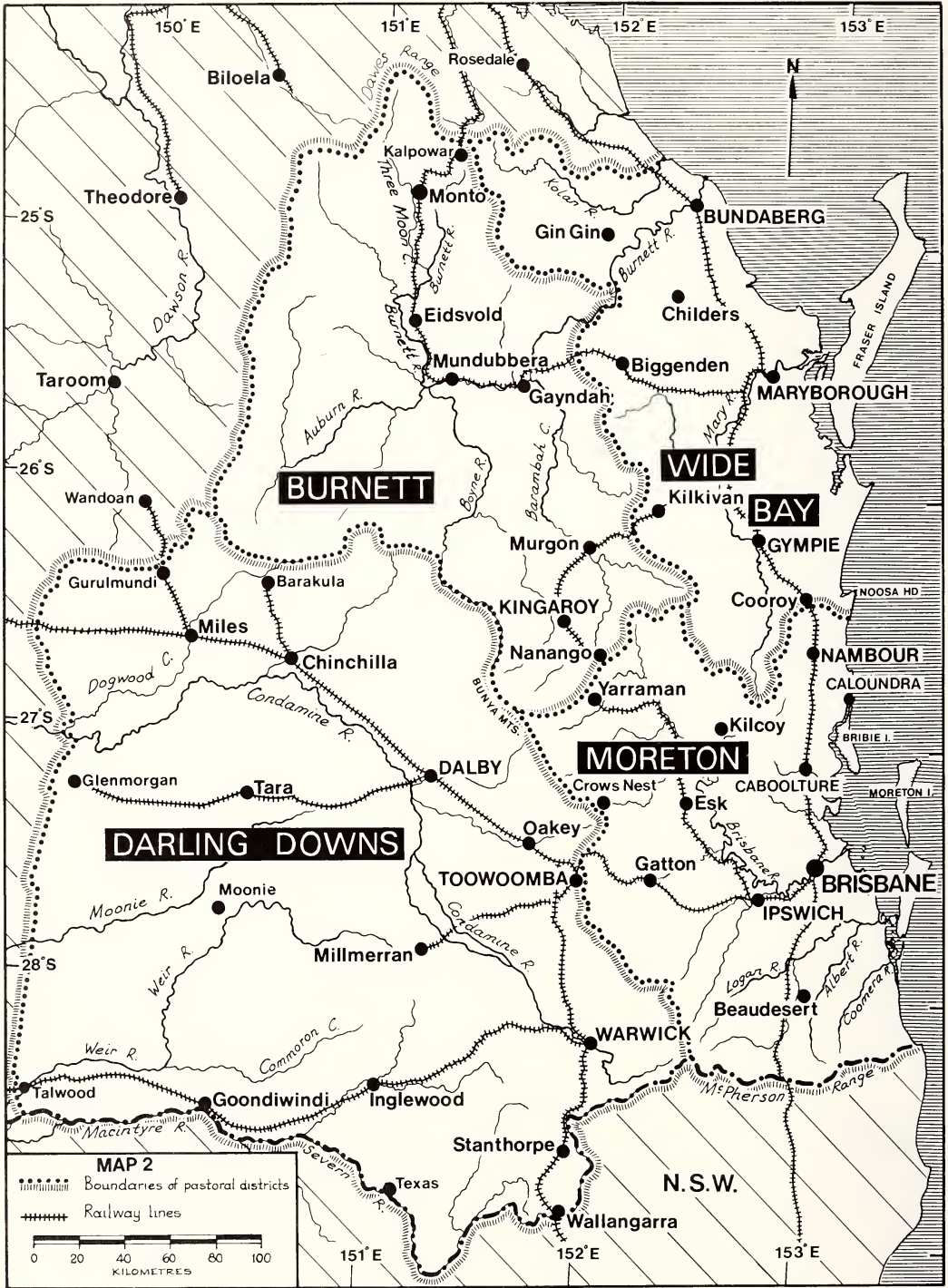


- Bk - BURKE
 - Bn - BURNETT
 - Co - COOK
 - Dd - DARLING DOWNS
 - Gn - GREGORY NORTH
 - Gs - GREGORY SOUTH
 - Le - LEICHHARDT
 - Ma - MARANOVA
 - Mi - MITCHELL
 - Mo - MORETON
 - Nk - NORTH KENNEDY
 - Pc - PORT CURTIS
 - Sk - SOUTH KENNEDY
 - Wa - WARREGO
 - Wb - WIDE BAY
- South-eastern Queensland



QUEENSLAND PASTORAL DISTRICTS





FOREWORD

In 1902 the first published flora of Queensland was completed. This work, written by F. M. Bailey, Colonial Botanist of Queensland, was compiled largely from Bentham's *Flora Australiensis*. Our knowledge of the flora has increased substantially since then. In Bailey's *Queensland Flora* approximately 4 500 species of flowering plants were described; it is now estimated there are at least twice as many recognizable taxa growing in the State. This has largely resulted from further exploration and more detailed taxonomic studies but, as well, a considerable number of alien plants have since become naturalized. In addition, many of the botanical names used by Bailey are no longer currently used so that his flora has become a scientist's tool rather than a work of utilitarian value.

The need for a modern written flora has been recognized for many decades. Many botanists past and present, pressed the case for a new flora, a dream shared by staff of the Queensland Herbarium for more than 50 years. The groundwork prepared by botanists such as C. T. White, W. D. Francis, S. L. Everist, S. T. Blake and L. S. Smith made such a dream possible but it was not until 1975 that a firm plan was finalized by John Parham, since retired, to produce four regional floras to cover the whole of the state. The conversion of this plan into the reality of published work was almost entirely due to the extreme dedication, single-mindedness of purpose, scientific competence and efficiency of Trevor Stanley and Estelle Ross. They have received the support of the rest of the staff. The book has been greatly enhanced by the accuracy and artistry of two talented illustrators, Margaret Saul and Gillian Rankin.

I am sure this book will be welcomed by both professionals and amateurs interested in the Queensland flora. It represents the current state of our taxonomic knowledge; no flora ever provides the final word. The authors have been careful to point out deficiencies in our understanding of the flora and so highlighted those areas requiring further research. This information certainly enhances the value of this important contribution to the literature written on the rich and varied flora of this State.

In the three volumes of this handbook, approximately 3 600 species will be described which makes the flora of this region as large as that of either Victoria or South Australia. This provides a good measure of the achievement of the two authors. The volumes containing the remainder of the species in south-eastern Queensland will be published over the next five years.

R. W. JOHNSON
DIRECTOR
QUEENSLAND HERBARIUM

February, 1981

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INTRODUCTION

This flora has been written to provide a means of identifying the various families, genera and species of angiosperms and gymnosperms, both native and naturalized, that occur in south-eastern Queensland. The ferns and fern allies have been covered by S. B. Andrews in *The Ferns of Queensland* [Qld. Govt. Printer (1982)]; other cryptogams have been excluded as large numbers of them are imperfectly known.

The region covered by the book is shown in **Maps 1 & 2** and covers an area of about 184 600 km² out of the total land area of Queensland of about 1 728 000 km².

The publication is aimed at the student, the naturalist, the agriculturist, in fact anyone wishing to know the names of the wild plants they see about them. It will consist of three volumes. Volume 1 contains the key to the families of dicotyledons and descriptions of about half of the number of species of dicotyledons in south-eastern Queensland. The second volume will contain the remainder of the dicotyledons. Volume 3 will describe the monocotyledons and the gymnosperms found in the region, and contain a key to the families in these groups.

The systematic arrangement of families used is based on the system of H. Melchior (ed) *A. Engler-Syllabus der Pflanzenfamilien* Berlin (1964). The family Proteaceae, which is placed between Urticaceae and Olacaceae, however, has not been included in the first volume as large sections of the family were under review at the time of preparation of the text. The Proteaceae will be included in Volume 2 so that the treatment can include any changes brought about by the modern revisions.

A description of each family, genus and species is given together with keys to the families, genera and species. The author is cited for each genus and species and infraspecific taxon recognized as occurring in Queensland. Where the species is known but not yet formally named, it appears as, for example, **Hibbertia** sp.

On the same line as the botanical names the accepted common name or names where they exist for each species, are also given. Where a common name is used in a localized area only, it is not given.

Basionyms are cited in synonymy as well as those synonyms used in Australian literature dating from F. M. Bailey, *Queensland Flora* 1892–1902. No attempt has been made to provide a complete list of synonyms as this would have overburdened the text.

Descriptions for the most part have been limited to attributes fairly readily visible with a hand lens with a magnification of x10, although in some cases two or more species are so similar as to require examination with a microscope. Most measurements given in this work are from dried specimens at the Queensland Herbarium. The descriptions cover the normal range of variation of the species; however, from time to time, odd variants may be encountered which do not fit the descriptions given. Also, no attempt has been made to key or describe natural hybrids, but proven or suspected cases of hybridism are discussed under the parent species.

Where disagreement exists over the limits of taxa the broad view has generally been accepted, to limit the size of the discussion. Where known taxonomic or nomenclatural problems exist these are noted after the descriptions of the taxa concerned.

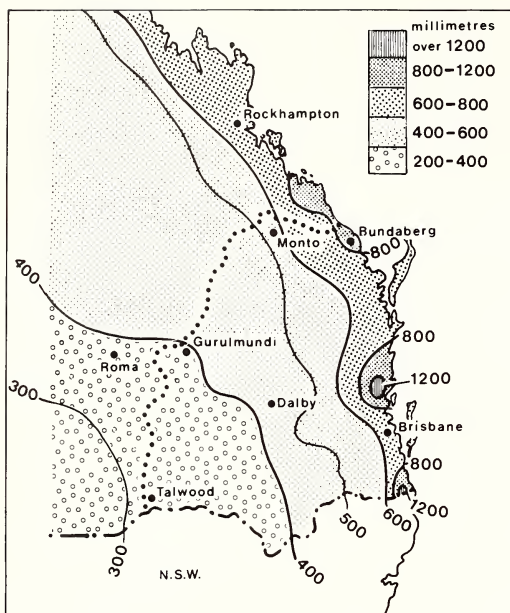
Brief notes are given on number of species and geographic distribution of the species in each family and genus. Records of distribution and habitat of each species within south-eastern Queensland are also given. The place of origin of naturalized species and the general flowering period of most species is indicated. Exotic naturalized species are indicated by an asterisk. Species poisonous to stock or people, declared noxious weeds or relevant reports of usefulness, are also noted.

The family treatments were divided amongst the authors and contributors as follows. T. Stanley was responsible for Dilleniaceae, Ochnaceae, Crassulaceae, Baueraceae, Escalloniaceae, Cunoniaceae, Pittosporaceae, Rosaceae, Fabaceae and Euphorbiaceae. L. Pedley prepared the treatments of Mimosaceae, Caesalpiniaceae, Tropaeolaceae and Polygalaceae. S. Reynolds wrote the treatments of Meliaceae, Akaniaceae, Anacardiaceae and Sapindaceae. R. Henderson prepared the treatment of Zygophyllaceae. E. Ross prepared the treatments of the remaining 59 families.

ACKNOWLEDGEMENTS

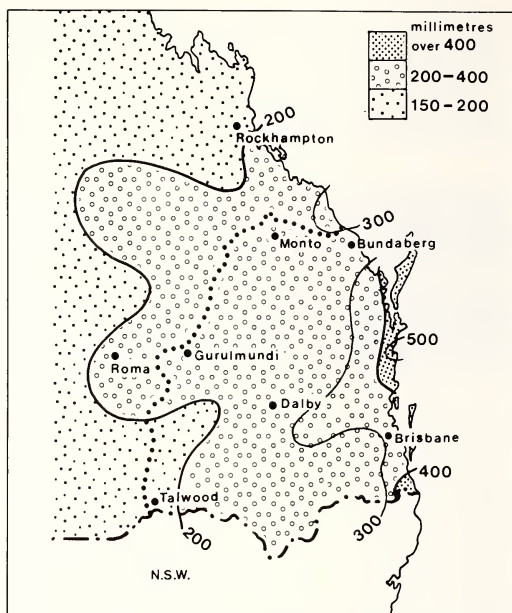
The authors would like to thank the many people who have assisted in the preparation of this book. In particular they would like to thank the other staff members of Botany Branch for their help and constructive criticism.

Many published works have been consulted in the preparation of this book and although too numerous to list here, the authors wish to make due acknowledgement to them. A list of the most frequently consulted works will be included at the back of Volume 3.



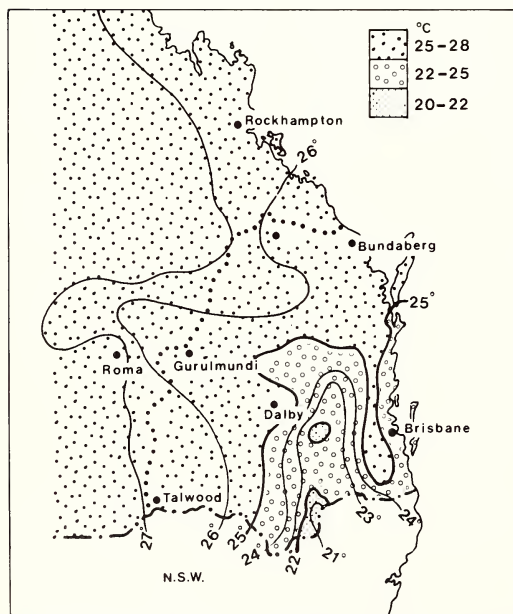
Map 3

MEAN SUMMER RAINFALL — The isohyets in millimetres represent the amount of summer rainfall which can be expected on 50% of occasions. (After *Queensland Resources Atlas*, 1976)



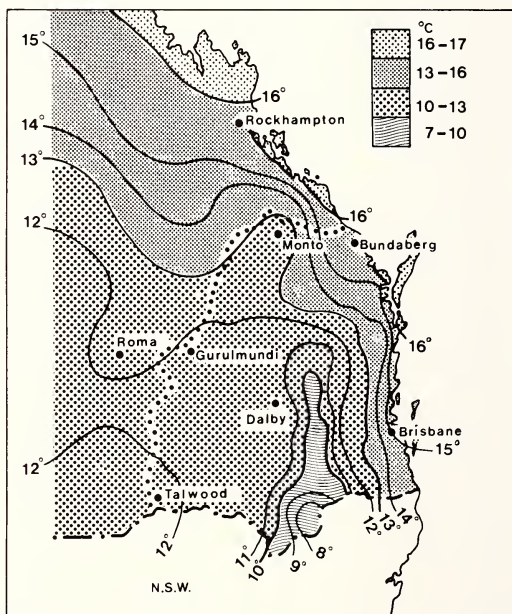
Map 4

MEAN WINTER RAINFALL — The isohyets in millimetres represent the amount of winter rainfall which can be expected on 50% of occasions. (After *Queensland Resources Atlas*, 1976)



Map 5

MEAN TEMPERATURE JANUARY — The isotherms in degrees celsius represent the mean temperature for the hottest month in summer. (After *Queensland Resources Atlas*, 1976)



Map 6

MEAN TEMPERATURE JULY — The isotherms in degrees celsius represent the mean temperature for the coldest month in winter. (After *Queensland Resources Atlas*, 1976)

NOTES ON GENERAL FEATURES OF SOUTH-EASTERN QUEENSLAND

(1) CLIMATE

The climate of the region can be generally classified as subtropical, except for areas of the south-eastern Darling Downs district which have a temperate climate. It is dominated by high and low pressure systems which move across Australia from west to east. Stable high pressure systems can cause droughts and stable low pressure systems may lead to persistent rain. The coastal areas especially are vulnerable to cyclones during the summer, although these occur less frequently than in more northern parts of Queensland. In winter the region is also affected by rain depressions further to the south which may account for about 30% of the annual total rainfall. This winter rainfall contributes to the characteristics of the region by which it is distinguished from the tropical regions to the north.

Rainfall (Maps 3 & 4) generally decreases from east to west across the region. Annual rainfall over 1 500 mm on the coast decreases to approximately 600 mm in western parts of the region. Some upland areas in the south-eastern Moreton district receive rainfall which may exceed 1 750 mm. There is, however, a marked fluctuation in annual rainfall and the region or parts of the region is subject to droughts or flooding.

Throughout the region, temperatures range from about 40°C to less than 0°C; both extremes are limited in occurrence. The area around Stanthorpe is the coldest part of the State although the region as a whole, especially eastern coastal parts, experiences mild winters. The region typically experiences long periods of clear skies, especially during winter. High daytime temperatures are a normal feature of the period from October to March (**Maps 5 & 6**).

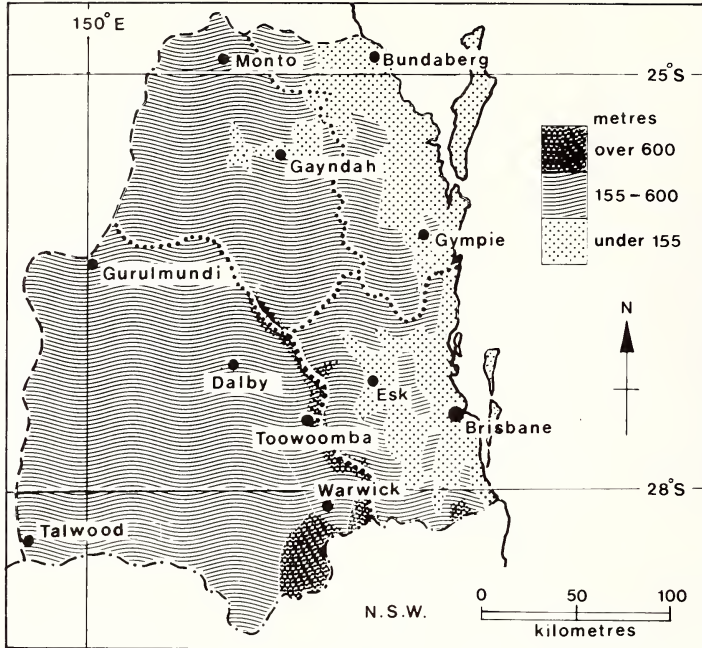
(2) PHYSICAL FEATURES OF THE REGION (Map 7)

The main physical features of the region are the eastern highlands, the western plains and the coastal plains.

Running approximately northwest-southeast through the region are the eastern highlands which constitute the main division between east and west flowing streams. In most places on the western side, the eastern highlands grade imperceptibly into the western plains. To the eastern side of the eastern highlands the narrow coastal plains extend the full length of the region.

The coastal plains are broken by coastal ranges which in places along the border with New South Wales, are higher than the eastern highlands. In the coastal plains large areas consist of stabilized sandy soils, with the poorer drained areas being known as "wallum" country.

Sand dunes, some built on high sand deposits, are a feature of the coast. High dunes are especially well developed north of Noosa and on the sandy islands, Fraser, Moreton and Stradbroke Islands.



Map 7

PHYSICAL FEATURES of south-eastern Queensland — height of land above sea level. (After *Queensland Year Book*, 1979)

(3) SOILS

The soils occurring in the region may be classified into five main groups.

- (1) **Podzolic Soils.** These occur along the eastern coastal fringe. They are generally poor soils, sandy on the surface with a clay subsoil.
- (2) **Red Loams.** Deep red loams derived from basalts occur at intervals throughout the region. The chief areas are on the Gold Coast hinterland, Maleny-Buderim, Proston-Kingaroy and Bundaberg-Childers. They are important agricultural soils.
- (3) **Alluvial Soils.** These are fertile soils, usually along streams but do not occupy extensive areas. They are important agriculturally.
- (4) **Black Soils.** These are self mulching clays which constitute the most important agricultural soils of the region. Large areas of black soils occur in the Darling Downs district and in the Lockyer Valley.
- (5) **Grey and Brown Calcareous Soils.** These are reasonably fertile soils corresponding with the distribution of brigalow communities.

(4) VEGETATION

The vegetation of the region may be broadly classified into five main types (**Map 8**).

- (1) **Rainforest.** These communities comprise complex mixtures of species with a closed canopy. In south-eastern Queensland they are mostly confined to high rainfall areas on soils derived from basalt and other basic rocks. Rainforest may also be found as fringing forest along streams.

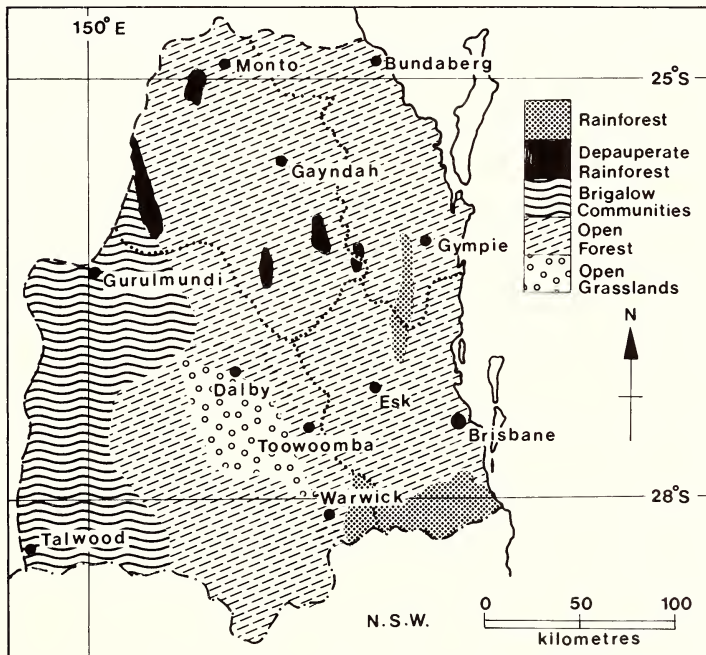
(2) **Depauperate Rainforest.** These are closed communities of trees or shrubs, mostly of species related to those in rainforest. They are generally found in areas with annual rainfall of 750–1 500 mm on fertile soils, and often merge into rainforest or brigalow communities.

(3) **Brigalow Communities.** These are usually open forest communities with brigalow (*Acacia harpophylla*) as the dominant tree. They occur in regions with an annual rainfall of 500–900 mm, usually on grey or brown calcareous soils. This vegetation type often merges into depauperate rainforest communities and has many species in common with them.

(4) **Open Forest.** This is a heterogeneous assemblage of plant communities with the dominant trees usually being species of *Eucalyptus* and may have a grassy or low shrubby understorey. It is the most extensive vegetation type in the region.

(5) **Open Grasslands.** These occur on heavy cracking clay soils. Large areas occurred in the eastern Darling Downs district but have now mostly been cleared for cultivation.

As south-eastern Queensland is the most densely populated part of the State few areas of completely undisturbed vegetation remain. A large number of exotic naturalized weeds also occur in the region.



Map 8 MAJOR VEGETATION TYPES of south-eastern Queensland and their broad distribution. (Modified from *Queensland Year Book*, 1979)

NOTES ON THE COLLECTION OF PLANT SPECIMENS

The first step towards identifying a plant is to collect an adequate specimen.

A representative specimen should always include at least one stem with leaves and flowers or fruits. Small plants such as grasses or herbs are best collected complete as root systems and basal leaves are often important in the identification of these plants. Bulky plants such as some grasses or sedges may be divided and only a portion kept, but a good specimen should include at least one basal shoot and complete inflorescence.

For large plants a stem 15–30 cm long with leaves and flowers or fruits attached is sufficient. Where the species has compound leaves care should be taken to collect a complete leaf as the number of leaflets is often important in identification.

Unless a fresh specimen is to be identified and disposed of within two or three days of picking, it is not advisable to store the specimen in a plastic bag. In hot weather plant material soon begins to decay when packed in plastic. The specimens should be dried between sheets of paper under light pressure. A simple plant press can be made by placing folded newspapers or magazines between two pieces of plywood or stiff cardboard and tying them tightly with string or straps. During the first few days the paper should be changed each day to prevent mould and to help preserve the colour.

It is also helpful when collecting plants to note features that cannot be seen from the dried specimen. These features include the habit of the plant (tree, shrub, vine, erect or creeping etc), the colour of the flowers and the approximate size of the plant. In trees the type of bark may also be important.

A simple reference herbarium can be constructed by attaching the specimen to a sheet of thin cardboard; a sheet about 15 cm x 20 cm is quite adequate. Notes made about the species can also be written on the card. A woodworking glue is particularly useful as a few drops will hold most specimens. Extra protection can be provided if the card is covered with clear plastic.

NOTES ON THE USE OF KEYS

All keys in this publication are of similar construction. Each key usually consists of a series of couplets, though occasionally more than two alternatives are offered. One should start at the first couplet, select the alternative that best fits the specimen and then go on to the couplet indicated by the number opposite the alternative selected. By continuing on in this manner one eventually arrives at the name.

It is important to read the **whole** of each alternative of a couplet before making a decision as to which alternative best fits your specimen.

If the plant is completely unknown it would be necessary to begin at the key to the families. Once the family to which the species belongs has been ascertained from the key and the specimen checked against the family description, the key to the genera belonging to that family should be used. Once the genus is known and the specimen checked against the generic description, the species key is used. Finally, by using the species key one obtains the name of the species. The specimen should be carefully checked against the species description.

ABBREVIATIONS AND SYMBOLS

GENERAL

- * (as a prefixing sign) — denotes a naturalized exotic species
- ± — more or less, approximately
- L.S. — longitudinal section
- T.S. — transverse section

GEOGRAPHICAL

- Ck. — creek
- I., Is. — island, islands
- Mt., Mts. — mountain, mountains
- R. — river
- Ra. — range

BOTANICAL

- forma — form
- sp. — species (singular)
- spp. — species (plural)
- subsp. — subspecies
- var. — variety

LATIN EXPRESSIONS

- aff. (affinis) — akin to, bordering
- al. (alii) — others; (aliorum) of others
- Aust. (Australiae) — of Australia
- auct. (auctorum) — of authors
- ca (circa) — about
- et — and
- lat. (latus) — broad, wide
- nom. illeg. (nomen illegitimum) — illegitimate name
- non — not
- pro parte — in part
- sens. (sensu) — in the sense of
- strict. (stricte) — strictly, precisely
- vel — or

DIMENSIONAL

- cm — centimetre
- km — kilometre
- mm — millimetre
- m — metre
- x $\frac{1}{4}$ — one quarter natural size
- x12 — twelve times natural size

GLOSSARY OF BOTANICAL TERMS

- Abaxial:** the side or face away from the axis e.g. lower (under or dorsal) surface of a leaf.
- Abortive:** failure to develop or imperfectly developed.
- Accrescent:** increasing in size with age.
- Achene:** a dry indehiscent 1-seeded fruit formed from a superior ovary of one carpel.
- Acicular:** very narrow and pointed; needle-shaped.
- Actinomorphic:** radially symmetrical, especially of corolla.
- Aculeate:** prickly.
- Acuminate:** tapering to a point. **Fig. 2.**
- Acute:** pointed; sharp. **Fig. 2.**
- Adaxial:** the side or face near to the axis e.g. upper (ventral) surface of a leaf.
- Adnate:** fused to an organ of a different kind e.g. stamens to petals.
- Adventitious:** arising in abnormal or irregular positions e.g. roots arising from a stem.
- Aerial roots:** adventitious roots growing in the air.
- Aestivation:** the manner in which petals and sepals are arranged in bud. **Fig. 4.**
- Aggregate fruit:** the aggregation of fruit derived from an apocarpous gynoecium.
- Alae:** (1) membranous expansions of any kind, as in seeds of Bignoniaceae; (2) the outer segments of the coronal lobes in some Asclepiadaceae.
- Albumen:** the nutritive material stored within the seed.
- Alternate:** (applied to leaves) inserted singly at different levels along the branch as distinct from opposite; commonly used also to include spiral arrangement. **Fig. 1.**
- Alveolae:** cavities or pits on the surface.
- Amphibious:** capable of growing on land or water.
- Amplexicaule:** stem-clasping e.g. leaf base embracing the stem.
- Anastomose:** forming a network.
- Anatropous:** having the micropyle facing the placenta.
- Androecium:** the male parts of a flower, consisting of stamens and staminodes.
- Androgynous:** when male and female flowers are found in the same inflorescence.
- Androphore:** the cylinder or column formed by monadelphous anthers as in Malvaceae.
- Angiosperm:** plant with seeds enclosed in an ovary.
- Annual:** plant which completes its life cycle in one season or year.
- Annular:** in a ring or arranged in a circle.
- Anterior:** see **abaxial**.
- Anther:** the part of the stamen which contains the pollen. **Fig. 3.**
- Anthesis:** the period when pollen is shed and fertilization of the ovary occurs.
- Anthocarp:** false fruit consisting of fruit plus base of perianth, as in Nyctaginaceae.
- Anthophore:** a short stalk which sometimes occurs between the calyx and petals, supporting the interior organs.
- Antrose:** directed upwards.
- Aphyllous:** without leaves.
- Apical:** at the apex or tip.
- Apiculate:** ending abruptly in a small point. **Fig. 2.**
- Apocarpous:** applied to a gynoecium which consists of several free carpels.
- Appressed:** pressed closely against an organ but not united to it.
- Aquatic:** growing in water.
- Arborescent:** growing to the size of a tree.
- Areole:** a space marked out on the surface. Hence **areolate:** divided in distinct spaces.
- Aril** (hence **arillate**): an expansion of the funicle partially or wholly enclosing the seed.
- Aristate:** with a long bristle-like point. **Fig. 2.**
- Armed:** provided with any kind of sharp defence, as of thorns, spines, etc.
- Article** (hence **articulate**): (1) a joint; (2) a 1-seeded part of a carpel into which some fruit break or segregate.
- Ascending:** growing obliquely at first but finally upwards. **Fig. 1.**
- Attenuate:** gradually narrowing. **Fig. 2.**
- Auricle** (hence **auriculate**): an ear-like appendage. **Fig. 2.**
- Autotrophic:** applied to plants which can collect their own nutriment, non-parasitic.
- Awn** (hence **awned**): a bristle-like part or appendage.
- Axil:** the upper angle formed between the axis and any organ arising from it.
- Axile:** on the axis. **Fig. 4.**
- Axillary:** occurring in an axil.
- Barbed:** bearing sharp spine-like hooks which are bent backwards.
- Barbellate:** finely barbed.
- Barren:** sterile.
- Basifixed:** attached at the base.
- Beak:** a pointed projection.
- Bearded:** having a tuft, line or zone of hairs.
- Berry:** a fleshy few- to many-seeded fruit without an endocarp (stone).
- Biennial:** a plant which lives for more than one but less than two years.
- Bifid:** deeply split at one end into two parts.
- Bilateral:** having two sides.
- Bilabiate:** 2-lipped. **Fig. 4.**
- Bipartite:** deeply divided into two parts.
- Bipinnate:** twice pinnately divided. **Fig. 1.**
- Bisexual:** having male and female organs in the one flower (hermaphrodite).
- Biternate:** twice ternate. **Fig. 1.**
- Blade:** the expanded part of a leaf.
- Bloom:** a waxy powdery covering.
- Bole:** the trunk of a tree up to the first branch.
- Boragoid inflorescence:** having all the flowers on one side of a rachis which is coiled when young but straightens as the flower opens. **Fig. 3.**
- Bract** (hence **bracteate**): a leaf-like or scaly structure subtending a flower or inflorescence. **Fig. 3.**
- Bracteole:** a small bract situated on the pedicel below the flower. **Fig. 3.**
- Bristle:** a short stiff hair.
- Bulb:** a storage organ consisting of an underground shoot with a short axis surrounded by fleshy leaf bases and outer dry protective leaf bases.

- Bulbiferous:** bearing bulbs.
Bulbil: a small bulb.
Bullate: blistered or puckered.
Burr: a compound structure developed from a seed or fruit and associated appendages (bracts, perianth, etc.), usually rough or prickly.
Buttress: knee-like or curtain-like growth at the base of certain trees.
- Caducous:** falling off early.
Caespitose: tufted.
Callosity: a thickened and hardened swelling on the surface of an organ.
Callus: (1) thickening; (2) the hard basal portion at the base of a floret or spikelet of some grasses.
Calyptra: a cap-like covering of a flower or fruit.
Calyx: the outer whorl of a flower; the sepals collectively.
Campanulate: bell-shaped. **Fig. 4.**
Campylotropus: applied to an ovule, one side of which has grown faster than the other so as to bring the micropyle near the hilum.
Capillary: hair-like.
Capitate: clustered together in a dense head.
Capitulum: a close head of sessile flowers.
Capsule: a dry, dehiscent fruit formed from two or more united carpels.
Carpel: a unit of the gynoecium in which one or more ovules are enclosed. (It can usually be divided into stigma, style and ovary.)
Carpophore: the persistent central axis of some fruits.
Cartilaginous: gristly.
Caruncle (hence **carunculate**): an outgrowth of the seed-coat from near the hilum.
Caryopsis: the fruit of a grass (grain).
Castaneus: chestnut-coloured.
Catkin: a deciduous spike, consisting of unisexual apetalous flowers.
Caudate: tailed, or like a tail.
Caudex: a compound axis, consisting of stem and sometimes root.
Cauliferous: bearing a stalk.
Cauliflorous: when the flowers are produced on old wood.
Cauline: attached to the stem.
Cell: (1) a cavity of an anther or ovary, etc., see **loculus**; (2) an individual unit of protoplasm.
Chalaza: that part of the ovule or seed where the body of the ovule joins its covering.
Chartaceous: of a papery nature.
Chasmogamous: applied to flowers which open and are openly pollinated.
Chlorophyll: the green colouring matter of plants.
Ciliate: bordered by long hairs. **Fig. 3.**
Cilifolate: bordered by shorter hairs.
Circinnate: coiled into a ring.
Circumciss: opening by a transverse line, so that the upper part comes off like a lid.
Cladode: a stem which takes on the function of a leaf.
Clavate: club-shaped.
Claw: the stalk of a petal.
Cleistogamous: applied to flowers which never open and are self-fertilized.
Coccus (plural: **cocci**): part of a schizocarp or lobed fruit.
Cochleate: shaped like a snail shell.
Columella: the persistent central axis in some fruits or cones.
- Column:** (1) the combination of stamens and style into a solid body (Orchidaceae and Styliidiaceae); (2) the lower part of the awn in grasses.
Column foot: the extension of the column of some orchids past its point of attachment to the receptacle.
Column wings: projections on the outer side of the column.
Compound leaf: a leaf divided into leaflets.
Commissure: the face by which two carpels adhere.
Compound head: an inflorescence consisting of several heads arranged into a larger head.
Compound umbel: an inflorescence consisting of several umbels arranged into a larger umbel.
Compressed: flattened.
Concave: a surface which is curved inwards (compare **convex**).
Conduplicate: folded together lengthwise.
Cone: (1) a compact group of sporophylls borne on a central axis (e.g. in Cycadaceae); (2) the woody multiple fruit of *Casuarina* spp., made up of true fruits surrounded by woody bracts and bracteoles.
Cone-shaped (hence **conical**): a solid body circular in transverse section and tapering from apex to base.
Confluent: blending into one.
Connate: organically fused to one another.
Connective: tissue between the lobes of an anther.
Connivent: coming together but not fused.
Contiguous: meeting at the edges.
Contorted: twisted, convolute. **Fig. 4.**
Contracted: narrowed or shortened.
Convergent: meeting towards the apex.
Convex: surface which is curved outwards (compare **concave**).
Convolute: rolled with the margins overlapping. **Fig. 3.**
Cordate: heart-shaped (often applied to bases only). **Fig. 2.**
Coriaceous: leathery.
Corm: a swollen underground stem of one year's duration. Each year a new one forms above the old one.
Cornute: horned or spurred.
Corolla: the petals collectively.
Corona: coloured appendages within the corolla.
Corymb (hence **corymbose**): a racemose inflorescence where the branches start at different points but ultimately reach the same height. **Fig. 3.**
Costate: ribbed.
Cotyledon: the first leaves of a plant (seed-leaves).
Crenate: bordered by blunt or rounded teeth or lobes. **Fig. 3.**
Crenulate: crenate with very small lobes.
Crisped: curled, wavy or crumpled.
Crown: the part of a tree or shrub above the first branch.
Crustaceous: hard, thin and brittle.
Cucullate: hood-shaped.
Culm: the stem or straw (of grasses).
Cuneate: wedge-shaped. **Fig. 2.**
Cupular: in the shape of a cup.
Cuspidate: with a rigid point.
Cyathiform: shaped like a wine cup.
Cyathium: inflorescence of *Euphorbia* spp.

Cyme (hence **cymose**): an inflorescence in which the central flower opens first and terminates the growth of the main axis which is replaced by one or two lateral buds, with the process being repeated throughout the inflorescence. **Fig. 3.**

Cystolith: mineral concretions, usually of calcium carbonate on a cellulose stalk.

Deciduous: falling off in season.

Decorticating: shedding the outer bark usually in long strips.

Decumbent: reclining or lying on the ground but with the ends ascending. **Fig. 1.**

Decurrent: extending down and adnate to the stem as when the edges of leaves are continued down the stem as raised lines or narrow wings.

Decussate: opposite, with successive pairs at right angles to each other. **Fig. 1.**

Deflexed: reflexed.

Dehiscent: opening when ripe to release the contents.

Deltoid: triangular.

Dendritic: having a branched appearance.

Dentate: toothed, each tooth having its two sides equal so that the point is directed outwards. **Fig. 3.**

Denticulate: finely toothed.

Depressed: sunk down as if flattened from above.

Diadelphous: having the stamens united by their filaments into two sets.

Dichasium: a cyme with the branches opposite and approximately equal.

Dichotomous: divided into two approximately equal branches.

Didymous: (1) in pairs; (2) 2-lobed.

Didynamous: in two pairs of unequal length.

Diffuse: spreading and much branched; of open growth.

Digitate: branching from the same point like the fingers of a hand.

Dilated: widened or expanded.

Dimorphic: of two forms.

Dioecious: referring to a species with male and female flowers on different individuals.

Disarticulate: to separate at a joint.

Disc (disk): (1) an enlargement of the receptacle within the corolla or stamens, usually in the form of a ring or cup, often lobed; (2) the central basal portion of the labellum from which the lobes radiate.

Disc (disk)-flower or disc-floret: flower borne on the central portion of the head of some Asteraceae as compared with ray-flower or ray-floret.

Discolourous: when two surfaces of a leaf are unlike in colour.

Dissected: divided into segments.

Dissepiment: one or more vertical partitions dividing an ovary or fruit.

Distal: remote from the place of attachment.

Distichous: arranged one above the other in two opposite rows, one on each side of the axis. **Fig. 1.**

Divaricate: extremely divergent.

Divergent: spreading in different directions.

Domatia: projections in the vein axils of a leaf.

Dorsal: see **abaxial**.

Dorsifixed: attached at or by the back; of an anther, attached by its back to the filament.

Drupe (hence **drupaceous**): an indehiscent fruit with a skin (epicarp) over fleshy layer (mesocarp) which surrounds a stony endocarp containing the seed e.g. PEACH.

Ebracteate: without bracts.

Echinate: covered with long sharp prickles.

Eglandular: without glands.

Eligulate: without a ligule.

Ellipsoid: an elliptic solid.

Elliptic: shaped like an ellipse. **Fig. 2.**

Emarginate: deeply notched at the apex. **Fig. 2.**

Embryo: the rudimentary plant.

Endemic: confined to a particular geographic region.

Endocarp: the innermost layer of a pericarp, identified only when it is stony.

Endosperm: the albumen of a seed.

Entire: without division, teeth, lobes, etc. **Fig. 3.**

Ephemeral: short lived; annual.

Epicalyx: an involucre of bracts outside the true calyx and resembling a calyx.

Epicarp: the outermost layer of a pericarp; skin.

Epidermis: the outer layer of cells of a plant.

Epigynous: referring to the stamens (sometimes also the sepals and petals) which are attached above the ovary. **Fig. 3.**

Epipetalous: attached to the petals.

Epiphyllous: growing on leaves.

Epiphyte: a plant which grows on another but without deriving nourishment from it, i.e. not parasitic.

Equitant: folding over as if astride.

Erose: as though bitten or gnawed.

Exocarp: see **pericarp**.

Exserted: projecting beyond, as the stamens from the tube of the corolla.

Exstipulate: without stipules.

Extrorse: of an anther which opens towards the outside of a flower.

Facultative: occasional; not essential.

Falcate: curved like the blade of a scythe. **Fig. 2.**

Family: a taxonomic group of related genera.

Farinose: see **mealy**.

Fascicle (hence **fasciculate**): a cluster of flowers, leaves etc. arising from about the same point.

Ferruginous: rust-coloured.

-fid: lobed, e.g. 2-fid, 3-fid etc.

Filament: the stalk of a stamen. **Fig. 3.**

Filiform: slender, thread-like.

Fimbriate: fringed with hairs.

Fistular: hollow throughout its length.

Flabellate: fan-shaped.

Flaccid: limp.

Flexuose (hence **flexuous**): zig-zag; bent alternately in opposite directions.

Floccose: covered with woolly hairs.

Floral: belonging to the flower.

Floral-leaves: leaves subtending flowers.

Floret: (1) a small flower of a cluster; (2) the 'flower' of grasses consisting of palea, lemma and enclosed fruit.

-foliolate: referring to the number of leaflets e.g. 5-foliolate.

Follicle: a fruit consisting of a single carpel opening only along the inner suture e.g. fruit of *Grevillea* spp.

Fovea (plural: **foveae**): a depression or pit.

Foveolate: marked with pitting.

Free: neither adhering nor united.

Fruit: the seed-bearing structure developed from the ovary of an angiosperm after fertilization.

Fugacious: soon perishing.

Funicle: the stalk of an ovule.

Funnelform: funnel-shaped. **Fig. 4.**

Fused: joined and growing together.

Fusiform: spindle-shaped.

- Galea:** helmet-like. Often applied in Orchidaceae when the dorsal sepals and petals together form a deep hood over the column.
- Gamopetalous:** when the petals are united entirely or at the base into a tube.
- Gamosepalous:** when the sepals are united entirely or at the base into a tube.
- Geniculate:** bent like a knee.
- Genus** (plural: **genera**): a unit of classification, comprising one species or a group of closely related species.
- Gibbous:** (1) when an organ is swollen; (2) pouch-like.
- Glabrous:** devoid of hairs.
- Glabrate:** almost glabrous.
- Glabrescent:** becoming glabrous.
- Gland:** a structure, embedded or projecting, which often secretes such substances as oil etc.
- Glandular:** having glands.
- Glaucous:** a pale bluish-green tint.
- Globoid:** globular, spherical.
- Glochid:** a barbed hair or bristle.
- Glutinous:** covered with a sticky exudation.
- Glume:** a bract enclosing the flower or spikelet, especially in grasses and sedges.
- gonous:** angled e.g. 3-gonous, 3-angled.
- Grain:** see **caryopsis**.
- Gymnosperm:** a seed plant whose seeds are not enclosed in an ovary.
- Gynobasic:** when the style arises apparently from the base of the ovary.
- Gynoeceium:** the carpels of one flower collectively.
- Gynophore:** a stalk supporting a gynoeceium; the stipe.
- Habit:** the general appearance of a plant e.g. whether a shrub or tree or whether prostrate or erect. **Fig. 1.**
- Habitat:** the environment in which a plant lives e.g. creek bank.
- Halophyte:** a plant which grows within the influence of salt water.
- Hastate:** of the base of a leaf when it has more or less triangular lobes diverging laterally. **Fig. 2.**
- Haustorium** (plural: **haustoria**): a sucker of parasitic plants.
- Head:** an aggregation of sessile flowers or flower clusters.
- Herb:** a plant which does not produce a woody stem.
- Herbaceous:** not woody.
- Hermaphrodite:** bearing both male and female sex organs in the same flower.
- Heterogamous:** bearing two kinds of flowers e.g. in Asteraceae with disc and ray florets.
- Hilum:** the scar left on the testa of a seed at the spot where it was attached to the funicle.
- Hip:** the aggregate fruit of *Rosa* spp.
- Hirsute:** covered with long spreading hairs.
- Hispid:** rough with short stiff hairs.
- Hoary:** covered with hairs so short as to be not readily distinguished, and yet giving the surface a greyish hue.
- Homogamous:** bearing one kind of flower.
- Hyaline:** almost transparent.
- Hypanthium:** an enlargement or development of the receptacle under the calyx.
- Hypocotyl:** the axis of an embryo below the cotyledons.
- Hypogynous:** inserted below the ovary. **Fig. 3.**
- Imbricate:** overlapping on the edges. **Fig. 4.**
- Immersed:** embedded in another organ.
- Imparipinnate:** pinnate with an odd terminal leaflet. **Fig. 1.**
- Incised:** cut rather deeply.
- Included:** bent or curved inwards or upwards. **Fig. 3.**
- Indefinite:** (1) (floral parts) too many to be counted easily; (2) (inflorescence) capable of constant extension by means of the main axis.
- Indehiscent:** not opening at maturity.
- Indumentum:** a general term for the hairy covering of plants.
- Induplicate:** with the edges folded inwards.
- Indusium:** a cup covering the stigma.
- Inferior ovary:** with floral members attached above the ovary.
- Inflexed:** bent inward.
- Inflorescence:** a collective term for a group of flowers.
- Inrolled:** see **involute**.
- Inserted:** attached.
- Internodes:** the portion of a stem between two nodes.
- Interpetiolar:** between the petioles of opposite leaves.
- Interrupted:** (inflorescence) with the flowers in distinct groups with bare rachis between the groups.
- Intramarginal:** situated within the margin but near the edge.
- Intrapetiolar:** within the petiole or between it and the stem.
- Introrse:** of an anther when it opens by a slit facing the centre of a flower.
- Involute:** a secondary partial involucre.
- Involucre:** a number of bracts surrounding the base of a flower head or umbel.
- Involute:** rolled inward or toward the upper side. **Fig. 3.**
- Irregular flower:** see **zygomorphic**.
- Keel:** (1) a sharp fold or ridge along the middle of a flat or convex surface; (2) the two partially united lowest (or anterior) petals of a pea-shaped flower e.g. flowers of family Fabaceae.
- Labellum:** the lowest petal in flowers of Orchidaceae and Stylidiaceae.
- Lacerate:** torn or irregularly cleft.
- Laciniate:** cut into narrow slender teeth or lobes.
- Lamina:** the expanded portion of a leaf; leaf-blade.
- Lanate:** woolly, with long intertwined curly hairs.
- Lateral:** on or at the side.
- Latex:** the milky juice of certain plants e.g. *Ficus* spp.
- Laticiferous:** latex-bearing.
- Lax:** loose, not compact.
- Leaflet:** a separate portion of a compound leaf.
- Leaf-opposed:** developed on the side of the stem opposite the leaf.
- Lemma:** the lowermost of the two bract-like scales subtending the floret of grasses.
- Lenticel:** corky spots on young bark corresponding to epidermal stomata.
- Lenticular:** like a doubly convex lens.
- Lepidote:** clothed with scales.
- Liane** (**liana**): luxuriant woody climber.
- Lignotuber:** a woody subterranean tuber.
- Ligule** (hence **ligulate**): (1) a small membranous or ciliate appendage at the summit of the sheath of leaves; (2) the limb of ray-florets in Asteraceae. **Fig. 4.**

Limb: the unfused portion of a calyx or corolla which is fused into a cup or tube below.

Linear: long and narrow with parallel edges. **Fig. 2.**

Lip: of a gamopetalous irregular corolla; the lobes are often in sets forming upper and lower lips.

Lithophytic: growing on rocks.

Littoral: belonging to or growing near the sea.

Lobed: of a leaf, when divided but not completely into separate leaflets. **Fig. 3.**

-locular: referring to the number of loculi e.g. 5-locular.

Locus (plural: **loculi**): cavity or compartment of an ovary or anther. **Fig. 3.**

Loculicidal: when a ripe capsule splits along its back, i.e. along the midrib or dorsal suture and not along the line of junction.

Loment: a seed pod which is contracted between the seeds, falling apart at maturity into 1-seeded sections.

Lunate: half moon-shaped.

Lyrate: lyre-shaped; of pinnate leaves, the terminal leaflet larger than lateral ones.

Mallee: a shrub with many stems arising from a lignotuber (usually applied to eucalypts only).

Marginal: placed on or attached to the edge. **Fig. 4.**

Maritime: confined to the sea coast.

Marsh: a waterlogged area; a swamp.

Massula: a group of cohering pollen grains.

Mealy: covered with coarse powder, like flour.

Medifixed: attached by the middle.

Membranous: thin and translucent.

Mentum: of orchids, pouch formed by basal fusion of lateral sepals with the column foot.

Mericarp: a 1-seeded section of a syncarpous ovary split off at maturity.

-merous: a suffix referring to the number of parts e.g. 5-merous, with 5 parts.

Mesocarp: the middle (usually fleshy) layer of a 3-layered pericarp.

Mesotonic: applied to pollinia which are attached at the middle to the rostellum etc.

Micropyle: the aperture in the coat of the ovule.

Midrib: the central vein of the leaf.

Minute: so small as to be difficult to see with the naked eye.

Monadelphous: having the filaments of stamens united into a single set.

Moniliform: with constrictions at regular intervals so resembling a necklace of beads.

Monochasium: a cymose inflorescence with a single branch at each node.

Monoecious: a species which has the male and female flowers on the same individual.

Monopodium: a stem of a single main axis which has unlimited growth.

Mucilage: a gelatinous substance.

Mucro: a sharp terminal point.

Mucronate: terminating abruptly in a mucro. **Fig. 2.**

Multicostate: with several main veins.

Muriccate: covered with short, hard-pointed protuberances.

Nectary: a gland which secretes a sweet fluid (nectar).

Neuter: sterile.

Nerve: a vein.

Nodding: hanging downwards.

Node: the portion of a stem from which a leaf or bract arises.

Nut: a 1-seeded indehiscent fruit.

Obconic: conical but attached at the narrow end.

Obovate: ovate but attached at narrower end. **Fig. 2.**

Obcordate: cordate but with the notch at the apex.

Obdiplostemonous: where the stamens are double the number of petals to which the outer series are opposite.

Oblique: unequal-sided as in leaf bases. **Fig. 2.**

Oblong: longer than broad and with parallel sides. **Fig. 2.**

Obsolete: much reduced or lacking.

Obtriangular: triangular but attached at the narrower end. **Fig. 2.**

Obtuse: blunt or rounded at the end. **Fig. 2.**

Ochrea: (plural: **ochreae**): sheath formed from two stipules encircling the stem. **Fig. 2.**

Operculum: the fused perianth segments forming a lid-like structure covering the flower bud as in **Eucalyptus** spp.

Opposite: arising at the same level but on opposite sides. **Fig. 1.**

Orbicular: circular. **Fig. 2.**

Order: a taxonomic group of related families.

Orifice: an opening.

Orthotropous: used of an ovule with a straight axis.

Ostiole: a pore or opening.

Ovary: that part of a pistil which contains the ovules and eventually becomes the fruit. **Fig. 3.**

Ovate: egg-shaped. **Fig. 2.**

Ovoid: egg-shaped (applied to a solid body).

Ovule: the immature seed before fertilization.

Palate: the projection in the throat of a 2-lipped corolla.

Palea: the upper (inner) of two bracts enclosing the flower of a grass.

Palmate: divided into segments like the fingers of a hand. **Figs. 1 & 2.**

Palmatifid: palmately cut.

Palmatisect: palmately cut almost to base.

Panicle: an inflorescence in which the axis is divided into branches bearing several flowers. **Fig. 3.**

Papillate: having small elongated protuberances (**papillae**).

Papillose: covered with small elongated protuberances (**papillae**).

Pappus: the ring of hairs or scales around the top of the fruit e.g. in many Asteraceae.

Parasite: an organism living on or in and obtaining nourishment from another organism at the other's expense.

Parietal: attached to the sides or the wall. **Fig. 4.**

Paripinnate: pinnate with an even number of leaflets, i.e. without a terminal leaflet. **Fig. 1.**

Partite: divided into segments but not quite to the base.

Patelliform: shaped like a circular, rimmed dish.

Patent: spreading.

Pedately compound (pedate): palmately divided or parted with the lateral divisions 2-cleft. **Fig. 1.**

Pedicel: the stalk of each individual flower of an inflorescence.

Peduncle: the stalk of an inflorescence or the stalk of a solitary flower.

Pellucid: transparent.

Peltate: having the stalk attached at the back and not at the edge. **Fig. 2.**

Pendulous: drooping.

Penicillate: brush-like.

Penninerved (penniveined): pinnately veined. **Fig. 2.**

Pepo: a 1-locular, many-seeded fruit with parietal placentas and pulpy interior.

- Perennial:** living for more than two years.
- Perfoliate:** used when a stem apparently passes through a leaf. **Fig. 2.**
- Pergamentaceous:** resembling parchment.
- Perianth:** the calyx and corolla collectively.
- Pericarp:** the walls of the fruit, consisting of the ripened ovary; the pericarp may be undifferentiated or divided into three easily distinguishable layers: the epicarp, mesocarp and endocarp; the combined epicarp and mesocarp is called the exocarp.
- Perigynous:** when the stamens, petals and sepals are attached to the rim of a lateral or upward expansion of the receptacle around a superior ovary; the stamens also appear perigynous when inserted on the corolla. **Fig. 3.**
- Perisperm:** the albumen of a seed which is formed outside the embryo sac.
- Persistent:** remaining until or longer than the part that bears it has reached maturity.
- Petal:** one of the usually conspicuous segments forming the inner whorl of the perianth. **Fig. 3.**
- Petaloid:** resembling a petal.
- Petiole:** the stalk of a leaf.
- Petiolate:** provided with a petiole.
- Petiolule:** the stalk of a leaflet.
- Phyllode:** a flat petiole fulfilling the functions of a leaf.
- Phylogeny** (hence **phylogenetic**): relationships deduced from development.
- Pilose:** sprinkled with long simple hairs.
- Pinna** (plural: **pinnae**): a primary or secondary division of a leaf comprising one or more axes and their leaflets.
- Pinnate leaf:** a compound leaf whose leaflets are arranged along a common rachis.
- Pinnatifid:** cut into lobes on both sides about half way to the midrib. **Fig. 3.**
- Pinnatisect:** cut into lobes on both sides almost to the midrib. **Fig. 3.**
- Pinnule:** the ultimate segment of a divided pinna.
- Pistil:** see **gynoecium**.
- Pith:** the spongy centre of some stems.
- Pitted:** having numerous small depressions.
- Placenta:** the part of the ovary to which the ovules are attached.
- Placentation:** the arrangement of the ovules within the ovary. **Fig. 4.**
- Plano-convex:** flat on one side, convex on the other. **Fig. 3.**
- Plicate:** folded longitudinally.
- Plicatulate:** the diminutive of plicate.
- Plumose:** covered with long feathery hairs.
- Pod:** a dry dehiscent fruit.
- Pollen:** the fertilizing powder produced by the anthers in angiosperms or in the microsporangia of gymnosperms.
- Pollen-sac:** a cavity of an anther, containing pollen.
- Pollinium:** a large number of pollen grains grouped together.
- Polygamous:** when a plant has male, female and bisexual flowers.
- Polymorphic:** with many different forms.
- Polypetalous:** having free petals.
- Polysepalous:** having free sepals.
- Posterior:** see **adaxial**.
- Prickle:** a sharp outgrowth of the epidermis detachable without tearing the lower layer.
- Process:** a projecting outgrowth.
- Procumbent:** spreading along the ground. **Fig. 1.**
- Prostrate:** lying flat on the ground.
- Protandrous:** having the male parts maturing before the female parts.
- Protogynous:** having the female parts maturing before the male parts.
- Proximal:** the part nearest the axis.
- Pruinose:** having a waxy powdery secretion on the surface.
- Pseudo-bulb:** a thickened, bulb-like internode or group of internodes of the stem of many orchids.
- Puberulent (puberulous):** sparsely hairy.
- Pubescent:** covered with short soft hairs.
- Pugioniform:** dagger-shaped.
- Pulvinate:** cushion or pad-shaped.
- Pulvinus:** the swollen base of a petiole or petiolule.
- Punctate:** marked with dots or translucent glands.
- Pungent:** sharp-pointed.
- Pustule:** an elevation on the surface like a blister.
- Pyrene:** a 1-seeded section of a drupe or drupaceous fruit.
- Pyriform:** pear-shaped.
- Quincuncial:** containing five parts arranged like the five on a dice, i.e. four at the corners and one in the centre.
- Raceme:** an inflorescence in which the flowers are borne on pedicels along an individual axis. **Fig. 3.**
- Rachilla:** the axis of the spikelet in grasses.
- Rachis:** the principal axis of an inflorescence; also applied to the axis of a compound leaf.
- Radiate:** spreading from a central point.
- Radical leaves:** arising at the base of a stem at ground level and forming a rosette or tuft.
- Radicle:** the rudimentary root of the embryo.
- Raphe:** (1) in a more or less anatropous ovule a cord or ridge of vascular tissue connecting the base of the body of the ovule with the placenta; (2) the suture between the carpels in Apiaceae.
- Ray:** (1) the strap-like part of some flowers in Asteraceae; (2) a branch of an umbel.
- Receptacle:** the part on which all floral parts are inserted.
- Recurved:** curved backwards or downwards. **Fig. 3.**
- Reflexed:** sharply bent backwards.
- Regular:** see **actinomorphic**.
- Reniform:** kidney-shaped.
- Repand:** with slightly uneven margin.
- Resupinate:** upside down; turned through 180°.
- Reticulate:** forming a network. **Fig. 2.**
- Retinaculum:** in orchids the disc to which the stipes and pollinia are sometimes attached.
- Retrorse:** directed back or downwards.
- Retuse:** with a shallow notch at a rounded apex. **Fig. 2.**
- Revolute:** rolled backwards or downwards. **Fig. 3.**
- Rhachilla:** see **rachilla**.
- Rhachis:** see **rachis**.
- Rhizome:** a root-like stem lying prostrate on or under the ground.
- Rhomboid:** quadrangular with the lateral angles obtuse. **Fig. 2.**
- Rosette:** an arrangement of leaves radiating from a crown or centre and usually at or close to the ground.
- Rostellum:** in orchids a projection of the upper edge of the stigma in front of the anthers.
- Rostrate:** beaked.

Rostrum: (1) any beak-like extension; (2) the inner segments of the coronal lobes in Asclepiadaceae.

Rosulate: collected into a rosette. **Fig. 1.**

Rotate: applied to a gamopetalous corolla with a short tube. **Fig. 4.**

Rugose: covered with wrinkles.

Runcinate: saw-toothed or sharply incised, the teeth retrorse.

Runner: a slender prostrate stem, having a bud at the end which roots at intervals.

Sac: a pouch or shallow cavity.

Saccate: pouch-like.

Sagittate: shaped like an arrowhead. **Fig. 2.**

Salverform: salver-shaped. **Fig. 3.**

Samara: an indehiscent 1-seeded fruit provided with a wing.

Saponin: a soap-like substance.

Saprophyte: an organism utilizing non-living organic matter for food.

Scaberulous: slightly rough to the touch.

Scabrous: rough to the touch.

Scale: (1) reduced leaf, usually scarios; (2) small flat discs attached more or less in the centre.

Scandent: climbing.

Scape: a flower-stalk arising from near the ground, leafless or with reduced leaves.

Scarios: thin and dry, not green.

Schizocarp: a dry fruit which on dehiscence breaks into individual carpels, each of which is called a mericarp.

Scurfy: scaly.

Sectile: cut into portions.

Seed: the fertilized ovule of a plant, consisting of an embryo and often an endosperm, the whole covered by a seed coat.

Segment: a part.

Semi-inferior: of an ovary which is partly embedded in a floral axis with the upper part exposed.

Sepal: a segment of the calyx or outer whorl of a flower. **Fig. 3.**

Sepaloid: like a sepal.

Sepate: divided by one or more partitions.

Septicidal: breaking or opening along a line of partition, i.e. along the septum.

Septifragal: when in dehiscence, the valves break away from the dissepiments.

Septum: a partition.

Seriate: in rows.

Series: a row.

Serrate: notched on the edge with asymmetrical teeth which point forward. **Fig. 3.**

Serrulate: minutely serrate.

Sessile: without any stalk.

Seta: a bristle or stiff hair.

Setose: bristly.

Sheath: a tubular structure either entire or split longitudinally; e.g. a leaf sheath is a tubular structure clasping the stem. **Fig. 2.**

Shrub: a woody plant with many stems.

Silicula: a small siliqua.

Siliqua: a dry dehiscent fruit formed from a superior ovary of two carpels and two parietal placentas connected by a false septum.

Simple: not divided. **Fig. 1.**

Sinuate: with a deep wavy margin. **Fig. 3.**

Sinus: the notch between teeth or lobes.

Spadix: a flower spike with a fleshy or thickened axis, often surrounded by a spathe.

Spathe: a large bract enclosing a spadix, or two or more bracts enclosing a flower cluster.

Spathulate: spoon-shaped.

Species: a taxonomic unit of classification; a group of organisms potentially capable of interbreeding to produce fertile offspring.

Spike: an inflorescence with the flowers sessile along an unbranched axis. **Fig. 3.**

Spikelet: (1) of grasses, a small spike composed of one or more flowers within a common pair of glumes; (2) of Cyperaceae, a small spike in which each flower is subtended by a glume.

Spine: a sharp-pointed structure, not detachable without tearing.

Spinescent: terminating in a spine.

Spinose: with spines.

Spur: a usually hollow projection of some part of the perianth.

Stamen: an anther plus the stalk (filament) on which it is borne. **Fig. 3.**

Staminal: of the stamens.

Staminode: an abortive or rudimentary stamen without a fertile anther.

Standard: the large upper petal of a flower of Fabaceae.

Stellate: star-shaped.

Stigma: the point or surface of a pistil which receives the pollen, either sessile or on top of a stalk or its branches (style). **Fig. 3.**

Stigmaphore: the part of the style which bears the stigma (usually used in Orchidaceae).

Stipe: a stalk (1) supporting the gynoeceum or a carpel; (2) to which the pollinia are attached in Orchidaceae.

Stipel: secondary stipule at the base of a leaflet.

Stipellate: having stipules.

Stipitate: having a stipe.

Stipulate: having stipules.

Stipule: an appendage of a leaf on each side of the leaf insertion of those plants which possess them.

Stolon: a slender prostrate stem growing above ground which roots at intervals; a runner.

Stoloniferous: sending out stolons. **Fig. 1.**

Stramineous: straw-like or straw-coloured.

Striate: marked with long narrow ridges or depressions.

Strigose: with short stiff hairs lying close to the surface.

Strobilus: an inflorescence made up largely of overlapping scales e.g. a pine cone.

Strophiole: an appendage to the hilum of some seeds.

Style: the stalk of a gynoeceum connecting the stigma to the ovary. **Fig. 3.**

Subulate: narrow and gradually tapering to a fine tip. **Fig. 2.**

Succulent: juicy.

Superior ovary: one which lies above the point of insertion of other floral parts.

Superposed: placed vertically over some other part.

Supra-axillary: above the axil.

Suture: a line of junction.

Syconium: the multiple fruit of the genus **Ficus**.

Sympetalous, synpetalous: a corolla in which the petals are fused by their edges to form a cup or tube.

Sympodial: a stem where at each branch one branch continues to develop whereas the other aborts so as to imitate a simple axis.

Synandrium: the cohesion of the anthers of each male flower.

Syncarp: a multiple or fleshy aggregate fruit e.g. the MULBERRY.

Syncarpous: having the carpels fused into a unit.

Synonym: a superseded or unused name.

Synonymy: all that relates to synonyms.

Taproot: the main root of a plant which descends perpendicularly down into the soil.

Taxon (plural: **taxa**): a term used to describe any taxonomic category.

Tendril: a climbing organ by which some plants cling to other objects.

Terete: cylindrical, circular in cross-section.

Ternate: arranged in threes.

Terrestrial: growing on land.

Testa: the outer coat of a seed.

Tetragonous: having four angles.

Tetrahedral: having four sides.

Thyrse: a panicle with the secondary and ultimate branches cymose.

Tomentellous: shortly tomentose.

Tomentose: densely covered with short matted hairs.

Torulose: cylindrical, with swollen portions at intervals.

Torus: see **receptacle**.

Tree: a woody plant usually with an evident trunk.

Triangular: triangular with the point of attachment at the broad end. **Fig. 2.**

Trichotomous: 3-forked; branching into three divisions.

Trifoliolate: having three leaflets. **Fig. 1.**

Trigonous: 3-angled.

Trimerous: having three segments in each floral whorl.

Tripinnate: thrice pinnate.

Triplinerved: see **tripliveined**.

Tripliveined: with three main veins.

Triquetrous: having three prominent angles.

Truncate: cut off more or less squarely at the end. **Fig. 2.**

Trunk: the main stem of a tree.

Tuber: the swollen end of an underground stem containing food reserves.

Tuberculate: having swellings or warts.

Tubercle-based hairs: hairs arising from a small wart-like base.

Tuberous: swollen, usually applied to roots and not the true tuber.

Turbinate: top-shaped.

Turgid: inflated or swollen.

Twiner: a climbing plant supporting itself by winding itself around an object.

Umbel: an inflorescence in which the pedicels (rays) all arise at the same point at the tip of the peduncle. A compound umbel is an umbel in which each ray itself supports an umbel.

Umbellule: an ultimate umbel in a compound umbel.

Umbonate: bearing a protuberance in the centre.

Undulate: wavy on the margin. **Fig. 3.**

Unisexual: having male or female parts but not both.

Urceolate: urn-shaped. **Fig. 4.**

Utricle: (1) the membranous covering of the fruits of some Cyperaceae; (2) a bladderly or membranous sac often used in some fruits, or a small bladderly pericarp.

Valvate: (1) with the edges touching (of floral parts) **Fig. 4;** (2) opening by valves (of fruit).

Valve: (1) one of the parts produced by the splitting of a capsule when ripe; (2) referring to one of the three inner perianth segments of Polygonaceae.

Velutinous: velvety, due to a coating of fine soft hairs.

Venation: the manner in which the veins of a leaf are arranged. **Fig. 2.**

Ventral: see **adaxial**.

Vernicose: shiny, as though varnished.

Verrucose: warted.

Verruculose: very warty, much covered with warts.

Versatile: when an anther is joined by its back to the filaments and swings freely.

Verticillate: arranged in a whorl. **Fig. 1.**

Vestige (hence **vestigial**): the remaining traces of an organ.

Vexillary: of or near the standard petal (in Fabaceae flowers).

Villous: covered with long weak hairs.

Viscid: sticky.

Vittae: the aromatic oil tubes of the pericarp of most Apiaceae.

Viviparous: germinating or sprouting from a seed while attached to the parent plant.

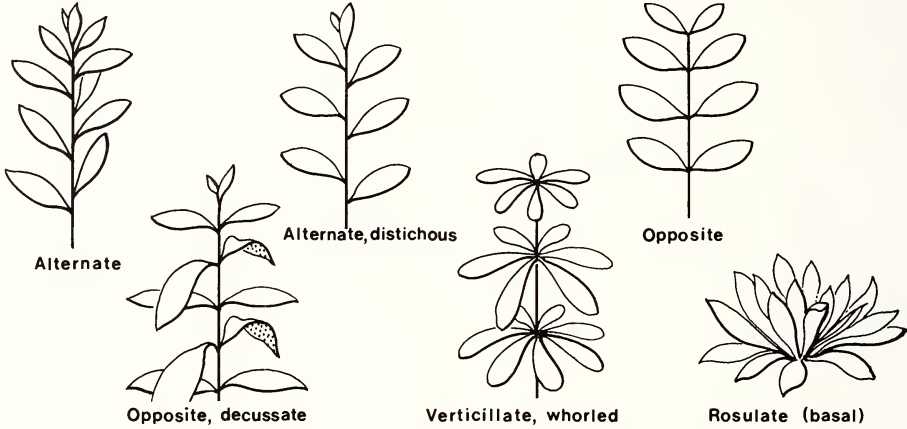
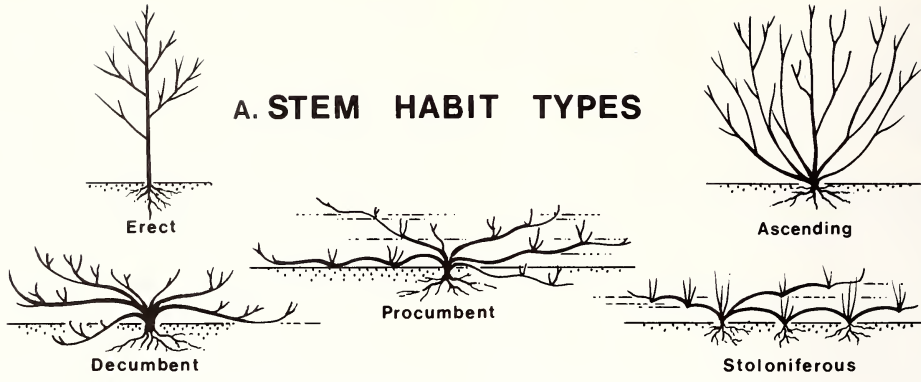
Whorl: a group of three or more appendages arising at the same level. **Fig. 1.**

Wing: (1) the membranous border of many seeds or fruits; (2) the lateral petals of a Fabaceae flower.

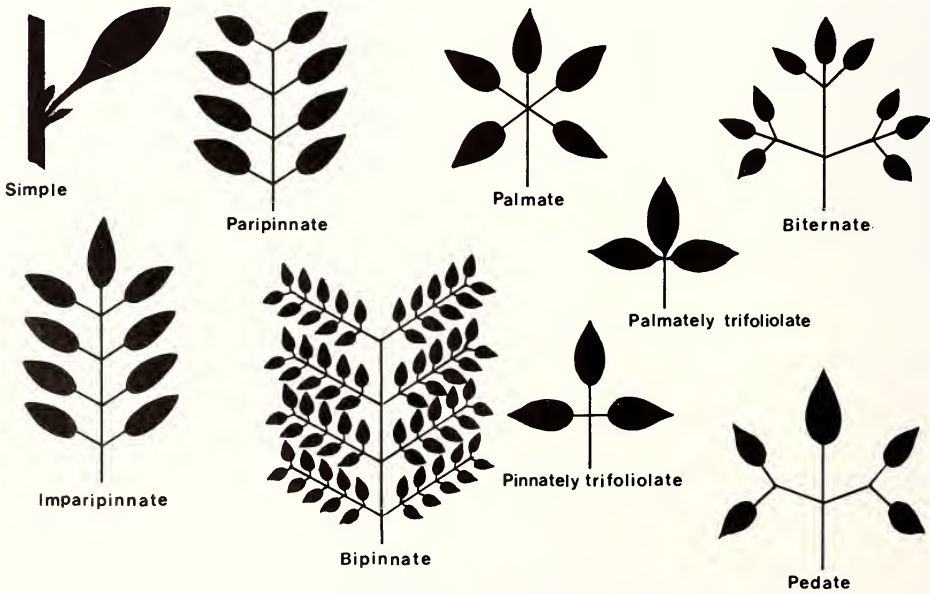
Xerophyte: a plant which can subsist on a small amount of moisture e.g. a desert plant.

Zygomorphic: bilaterally symmetrical; irregular.

A. STEM HABIT TYPES

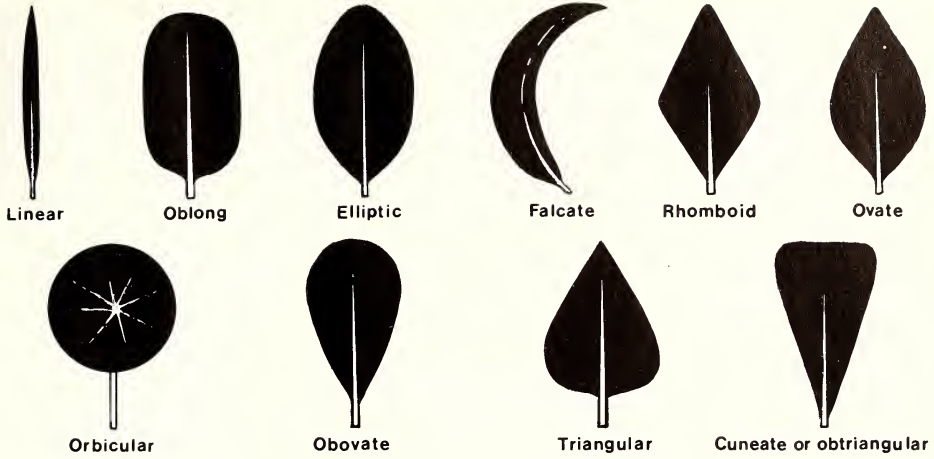


B. LEAF ARRANGEMENTS

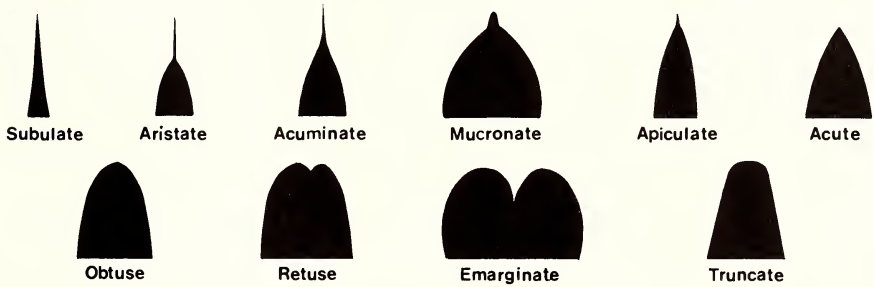


C. LEAF TYPES

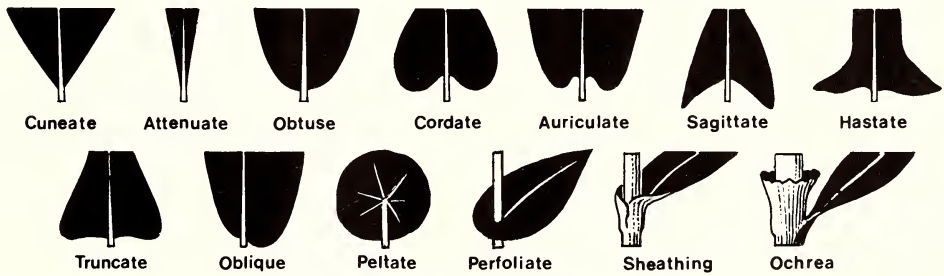
Fig. 1



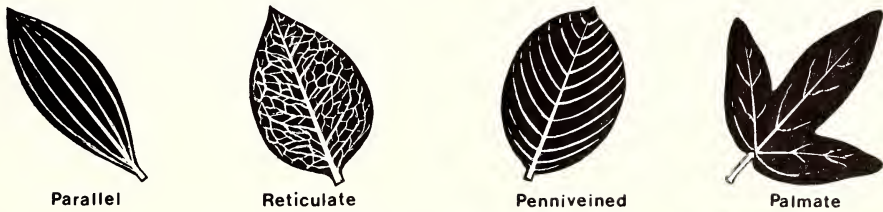
A. LEAF SHAPE



B. LEAF APICES

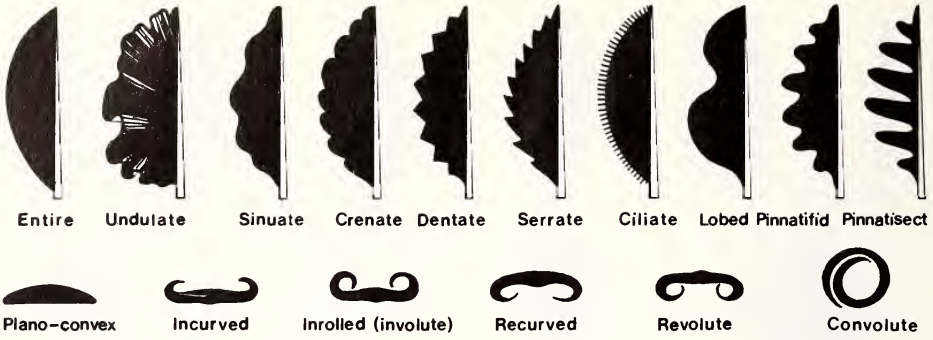


C. LEAF BASES

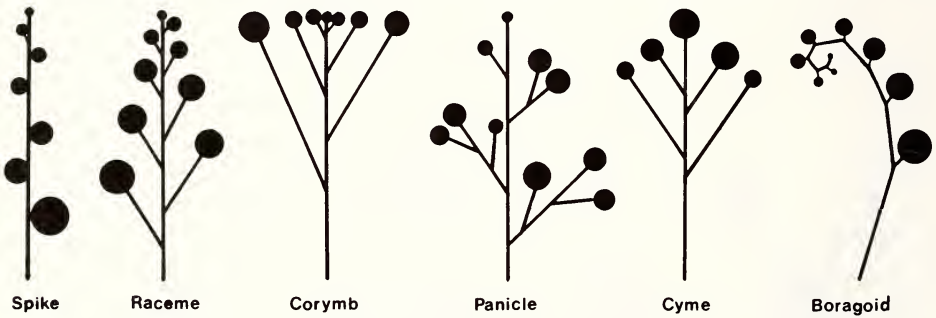


D. VENATION

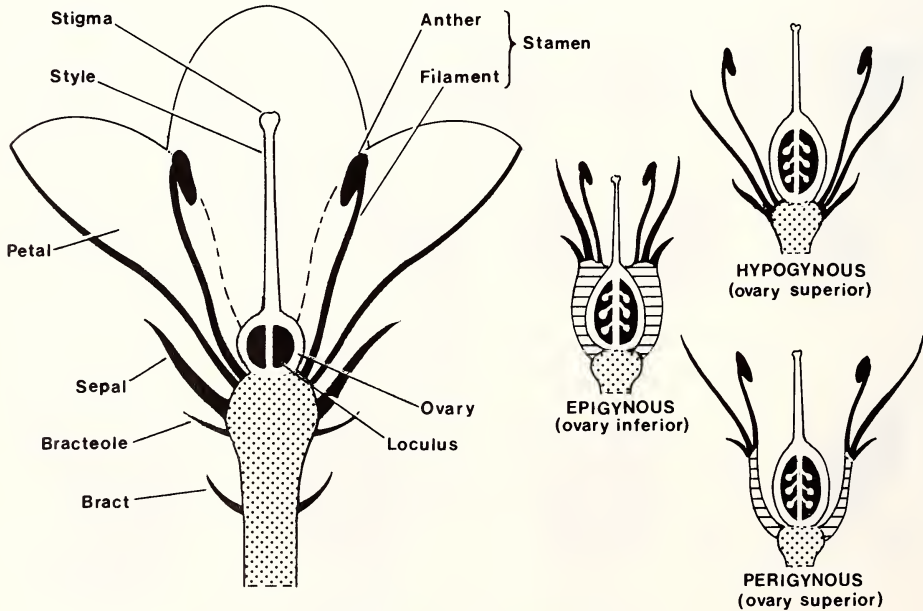
Fig. 2



A. LEAF MARGINS

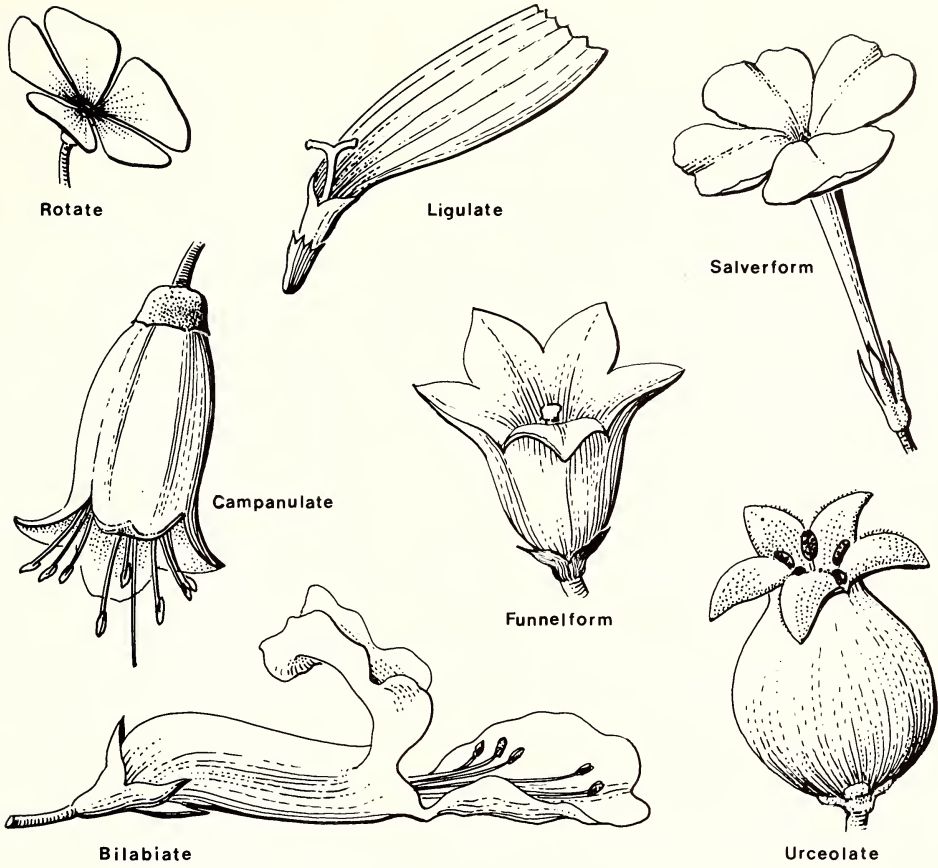


B. INFLORESCENCES

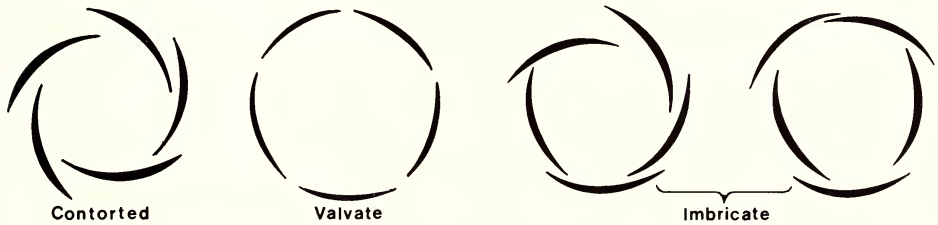


C. FLORAL PARTS

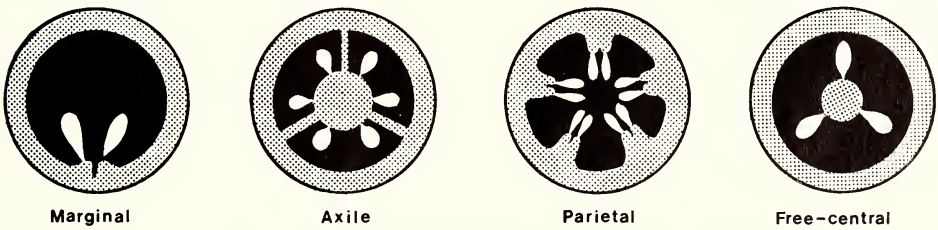
Fig. 3



A. COROLLA TYPES



B. AESTIVATION



C. PLACENTATION TYPES

Fig. 4

KEY TO THE FAMILIES OF FLOWERING PLANTS (DICOTYLEDONS)*

1. Flowers without perianth	2
Flowers with perianth	17
2. Milky latex present	3
Milky latex absent	4
3. Styles or stigmas 3 or more	69. Euphorbiaceae
Style or stigma 1	5. Moraceae
4. Succulent herbs, parasitic on roots; leaves scale-like, lacking chlorophyll	13. Balanophoraceae
Plants not parasitic; leaves if present with chlorophyll	5
5. Flowers unisexual	6
Flowers bisexual	13
6. Climbers	7
Non-climbers	8
7. Herbaceous climbers with adventitious roots	41. Piperaceae
Woody climbers or scandent shrubs without adventitious roots	31. Monimiaceae
8. Leaves opposite	134. Callitrichaceae
Leaves otherwise	9
9. Leaves reduced to scales, in whorls	1. Casuarinaceae
Leaves not reduced to scales	10
10. Aquatic herbs	106. Haloragaceae
Land plants	11
11. Plants dioecious	2. Salicaceae
Plants monoecious	12
12. Trees; female flowers solitary without an involucre	69. Euphorbiaceae
Herbs or undershrubs; female flowers 1 or 2, surrounded by a spiny involucre	155. Asteraceae
13. Stamens 10 or fewer	14
Stamens more than 10	16
14. Plants without leaves, with succulent jointed stems	23. Chenopodiaceae
Plants with leaves	15
15. Flowers in leaf-opposed spikes or racemes	41. Piperaceae
Flowers in axillary or terminal spikes with succulent bracts	42. Peperomiaceae
16. Stamens all perfect	99. Myrtaceae
Inner rows of stamens modified to petal-like staminodes	29. Eupomatiaceae
17. Perianth segments more than 6	18
Perianth segments 6 or fewer	558
18. Corolla or perianth segments free	19
Corolla or perianth segments fused at base	373
19. All flowers unisexual	20
Most flowers bisexual	55
20. Ovary superior	21
Ovary inferior	52
21. Aquatic plants; leaves whorled, much divided	40. Ceratophyllaceae
Land plants; leaves alternate, opposite or absent	22
22. Gynoecium consisting of several free carpels	23
Gynoecium consisting of 1 carpel or of 2 or more united carpels	26

*Based on family key in H. T. Clifford and Gwen Ludlow, *Keys to the Families and Genera of Queensland Flowering Plants (Magnoliophyta)*, First Edition, 1972, University of Queensland Press, St. Lucia.

23. Climbers or spreading over the ground		24
Non-climbers, non-spreading		25
24. Leaves opposite	70. Rutaceae	
Leaves alternate	36. Menispermaceae	
25. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted	72. Simaroubaceae	
26. Leaves compound		27
Leaves simple or absent		39
27. Corolla of 4 parts		28
Corolla of 5 parts		34
28. Filaments connate into a tube	74. Meliaceae	
Filaments not connate		29
29. Stamens 3-5		30
Stamens 6-8		32
30. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted		31
31. Climbers with tendrils	85. Vitaceae	
Shrubs or trees	72. Simaroubaceae	
32. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted		33
33. Style 1	79. Sapindaceae	
Styles more than 1	78. Anacardiaceae	
34. Stamens 5 in male flowers, styles more than 1	78. Anacardiaceae	
Stamens more than 5 in male flowers, or if stamens 5 then style 1		35
35. Filaments wholly or partially united into a column	74. Meliaceae	
Filaments free		36
36. Stamens 5-8		37
Stamens 10		38
37. Ovary 2-3-locular, seeds not winged	79. Sapindaceae	
Ovary 5-locular, seeds winged	74. Meliaceae	
38. Ovary \pm entire, stigmas glabrous	78. Anacardiaceae	
Ovary lobed, stigmas plumose	72. Simaroubaceae	
39. Leaves opposite		40
Leaves alternate		42
40. Disc present	80. Celastraceae	
Disc absent		41
41. Ovary 4-locular	70. Rutaceae	
Ovary usually 3-locular	69. Euphorbiaceae	
42. Climbers or twiners		43
Plants not climbing or twining		45
43. (a) Climbers with axillary tendrils	94. Passifloraceae	
(b) Climbers with leaf-opposed tendrils	85. Vitaceae	
(c) Twiners		44
44. Flowers in simple or compound umbels	36. Menispermaceae	
Flowers not in umbels	80. Celastraceae	
45. Styles 2-3	69. Euphorbiaceae	
Style 1 or stigma sessile		46
46. Stigmas 2 or more		47
Stigma 1 or stigma sessile		50
47. Female flowers with staminodes		48
Female flowers without staminodes	69. Euphorbiaceae	
48. Stamens numerous	87. Tiliaceae	
Stamens 4-5		49
49. Fruits drupes	83. Icacinaceae	
Fruits capsules	80. Celastraceae	
50. (a) Ovary 3-locular	69. Euphorbiaceae	
(b) Ovary 2- or 4-locular	87. Tiliaceae	
(c) Ovary 1-locular		51

51. Ovary stipitate	50. Capparaceae
Ovary sessile	83. Icacinaceae
52. Climbers with tendrils	97. Cucurbitaceae
Non-climbers	53
53. Trees; style 1	34. Hernandiaceae
Herbs or shrubs; styles 2 or more	54
54. Flowers in umbels or racemes arranged in panicles	108. Araliaceae
Flowers few together, axillary	106. Haloragaceae
55. Gynoecium of several free carpels	56
Gynoecium of 1 carpel or of 2 or more united carpels	88
56. Flowers with perianth and stamens inserted around the superior ovary on a torus or receptacle	57
Flowers with perianth inserted below the ovary	60
57. Leaves alternate or radical	58
Leaves opposite	59
58. Stamens more than 10	59. Rosaceae
Stamens 4 or 8	54. Crassulaceae
59. Trees or shrubs	32. Atherospermataceae
Herbs, often succulent	54. Crassulaceae
60. Stamens more than 10	61
Stamens 10 or fewer	71
61. Leaves peltate; aquatic plants	62
Leaves not peltate	63
62. Leaves held above the water; fruits, when mature, achenes lying free in cavities of obconical receptacle	39. Nelumbonaceae
Leaves floating on the water; fruits not as above, 1-2-seeded	37. Cabombaceae
63. Style 1 with 3-5 stigmas, carpel 1 but often deeply lobed	45. Ochnaceae
Styles and stigmas as many as carpels	64
64. Climbers	65
Non-climbers	66
65. Calyx segments 3, corolla segments 6	28. Annonaceae
Calyx segments 5, corolla segments 5	44. Dilleniaceae
66. Perianth all petaloid	35. Ranunculaceae
One or more whorls of perianth sepaloid	67
67. Stamens petaloid	26. Himantandraceae
Stamens not petaloid	68
68. Sepals 3, petals 6 in 2 whorls	28. Annonaceae
Sepals 5, petals 5 sometimes more	69
69. Herbs; leaves usually much incised	35. Ranunculaceae
Trees, shrubs or undershrubs; leaves entire or 2-pinnate	70
70. Leaves simple	44. Dilleniaceae
Leaves 2-pinnate	61. Mimosaceae
71. Style 1, with 1 or more stigmas	72
Styles free from one another, as many as there are carpels	76
72. Leaves peltate	65. Tropaeolaceae
Leaves not peltate	73
73. Leaves gland-dotted	70. Rutaceae
Leaves not gland-dotted	74
74. Leaves opposite	70. Rutaceae
Leaves alternate	75
75. Stigma 1	45. Ochnaceae
Stigmas 3 or more	72. Simaroubaceae
76. Leaves compound	77
Leaves simple	78
77. Leaves gland-dotted	70. Rutaceae
Leaves not gland-dotted	72. Simaroubaceae
78. Leaves opposite	54. Crassulaceae
Leaves alternate, radical, clustered or absent	79

79. Flowers with calyx and corolla segments in 2 or more whorls, with 3 segments in each whorl	36. Menispermaceae	
Flowers with calyx and corolla segments in 1 whorl each, 4 or 5 segments in each whorl		80
80. Flowers 4-merous	54. Crassulaceae	
Flowers 5-merous		81
81. Stamens united in a ring at the base	44. Dilleniaceae	
Stamens free		82
82. Leaves absent at time of flowering	78. Anacardiaceae	
Leaves present at time of flowering		83
83. Leaves lobed or much divided	35. Ranunculaceae	
Leaves entire		84
84. Carpels more than 10	35. Ranunculaceae	
Carpels 5 or fewer		85
85. Leaves fleshy	54. Crassulaceae	
Leaves not fleshy		86
86. Leaves opposite, 3-foliolate, sessile so as to appear as a whorl of 6 separate leaves	55. Baueraceae	
Leaves alternate or opposite, simple or compound but not appearing whorled		87
87. Shrubs or undershrubs; carpels usually 2 or 3	44. Dilleniaceae	
Maritime shrubs with 5 carpels or small or large trees	72. Simaroubaceae	
88. (a) Corolla of 3 segments		89
(b) Corolla of 4 segments		90
(c) Corolla of 5 segments		154
(d) Corolla of more than 5 segments or whole perianth petaloid or sepaloid or sometimes in 1 whorl		334
89. Leaves simple	77. Polygalaceae	
Leaves compound	62. Caesalpiaceae	
90. (a) Calyx of 2-4 segments		91
(b) Calyx of 5 segments		151
(c) Calyx of 6 segments		153
91. Ovary superior		92
Ovary inferior		138
92. (a) Leaves reduced to scales	95. Tamaricaceae	
(b) Leaves radical or alternate		93
(c) Leaves opposite or whorled		119
93. Styles more than 1	47. Droseraceae	
Style 1, with 1 or more stigmas or stigma sessile		94
94. (a) Stamens 2 or 3		95
(b) Stamens 4 or 5		96
(c) Stamens 6		102
(d) Stamens 7, 8 or 9		104
(e) Stamens 10 or more		111
95. Leaves simple, entire or much divided	52. Brassicaceae	
Leaves compound	62. Caesalpiaceae	
96. Stamens opposite the petals		97
Stamens alternate with the petals		98
97. Climbers with leaf-opposed tendrils	85. Vitaceae	
Non-climbers	111. Myrsinaceae	
98. Leaves compound	51. Cleomaceae	
Leaves simple or absent		99
99. Herbs		100
Shrubs or trees		101
100. Sepals inserted on summit of hypanthium which resembles a fused calyx	98. Lythraceae	
Sepals not inserted on hypanthium	52. Brassicaceae	
101. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted	80. Celastraceae	

102. Climbers with tendrils	79. Sapindaceae	103
Erect herbs		
103. (a) Stamens 6, 2 outer shorter than 4 inner, inserted below ovary; leaves usually simple but lobed	52. Brassicaceae	
(b) Stamens 6, subequal, inserted below ovary; leaves compound	51. Cleomaceae	
(c) Stamens 6, inserted on hypanthium resembling a fused calyx; leaves simple	98. Lythraceae	
104. Stamens united in a ring	74. Meliaceae	105
Stamens free		
105. Leaves simple or absent		106
Leaves compound		109
106. Leaves not entire	79. Sapindaceae	
Leaves entire or absent		107
107. Corolla densely hairy inside	9. Olacaceae	
Corolla glabrous		108
108. Anthers opening by apical pores	76. Tremandraceae	
Anthers opening longitudinally	98. Lythraceae	
109. Herbs, not climbing; ovary 1-locular	51. Cleomaceae	
Trees or shrubs, or rarely climbing herbs; ovary 2- or more-locular		110
110. Ovules 2 per loculus	73. Burseraceae	
Ovules 1 per loculus	79. Sapindaceae	
111. Flowers in heads or spikes	62. Caesalpiniaceae	
Flowers not in heads or spikes		112
112. Ovary borne on a long stipe (stalk)		113
Ovary sessile		114
113. Herbs; fruits capsules	51. Cleomaceae	
Shrubs or trees; fruits drupes or berries	50. Capparaceae	
114. Stamens with a ring of glands at base; ovary 1-locular	92. Flacourtiaceae	
Stamens without glands; ovary 2-4-locular		115
115. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted		116
116. Herbs		117
Trees or shrubs		118
117. Hypanthium present, resembling a fused calyx	98. Lythraceae	
Hypanthium absent	53. Resedaceae	
118. Fruits capsules or drupes	86. Elaeocarpaceae	
Fruits berries	92. Flacourtiaceae	
119. Leaves opposite, 3-foliolate, sessile so as to appear as a whorl of 6 separate leaves	55. Baueraceae	
Leaves otherwise		120
120. (a) Stamens 2		121
(b) Stamens 4		122
(c) Stamens 5-8		127
(d) Stamens 10 or more		137
121. Flowers in clusters, racemes or panicles	117. Oleaceae	
Flowers solitary in leaf axils	98. Lythraceae	
122. Leaves gland-dotted		123
Leaves not gland-dotted		124
123. Style and stigma 1	70. Rutaceae	
Styles and stigmas 4	57. Cunoniaceae	
124. Flowers perigynous		125
Flowers hypogynous		126
125. Anthers opening by apical pores	102. Melastomataceae	
Anthers opening longitudinally	98. Lythraceae	
126. Style 1	80. Celastraceae	
Styles 4	96. Elatinaceae	
127. Leaves simple or absent		128
Leaves compound		135

128. Leaves 2-lobed Leaves entire or lobes more than 2	66. Zygophyllaceae	129
129. Leaves gland-dotted Leaves not gland-dotted	70. Rutaceae	130
130. Ovary half inferior; petals fringed Ovary wholly superior; petals not fringed	103. Rhizophoraceae	131
131. Styles and stigmas more than 1 Style and stigma 1	57. Cunoniaceae	132
132. Flowers hypogynous Flowers perigynous		133 134
133. Leaves in whorls of 3 or 4 Leaves opposite	76. Tremandraceae 70. Rutaceae	
134. Leaves with 2 or more conspicuous longitudinal veins beside midrib Leaves with midrib as only conspicuous vein	102. Melastomataceae 98. Lythraceae	
135. Stamens united Stamens free	74. Meliaceae	136
136. Leaves gland-dotted Leaves not gland-dotted	70. Rutaceae 66. Zygophyllaceae	
137. Style and stigma 1 Styles and stigmas more than 1	98. Lythraceae 57. Cunoniaceae	
138. Leaves with translucent glandular dots Leaves without translucent glandular dots	99. Myrtaceae	139
139. Stamens more than 10 Stamens 10 or fewer		140 141
140. Style with 1 stigma Style with 4 stigmas	101. Barringtoniaceae 56. Escalloniaceae	
141. Leaves alternate or radical Leaves opposite or whorled		142 146
142. Style 1, with 1 or more stigmas Styles several, free		143 145
143. (a) Style with 3-4 stigmas (b) Style with 2 stigmas (c) Style with 1 stigma	105. Onagraceae 107. Alangiaceae	144
144. Ovary 1-locular Ovary 4-locular	104. Combretaceae 105. Onagraceae	
145. Herbs; flowers very small Shrubs; flowers above 6 mm diameter	106. Haloragaceae 56. Escalloniaceae	
146. Styles several, free Style 1, with 1 or more stigmas	106. Haloragaceae	147
147. Ovary half inferior; corolla fringed Ovary wholly inferior; corolla not fringed	103. Rhizophoraceae	148
148. Stamens 4 Stamens more than 4	56. Escalloniaceae	149
149. Leaves with 2 or more longitudinal veins besides midrib Leaves with only midrib conspicuous longitudinally	102. Melastomataceae	150
150. Ovary 1-locular Ovary 4-locular	102. Melastomataceae 105. Onagraceae	
151. Ovary 2-3-locular Ovary 1-locular	79. Sapindaceae	152
152. (a) Petals valvate or rarely imbricate in bud; flowers actinomorphic (b) Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers usually zygomorphic (c) Petals imbricate in bud, uppermost petal outside lateral petals; flowers zygomorphic	61. Mimosaceae 62. Caesalpinaceae 60. Fabaceae	
153. Herbs Small shrubs	98. Lythraceae 56. Escalloniaceae	

154. (a) Calyx segments 2	155
(b) Calyx segments 3	158
(c) Calyx segments 4	159
(d) Calyx segments 5 or more	162
155. Twiners	21. Basellaceae
Non-twiners	156
156. Shrubs or trees	101. Barringtoniaceae
Herbs	157
157. Stamens 5 or fewer	24. Amaranthaceae
Stamens usually more than 5	20. Portulacaceae
158. Stamens 8	77. Polygalaceae
Stamens more than 8	101. Barringtoniaceae
159. Leaves scale-like	95. Tamaricaceae
Leaves not scale-like	160
160. Stamens more than 10	101. Barringtoniaceae
Stamens 8-10	161
161. (a) Petals valvate or rarely imbricate in bud; flowers actinomorphic	61. Mimosaceae
(b) Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers \pm zygomorphic	62. Caesalpiniaceae
(c) Petals imbricate in bud, uppermost petal outside lateral petals; flowers zygomorphic	60. Fabaceae
162. Ovary superior	163
Ovary inferior or half inferior	301
163. Style 1 with simple stigma or stigma sessile	164
Styles or stigmas more than 1	248
164. Leaves opposite or whorled	165
Leaves alternate or radical or absent	181
165. Leaves gland-dotted	166
Leaves not gland-dotted	169
166. Leave simple	167
Leaves compound	168
167. Flowers hypogynous	70. Rutaceae
Flowers perigynous	99. Myrtaceae
168. Fruits capsules dehiscent with 5 valves	71. Flindersiaceae
Fruits berries, drupes or cocci dehiscent with 2 valves	70. Rutaceae
169. Leaves simple	170
Leaves compound	178
170. Leaves with 2 or more conspicuous longitudinal veins besides midrib	102. Melastomataceae
Leaves with only midrib conspicuous	171
171. Stamens 10 or fewer	172
Stamens more than 10	177
172. Flowers actinomorphic	173
Flowers zygomorphic	175
173. Flowers perigynous	98. Lythraceae
Flowers hypogynous	174
174. (a) Stamens 5; disc absent	58. Pittosporaceae
(b) Stamens 5; disc present	80. Celastraceae
(c) Stamens more than 5	103. Rhizophoraceae
175. Stamens 5, anthers connate around ovary	93. Violaceae
Stamens 10	176
176. (a) Petals valvate or rarely imbricate in bud; flowers actinomorphic	61. Mimosaceae
(b) Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers \pm zygomorphic	62. Caesalpiniaceae
(c) Petals imbricate in bud, uppermost petal outside lateral petals; flowers zygomorphic	60. Fabaceae
177. Flowers hypogynous	86. Elaeocarpaceae
Flowers perigynous	98. Lythraceae
178. Stamens 5	74. Meliaceae
Stamens more than 5	179

179. Ovary 4-5-locular	66. Zygophyllaceae	180
Ovary 1-locular or of 2 or more free carpels		
180. (a) Petals valvate or rarely imbricate; flowers actinomorphic	61. Mimosaceae	
(b) Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers \pm zygomorphic	62. Caesalpiaceae	
(c) Petals imbricate in bud, uppermost petal outside lateral petals; flowers zygomorphic	60. Fabaceae	
181. (a) Stamen 1	78. Anacardiaceae	
(b) Stamens 2-4		182
(c) Stamens 5		183
(d) Stamens 6-9		207
(e) Stamens 10		213
(f) Stamens more than 10		234
182. Calyx enlarging and enclosing fruit	9. Olacaceae	
Calyx not enlarging and not enclosing fruit	62. Caesalpiaceae	
183. Leaves simple or absent		184
Leaves compound		199
184. Leaves 2-fid at apex	62. Caesalpiaceae	
Leaves not 2-fid at apex		185
185. Twining or climbing plants		186
Non-twining, non-climbing plants		187
186. Climbers with leaf-opposed tendrils	85. Vitaceae	
Twiners	58. Pittosporaceae	
187. Herbs; flowers zygomorphic	93. Violaceae	
Shrubs or trees; flowers actinomorphic		188
188. Stamens opposite corolla segments		189
Stamens alternate with corolla segments		191
189. Each stamen \pm enclosed by small hood-shaped corolla segment	84. Rhamnaceae	
Stamens not enclosed by corolla segments		190
190. Stamens adnate to calyx tube	84. Rhamnaceae	
Stamens free	89. Sterculiaceae	
191. Fruits indehiscent, with numerous 1-seeded radiating pyrenes	81. Siphonodontaceae	
Fruits not as above		192
192. Base of calyx covered by a number of sepaloïd bracteoles	110. Epacridaceae	
Bracteoles absent or not covering base of calyx		193
193. Calyx segments free		194
Calyx segments united		197
194. Ovary immersed in a conspicuous disc		195
Ovary not immersed in a disc		196
195. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted	80. Celastraceae	
196. Ovary usually 2-locular, rarely 1-locular, ovules few to many	58. Pittosporaceae	
Ovary 1-locular by abortion from 2-5-locular ovary, ovules 1-2	83. Icacinaceae	
197. Ovary 1-locular by abortion from 2-5-locular ovary	83. Icacinaceae	
Ovary 2- or more-locular		198
198. Disc present	80. Celastraceae	
Disc absent	56. Escalloniaceae	
199. Climbers with leaf-opposed tendrils	85. Vitaceae	
Non-climbers or climbers without leaf-opposed tendrils		200
200. Leaves gland-dotted		201
Leaves not gland-dotted		202
201. Fruits capsules dehiscent with 5 valves	71. Flindersiaceae	
Fruits berries, drupes or cocci dehiscent with 2 valves	70. Rutaceae	
202. Stamens 5, staminodes 5	66. Zygophyllaceae	
Stamens 5 without staminodes		203
203. Stamens free		204
Stamens connate		206

204. (a) Ovary 2-locular	79. Sapindaceae	
(b) Ovary 3-5-locular; leaves 1-pinnate	74. Meliaceae	
(c) Ovary 1-locular; leaves 2-pinnate		205
205. Petals valvate or rarely imbricate; flowers actinomorphic	61. Mimosaceae	
Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers zygomorphic	62. Caesalpiniaceae	
206. Leaves 1-pinnate	74. Meliaceae	
Leaves 2-3-pinnate	85. Vitaceae	
207. Leaves simple		208
Leaves compound		210
208. Stamens 8, staminodes 6-10; style inserted at base of ovary	59. Rosaceae	
Stamens 6-9, staminodes absent; style terminal		209
209. (a) Petals valvate or rarely imbricate; flowers actinomorphic	61. Mimosaceae	
(b) Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers \pm zygomorphic	62. Caesalpiniaceae	
(c) Petals imbricate in bud, uppermost petal outside lateral petals; flowers zygomorphic	60. Fabaceae	
210. Ovary 2-3-locular		211
Ovary 1-locular		212
211. Disc present, sometimes incomplete; petals imbricate	79. Sapindaceae	
Disc absent; petals contorted	75. Akaniaceae	
212. (a) Petals valvate or rarely imbricate; flowers actinomorphic	61. Mimosaceae	
(b) Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers \pm zygomorphic	62. Caesalpiniaceae	
(c) Petals imbricate in bud, uppermost petal outside lateral petals; flowers zygomorphic	60. Fabaceae	
213. Flowers actinomorphic or nearly so		214
Flowers zygomorphic		233
214. Stamens united		215
Stamens free		218
215. Leaves simple		216
Leaves compound		217
216. Staminal tube long and narrow	74. Meliaceae	
Staminal tube short, open, cup-like	89. Sterculiaceae	
217. Ovary 2-5-locular	74. Meliaceae	
Ovary 1-locular	61. Mimosaceae	
218. Leaves simple		219
Leaves compound		226
219. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted		220
220. Style inserted near base of ovary	72. Simaroubaceae	
Style terminal		221
221. Ovary and outside of corolla covered with scales; flowers in heads or clusters at end of branchlets	70. Rutaceae	
Not as above		222
222. Flowers perigynous	98. Lythraceae	
Flowers hypogynous		223
223. Ovary usually stipitate; ovules several per loculus; calyx segments united	62. Caesalpiniaceae	
Ovary sessile; ovules 1 or 2 per loculus; calyx segments usually free		224
224. Ovary 1-locular; ovule 1	78. Anacardiaceae	
Ovary 2-5-locular		225
225. Ovary 5-locular; ovules 1 per loculus	45. Ochnaceae	
Ovary 2-5-locular; ovules 2 per loculus	87. Tiliaceae	
226. Leaves gland-dotted		227
Leaves not gland-dotted		228
227. Fruits capsules dehiscent with 5 valves	71. Flindersiaceae	
Fruits berries, drupes or cocci dehiscent with 2 valves	70. Rutaceae	
228. Herbs	66. Zygophyllaceae	
Shrubs or trees		229

229. Ovary 1-locular or gynoeceum of several free carpels	230
Ovary 2- or more-locular	232
230. Fruits drupes	78. Anacardiaceae
Fruits not drupes	231
231. (a) Petals valvate or rarely imbricate; flowers actinomorphic	61. Mimosaceae
(b) Petals imbricate in bud, uppermost petal overlapped on each side by lateral petals; flowers \pm zygomorphic	62. Caesalpinaceae
(c) Petals imbricate in bud, uppermost petal outside lateral petals; flowers zygomorphic	60. Fabaceae
232. Ovary 1- or 3-locular	79. Sapindaceae
Ovary 4-5-locular	73. Burseraceae
233. Uppermost petal outside lateral petals	60. Fabaceae
Uppermost petal overlapped on each side by lateral petals	62. Caesalpinaceae
234. Leaves gland-dotted	235
Leaves not gland-dotted	236
235. Flowers hypogynous	70. Rutaceae
Flowers perigynous	99. Myrtaceae
236. Leaves simple or absent	237
Leaves compound	246
237. (a) Stamens free or only slightly united at the base	238
(b) Stamens united into 5 or 10 groups	87. Tiliaceae
(c) Stamens united into a single group	244
238. Flowers small, in globular heads or cylindrical spikes	239
Flowers not as above	240
239. Petals imbricate in bud; flowers \pm zygomorphic	62. Caesalpinaceae
Petals valvate in bud; flowers actinomorphic	61. Mimosaceae
240. Flowers hypogynous	241
Flowers perigynous	243
241. (a) Climbers	92. Flacourtiaceae
(b) Shrubs; leaves fleshy	66. Zygophyllaceae
(c) Shrubs or trees; leaves not fleshy	242
242. Anthers dehiscing longitudinally	87. Tiliaceae
Anthers dehiscing by apical pores	86. Elaeocarpaceae
243. Stamens inserted on rim of calyx tube with corolla; ovules 1 or 2	59. Rosaceae
Stamens inserted at various levels on calyx tube or stamens hypogynous; ovules numerous	98. Lythraceae
244. Anthers 1-locular	88. Malvaceae
Anthers 2-locular	245
245. Filaments forming a column; staminodes often present	89. Sterculiaceae
Filaments forming a hollow tube; staminodes absent	74. Meliaceae
246. Filaments fused into a cylindrical tube	74. Meliaceae
Filaments free	247
247. Petals imbricate in bud; flowers \pm zygomorphic	62. Caesalpinaceae
Petals valvate; flowers actinomorphic	61. Mimosaceae
248. Leaves simple or absent	249
Leaves compound	290
249. Leaves opposite or whorled	250
Leaves alternate or radical or absent	265
250. Stamens 10 or fewer	251
Stamens more than 10	264
251. Styles or stigmas 5	252
Styles or stigmas less than 5	258
252. Leaves whorled	253
Leaves opposite	254
253. Floating aquatic plants without roots	47. Droseraceae
Non-aquatics	22. Caryophyllaceae
254. Leaves gland-dotted	70. Rutaceae
Leaves not gland-dotted	255

255. Styles 5, free	256
Style 1, with 5 stigmas	257
256. Ovary 2-5-locular	96. Elatinaceae
Ovary 1-locular	22. Caryophyllaceae
257. Stems swollen at nodes; ovary 1-locular	22. Caryophyllaceae
Stems not swollen at nodes; ovary 3- or more-locular	64. Geraniaceae
258. Styles free	259
Styles united	262
259. Leaves gland-dotted	46. Clusiaceae
Leaves not gland-dotted	260
260. Mostly herbs; stems usually swollen at nodes	22. Caryophyllaceae
Shrubs or trees; stems not swollen at nodes	261
261. Leaves petiolate	57. Cunoniaceae
Leaves sessile	55. Baueraeeae
262. Herbs, non-climbers, non-twiners	22. Caryophyllaceae
Shrubs, trees or climbers and twiners	263
263. Stamens opposite to and enclosed in corolla segments	84. Rhamnaceae
Stamens alternate with corolla segments	80. Celastraceae
264. Leaves opposite	46. Clusiaceae
Leaves apparently in whorls of 6	55. Baueraeeae
265. Stamens united at least at base, often forming a conspicuous staminal tube	266
Stamens free or arising from margin of a small disc	273
266. Styles 2 or more, free	267
Style 1, with 2 or more stigmas	270
267. Stamens 8	18. Aizoaceae
Stamens 5, 10 or more	268
268. Fruits drupes or nuts; non-climbers	68. Erythroxylaceae
Fruits capsules or if drupaceous then plants climbers	269
269. Plants with stellate hairs	89. Sterculiaceae
Plants glabrous	67. Linaceae
270. Corolla attached to base of staminal column; staminal column usually long	88. Malvaceae
Corolla not attached to base of staminal column if column present	271
271. Style branches or stigmas 2 or 3	67. Linaceae
Style branches or stigmas 5	272
272. (a) Stamens 5, staminodes absent or 5; leaves with stellate hairs	89. Sterculiaceae
(b) Stamens 5, staminodes 5; leaves entire, glabrous	67. Linaceae
(c) Stamens usually 10 though often 3 or 4 without anthers; leaves lobed, with at least some simple hairs	64. Geraniaceae
(d) Stamens 10 or more, sometimes with staminodes; leaves usually with stellate hairs	89. Sterculiaceae
273. (a) Stamens 1-3	87. Tiliaceae
(b) Stamens 5	274
(c) Stamens 6-10	284
(d) Stamens more than 10; flowers hypogynous	289
(e) Stamens more than 10; flowers perigynous	59. Rosaceae
274. Climbers with axillary tendrils	94. Passifloraceae
Non-climbers or climbers without axillary tendrils	275
275. (a) Styles 2 or more, free	276
(b) Style 1, with 2 or more stigmas	279
(c) True style absent, stigmatic tufts 5	81. Siphonodontaceae
276. Stamens opposite corolla lobes	277
Stamens alternating with corolla lobes	278
277. Styles 5	113. Plumbaginaceae
Styles less than 5	84. Rhamnaceae
278. (a) Leaves with conspicuous glandular hairs	47. Droseraceae
(b) Leaves scale-like, appressed to stem	95. Tamaricaceae
(c) Leaves not scale-like, without glandular hairs	67. Linaceae

279. Leaves scale-like, appressed to stem	95. Tamaricaceae	280
Leaves not scale-like, not appressed to stem		
280. Stamens opposite corolla lobes	84. Rhamnaceae	281
Stamens alternate with corolla lobes		
281. (a) Herbs with 5 stamens and no staminodes	82. Stackhousiaceae	
(b) Herbs with 5 stamens and 5 staminodes	64. Geraniaceae	282
(c) Shrubs or trees; stamens 4–6, staminodes absent		
282. Flowers perigynous; ovules numerous per loculus	56. Escalloniaceae	283
Flowers hypogynous; ovules 2 or 3 per loculus		
283. Disc absent	83. Icacinaceae	
Disc present	80. Celastraceae	
284. Leaves peltate	65. Tropaeolaceae	285
Leaves not peltate		
285. Stamens 8, 6 of them attached to base of corolla	77. Polygalaceae	286
Stamens all hypogynous or perigynous		
286. Stamens 7–10, if 10 some without anthers	64. Geraniaceae	287
Stamens 10, all with anthers		
287. Styles several, free	78. Anacardiaceae	288
Style 1, with 2 or more stigmas		
288. Flowers hypogynous; calyx free	64. Geraniaceae	
Flowers perigynous; calyx united	56. Escalloniaceae	
289. Calyx segments valvate or united	87. Tiliaceae	
Calyx segments imbricate	44. Dilleniaceae	
290. Leaves alternate or radical		291
Leaves opposite		298
291. Styles or sessile stigmas free		292
Style 1, with 2 or more stigmas		295
292. Herbs		293
Shrubs or trees		294
293. Stamens 5	47. Droseraceae	
Stamens 10	63. Oxalidaceae	
294. Style 1; leaflets 2, occasionally reduced to 1	79. Sapindaceae	
Styles 2–5, if 2 then leaflets more than 2	78. Anacardiaceae	
295. (a) Stamens 3 with 5 staminodes; style petaloid	62. Caesalpiniaceae	
(b) Stamens 5 with no staminodes	78. Anacardiaceae	
(c) Stamens 5, alternating with 5 usually scale-like staminodes	64. Geraniaceae	296
(d) Stamens more than 5		
296. Stamens 10; stigmas plumose	72. Simaroubaceae	297
Stamens 6–9; stigmas not plumose		
297. Disc present, sometimes incomplete; petals imbricate	79. Sapindaceae	
Disc absent; petals contorted	75. Akaniaceae	
298. Leaves with 3 leaflets		299
Leaves with more than 3 leaflets		300
299. Leaves sessile so as to appear as a whorl of 6 leaves	55. Baueraeeae	
Leaves petiolate	57. Cunoniaceae	
300. (a) Herbs; style 1, with 1–5 sessile stigmas	66. Zygophyllaceae	
(b) Herbs or small shrubs; style 1, with 5 short stigmatic branches	64. Geraniaceae	
(c) Trees; styles 2 or stigmas 2–4	57. Cunoniaceae	
301. Stamens 5		302
Stamens more than 5		315
302. Stamens alternating with corolla lobes		303
Stamens opposite corolla lobes		307
303. (a) Leaves gland-dotted	99. Myrtaceae	
(b) Leaves not gland-dotted; stamens attached to corolla at their base	107. Alangiaceae	
(c) Leaves not gland-dotted; stamens not attached to corolla		304
304. Leaves stipulate		305
Leaves exstipulate		306

305. Styles 2, free, at length recurved	108. Araliaceae	
Style 1, stigma lobed	84. Rhamnaceae	
306. Ovules numerous per loculus	56. Escalloniaceae	
Ovules 1 per loculus	109. Apiaceae	
307. Parasitic shrubs (mistletoes)	11. Loranthaceae	
Plants not parasitic		308
308. Leaves gland-dotted	99. Myrtaceae	
Leaves not gland-dotted		309
309. Herbs, non-climbing nor twining		310
Shrubs or trees, sometimes climbing or twining		311
310. Flowers not in umbels nor heads; style and stigma 1	105. Onagraceae	
Flowers in umbels or heads; styles or stigmas 2	109. Apiaceae	
311. Flowers in umbels		312
Flowers not in umbels		314
312. Leaves compound	108. Araliaceae	
Leaves simple		313
313. Stipules usually present; epigynous disc entire	108. Araliaceae	
Stipules absent; epigynous disc 2-lobed	109. Apiaceae	
314. Leaves compound	108. Araliaceae	
Leaves simple	84. Rhamnaceae	
315. Leaves gland-dotted		316
Leaves not gland-dotted		318
316. Stamens more than 10, or if 10 then alternating with staminodes	99. Myrtaceae	
Stamens 10 or fewer with no staminodes		317
317. Ovary 1-locular	104. Combretaceae	
Ovary 2- or more-locular	99. Myrtaceae	
318. Leaves alternate, radical or absent		319
Leaves opposite		326
319. Leaves simple		320
Leaves compound		325
320. Style and stigma 1		321
Styles or stigmas more than 1		324
321. Stamens more than 10	59. Rosaceae	
Stamens 10 or fewer		322
322. Herbs	105. Onagraceae	
Shrubs, sometimes climbing, or trees		323
323. Ovary 1-locular	104. Combretaceae	
Ovary 2- or more-locular	56. Escalloniaceae	
324. (a) Stamens 6, 1 attached to each petal; styles simple or 2- or 3-lobed	107. Alangiaceae	
(b) Stamens 8 or more, 2-3 opposite each petal; styles 5	92. Flacourtiaceae	
(c) Stamens 10; styles with 5-lobed stigmas	105. Onagraceae	
(d) Stamens more than 10, not regularly opposite petals; styles usually less than 5	59. Rosaceae	
325. Stamens 10	78. Anacardiaceae	
Stamens more than 10	59. Rosaceae	
326. Leaves simple or absent		327
Leaves compound		333
327. Leaves with several conspicuous longitudinal veins	102. Melastomataceae	
Leaves with only midrib conspicuous		328
328. Stamens more than 15	100. Punicaceae	
Stamens usually 10, rarely up to 13		329
329. Styles 3	56. Escalloniaceae	
Style 1, with 1 or 2 stigmas		330
330. One leaf of pair much larger than other; anthers with conspicuous appendages	102. Melastomataceae	
Leaves of pairs equal; anthers without conspicuous appendages		331
331. Ovary 1-locular	104. Combretaceae	
Ovary 2- or more-locular		332

332. Trees of sea shore or salt water creeks Plants not growing in salt water	103. Rhizophoraceae 56. Escalloniaceae	
333. Leaves petiolate Leaves sessile, appearing in whorls of 6	57. Cunoniaceae 55. Baueraceae	
334. Flowers with 1 or more long spurs Flowers without a spur	35. Ranunculaceae	335
335. (a) Calyx segments 2; style short or none, stigmas usually confluent (b) Calyx segments 2; styles several, free, or style 1, with several stigmas (c) Calyx segments more than 2, or whole perianth petaloid or sepaloid	48. Papaveraceae 20. Portulacaceae	336
336. Ovary superior Ovary inferior		337 355
337. Aquatic herbs Shrubs, trees or non-aquatic herbs		338 339
338. Leaves held above water; fruits achenes held in enlarged receptacle Leaves floating on water; fruits spongy berries	39. Nelumbonaceae 38. Nymphaeaceae	
339. Leaves alternate Leaves opposite or whorled		340 352
340. Climbers Non-climbers		341 343
341. Climbers with tendrils Climbers without tendrils	94. Passifloraceae	342
342. Branches spiny Branches not spiny	25. Cactaceae 36. Menispermaceae	
343. Stamens more than 10 Stamens less than 10		344 347
344. Leaves gland-dotted Leaves not gland-dotted	70. Rutaceae	345
345. Flowers zygomorphic Flowers actinomorphic	53. Resedaceae	346
346. Styles present, free Stigma sessile on ovary	92. Flacourtiaceae 48. Papaveraceae	
347. (a) Stamen 1, with 4 or more staminodes (b) Stamens 5, staminodes absent (c) Stamens 6-9, staminodes absent	78. Anacardiaceae 56. Escalloniaceae	348
348. Leaves compound Leaves simple or absent	62. Caesalpinaceae	349
349. Flowers perigynous Flowers hypogynous		350 351
350. Stamens inserted low down in calyx tube or stamens hypogynous Stamens on edge of calyx tube	98. Lythraceae 59. Rosaceae	
351. Shrubs or trees Herbs	92. Flacourtiaceae 24. Amaranthaceae	
352. (a) Leaves compound, each with 3 leaflets, appearing as a whorl of 6 leaves (b) Leaves compound, digitately 3-foliolate, not appearing as a whorl of 6 leaves (c) Leaves simple	55. Baueraceae 70. Rutaceae	353
353. Leaves with 5-7 conspicuous longitudinal veins Leaves with midrib as only conspicuous longitudinal vein	102. Melastomataceae	354
354. Stamens inserted on calyx tube, anthers opening longitudinally Stamens inserted at base of calyx, anthers opening by apical pores	98. Lythraceae 102. Melastomataceae	
355. Aquatic herbs Shrubs, trees or non-aquatic herbs		356 357
356. Leaves held above water; fruits achenes Leaves floating on water; fruits spongy berries	39. Nelumbonaceae 38. Nymphaeaceae	

357. (a) Leaves absent	25. Cactaceae	358
(b) Leaves alternate or clustered		365
(c) Leaves opposite		359
358. Branches spiny		360
Branches without spines		
359. Fleshy plants	25. Cactaceae	
Woody plants	100. Punicaceae	
360. Parasitic shrubs (mistletoes)	11. Loranthaceae	361
Plants not parasitic		
361. Leaves fleshy	18. Aizoaceae	362
Leaves not fleshy		
362. Leaves palmate	108. Araliaceae	363
Leaves simple		364
363. (a) Style and stigma 1; stamens more than 10		
(b) Stigma sessile; stamens less than 10	104. Combretaceae	
(c) Style 1 with 2 stigmas; stamens usually 6, epipetalous	107. Alangiaceae	
(d) Styles or stigmas 3-5; stamens 6-many, epipetalous, staminodes absent	92. Flacourtiaceae	
(e) Stigmas numerous, sessile; stamens more than 10 with many staminodes	29. Eupomatiaceae	
364. Leaves gland-dotted	99. Myrtaceae	
Leaves not gland-dotted	100. Punicaceae	
365. Leaves fleshy; stigmas 5	18. Aizoaceae	366
Leaves not fleshy; stigmas 1-2		
366. Corolla absent	99. Myrtaceae	367
Corolla present		
367. Leaves with 5-7 conspicuous longitudinal veins	102. Melastomataceae	368
Leaves with midrib as only conspicuous longitudinal vein		
368. Calyx and corolla segments numerous	103. Rhizophoraceae	369
Calyx and corolla segments each less than 10		
369. Stamens more than 20		370
Stamens less than 20		371
370. Leaves gland-dotted	99. Myrtaceae	
Leaves not gland-dotted	100. Punicaceae	
371. Ovary 1-locular, with <i>ca</i> 10 ovules	104. Combretaceae	372
Ovary 2-5-locular, with 1-2 ovules per loculus		
372. Mangroves	103. Rhizophoraceae	
Not mangroves	99. Myrtaceae	
373. Flowers unisexual		374
Flowers bisexual		385
374. Leaves opposite		375
Leaves alternate		377
375. Ovary inferior	127. Rubiaceae	376
Ovary superior		
376. (a) Gynoecium of 8 or more carpels	31. Monimiaceae	
(b) Gynoecium of 4 segments	135. Lamiaceae	
(c) Gynoecium 1-locular	17. Nyctaginaceae	
377. Perianth in 1 series		378
Perianth in 2 series		379
378. Fruits indehiscent anthocarps	17. Nyctaginaceae	
Fruits not as above, usually with 2 hard, laterally flattened, 1-seeded pyrenes	108. Araliaceae	
379. Calyx and corolla segments each 4		380
Calyx and corolla segments each 5 or more		381
380. Climbers	36. Menispermaceae	
Non-climbers	116. Ebenaceae	
381. Ovary superior		382
Ovary inferior		384

382. Perianth in 1 series of <i>ca</i> 8 unequal lobes	69. Euphorbiaceae	383
Perianth in 2 series		
383. Stamens 5 in male flowers	9. Olacaceae	
Stamens <i>ca</i> 10 in male flowers	116. Ebenaceae	
384. Plants with tendrils, climbers or prostrate, or if without tendrils then fruits more than 3 cm long	97. Cucurbitaceae	
Plants without tendrils, usually erect; fruits less than 2 cm long	151. Campanulaceae	
385. Ovary superior		386
Ovary inferior or half inferior		531
386. (a) Stamens 2		387
(b) Stamens 4		404
(c) Stamens 5		454
(d) Stamens more than 5		516
387. Ovary divided into free or nearly free segments	135. Lamiaceae	
Ovary entire or slightly lobed		388
388. Flowers actinomorphic		389
Flowers zygomorphic		394
389. Leaves compound	117. Oleaceae	
Leaves simple or absent		390
390. Corolla lobes 4 or more than 5		391
Corolla lobes 5		392
391. Trees or shrubs	117. Oleaceae	
Erect herbs	135. Lamiaceae	
392. (a) Herbs	137. Scrophulariaceae	
(b) Shrubs or undershrubs		393
(c) Climbers	117. Oleaceae	
393. (a) Flowers in long spikes, terminal on branches	131. Verbenaceae	
(b) Flowers not in spikes; style minutely notched at top	117. Oleaceae	
(c) Flowers not in spikes; styles deeply divided into 2 branches	131. Verbenaceae	
394. Bracteoles large, \pm covering calyx	140. Acanthaceae	
Bracteoles small or absent		395
395. Calyx divided into 2 lobes or segments		396
Calyx divided into more than 2 lobes or segments		397
396. Herbs or shrubs with opposite leaves	131. Verbenaceae	
Herbs with alternate or radical leaves, or leaves absent; aquatic or marsh plants	143. Lentibulariaceae	
397. Leaves radical or alternate		398
Leaves opposite or whorled		399
398. Ovary 1-locular	146. Gesneriaceae	
Ovary 2-locular	136. Solanaceae	
399. Leaves with viscid hairs	141. Martyniaceae	
Leaves glabrous, or hairs if present not viscid		400
400. Calyx segments 4		401
Calyx segments 5		402
401. Corolla lobes 4, often indistinct, or corolla 2-lipped	137. Scrophulariaceae	
Corolla lobes 5	131. Verbenaceae	
402. (a) Ovary 1-locular	146. Gesneriaceae	
(b) Ovary 2-locular		403
(c) Ovary 4-locular	135. Lamiaceae	
403. Herbs, usually annual	137. Scrophulariaceae	
Shrubs or small trees	140. Acanthaceae	
404. Gynoecium apocarpous		405
Gynoecium syncarpous or carpel 1		407
405. Styles several, 1 per carpel	31. Monimiaceae	
Style 1, with 1 or 2 stigmas		406
406. Style arising from base of ovary	135. Lamiaceae	
Style terminal	131. Verbenaceae	
407. Flowers actinomorphic or nearly so		408
Flowers zygomorphic		438

408. Leaves alternate or radical or absent		409
Leaves opposite or whorled		420
409. Leaves alternate		410
Leaves radical or absent		418
410. Leaves 2-pinnate	61. Mimosaceae	
Leaves not 2-pinnate		411
411. (a) Corolla lobes 3	77. Polygalaceae	
(b) Corolla lobes 4		412
(c) Corolla lobes 5		415
412. Stamens alternating with corolla lobes		413
Stamens opposite corolla lobes		414
413. (a) Twining land plants	83. Icacinaceae	
(b) Prostrate land annuals	130. Ehretiaceae	
(c) Marsh or aquatic herbs	123. Menyanthaceae	
(d) Erect herbs, shrubs or small trees	136. Solanaceae	
414. Ovary 1-locular with several ovules	111. Myrsinaceae	
Ovary 2-locular, with 1 ovule per loculus	115. Sapotaceae	
415. Leaves with viscid hairs	141. Martyniaceae	
Leaves glabrous, or hairs if present not viscid		416
416. Anthers connivent in a cone around the style	136. Solanaceae	
Anthers not connivent		417
417. Fruits berries or capsules	136. Solanaceae	
Fruits drupes	144. Myoporaceae	
418. Leaves absent	128. Convolvulaceae	
Leaves radical		419
419. Calyx segments 4	148. Plantaginaceae	
Calyx segments 5	140. Acanthaceae	
420. Ovary divided into separate (usually 4) segments		421
Ovary entire or lobed		422
421. Style arising from base of ovary	135. Lamiaceae	
Style terminal	131. Verbenaceae	
422. Calyx lobes 4		423
Calyx lobes 5 or more, or calyx 2-lipped or truncate		431
423. (a) Ovary 1-locular		424
(b) Ovary 2-locular		425
(c) Ovary 4-locular	131. Verbenaceae	
424. Terrestrial plants; leaves opposite	122. Gentianaceae	
Aquatic or marsh plants; leaves radical or alternate, sometimes floating	123. Menyanthaceae	
425. Shrubs or trees		426
Herbs		428
426. Fruits succulent	131. Verbenaceae	
Fruits dry		427
427. Indumentum glandular, stellate or lepidote	119. Buddlejaceae	
Indumentum, if present, not as above	118. Loganiaceae	
428. Leaves usually in whorls of 3	137. Scrophulariaceae	
Leaves opposite		429
429. Ovary half inferior	127. Rubiaceae	
Ovary superior		430
430. Ovules 1-2 per loculus	131. Verbenaceae	
Ovules several per loculus	121. Spigeliaceae	
431. Leaves compound		432
Leaves simple or absent		433
432. Corolla with 4 lobes	131. Verbenaceae	
Corolla with 5 lobes	138. Bignoniaceae	
433. Bracteoles large and \pm enclosing the calyx		434
Bracteoles absent or not covering the calyx		435
434. Climbing plants	139. Thunbergiaceae	
Plants not climbing, usually herbaceous	140. Acanthaceae	

435. Placentas parietal 146. Gesneriaceae
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436. (a) Ovary 2-locular, with several ovules; herbs or shrubs 137. Scrophulariaceae
 (b) Ovary 2-locular, with numerous ovules; trees 138. Bignoniaceae
 (c) Ovary 2- or 4-locular, with 1 ovule per loculus 437
437. Plants mangroves 132. Avicenniaceae
 Plants not mangroves 131. Verbenaceae
438. (a) Leaves opposite, rarely absent, simple or of 3-5 leaflets; ovary
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 (b) Leaves mostly in whorls of 3, simple or pinnate; ovary 2-locular
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 (c) Upper leaves simple, lower leaves compound 147. Pedaliaceae
 (d) Leaves all simple, rarely absent; ovary 1-8-locular but if 2-locular
 then several ovules per loculus 440
 (e) Leaves all compound 452
439. Seeds with endosperm; plants usually densely woolly pubescent; rarely
 leafless 133. Chloanthaceae
 Seeds without endosperm; plants usually not as above; leafy 131. Verbenaceae
440. (a) Leaves absent 142. Orobanchaceae
 (b) Leaves radical 137. Scrophulariaceae
 (c) Upper leaves alternate, lower leaves opposite; ovary 2-locular 137. Scrophulariaceae
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 (e) Leaves all alternate 441
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441. Corolla lobes 3 77. Polygalaceae
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442. Ovary 4-locular 144. Myoporaceae
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443. Herbs, occasionally shrubs, sometimes climbing; fruits capsules or
 berries 137. Scrophulariaceae
 Shrubs or small trees; fruits drupes 144. Myoporaceae
444. Ovary divided into 4 nearly separate segments 135. Lamiaceae
 Ovary simple or lobed 445
445. (a) Ovary 1-locular 446
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452. Climbers usually woody 138. Bignoniaceae
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453. Fifth stamen represented by a staminode 138. Bignoniaceae
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454. Latex present 455
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455. (a) Leaves absent 125. Asclepiadaceae
 (b) Leaves alternate 456
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456. Twiners 128. Convolvulaceae
 Non-twiners 457

457. Flowers zygomorphic	151. Campanulaceae	458
Flowers actinomorphic		
458. Anthers united around or above stigma	124. Apocynaceae	459
Anthers free		
459. Stamens opposite corolla lobes	115. Sapotaceae	460
Stamens alternating with corolla lobes		
460. Herbs or climbers	128. Convolvulaceae	
Shrubs or trees	124. Apocynaceae	
461. Staminal filaments united	125. Asclepiadaceae	462
Staminal filaments free		
462. Staminal filaments with coronal appendages	126. Periplocaceae	
Staminal filaments without coronal appendages	124. Apocynaceae	
463. Gynoecium apocarpous or divided into 2 or more free segments		464
Gynoecium syncarpous, ovary entire or lobed, or carpel 1		468
464. (a) Leaves absent	125. Asclepiadaceae	
(b) Leaves alternate		465
(c) Leaves opposite or whorled		467
465. Inflorescences of boragoid type	129. Boraginaceae	466
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466. Slender creeping perennials, rooting at nodes	128. Convolvulaceae	
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467. Perianth segments 10 or fewer	124. Apocynaceae	
Perianth segments <i>ca</i> 15	31. Monimiaceae	
468. (a) Leaves absent	128. Convolvulaceae	469
(b) Leaves whorled		470
(c) Leaves opposite		483
(d) Leaves alternate or radical		
469. Shrubs or trees	124. Apocynaceae	
Floating herbs	47. Droseraceae	
470. Flowers actinomorphic		471
Flowers zygomorphic		481
471. Leaves compound	138. Bignoniaceae	472
Leaves simple		
472. (a) Style 1, apex divided into many minute stigmatic branches	17. Nyctaginaceae	473
(b) Style 1, with 1 or 2 stigmas		
(c) Styles or style branches 5	113. Plumbaginaceae	
473. Inflorescences of boragoid type	129. Boraginaceae	474
Inflorescences not of boragoid type		
474. (a) Anthers cohering; small herbs	22. Caryophyllaceae	
(b) Anthers united in cone around or above stigma; shrubs, sometimes twining, or trees	124. Apocynaceae	475
(c) Anthers quite free		
475. Stamens opposite corolla lobes	112. Primulaceae	476
Stamens alternating with corolla lobes		
476. Ovary 1-locular		477
Ovary 2- or 4-locular		478
477. Stipules absent	122. Gentianaceae	
Stipules present	22. Caryophyllaceae	
478. Plants densely covered with cottony or woolly hairs	133. Chloanthaceae	479
Not as above		
479. Leaves all opposite		480
Leaves in non-flowering parts alternate, exstipulate	136. Solanaceae	
480. Fruits succulent, indehiscent	120. Strychnaceae	
Fruits dry, dehiscent	118. Loganiaceae	
481. Leaves compound	138. Bignoniaceae	482
Leaves simple		
482. Ovary 4-, occasionally 2-locular	131. Verbenaceae	
Ovary 1-locular	141. Martyniaceae	

483. Corolla segments 3	77. Polygalaceae	
Corolla segments 4 or more		484
484. Style with indusium		485
Style without indusium		486
485. Corolla actinomorphic or nearly so	153. Brunoniaceae	
Corolla zygomorphic, usually split down one side	152. Goodeniaceae	
486. Flowers zygomorphic	136. Solanaceae	487
Flowers actinomorphic		488
487. (a) Stamens hypogynous		
(b) Stamens hypogynous but usually detached with corolla	58. Pittosporaceae	
(c) Stamens distinctly epipetalous, though sometimes near the base of corolla tube		494
488. Stigmas 4 or 5	113. Plumbaginaceae	489
Stigmas 1-3		
489. Stamens opposite corolla lobes		490
Stamens alternating with corolla lobes		491
490. Ovary 1-locular	111. Myrsinaceae	
Ovary 2- or more-locular	115. Sapotaceae	
491. Herbs, not climbers	82. Stackhousiaceae	492
Trees, shrubs, climbers or twiners		
492. Calyx covered at base with usually numerous imbricate sepaloïd bracteoles	110. Epacridaceae	493
Bracteoles absent or not covering base of calyx		
493. Anthers versatile; ovules 1 or 2 in ovary	9. Olacaceae	
Anthers not versatile; ovules more than 2 in ovary	58. Pittosporaceae	
494. Inflorescences of boragoid type		495
Inflorescences not of boragoid type		496
495. Style 1, with 1 or more stigmas	129. Boraginaceae	
Styles 2, free	145. Hydrophyllaceae	
496. (a) Style 1, with 1 or 2 stigmas, or stigma sessile		497
(b) Style 1, with 4 stigmas		512
(c) Style 1, with 5 stigmas or styles 5	113. Plumbaginaceae	
(d) Style 1, with 6-8 stigmas	128. Convolvulaceae	
(e) Styles 2, free		513
497. Stamens opposite corolla lobes		498
Stamens alternating with corolla lobes		500
498. Herbs	112. Primulaceae	
Shrubs or trees		499
499. Ovary 1-locular	111. Myrsinaceae	
Ovary 2- or more-locular	115. Sapotaceae	
500. Leaves simple		501
Leaves compound		511
501. Herbs growing in marshes or the leaves often floating in water	123. Menyanthaceae	
Shrubs, trees or climbers or non-aquatic herbs		502
502. Base of calyx ± covered by bracts and bracteoles	110. Epacridaceae	
Bracteoles absent or not covering base of calyx		503
503. Climbers, twiners or prostrate plants		504
Plants ± erect		505
504. Anthers united around style	136. Solanaceae	
Anthers not united	128. Convolvulaceae	
505. Herbs, often coarse		506
Trees or shrubs		508
506. Ovules 1 per loculus	129. Boraginaceae	
Ovules 2 or more per loculus		507
507. Anthers 2-locular	136. Solanaceae	
Anthers 1-locular	137. Scrophulariaceae	

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| 508. (a) Ovary 1-locular | 9. Olacaceae | 509 |
| (b) Ovary 2-locular | | |
| (c) Ovary 4-locular | | 510 |
| (d) Ovary usually 5-locular | 110. Epacridaceae | |
| 509. (a) Ovules 1 per loculus | 144. Myoporaceae | |
| (b) Ovules 2 per loculus | 129. Boraginaceae | |
| (c) Ovules more than 2 per loculus | 136. Solanaceae | |
| 510. Ovules 1-2 per loculus | 130. Ehretiaceae | |
| Ovules more than 2 per loculus | 136. Solanaceae | |
| 511. Leaves palmate or pinnate; fruits dry capsules | 128. Convolvulaceae | |
| Leaves pinnate; fruits fleshy berries | 136. Solanaceae | |
| 512. Usually annuals with slender creeping or trailing stems | 128. Convolvulaceae | |
| Tall shrubs or trees | 130. Ehretiaceae | |
| 513. Styles 2-fid | 128. Convolvulaceae | |
| Styles entire | | 514 |
| 514. Ovary with numerous ovules per loculus | 145. Hydrophyllaceae | |
| Ovary with 1-2 ovules per loculus | | 515 |
| 515. Creepers or twiners or small shrubs | 128. Convolvulaceae | |
| Tall shrubs or trees | 130. Ehretiaceae | |
| 516. Latex present | 115. Sapotaceae | |
| Latex absent | | 517 |
| 517. Leaves simple | | 518 |
| Leaves compound | | 527 |
| 518. Gynoecium apocarpous | | 519 |
| Gynoecium syncarpous or carpel 1 | | 521 |
| 519. Style 1 | 70. Rutaceae | |
| Styles as many as carpels | | 520 |
| 520. Herbs, mostly succulent | 54. Crassulaceae | |
| Trees or shrubs | 32. Atherospermataceae | |
| 521. Perfect stamens alternating with staminodes, though staminodes some-
times scale-like | 115. Sapotaceae | |
| Stamens all perfect | | 522 |
| 522. Stamens more than 10 | 61. Mimosaceae | |
| Stamens 10 or fewer | | 523 |
| 523. Style 1, apex divided into many minute stigmatic branches | 17. Nyctaginaceae | |
| Styles or stigmas 5 or fewer, or if style 1 then stigma single or 2-lobed | | 524 |
| 524. Stamens united | 77. Polygalaceae | |
| Stamens free | | 525 |
| 525. Style and stigma 1 | 136. Solanaceae | |
| Styles or stigmas 2 or more | | 526 |
| 526. Marsh or aquatic herbs | 123. Menyanthaceae | |
| Land shrubs or trees | 116. Ebenaceae | |
| 527. Leaves 2-pinnate | | 528 |
| Leaves 1-pinnate or 3-foliolate | | 529 |
| 528. Petals valvate or rarely imbricate; flowers actinomorphic | 61. Mimosaceae | |
| Petals imbricate in bud, uppermost petal overlapped on each side by
lateral petals; flowers \pm zygomorphic | 62. Caesalpinaceae | |
| 529. (a) Gynoecium apocarpous with 4 or 5 carpels | 54. Crassulaceae | |
| (b) Gynoecium syncarpous with 3-5 styles | 63. Oxalidaceae | |
| (c) Gynoecium 1-locular, style and stigma 1 | | 530 |
| 530. Petals valvate or rarely imbricate; flowers actinomorphic | 61. Mimosaceae | |
| Petals imbricate in bud, uppermost petal overlapped on each side by
lateral petals; flowers \pm zygomorphic | 62. Caesalpinaceae | |
| 531. Leaves opposite or whorled | | 532 |
| Leaves alternate, radical or absent | | 545 |
| 532. (a) Corolla absent; mangroves | 99. Myrtaceae | |
| (b) Corolla segments 4 | | 533 |
| (c) Corolla segments 5 | | 536 |
| (d) Corolla segments more than 5 | | 543 |

533. Leaves compound	150. Sambucaceae	
Leaves simple		534
534. Stamens epipetalous	127. Rubiaceae	
Stamens epigynous		535
535. Ovary 1-locular	56. Escalloniaceae	
Ovary 2-5-locular	151. Campanulaceae	
536. Stamens 4		537
Stamens 5		538
537. Herbs	146. Gesneriaceae	
Shrubs	150. Sambucaceae	
538. Parasitic shrubs (mistletoes)	11. Loranthaceae	
Plants not parasitic		539
539. Stamens epipetalous		540
Stamens epigynous		542
540. Flowers zygomorphic	149. Caprifoliaceae	
Flowers actinomorphic		541
541. Leaves stipulate	127. Rubiaceae	
Leaves exstipulate	150. Sambucaceae	
542. Style with indusium	152. Goodeniaceae	
Style without indusium	151. Campanulaceae	
543. Styles or stigmas 3 or 5	127. Rubiaceae	
Style 1, stigmas 1 or 2		544
544. Parasitic shrubs (mistletoes)	11. Loranthaceae	
Plants not parasitic	127. Rubiaceae	
545. Parasitic shrubs (mistletoes)	11. Loranthaceae	
Plants not parasitic		546
546. (a) Stamens 2	154. Stylidiaceae	
(b) Stamens 3	97. Cucurbitaceae	
(c) Stamens 4		547
(d) Stamens 5		548
(e) Stamens more than 5		555
547. Marsh or aquatic herbs	123. Menyanthaceae	
Land plants	151. Campanulaceae	
548. Style expanded into indusium	152. Goodeniaceae	
Style without indusium		549
549. Flowers zygomorphic	151. Campanulaceae	
Flowers actinomorphic		550
550. Prostrate plants or climbers; tendrils present	97. Cucurbitaceae	
Non-climbers; tendrils absent		551
551. Stamens alternating with corolla lobes		552
Stamens opposite corolla lobes		553
552. Marsh or aquatic herbs	123. Menyanthaceae	
Land plants	151. Campanulaceae	
553. Herbs	112. Primulaceae	
Trees or climbers		554
554. Style with 1 stigma	111. Myrsinaceae	
Style with 2 stigmas	107. Alangiaceae	
555. Marsh or aquatic plants	123. Menyanthaceae	
Land plants		556
556. Stamens 6	107. Alangiaceae	
Stamens numerous		557
557. Leaves persistent	114. Symplocaceae	
Leaves, if present, deciduous	25. Cactaceae	
558. Flowers unisexual		559
Flowers mostly bisexual		642
559. Leaves or scales in whorls of 3 or more		560
Leaves or scales alternate, opposite or absent		562

560. Shrubs or trees	1. Casuarinaceae	
Aquatic herbs		561
561. Ovary inferior	106. Haloragaceae	
Ovary superior	40. Ceratophyllaceae	
562. Latex present		563
Latex absent		565
563. Male and female flowers inside pear-shaped common receptacle which opens by narrow aperture at top (figs)	5. Moraceae	
Not as above		564
564. Ovary 1-locular	5. Moraceae	
Ovary 2- or more-locular	69. Euphorbiaceae	
565. (a) Perianth segments 2		566
(b) Perianth segments 3		570
(c) Perianth segments 4		577
(d) Perianth segments 5 or more, sometimes only obscurely lobed or perianth truncate		601
566. Ovary inferior	155. Asteraceae	
Ovary superior		567
567. Climbers	36. Menispermaceae	
Non-climbers		568
568. Ovary 2-3-locular, styles 2 or 3	69. Euphorbiaceae	
Ovary 1-locular, styles 2		569
569. Leaves stipulate	7. Urticaceae	
Leaves exstipulate	23. Chenopodiaceae	
570. Ovary inferior; parasitic shrubs (mistletoes)	12. Viscaceae	
Ovary superior		571
571. Succulent root parasites, without chlorophyll, 5-10 cm tall with scale- like leaves	13. Balanophoraceae	
Herbs, shrubs or trees, with chlorophyll		572
572. (a) Style or stigma 1		573
(b) Styles or style-branches 2 or more		574
(c) Stigma consisting of a number of hair-like branches	7. Urticaceae	
573. Leaves simple	10. Santalaceae	
Leaves compound	79. Sapindaceae	
574. Ovary 2-3-locular	69. Euphorbiaceae	
Ovary 1-locular, with 1 ovule		575
575. Leaves stipulate	24. Amaranthaceae	
Leaves exstipulate		576
576. Filaments free, staminodes very rare	23. Chenopodiaceae	
Filaments basally united, often with staminodes between them	24. Amaranthaceae	
577. (a) Succulent root parasites without chlorophyll	13. Balanophoraceae	
(b) Shrubs parasitic on stems, with chlorophyll (mistletoes)	12. Viscaceae	
(c) Plants not parasitic		578
578. Ovary superior		579
Ovary inferior		599
579. Gynoecium apocarpous		580
Gynoecium syncarpous or carpel 1		584
580. Styles 4, connate	89. Sterculiaceae	
Styles free		581
581. Leaves alternate		582
Leaves opposite		583
582. Climbers	36. Menispermaceae	
Non-climbers	15. Phytolaccaceae	
583. Leaves simple	31. Monimiaceae	
Leaves compound	35. Ranunculaceae	
584. (a) Style 1		585
(b) Styles 2		597
(c) Styles 3 or 4		598
(d) Styles or stigmas appearing as tufts of hairs	7. Urticaceae	

585. Leaves simple or absent		586
Leaves compound		596
586. Leaves opposite	7. Urticaceae	
Leaves alternate or leaves absent		587
587. Leaves with stinging hairs	7. Urticaceae	
Leaves without stinging hairs or leaves absent		588
588. (a) Stamens 2 in male flowers	90. Thymelaeaceae	
(b) Stamens usually 4 in male flowers		589
(c) Stamens 6 in male flowers; stipules absent	33. Lauraceae	
(d) Stamens 5-9; stipules present	69. Euphorbiaceae	
(e) Stamens 10 or more in male flowers		593
589. Flowers in clusters surrounded by an involucre of bracts	33. Lauraceae	
Flowers not in clusters surrounded by bracts		590
590. Leaves absent at time of flowering	10. Santalaceae	
Leaves present at time of flowering		591
591. Leaves exstipulate	15. Phytolaccaceae	
Leaves stipulate		592
592. Fruits densely crowded into a syncarp	5. Moraceae	
Fruits separate	7. Urticaceae	
593. Stamens in male flowers united	89. Sterculiaceae	
Stamens in male flowers not united		594
594. Ovary with hooked hairs	15. Phytolaccaceae	
Ovary without hooked hairs		595
595. (a) Fruits winged capsules	79. Sapindaceae	
(b) Fruits dry berries	92. Flacourtiaceae	
(c) Fruits succulent drupes	69. Euphorbiaceae	
596. Leaves stipulate	59. Rosaceae	
Leaves exstipulate	79. Sapindaceae	
597. Flowers cymose or solitary	4. Ulmaceae	
Flowers in spikes or heads	5. Moraceae	
598. Perianth 1-seriate, sepaloid; fruits drupes	84. Rhamnaceae	
Perianth 2-seriate, inner petaloid or fruits capsules	69. Euphorbiaceae	
599. Shrubs or trees	3. Fagaceae	
Herbs		600
600. Flowers in heads often resembling single flowers	155. Asteraceae	
Flowers not in heads	106. Haloragaceae	
601. Succulent root parasites, without chlorophyll	13. Balanophoraceae	
Not succulent root parasites, with chlorophyll		602
602. Ovary superior		603
Ovary inferior		640
603. Gynoecium apocarpous		604
Gynoecium syncarpous or carpel 1		609
604. Leaves opposite	31. Monimiaceae	
Leaves alternate		605
605. Perianth segments 6	36. Menispermaceae	
Perianth segments 5		606
606. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted		607
607. Leaves compound or palmately lobed or veined	89. Sterculiaceae	
Leaves simple, pinnately veined		608
608. Plants glabrous or hairs simple	15. Phytolaccaceae	
Leaves and/or flowers with stellate hairs	89. Sterculiaceae	
609. Leaves alternate, radical or absent		610
Leaves opposite		635
610. Climbers		611
Non-climbers		615
611. Styles 3, free		612
Styles connate or style 1		613

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| 612. Fruits berries | 24. Amaranthaceae |
| Fruits nuts | 14. Polygonaceae |
| 613. Plants monoecious | 69. Euphorbiaceae |
| Plants dioecious | 614 |
| 614. (a) Fruits nuts | 14. Polygonaceae |
| (b) Fruits drupes | 36. Menispermaceae |
| (c) Fruits anthocarps | 17. Nyctaginaceae |
| 615. Perianth segments 5 or perianth truncate | 616 |
| Perianth segments 6 | 630 |
| 616. Leaves simple or absent | 617 |
| Leaves compound | 628 |
| 617. (a) Style and stigma 1 | 618 |
| (b) Styles or stigmas 2-4 | 621 |
| (c) Styles or stigmas 8 or more | 627 |
| (d) Style 1, stigmas penicillate | 7. Urticaceae |
| 618. Ovary 1-locular, usually with 1 ovule | 619 |
| Ovary 2- or more-locular, with 2 ovules per loculus | 79. Sapindaceae |
| 619. Plants with leaves usually reduced to minute alternate scales; fruit on succulent pedicels | 10. Santalaceae |
| Plants with leaves; fruit not on succulent pedicels | 620 |
| 620. Leaves with domatia on undersurface | 83. Icacinaceae |
| Leaves without domatia | 69. Euphorbiaceae |
| 621. Herbs | 622 |
| Shrubs or trees | 624 |
| 622. (a) Styles entire, ovary 1-locular | 24. Amaranthaceae |
| (b) Styles entire, ovary 2-3-locular | 69. Euphorbiaceae |
| (c) Styles divided | 623 |
| 623. Fruits achenes | 6. Cannabaceae |
| Fruits capsules or drupes | 69. Euphorbiaceae |
| 624. Ovary 2-4-locular | 69. Euphorbiaceae |
| Ovary 1-locular with 1 ovule | 625 |
| 625. Styles or stigmas 3 | 14. Polygonaceae |
| Styles or stigmas 2 | 626 |
| 626. Leaves stipulate | 4. Ulmaceae |
| Leaves exstipulate | 23. Chenopodiaceae |
| 627. Fruits indehiscent, fleshy or drupe-like | 15. Phytolaccaeae |
| Fruits dehiscent, dry | 16. Gyrostemonaceae |
| 628. Herbs | 59. Rosaceae |
| Shrubs or trees | 629 |
| 629. Leaves 3-foliolate | 69. Euphorbiaceae |
| Leaves pinnate | 79. Sapindaceae |
| 630. Slender creeping perennials or herbs | 14. Polygonaceae |
| Shrubs or trees | 631 |
| 631. Perianth in 1 series | 632 |
| Perianth in 2 series | 634 |
| 632. Style 1 | 633 |
| Styles 3 | 69. Euphorbiaceae |
| 633. Flowers in clusters, surrounded by involucre of bracts | 33. Lauraceae |
| Flowers not in clusters surrounded by bracts | 79. Sapindaceae |
| 634. (a) Perianth segments free | 69. Euphorbiaceae |
| (b) Outer perianth segments fused, inner free | 73. Burseraceae |
| (c) Outer and inner perianth segments fused | 116. Ebenaceae |
| 635. Styles 2 or more | 636 |
| Style 1, with 1 or 2 stigmas, or stigma sessile | 637 |
| 636. Leaves stipulate | 69. Euphorbiaceae |
| Leaves exstipulate | 23. Chenopodiaceae |
| 637. (a) Herbs, annual | 6. Cannabaceae |
| (b) Woody climbers | 638 |
| (c) Shrubs or trees | 639 |

638. Stigma sessile	30. Trimeniaceae	
Stigma on slender style	17. Nyctaginaceae	
639. Stamens 2 in male flowers	117. Oleaceae	
Stamens more than 2 in male flowers	30. Trimeniaceae	
640. (a) Style and stigma 1, or stigma sessile	104. Combretaceae	
(b) Styles or stigmas 2		641
(c) Styles or stigmas 3-6	3. Fagaceae	
641. Flowers in heads	155. Asteraceae	
Flowers in umbels	109. Apiaceae	
642. Latex present		643
Latex absent		647
643. (a) Flowers in heads surrounded by cup-shaped involucre, heads resembling simple flowers; perianth absent except sometimes for petal-like appendages to glands on edge of involucre	69. Euphorbiaceae	
(b) Flowers in heads surrounded by an involucre of bracts, heads often resembling simple flowers; each floret with a perianth of 4 or 5 united parts	155. Asteraceae	644
(c) Flowers not in heads with an involucre		645
644. Perianth in 1 series of 4 or 5 segments		646
Perianth in 2 series		646
645. Stamens 4; trees	5. Moraceae	
Stamens numerous; herbs	48. Papaveraceae	
646. Ovary superior	48. Papaveraceae	
Ovary inferior	127. Rubiaceae	
647. (a) Ovary half inferior		648
(b) Ovary superior		651
(c) Ovary inferior		788
648. Fleshy herbs		649
Shrubs or trees		650
649. Leaves alternate, exstipulate	19. Tetragoniaceae	
Leaves alternate, with stipular hairs, or leaves opposite	20. Portulacaceae	
650. Leaves simple, entire	10. Santalaceae	
Leaves compound, or if simple then serrate or undulate	57. Cunoniaceae	
651. Gynoecium apocarpous		652
Gynoecium syncarpous or carpel 1		670
652. (a) Perianth segments 2-3	27. Winteraceae	
(b) Perianth segments 4		653
(c) Perianth segments 5		660
(d) Perianth segments 6		665
653. Climbers	35. Ranunculaceae	
Non-climbers		654
654. Herbs		655
Shrubs or trees		656
655. Leaves radical	35. Ranunculaceae	
Leaves alternate	15. Phytolaccaceae	
656. Leaves alternate		657
Leaves opposite		659
657. Leaves gland-dotted, glabrous	27. Winteraceae	
Leaves not gland-dotted		658
658. Leaves with stellate hairs or scales	89. Sterculiaceae	
Leaves without stellate hairs or scales	15. Phytolaccaceae	
659. Fruiting carpels enclosed by enlarged hypanthium which splits at maturity	32. Atherospermataceae	
Fruiting carpels not enclosed by hypanthium	70. Rutaceae	
660. Leaves gland-dotted		661
Leaves not gland-dotted, or leaves absent		663
661. Fruiting carpels enclosed by enlarged hypanthium which splits at maturity	32. Atherospermataceae	
Fruiting carpels not enclosed by hypanthium		662

662. Fruits berries	27. Winteraceae	
Fruits not berries	70. Rutaceae	
663. (a) Leaves radical	35. Ranunculaceae	
(b) Leaves opposite	57. Cunoniaceae	
(c) Leaves alternate or absent		664
664. Styles and stigmas free	15. Phytolaccaceae	
Style and stigma 1	89. Sterculiaceae	
665. (a) Leaves radical	35. Ranunculaceae	
(b) Leaves alternate		666
(c) Leaves opposite		669
666. (a) Aquatic herbs with peltate leaves	37. Cabombaceae	
(b) Woody climbers	36. Menispermaceae	
(c) Shrubs or trees, non-climbers		667
667. Styles or stigmas connate	89. Sterculiaceae	
Styles or stigmas free		668
668. Stamens 8	15. Phytolaccaceae	
Stamens more than 10	28. Annonaceae	
669. Anthers opening by longitudinal slits	31. Monimiaceae	
Anthers opening by valves from base upwards	32. Atherospermataceae	
670. (a) Perianth segments 1	22. Caryophyllaceae	
(b) Perianth segments 2		671
(c) Perianth segments 3		673
(d) Perianth segments 4		678
(e) Perianth segments 5		720
(f) Perianth segments 6		765
671. Stamens 5 or fewer	23. Chenopodiaceae	
Stamens more than 10		672
672. Herbs	48. Papaveraceae	
Shrubs	27. Winteraceae	
673. (a) Leaves absent	23. Chenopodiaceae	
(b) Leaves alternate		674
(c) Leaves opposite or whorled		677
674. Perianth segments valvate	23. Chenopodiaceae	
Perianth segments imbricate		675
675. Styles 2 or 3	24. Amaranthaceae	
Style 1		676
676. Herbs; fruits capsules	22. Caryophyllaceae	
Shrubs; fruits berries	27. Winteraceae	
677. Stigma 1	98. Lythraceae	
Stigmas 5	96. Elatinaceae	
678. Leaves alternate, radical or absent		679
Leaves opposite or whorled		709
679. Style and stigma 1		680
Styles and stigmas more than 1		703
680. (a) Stamens 2		681
(b) Stamens 3 + 1 staminode	8. Proteaceae	
(c) Stamens 4		685
(d) Stamens 5	89. Sterculiaceae	
(e) Stamens 6	33. Lauraceae	
(f) Stamens more than 6		695
681. Leaves simple or absent		682
Leaves compound		684
682. Leaves radical or absent	143. Lentibulariaceae	
Leaves alternate		683
683. Herbs; perianth segments free	52. Brassicaceae	
Shrubs; perianth segments fused at least at base	90. Thymelaeaceae	
684. Floating aquatics	143. Lentibulariaceae	
Rooted land plants	59. Rosaceae	
685. Plants, usually climbers, with leaf-opposed tendrils	85. Vitaceae	
Plants without tendrils		686

686. Leaves compound		687
Leaves simple		688
687. Stamens attached to perianth segments	8. Proteaceae	
Stamens not as above	62. Caesalpiniaceae	
688. Leaves with stinging hairs	7. Urticaceae	
Leaves without stinging hairs		689
689. Stamens attached to perianth segments		690
Stamens hypogynous or at base of perianth		691
690. Stamens opposite perianth segments and often sessile on them	8. Proteaceae	
Stamens alternating with perianth segments	91. Elaeagnaceae	
691. Flowers in axillary spikes		692
Flowers not in axillary spikes		693
692. Leaves glabrous or with scattered hairs	10. Santalaceae	
Underside of leaves white with close-set hairs	7. Urticaceae	
693. Perianth petaloid	15. Phytolaccaceae	
Perianth sepaloid		694
694. Flowers without bracts, in terminal racemes	52. Brassicaceae	
Flowers with bracts, in clusters, cymes or heads	7. Urticaceae	
695. Leaves simple		696
Leaves compound		702
696. Herbs		697
Shrubs or trees		698
697. Ovules several per loculus	48. Papaveraceae	
Ovules 1 per loculus	15. Phytolaccaceae	
698. Stamens 10 or fewer		699
Stamens numerous		700
699. Stamens united into a tube	89. Sterculiaceae	
Stamens attached to perianth but free from one another	90. Thymelaeaceae	
700. Leaves gland-dotted	27. Winteraceae	
Leaves not gland-dotted		701
701. Anthers dehiscing by means of longitudinal slits	87. Tiliaceae	
Anthers dehiscing by means of apical pores	86. Elaeocarpaceae	
702. Shrubs or trees	62. Caesalpiniaceae	
Herbs	59. Rosaceae	
703. (a) Stamens 2; herbs, aquatic or growing in wet places; leaves radical, floating or absent	143. Lentibulariaceae	
(b) Stamens 3 or 4, if 2 then plants not as in (a)		704
(c) Stamens 5-10		706
(d) Stamens more than 10		708
704. Leaves with ochreae	14. Polygonaceae	
Leaves without ochreae		705
705. Herbs or shrubs; leaves covered with mealy scales	23. Chenopodiaceae	
Trees	4. Ulmaceae	
706. Style 1, with usually 2 stigmas	79. Sapindaceae	
Styles more than 1		707
707. Fruits berries	15. Phytolaccaceae	
Fruits nuts	14. Polygonaceae	
708. Herbs	48. Papaveraceae	
Trees	89. Sterculiaceae	
709. Style and stigma 1		710
Styles or stigmas more than 1		716
710. (a) Stamens 2		711
(b) Stamens 3		
(c) Stamens 4	98. Lythraceae	
(d) Stamens 5		713
(e) Stamens 8	98. Lythraceae	
	90. Thymelaeaceae	
711. Stamens hypogynous, united into cup at base	24. Amaranthaceae	
Stamens epipetalous, or on calyx tube		712

712. Annual herbs, frequently in moist situations	98. Lythraceae	
Small shrubs	90. Thymelaeaceae	
713. Leaves with stinging hairs	7. Urticaceae	714
Leaves without stinging hairs		
714. (a) Stamens hypogynous, or at base of perianth segments		715
(b) Stamens attached to perianth; shrubs or trees	8. Proteaceae	
(c) Stamens attached to perianth; herbs	98. Lythraceae	
715. Herbs	24. Amaranthaceae	
Shrubs or trees	10. Santalaceae	
716. (a) Stamen 1	22. Caryophyllaceae	
(b) Stamens 4		717
(c) Stamens more than 4		718
717. Stamens opposite perianth lobes	10. Santalaceae	
Stamens alternating with perianth lobes	22. Caryophyllaceae	
718. Styles 2, rarely 3	57. Cunoniaceae	
Styles 4		719
719. Stamens 8	57. Cunoniaceae	
Stamens more than 10	18. Aizoaceae	
720. Leaves alternate, radical or absent		721
Leaves opposite or whorled		753
721. Stamens 5 or fewer		722
Stamens more than 5		739
722. Style and stigma 1		723
Styles or stigmas more than 1		730
723. Climbers with leaf-opposed tendrils	85. Vitaceae	
Non-climbers or climbers without leaf-opposed tendrils		724
724. Leaves compound	62. Caesalpiniaceae	
Leaves simple or absent		725
725. Flowers in clusters of 2-4, surrounded by conspicuous coloured bracts	17. Nyctaginaceae	
Not as above		726
726. (a) Stamens 2 or 3, with or without anthers	24. Amaranthaceae	
(b) Perfect stamens 3, staminodes 5	9. Olacaceae	
(c) Perfect stamens 5		727
727. Herbs or undershrubs	24. Amaranthaceae	
Shrubs or trees		728
728. Stamens opposite perianth segments	10. Santalaceae	
Stamens alternating with perianth segments		729
729. Petals present	83. Icacinaceae	
Petals absent	84. Rhamnaceae	
730. (a) Twiners; perianth segments free; styles 3	24. Amaranthaceae	
(b) Twiners; perianth segments united; style 1, with 2 short stigmas	84. Rhamnaceae	
(c) Climbers with axillary tendrils	94. Passifloraceae	
(d) Climbers or twiners; plants with ochreae	14. Polygonaceae	
(e) Non-climbers, non-twiners		731
731. Herbs		732
Shrubs or trees		735
732. Ovary 3-5-locular, with several ovules per loculus	18. Aizoaceae	
Ovary 1-locular, with 1-several ovules		733
733. Leaves with ochreae	14. Polygonaceae	
Leaves without ochreae		734
734. Flowers with 1 bract and usually 2 bracteoles; perianth dry and membranous	24. Amaranthaceae	
Flowers without bracts or bracteoles or if with 1 bract and 2 bracteoles then perianth succulent	23. Chenopodiaceae	
735. Stamens opposite perianth segments		736
Stamens alternating with perianth segments		738
736. Perianth segments free	4. Ulmaceae	
Perianth segments united		737

737. Flowers with 1 bract and usually 2 bracteoles	24. Amaranthaceae	
Flowers without bracts or bracteoles	23. Chenopodiaceae	
738. Stamens 5, staminodes 5; ovary 5-locular	89. Sterculiaceae	
Stamens 5, staminodes absent; ovary 2-locular	84. Rhamnaceae	
739. Leaves simple or absent		740
Leaves compound		751
740. Style 1, simple or branched with 2 or more stigmas		741
Styles 2 or more, free		749
741. Flowers in clusters of 3-5, surrounded by 3 large coloured bracteoles	17. Nyctaginaceae	
Flowers not surrounded by conspicuous bracteoles		742
742. (a) Climbers	14. Polygonaceae	
(b) Herbs, non-climbers		743
(c) Shrubs or trees		744
743. Stamens 10 or fewer; flowers hypogynous	14. Polygonaceae	
Stamens 10 or fewer; flowers perigynous, or if flowers hypogynous then stamens more than 10	18. Aizoaceae	
744. Perianth segments free		745
Perianth segments fused at base		747
745. Leaves absent; stems flat and green	14. Polygonaceae	
Leaves present		746
746. Stamens 10 or fewer; stigmas 2 or 3	79. Sapindaceae	
Stamens numerous; stigma 1	86. Elaeocarpaceae	
747. Flowers small in heads or spikes; stamens exerted	61. Mimosaceae	
Flowers not in heads or spikes; stamens usually not exerted		748
748. (a) Stamens 8, staminodes 8	92. Flacourtiaceae	
(b) Stamens 9, staminodes 3 or more	33. Lauraceae	
(c) Stamens 10-12, staminodes 10-12	92. Flacourtiaceae	
(d) Stamens <i>ca</i> 15, irregularly clustered in a head	89. Sterculiaceae	
(e) Stamens 30-40, staminodes absent	27. Winteraceae	
749. (a) Styles 2	14. Polygonaceae	
(b) Styles 3		750
(c) Styles 5	18. Aizoaceae	
(d) Styles 7-10	15. Phytolaccaceae	
750. Ovary 1-locular, ovule 1	14. Polygonaceae	
Ovary 3-locular, ovules 1-several per loculus	18. Aizoaceae	
751. Ovary 2- or more-locular, leaves 1-pinnate	79. Sapindaceae	
Ovary 1-locular or leaves 2-pinnate		752
752. Flowers actinomorphic; petals usually imbricate in bud	61. Mimosaceae	
Flowers \pm zygomorphic; petals valvate in bud	62. Caesalpinaceae	
753. (a) Stigma sessile	30. Trimeniaceae	
(b) Style and stigma 1		754
(c) Styles and style branches more than 1		759
754. Leaves gland-dotted	99. Myrtaceae	
Leaves not gland-dotted		755
755. Stamens hypogynous		756
Stamens epipetalous or inserted on calyx tube		757
756. Perianth segments free	24. Amaranthaceae	
Perianth segments united	17. Nyctaginaceae	
757. Leaves opposite, unequal in size	18. Aizoaceae	
Leaves opposite, equal in size		758
758. Stamens 10	90. Thymelaeaceae	
Stamens less than 10	98. Lythraceae	
759. (a) Stamen 1	22. Caryophyllaceae	
(b) Stamens 2-5		760
(c) Stamens more than 5		763
760. Stamens epipetalous or inserted on calyx tube	18. Aizoaceae	
Stamens hypogynous		761
761. Ovules more than 1	22. Caryophyllaceae	
Ovule 1		762

762. Perianth segments scarious	24. Amaranthaceae	
Perianth segments herbaceous	23. Chenopodiaceae	
763. Shrubs or trees	57. Cunoniaceae	
Herbs		764
764. Ovary 1-locular	22. Caryophyllaceae	
Ovary 2-5-locular	18. Aizoaceae	
765. Leaves alternate, radical or absent		766
Leaves opposite or whorled		783
766. Perianth in 2 series of 2 calyx segments and 4 corolla segments		767
Perianth in 1 series or in 2 series, usually of 3 segments in each series		769
767. Flowers zygomorphic	49. Fumariaceae	
Flowers actinomorphic		768
768. Stamens more than 10; stigma flat and sessile	48. Papaveraceae	
Stamens 3; stigmatic lobes 3, \pm erect	20. Portulacaceae	
769. (a) Stamens 3		770
(b) Stamens 5 or 6		772
(c) Stamens more than 6		777
770. Climbers with leaf-opposed tendrils	85. Vitaceae	
Trees or shrubs		771
771. Style and stigma 1	33. Lauraceae	
Styles 2-3	69. Euphorbiaceae	
772. Climbers with leaf-opposed tendrils	85. Vitaceae	
Plants without tendrils		773
773. Leaves compound	73. Burseraceae	
Leaves simple		774
774. Perianth segments fused		775
Perianth segments free		776
775. Ovary 3-locular	116. Ebenaceae	
Ovary 1-locular	33. Lauraceae	
776. Leaves without ochreae	69. Euphorbiaceae	
Leaves with ochreae	14. Polygonaceae	
777. Leafless parasitic twiners	33. Lauraceae	
Non-twiners		778
778. Style and stigma 1		779
Styles or stigmas 2-3		782
779. Mostly herbs; flowers with 1 or more long spurs	35. Ranunculaceae	
Shrubs or trees; flowers without spurs		780
780. Leaves gland-dotted	70. Rutaceae	
Leaves not gland-dotted		781
781. Stamens <i>ca</i> 9, often staminodes present	33. Lauraceae	
Stamens more than 10	86. Elaeocarpaceae	
782. Perianth polysepalous	14. Polygonaceae	
Perianth gamosepalous	116. Ebenaceae	
783. Stamens 3	96. Elatinaceae	
Stamens 6 or more		784
784. Woody climbers		785
Non-climbers		786
785. Ovary 1-locular with 1 ovule	30. Trimeniaceae	
Ovary with numerous carpels enclosed in enlarged perianth, each carpel with 1 ovule	31. Monimiaceae	
786. Stamens 9, usually with 3 staminodes	33. Lauraceae	
Stamens 10 or more		787
787. Leaves 3-foliolate	57. Cunoniaceae	
Leaves not 3-foliolate	98. Lythraceae	
788. Plants parasitic on branches of other plants	11. Loranthaceae	
Plants not parasitic on branches of other plants		789
789. Leaves alternate, radical or absent		790
Leaves opposite or whorled		805

790. Leaves gland-dotted		791
Leaves not gland-dotted, or leaves absent		792
791. Stamens 10	104. Combretaceae	
Stamens more than 10	99. Myrtaceae	
792. Perianths actinomorphic		793
Perianths zygomorphic		804
793. Perianth segments 4		794
Perianth segments 5 or 6		795
794. (a) Stamens 4; flowers in umbels	108. Araliaceae	
(b) Stamens 4; flowers not in umbels nor heads	10. Santalaceae	
(c) Stamens 5; flowers in heads resembling single flowers	155. Asteraceae	
(d) Stamens 6 or more; flowers not in umbels, nor in heads	18. Aizoaceae	
795. Stamens 5		796
Stamens more than 5		802
796. Anthers fused to one another	155. Asteraceae	
Anthers free		797
797. Herbs		798
Shrubs or trees		799
798. Fruits \pm globular	10. Santalaceae	
Fruits laterally flattened	109. Apiaceae	
799. Styles 2, free	108. Araliaceae	
Style 1, with 1-2 stigmas		800
800. Stamens opposite perianth segments	10. Santalaceae	
Stamens alternating with perianth segments		801
801. Leaves simple and entire	84. Rhamnaceae	
Leaves compound or divided	108. Araliaceae	
802. Leaves compound	108. Araliaceae	
Leaves simple		803
803. Trees; stamens usually 10	104. Combretaceae	
Herbs or shrubs; stamens more than 10	18. Aizoaceae	
804. Style or style branches each with an indusium	152. Goodeniaceae	
Style with 3-6 branches but no indusium	43. Aristolochiaceae	
805. Leaves gland-dotted	99. Myrtaceae	
Leaves not gland-dotted		806
806. (a) Perianth segments 3	127. Rubiaceae	
(b) Perianth segments 4		807
(c) Perianth segments 5		811
(d) Perianth segments 6		814
807. (a) Stamens 2	90. Thymelaeaceae	
(b) Stamens 4		808
(c) Stamens 5	155. Asteraceae	
(d) Stamens 8	57. Cunoniaceae	
(e) Stamens more than 10	99. Myrtaceae	
808. Aquatic plants	106. Haloragaceae	
Plants not aquatic		809
809. Leaves in whorls of 4-8	127. Rubiaceae	
Leaves opposite		810
810. Stamens alternating with perianth segments	127. Rubiaceae	
Stamens opposite perianth segments	10. Santalaceae	
811. Stamens more than 10	18. Aizoaceae	
Stamens 5		812
812. Anthers fused	155. Asteraceae	
Anthers free		813
813. Stamens opposite perianth segments	10. Santalaceae	
Stamens alternating with perianth segments	127. Rubiaceae	
814. Leaves compound	149. Caprifoliaceae	
Leaves simple		815
815. Stamens 3	127. Rubiaceae	
Stamens 10	20. Portulacaceae	

1. CASUARINACEAE

Trees or shrubs with jointed branches. Leaves reduced to many-toothed sheaths surrounding the nodes of the branches. Flowers unisexual; perianth absent; male flowers spicate, arranged in the sheaths towards the ends of the branchlets, each with 4 bracteoles; stamen 1, central, anther 2-locular; female flowers capitate at tips of branchlets or lateral; ovary small, superior, 1-locular, ovules 2, style short, terminal with two long stylar arms. Fruits crowded into a cone with persistent bracts which open like a capsule, exposing the samaroid, indehiscent nut; seeds solitary, without endosperm.

1 genus with 65 species from Mascarenes and south-eastern Asia to Australia and Polynesia; *ca* 30 species Australia; 9 species south-eastern Queensland.

1. CASUARINA Adans.

Characters of the family.

- | | | |
|--|---|---|
| 1. Branchlets with 4, rarely 5 teeth in a whorl | 1. <i>C. torulosa</i> | 2 |
| Branchlets with 6 or more teeth in a whorl | | |
| 2. Branchlets with 6–8, rarely 9 teeth in a whorl | | 3 |
| Branchlets with 9–16 teeth in a whorl | | 7 |
| 3. Branchlets pendulous, at least the younger ones tomentose with short soft hairs; cones with backs of valves pubescent | 2. <i>C. equisetifolia</i> var. <i>incana</i> | 4 |
| Branchlets usually erect, ± glabrous; cone valves ± glabrous | | |
| 4. Cones 5–8 mm diameter; branchlets up to <i>ca</i> 0.5 mm thick; tree of river or creek banks | 3. <i>C. cunninghamiana</i> | |
| Cones usually more than 1 cm diameter, if less then branchlets 0.7–1.3 mm thick; trees of forest, heath or exposed mountain tops | | 5 |
| 5. Bark stringy or fibrous; cone ‘woody’ with relatively few valves | 4. <i>C. inophloia</i> | 6 |
| Bark not stringy; cone with many valves | | |
| 6. Branchlets usually 1 mm or more thick, rarely 0.75 mm; cone peduncle <i>ca</i> 5 mm long; shrubs or small trees of high peaks near the border and on the Granite Belt | 5. <i>C. rigida</i> | |
| Branchlets usually 0.5 mm thick, rarely 0.75 mm; cone peduncle usually 1–2 cm long; trees of coastal forests | 6. <i>C. littoralis</i> | |
| 7. Cones depressed or disc-like | 7. <i>C. luehmannii</i> | 8 |
| Cones as long as, or longer than, wide | | |
| 8. Cones <i>ca</i> 1–1.3 cm diameter, valves broadly obtuse; tree of coastal swamps and low lying areas | 8. <i>C. glauca</i> | |
| Cones <i>ca</i> 1.5–2 cm diameter, valves nearly ovate; tree of inland forests | 9. <i>C. cristata</i> | |

1. *Casuarina torulosa* Aiton ex Dryander

FOREST SHE-OAK

Tree up to 20 m tall; bark greyish, longitudinally cracked, corky; branchlets 0.4–0.5 mm thick, sometimes angular, drooping. Cones very woody on peduncles 1–3.5 cm long, subglobose to unevenly cylindrical, 1.9–4 cm × 1.4–3 cm, tuberculate; valves mucronate, ± pubescent. **Fig. 5A.**

Mainly in forest country on hillsides and mountain slopes of coastal plain – prefers fertile soil. Timber suitable for cabinet work (veneers) and turnery. Sometimes cultivated in home gardens.

2. *Casuarina equisetifolia* L. var. *incana* Benth. COAST SHE-OAK*C. litorea* L.

Tree up to 10 m tall; bark greyish, often rough on lower trunk; branchlets 0.5–1 mm thick, striate. Cones on peduncles *ca* 0.5–1.2 cm long, subglobose to shortly cylindrical, 1–1.7 cm × 1–1.7 cm; valves mucronate.

Coastal, growing in strand communities or on sandy soil near the sea. Timber has been used for veneers. Branchlets readily eaten by cattle.

3. *Casuarina cunninghamiana* Miq. RIVER OAK

Tree up to 15 m tall; bark dark grey, fissured; branchlets 0.4–0.6 mm thick, slightly striate. Cones on peduncles *ca* 5 mm long, ± globose, 5–9 mm × 6–8 mm; valves mucronate.

On banks of creeks and rivers throughout the area; said to prevent excessive erosion along watercourses. Timber used for turnery, occasionally axe-handles. Branchlets moderately useful drought fodder.

4. *Casuarina inophloia* F. Muell. & F. M. Bailey THREADY-BARKED SHE-OAK

Tree up to 15 m tall; bark dark brown or blackish, thready or stringy; branchlets 0.5–0.6 mm thick. Cones woody on peduncles usually 5–10 mm long, usually cylindrical, 1.2–2 cm × 1.2–1.6 cm; valves acute, in regular columns. **Fig. 5C.**

Widespread throughout forests in the area, mainly in Darling Downs district.

5. *Casuarina rigida* Miq.*Casuarina distyla* Vent.

Shrub or small tree up to *ca* 5 m, rarely 10 m tall; bark brownish; branchlets (0.75–) 1–1.25 mm thick, deeply striate. Cones on peduncles up to 5 mm long, ± cylindrical, (0.9–)1.2–2 cm × (0.8–)0.9–1.2 cm; valves very obtuse with prominent thickening on back for *ca* half the length.

Generally found on high peaks of the border region and Granite Belt but recorded once from Emu Mt. near Coolool (specimen atypical).

6. *Casuarina littoralis* Salisb. BLACK SHE-OAK*Casuarina suberosa* Otto & Dietr.

Tree up to 10 m tall; bark grey, usually rough, fissured; branchlets 0.3–0.5 mm thick, slightly striate. Cones on peduncles usually 1–2 cm long, ± cylindrical, 1.5–2.5(–3.2) cm × 1.1–1.5(–1.9) cm; valves usually acute. **Fig. 5B.**

Widely distributed in south-eastern Queensland (mainly on the coastal plain) especially in forest country on sandy or stony soils. Timber has been used for cabinet work (veneers). Useful supply of pollen for bees April–October, and grown as an ornamental tree.

A form with more robust branchlets (0.75 mm or 0.8 mm) has been recorded from Sunshine Beach near Noosa, and Fraser I.

7. *Casuarina luehmannii* R. T. Baker BULL OAK

Tree up to 20 m tall; bark blackish, corky, somewhat furrowed; branchlets 1–1.5 mm thick, sometimes glaucous. Cones on peduncles up to 5 mm long, flattened or disc-shaped, 0.8–0.9 cm × 1.3–1.8 cm; valves mucronate. **Fig. 5E.**

Widespread in forests, mainly in Darling Downs district, on poorer soils. Timber used for fencing posts. Foliage is inferior drought fodder.

8. *Casuarina glauca* Sieber ex Sprengel SWAMP OAK

Tree up to 20 m tall; bark greyish, closely cracked, appearing scaly; branchlets 1–2 mm thick, greyish, sometimes pendulous. Cones on peduncles 5–10 mm long, subglobose to cylindrical, 0.9–1.6 cm × 1–1.3 cm; valves very obtuse.

Confined mainly to low lying or swampy often brackish land near the coast. Timber used for fencing rails, and small pylons in salt water.

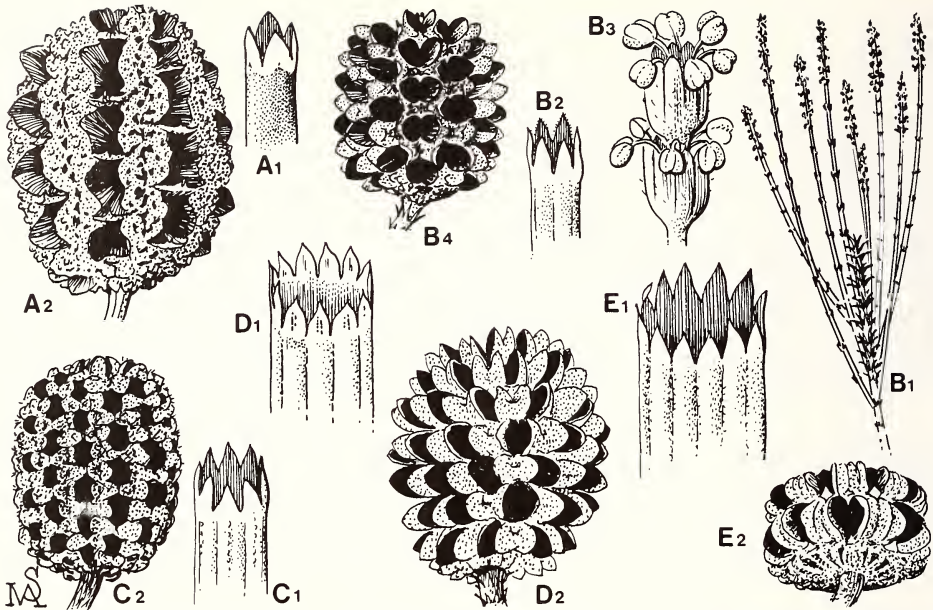


Fig. 5 CASUARINACEAE – A-E *Casuarina* spp. – A₁-A₂ *C. torulosa*, A₁ part of branchlet showing number of teeth x12, A₂ fruit x1½; B₁-B₄ *C. littoralis*, B₁ part of branchlet bearing male inflorescence x1, B₂ part of branchlet showing number of teeth x12, B₃ male flowers x12, B₄ fruit x1½; C₁-C₂ *C. inophloia*, C₁ part of branchlet showing number of teeth x12, C₂ fruit x1½; D₁-D₂ *C. cristata*, D₁ part of branchlet showing number of teeth x12, D₂ fruit x1½; E₁-E₂ *C. luehmannii*, E₁ part of branchlet showing number of teeth x12, E₂ fruit x1½.

9. *Casuarina cristata* Miq.

BELAH

Casuarina lepidophloia F. Muell.

Tree up to 20 m tall; bark greyish, coarsely flaky or scaly, furrowed; branchlets 0.5–1.5 mm thick, striate, sometimes glaucous, slightly pendulous. Cones on peduncles *ca* 5 mm long, subglobose, 1–1.8 cm × 1–1.7 cm; valves ovate, with narrowly obtuse tip. **Fig. 5D.**

Generally widespread in Darling Downs district and further west, sometimes forming pure stands, but minor occurrences in the Moreton and Burnett districts. Trees used for fencing posts, rough stockyards, and shade. Branchlets moderately useful fodder in drought.

The timber of *Casuarina* spp. generally is reddish or dark brown, beautifully marked with a close grain, and is hard, tough and durable. The trees grow quickly and make good windbreaks.

2. SALICACEAE

Trees or shrubs. Leaves usually deciduous, alternate, stipulate, penninerved. Flowers in catkin-like, erect or pendulous spikes, rarely racemes, unisexual, each flower subtended by a membranous bract; perianth absent; disc cupular or reduced to 1–2 scales; male flowers with 2 or more filiform stamens; female flowers with sessile or stipitate 1-locular ovary, 2–4 parietal placentas, ovules usually numerous, style short, 2–4-fid, stigmas 2–4. Fruits dehiscent, capsular; seeds small with tuft of hairs arising from the funicle, little or no endosperm.

3 genera with *ca* 530 species, chiefly temperate Northern Hemisphere, but widely cultivated as ornamentals; at least 2 genera with 6 species naturalized Australia; 1 genus with 1 species south-eastern Queensland.

1. SALIX L.

Flowers insect-pollinated; catkins precocious or produced with the leaves, usually dense, erect; flowers sessile, bracts small, disc of scales; stamens 2, rarely more; ovary with 2 placentas. Capsules 2-valved.

About 500 species (with much hybridization), chiefly temperate Northern Hemisphere; several species cultivated, at least 3 species naturalized Australia; 1 species south-eastern Queensland.

1. **Salix babylonica* L.

WEeping WILLOW

Tree up to *ca* 12 m tall, with long pendulous branches. Leaves with pubescent petioles 0.4–1.2 cm long; blades discolorous, narrowly elliptic, apex acuminate, margin serrate, 4–10 cm × 0.5–1.2 cm, ± glabrous with age, ± glaucous beneath; floral leaves very narrowly obovate, margin entire, 2.5–3.5 cm × 0.4–0.6 cm. Catkins appearing with or after leaves on short, axillary, ± leafy shoots, very slender, male up to 4 cm long, female up to 2.5 cm long. Capsules small.

Originally a native of China but widely cultivated as a garden ornamental, preferring well-watered situations; naturalized along watercourses.

3. FAGACEAE

Trees or shrubs. Leaves alternate, stipulate, penninerved. Flowers unisexual; male perianth 4–6-lobed, stamens *ca* 8–40; female flower solitary within involucre of imbricate scales, ovary inferior, 3–6-locular, styles as many as ovary-locules, ovules 2 per loculus. Involucre of fruits often hardened, cupular or altogether closed, often tuberculate or echinate; fruits nuts; seeds usually solitary by abortion, without endosperm.

8 genera with *ca* 900 species in temperate and tropical regions, absent from Africa and tropical South America (except where cultivated); 1 genus with 3 species south-eastern Australia; 1 genus with 1 species south-eastern Queensland.

1. NOTHOFAGUS Blume

Flowers either solitary or in groups of three; males shortly pedicellate, perianth campanulate; females in sessile or shortly pedicellate involucre. Involucre of fruits covered externally with bristly deltoid or foliaceous, sometimes gland-tipped processes; nuts 1–2 in each involucre, triangular.

About 35 species New Guinea, New Caledonia, temperate Australia, New Zealand and temperate South America; 3 species endemic to south-eastern Australia; 1 species south-eastern Queensland.

1. *Nothofagus moorei* (F. Muell.) Krasser

ANTARCTIC BEECH

Fagus moorei F. Muell.

Shrub or tree up to 50 m tall, evergreen. Leaves with stipules 1–1.5 mm long, reflexed; petioles 3–8 mm long; blades narrowly ovate to ovate, apex acuminate, margin serrate, 2–9 cm × 1.3–3.5 cm. Flowers axillary. Fruiting involucre cupulate, *ca* 1 cm long, 4-valved.

Confined to McPherson Ra., in rainforest at high altitudes.

4. ULMACEAE

Trees or shrubs. Leaves alternate, stipulate, pinnately nerved and often 3-nerved at the base. Flowers fasciculate, unisexual or bisexual; perianth with 4–8 imbricate, persistent lobes; stamens inserted at base of perianth, erect in bud, usually as many as perianth lobes and opposite them, filaments free; ovary of 2 connate carpels, 1–2-locular, style central, usually bipartite, divergent, stigmatose on inner surface, ovule solitary, pendulous from near top. Fruits compressed, membranous, dry or thinly fleshy; seeds usually without endosperm.

16 genera with *ca* 230 species, mostly northern temperate regions; 3–4 genera with *ca* 8 species Australia (*Ulmus* spp. sometimes recorded naturalized); 3 genera with 5 species south-eastern Queensland.

- | | | |
|---|----------------------|---|
| 1. Leaves smooth, glabrous, at most half margin serrate | 1. <i>Celtis</i> | |
| Leaves scabrous and/or pubescent, all margin serrate | | 2 |
| 2. Leaves scabrous and/or ± pubescent, venation not raised; flowers unisexual and bisexual, all cymose | 2. <i>Trema</i> | |
| Leaves scabrous, ± glabrous, venation raised on undersurface; flowers unisexual, females solitary, males cymose | 3. <i>Aphananthe</i> | |

1. CELTIS L.

Leaves entire or partly serrate, usually with oblique base. Flowers cymose or fasciculate on young shoots, usually bisexual or male; male flowers with 4-5-lobed perianth, anthers ovoid, rudimentary ovary sometimes present, torus often densely pilose; bisexual flowers similar, style branches plumose stigmatose; rarely solitary female flowers present. Drupes succulent.

150 species temperate and tropical regions; 2 native and 1 naturalized species tropical and subtropical Australia; 2 species south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Leaf margin serrate in upper half, base oblique; fruit reddish-brown | 1. <i>C. sinensis</i> |
| Leaf margin entire, base not or rarely slightly oblique; fruit black | 2. <i>C. paniculata</i> |

1. **Celtis sinensis* Pers.

CHINESE CELTIS

Tree. Leaves with petioles 5-6 mm long; blades broadly ovate, apex acuminate, base cuneate to obtuse, 4-6.5 cm × 2.5-3.75 cm, glabrous, smooth. Fruits 1-2 on peduncle 0.4-1.2 cm long, globular, 7-8 mm long.

Native of China, Korea and Japan; introduced as an ornamental tree, now naturalized in the region. Flowers spring.

2. *Celtis paniculata* (Endl.) Planchon

Solenostigma paniculatum Endl.

Tree. Leaves with petioles 8-10 mm long; blades narrowly ovate to ovate, apex acute to acuminate, base cuneate to obtuse, 5-11 cm × 2.4-5 cm, glabrous, smooth. Fruits 1-3 on peduncle 6-10 mm long, globular to ovoid, 6-10 mm long.

Found in coastal rainforest, not common. Flowers spring.

2. TREMA Lour.

Leaves serrate. Flowers in axillary cymes, male, female or bisexual (male predominant); male flowers with 4-5-lobed perianth, rudimentary ovary sometimes present; female or bisexual flowers with similar perianth, ovary sessile, style branches linear; torus often pilose. Drupes often crowned by involute style branches, exocarp ± succulent, endocarp hard; seeds with fleshy endosperm.

55 species tropical and subtropical; 3 species Australia; 2 species south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Leaves serrate, glabrous, scabrous or pubescent with hispid hairs on veins beneath, base rounded | 1. <i>T. aspera</i> |
| Leaves serrulate, densely pubescent with short silky appressed hairs beneath, giving a silvery or greenish sheen to undersurface, base subcordate to cordate, usually oblique | 2. <i>T. orientalis</i> |

1. *Trema aspera* (Brongn.) Blume

POISON PEACH; PEACH-LEAVED
POISON-BUSH

Celtis aspera Brongn.; *Trema aspera* (Brongn.) Blume var. *viridis* Benth.; *T. amboinensis* (Willd.) Blume

Shrub to small tree. Leaves narrowly ovate, apex acuminate, 3-13 cm × 1-5 cm. Fruits ovoid to ellipsoid, 2-3 mm long in cymes ± as long as petiole. **Fig. 6H.**

Widely distributed throughout the area. Flowers mainly summer. Usually toxic to livestock.

This species is probably only a form of the cosmopolitan *T. cannabina* Lour.

2. *Trema orientalis* (L.) Blume

TREE PEACH; WOOLLY CEDAR

Celtis orientalis L.

Tree. Leaves ± triangular, apex long acuminate, 5-15 cm × 1-5 cm. Fruits ovoid to ellipsoid, up to 5 mm long in much-branched cymes longer than the petiole.

Coastal rainforest, not common. Flowers spring to summer.

3. APHANANTHE Planchon

Leaves serrate. Flowers unisexual; male flowers densely cymose, perianth 4-5-lobed, anthers oblong, rudimentary ovary absent or obscure among hairs of torus; female flowers solitary, perianth similar, style branches linear. Drupes with succulent exocarp, hard endocarp.

8 species eastern Africa, Malaya, Australia, Madagascar; 1-2 species Australia; 1 species south-eastern Queensland.

1. *Aphananthe philippinensis* Planchon

NATIVE ELM; GREY HANDLEWOOD

Tree. Leaves ovate, apex acute, base cuneate to obtuse, 2-8 cm × 1-3.75 cm, ± glabrous, scabrous, nerves raised on undersurface, prominent, major nerves ending in pungent point on leaf margin. Fruits axillary on peduncle 2-4 mm long, ovoid to ellipsoid, 7-10 mm long, bifid style persistent, recurved.

Widespread in coastal rainforest. Timber close-grained, used for axe and hammer handles, mallets, etc. Sapwood subject to attack by borers. Flowers spring.

5. MORACEAE

Trees, shrubs, climbers (sometimes epiphytes), lactiferous. Leaves usually alternate, stipulate, simple. Inflorescences axillary, typically paired, paniculate, racemose, spicate, capitate or urceolate, unisexual or bisexual; flowers small, unisexual; perianth usually 4-lobed; male with stamens 4 or 2, opposite perianth lobes, filaments inflexed or straight, rudimentary ovary present or absent; female with ovary superior to inferior, usually 1-locular, ovule mostly pendulous from apex, styles mostly 2, filiform. Fruits usually drupaceous; seeds with or without endosperm.

53 genera with ca 1400 species, in mainly tropical and temperate regions; 5 genera with ca 50 species Australia; 5 genera with 16 species south-eastern Queensland.

- 1. Flowers attached to inner wall of hollow fleshy receptacle 1. *Ficus*
- Flowers in heads or spikes 2
- 2. Branches usually with rigid spines; both male and female flowers in heads; fruit in Queensland species yellow 2. *Cudrania*
- Branches occasionally rough but never with rigid spines; male flowers in spikes; fruit in Queensland species red or purplish 3
- 3. Usually woody vines or scandent shrubs; female flowers in densely hoary tomentose heads 3. *Malaisia*
- Usually shrubs or small trees; female flowers few, solitary, or forming short spikes, not densely hoary tomentose 4
- 4. Leaf margins ± entire or irregularly toothed 4. *Streblus*
- Leaf margins regularly serrate or crenate 5. *Morus*

1. *FICUS* L.

Leaves alternate rarely opposite, stipules enclosing terminal bud, often very caducous and leaving a scar; blades entire to lobed. Flowers unisexual, enclosed in a fleshy receptacle (syconium) with a small mouth (ostiole) with bracts spreading across outside or pointing vertically inside, sometimes bracts scattered over outer surface or 2-3 at base; male flowers usually with 2-6 imbricate perianth lobes, stamens 2-1, rarely 6-3, filaments straight; female flowers with often fewer, narrower perianth lobes, or perianth minute to absent, ovary straight or soon oblique, style after fertilization excentric or lateral, short or filiform. Achenes enclosed in enlarged receptacle; seeds pendulous.

About 800 species mainly tropic and temperate regions; ca 45 species Australia; 12 species south-eastern Queensland.

- | | |
|---|---|
| 1. Leaves scabrid or hispid | 2 |
| Leaves glabrous or if pubescent, smooth | 4 |
| 2. Leaves alternate, distichous, base usually asymmetrical; receptacles with numerous long narrow erect apical bracts | 1. <i>F. coronata</i> |
| Leaves opposite or spirally arranged, base usually symmetrical; receptacles with short or obtuse apical bracts | 3 |
| 3. Leaf base rounded to cordate, apex blunt to subacute; apical bracts of receptacle obtuse, not or scarcely projecting | 2. <i>F. opposita</i> |
| Leaf base cuneate, apex subacute to abruptly acuminate; apical bracts of receptacle suberect, 1-2 mm long, projecting | 3. <i>F. fraseri</i> |
| 4. Tree, not epiphytic; receptacles borne on small branchlets attached to main trunk or larger branches | 4. <i>F. racemosa</i> |
| Banyan, strangling fig or creeper with adventitious roots; receptacles 1-2, axillary among present year's leaves | 5 |
| 5. Leaf blade 6-9 times longer than petiole; both primary and secondary veins prominent, often appearing 3-nerved at the base | 5. <i>F. microcarpa</i> |
| Not the above combination of characters; leaf blade usually 2-4 times longer than petiole | 6 |
| 6. Leaves with primary and reticulate venation \pm equally prominent, primary veins looping but not forming distinct intramarginal vein, angle of venation ca 50°-60° | 7 |
| Leaves with primary veins much more prominent than secondary reticulation, and forming a distinct intramarginal vein, angle of venation generally more than 60° | 8 |
| 7. Basal bracts caducous; receptacles 1.5-2.5 cm diameter, peduncles 0.3-1.1 cm long | 6. <i>F. superba</i> var. <i>henneana</i> |
| Basal bracts persistent, 3; receptacles 0.7-1.2 cm diameter, peduncles 0-6 mm long | 7. <i>F. virens</i> |
| 8. Receptacles 0.6-1.4 cm diameter, subglobose, peduncle slender, up to 0.5 cm, rarely 1 cm long, terete | 9 |
| Receptacles 1.3-3 cm diameter, subglobose or ellipsoid, peduncle 0.6-4 cm long, usually flattened or angular | 10 |
| 9. Receptacles 0.6-0.9 cm or 1-1.3 cm diameter; basal bracts 2, caducous; blades thinly coriaceous | 8. <i>F. obliqua</i> |
| Receptacles 1-1.4 cm diameter; basal bracts 3, caducous; blades thickly or stiffly coriaceous | 9. <i>F. platypoda</i> |
| 10. Receptacles with probosciform apex 3-4 mm long, body 2.5-4 cm \times 1.5-3 cm, peduncle flattened, 0.6-4 cm \times 0.4-0.5 cm, dilated to cupule 1-1.7 cm wide | 10. <i>F. watkinsiana</i> |
| Receptacles without probosciform apex, body 1.4-2.5 cm \times 1.3-2.5 cm, peduncle dilated to adnate cupule 0.5-1.2 cm wide | 11 |
| 11. Receptacle body ellipsoid, apex with nipple, peduncle 0.6-1.3 cm long; young parts densely pubescent; basal bracts 3, caducous | 11. <i>F. baileyana</i> |
| Receptacle body subglobose, without nipple, peduncle 1.2-3.5 cm long; \pm glabrous; basal bracts 2, caducous | 12. <i>F. macrophylla</i> |

1. *Ficus coronata* Spin

A SANDPAPER FIG

Ficus stephanocarpa Warb.

Shrub or tree. Leaves with petioles 3–9 mm long; blades narrowly elliptic to narrowly ovate, apex acuminate, base cuneate to \pm cordate, often oblique, margin often slightly crenate, 6–14.5 cm \times 2–4.5 cm, scabrous above, often shortly white pubescent beneath. Receptacles often clustered along trunk or on larger branches, as well as in leaf axils, peduncle 3–10 mm long, basal bracts 3, often up to 5 mm below receptacle, body purplish-black when ripe, subglobose to ellipsoid, up to 3 cm \times 2 cm, densely pubescent usually with white soft hairs, some bracts amongst them. **Fig. 6C.**

Common in rainforest or along creeks in the area. Receptacles found throughout the year. The figs are good eating when completely ripe, provided that the hairs on the surface are avoided.

2. *Ficus opposita* Miq.

A SANDPAPER FIG

Ficus conjugata Miq.; *F. xerophila* Domin; *F. yarrabensis* Domin

Shrub or tree. Leaves with petioles 0.6–3 cm long; blades elliptic to broadly ovate, apex obtuse to subacute, base cordate, truncate or occasionally rounded, margin entire, 4.5–17 cm \times 1.7–9.5 cm, scabrous above, often softly or harshly white pubescent beneath; juvenile leaves very variable in size and shape, often being lobed at the base or very long and narrow. Receptacles on peduncles 2–8 mm long, basal bracts 2–3, up to 4 mm below receptacle, body \pm globose to depressed globose, up to 1.2 cm \times 1.2 cm, glabrous or hispid.

Common generally in coastal rainforest or along creeks, sometimes near strand. Receptacles found throughout the year.

3. *Ficus fraseri* Miq.

A SANDPAPER FIG

Ficus stenocarpa F. Muell. ex Benth.; *F. subglabra* F. Muell.; *F. scabra* Forster f.

Shrub or tree. Leaves with petioles 0.5–2 cm long; blades usually obovate, sometimes elliptic, apex usually abruptly acuminate, rarely subacute, base cuneate, rarely rounded, margin entire, 6–15 cm \times 2.5–6.3 cm, scabrous above, often shortly hispid or scabrous below; juvenile leaves quite variable, often lobed towards apex. Receptacles on peduncles 0.5–2 cm long, basal bracts up to 5 mm below receptacle, body subglobose to \pm ellipsoid, up to 1.3 cm \times 1.2 cm, glabrous.

Common, generally in coastal rainforest or along creeks. Receptacles usually found spring to autumn.

F. opposita and **F. fraseri** have been confused in the past; though in their 'typical' forms they are fairly distinct they seem to intergrade or perhaps hybridize. Both are variable.

4. *Ficus racemosa* L.

CLUSTER FIG

Ficus glomerata Roxb.

Tree. Leaves deciduous; petioles 1.2–6.6 cm long; blades narrowly elliptic, oblong or ovate, apex acute to acuminate, base obtuse to subcordate, 7–17.5 cm \times 2.7–7.5 cm, glabrous, cystoliths present beneath. Inflorescences cauliflorous; receptacles on peduncles 0.8–1.4 cm long, basal bracts 3, persistent, 3–5 mm below receptacle, body subglobose, 1.3–2 cm \times 1.5–2.5 cm.

Rainforest in the region, not common. Cultivated. Receptacles usually found spring to autumn.

5. *Ficus microcarpa* L. f.In Australia wrongly referred to as *Ficus retusa* L. or *F. nitida* Thunb.

Tree. Leaves with petioles 0.4–1.5 cm long; blades elliptic to obovate, apex obtuse to bluntly acuminate, base cuneate, sometimes rounded, 3.4–10 cm \times 1.8–7 cm, glabrous. Receptacles sessile with 3 persistent bracts, \pm subglobose, 7–10 mm diameter.

Coastal rainforest, often near strand. Receptacles may be found throughout the year.

6. *Ficus superba* Miq. var. *henneana* (Miq.) Corner*Ficus henneana* Miq.; *F. gracilipes* F. M. Bailey

Tree. Leaves deciduous; petioles 1.5–4.5 cm long; blades usually elliptic, sometimes obovate, apex acute to bluntly acuminate, base cuneate to subcordate, 4.5–12.5 cm \times 2–5.5 cm, glabrous. Receptacles reddish with white spots, subglobose. **Fig. 6B.**

Common in coastal rainforest. Receptacles generally found spring to autumn.

7. *Ficus virens* Aiton ex Dryander

WHITE FIG

Ficus nesophila F. Muell. ex Miq.; *F. infectoria* Roxb.; *F. cunninghamii* Miq.

Tree. Leaves deciduous; petioles 1.3–4 cm long; blades oblong, elliptic or obovate, apex acute to sharply acuminate, base cuneate to slightly cordate, 4.5–14 cm × 2.4–6.5 cm, glabrous. Receptacles shortly pedunculate, subglobose.

Two varieties are found in the region:

- | | | |
|------------------------------------|-----------|--|
| 1. Receptacles shortly pedunculate | | <i>F. virens</i> var. <i>virens</i> |
| Receptacles sessile | | <i>F. virens</i> var. <i>sublanceolata</i> |

Both *F. virens* var. *virens* and *F. virens* var. *sublanceolata* (Miq.) Corner (*F. saxophila* Blume var. *sublanceolata* Miq.) are found usually in rainforest but occasionally near strand in dry vine forest or where remnants have been cleared. Receptacles may be found throughout the year.

8. *Ficus obliqua* Forster. f.

SMALL-LEAVED FIG

Ficus eugenioides (Miq.) F. Muell.

Tree. Leaves with petioles 0.5–4 cm long; blades ovate to elliptic, apex acute, occasionally slightly acuminate, base cuneate, 3–10.5(–13) cm × 1.5–5.5(–6.5) cm, glabrous. Receptacles on peduncles 0–4(–10) mm long, yellow when mature, globular, 0.6–0.9(–1.3) cm diameter.

Two varieties occur in the region:

- | | | |
|--|-----------|--|
| 1. Leaf blades up to 10.5 cm × 5.5 cm; receptacles 0.6–0.9 cm diameter on peduncle 0–4 mm long | | <i>F. obliqua</i> var. <i>obliqua</i> |
| Leaf blades up to 13 cm × 6.5 cm; receptacles 1–1.3 cm diameter on peduncles 2.5–10 mm long | | <i>F. obliqua</i> var. <i>petiolaris</i> |

Both *F. obliqua* var. *obliqua* and *F. obliqua* var. *petiolaris* (Benth.) Corner (*F. platypoda* Cunn. ex Miq. var. *petiolaris* Benth.) are common in rainforest or on the edge of cliffs in dry vine forests or in full sun or possibly in strand vegetation. Receptacles generally found spring.

9. *Ficus platypoda* (Miq.) Cunn. ex Miq.*Urostigma platypodum* Miq.

Tree. Leaves with petioles 1.5–4.5 cm long; blades elliptic, apex acute, base cuneate, 5–11 cm × 2–6 cm, glabrous. Receptacles globular on peduncles 2–5 mm long.

Rainforest or dry vine forest, sometimes close to sea. Receptacles present winter–spring.

10. *Ficus watkinsiana* F. M. Bailey*Ficus bellingeri* C. Moore & Betche; *F. simmondsii* F. M. Bailey

Tree. Leaves with petioles 3–6.5 cm long; blades narrowly elliptic to elliptic, apex acute, sometimes shortly acuminate, base cuneate, 7.5–17 cm × 3–7 cm, glabrous. Receptacles purplish-black when mature.

Rainforest or beside creeks, throughout the area. Receptacles found throughout the year, mainly spring.

11. *Ficus baileyana* Domin*Ficus macrophylla* Desf. var. *pubescens* F. M. Bailey

Tree. Leaves with petioles 2.5–5 cm long; blades ovate, apex acute to acuminate, base rounded, 6–14 cm × 2.5–8 cm, glabrous above, often puberulent beneath with white hairs, sometimes also red scurfy below. Receptacles often red scurfy, peduncle and bracts finely white-pubescent.

Rainforest or creek banks of region. Receptacles generally found spring to autumn.

12. *Ficus macrophylla* Desf.**MORETON BAY FIG**

Tree. Leaves with petioles 2.5–9 cm long; blades ovate, apex acute to bluntly acuminate, base rounded, 7.5–18.5 cm × 3.5–8.7 cm, glabrous, dark green above, often rusty scurfy beneath. Receptacles purplish when ripe, ± glabrous. **Fig. 6A.**

Common in rainforest, often cultivated. Receptacles generally found spring to summer. Figs acceptable eating when ripe.

2. CUDRANIA Trécul

Much-branched or climbing shrubs often armed with axillary, straight or recurved spines. Flowers unisexual; male and female inflorescences globose-capitate, not involucrate, axillary, very small, larger and coloured in fruit; male flowers 4-merous, anthers erect; female flowers with perianth segments imbricate, closely surrounding ovary. Fruiting perianths with bracts enlarged, fleshy, densely crowded into a syncarp.

4 species Japan to Australia, New Caledonia; 1 species Australia, occurring in south-eastern Queensland.

1. *Cudrania cochinchinensis* (Lour.) Kudo & Masamune**COCKSPUR THORN**

Vanieria cochinchinensis Lour.; *Cudrania javanensis* Trécul; *Maclura cochinchinensis* (Lour.) Corner

Spreading, often scandent shrub or vine; branches often with curved thorns up to 1.5 cm long. Leaves with petioles (0.4–)0.9–1.3 cm long; blades discolourous, narrowly elliptic to narrowly obovate, apex acute, often shortly mucronate, base cuneate, margin entire, (2–)3.4–9.2 cm × 1.3–3.2 cm, glabrous, lower surface lighter with reticulate venation often drying darker. Inflorescences 1–2 per axil on pubescent peduncles 5–8 mm long. Syncarps yellow, 5–8 mm diameter. **Fig. 6E.**

Common along creeks and understorey of rainforest margins or in cleared rainforest areas. Flowers spring to early summer.

3. MALAISIA Blanco

Shrubs, sometimes scandent. Flowers unisexual; male flowers spicate, 3–4-merous, filaments inflexed in bud; female flowers capitate, hoary tomentose with closely contiguous fleshy bracteoles, flowers immersed among these; perianth urceolate, mouth contracted, scarcely denticulate. Fruits surrounded by thinly fleshy perianth.

1 species eastern Asia, Malaysia, Australia, Pacific Is., occurring in south-eastern Queensland.

1. *Malaisia scandens* (Lour.) Planchon

Caturus scandens Lour.; *Malaisia tortuosa* Blanco

Scandent shrub. Leaves with petioles 0.4–1.2 cm long; blades narrowly elliptic to narrowly obovate, rarely ovate, apex obtuse to shortly bluntly acuminate, base cuneate, margin usually entire, 3.1–12.5 cm × 1.4–4.5 cm, glabrous. Inflorescences axillary, 1-several; male spike 1–2.5 cm long on peduncle 0.5–1.5 cm long; female head up to 5 mm diameter on peduncle 0.2–1.2 cm long. Fruits red, subglobose to ovoid, 6–8 mm × 5–8 mm. **Fig. 6D.**

Along creeks or in rainforest, rainforest margins or cleared rainforest areas. Flowers generally spring to autumn.

4. STREBLUS Lour.

Usually trees, dioecious. Leaves usually with cystoliths on upper or lower surface. Male flowers spicate, usually 4-merous, filaments inflexed in bud; female flowers spicate, 4-merous, perianth segments decussate, imbricate, free or ± connate, ovary superior. Fruits drupaceous, often with a fleshy base.

22 species Madagascar, south-eastern Asia, Australia; 1 species Australia, occurring in south-eastern Queensland.

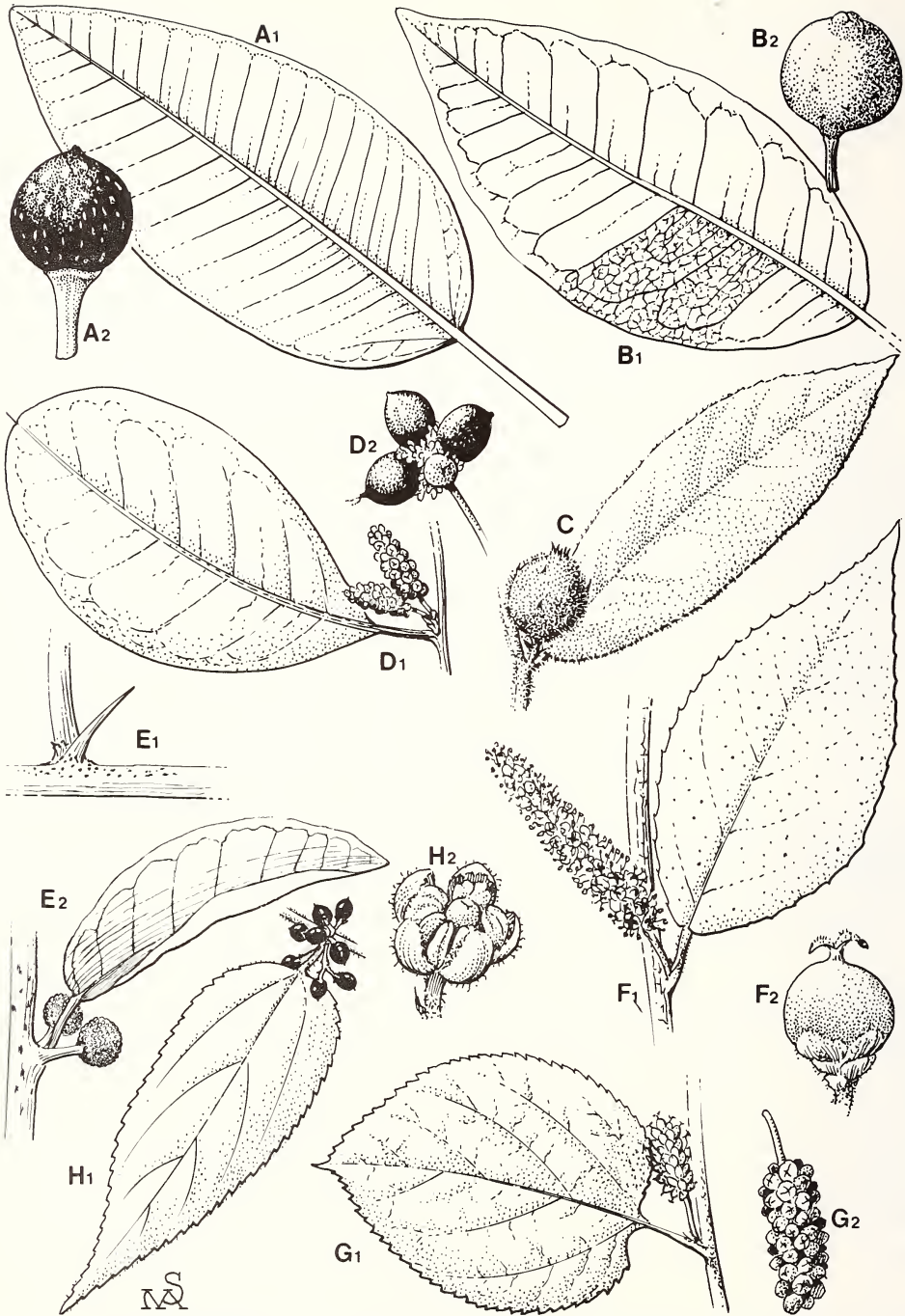


Fig. 6

A-G MORACEAE — A-C *Ficus* spp. — A₁-A₂ *F. macrophylla*, A₁ leaf showing prominent primary venation and obscure secondary venation $\times\frac{1}{2}$, A₂ fruit $\times 1$; B₁-B₂ *F. superba* var. *henneana*, B₁ leaf showing equally prominent primary and secondary venation $\times 1$, B₂ fruit $\times 1$; C *F. coronata*, leaf and fruit showing scabrid surface $\times\frac{1}{2}$; D₁-D₂ *Malaisia scandens*, D₁ part of flowering stem $\times 1$, D₂ fruiting inflorescence $\times 1$; E₁-E₂ *Cudrania cochinchinensis*, E₁ part of old stem with spine $\times 1$, E₂ part of young stem with leaf and inflorescences $\times 1$; F₁-F₂ *Streblus pendulinus*, F₁ part of flowering stem $\times 1$, F₂ fruit $\times 3$; G₁-G₂ *Morus alba*, G₁ part of flowering stem $\times\frac{1}{2}$, G₂ fruit $\times 1$; H ULMACEAE — H₁-H₂ *Trema aspera*, H₁ part of stem with fruiting inflorescence $\times 1$, H₂ flower $\times 8$.

1. *Streblus pendulinus* (Endl.) F. Muell.

Morus pendulina Endl.; *Streblus brunonianus* (Endl.) F. Muell.; *Pseudomorus brunoniana* (Endl.) Bur.

Shrub or small tree. Leaves with petioles 2–8 mm long; blades discolourous, narrowly elliptic to narrowly ovate, apex acute to acuminate, base cuneate, margin entire or crenate, 2.5–9.2 cm × 1.1–4.2 cm, glabrous, upper surface with cystoliths. Male spikes up to 2.5 cm long, peduncle *ca* 3 mm long; female flowers few, solitary, or spike up to 5 mm long, peduncle up to 5 mm long. Fruits red, fleshy, subglobular, 5–7 mm × 4–6 mm, without fleshy base. **Fig. 6F.**

Rainforest margins and creek banks. Flowers spring to autumn.

5. MORUS L.

Trees or shrubs. Leaves dentate, undivided or 3-lobed, base 3-nerved. Flowers axillary, spicate, unisexual; male flowers 4-merous, filaments inflexed in bud, soon exerted; female flowers with imbricate perianth lobes, ovary enclosed. Fruits enclosed by enlarged succulent perianths.

About 60 species tropical and temperate regions; at least 1 species widely cultivated Australia, naturalized in south-eastern Queensland.

1. **Morus alba* L.**WHITE MULBERRY**

Shrub or tree. Leaves deciduous; petioles 1.5–2.5 cm long; blades bright green, usually glossy, ovate to broadly ovate, apex acute to acuminate, base truncate to cordate, margin serrate, 4.5–11 cm × 4.5–8 cm, glabrous or pubescent on veins and axils beneath. Male flower spikes puberulent, *ca* 2 cm long on peduncles *ca* 6 mm long; female 0.5–2.5 cm long on peduncles 5–10 mm long. Fruits whitish to dark purple when mature, sweet. **Fig. 6G.**

Native of China; disturbed areas especially creek flats, usually near habitation. Flowers spring to summer. Often cultivated for its sweet fruit. The leaves are also used for feeding silkworms.

M. nigra, **BLACK MULBERRY**, can be distinguished from the above by its dull green leaves, mostly very rough on the upper surface and pubescent beneath. The fruit is dark red or blackish.

6. CANNABACEAE

Erect or scandent herbs. Leaves alternate or opposite, stipulate. Inflorescences usually dioecious, axillary; male flowers paniculate, perianth with 5 imbricate segments, stamens 5, anthers erect in bud, 2-locular, opening lengthwise, vestige of ovary absent; female flowers sessile, crowded or strobilate, with large persistent bracts, perianth closely enveloping ovary, membranous, entire, ovary sessile, 1-locular, ovule solitary, pendulous, style central, 2-partite. Fruits achenes covered by persistent perianth; seeds with fleshy endosperm.

2 genera with 3 species northern temperate, much cultivated; 2 genera with 2 species cultivated Australia; 1 genus with 1 species south-eastern Queensland.

1. CANNABIS L.

Erect annual herbs. Leaves opposite on lower part of stem, alternate above; stipules 2, free; blades palmate. Flowers unisexual; males in short dense cymes, perianth segments free, membranous, stamens attached to perianth segments; females solitary enveloped by spatheous conspicuous acuminate bract; stigmas long, filiform, caducous. Achenes enveloped by persistent enlarged bract.

1 species central Asia, cultivated elsewhere, reported as naturalized Australia, possibly occurring in south-eastern Queensland.

1. **Cannabis sativa* L.

INDIAN HEMP; MARIJUANA

Herb usually up to 1.5 m tall, sometimes taller, glandular. Leaves with petioles 0.3–10 cm long; blades 3–11-foliolate, uppermost sometimes 1-foliolate, leaflet blades narrowly ovate to narrowly elliptic, apex attenuate, base cuneate to attenuate, margin coarsely serrate, 3–14 cm × 0.3–2(–3.5) cm, scabrous above, with short stiff tubercular-based hairs, appressed-pubescent and sparsely to densely gland-dotted beneath. Perianth segments of male flowers greenish-white, 4–5 mm long, finely appressed-pubescent, anthers 3–4 mm long; female flowers with dense glandular hairs on back of bract, stigmas 0.5–1.2 cm long. Fruits yellowish or brown, smooth, shining, 4–5 mm long, bract up to 7 mm long with long abruptly acuminate tip.

Native of central Asia; prohibited plant but may be found cultivated or apparently naturalized in the region. Has been cultivated for the fibre to make rope, for birdseed, for oil extracted from the seeds but mainly in recent times for the drug contained in glands on the leaves and floral bracts.

7. URTICACEAE

Herbs, shrubs or rarely soft-wooded trees, often with irritant (stinging) hairs; epidermal cells of leaves mostly with prominent cystoliths. Leaves usually stipulate, simple. Flowers very small, unisexual, rarely bisexual; male flowers with 4–5-lobed perianth, stamens 4–5, filaments inflexed in bud, anthers 2-locular, rudimentary ovary usually present; female flowers usually with similar perianth, often enlarged in fruit, staminodes scale-like or absent, ovary free or adnate to calyx, sessile or shortly stipitate, 1-locular, style simple, ovule solitary, erect. Fruits dry achenes or fleshy drupes; seeds usually with endosperm.

45 genera with ca 550 species widely distributed; ca 11 genera with 20 species Australia; 8 genera with 12 species south-eastern Queensland.

- | | |
|--|-----------------------|
| 1. Stinging hairs present, at least on inflorescences | 2 |
| Stinging hairs absent | 3 |
| 2. Herbs with opposite leaves; stipules interpetiolar | 1. <i>Urtica</i> |
| Shrubs or trees with alternate leaves; stipules intrapetiolar | 2. <i>Dendrocnide</i> |
| 3. Diffuse, prostrate, or erect herbs | 4 |
| Woody shrubs or trees | 7 |
| 4. Leaves opposite | 3. <i>Pilea</i> |
| Leaves alternate | 5 |
| 5. Leaves in Queensland species entire | 4. <i>Parietaria</i> |
| Leaves in Queensland species serrate or crenate | 6 |
| 6. Leaves in Queensland species with very oblique bases, margins coarsely serrate | 5. <i>Elatostema</i> |
| Leaves in Queensland species without oblique bases, margins dentate to crenate | 6. <i>Australina</i> |
| 7. Perianth of female flowers membranous, styles persistent; leaves in south-eastern Queensland species opposite | 7. <i>Boehmeria</i> |
| Perianth of female flowers fleshy, styles deciduous; leaves in south-eastern Queensland species alternate | 8. <i>Pipturus</i> |

1. URTICA L.

Annual or perennial herbs with stinging hairs. Leaves opposite; stipules lateral, interpetiolar; blades with margin dentate to incised-lobed, usually 5–7-nerved. Inflorescences in axillary pairs, various; male flowers 4-merous; female flowers with perianth unequally 4-lobed, stigma usually sessile, penicillate-capitate. Achenes compressed, enclosed by usually membranous perianths.

About 50 species temperate and subtemperate regions; 2 species Australia, both in south-eastern Queensland.

- | | |
|--|---------------------|
| 1. Annual; leaves elliptic to obovate with obtuse tip; male and female flowers in same inflorescence | 1. <i>U. urens</i> |
| Perennial; leaves ovate to ± triangular with tapered tip; male and female flowers in separate inflorescences | 2. <i>U. incisa</i> |

1. *Urtica urens* L.

SMALL NETTLE; STINGING NETTLE

Herb with scattered stinging hairs; stems otherwise \pm glabrous. Leaves with petioles 0.2–3 cm long; blades with margin deeply incised, 0.9–4.3 cm \times 0.5–3.5 cm, puberulent with appressed hairs. Inflorescences of clusters of flowers in short racemes up to 1.5 cm long. Achenes ellipsoid, 1–2 mm long. **Fig. 7B.**

Cosmopolitan weed of pastures and gardens. Flowers generally late winter to spring. Little or no significance as a poisonous plant. The young shoots are edible when boiled for a few minutes, either as a green vegetable or as a base for soup.

2. *Urtica incisa* Poiret

STINGING NETTLE

Herb with scattered stinging hairs; stems otherwise glabrous. Leaves with petioles 0.6–5.5 cm long; blades with margins coarsely serrate, 2.5–10 cm \times 1.5–7 cm, puberulent with small hairs. Male inflorescences of fascicles in spikes up to 7 cm long, single or divided into 2 at the base; females similar but usually shorter, extensively branched. Achenes ellipsoid, 0.5–1 mm long. **Fig. 7A.**

Widespread in rainforest or a weed of pasture in damp areas. Flowers spring to autumn. Little or no significance as a poisonous plant. The young shoots are edible when boiled for a few minutes, either as a green vegetable or as a base for soup.

This is possibly only a variety of the cosmopolitan *U. dioica* L.

2. DENDROCNIDE Miq.

Dioecious perennial shrubs or trees with irritant hairs. Leaves spirally arranged; stipules entirely connate, intrapetiolar. Inflorescences axillary, racemose, bracteate; flowers free, fasciculate or in flabellate receptacles; male flowers usually 4-merous; female flowers 4-merous, ovary with ligulate stigmas. Achenes compressed or bloated, usually strongly tuberculate.

36 species China, India, Sri Lanka, through south-eastern Asia, Malesia, Australia and Pacific Is.; 4 species Australia; 3 species south-eastern Queensland.

- | | | |
|---|----------------------------|---|
| 1. Leaf blades peltate, margin sharply serrate | 1. <i>D. moroides</i> | 2 |
| Leaf blades not peltate, margin entire, sinuate or crenate | | |
| 2. Leaf blades of adult tree glabrous, irritant hairs usually absent, base cuneate to rounded | 2. <i>D. photinophylla</i> | |
| Leaf blades of adult tree pubescent, irritant hairs present, base very deeply cordate | 3. <i>D. excelsa</i> | |

1. *Dendrocnide moroides* (Wedd.) Chew

GYMPIE; GIMPI GIMPI

Laportea moroides Wedd.; *L. peltata* Gaudich. ex Decaisne; *Urticastrum moroides* (Wedd.) Kuntze

Shrub or tree up to 10 m tall, densely pubescent with irritant hairs. Leaves with petioles 8–22 cm long; blades broadly ovate, apex acuminate, base cordate peltate, 10–38 cm \times 9–30 cm. Inflorescences bisexual; flowers fasciculate. **Fig. 7E.**

Common in rainforest, particularly in disturbed areas within and around the edge of rainforest. Flowers throughout the year, mostly summer. This species causes a very intense and persistent sting.

2. *Dendrocnide photinophylla* (Kunth) Chew

SHINING-LEAVED STINGING

TREE; MULBERRY-LEAVED STINGING TREE; FIBREWOOD

Fleurya photinophylla Kunth; *Urera leichhardtiana* Wedd.; *Laportea photinophylla* (Kunth) Wedd.; *Urticastrum photinophylla* (Kunth) Kuntze

Tree up to 20 m tall, young branchlets with few irritant hairs, otherwise plant glabrous. Leaves with petioles 3–7 cm long; blades ovate-elliptic, apex acuminate, 6–18 cm \times 3–10 cm, shining above. Inflorescences unisexual, few irritant hairs present; flowers fasciculate. Achene pericarps smooth.

Rainforests throughout the region. Flowers throughout the year. Sting similar to *D. moroides* but much less severe.

3. *Dendrocnide excelsa* (Wedd.) Chew GIANT STINGING TREE; FIBREWOD
Urera excelsa Wedd.; *U. rotundifolia* Wedd.; *Laportea gigas* Wedd.; *Urticastrum gigas* (Wedd.) Kuntze

Tree up to 35 m tall, puberulent with irritant hairs. Leaves with petioles 5–10 cm long; blades ovate to broadly ovate, apex acuminate, 10–25 cm × 5–18 cm, upper surface with scattered irritant hairs, lower surface usually densely woolly with simple hairs and scattered irritant hairs. Inflorescences unisexual; flowers fasciculate.

Rainforests throughout the region. Flowers autumn to spring. Sting similar to *D. moroides* but less severe.

***Laportea interrupta* (L.) Chew** (*Urtica interrupta* L.), a tropical herb with stinging hairs and alternate leaves with intrapetiolar stipules has been collected once from Bowen Park with a note that it was probably introduced from Cairns.

3. PILEA Lindl.

Leaves opposite; stipules connate; blades usually petiolate. Plants dioecious or monoecious; flowers in small axillary cymes, or sometimes paniculate, unisexual; male flowers with usually 4 perianth segments, stamens same number as segments; female perianth with 3 segments, segments unequal, scale-like staminode present before each, stigma sessile, many-branched. Achenes somewhat covered in persistent perianth lobes.

400 species tropical; 1 species commonly grown in Australia as an ornamental, now a garden escape in south-eastern Queensland.

1. **Pilea microphylla* (L.) Liebm. MILITARY FERN; ARTILLERY PLANT
Parietaria microphylla L.; *Pilea muscosa* Lindl.; *Peplis portula* auct. non L., F. M. Bailey Much-branched herb up to 40 cm tall, or ± prostrate; stems succulent, glabrous. Leaves of each pair unequal, one with petiole 2.5 mm long, blade up to 6 mm × 4 mm, the other with petiole 1.5 mm long, blade up to 3.5 mm × 2.5 mm, blades elliptic to obovate, apex subacute or obtuse, base cuneate, usually oblique, margin entire. Inflorescences of cymes up to 2 mm long; flowers few; perianth segments 0.5–0.75 mm long. Achenes brown, ovoid, slightly laterally compressed, ca 0.4 mm long. **Fig. 7C.**

Native of Europe; naturalized near gardens, often a weed in shady areas of lawns. Flowers summer.

4. PARIETARIA L.

Annual or perennial herbs, indumentum often of hooked hairs. Leaves alternate; exstipulate; blades entire, 3-nerved. Flowers cymose or clustered, axillary, unisexual or bisexual; perianth of bisexual and male flowers deeply 3–4-lobed, valvate; female perianth tubular at the base with shorter lobes; stamens 3–4; ovary free within perianth, stigma linear, recurved, densely penicillate, deciduous. Achenes enclosed by persistent perianth.

30 species in tropical and temperate regions; 1 species Australia, occurring in south-eastern Queensland.

1. *Parietaria debilis* Forster

Leaves with petioles 0.2–3 cm long; blades ovate to ± triangular, apex blunt, base cuneate to truncate, margin entire, 0.5–4 cm × 0.4–3 cm, glabrescent. Flowers few, often solitary; perianth with stiff, sometimes viscid hairs. **Fig. 7G.**

Rainforest fringes or wet gullies in Darling Downs district. Flowers spring to autumn.

5. ELATOSTEMA J. R. & G. Forster

Annual or perennial herbs. Leaves alternate; stipules intrapetiolar, undivided; blades very oblique at the base, margin usually coarsely serrate, 3–5-nerved, sometimes with an additional stipule-like opposite or lateral leaf. Flowers depressed-capitate on broad receptacle, at length discoid or lobate; male flowers 4–5-merous; female flowers with 3–5-lobed perianth or reduced, stigma sessile, penicillate, soon disappearing. Achenes compressed, perianth unchanged; seeds often without endosperm.

200 species Old World tropics; 2 species Australia, occurring in south-eastern Queensland.

- | | |
|--|----------------------------|
| 1. Leaves more than 7 cm long; female flower heads \pm sessile | . 1. <i>E. reticulatum</i> |
| Leaves less than 7 cm long; female flower heads pedunculate | . 2. <i>E. stipitatum</i> |

1. *Elatostema reticulatum* Wedd.

Leaves with petioles 3–10 mm long; blades discolourous, ovate-elliptic, often slightly falcate, apex acuminate, 8–20 cm \times 2–7 cm, puberulent. Male inflorescences on peduncles 2–9 cm long, usually 1–1.5 cm diameter; female inflorescences \pm sessile, usually 0.8–1.5 cm diameter. **Fig. 7F.**

Rainforest or margins in the region. Flowers summer to autumn. Leafy stems can be boiled as a spinach substitute.

2. *Elatostema stipitatum* Wedd.

Leaves with petioles 1–2 mm long; blades discolourous, ovate-elliptic, often slightly falcate, apex acuminate, 0.8–6 cm \times 0.4–2.5 cm, puberulent. Male inflorescences on peduncles ca 1–2 cm long, up to ca 1 cm diameter; female inflorescences on peduncles 0.5–1.5 cm long, up to ca 1 cm diameter.

Rainforest or margins in the region. Flowers summer to autumn.

6. AUSTRALINA Gaudich.

Diffuse annual or perennial herbs. Leaves alternate; stipules lateral, free; blades dentate or subentire. Flowers axillary, glomerate; male flowers with 1 stamen, rudimentary ovary absent; female flowers with obscurely toothed, urceolate perianth, ovary enclosed, stigma linear, often short, villous or almost penicillate on one side. Achenes enclosed by slightly enlarged perianth, free from, or adherent to it, pericarp shining.

5 species New Zealand, Australia, Africa; 2 species Australia; 1 species south-eastern Queensland.

1. *Australina muelleri* Wedd.

Leaves with petioles 0.9–2 cm long; blades ovate, lower ones sometimes orbicular, apex acute to obtuse, base cuneate to truncate, margin dentate to crenate, 1.2–4 cm \times 1–3 cm, puberulent with tiny appressed hairs and scattered larger ones.

Rainforest tracks or wet gullies in rainforest on the McPherson Ra., and southern Great Dividing Ra. Flowers spring–summer.

7. BOEHMERIA Jacq.

Small trees or shrubs. Leaves alternate or opposite; stipules usually free, caducous; blades usually dentate, 3-nerved. Flowers clustered, nearly always unisexual; male flowers 4-merous; female flowers with tubular perianth, compressed or ventricose, 2–4-toothed, stigma elongate, filiform, pilose on one side. Achenes enclosed by the withered perianths.

About 100 species tropical or temperate regions; 2 species Australia; 1 species south-eastern Queensland.

1. *Boehmeria platyphylla* Don var. *austroqueenslandica* Domin
Boehmeria platyphylla of "Qd Flora"

Leaves opposite; petioles 1–8 cm long; blades not discolourous, narrowly ovate to ovate, apex acuminate, base cuneate to rounded, often subcordate, margin dentate except at base, 4–21 cm × 2–8 cm, glabrescent. Inflorescences of numerous clusters of flowers often forming a ± dense axillary spike up to 15 cm long.

Rainforest of Gold Coast hinterland and McPherson Ra. Flowers generally summer and autumn.

8. PIPTURUS Wedd.

Small trees or shrubs, rarely scandent. Leaves alternate; stipules united into one, bifid at apex, intrapetiolar, very caducous; blades 3–5-nerved, often woolly below. Flowers clustered; male flowers usually 4–5-merous; female flowers with ovoid perianth narrowed and minutely dentate at apex, thinly fleshy in fruit, stigma linear, exserted, villous on one side, deciduous. Achenes closely enclosed by the slightly enlarged perianths.

About 40 species Mascarenes, Malaya, Pacific Is., Australia; 1 species Australia, occurring in south-eastern Queensland.

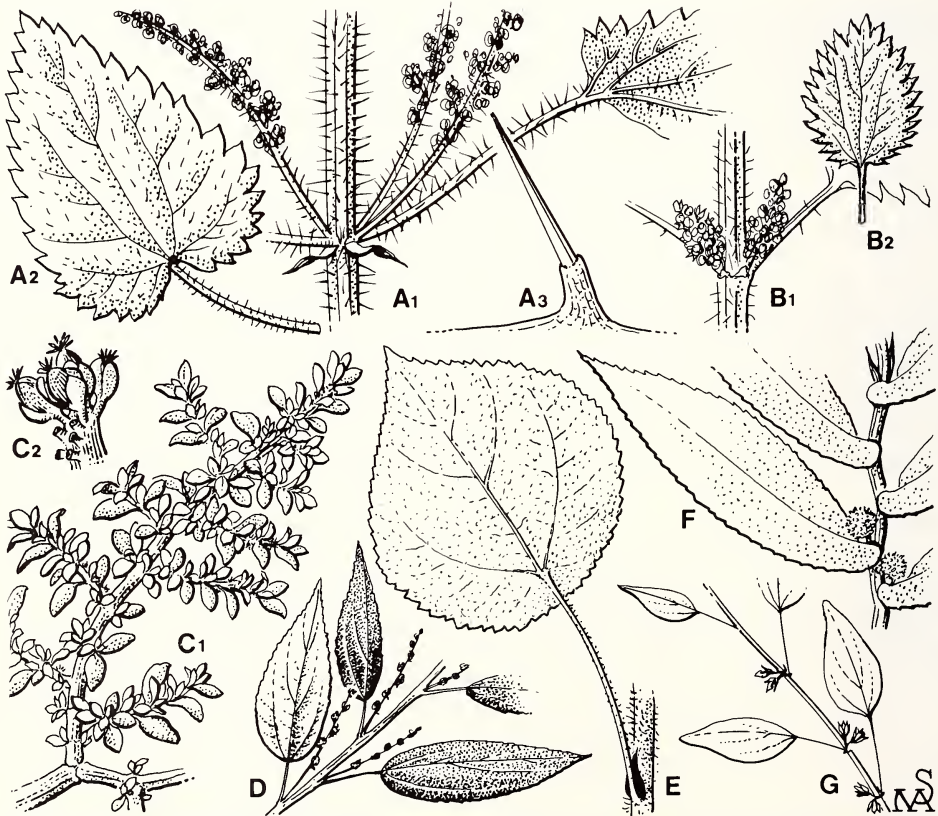


Fig. 7

URTICACEAE — A–B *Urtica* spp. — A₁–A₃, *U. incisa*, A₁, part of flowering stem with interpetiolar stipules x1, A₂, leaf x½, A₃, stinging hair x12; B₁–B₂, *U. urens*, B₁, part of flowering stem x1, B₂, leaf x½; C₁–C₂, *Pilea microphylla*, C₁, part of stem x1, C₂, inflorescence x12; D *Pipturus argenteus*, part of fertile stem x½; E *Dendrocnide moroides*, leaf with intrapetiolar stipule (cf. A₁) x½; F *Elatostema reticulatum*, part of fertile stem x½; G *Parietaria debilis*, part of fertile stem x½.

1. *Pipturus argenteus* (Forster) Wedd.

NATIVE MULBERRY

Urtica argentea Forster

Tree. Leaves with petioles 0.5–9 cm long; blades discolourous, narrowly ovate to ovate, apex acuminate, base cuneate to obtuse, margin serrate, 3.5–18 cm × 1.8–8 cm, upper surface usually with scattered black dots, lower hoary white pubescent, veins dark against light grey hairs. Inflorescences axillary, of 3–7 clusters of flowers along a spike 1.5–4.5 cm long. **Fig. 7D.**

Coastal rainforest. Flowers summer–autumn. The translucent white body in which the brown fruits are embedded is edible, sweet, succulent.

9. OLACACEAE

Trees, shrubs or climbers. Leaves alternate, exstipulate. Flowers usually bisexual, actinomorphic, small; calyx lobes imbricate or open in bud; corolla valvate; stamens usually free, opposite petals, anthers 2-locular; ovary superior or slightly immersed in disc, 1–3-locular, style simple, stigma 2–5-lobed, ovules 1–5. Fruits often drupaceous, sometimes enclosed by enlarged calyx; seeds with copious endosperm.

25 genera with 250 species, tropical or subtropical; 2 genera with 5 species Australia; 1 genus with 2 species south-eastern Queensland.

1. OLAX L.

Leaves sometimes small, scale-like. Inflorescences axillary, usually spicate or racemose; calyx cupular, truncate; petals 6, rarely 5; stamens and staminodes 12–9, stamens usually in 3 pairs connected to petals, staminodes often 6, bifid or bipartite; stigma subcapitate, ovules 3, pendulous from apex of central placenta.

About 55 species tropical Africa, Madagascar, Indomalaysia, Australia; 5 species Australia; 2 species south-eastern Queensland.

- | | | |
|---|-----------|----------------------|
| 1. Leaves emarginate; staminodes bifid | | 1. <i>O. retusa</i> |
| Leaves not emarginate; staminodes not bifid | | 2. <i>O. stricta</i> |

1. *Olax retusa* F. Muell. ex Benth.

Subshrub or shrub up to 1 m tall, often spindly. Leaves yellowish-green, ± sessile; blades ± oblong, occasionally obovate, apex emarginate, shortly mucronate, base truncate, 0.3–1.2 cm × 0.15–0.4 cm, glabrous. Flowers solitary, axillary, 4–7 mm long, peduncles up to 2 mm long; petals white, 5; stamens 3, staminodes 5, bifid, pubescent in lower half. Fruits cylindrical to ellipsoid, 6–7 mm × 3–4 mm.

Fairly common on wallum flats. Flowers throughout the year, mainly spring.

2. *Olax stricta* R. Br.

Erect shrub up to 2 m tall. Leaves ± sessile; blades narrowly oblong, occasionally narrowly obovate, apex obtuse, mucronate, base truncate, 0.4–2 cm × 0.1–0.3 cm, glabrous. Flowers solitary, axillary, peduncles up to 1.5 mm long; petals white, 5, rarely 6; stamens 3, staminodes 5, rarely 6, pubescent in lower half. Fruits cylindrical to obovoid, 5–7 mm × 4–5 mm.

Usually found on poor or sandy soils on Darling Downs, Stanthorpe area and Crows Nest, though it has been recorded from Stradbroke I. Flowers throughout the year.

10. SANTALACEAE

Trees, shrubs or herbs, sometimes parasitic. Leaves alternate or opposite, exstipulate, entire, sometimes reduced to scales. Flowers unisexual or bisexual, actinomorphic; perianth green or petaloid, often fleshy, adnate to ovary, lobes 3-6, valvate or slightly imbricate; stamens as many as perianth lobes, and opposite them, anthers 2-locular; disc epigynous; ovary inferior or superior, 1-locular, style ± simple, ovules 1-3, pendulous from basal placenta. Fruits indehiscent, nut-like or drupaceous; seeds with copious endosperm.

30 genera with 400 species tropical and temperate regions; ca 9 genera with 43 species Australia; 6 genera with 10 species south-eastern Queensland.

- 1. Leaves conspicuously developed, persistent in Queensland species 2
 Leaves reduced to scales, usually caducous in Queensland species 4
- 2. Leaves opposite; perianth large, lobed 1. *Santalum*
 Leaves alternate; perianth very small, lobed or segments free 3
- 3. Herbs; ovary inferior; fruit on very small pedicel 2. *Thesium*
 Shrubs or small trees; ovary superior; fruiting pedicel enlarged, often succulent 6. *Exocarpos*
- 4. Ovary inferior; fruit crowned by persistent perianth lobes 5
 Ovary superior; perianth segments free, either persistent at base of fruit, or caducous 6
- 5. Flowers solitary in Queensland species, subtended by 2-4 scale-like bracts 3. *Choretrum*
 Flowers spicate or racemose in Queensland species, subtended by 1 scale-like, often caducous bract 4. *Leptomeria*
- 6. Flowers unisexual; fruit pedicels terete, not succulent 5. *Anthobolus*
 Flowers bisexual; fruit pedicel enlarged, often succulent 6. *Exocarpos*

1. SANTALUM L.

Trees or shrubs. Leaves usually opposite. Flowers in small axillary or terminal panicles, bisexual; perianth lobes 4, rarely 5, tuft of hairs inside behind each stamen; stamens inserted at base of lobes, filaments usually longer than scale-like projections of disc between lobes; ovary half-inferior, style elongated, stigma 2-3-lobed. Fruits globular drupes, perianth lobes deciduous.

25 species eastern Malaysia and Australia to eastern Polynesia; 3-4 species Australia; 2 species south-eastern Queensland.

- 1. Leaves narrowly oblong; flowers up to ca 4 in small axillary racemes 4-7 mm long 1. *S. obtusifolium*
 Leaves narrowly elliptic to narrowly ovate, or broader; flowers many, usually in axillary panicles up to 5 cm long 2. *S. lanceolatum*

1. *Santalum obtusifolium* R.Br.

Shrub up to 1.5 m tall. Leaves with petioles up to 2 mm long; blades discolourous, apex obtuse, usually mucronate, base cuneate, margin recurved, 1.5-5 cm × 0.1-0.7 cm, glabrous. Flowers ca 8 mm long, lobes white. Fruits bluish-black, ovoid, 0.8-1.1 cm × 0.6-0.8 cm, scar of deciduous lobes at apex.

Restricted to McPherson Ra., also recorded from near Wallangarra.

This may be specifically distinct from true *S. obtusifolium*, native to the Central Coast region of New South Wales. A variant with slightly longer leaves with acute tips and flat margins recorded from the border regions of the Granite Belt may be true *S. obtusifolium*.

2. *Santalum lanceolatum* R.Br.PLUMWOOD; COMMERCIAL OR
TRUE SANDALWOOD

Shrub or small tree up to 6 m tall. Leaves with petioles 2–10 mm long; blades with usually acute, mucronate apex, base cuneate, margin flat, 3.5–10.5 cm × 1–3.5 cm, glabrous, often glaucous. Flowers 6–8 mm long, lobes white. Fruits dark purple, globular to depressed globular, 0.5–1 cm × 0.8–1.4 cm, scar of deciduous lobes well below apex. **Fig. 8H.**

Generally west of Great Dividing Ra. Flowers spring to autumn. Root parasite. Excellent fodder for stock. The fleshy part of the fruit is edible, sweetish.

2. THESIUM L.

Herbs or small shrubs. Leaves alternate, usually linear. Flowers solitary or in small cymes, axillary pedunculate, bisexual; perianth lobes 5, rarely 4, tuft of hairs inside, at base of, or behind stamens; stamens inserted near base of lobes; ovary inferior, style ± elongated, stigma capitate. Fruits small nuts, usually ribbed, crowned by persistent perianth lobes.

250 species Europe, Africa, Asia, South America; 1 species Australia, occurring in south-eastern Queensland.

1. *Thesium australe* R.Br.

Erect herb up to 40 cm tall. Leaves with petioles up to 1 mm long; blades linear, apex acute, base cuneate, 0.5–5 cm × 0.05–0.15 cm. Flowers solitary, axillary on peduncle 1–2 mm long subtended by leaf, with 2 lateral bracts; perianth 2–3 mm long, lobes white. Fruits ± globular to ovoid, 2–2.5 mm × 1.8–2 mm. **Fig. 8C.**

Scattered throughout the district, often in damp areas. Flowers spring to autumn. Root parasite.

3. CHORETRUM R.Br.

Shrubs. Leaves reduced to minute alternate scales, usually caducous. Flowers minute, solitary or clustered, surrounded by involucre of 2–4 minute bracts; perianth 4–5-lobed; stamens inserted near base of lobes, filaments short; ovary inferior, style very short, stigma entire or slightly 2-lobed. Fruits drupaceous, globular or ovoid, perianth lobes persistent.

8 species endemic to Australia; 1 species south-eastern Queensland.

1. *Choretrum candollei* F. Muell. ex Benth.

Branched shrub or small tree up to 5 m tall. Leaf scales fine, triangular, 1–2 mm long, usually present on young branchlets. Flowers solitary, axillary, peduncles 0.5–1 mm long; perianth ca 2 mm long, lobes white. Fruits usually ± globular, 4–6 mm × 4–5 mm. **Fig. 8B.**

Widespread throughout the area, mainly in forest country. Flowers throughout the year, chiefly spring. Representatives of this species on the Granite Belt often have thicker, more rigid branchlets and are rarely above 2m tall.

4. LEPTOMERIA R.Br.

Shrubs. Leaves reduced to minute alternate scales, usually caducous, rarely longer, linear-terete and persistent. Flowers minute in small terminal or lateral spikes, racemes or clusters, sessile or shortly pedicellate in axil of usually minute bract; perianth lobes 5, rarely 4; stamens inserted near base of lobes, filaments short; ovary inferior, style very short, stigma entire or slightly lobed. Fruits drupaceous, small, globular or ovoid, indehiscent, perianth lobes persistent.

15 species endemic to Australia; 1 species south-eastern Queensland.

1. *Leptomeria acida* R.Br.

CURRENT BUSH

Slender shrub up to 2 m tall; branchlets angular or fluted. Leaf scales present at growing tips, soon deciduous. Inflorescences axillary, minutely racemose, rachis up to *ca* 2.5 cm long with *ca* 20 flowers, each up to 1 mm long, lobes white. Only 1 fruit developing per raceme, ovoid, 5–6 mm × 4–5 mm. **Fig. 8D.**

Wallum or sandy coastal areas of the region. Flowers throughout the year, chiefly spring. Fruits edible with acid flavour, improved by cooking with sugar to make a good jam.

5. ANTHOBOLUS R.Br.

Shrubs. Leaves alternate, either linear-terete and persistent or minute, scale-like and caducous. Flowers small, axillary, usually racemose, unisexual, males usually 3–5 together, females 1–2 together, caducous bracts at base; perianth segments 3–4, rarely 5, free; males with stamens inserted near base of segments, filaments very short; ovary superior, thick, fleshy, stigma sessile, pulvinate, obscurely lobed. Drupes ovoid or oblong, perianth segments deciduous.

3 species endemic to Australia; 1 species south-eastern Queensland.

1. *Anthobolus leptomerioides* F. Muell.

Shrub up to 1.2 m tall; branchlets usually ± terete. Leaf scales present at growing tips, caducous. Flowers clustered, each on peduncle 0.4–1.5 cm long, rarely longer; perianth greenish white, 2–3 mm long. Fruits orange-red, ovoid, 6–8 mm × 4–5 mm. **Fig. 8I & 8G.**

Darling Downs district and further west. Flowers mainly spring.

6. EXOCARPOS Labill.

Trees or shrubs. Leaves usually alternate, often reduced to minute scales, caducous, rarely enlarged and persistent. Flowers minute, axillary spicate or clustered, bisexual or male by abortion; perianth segments 5, rarely 4, free; stamens inserted near base of perianth segments, filaments very short, broad; ovary superior, thick, fleshy, stigma sessile, entire or slightly lobed. Usually only 1 fruit formed per spike, drupe or nut, ovoid or ± globular, on enlarged, usually succulent pedicel, perianth segments either persistent around base of fruit, or deciduous.

26 species Indochina, Malaysia, Australasia, Hawaii; 9 species Australia; 4 species south-eastern Queensland.

- | | |
|--|-----------------------------|
| 1. Flowers in spikes | 2 |
| Flowers in ± sessile clusters | 3 |
| 2. Leaves large, persistent | 1. <i>E. latifolius</i> |
| Leaves reduced to minute persistent scales | 2. <i>E. cupressiformis</i> |
| 3. Branchlets rigid, terete, often ending in sharp point; flowers in clusters; | |
| fruit ovoid, <i>ca</i> 4 mm × 3 mm. | 3. <i>E. aphyllus</i> |
| Branchlets fine, very angular, drooping; flowers 1–2 together; fruit glo- | |
| bose, 2–3 mm × 2–3 mm | 4. <i>E. strictus</i> |

1. *Exocarpos latifolius* R.Br.

NATIVE CHERRY; BROAD-LEAVED
NATIVE CHERRY

Shrub or small tree up to 5 m tall, young parts scurfy; branchlets striate. Leaves with petioles 3–10 mm long; blades elliptic to broadly elliptic, apex obtuse, often slightly emarginate, mucronate, base cuneate, 2.5–8 cm × 1.2–5 cm. Flower spikes up to 2.5 cm long; perianth segments up to 1 mm long. Fruits ± ovoid to globular, 5–7 mm × 5–7 mm, on enlarged pedicel 5–8 mm long. **Fig. 8A.**

Widespread in mainly coastal districts. Flowers mainly winter. Enlarged pedicel when red and ready to fall, sweet and palatable.



Fig. 8

SANTALACEAE — A, -A, *Exocarpos latifolius*, A₁, part of fruiting branchlet x1, A₂, part of flower spike x6; B, -B, *Choretrum candollei*, B₁, part of flowering branchlet x1, B₂, flower x6, B₃, fruit x1½; C, -C, *Thesium australe*, C₁, part of fruiting branchlet x1, C₂, flower x3, C₃, fruit x1½; D, -D, *Leptomeria acida*, D₁, part of fertile branchlet x1, D₂, flower x12, D₃, fruit x1½; E-F *Exocarpos* spp. — E *E. cupressiformis*, part of fruiting branchlet x1; F, -F, *E. aphyllus*, F₁, flower cluster on stem x6, F₂, T.S. of stem showing striations x6; G *Anthobolus leptomerioides*, T.S. of stem showing striations x6; H, -H, *Santalum lanceolatum*, H₁, part of flowering branchlet x½, H₂, fruit x1; I, -I, *Anthobolus leptomerioides*, I₁, part of fruiting branchlet x1, I₂, inflorescence x1, I₃, flower x3, I₄, fruit x1½.

2. *Exocarpos cupressiformis* Labill. NATIVE CHERRY; CHERRY BALLART
Shrub or small tree up to 8 m tall, young parts scurfy; branchlets striate. Leaf scales *ca* 1 mm long. Flower spikes up to 1 cm long; perianth segments yellowish, up to 1 mm long. Fruits ovoid, 3–5 mm × 3–4 mm, on enlarged ± fleshy pedicel 2–4 mm long, perianth persistent. **Fig. 8E.**

Common throughout the area. Flowers all year round. Fruiting pedicel when deep red and ready to fall, sweet and palatable.

3. *Exocarpos aphyllus* R.Br.
Shrub or small tree up to 5 m tall; branchlets striate. Leaf scales caducous. Flowers ± sessile; perianth segments yellowish-green, *ca* 1 mm long. Fruiting pedicels enlarged, 2–4 mm long, perianth usually persistent. **Fig. 8F.**

Darling Downs district and further west. Flowers throughout the year.

When sterile, this species and *Anthobolus leptomerioides* may be confused. See illustration in **Fig. 8F & 8G** of striated and fluted branchlets.

4. *Exocarpos strictus* R.Br.
Shrub up to 3 m tall; branchlets striate. Flowers ± sessile; perianth segments yellowish, 1–2 mm long. Fruiting pedicels enlarged, fleshy, 2–4 mm long, perianth persistent.

Mainly high areas near Qld-N.S.W. border, though it has been recorded from Mt. Glorious. Flowers spring–summer.

11. LORANTHACEAE

Hemiparasitic, terrestrial, root-parasitic shrubs or trees, or aerial, stem-parasitic shrubs. Leaves mostly opposite. Flowers mostly more than 5 mm long, bisexual or unisexual; calyx a lobed or truncate limb at apex of ovary; corolla polypetalous or gamopetalous, usually actinomorphic, 4–6(–9)-merous, valvate; stamens the same number as and opposite the petals, epipetalous, anthers mostly basifixed and immobile, sometimes dorsifixed and versatile; ovary inferior, 1–many-locular, ovules not differentiated from placenta. Fruits mostly baccate, viscous layer outside vascular bundles; seeds solitary.

About 65 genera with 900 species in tropical and temperate regions; 10 genera with 62 species Australia; 7 genera with 25 species south-eastern Queensland.

Most species are known by the common name ‘MISTLETOE’.

A complete list of synonyms for names in this family is given in B. A. Barlow (1966). “A Revision of the Loranthaceae of Australia and New Zealand”, *Aust. J. Bot.* 14, pp. 421–99.

1. Inflorescence terminal (sometimes on short lateral stems and then seemingly axillary)	1. <i>Muellerina</i>	2
Inflorescence otherwise		
2. Flowers in heads, enclosed in 2 enlarged foliaceous bracts connate at margins over buds during development	2. <i>Diplatia</i>	3
Inflorescence various; flowers not enclosed in enlarged foliaceous bracts		
3. Corolla polypetalous	3. <i>Amyema</i>	4
Corolla gamopetalous		
4. Leaves mostly alternate or scattered; inflorescence a raceme of single flowers	4. <i>Dendrophthoe</i>	5
Leaves opposite or clustered; inflorescence a simple umbel or a raceme of triads		
5. Corolla 5-merous, deeply split on one side, lobes and stamens reflexed to other side	5. <i>Benthamina</i>	6
Corolla 6-merous, lobes and stamens not reflexed to one side		
6. Runners present; corolla tube straight; inflorescence a raceme of triads	6. <i>Amylotheca</i>	
Runners absent; corolla tube curved; inflorescence a simple umbel	7. <i>Lysiana</i>	

1. **MUELLERINA** van Tieghem

Aerial stem-parasitic shrubs with runners. Leaves opposite, penninervous or curvinervous. Inflorescences terminal, racemose with 1–6 decussate pairs of pedunculate triads or single flowers, each triad with central flower sessile, laterals pedicellate, pedicel 3–6 mm long, 1 bract under each flower; corolla curved in bud, polypetalous, 5-merous; stamens unequal, anthers dorsifixed, versatile; style articulate at base. Fruits pear-shaped.

4 species endemic to Australia, all in south-eastern Queensland.

- | | |
|---|----------------------------|
| 1. Flowers single, mostly forming a simple, 2-flowered umbel | 2 |
| Flowers in triads or, if single, forming a raceme of at least 6 flowers | 3 |
| 2. Leaves linear-oblong, petiolate | 1. <i>M. bidwillii</i> |
| Leaves ovate, sessile | 2. <i>M. myrtifolia</i> |
| 3. Stems pendulous; leaves linear to oblong, apex acute, mostly more than 8 cm long | 3. <i>M. eucalyptoides</i> |
| Stems spreading; leaves oblong to orbicular, apex rounded, mostly less than 8 cm long | 4. <i>M. celastroides</i> |

1. ***Muellerina bidwillii*** (Benth.) Barlow

Loranthus bidwillii Benth.

More or less glabrous. Leaves with petioles *ca* 2 mm long; blades linear to narrowly obovate, apex rounded, base attenuate, 1.3–4.5 cm × 0.15–0.4 cm. Inflorescences 2-flowered umbels, rarely 4-flowered simple racemes, peduncle 3–6 mm long, pedicels 5–7 mm long; calyx ± cylindrical; corolla slender, acute, 2–2.7 cm long. Fruits 6–8 mm long.

Generally coastal districts, exclusively parasitic on *Callitris* spp.

2. ***Muellerina myrtifolia*** (Benth.) Barlow

Loranthus myrtifolius Benth.

Glabrous. Leaves sessile; blades ovate, apex rounded, base cordate, 1.5–2.5 cm × 0.8–1.2 cm. Inflorescences 2-flowered umbels, peduncle 5–10 mm long, pedicels 6–10 mm long; calyx barrel-shaped; corolla 2–2.5 cm long.

South-eastern Darling Downs district and McPherson Ra., recorded as parasitic on *Croton* spp., *Parsonsia* spp., and *Pandorea jasminoides*.

3. ***Muellerina eucalyptoides*** (DC.) Barlow

Loranthus eucalyptoides DC.

Glabrous. Leaves with petioles 1–3 cm long; blades linear-ovate to narrowly oblong, apex acute, attenuate, base attenuate, 6–25 cm × 0.7–2.5 cm. Axes of inflorescences 1.2–3.5 cm long, enlarged at nodes, peduncle 5–9 mm long; usually flowers in triads but often single; calyx barrel-shaped; corolla weakly clavate, acute, 3–4.5 cm long. Fruits 1.2–1.5 cm long, truncate and 5 mm wide at apex. **Fig. 9A.**

Mainly mountains of Great Dividing Ra. and Darling Downs district, usually parasitic on *Eucalyptus* spp.

4. ***Muellerina celastroides*** (Sieber ex J. A. & J. H. Schultes) van Tieghem

Loranthus celastroides Sieber ex J. A. & J. H. Schultes

Leaves with ± winged petioles 3–8 mm long; blades oblong to elliptic, apex rounded, base attenuate, 2.5–7 cm × 1.5–4 cm, glabrous. Inflorescences minutely brown tomentose, axis 0.5–2 cm long, peduncle 5–7 mm long; flowers usually in triads; calyx barrel-shaped; corolla weakly clavate, acute, 2.2–3.5 cm long.

Coastal areas in open forest and rainforest, usually parasitic on *Banksia* spp. and *Casuarina* spp.

2. **DIPLATIA** van Tieghem

Aerial stem-parasitic shrubs without runners. Leaves opposite, curvinervous. Inflorescences capitata, consisting of 2, rarely 3, sessile triads at apex of common peduncle, central bracts enlarged and foliaceous, oblong to ovate, enclosing flowers and connate at margins over them during development, lateral bracts small, narrow, caducous; corolla polypetalous, actinomorphic, 5-merous; anthers basifixed, immobile; style articulate at base.

3 species endemic to Australia; 1 species south-eastern Queensland.

1. ***Diplatia furcata*** Barlow

Glabrous. Leaves with petioles 3–5 mm long; blades narrowly ovate to oblong, apex rounded, base attenuate, 4–10 cm × 0.5–2.5 cm. Inflorescences 2–3 in axils, peduncles 1–2.5 cm long, enlarged central bracts 1.4–2.5 cm × 0.8–1.5 cm (shorter than flowers); calyx funnel-shaped; corolla 1.8–2.8 cm long. **Fig. 9D.**

Usually coastal areas of south-eastern Queensland, almost exclusively parasitic on *Melaleuca* spp. and *Callistemon viminalis*, rarely *Eucalyptus* spp.

3. **AMYEMA** van Tieghem

Aerial stem-parasitic shrubs with or without runners. Leaves opposite or verticillate, rarely scattered, penninervous to curvinervous. Inflorescences usually axillary, sometimes internodous or arising from runners, primarily a pedunculate, many-rayed umbel of triads, often variously reduced, bract single beneath each flower; corolla polypetalous; usually 4-, 5-, or 6-merous; anthers basifixed, immobile; style usually articulate at the base.

About 90 species from Malaya and the Philippines to Australia and the Pacific; 32 species Australia; 14 species south-eastern Queensland.

1. Leaves terete	2
Leaves flat	3
2. Buds slender, indumentum of corolla short, grey	1. <i>A. cambagei</i>
Buds usually robust, indumentum of corolla long, white or pale brown	2. <i>A. linophyllum</i>
3. Inflorescence a pedunculate head of 3–6, rarely 9, sessile flowers	3. <i>A. maidenii</i>
Inflorescence umbellate	4
4. Flowers in diads	5
Flowers in triads or tetrads	6
5. Flowers sparsely to densely rusty-tomentose; corolla robust; fruit globular, bracts usually enlarged	4. <i>A. bifurcatum</i>
Flowers ± glabrous; corolla slender; fruit oblong, bracts not enlarged	5. <i>A. biniflorum</i>
6. Corolla in mature bud minutely to densely tomentose	7
Corolla in mature bud glabrous	8
7. Corolla more than 1.6 cm long; calyx abruptly widened then contracted again just below the limb	6. <i>A. quandang</i>
Corolla less than 1.5 cm long; calyx uniformly cup-shaped	7. <i>A. gaudichaudii</i>
8. Lateral flowers of triads sessile	8. <i>A. lucasii</i>
Lateral flowers of triads pedicellate, sometimes shortly so	9
9. Triads with all flowers pedicellate	9. <i>A. miquelii</i>
Triads or tetrads with central flower sessile	10
10. Leaves more than 10 cm long; stems pendulous	10. <i>A. pendulum</i>
Leaves less than 10 cm long; stems usually erect or spreading	11

- | | | |
|---|---------------------------|----|
| 11. Calyx densely tomentose in lower part | 11. <i>A. conspicuum</i> | 12 |
| Calyx glabrous or shortly and sparsely tomentose | | |
| 12. Corolla in mature bud longitudinally ridged or winged, especially near the apex | 12. <i>A. miraculosum</i> | 13 |
| Corolla in mature bud not ridged or winged | | |
| 13. Leaves elliptic to orbicular; calyx usually glabrous; host usually mangroves | 13. <i>A. mackayense</i> | |
| Leaves mostly oblong; calyx sparsely to densely tomentose; host usually <i>Casuarina</i> spp. | 14. <i>A. congener</i> | |

1. *Amyema cambagei* (Blakely) Danser

Loranthus cambagei Blakely

Young parts and inflorescences shortly, densely, white- or grey-tomentose, becoming glabrous. Leaves clustered, linear-terete, apex mucronate, 5–20 cm × 0.1–0.2 cm, flexuose. Peduncles of inflorescences 0.8–2 cm long, rays 2–4, spreading, 4–6 mm long, pedicels of lateral flowers 3–6 mm long; calyx cup-shaped; corolla strongly clavate, acute, 1.5–2 cm long. Fruits small, globular.

Throughout the area, parasitic almost exclusively on several *Casuarina* spp.

2. *Amyema linophyllum* (Fenzl) van Tieghem

Loranthus linophyllum Fenzl

Plants densely white-, rarely pale brown-tomentose, or glabrous with age. Leaves clustered or opposite, terete, apex obtuse, 6–12 cm × 0.1–0.25 cm, flexuose. Peduncles of inflorescences 5–10 mm long, rays usually 3, spreading, 2–6 mm long, pedicels of lateral flowers 1–3.5 mm long; calyx cup-shaped; corolla clavate, obtuse, 1.6–2.6 cm long. Fruits globular, ca 5 mm diameter, crowned by persistent calyx limb.

Inland areas of region, exclusively parasitic on *Casuarina* spp.

3. *Amyema maidenii* (Blakely) Barlow

Loranthus maidenii Blakely; *Diplatia maidenii* (Blakely) Danser

Plants densely white- or brown-tomentose, vegetative parts glabrous with age. Leaves with petioles 1–5 mm long; blades narrowly obovate to oblong, apex rounded, base attenuate, 3–6 cm × 0.5–1 cm, glaucous. Peduncles of inflorescences 1–3 cm long; calyx ± angular; corolla slender, strongly clavate, 1.4–3 cm long. Fruits ellipsoid, ca 8 mm long, constricted near apex, crowned by persistent calyx limb.

Western Darling Downs district, and further west, usually parasitic on *Acacia harpophylla*, but also recorded on *Acacia cambagei*.

4. *Amyema bifurcatum* (Benth.) van Tieghem

Loranthus bifurcatus Benth.

Young parts and flowers ± rusty-tomentose, glabrous otherwise. Leaves with terete, winged petioles 1–4 cm long; blades linear to narrowly ovate, often falcate, pendulous, apex acute to rounded, base attenuate, 10–35 cm × 0.4–2.5 cm. Peduncles 1.5–4 cm long, rays usually 2, 0.2–2 cm long, pedicels 1–7 mm long; calyx cup-shaped; corolla slightly to strongly inflated at the base, clavate, obtuse, 2.2–3 cm long. Fruits globular, ca 1 cm diameter, prominent nipple left by articulation of style above base. **Fig. 9G.**

Widespread in area, mostly parasitic on species of *Eucalyptus*, such as *E. maculata* and *E. intermedia*.

5. *Amyema biniflorum* Barlow

Loranthus bifurcatus auct. non Benth., Blakely

Young parts sparsely brown-tomentose, otherwise glabrous. Leaves with petioles 1.3–3 cm long; blades narrowly ovate, often falcate, apex acute, base attenuate, 8–18 cm × 0.8–1.5 cm. Peduncles of inflorescences 3–6 cm long, rays 2, 5–10 mm long, pedicels 4–8 mm long; calyx funnel-shaped; corolla red or green, inflated at base, weakly clavate, 2–2.5 cm long. Fruits narrowly ellipsoid, ca 8 mm long.

Occurs sporadically in the area, parasitic on *Eucalyptus* spp.

6. *Amyema quandang* (Lindl.) van Tieghem*Loranthus quandang* Lindl.

Plants shortly densely white-tomentose or glabrous glaucous with age. Leaves opposite, alternate or scattered; petioles 0.4–1.2 cm long; blades narrowly ovate, ovate, elliptic or oblong, usually falcate, apex acute to rounded, base attenuate or contracted, 3–10 cm × 0.8–2(–4.5) cm. Peduncles of inflorescences 3–10 mm long, rays 2, 2–8 mm long, pedicels 1–3 mm long; corolla 1.6–3 cm long. Fruits ellipsoid or pear-shaped to nearly orbicular, 6–10 mm long.

Two varieties occur in the region:

1. Leaf blades narrowly ovate to elliptic, usually falcate, base usually attenuate, 0.8–2 cm wide *A. quandang* var. *quandang*
 Leaf blades oblong to ovate, not falcate, base contracted, 2–4.5 cm wide *A. quandang* var. *bancroftii*

A. quandang var. *quandang* occurs throughout the region. *A. quandang* var. *bancroftii* (Blakely) Barlow (*Loranthus quandang* var. *bancroftii* Blakely) (Fig. 9I) occurs in inland districts. They are most commonly parasitic on *Acacia aneura*, *A. cambagei*, and *A. harpophylla*.

7. *Amyema gaudichaudii* (DC.) van Tieghem*Loranthus gaudichaudii* DC.

Young parts, inflorescences shortly tomentose. Leaves with petioles 2–5 mm long; blades narrowly ovate, apex rounded, base attenuate, 2–4 cm × 0.2–0.5 cm. Peduncles of inflorescences 0.8–1.2 cm long, rays 2–3, 4–6 mm long, pedicels 2–4 mm long; calyx cup-shaped; corolla 4- or 5-merous, slender, clavate, obtuse, 7–10 mm long. Fruits red, globular, ca 4 mm diameter.

Darling Downs district, almost exclusively parasitic on *Melaleuca decora*.

8. *Amyema lucasii* (Blakely) Danser*Loranthus lucasii* Blakely

Leaves with petioles 4–8 mm long; blades narrowly oblong to elliptic, apex rounded, base contracted, 3.5–5.5 cm × 1–2.5 cm, glabrous glaucous, distinctly wrinkled on both surfaces when dry. Peduncles of inflorescences 1.2–2 cm long, rays usually 4, 0.2–1.2 cm long; calyx cup-shaped, densely white-tomentose in lower part; corolla slender, clavate, ca 2 cm long. Fruits ovoid, ± tomentose in lower half, crowned by persistent calyx limb. Fig. 9H.

Darling Downs district and drier open forest areas, usually parasitic on *Flindersia* spp.

9. *Amyema miquelii* (Lehm. ex Miq.) van Tieghem*Loranthus miquelii* Lehm. ex Miq.

Young plants, calyx and sometimes inflorescence shortly, sparsely to densely brown-tomentose, glabrous glaucous with age. Leaves with petioles 1–5 cm long; blades linear to ± ovate, often falcate, apex acute or rounded, base attenuate, 3–25 cm × 0.5–3 cm. Peduncles of inflorescences 1–5 cm long, rays 3–7, 0.3–1.5 cm long, pedicels of all flowers 1–6 mm long, rarely central flower sessile; calyx ± cylindrical; corolla sometimes inflated at base, otherwise slender, clavate, acute, 5–7-merous, 1.5–2.8 cm long. Fruits cylindrical to ± ovoid, 0.8–1.2 cm long. Fig. 9J.

Throughout the area, usually on *Eucalyptus* spp. or sometimes *Acacia* spp.

10. *Amyema pendulum* (Sieber ex Sprengel) van Tieghem*Loranthus pendulus* Sieber ex Sprengel

Young parts, flowers scurfy or shortly brown-tomentose, otherwise glabrous. Leaves with petioles 1–4 cm long; blades narrowly ovate, apex usually acute, base attenuate, 10–40 cm × 0.3–1.5 cm. Peduncles of inflorescences 0.8–4 cm long, rays 3–5, 0.5–1.8 cm long, pedicels 2–7 mm long; calyx funnel-shaped; corolla 2.2–4 cm long. Fruits ellipsoid-ovoid, 1 cm × 0.5 cm, crowned by persistent calyx limb.

Two subspecies occur in the region:

- | | |
|---|--|
| 1. Buds usually acute, 5-merous; peduncle 1-2.2 cm long, rays 0.5-1.1 cm long, pedicels 2-4 mm long | <i>A. pendulum</i> subsp. <i>pendulum</i> |
| Buds usually obtuse, 6-merous; peduncle usually 1.5-4 cm long, rays 0.8-1.8 cm long, pedicels 4-7 mm long | <i>A. pendulum</i> subsp. <i>longifolium</i> |

Both *A. pendulum* subsp. *pendulum* and *A. pendulum* subsp. *longifolium* (Hook.) Barlow (*Loranthus longifolius* Hook.) occur throughout the region usually on *Eucalyptus* spp. and *Acacia* spp.

11. *Amyema conspicuum* (F. M. Bailey) Danser

Loranthus conspicuus F. M. Bailey

Young parts, calyces white- to brown-tomentose, otherwise \pm glabrous. Leaves with petioles 1-6 mm long; blades oblong to ovate, apex rounded, base attenuate, 3.5-8 cm \times 1.2-4.5 cm. Peduncles of inflorescences 3-9 mm long, rays 2, 1-2.5 mm long, pedicels 0.5-1 mm long; calyx \pm cylindrical; corolla slender, weakly clavate, acute, 1.4-2.5 cm long. Fruits globular, 4-5 mm diameter, with truncate collar 1-1.5 mm long.

Coastal districts in open forest and rainforest, usually parasitic on *Alphitonia excelsa*.

12. *Amyema miraculosum* (Miq.) van Tieghem subsp. *boormanii* (Blakely) Barlow

Loranthus miraculosus Miq. var. *boormanii* Blakely; *Loranthus bifurcatus* Benth. var. *queenslandicus* Domin

More or less glabrous. Leaves with petioles 2-10 mm long; blades narrowly ovate to narrowly oblong, apex rounded or acute, base attenuate, 4-10 cm \times 0.5-2.5 cm. Peduncles of inflorescences 0.6-3 cm long, rays 2-3, 3-10 mm long, pedicels 0.5-10 mm long; calyx funnel-shaped; corolla slender, strongly clavate, obtuse, longitudinally ridged at apex, sometimes 4-merous, 0.8-2.5 cm long. Fruits narrowly ellipsoid, constricted at apex, crowned by persistent calyx limb.

Mainly Darling Downs district, common on *Santalum lanceolatum*, *Casuarina* spp., species of Myoporaceae, and other species of Loranthaceae.

13. *Amyema mackayense* (Blakely) Danser

Loranthus mackayensis Blakely

More or less glabrous. Leaves with petioles 3-6 mm long; blades elliptic to orbicular, apex rounded, base contracted, 2.5-6 cm \times 1.2-4.5 cm. Peduncles of inflorescences usually deflexed, 0.6-2.2 cm long, rays 2-5, 4-10 mm long, pedicels 2-5 mm long; calyx cylindrical to funnel-shaped; corolla slender, clavate, 1-2.8 cm long. Fruits ellipsoid, crowned by persistent calyx limb.

Mangrove areas along the coast, parasitic on *Avicennia* spp.

14. *Amyema congener* (Sieber ex J. A. & J. H. Schultes) van Tieghem

Loranthus congener Sieber ex J. A. & J. H. Schultes

Young parts and calyx sparsely to densely brown- or white- tomentose, otherwise \pm glabrous. Leaves with petioles up to 8 mm long; blades narrowly ovate, obovate or orbicular, apex rounded, base attenuate or contracted, 3-10 cm \times 1-5.5 cm. Peduncles of inflorescences 1-3.5 cm long, rays 3-5, 5-8 mm long, pedicels 2-3 mm long; calyx slightly funnel-shaped; corolla slender, clavate, acute, 1.6-3.5 cm long. Fruits ellipsoid to \pm globular, crowned by persistent calyx limb.

Two subspecies occur in the region:

- | | |
|--|--|
| 1. Leaf blades narrowly ovate to oblong, base attenuate, usually more than 4 cm long | <i>A. congener</i> subsp. <i>congener</i> |
| Leaf blades oblong to \pm orbicular, base contracted, 2.5-5 cm long | <i>A. congener</i> subsp. <i>rotundifolium</i> |

A. congener subsp. *congener* is usually found in coastal areas while *A. congener* subsp. *rotundifolium* Barlow is usually found in the Darling Downs district. The most frequent hosts are *Casuarina* spp. and *Acacia* spp. in coastal areas, and *Geijera parviflora* in inland areas.

4. **DENDROPTHOE** Mart.

Aerial stem-parasites, runners usually present. Leaves alternate or scattered, occasionally opposite, penninervous. Inflorescences simple axillary racemes or spikes, sometimes reduced, bracts single under each flower; corolla gamopetalous, 5-merous, tube usually inflated, curved, and unequally split into lobes; anthers basifixed, immobile.

About 30 species from tropical Africa to Australia; 6 species Australia; 2 species south-eastern Queensland.

- | | |
|---|--------------------------|
| 1. Calyx glabrous | 1. <i>D. glabrescens</i> |
| Calyx sparsely to densely brown-tomentose | 2. <i>D. vitellina</i> |

1. **Dendrophthoe glabrescens** (Blakely) Barlow

Loranthus vitellinus F. Muell. var. *glabrescens* Blakely; *L. longiflorus* Desr. var. *savannorum* Domin

More or less glabrous. Leaves with petioles 0.3–2.5 cm long; blades thick, narrowly obovate to elliptic, apex rounded, base attenuate, 3–20 cm × 1–5 cm, usually glaucous. Axes of inflorescences 1–3 cm long, flowers 5–20 on pedicels 3–5 mm long; calyx cylindrical; corolla 2–5 cm long. Fruits oblong-ovoid, 1–1.5 cm long.

Found mostly inland or in drier coastal areas in open forest, most frequently parasitic on *Eucalyptus* spp.

2. **Dendrophthoe vitellina** (F. Muell.) van Tieghem

Loranthus vitellinus F. Muell.

Young vegetative parts tomentose. Leaves with petioles 3–10 mm long; blades narrowly ovate, ovate to oblong, apex rounded, base attenuate, 4–12 cm × 0.6–4.2 cm. Axes of inflorescences 1–5 cm long, flowers 5–20 on pedicels 1.5–4 mm long; calyx cylindrical or slightly funnel-shaped; corolla 2.5–4.5 cm long. Fruits oblong-ovoid, 1–1.5 cm long. **Fig. 9C.**

Coastal plain and ranges of the area, parasitic most frequently on Myrtaceous hosts.

5. **BENTHAMINA** van Tieghem

Aerial stem-parasites with runners. Leaves opposite, penninerved. Inflorescences axillary, 2-flowered pedunculate simple umbels, 1 bract under each flower; corolla gamopetalous, 5-merous, deeply split on one side, ligulate with the lobes reflexed on other side; anthers basifixed, immobile.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. **Benthamina alyxifolia** (F. Muell. ex Benth.) van Tieghem

Loranthus alyxifolius F. Muell. ex Benth.

Leaves with ± winged petioles 2–6 mm long; blades elliptic to obovate, apex rounded, base contracted, 2.5–7.5 cm × 2–5 cm, glabrous, ± shiny above. Inflorescences several at nodes, densely brown-tomentose, peduncle 0–3 mm long, pedicels 0.5–1.5 mm long; calyx narrow, 3–5 mm long; corolla slender, 3.2–4.2 cm long. Fruits narrowly ovoid, 8–10 mm long. **Fig. 9B.**

Coastal areas, usually parasitic on rainforest trees.

6. **AMYLOTHECA** van Tieghem

Aerial stem-parasites with runners. Leaves opposite, penninerved. Inflorescences primarily axillary subumbellate racemes of several decussate pairs of triads, central flower sessile, laterals pedicellate, sometimes reduced to simple racemes or 2-flowered simple umbels, usually 1 bract beneath each flower; corolla gamopetalous to middle or higher, actinomorphic, 6-merous; anthers linear, basifixed, immobile; style articulate 1.5–5 mm above base, style base pyramidal.

4 species Australia, New Guinea, Melanesia; 2 species Australia; 1 species south-eastern Queensland.

1. *Amylotheca dictyophleba* (F. Muell.) van Tieghem

Loranthus dictyophlebus F. Muell.

Glabrous. Leaves with petioles 2–8 mm long; blades narrowly ovate to elliptic, apex acute to rounded, base attenuate to contracted, 6–12 cm × 2–6 cm, usually shiny above, dull below. Inflorescences 1–3 together, axillary, axis 1.5–2.8 cm long, peduncle 3–10 mm long; pedicels 2–4 mm long; calyx narrow, cylindrical; corolla thin, inflated in middle, clavate and acute at apex, 2.8–3.8 cm long. Fruits globular, 1–1.2 cm diameter. **Fig. 9E.**

Common in closed forest communities in coastal areas, parasitic mainly on a large number of rainforest species.

7. LYSIANA van Tieghem

Aerial stem-parasites without runners. Leaves opposite (and sometimes clustered), terete or flat, penninerved. Inflorescences axillary, pedunculate or sessile, 2-, rarely 3-flowered simple umbels, sometimes reduced to 1 flower, 1 bract under each flower; corolla gamopetalous, 6-merous, obliquely curved, inflated in middle, unequally divided, with segments on concave side extended deeper and more strongly reflexed; anthers basifixed; style articulate up to 1 mm above base.

6 species endemic to Australia; 2 species south-eastern Queensland.

- 1. Fruit ± translucent; leaves narrowly obovate to broadly spatulate with prominent venation; calyx usually lobed or toothed 1. *L. subfalcata*
- Fruit dark; leaves linear to oblong with obscure venation; calyx limb usually short, entire 2. *L. exocarpi*

1. *Lysiana subfalcata* (Hook.) Barlow

Loranthus subfalcatus Hook.; *L. exocarpi* (Behr) van Tieghem var. *subfalcatus* (Hook.) Domin; *L. exocarpi* var. *venulosa* Blakely

Glabrous. Leaves with petioles 5–10 mm long; blades with apex acute or rounded, base attenuate, 2–11 cm × 0.4–2 cm. Inflorescences 2-flowered umbels, pedicels 3–8 mm long; calyx cylindrical; corolla 2.5–5 cm long. Fruits ellipsoid to pear-shaped, 0.8–1.4 cm × 0.4–0.6 cm. **Fig. 9F.**

Two subspecies occur in the region:

- 1. Stems usually pendulous and sparsely branched; leaves very narrowly ovate or narrowly spatulate; peduncles 1–3 mm long; nipple on fruit small or absent *L. subfalcata* subsp. *subfalcata*
- Stems erect and much-branched; leaves broadly spatulate, more than 4 cm long; peduncles 3–5 mm long; nipple on fruit ca 1 mm long *L. subfalcata* subsp. *maritima*

L. subfalcata subsp. *subfalcata* occurs in more inland areas in open forest, usually parasitic on *Atalaya hemiglauc*a, *Heterodendrum oleifolium*, *Santalum lanceolatum* and several *Acacia* spp. *L. subfalcata* subsp. *maritima* Barlow occurs in or adjacent to mangrove communities, usually on *Ceriops tagal* and *Rhizophora* spp., rarely on adjacent trees such as *Casuarina glauca* and *Myoporum acuminatum*.

2. *Lysiana exocarpi* (Behr) van Tieghem

Loranthus exocarpi Behr

Glabrous. Leaves with obscure petioles; blades linear to narrowly ovate, often falcate, apex ± rounded, base attenuate, 3–15 cm × 0.1–1 cm. Inflorescences 2- or 3-flowered umbels, peduncle 0.5–3 mm long, pedicels 2–5 mm long; calyx cylindrical; corolla obtuse, 2.5–5 cm long. Fruits red or black, ellipsoid to ovoid, truncate, 6–10 mm long.

Two subspecies occur in the region:

- 1. Leaves narrowly ovate, 3–10 mm wide *L. exocarpi* subsp. *exocarpi*
- Leaves linear, 1–3 mm wide *L. exocarpi* subsp. *tenuis*

L. exocarpi subsp. *exocarpi* occurs throughout the region in open forest on a wide range of hosts. *L. exocarpi* subsp. *tenuis* (Blakely) Barlow (*Loranthus exocarpi* var. *tenuis* Blakely) has been recorded from the Darling Downs district in open forest, mainly on *Casuarina luehmannii* but also on *C. cristata*, *C. glauca*, *Acacia oswaldii* and *Atalaya hemiglauc*a.

12. VISCACEAE

Hemiparasitic shrubs on branches of trees. Leaves opposite or absent. Flowers usually less than 2 mm long, unisexual; perianth segments 2-4, valvate; stamens opposite segments, adnate to them or free; ovary inferior, spherical, 1-locular, with short placental column containing sporogenous cells. Fruits baccate, with viscous layer between vascular bundles.

7 genera with 300-400 species, widespread in all continents; 3 genera with 11 species Australia; 3 genera with 8 species south-eastern Queensland.

Most species are commonly called MISTLETOES.

- | | |
|---|------------------------|
| 1. Plants leafless or with only rudimentary scale-like leaves | 2 |
| Plants with leaves | 3 |
| 2. Internodes strongly flattened in one plane; erect plants less than 20 cm tall | 1. <i>Korthalsella</i> |
| Internodes flattened at right angles to each other, or terete; pendulous plants more than 25 cm long | 2. <i>Viscum</i> |
| 3. Completely glabrous; cymes 3-flowered with distinct bracts; anthers fused to perianth segments | 2. <i>Viscum</i> |
| Usually densely golden or silver dendritic pubescent; flowers in fanlike cymes which are usually in racemes; anthers free | 3. <i>Notothixos</i> |

1. KORTHALSELLA van Tieghem

Very small erect shrubs and herbs; stems strongly articulate, usually flattened and green. Leaves rudimentary, often fused into a collar at the apex of each internode. Flowers minute, grouped in leaf axils and surrounded by hairs, the flowers of each group developing progressively, unisexual; male flowers globular, female flowers pear-shaped; perianth 3-merous, segments triangular. Fruits ellipsoid, crowned by persistent perianth segments.

23 species widely distributed; 2 species Australia, both occurring in south-eastern Queensland.

- | | |
|--|------------------------------|
| 1. Internodes much longer than broad, tapering at each end such that the nodal articulations are distinct; flowers at shoulders of internodes extending toward midline of stem | 1. <i>K. japonica</i> |
| Internodes \pm as long as broad, nodal articulations indistinct; flowers at shoulders only | 2. <i>K. breviarticulata</i> |

1. *Korthalsella japonica* (Thunb.) Engl.

Viscum japonicum Thunb.; *Korthalsella articulata* Blakely; *K. brassiana* Blakely

Stems much branched, branches oriented transversely to parent stem, main axis 4-20 cm long; internodes narrowly obovate to ovate, 0.6-3 cm \times 0.3-1 cm, midvein prominent. Flower groups initially enclosed by membranous scale leaf; older inflorescences extending towards midline of stem, but not completely encircling it. **Fig. 9L.**

Throughout the region, parasitic on several hosts, most frequently *Geijera parviflora* in western areas, rainforest areas on the coast.

2. *Korthalsella breviarticulata* (van Tieghem) Danser

Bifaria breviarticulata van Tieghem; *Visum australe* F. M. Bailey; *Korthalsella australis* (F. M. Bailey) Blakely

Branches flattened in same plane as parent stem, main axis up to 7 cm long; internodes \pm rectangular or square, 1-1.5 cm \times 1-2 cm. Flower groups, even when fully developed, not growing towards each other.

Mainly found in the Darling Downs district, often parasitic on *Heterodendrum diversifolium*.

2. VISCUM L.

Leafy or leafless herbs or shrubs, usually glabrous, slender, pendulous, successive internodes oriented at right angles to each other. Inflorescences axillary or terminal, of cymose spikes or triads, each cyme usually subtended by a pair of opposite connate bracts, and usually with male and female flowers; flowers usually 4-merous; male flowers often flattened, female flowers cylindrical.

About 100 species widely distributed; 5 species Australia; 3 species south-eastern Queensland.

- | | | |
|--|--------------------------|---|
| 1. Plants with narrow leaves <i>ca</i> 3 cm long | 1. <i>V. whitei</i> | |
| Plants leafless or with only scale-like leaves | | 2 |
| 2. Inflorescence sessile | 2. <i>V. articulatum</i> | |
| Inflorescence pedunculate | 3. <i>V. bancroftii</i> | |

1. *Viscum whitei* Blakely

Viscum orientale auct. non Willd., Benth.

Lower branch internodes terete, upper gradually longer, \pm flattened. Leaves with petioles 1–2 mm long; blades narrowly obovate, apex obtuse, base attenuate, 2–4 cm \times 0.4–0.6 cm. Inflorescences pedunculate axillary cymes, peduncle 0.2–1.2 cm long; flowers 3–5. Fruits shining, \pm globose, up to 4 mm diameter. **Fig. 9M.**

Throughout the region, rare, host unknown.

2. *Viscum articulatum* N. L. Burm.

Lower internodes terete, upper flattened, widened towards apex. Inflorescences sessile, axillary. Fruits yellow or white, globose, *ca* 3 mm diameter.

Common throughout the region, almost exclusively parasitic on Loranthaceous mistletoes and *Notothixos* spp.

3. *Viscum bancroftii* Blakely

Lower internodes terete, upper gradually shorter. Inflorescences solitary, lateral, terminal or axillary, pedunculate cymes, peduncle 1–5 mm long. Fruits shining, \pm ellipsoid, up to 3 mm \times 2 mm.

Inland localities, often parasitic on Loranthaceous hosts.

3. NOTOTHIXOS Oliver

Small much-branched shrubs, whole plant or young parts densely covered with dendritic hairs. Inflorescences terminal, of fan-like cymes of small sessile flowers, cymes solitary or aggregated in larger inflorescences resembling racemes or spikes, but which have terminal cymes; cymes with both male and female flowers (male flowers central) or all female; flowers 4-merous; male flowers globular, female flowers cylindrical.

About 10 species from Sri Lanka to Australia; 4 species Australia; 3 species south-eastern Queensland.

- | | | |
|---|--------------------------|---|
| 1. Inflorescence 1.5–7 cm long, with 3–6 pairs of fan-like cymes and a terminal cyme on a common axis; older vegetative parts \pm glabrous | 1. <i>N. cornifolius</i> | |
| Inflorescence less than 1 cm long, with up to 3 fan-like cymes; whole plant densely dendritic-pubescent or older parts puberulent or glaucous | | 2 |
| 2. Inflorescence a solitary 3-flowered cyme; indumentum white | 2. <i>N. incanus</i> | |
| Inflorescence with 2 lateral and 1 terminal cymes, each with 3–7 flowers; indumentum mostly golden, rarely rather grey or silvery | 3. <i>N. subaureus</i> | |

1. *Notothixos cornifolius* Oliver

Young parts and inflorescences densely golden tomentose, otherwise glabrous. Leaves with petioles 5–10 mm long; blades narrowly ovate to obovate, apex acute to rounded, base attenuate, 3–10 cm \times 1–3 cm. Flowers sessile, usually 5 per cyme. Fruits narrowly ellipsoid to funnel-shaped, 4–6 mm long.

Throughout the region, uncommon, usually parasitic on *Brachychiton populneus*, or other Sterculiaceae.



Fig. 9

A-J LORANTHACEAE — types of inflorescences $\times \frac{1}{2}$ — A *Muellerina eucalyptoides*; B *Benthamina alyxifolia*; C *Dendrophthoe vitellina*; D *Diplatia furcata*; E *Amylothecha dictyophleba*; F *Lysiana subfalcata*; G-J *Amyema* spp. — G *A. bifurcatum*; H *A. lucasii*; I *A. quandang* var. *bancroftii*; J *A. miquelii*; K-M VISCACEAE — K₁-K₃, *Notothixos subaureus*, K₁, part of fertile branchlet $\times \frac{1}{2}$, K₂, male flower $\times 8$, K₃, female flower $\times 8$; L *Korthalsella japonica*, part of flowering branch $\times \frac{1}{2}$; M *Viscum whitei*, part fertile branch $\times \frac{1}{2}$.

2. *Notothixos incanus* (Hook.) Oliver*Viscum incanum* Hook.

Young parts and inflorescences densely white-tomentose, eventually becoming glabrous and/or glaucous. Leaves with petioles 2–4 mm long; blades narrowly obovate, apex \pm rounded, base attenuate, 2–4 cm \times 0.3–1 cm. Inflorescences on peduncles *ca* 2 mm long. Fruits ellipsoid, 6–8 mm long.

Usually in coastal southern areas, usually parasitic on *Melaleuca* spp. and *Callistemon* spp.

3. *Notothixos subaureus* Oliver*Notothixos incanus* (Hook.) Oliver var. *subaureus* (Oliver) Moore & Betche

Whole plant or at least young parts densely golden- rarely grey- or silver-pubescent. Leaves with petioles 2–5 mm long; blades ovate to elliptic, apex acute or rounded, mucronate, base attenuate, 1–4 cm \times 0.5–2.5 cm. Inflorescences of 3 cymes on common peduncle 1–4 mm long, terminal cyme on pedicel 5–7 mm long, lateral ones 2–4 mm long. Fruits ellipsoid, 4–5 mm long. **Fig. 9K.**

Common throughout the region, usually parasitic on Loranthaceous mistletoes, especially *Muellerina* spp., *Amyema congener* and *Dendrophthoe vitellina*.

13. BALANOPHORACEAE

Annual or perennial, fleshy herbs parasitic on roots, devoid of chlorophyll and stomata, consisting of an underground tuberous rhizome attached by suckers to roots, and an above ground leafless or scaly-leaved stem and spadix-like monoecious or dioecious inflorescence of unisexual, rarely bisexual flowers; male flowers with or without 3–8-partite perianth, stamens 1–2 where perianth absent, or where perianth present, often equal in number to, and opposite, lobes, filaments free or connate, anthers 2–4- or many-locular, free or connate, opening by pores or slits; female flowers stigma with 1–3-locular ovary, adnate to perianth if present, styles 1–2, terminal, or rarely stigma sessile and discoid, ovule 1 per loculus, mostly pendulous, without, or only with single integument. Fruits small, nut-like or drupe-like, 1-locular, 1-seeded; seeds with abundant endosperm and small embryo.

18 genera with 120 species, all but 1 tropical; 1 genus with 1 species Australia, occurring in south-eastern Queensland.

1. BALANOPHORA J. R. & G. Forster

Leaves broad-based, opposite, whorled, distichous or spirally arranged. Inflorescences terminating stems; flowers mostly subtended by short truncate or club-shaped bracts; male perianth of 3–6 segments, stamens united, anthers 4-locular; female flowers without perianth, ovary with single style.

80 species Madagascar to Japan, Malaysia, Australia and Polynesia; 1 species Australia, occurring in south-eastern Queensland.

1. *Balanophora fungosa* J. R. & G. Forster

Rhizomes short, thick, irregularly lobed; stems up to 12 cm long. Leaves spirally arranged, imbricate, ovate to broadly ovate, membranous, apex obtuse, 1–3 cm \times 1–2 cm. Inflorescences monoecious, male flowers forming ring below females 5–10 mm wide; male flowers 2–20, on pedicels 4–8 mm long, perianth segments spreading to reflexed, 4–5, 3–4 mm long, stamens erect, anthers forming globular mass on stipe *ca* 1 mm long; female flowers very numerous, minute, densely packed in subspherical or shortly ovoid terminal head 2–4 cm diameter. Fruits 0.5–0.75 mm long.

Parasite on roots of lowland rainforest trees of northern parts of the region, commoner in tropical areas.

14. POLYGONACEAE

Herbs, shrubs, climbers, rarely trees. Leaves alternate, rarely opposite; base of petiole often dilated into a membranous sheath (ochrea). Flowers unisexual or bisexual, actinomorphic, small; perianth segments 3-6, imbricate, often enlarged and membranous in fruit; stamens usually 6-9; ovary superior, sessile, 1-locular, styles 2-4, usually free, ovule solitary, basal, sessile or stalked. Fruits 2- or 3-sided nuts.

About 40 genera with 800 species, cosmopolitan but chiefly north temperate; 5 genera with 40-44 species Australia; 4 genera with 28 species south-eastern Queensland.

- | | |
|--|-------------------------|
| 1. Perianth segments 6, unequal in fruit | 2 |
| Perianth segments 5, rarely 4, \pm equal in fruit | 3 |
| 2. Three outer segments small, membranous, 3 inner enlarged in fruit | 1. <i>Rumex</i> |
| Three outer segments enlarged, becoming rigid spines, 3 inner smaller in fruit | 2. <i>Emex</i> |
| 3. Flowers bisexual; perianth segments not enlarging as fruit develops | 3. <i>Polygonum</i> |
| Flowers unisexual; perianth segments enlarging as fruit develops | 4. <i>Muehlenbeckia</i> |

1. RUMEX L.

Annual or perennial, often tall herbs. Flowers small, often turning red, on jointed pedicels in whorl-like clusters forming long racemes and panicles, bisexual or unisexual; perianth segments 6, in 2 series, small, the 3 outer remaining small and membranous in fruit, the 3 inner enlarging, forming valves enclosing fruit; stamens 6; styles 3, with penicillate stigmas. Fruits triquetrous nuts.

About 200 species cosmopolitan, especially north temperate; 12-16 species Australia; 10 species south-eastern Queensland.

- | | |
|---|-----------------------------|
| 1. Valves scarcely enlarged, 1-1.5 mm long | 1. <i>R. acetosella</i> |
| Valves 2.5 mm long or longer, more than twice as long as the 3 outer perianth segments | 2 |
| 2. Valves with toothed margins | 3 |
| Valves with \pm entire margins | 7 |
| 3. Flower clusters subtended by small leaves longer than the flowers | 4 |
| Flower clusters not subtended by leaves, except at the lowest nodes | 6 |
| 4. Clusters each with numerous flowers; foliage very narrow, usually <i>ca</i> 20 times longer than wide | 2. <i>R. tenax</i> |
| Clusters 1-5-flowered; foliage broader | 5 |
| 5. Valves tuberculate; teeth longer than half the width of the valves | 3. <i>R. dumosiformis</i> |
| Valves not tuberculate; teeth shorter than half the width of the valves | 4. <i>R. dumosus</i> |
| 6. Valves terminating in a spine <i>ca</i> 2 mm long; teeth \pm longer than half the width of the valves and often hooked | 5. <i>R. brownii</i> |
| Valves not terminating in spine; teeth shorter, straight | 6. <i>R. obtusifolius</i> |
| 7. Leaves sagittate; flowers 1-2 per cluster; valves longer than 9 mm at maturity | 8 |
| Leaves not sagittate; flowers numerous per cluster; valves shorter than 7 mm | 9 |
| 8. Valves when mature longer than wide, 1.5-2 cm long; outer perianth segments not reflexed, usually hidden by valves | 7. <i>R. vesicarius</i> |
| Valves when mature orbicular or wider than long, 0.9-1.2 cm long; outer perianth segments reflexed at maturity | 8. <i>R. sagittatus</i> |
| 9. Valves broadly ovate, often cordate, 4-6 mm long; pedicel thin, 7-10 mm long | 9. <i>R. crispus</i> |
| Valves narrowly ovate to oblong, rounded, 2-2.5 mm long; pedicel thick, 2.5-3 mm long | 10. <i>R. conglomeratus</i> |

1. **Rumex acetosella* L.

SORREL

Leaves with petioles 1–7 cm long; blades narrowly elliptic or obovate, apex acute to obtuse, base hastate, margin undulate, 1–8 cm × 0.5–2.5 cm. Flowers very small, in clusters of 1–10 in terminal few-branched panicles. Fruiting perianths scarcely enlarged, margin entire, 1–1.5 mm long, pedicel 1.5–2 mm long. **Fig. 10I.**

Native of Europe; throughout the region, weed of cultivation, waste places and other disturbed sites. Flowers spring–summer. This species has been suspected on field evidence of poisoning stock.

This species has been placed in the subgenus *Acetosella*, which is sometimes regarded as a separate genus. It is then referred to as *Acetosella angiocarpa* (Murb.) A. Löve. The species itself is polymorphic and is sometimes treated as three species, *Rumex acetosella*, *R. angiocarpa* Murb., and *Acetosella tenuifolius* (Wallr.) A. Löve, or is often divided into a number of varieties.

2. *Rumex tenax* K. H. Rech.*Rumex halophilus* F. Muell.

Leaves with petioles 0.2–6 cm long; blades linear-oblong, apex acute, base attenuate to hastate, margin flat or crisped, 2–16 cm × 0.1–1 cm, decreasing in size up the stem. Inflorescences few-branched panicles. Valves with acute apex and two rigid teeth on either side, 2.5–3 mm long, tuberculate, pedicel *ca* 2 mm long, articulate close to base. **Fig. 10A.**

Common weed of waste places, disturbed sites, mainly in western areas of the region, usually in damp spots. Flowers most of the year.

3. *Rumex dumosiformis* K. H. Rech.

Rumex dumosus Cunn. pro parte; *R. flexuosus* auct. non Solander, F. Muell. pro parte
Basal leaves with petioles 5–18 cm long; blades mostly narrowly oblong, apex acute, base truncate to hastate, margin ± crisped, 9–16 cm × 1–5 cm; cauline leaves gradually smaller. Inflorescences much-branched panicles, clusters 1–5-flowered. Valves with acute apex and usually with 2 rigid teeth on either side, 3–4 mm long, pedicel 2.5–4 mm long, articulate ± the middle. **Fig. 10D.**

Weed of cultivation and disturbed sites in the Darling Downs district. Flowers autumn.

4. *Rumex dumosus* Cunn.

WIRY DOCK

Rumex flexuosus auct. non Solander, F. Muell. pro parte

Basal leaves with petioles 7–12 cm long; blades narrowly oblong to narrowly obovate, apex acute, base attenuate to truncate, margin crisped, 10–20 cm × 2–3 cm; cauline leaves gradually smaller. Inflorescences much-branched panicles. Valves 3–4 mm long, pedicel articulate ± the middle. **Fig. 10C.**

Rare, Darling Downs district. Flowers spring.

5. *Rumex brownii* Campd.

SWAMP DOCK

Basal leaves with petioles 1–15 cm long; blades oblong, ovate, or obovate, apex acute to subobtuse, base truncate or hastate, margin undulate to crisped, 5–30 cm × 1–11 cm; cauline leaves gradually smaller. Inflorescences few-branched panicles or racemes, clusters 5–16-flowered. Valves *ca* 3 mm long, terminal spine 1.5–2 mm long, lateral teeth 3–4, often hooked, pedicel 3–4 mm long, articulate near the base. **Fig. 10B.**

Widespread and common in forest country, along creeks, often a weed of disturbed sites and waste places. Flowers most of the year. Can contain potentially toxic levels of nitrates, but is generally unpalatable to stock.

6. **Rumex obtusifolius* L.

BROAD-LEAVED DOCK

Basal leaves with petioles up to 20 cm long; blades oblong to ovate, apex obtuse, base cordate, margin often crisped, 10–30 cm × 5–14 cm; cauline leaves gradually smaller, base often cuneate. Inflorescences dense, leafless panicles. Valves with acute to obtuse apex, margin with 2–4 teeth, 4–6 mm long, often tuberculate, pedicel 6–8 mm long, articulate near the base. **Fig. 10G.**

Native of Europe; possibly naturalized in Brisbane area (common in southern Australia). Flowers spring to early summer. This species is known to hybridize with *R. crispus*.

7. **Rumex vesicarius* L.

PINK DOCK; BLADDER DOCK

Basal rosette absent. Leaves with petioles 2–10 cm long; blades triangular-ovate, apex obtuse, base sagittate, margin undulate, 3–10 cm × 2–8 cm. Inflorescences leafless panicles, pedicels mostly with 2 connate flowers, 1 hidden under 1 of the 3 reduplicate perianth segments of the other flower. Valves often reddish, broadly oblong or ovate, 1.5–2 cm long, pedicel 5–6 mm long, articulate near the base.

Native of northern Africa and south-western Asia; naturalized but not common, garden escape. Flowers spring.

8. **Rumex sagittatus* Thunb.

Stems tuberous, often creeping. Leaves with petioles 1.5–7 cm long; blades triangular-ovate, apex acute, base broadly sagittate, margin undulate to crisped, 2–8 cm × 1.5–7 cm. Inflorescences terminal panicles. Valves membranous, orbicular, 8–10 mm long, often tuberculate, outer perianth segments deflexed, pedicel 5–6 mm long, articulate near the base. **Fig. 10H.**

Native of South Africa; naturalized in most states, widespread through the region, weed of cultivation, disturbed sites and gardens. Flowers spring–summer.

This species is placed in the subgenus *Acetosa*, which is sometimes raised to generic rank. The species is then called *Acetosa sagittata* (Thunb.) L. A. S. Johnson & B. G. Briggs.

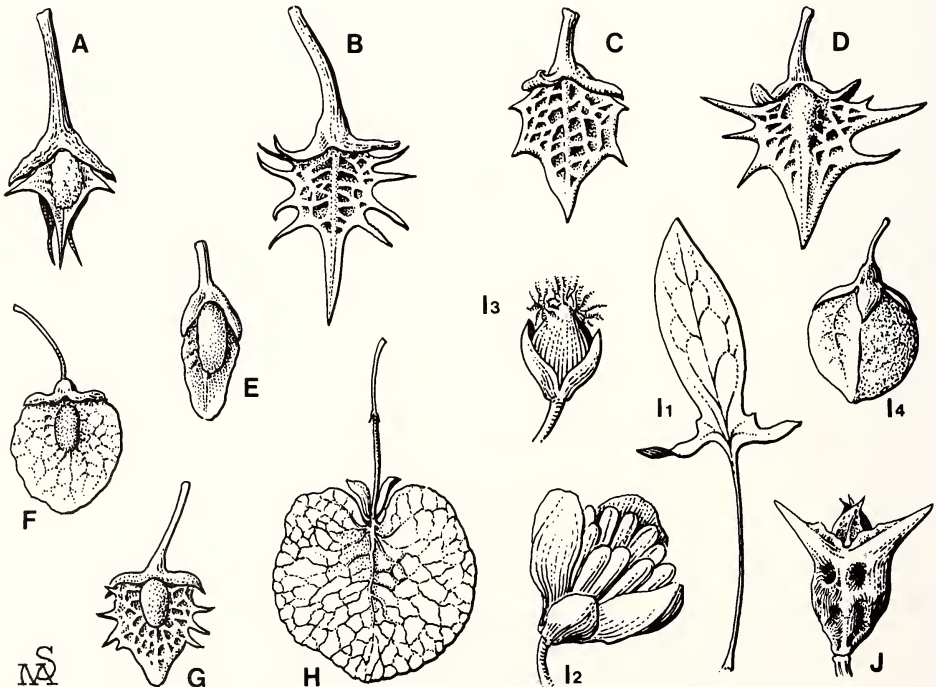


Fig. 10

POLYGONACEAE — A–I *Rumex* spp. — A–H fruits — A *R. tenax* x6; B *R. brownii* x6; C *R. dumosus* x6; D *R. dumosiformis* x6; E *R. conglomeratus* x6; F *R. crispus* x3; G *R. obtusifolius* x3; H *R. sagittatus* x3; I₁–I₃, *R. acetosella*, I₁ leaf x1, I₂ male flower x12, I₃ female flower x12, I₄ fruit x12; J *Emex australis*, fruit x3.

9. **Rumex crispus* L.

CURLED DOCK

Basal leaves with petioles 1.5–11 cm long; blades oblong to ovate, apex acute to subobtuse, base attenuate to hastate, margin crisped or undulate, 11–30 cm × 1.5–10 cm; cauline leaves gradually smaller. Inflorescences dense leafless panicles. Valves with acute to obtuse apex, 4–6 mm long, tuberculate, pedicel 7–10 mm long, articulate near the base. **Fig. 10F.**

Native of Europe, Asia, Africa; naturalized in most states near habitation, widespread common weed generally in damp areas. Flowers mostly spring–summer. Has been suspected of causing oxalate poisoning.

10. **Rumex conglomeratus* Murray

CLUSTERED DOCK

Basal leaves with petioles 2.5–5 cm long; blades oblong to ovate, apex acute, base attenuate to truncate, margin crisped, 6–12 cm × 2–4 cm. Inflorescences leafy panicles, clusters 5–15-flowered. Valves with obtuse apex, 2–2.5 mm long, tuberculate, pedicel 2.5–3 mm long, articulate near the base. **Fig. 10E.**

Native of Europe, Asia and Africa; now widely naturalized elsewhere, but only recorded from the Brisbane area in south-eastern Queensland. Flowers summer. Has been suspected of causing oxalate poisoning.

2. EMEX Campd.

Annual herbs, monoecious. Flowers axillary; male flowers with spreading perianth of 5–6 segments, 4–6 stamens; female flowers with triangular tube, lobes 6, the 3 outer in fruit becoming 3 rigid spreading spines, 3 inner ovate, erect. Fruits triquetrous nuts.

2 species South Africa and Mediterranean region; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Emex australis* Steinh.

DOUBLE GEE; SPINY EMEX; CAPE SPINACH; PRICKLY JACK

Glabrous annual. Leaves with petioles 1–10 cm long; blades triangular to oblong-ovate, apex obtuse, base cordate or truncate, 2–10 cm × 1.5–7 cm. Flowers in axillary whorl-like clusters, males in racemes up to 4 cm long, females subsessile; female perianth hardened in fruit, 7–9 mm long, styles 3, stigmas penicillate. Nuts trigonous, brown, glossy. **Fig. 10J.**

Native of South Africa; weed of drier areas of Moreton, Darling Downs and Burnett districts. Flowers and fruits spring and summer. Can contain potentially toxic levels of oxalates.

3. POLYGONUM L.

Annual or perennial herbs, stipular sheath (ochrea) usually truncate. Flowers in axillary or bracteate clusters, often forming narrow panicles, usually bisexual, small; perianth segments usually 5, ± equal; stamens 5–8; styles 2–3, sometimes united towards the base, stigmas terminal. Nuts enclosed in persistent perianth.

About 300 species, cosmopolitan but chiefly temperate; ca 16 species Australia; 14 species south-eastern Queensland.

Generally called SMARTWEEDS, since leaves of most species can cause irritation if rubbed on tender skin, and have been suspected of causing dermatitis in man and livestock.

- | | |
|--|-----------------------|
| 1. Flowers in small subsessile axillary clusters | 2 |
| Flowers in short or long spikes, usually dense but sometimes filiform or lax | 4 |
| 2. Leaves without lateral nerves visible on undersurface; fruit shining, 1–1.5 mm long | 1. <i>P. plebeium</i> |
| Leaves with conspicuous lateral nerves on undersurface; fruit ± dull, 1.5–2.5 mm long | 3 |

- | | | |
|---|---|----------|
| 3. Prostrate or semierect; inflorescence of axillary clusters; widespread weed
Stems erect; inflorescence of numerous clusters forming \pm panicle of lax spikes; restricted to small area of Darling Downs in grain crops | 2. <i>P. aviculare</i>
3. <i>P. patulum</i> | |
| 4. Stems twining or prostrate; leaves triangular-ovate with sagittate base, not prickly; fruit 3.5-4 mm long, trigonous
Stems not twining though sometimes prostrate; leaves, if with sagittate or hastate base, then prickly; fruit up to 3.5 mm long, lenticular or trigonous | 4. <i>P. convolvulus</i> | 5 |
| 5. Stems, base of ochreae and often leaves prickly; flower spikes very short, globose or ovoid
Stems variously pubescent or glabrous, but not prickly; flower spikes oblong, cylindrical to filiform, more than 1.5 cm long | 5. <i>P. strigosum</i> | 6 |
| 6. Both surfaces of leaves pubescent, often densely so
Leaves glabrous at least on upper surface, sometimes leaf margins and midrib beneath with \pm appressed hairs or scattered hairs on lower surface, but rarely <i>P. lapathifolium</i> has a white woolly pubescence in young stages | | 7 |
| 7. Ochreae with coarse cilia 1-2 cm long (relatively rare)
Ochreae with cilia up to 1 cm long, or with spreading green limb | 6. <i>P. barbatum</i> | 8 |
| 8. Leaves sessile or almost so
Leaves with petioles 1 cm or more long | | 9
10 |
| 9. Stems prostrate; ochreae terminated by spreading green limb; inflorescences usually short and dense
Stems erect; ochreae terminated by coarse cilia up to 1 cm long; inflorescences usually long and filiform | 7. <i>P. prostratum</i>
8. <i>P. subsessile</i> | |
| 10. Ochreae pubescent, terminated by spreading limb; leaves ovate, often with cordate base; flowers pink
Ochreae \pm glabrous, terminated by short cilia; leaves narrowly ovate with attenuate base; flowers generally white | 9. <i>P. orientale</i>
10. <i>P. attenuatum</i> | |
| 11. Perianth dotted with conspicuous oil glands
Perianth without conspicuous oil glands though they may be present elsewhere on the plant | 11. <i>P. hydropiper</i> | 12 |
| 12. Plant densely covered with glandular hairs, simple hairs absent
Plant with or without glandular hairs, simple hairs present, or completely glabrous | 12. <i>P. elatius</i> | 13 |
| 13. Ochreae without terminal hairs or spreading green limb
Ochreae with terminal hairs or spreading green limb | | 14
15 |
| 14. Peduncles and undersurface of leaf minutely, often densely dotted with yellowish glands; inflorescences usually \pm dense spikes
Peduncles and leaves without glands; inflorescences very lax spikes, \pm a number of axillary clusters with very few leaves | 13. <i>P. lapathifolium</i>
3. <i>P. patulum</i> | |
| 15. Ochreae with spreading green limb; spikes cylindrical, dense; stems prostrate
Ochreae with terminal hairs up to 8 mm long; spikes filiform; new stems erect, but often older decumbent branches rooted | 7. <i>P. prostratum</i>
14. <i>P. salicifolium</i> | |

1. *Polygonum plebeium* R.Br.

SMALL KNOTWEED

Leaves with petioles 1-2 mm long; blades linear-ovate to obovate, apex acute, base attenuate to contracted, 0.5-2 cm \times 0.1-0.3 cm. Flowers 1-5 in axillary clusters. Fruits shining, trigonous, 1-1.5 mm long.

Weed of roadsides, waste places and cultivation. Flowers and fruits most of the year.

2. *Polygonum aviculare L.

WIREWEED

Leaves with petioles 1–3 mm long; blades narrowly elliptic to ovate or obovate, apex acute, base attenuate, 0.5–4 cm \times 0.1–1.3 cm. Flowers mostly 3–6 in axillary clusters. Fruits dull, trigonous, 1.5–2.5 mm long. **Fig. 11F.**

Native of Europe but cosmopolitan; weed of cultivation, near rivers, waste places. Flowers and fruits most of the year.

This species is sometimes split into a number of species, including *P. arenastrum* Bor. However it is treated here as one polymorphic species.

3. *Polygonum patulum Bieb.(Wrongly known as *Muehlenbeckia dielina* in Queensland)

Leaves few, with petioles 4–8 mm long; blades narrowly elliptic to narrowly obovate, apex acute to obtuse, base attenuate, 1–5 cm \times 0.2–1 cm. Inflorescences panicles of spike-like racemes. Fruits dark brown, \pm dull, trigonous, *ca* 2.5 mm long.

Native of Europe; weed restricted to Darling Downs around Mt. Tyson, Bowenville, in wheat crops. Flowers and fruits November–December.

4. *Polygonum convolvulus L. BLACK BINDWEED; CLIMBING BUCKWHEAT

Leaves with short, eciliate ochreae; petioles 0.5–7 cm long; blades triangular-ovate, apex acuminate, base sagittate, 1.5–7 cm \times 0.8–4 cm, glabrous, or papillose hairs on nerves below. Flowers in axillary clusters or spikes. Fruits dull black, trigonous, 3.5–4 mm long. **Fig. 11G.**

Native of Europe; common weed of cultivation, sometimes contaminant in grain. Flowers and fruits spring–summer.

This species is sometimes placed in a separate genus, by virtue of its twining habit and is then called *Fallopia convolvulus* (L.) A. Löve.

5. Polygonum strigosum R.Br.

Herbs with \pm numerous prickles on internodes and leaf midribs beneath. Leaves with long cylindrical ochreae; petioles 0.2–2.5 cm long; blades oblong-elliptic to ovate, apex acute to acuminate, base attenuate to sagittate or hastate, 3–11 cm \times 0.8–4 cm, pubescent, or glabrous above. Inflorescences terminal or seemingly lateral with 3–5 short spikes or clusters of flowers. Fruits lenticular or trigonous. **Fig. 11E.**

Widespread in moist areas, swamps or beside creeks. Flowers mostly summer–autumn.

B. H. Danser in “A Revision of the Queensland Polygona”, *Proc. Roy. Soc. Qld.*, 39(3), pp 23–42, 1927, recognized three species, *P. strigosum*, *P. dichotomum* and *P. praetermissum* in this region separating them on characters of inflorescence and indumentum. However there is a continuous gradation from species to species, and under these circumstances it seems wiser to regard it as one variable species.

6. Polygonum barbatum L.

Leaves with densely pubescent ochreae, with coarse cilia 1–2 cm long; petioles 5–10 mm long; blades \pm elliptic, apex acute, base attenuate to contracted, margin ciliate, 4–16 cm \times 0.8–3 cm, variously silky pubescent. Flower spikes in racemes or panicles, bracts with long cilia. Fruits brownish-black, shining, trigonous, *ca* 2 mm long.

Not common; tropical mountain species. Flowers summer.

7. Polygonum prostratum R.Br.

CREEPING KNOTWEED

Leaves with ochreae often with spreading, leafy, deeply toothed or palmatifid, scantily ciliate limb; petioles 2–5 mm long; blades linear to narrowly ovate, apex subobtuse, base rounded to attenuate, 1.5–7 cm \times 0.3–0.7 cm, usually pubescent. Flowering spikes solitary, cylindrical. Fruits mostly dull, lenticular, 1–1.5 mm long. **Fig. 11C.**

Throughout the area in damp places. Flowers mostly summer–autumn.

8. *Polygonum subsessile* R.Br.*Polygonum minus* Huds. var. *subsessile* (R.Br.) Danser

Leaves with ochreae with coarse cilia up to 1 cm long; petioles 1–2 mm long; blades narrowly elliptic, apex acuminate, base attenuate to contracted, margin ciliate, 3.5–14 cm × 0.5–1 cm, pubescent. Flowers pink. Fruits brown or black, usually lenticular, *ca* 2 mm long.

Coastal regions in wet or swampy areas. Flowers throughout the year.

The white-flowered *P. dietrichiae* Domin was thought by Domin to be a hybrid between *P. subsessile* and *P. attenuatum*.

9. *Polygonum orientale* L.*Polygonum orientale* var. *cochinchinense* Domin

Leaves with short, cylindrical ochreae spreading into a green limb; petioles 1–10 cm long; blades ovate, rarely narrow, apex acuminate, base cordate or rounded, 5–20 cm × 1–12 cm, densely pubescent, glands numerous. Flowering spikes axillary, grouped into a panicle, ± dense, cylindrical; flowers pink. Fruits brownish-black, shining, lenticular or trigonous, *ca* 3 mm long. **Fig. 11B.**

Cosmopolitan; coastal districts and eastern Darling Downs district, along watercourses or in swamps. Flowers chiefly summer. Sometimes cultivated, and then called PRINCE'S FEATHER or LADY'S THUMB.

10. *Polygonum attenuatum* R.Br.

Leaves with long, cylindrical ochreae; petioles 1–4 cm long; blades narrowly ovate, apex long acuminate, base attenuate, 8–26 cm × 1–5 cm, ± densely silky pubescent, glands numerous. Flower spikes in racemes or panicles, long, dense, cylindrical; flowers generally white. Fruits brownish-black, shining, lenticular, apex mucronate, *ca* 3 mm long.

Coastal districts in lagoons, creeks and swamps. Flowers most of the year.

11. *Polygonum hydropiper* L.

WATER PEPPER

Leaves with long, cylindrical, ciliate ochreae; petioles 0.3–1.5 cm long; blades narrowly ovate, apex acuminate, base attenuate, 2.5–10 cm × 0.7–2.5 cm, ± bristly pubescent on nerves below, otherwise glabrous. Flower spikes narrow, filiform, interrupted. Fruits brownish-black, lenticular or trigonous, 2–3 mm long. **Fig. 10D.**

Generally coastal districts in damp areas along watercourses. Flowers and fruits chiefly summer.

12. *Polygonum elatius* R.Br.

Leaves with cylindrical ochreae; petioles 0.7–4 cm long; blades narrowly ovate, apex acuminate to subobtusate, base contracted, 6.5–18 cm × 1.5–6 cm, densely glandular. Flower spikes ± in racemes, 2–5 together. Fruits black, shining, lenticular, *ca* 2 mm long.

Rare, only collected in swampy areas near Brisbane; possibly only a variant of *P. lapathifolium*. Flowers summer.

13. *Polygonum lapathifolium* L.

Leaves with initially cylindrical, eciliate ochreae; petioles 0.8–3 cm long; blades narrowly ovate, apex acute to subobtusate, base attenuate, 6–23 cm × 0.8–3.5 cm, glabrous except for strigose or appressed hairs along midvein beneath, rarely with woolly pubescence on 1 or both sides of leaf when young, yellow glandular secretion over undersurface. Flowering spikes solitary or in racemes or panicles, usually rather dense; flowers pink, occasionally white. Fruits brown or black, shining or dull, mostly lenticular, 2–3 mm long.

Widespread in watercourses, dams, swamps. Flowers mostly summer.

P. lapathifolium subsp. *lanigerum* (R.Br.) Danser (*P. lanigerum* R.Br.) has been included here. The woolly pubescence that characterizes the plant when young is lost with age; consequently it does not appear worthy of any taxonomic rank.



Fig. 11

POLYGONACEAE — A *Muehlenbeckia rhyticarya*, part of fertile stem with flowers and enlarged fruiting perianth x1; B₁-B₂ *P. orientale*, B₁ part of stem showing ochreae with spreading green limb at apex x1, B₂ flower x6; C *P. prostratum*, part of stem showing ochreae with spreading green limb at apex x1; D *P. hydropiper*, fruit with T.S. x6; E *P. strigosum*, part of fertile stem x1; F *P. aviculare*, part of fertile stem x1; G₁-G₂ *P. convolvulus*, G₁ part of fruiting stem x1, G₂ fruit with T.S. x6.

14. *Polygonum salicifolium Brouss. ex Willd.

Leaves with ochreae with cilia up to 8 mm long; petioles 1–5 mm long; blades narrowly elliptic, apex acute to acuminate, base attenuate to contracted, margin with strong hairs, 3–11 cm × 1–1.5 cm, few hairs on veins beneath, otherwise ± glabrous. Flower spikes few, slender, usually terminal; flowers pink. Fruits black, shining, usually trigonous, 2–2.5 mm long.

Native of southern Europe; naturalized, common throughout coastal areas in wet ground beside creeks. Flowers mostly summer–autumn.

This species was referred by Danser in “A Revision of the Queensland Polygons”, *Proc. Roy. Soc. Qld.*, 39(3) pp 23–42, to *P. minus* Huds. and *P. minus* var. *decipiens* (R.Br.) Danser, but true *P. minus*, a European species, does not occur in Queensland.

4. MUEHLENBECKIA Meissner

Perennial shrubs or climbers, glabrous. Flowers clustered within sheathing bracts to form interrupted spike-like racemes, unisexual; perianth segments 5; stamens 8; female flowers with 1-locular ovary surrounded by 8 barren filaments, styles 3. Fruits trigonous or globose, surrounded by enlarged perianth.

15 species New Guinea, Australia, New Zealand, western and southern Americas; 10 species endemic to Australia; 3 species south-eastern Queensland.

- | | |
|--|---------------------------|
| 1. Shrub; leaves caducous, linear or narrowly elliptic with attenuate base; stems striate | 1. <i>M. cunninghamii</i> |
| Usually climber; leaves persistent, triangular-ovate to ± orbicular with hastate or cordate base; stems smooth | 2 |
| 2. Leaves broadly ovate with cordate base, thick; nuts strongly rugose | 2. <i>M. rhyticarya</i> |
| Leaves ± triangular with hastate base, thin; nuts smooth to weakly rugose | 3. <i>M. gracillima</i> |

1. Muehlenbeckia cunninghamii (Meissner) F. Muell.

LIGNUM

Polygonum cunninghamii Meissner

Stems sometimes ending in a spine. Leaves when present with petioles 2–10 mm long; blades linear to narrowly elliptic, apex acuminate, base attenuate, 1.5–7 cm × 0.1–1 cm. Flowers greenish-yellow or white. Fruits shining black, ovoid-trigonous, enlarged perianth dry, ca 5 mm long.

Western districts in heavy soil, along creek banks, flood plains or swampy areas. Flowers mainly summer–autumn.

2. Muehlenbeckia rhyticarya F. Muell.

Occasionally shrubby. Leaves with petioles 1–4 cm long; blades broadly ovate to orbicular, apex abruptly acuminate, or obtuse, base cordate, 1–7 cm × 1–8 cm. Flowers greenish-white. Fruits black, ovoid-trigonous, rugose, enlarged perianth segments dry, apex acute, ca 4 mm long. **Fig. 11A.**

Usually in forests, along watercourses or on rocky outcrops, but has been reported from cultivation paddocks. Flowers most of the year.

B. H. Danser in “Note on the Muehlenbeckias of New Guinea and Queensland”, *Bull. Jard. Bot. Bukit.*, Ser. III, Vol. 1 16(3), 1940, described *M. triloba* as a new species from Yarraman, having smaller, sometimes 3-lobed leaves. This appears to be merely a form of *M. rhyticarya* and there is a continuous gradation of characters in all features, except for these occasional 3-lobed leaves. As Danser himself stated it ‘strongly resembles *M. rhyticarya*’ it seems wiser to regard them as being conspecific.

3. Muehlenbeckia gracillima Meissner

Leaves with petioles 0.7–6 cm long; blades sagittate to triangular-ovate, apex long acuminate, base truncate to hastate, 1.5–12 cm × 1–7 cm. Flowers greenish-white. Fruits black, globose, obscurely angled, smooth or slightly rugose, enlarged perianth segments ± succulent, apex obtuse, ca 3 mm long.

Rainforest margins, or along creeks in remnant rainforests of the area. Flowers mainly summer–autumn.

15. PHYTOLACCACEAE

Herbs, shrubs or rarely trees. Leaves alternate, exstipulate, blades entire. Inflorescences leaf-opposed, axillary or terminal spikes or racemes, flowers unisexual or bisexual; perianth segments usually 4–5, free or basally connate; stamens 5–30, inserted on fleshy disc, filaments free or basally connate; ovary globose, composed of 1–10 free or \pm connate carpels, stigmas as many as carpels, free or basally connate, ovule 1 per carpel, basal. Fruits berries or capsules.

About 12 genera and 100 species, chiefly tropical and South America, and South Africa; 3 genera with 1 native and 4 naturalized species Australia, all occurring in south-eastern Queensland.

- | | | |
|--|--|---|
| 1. Carpels 6–12; racemes dense, flowers or fruits usually \pm touching
Carpels 1; racemes elongated, flowers remote | 1. <i>Phytolacca</i> | 2 |
| 2. Fruits smooth red berries; flowers bisexual
Fruits achenes covered with hooked bristles; flowers unisexual, rarely
bisexual | 2. <i>Rivina</i>
3. <i>Monococcus</i> | |

1. PHYTOLACCA L.

Perianth segments 4–5; stamens 8–25; carpels 6–12, free or connate. Fruits fleshy.

35 species tropical and subtropical; 3 species naturalized Australia, occurring in south-eastern Queensland.

- | | | |
|--|---|---|
| 1. Tree; racemes drooping; carpels united only in the lower part
Herb or shrub; racemes erect; carpels united except for the styles | 1. <i>P. dioica</i> | 2 |
| 2. Fruit with 7–8 carpels, sessile or on pedicels up to 3 mm long
Fruit with 10 or 11 carpels, on pedicels 5–8 mm long | 2. <i>P. octandra</i>
3. <i>P. americana</i> | |

1. **Phytolacca dioica* L.

BELLA SOMBRA; UMBU; PACKALACCA

Small tree. Leaves with petioles 1.5–5.5 cm long; blades ovate, apex acute, base rounded, 3–13 cm \times 1.5–7 cm. Flowers in terminal or upper axillary racemes 10–15 cm long; carpels 7–11. Fruits dark red to almost black when ripe, \pm globose, ca 1 cm diameter, on pedicels 4–6 mm long.

Native of South America; rare, cultivated as a fodder tree in a few areas, possibly naturalized. Flowers summer. Leaves are palatable but the roots are reported poisonous.

2. **Phytolacca octandra* L.

INKWEED; RED-INK PLANT; DYEBERRY

Herb or small shrub. Leaves with petioles 0.5–4 cm long; blades elliptic to ovate, apex acute, base attenuate to rounded, 3.5–15 cm \times 1–8 cm. Flowers in axillary racemes usually 10–15 cm long; carpels 7–8. Fruits purplish-black when ripe, depressed globose, ca 8 mm diameter, on pedicels up to 3 mm long. **Fig. 12A.**

Native of America; common throughout area, weed of waste places, roadsides, creek banks. Flowers and fruits throughout the year, mostly spring–summer. Suspected of poisoning stock but no positive proof of toxicity.

3. **Phytolacca americana* L.

POKEBERRY; PIGEONBERRY; INKBERRY

Phytolacca decandra L.

Shrub. Leaves with petioles 0.6–1.5 cm long; blades narrowly elliptic, apex acute, base attenuate, 4–14 cm \times 1.5–4 cm. Flowers in lateral racemes ca 10–15 cm long; carpels 10–11. Fruits mostly dark red when ripe, depressed globose, ca 8 mm diameter, on pedicels 5–8 mm long.

Native of North America; rare, recorded from Gold Coast hinterland area. Flowers spring–summer. Roots, and to a lesser extent the berries, reported poisonous.

2. RIVINA L.

Herbs or undershrubs. Perianth segments 4; stamens 4; carpel 1, compressed, style subterminal, short, curved, stigma capitate. Fruits berries.

3 species tropical America; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Rivina humilis* L.

CORALBERRY; TURKEYBERRY

Rivina laevis auct non L., F. M. Bailey

Shrub. Leaves with petioles 1–4 cm long; blades narrowly ovate, apex acute, base usually rounded, 3–13 cm × 1–5 cm. Flowers in axillary racemes *ca* 5–10 cm long. Fruits shining, red, *ca* 3 mm diameter, smooth.

Native of tropical America; usually in coastal districts in damp shady areas, rainforest margins or waste spaces; sometimes cultivated for showy berries. Flowers mainly spring–summer. Can cause taints in milk.

3. MONOCOCCUS F. Muell.

Shrubs, monoecious or dioecious. Flowers with 4 perianth segments; stamens 10–20; carpel 1, style very short, hooked and decurrent in a bearded line along inner edge of carpel. Fruits dry, indehiscent, covered with hooked bristles.

1 species New Caledonia and Australia, occurring in south-eastern Queensland.

1. *Monococcus echinophorus* F. Muell.

Spreading or scandent shrub. Leaves with petioles 0.5–1.5 cm long; blades narrowly ovate, apex obtuse, mucronate, base rounded or cuneate, 3–12 cm × 1.3–5 cm. Flowers in slender axillary racemes 10–30 cm long; females with carpels covered with hooked bristles. Fruits dry, *ca* 4 mm long, covered with hooked bristles. **Fig. 12B.**

Coastal districts in or near rainforests or in moist areas in forests. Flowers summer.

16. GYROSTEMONACEAE

Trees or shrubs. Leaves alternate; stipules minute or absent; blades entire, often ± succulent. Flowers axillary and solitary, racemose, or spicate, unisexual, small, bracteoles present; perianth lobed or truncate, persistent in fruit; stamens 6 or more, in 1 or more whorls on a flat receptacle, anthers almost sessile; ovary superior, of 2–50 connate carpels surrounding a central column which is often dilated into a flat disc at the top, styles 1 per carpel, ± free around the top of the column, ovule 1 per carpel. Fruits dry, dehiscent, usually becoming free and separating from axis, rarely syncarpous and indehiscent.

5 genera with 15 species endemic to Australia; 1 genus with 1 species south-eastern Queensland.

1. CODONOCARPUS Cunn. ex Endl.

Flowers in leafless spikes or racemes, axillary or terminal; perianth very shortly or obscurely sinuate-toothed; stamens 10–20 in 1 series; ovary of 20–50 carpels, styles or stigmas short or linear. Fruiting carpels separating when ripe, opening only along the inner edge.

3 species Australia; 1 species south-eastern Queensland.

1. *Codonocarpus attenuatus* (Hook.) H. Walter BELL FRUIT; NATIVE POPLAR
Gyrostemon attenuatus Hook.; *Codonocarpus australis* Cunn.
 Deciduous tree. Leaves with petioles 0.5–2 cm long; blades very narrowly ovate, apex long acuminate, base attenuate, 4–10 cm × 0.8–2.5 cm. Male flowers in axillary spikes 5–15 cm long, stamens *ca* 30; female flowers solitary axillary on peduncles 1.5–4 cm long, sometimes appearing racemose when the leaves fall, carpels 40–50. Fruits brownish, ± obconical, *ca* 1.8 cm diameter at apex. **Fig. 12C.**

Throughout the region, usually found in light rainforest or wet eucalypt forest, sometimes a minor weed of cleared rainforest areas or roadsides. Flowers summer; mature fruit the following winter and spring. Suspected of poisoning stock but there is no definite evidence of toxicity.

17. NYCTAGINACEAE

Trees, shrubs, herbs, rarely armed climbers; roots sometimes tuberous; hairs simple. Leaves opposite, or rarely in whorls or pseudowhorls, sometimes unequal in each pair; exstipulate. Inflorescences cymose, often thyrsoid, corymbose or umbellate, terminal or axillary, sometimes cauliflorous, bracts and bracteoles present, sometimes very small, sometimes caducous; flowers bisexual or unisexual by reduction, actinomorphic, pedicelled with 1–3 sometimes coloured bracteoles, or sustained by an involucre; perianth tubular, campanulate, funnel-shaped, or urceolate, the basal part persistent and enclosing the receptacle, often accrescent (forming an anthocarp), the apical part mostly circumscissile caducous, plicate or valvate in bud, with 5–10, rarely 4, green or coloured lobes; stamens 1–40, rarely more, in 1–2 whorls, basally connate, free from perianth, anthers 2-locular, latrorse, basifixed; ovary sessile or shortly stipitate, superior, 1-locular with single erect anatropous ovule, style terminal, stigma capitate or fimbriate to shortly lobed. Anthocarps indehiscent, smooth or with viscid ribs and glands, sometimes glands accrescent into prickles, pericarp thin.

30 genera with 290 species, mostly tropical, especially America; 6 genera with *ca* 10 species Australia; 3 genera with 3 species south-eastern Queensland.

- | | | |
|---|---------------------|---|
| 1. Woody trees or shrubs, sometimes climbing | 1. <i>Pisonia</i> | |
| Erect or creeping herbs | | 2 |
| 2. Leaves of each pair ± equal in size; inflorescences involucre; anthocarps not viscid | 2. <i>Mirabilis</i> | |
| Leaves of each pair generally unequal in size; inflorescences not involucre; anthocarps mostly with viscid glands | 3. <i>Boerhavia</i> | |

1. PISONIA L.

Erect shrubs or trees up to 30 m tall, rarely climbing, mostly unarmed, sympodially branched, mostly glabrescent; wood and bark soft, spongy, brittle. Leaves subopposite or alternate, entire. Inflorescences thyrsoid, sometimes cauliflorous, 2–8 times umbellately branched, ultimate branches bearing diads or triads or single flowers, pedicels with 1–3 small, caducous bracts, accrescent; flowers unisexual or bisexual, male and female sometimes of different shape; perianth somewhat fleshy, lobes 5, rarely 10, valvate in bud, basal part tubular, coriaceous, apical coloured; stamens 2–40, mostly exerted; ovary on small disc, elongated, style longer than ovary. Anthocarps coriaceous, often crowned with remains of upper part of perianth, sometimes with rostrum; seeds oblong with longitudinal furrow.

50 species tropical and subtropical; 3 species Australia; 1 species south-eastern Queensland.

1. *Pisonia aculeata* L.

Scandent shrub or climber, often with recurved axillary thorns 5–10 mm long. Leaves with petioles 0.5–2.5 cm long; blades ovate-elliptic or obovate, apex obtuse or bluntly acuminate, base cuneate, 1.7–11 cm × 1–7 cm; glabrous or puberulent beneath. Inflorescences pubescent dense axillary cymes, peduncle 1.5–3 cm long in flower; flowers unisexual; perianth with 5 large lobes up to 1 mm long alternating with 5 small lobes; males funnel-shaped, ca 3–4 mm long, stamens 8, exserted 1–2 mm; females urceolate, ca 3 mm long. Anthocarps narrowly oblong-ellipsoid, to narrowly ovoid, 1.2–1.5 cm × 0.25–0.4 cm, 5-ribbed, each rib glandular muricate, pubescent between ribs. **Fig. 12F.**

Uncommon in coastal districts, usually in depauperate rainforest fringes or littoral forests. Flowers spring.

2. *MIRABILIS* L.

Erect herbs, often branched; glandular-pubescent, or glabrous; nodes thickened; roots with tubers. Leaves of each pair equal. Inflorescences terminal, corymbose, 1–many-flowered, each flower sustained by a persistent, accrescent involucre, divided halfway into 5 oblong, acute lobes; flowers bisexual, ephemeral, trumpet-shaped, large; tube with a constriction above the basal part, lower part of tube ribbed or with knobs, upper part of tube and limb circumscissile, caducous after anthesis; stamens 3–6, unequal, distinctly exserted; ovary sessile, style distinctly exserted. Anthocarps ribbed or with knobs, not viscid.

60 species, American; 1 species cultivated and naturalized Australia, occurring in south-eastern Queensland.

1. **Mirabilis jalapa* L.**FOUR O'CLOCK; MARVEL-OF-PERU**

Herb ca 0.8m, rarely up to 1.5m tall. Leaves with petioles 0.5–4.5 cm long; blades ovate to triangular-ovate, apex acuminate, base cuneate-truncate to ± broadly cordate, 2.2–9(–15) cm × 1.2–6(–9) cm. Flowers usually white, pink or crimson or variegated, 3–7 together on peduncle 1.5–6 cm long; involucre 8–10 mm long, enlarging to 1.5 cm after anthesis; lower part of perianth tube 5 mm long, upper part 4–5 cm long, limb 2.5–3.5 cm across; stamens 5–6, exserted by 0.8–1.5 cm; style equalling stamens. Anthocarps ovoid, 7–8 mm long. **Fig. 12D.**

Native of Peru; naturalized mainly near towns in a few areas. Flowers mainly summer. The flowers open late afternoon, and close early next morning, hence the common name.

3. *BOERHAVIA* L.

Annual, sometimes woody herbs, erect, ascending or creeping; puberulous-glabrescent with sessile or stalked clavate glands or hairs. Leaves opposite, slightly unequal in each pair; epidermis with minute irregular cystolith-like sculptures, and sometimes with embedded reddish glands. Inflorescences axillary in axil of smaller leaf of each pair, subumbellate, with 2–10 small flowers, bracts and bracteoles small, acute, fimbriate, caducous, pedicels jointed, very short; flowers bisexual; perianth tubular-campanulate with a distinct constriction mostly halfway, lower part obconical, 5- or 10-ribbed, upper part 5-lobed, plicate in bud, caducous; stamens 1–4, exserted; ovary shortly stipitate, smooth, style as long as perianth, stigma capitate. Anthocarps closed at apex, 5–10-ribbed, glabrous, or set with glands, swelling and slimy in water.

40 species tropical and subtropical; 4 species Australia; 1–4 species south-eastern Queensland.

1. *Boerhavia diffusa* L.**TAR VINE**

Prostrate, diffuse or ascending herb; glabrous or puberulent. Leaves with petioles 0.3–3.5 cm long; blades narrowly ovate, ovate or oblong-elliptic, apex acute or obtuse, base cuneate, obtuse or ± truncate, margin entire, undulate or slightly sinuate, 1–4.5 cm × 0.5–2.5 cm, reddish glands sometimes present. Inflorescences axillary or, by the reduction of leaves into bracts, each stem forming one large thyrsoid inflorescence appearing

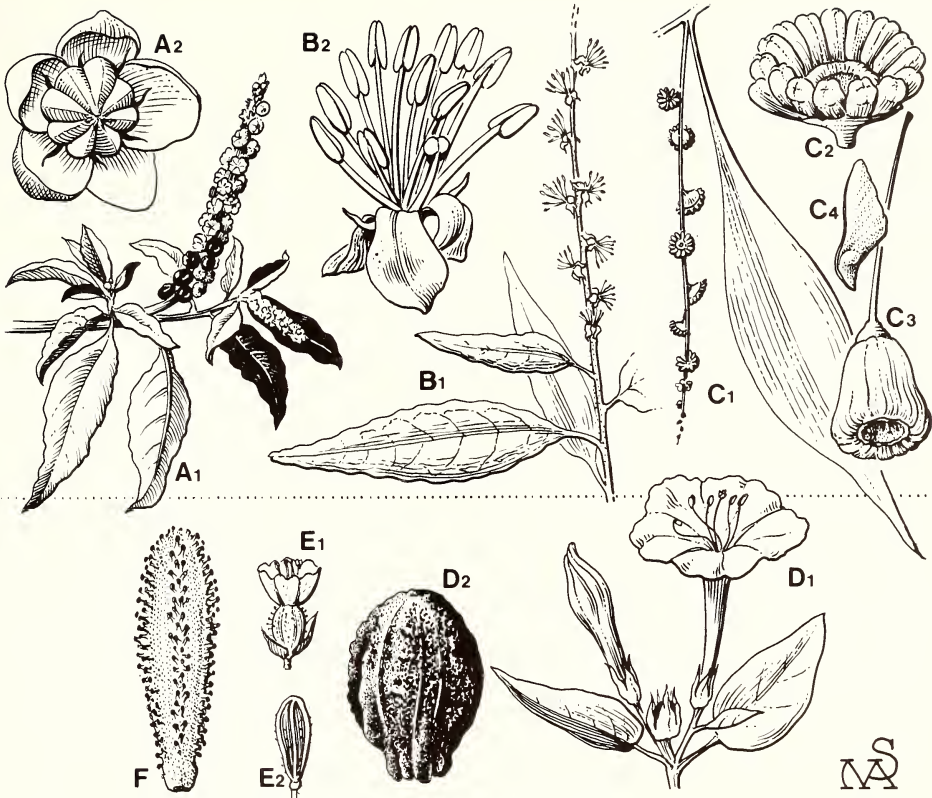


Fig. 12

A-B PHYTOLACCACEAE – A₁-A₂, *Phytolacca octandra*, A₁ part of fruiting branchlet $\times \frac{1}{2}$, A₂ young fruit with persistent perianth segments and staminal filaments $\times 6$; B₁-B₂, *Monococcus echinophorus*, B₁ part of flowering branchlet $\times \frac{3}{2}$, B₂ male flower $\times 6$; **C GYROSTEMONACEAE** – C₁-C₄, *Codonocarpus attenuatus*, C₁ leaf and male inflorescence $\times 1$, C₂ male flower $\times 4$, C₃ fruit $\times 1$, C₄ seed $\times 1$; **D-F NYCTAGINACEAE** – D₁-D₂, *Mirabilis jalapa*, D₁ inflorescence, showing involucre bracts at base of flower $\times \frac{3}{2}$, D₂ fruit $\times 3$; E₁-E₂, *Boerhavia diffusa*, E₁ flower $\times 6$, E₂ fruit $\times 3$; F *Pisonia aculeata*, fruit $\times 3$.

terminal at the extremities; flowers white, pink or purplish, 1-few together; perianth 1.5–3 mm long; stamens 1–3, exerted *ca* 0.5 mm. Anthocarps ellipsoid or obovoid, 3–4.5 mm long, glandular muricate. Fig. 12E.

Throughout the area in a variety of habitats. Flowers spring to autumn.

There are a number of different forms of this species occurring in Queensland, including a coastal form, an inland form, a very pubescent one, a very broad-leaved form, as well as the type form. A critical review is necessary to determine whether it is one polymorphic species, or whether several separate taxa are grouped under this name.

18. AIZOACEAE

Herbs or low shrubs, erect or prostrate, often fleshy. Leaves alternate or opposite; stipules minute or absent; blades entire. Flowers bisexual, actinomorphic; perianth herbaceous or scarious, 4–5-lobed or -partite; stamens 3, 5 or many, 1-many-seriate, sometimes outermost forming petaloid staminodes, anthers 2-locular; ovary superior or inferior, 1-several-locular, ovules 1-many, basal, apical, or axile, styles as many as loculi, usually stigmatic on inner surface. Fruits capsular, rarely fleshy; seeds usually compressed and crustaceous.

130 genera with 1200 species, chiefly southern Africa, but also tropical Africa and Asia, Australia, and tropical and southern America; 12 genera with 36 species Australia; 9 genera with 13 species south-eastern Queensland.

- | | | |
|--|-----------------------|---|
| 1. Flowers with several rows of petaloid staminodes; ovary \pm inferior, adnate to perianth-tube | | 2 |
| Flowers without petaloid staminodes; ovary superior, free from perianth-tube | | 4 |
| 2. Plants \pm covered with glistening papillae; leaves flat, broad | 1. <i>Aptenia</i> | |
| Plants without papillae, glabrous, smooth; leaves triquetrous or cylindrical | | 3 |
| 3. Leaves triquetrous; fruit indehiscent | 2. <i>Carpobrotus</i> | |
| Leaves \pm cylindrical; fruit dehiscent | 3. <i>Disphyma</i> | |
| 4. Perianth tubular below, 4-5-lobed above; stamens perigynous | | 5 |
| Perianth divided \pm to the base; stamens hypogynous | | 7 |
| 5. Style 1 | 4. <i>Trianthema</i> | |
| Styles 2-5 | | 6 |
| 6. Flowers glomerate; styles always 2; lid of capsule splitting into 2 valves; seeds 4 | 5. <i>Zaleya</i> | |
| Flowers solitary; styles rarely 2, usually 3-5; lid of capsule remaining intact; seeds more than 4 | 6. <i>Sesuvium</i> | |
| 7. Cauline leaves alternate, often reduced to scales | 7. <i>Macarthuria</i> | |
| Cauline leaves opposite or apparently whorled | | 8 |
| 8. Seeds strophiolate with a long filiform appendage | 8. <i>Glinus</i> | |
| Seeds not strophiolate, without appendage | 9. <i>Mollugo</i> | |

1. APTENIA N. E. Brown

Minutely papillose perennial herbs. Leaves opposite, petiolate, flat. Flowers axillary, solitary; perianth 4-5-lobed; petaloid staminodes numerous; ovary \pm inferior, placentas axile. Fruits dehiscent.

1 species Africa, naturalized Australia, occurring in south-eastern Queensland.

1. **Aptenia cordifolia* (L. f.) Schwantes
Mesembryanthemum cordifolium L. f.

HEART-LEAF ICE-PLANT

Prostrate perennial; stems up to 60 cm long. Leaves with petioles 0.8-1.3 cm long; blades thick, ovate to triangular, apex acute, base broadly cuneate to truncate, 1-3 cm \times 0.8-2.5 cm, minutely papillose on both surfaces. Flowers up to 1.5 cm diameter, on peduncles 0.5-2.5 cm long; perianth *ca* 1.5 cm long, 4-lobed, 2 broad obtuse lobes longer than others; petaloid staminodes reddish to purple; styles 4, short. Fruits 4-locular, opening by 4 valves. **Fig. 13F**

Native of South Africa; garden escape in the Granite Belt area, rare. Flowers spring-summer.

2. CARPOBROTUS N. E. Brown

Glabrous, perennial herbs; stems prostrate, rooting at nodes. Leaves opposite, sessile, triquetrous, succulent. Flowers terminal, solitary; perianth 4-5-lobed, 2 opposite and larger than others; petaloid staminodes showy, numerous, free; stamens numerous; ovary inferior, 6-15-locular, ovules numerous per loculus, stigmas fimbriate. Fruits fleshy, crowned by at least 2 longest perianth lobes; seeds numerous.

20-25 species, chiefly southern Africa; 4 native and 2 naturalized species Australia; 1 species south-eastern Queensland.

1. *Carpobrotus glaucescens* (Haw.) Schwantes

PIGFACE

Mesembryanthemum glaucescens Haw.; *M. aequilaterale* auct. non Haw., Benth.
Stems up to 2 m long. Leaves triquetrous, mostly 4–8 times as long as wide, 3.5–10 cm × 0.9–1.5 cm, slightly glaucous. Flowers 4–6 cm across, subsessile or on peduncles up to 3 cm long; perianth lobes 5, longer ones 1.6–4 cm long; petaloid staminodes light purple, white near the base, 100–150; stamens 300–400; ovary with 7–10 styles. Fruits red or purple, cylindrical to ellipsoid, 2–3 cm long, 2-ribbed.

Common along beaches of region on sand or over rocks. Flowers sporadically throughout the year. Fleshy pulp of fruit edible, also leaves when cooked.

In a few areas *C. aequilaterus* (Haw.) N. E. Brown has been planted for erosion control on embankments. It is a native of Chile but has become naturalized in southern Australia. Its leaves are 6–12 times as long as wide (thick); it flowers mainly spring–summer; its fruits are sharply 2-edged.

3. DISPHYMA N. E. Brown

Glabrous prostrate herbs, rooting at nodes. Leaves opposite, cylindrical, succulent. Flowers conspicuous, solitary on long erect peduncles; perianth 4–5-lobed; petaloid staminodes numerous; ovary inferior, 5–10-locular, placentas parietal, thickened at apex into 2-lobed tubercle which ± closes aperture in loculus roof. Fruits dehiscent capsules, opening stellately in 5–10 valves with membranous wings.

3–5 species South Africa, Australia and New Zealand; 1 species Australia, occurring in south-eastern Queensland.

1. *Disphyma clavellatum* (Haw.) Chinnock

Mesembryanthemum clavellatum Haw.; *Disphyma australe* (Aiton) J. M. Black (Australian populations); *D. blackii* Chinnock

Stems up to ca 1 m long. Leaves stem-clasping, terete or subtriquetrous, margin papillose, 0.5–5 cm × 0.4–1 cm. Flowers 2–5 cm across on peduncles 2–10 cm long; perianth segments 5, 2 opposite usually longer, leaf-like; petaloid staminodes purplish, 2-seriate; stamens numerous; nectary annular, shallow, crenulate; styles usually 5. Fruits ± obconical, 0.5–1.2 cm across, valves usually 5, placental tubercle 2-lobed.

Rare, recorded only from Yelarbon area. Flowers mainly spring.

4. TRIANTHEMA L.

Prostrate or procumbent herbs. Leaves opposite, with dilated sheathing bases, the dilations resembling ochreae. Flowers axillary, clustered or solitary, small, each with a membranous bract and 1–2 bracteoles at base; perianth of 5 imbricate lobes; stamens 5–20, perigynous; ovary superior, 1-locular, usually 2-ovulate, style 1. Fruits circumscissile capsules.

About 20 species, tropical and subtropical Africa, Asia, Australia, tropical America; 10 species Australia; 2 species south-eastern Queensland.

1. Leaves broadly obovate or broadly elliptic; flowers solitary in axils;
stamens 10–25
Leaves linear-oblong to narrowly elliptic; flowers clustered in axils;
stamens 5

1. *T. portulacastrum*
2. *T. triquetra*

1. **Trianthema portulacastrum* L.**BLACK PIGWEED; GIANT PIGWEED**

Paired leaves unequal in size; petioles 0.2–3.5 cm long; blades broadly obovate or broadly elliptic, apex obtuse, base cuneate, 0.5–5 cm × 0.5–4.5 cm, ± glabrous. Flowers pink to purple, solitary, partly hidden by sheathing leaf-bases; perianth 3–5 mm long, lobes obtuse, mucronate; stamens 10–25; ovary 2-lobed. Capsules ± obconical, ca 4 mm long; seeds black. **Fig. 13A.**

Native of tropical America and southern Asia; weed of south-eastern Queensland. Flowers summer to autumn. Has been suspected of poisoning hungry stock.

2. *Trianthema triquetra* Willd.**RED SPINACH**

Trianthema chrystallina auct. non (Forssk.) Vahl., J. M. Black, misspelt as '*crystallina*' Leaves with petioles 1–3 mm long; blades linear-oblong to narrowly elliptic or narrowly obovate, apex usually obtuse, base cuneate, 0.5–1.5 cm × 0.1–0.3 cm, glabrous or papillose. Flowers clustered; perianth 2–4 mm long, lobes triangular; stamens 5; ovules 2. Capsules 2 mm long, circumcising with 1 or both seeds, base fused to persistent hypanthium. **Fig. 13B.**

Drier areas of the region. Flowers most of the year. Under certain conditions can be toxic to stock.

5. ZALEYA N. L. Burm.

Usually prostrate, annual or perennial herbs. Leaves opposite, exstipulate, petiolate, slightly succulent. Flowers axillary, glomerate, bisexual, actinomorphic, subsessile; perianth 5-lobed with membranous margins and subapical dorsal mucro; stamens 5–15, free, inserted in upper part of perianth tube; ovary superior, syncarpous, 2-locular, ovules 2 per loculus, attached to interocular septum, stigmas 2, free. Fruits 4-seeded capsules dehiscent by means of a bivalved operculum, valves usually separating.

About 3 species tropical Africa, India, Sri Lanka, Lesser Sunda Is., Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Zaleya galericulata* (Melville) H. Eichler**HOGWEED**

Trianthema galericulata Melville; *T. decandra* auct. non L., J. M. Black; *Zaleya decandra* auct. non N. L. Burm., Tate; *T. australis* auct. non Melville, Chippend.

Glabrous procumbent herb. Paired leaves unequal in size; petioles 0.4–1.5 cm long, expanded at base; blades elliptic to obovate, apex obtuse, mucronate, base cuneate, 1–5 cm × 0.5–3.5 cm. Flowers pink; perianth 3–4 mm long; stamens 10–12, rarely 5. Capsules ca 4 mm long, separating into 2 parts, lower part 2-seeded, horny circumcissile cap also 2-seeded; seeds black. **Fig. 13C.**

Weed, usually on river plains in the more inland districts. Flowers summer. Has been suspected of poisoning sheep.

6. SESUVIUM L.

Herbs or undershrubs. Leaves ± opposite, exstipulate, succulent. Flowers solitary, in axillary clusters, or ± cymose; perianth deeply 5-lobed, persistent, scarious on margins; stamens 5–many; ovary free, 3–5-locular, ovules numerous per loculus. Fruits membranous capsules ± completely divided by very thin dissepiments, transversely circumcising about the middle; seeds, black, several.

8 species worldwide, tropical and subtropical coasts; 1 species Australia, occurring in south-eastern Queensland.

1. *Sesuvium portulacastrum* (L.) L.

SEA PURSLANE

Portulaca portulacastrum L.

Glabrous procumbent herb, rooting at nodes; stems 2–3 m long. Leaves with stem-clasping bases with hyaline margins; blades narrowly elliptic, apex obtuse, 3–7 cm × 0.8–1.2 cm. Flowers pink to purple, usually solitary on peduncles up to 1.2 cm long; perianth 8–10 mm long; stamens 20–30, perigynous; ovary superior, 3–4-locular. Fruits ovoid, *ca* 6 mm long.

Sandy areas and salt marshes along the beaches of the region. Flowers most of the year. Edible.

7. MACARTHURIA Huegel ex Endl.

Rigid, wiry, or rush-like herbs or undershrubs. Leaves alternate, often reduced to scales. Flowers small, in lateral or terminal, short irregular cymes or forming a spreading dichotomous cyme with opposite bracts; calyx 5-partite, persistent; corolla 5-merous or absent; stamens 8, filaments united at base; ovary 3-locular, 1–3 ovules per loculus, placentation basal, styles 3, stigmas terminal. Capsules dehiscent loculicidally in 3 valves; seeds with small white arillus.

6–7 species endemic to Australia; 2–3 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Stems ± terete; inflorescences cymose, terminal on much-branched stems | 1. <i>M. neocambrica</i> |
| Stems angular, flattened or winged, flowers solitary or in axillary clusters on few-branched stems | 2 |
| 2. Stems angular; pedicels 1–4 mm long | 2. <i>M. ephedroides</i> |
| Stems narrowly to broadly winged; pedicels 0.5–1(–1.5) mm long | 3. <i>M. complanata</i> |

1. *Macarthuria neocambrica* F. Muell.

Leaves few, radical and cauline; radical leaves with petioles 1–2.5 cm long; blades elliptic to obovate, apex usually obtuse, base attenuate, 1–2.2 cm × 0.5–1 cm; cauline leaves gradually reducing. Inflorescences broad loose cymes; flowers white, pedicels 3–5 mm long; sepals obtuse, 3 mm long; petals *ca* 3 mm long or absent; ovule 1 per loculus. Capsules ± globose, *ca* 2 mm long; seeds black, *ca* 1.5 mm long.

Common in coastal wallum or on vegetated sand dunes along the coast or on offshore islands. Flowers summer to autumn.

2. *Macarthuria ephedroides* C. T. White

Sprawling decumbent multi-stemmed glabrous herb with woody tap root. Leaves few, caducous, radical leaves with obscure petioles; blades narrowly obovate, apex obtuse, base attenuate, *ca* 2 cm × 0.4 cm; cauline leaves reduced to scales. Flowers solitary or 2–3 together in axils of scales, pedicels 1–4 mm long; sepals greenish-white, acute, *ca* 2.5 mm long; petals absent; ovule 1 per loculus. Capsules ovoid, *ca* 2–2.5 mm long; seeds black, *ca* 1.5 mm long, verrucose.

Teewah area of Wide Bay district, on high sand dunes; uncommon. Flowers spring–summer.

3. *Macarthuria complanata* E. Ross

Leaves few, caducous; radical leaves with petioles up to 1 cm long; blades narrowly obovate, apex obtuse, mucronate, base attenuate, 0.8–2.5 cm × 0.2–0.6 cm; cauline leaves reduced to scales. Inflorescences spicate with ± sessile flowers in axils of scales along upright stems; sepals acuminate, 3–4 mm long; petals absent; ovule 1 per loculus. Capsules ovoid, *ca* 3 mm long; seeds black.

Recorded only from Noosa area and Noosa River plain. Flowers mainly summer.

8. GLINUS L.

Herbs. Radical leaves rosulate, caducous; cauline leaves opposite or apparently verticillate; stipules small, caducous. flowers axillary, apparently clustered on short peduncles; perianth 5-partite, imbricate; stamens 3-20, usually with a few staminodes outside them; ovary superior, 3-5-locular, ovules several per loculus, styles 3-5. Fruits 3-5-valved loculicidal capsules, enclosed in persistent perianth; seeds with distinct, long, filiform-appendaged strophiole.

12 species worldwide, tropical and subtropical; 3 species Australia; 2 species south-eastern Queensland.

- | | |
|--|-----------------------------|
| 1. Leaves with dense grey stellate tomentum; perianth 6-8 mm long; styles 5 | 1. <i>G. lotoides</i> |
| Leaves \pm glabrous or with a few simple hairs; perianth <i>ca</i> 3 mm long; styles 3 | 2. <i>G. oppositifolius</i> |

1. *Glinus lotoides* L.

HAIRY CARPET WEED

Mollugo glinus A. Rich.; *M. hirta* Thunb.

Leaves apparently in whorls of 4; petioles 4-10 mm long; blades broadly elliptic to obovate, apex obtuse or acute, base cuneate, 1-2.2 cm \times 0.6-1.6 cm. Flowers in axillary clusters of 4-7; perianth 6-8 mm long; stamens 8-18, usually with *ca* 5 bifid staminodes; ovary 5-locular. Capsules cylindrical, *ca* 5 mm long.

Western Darling Downs district, uncommon in region. Flowers and fruits most of the year.

2. *Glinus oppositifolius* (L.) A.DC.

Mollugo oppositifolia L.; *M. spergula* L.; *Glinus spergula* (L.) Steudel

Leaves opposite or verticillate; petioles 1-5 mm long; blades narrowly obovate to narrowly elliptic, apex obtuse, base cuneate to attenuate, 0.5-2 cm \times 0.2-1 cm. Flowers in axillary clusters of 2-7; perianth 2.5-3 mm long; stamens 3-4; ovary 3-locular. Capsules cylindrical, *ca* 3 mm long. **Fig. 13E.**

Coastal swampy areas of region. Flowers spring to autumn.

9. MOLLUGO L.

Annual or perennial herbs. Leaves basal or opposite or in false whorls; stipules caducous. Inflorescences cymose, laxly dichasial or umbelliform; perianth segments 5, free, persistent; stamens 3-5; ovary 3-5-locular, ovules many. Fruits thin-walled loculicidal capsules; seeds few to many, without strophiole or any linear appendage.

20 species worldwide, tropical and subtropical; 2 species Australia; 1 species south-eastern Queensland.

1. **Mollugo verticillata* L.

INDIAN CHICKWEED

Annual, forming mats up to 40 cm across. Leaves in whorls of 3-8; petioles 1-3 mm long; blades narrowly obovate, apex acute or obtuse, base attenuate, 1-3 cm \times 0.2-0.6 cm, glabrous. Flowers white or greenish, in axillary clusters of 2-5 on peduncles 0.3-1.5 cm long; perianth segments *ca* 3 mm long; stamens 3-4; ovary 3-locular. Capsules ovoid, 3 mm long; seeds brown, numerous, longitudinally ridged. **Fig. 13D.**

Native of tropical America; weed of waste areas and roadsides, etc., of the region. Flowers summer-autumn.

19. TETRAGONIACEAE

Succulent herbs or subshrubs, prostrate or scrambling. Leaves simple, alternate, exstipulate, entire. Flowers axillary, solitary or few or in small racemiform cymes, bisexual or unisexual; perianth lobes 3-5; stamens 1-many, inserted on perianth tube, sometimes

fasciculated; ovary inferior, 3-9-locular, rarely 1-2-locular, 1 pendulous ovule per loculus, as many subulate styles as loculi. Fruits indehiscent, ± drupaceous, sometimes winged, cornute, or spiny.

2 genera with ca 60 species, mostly southern hemisphere; 1 genus with 4 species Australia; 1 species south-eastern Queensland.

1. TETRAGONIA L.

Characters of the family

1. *Tetragonia tetragonioides* (Pallas) Kuntze NEW ZEALAND SPINACH
Demidovia tetragonioides Pallas; *Tetragonia expansa* Murray

Robust herb. Leaves with petioles 0.5-2.5 cm long; blades triangular-ovate to narrowly elliptic, apex obtuse to bluntly acuminate, base cuneate, 1.5-11 cm × 1-7.5 cm, thick. Flowers solitary or few, on peduncles ± 2 mm long; perianth ca 4 mm long, lobes 4; stamens 4-16, ovary half inferior, 5-11-locular. Fruits turbinate, 0.5-1.5 cm long and broad, 2-5-cornute; seeds 4-10. **Fig. 13G.**

Weed throughout most of the region. Flowers spring-summer. Young shoots cooked and used as spinach. Contains oxalates in green state at potentially poisonous levels.

20. PORTULACACEAE

Herbs or undershrubs, often succulent. Leaves alternate or opposite with scarious or setose stipules. Inflorescences cymose, racemose, or of solitary, bisexual, actinomorphic flowers; sepals 2, imbricate, free or united at base; petals 4-6 or more, imbricate, free or connate at base, caducous; stamens 3-many, free, anthers 2-locular; ovary superior or half inferior, 1-locular, placentation basal, ovules 1-many, styles usually divided. Fruits capsular, dehiscing by valves or circumcissing, rarely a nut or indehiscent; seeds globose to reniform, embryo surrounding the copious mealy endosperm.

19 genera with 580 species cosmopolitan; 6 genera with 48 species Australia; 3 genera with 11-12 species south-eastern Queensland.

- | | | |
|--|-----------------------|---|
| 1. Ovary half inferior; capsule circumcissile | 1. <i>Portulaca</i> | |
| Ovary superior; capsule dehiscent, splitting into valves | | 2 |
| 2. Inflorescences terminal or axillary racemes or rarely solitary axillary pedunculate flowers | 2. <i>Calandrinia</i> | |
| Inflorescences terminal cymose panicles | 3. <i>Talinum</i> | |

1. PORTULACA L.

Succulent glabrous herbs. Stipules often reduced to tufts of hairs. Flowers solitary or clustered, axillary or terminal; sepals united towards the base forming a tube adnate to lower part of ovary, tube circumcissing below summit of ovary with upper part of sepals finally falling; petals 4-6, perigynous; stamens usually numerous; ovary half inferior, ovules many, style with several flat stigmatic branches. Capsules membranous, circumcissile, upper part falling off with petals and sepals; seeds numerous, minute, usually with caruncle.

About 200 species worldwide, tropical and subtropical; 15 species Australia; 5-6 species south-eastern Queensland.

- | | | |
|--|-----------------------|---|
| 1. Leaves opposite, broadly ovate or orbicular; flowers on peduncles 3-6 mm long | 1. <i>P. bicolor</i> | |
| Leaves usually alternate, not broadly ovate or orbicular; flowers ± sessile | | 2 |
| 2. Stipular hairs absent or less than 1 mm long and inconspicuous | 2. <i>P. oleracea</i> | |
| Stipular hairs present and conspicuous | | 3 |

- 3. Leaves linear; sepals 4-5 mm long; petals 8-10 mm long; style longer than stamens 3. *P. filifolia*
- Leaves oblong or narrowly ovate; sepals less than 4 mm long; petals less than 8 mm long; style not longer than stamens 4
- 4. Stamens free; flowers usually pink to purple 4. *P. pilosa*
- Stamens basally connate; flowers yellow 5. *P. australis*

1. *Portulaca bicolor* F. Muell.

Small prostrate annual. Leaves opposite; stipular hairs absent; petioles 1-2 mm long; blades broadly ovate, apex obtuse or shortly acuminate, base truncate to cordate, 3-6 mm × 3-6 mm. Flowers yellow or purple, solitary, axillary or apparently terminal on peduncles 3-6 mm long; sepals *ca* 2 mm long; petals 2-3 mm long; stamens *ca* 6. Capsules ± obconical, 2.5 mm diameter; seeds black, minute, verrucose. **Fig. 13I.**

Drier western parts of region. Flowers most of the year.

2. *Portulaca oleracea* L.

PIGWEEED; PURSLANE

Diffuse herb. Leaves mostly alternate; petioles 2-5 mm long; blades oblong to obovate, apex obtuse, base attenuate, 0.5-2 cm × 0.3-1 cm. Flowers yellow, sessile, solitary or clustered; sepals 5 mm long; petals 4-6, *ca* 5 mm long; stamens 8-15; style branches 4-6. Fruits ovoid, 4-5 mm long; seeds shiny black with stellate sculptured pattern and often fine tubercles on surface. **Fig. 13H.**

Throughout the region, particularly waste places. Flowers summer. The leaves have been used as a green vegetable, while the seeds can be ground to make meal for cakes or bread.

An inland form, MUNYEROO or INLAND PIGWEEED may prove to be an undescribed species. The stems and oblong leaves are usually reddish, and it branches profusely to form mats.

Both can be poisonous to stock under certain conditions.

3. *Portulaca filifolia* F. Muell.

Erect or diffuse annual. Leaves alternate; petioles 1-2 mm long; blades ± linear, apex subacute, 1-3 cm × 0.1-0.25 cm. Flowers bright yellow, 1-3, sessile, terminal or axillary; sepals 4-5 mm long; petals 8-10 mm long; stamens numerous; style elongated, stigmatic lobes 3-5. Capsules circumcising below middle, *ca* 5-6 mm long; seeds ± shiny black, subreniform, *ca* 0.5 mm long, ornately tuberculate in concentric rows.

Dry areas of western parts of region. Flowers summer.

4. **Portulaca pilosa* L.

More or less prostrate. Leaves usually alternate; petioles 1-2 mm long; blades narrowly ovate, apex acute or obtuse, base tapered, 0.5-2.7 cm × 0.1-0.4 cm. Flowers purple or crimson, occasionally yellow, terminal in sessile clusters of 1-6, encircled by axillary hairs; sepals *ca* 3-4 mm long; petals 5-several, 3-8 mm long, united at base; stamens 15-25, free; style short, stigmatic lobes 3-6. Capsules subglobose, up to 7 mm long, circumcising at or below middle; seeds ± shining black, reniform, stellate tuberculate. **Fig. 13J.**

Native of America; naturalized weed of region. Flowers summer.

5. *Portulaca australis* Endl.

Prostrate annual. Leaves alternate, crowded; petioles 0.5-2 mm long; blades oblong-elliptic, apex subobtuse, base truncate to tapered, 0.4-1.2 cm × 0.1-0.45 cm, thick. Flowers yellow, mostly 2 together, shortly pedunculate, surrounded by hairs; sepals *ca* 3 mm long; petals 5, *ca* 5-6 mm long, united at base; stamens 25, filaments basally connate; style elongate, stigmatic lobes 5-6. Capsules elongate to subglobose, circumcising at middle; seeds shining black, reniform, granulate.

Drier parts of region. Flowers summer.

2. CALANDRINIA Kunth

Decumbent or ascending herbs. Leaves alternate or radical, exstipulate, succulent. Flowers usually in terminal racemes with 1–2 bracts at the base of each pedicel; sepals 2, persistent; petals usually 4–5, withering and enclosing ovary; stamens 3–many; ovary superior, ovules 2–many, stigmatic branches 3 or 4, free and sessile on ovary or terminating short style. Capsules small, dehiscent longitudinally into 3–4 valves; seeds reniform, orbicular or ovoid, funicle often terminating in small aril at seed base.

About 150 species America, Australia; ca 30 species Australia; 5 species south-eastern Queensland.

- | | | |
|--|--------------------------|---|
| 1. Flowers large, showy; petals 1–2 cm long | 1. <i>C. balonensis</i> | 2 |
| Flowers small; petals less than 1 cm long | | |
| 2. Petals 4; flowers on pedicels ca 5 mm long; seeds tuberculate | 2. <i>C. pickeringii</i> | 3 |
| Petals 5 or more; flowers on pedicels 0.5–3 cm long; seeds variously patterned but not tuberculate | | |
| 3. Petals 6–9, ca 8 mm long; capsule valves 4; seeds ca 0.4 mm diameter | 3. <i>C. pleiopetala</i> | 4 |
| Petals 5, less than 5 mm long; capsule valves 3; seeds 0.5–0.75 mm diameter | | |
| 4. Seeds 0.5 mm diameter, finely wrinkled, ca 50 per capsule | 4. <i>C. eremaea</i> | |
| Seeds 0.75 mm diameter, smooth and shining, ca 12–25 per capsule | 5. <i>C. calyptrata</i> | |

1. *Calandrinia balonensis* Lindl.

PARAKEELYA

Ascending herb. Leaves with petioles 0.5–3 cm long; blades narrowly elliptic to obovate, apex usually acute, base attenuate, 2–10 cm × 0.4–2 cm. Flowers purplish, pedicels 2–3 cm long; sepals broadly ovate, 5–6 mm long; petals 5, 1.1–1.5 cm long; stamens 60–80; stigmatic lobes 3, united in short style. Capsule 3-valved; seeds dark, 1 mm diameter, concentrically rugulose. **Fig. 13L.**

Western Darling Downs district. Leaves have been used for food, and seeds for a type of bread. Can contain oxalates.

2. *Calandrinia pickeringii* A. Gray

Decumbent herb. Basal leaves with petioles 0.3–1.2 cm long; blades linear-oblong to narrowly elliptic, apex ± obtuse, base attenuate, 1.5–4 cm × 0.3–0.6 cm; cauline leaves linear-elliptic, reducing. Flowers pinkish, pedicels 3–5 mm long; sepals 3 mm long; petals 4–5 mm long; anthers 3; stigmatic lobes 3, free. Capsules ± conical, 3-valved, 4 mm long; seeds dark brown, 0.5 mm diameter, minutely tuberculate. **Fig. 13K.**

Fairly common in damp spots, particularly in crevices and seepage areas near rocky cliffs. Flowers summer.

3. *Calandrinia pleiopetala* F. Muell.

Glabrous erect herb. Radical leaves crowded; petioles 3–10 mm long; blades linear-oblong, apex obtuse, mucronate, base tapered, 2–5 cm × 0.1–0.3 cm; cauline leaves reducing. Flowers purple, pedicels 0.5–2.5 cm long; sepals 3–4 mm long; petals usually 8, ca 8 mm long; stamens ca 20; stigmatic lobes 4. Capsules cylindrical, 4-valved; seeds brown, ca 0.4 mm diameter, smooth or minutely rugulose.

Recorded from Darling Downs district. Flowers summer.

4. *Calandrinia eremaea* Ewart*Calandrinia pusilla* Lindl.

Small erect annual. Basal leaves with petioles 2–5 mm long; blades linear-oblong to narrowly obovate, apex acute or obtuse, base tapered, 1–4 cm × 0.2–0.6 cm; cauline leaves reducing. Flowers pinkish, pedicels 1–3 cm long; sepals 2–3 mm long; petals 5, ca 4 mm long; stamens 5–12; stigmatic lobes 3. Capsules conical, 3-valved, ca 4 mm long; seeds shining black or metallic, 0.5 mm diameter, concentrically rugulose.

Darling Downs district, fairly common. Flowers summer.

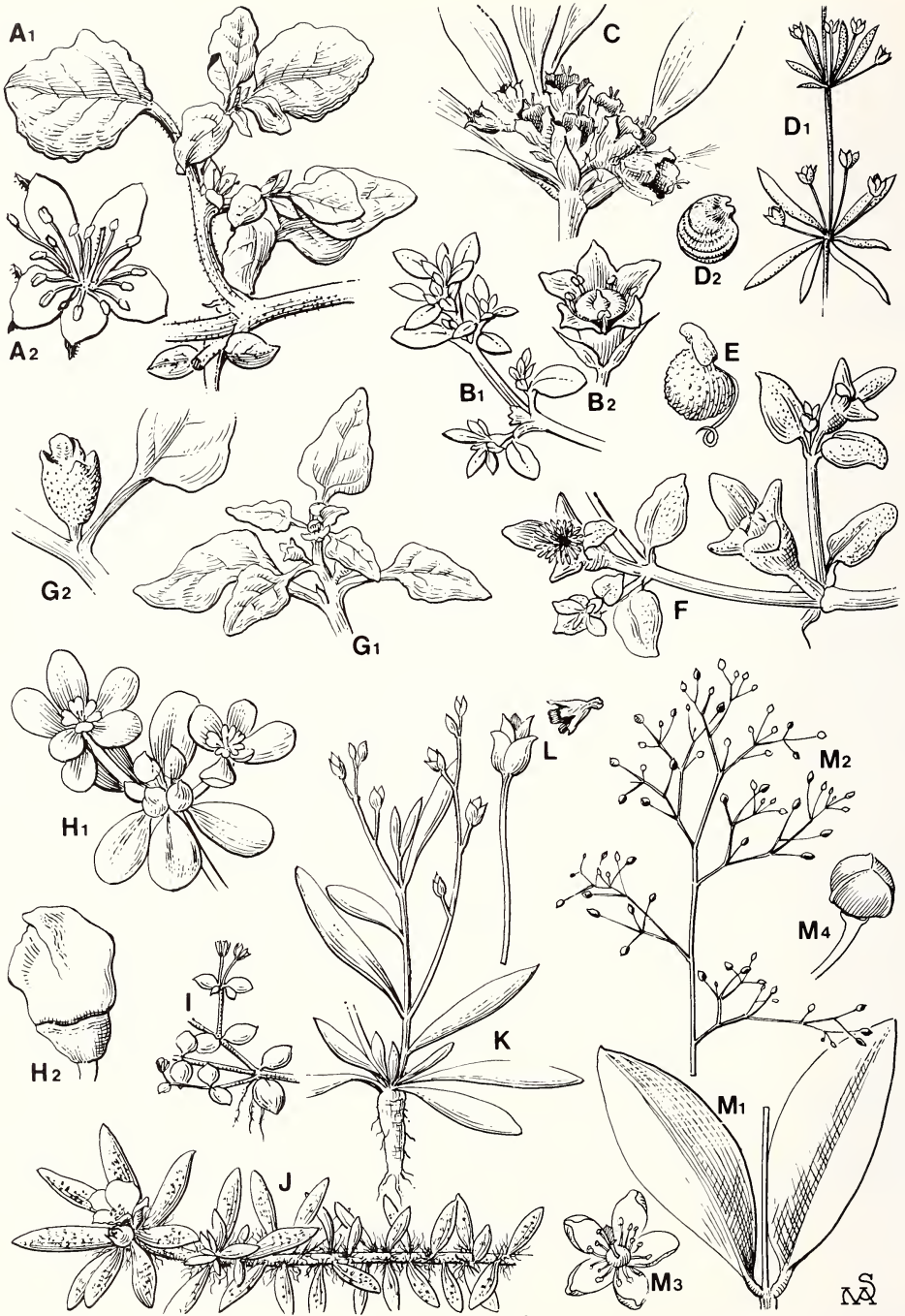


Fig. 13

A-F AIZOACEAE — A-B *Trianthema* spp. — A₁-A₂, *T. portulacastrum*, A₁, part of flowering stem x1, A₂, flower x3; B₁-B₂, *T. triquetra*, B₁, part of stem x1, B₂, flower x3; C *Zaleya galericulata*, inflorescence x2; D₁-D₂, *Mollugo verticillata*, D₁, part of flowering stem x1, D₂, seed with striated testa x17; E *Glinus oppositifolius*, seed showing strophiole and long filiform appendage x17; F *Aptenia cordifolia*, part of fruiting stem x1; G TETRAGONIACEAE — G₁-G₂, *Tetragonia tetragonioides*, G₁, part of fruiting stem x $\frac{2}{3}$, G₂, fruit x1; H-M PORTULACACEAE — H-J *Portulaca* spp. — H₁-H₂, *P. oleracea*, H₁, stem apex with flowers and fruit x1, H₂, fruit x3; I *P. bicolor*, part of stem showing pedicellate flowers x1 $\frac{1}{2}$; J *P. pilosa*, flowering stem with stipular hairs x1; K-L *Calandrinia* spp. — K *C. pickeringii*, part of plant x1; L *C. balonensis*, fruiting capsule with petals removed x1; M₁-M₄, *Talinum paniculatum*, M₁, leaves x $\frac{1}{2}$, M₂, inflorescence x $\frac{1}{2}$, M₃, flower x3, M₄, fruit x2.

5. *Calandrinia calyptrata* Hook. f.

Small erect annual. Basal leaves with petioles 2–3 mm long; blades linear-oblong to linear-obovate, apex obtuse, base tapered, 0.5–2 cm × 0.1–0.3 cm; cauline leaves reducing. Flowers pinkish, pedicels 5–10 mm long; sepals 2–3 mm long; petals 5, *ca* 3–4 mm long; stamens 5–12; stigmatic lobes 3. Capsules conical, 3-valved, *ca* 4 mm long; seeds shining black, 0.75 mm diameter, smooth.

Rare, Darling Downs district. Flowers summer.

3. TALINUM Adans.

Glabrous succulent herbs. Leaves alternate or basal, exstipulate, flat or terete. Flowers cymose (in Australian species) or solitary; sepals 2, usually caducous; petals 5, caducous; stamens 10–30; ovary superior, sessile or stipitate, ovules many, stigmatic lobes 3. Capsules dehiscent, 3-valved, many-seeded.

About 50 species America, Africa, Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Talinum paniculatum* (Jacq.) Gaertn.

TALINUM

Portulaca paniculata Jacq.; *Talinum patens* (Jacq.) Willd.

Erect glabrous herb up to 60 cm tall. Leaves alternate, often crowded at base, petioles 4–10 mm long; blades obovate, apex acute to obtuse, base tapered, 3–8 cm × 1–3.5 cm. Inflorescences loose cymose panicles *ca* 30 cm long; flowers pink, pedicels terete, 3–5 mm long which elongate in fruit; petals *ca* 2 mm long. Fruits scarlet, globose, 3–4 mm diameter. **Fig. 13M.**

Native of South America; garden escape naturalized around habitation in the coastal districts. Flowers spring to summer.

T. triangulare (Jacq.) Willd. (*Portulaca triangularis* Jacq.) possibly may be encountered as an escape from cultivation. It differs from **T. paniculatum** mainly in the triangular pedicels, having capsules *ca* 5 mm long, persistent sepals and sometimes yellowish flowers.

21. BASELLACEAE

Twining with slender stems. Leaves rather fleshy, alternate, exstipulate, entire. Flowers in spikes, racemes or panicles, bisexual, actinomorphic, bracts small, bracteoles 2, often united to base of perianth; perianth segments 5, free or basally connate, often coloured, persistent; stamens 5, filaments free, short; ovary solitary, 1-locular, ovule solitary, basal, style terminal, 3-fid. Fruits indehiscent, surrounded by persistent, fleshy perianth.

4 genera with 25 species, mainly tropical, Asia, America, Africa; 1 genus with 1 species naturalized Australia, occurring in south-eastern Queensland.

1. ANREDERA Juss.

Inflorescences axillary or terminal racemes, floral bracteoles boat-shaped, broadly winged; perianth tube short; stamens inserted at the base of the perianth, filaments reflexed in bud.

About 5–10 species tropical America; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Anredera cordifolia* (Ten.) van Steenis LAMB'S TAIL; MADEIRA VINE
Boussingaultia cordifolia Ten.; *B. baselloides* auct. non Kunth, Hook.; *B. gracilis* Miers
 forma *pseudobaselloides* Hauman

Glabrous slender perennial climber, producing tubers on roots and stems. Leaves with petioles 0.5–2 cm long; blades thin, broadly ovate, apex usually acuminate, mucronate, base cordate to truncate, 2–10 cm × 1.5–9 cm. Flowers numerous on axillary drooping racemes up to 25 cm long, fragrant, pedicels 3–4 mm long; perianth segments white, oblong, apex obtuse, 2–3 mm long. **Fig. 14A.**

Native of South America; mainly in coastal districts on the margins of rainforest or near habitation. Flowers spring to autumn. Can be poisonous to stock, but rarely eaten.

22. CARYOPHYLLACEAE

Annual or perennial herbs. Leaves opposite; stipules scarious or absent; blades simple, entire, often connate at base. Flowers solitary or cymose, usually bisexual, actinomorphic; sepals free or connate into tube; petals absent or small and as many as sepals; stamens 1–10, free, anthers 2-locular; ovary superior, 1-locular or imperfect at base with free central placentation, ovules ± numerous, styles free or variously connate. Fruits dry capsules, usually opening by valves or apical teeth.

About 70 genera with 1750 species, cosmopolitan; 23 genera with *ca* 70 species Australia; 14 genera with 18 species south-eastern Queensland.

1. Sepals connate into cylindrical or bell-shaped tube	2
Sepals free	6
2. Inflorescences of capitula, ± enclosed by large bracts	1. <i>Petrorhagia</i>
Inflorescences otherwise, bracts absent, or 2 bracteoles present, overlapping calyx for $\frac{1}{10}$ of its length	
3. Petals absent; stamens 1–2; fruit a single-seeded nut enclosed by rigid calyx	2. <i>Scleranthus</i>
Petals present (often minute); stamens 10; fruit a capsule, seeds usually numerous	4
4. Calyces with 10 conspicuous veins; styles 3	3. <i>Silene</i>
Calyces with 5 veins or with 5 wings; styles 2	5
5. Calyces with 5 wings, venation obscure	4. <i>Vaccaria</i>
Calyces without wings, 5-veined	5. <i>Gypsophila</i>
6. Stipules absent	7
Stipules present, though sometimes caducous	9
7. Sepals 4, rarely 5 on same plant; petals 4, 5 or absent	6. <i>Sagina</i>
Sepals always 5; petals 5, rarely absent	8
8. Styles 5; capsule dehiscent by 10 teeth at the apex	7. <i>Cerastium</i>
Styles 3; capsule dehiscent by 6 valves separating to below the middle	8. <i>Stellaria</i>
9. Flowers in axillary clusters; stigmas 2; fruit an achene enclosed in persistent calyx	9. <i>Paronychia</i>
Flowers in axillary or terminal cymes, rarely solitary, axillary pedunculate; styles or stigmatic lobes 1, 3 or 5; fruit a dehiscent capsule	10
10. Leaves fascicled on both sides of nodes; capsule dehiscent with 5 valves	10. <i>Spergula</i>
Leaves paired, verticillate, or fascicled only on one side of node; capsule dehiscent with 3 valves	11
11. Leaves in Australian species broadly ovate or obovate	12
Leaves in Australian species ± linear or narrowly ovate	13

- | | |
|--|------------------------|
| 12. Leaves in Australian species paired, broadly ovate to reniform | 11. <i>Drymaria</i> |
| Leaves in Australian species usually in whorls of 4, obovate | 12. <i>Polycarpon</i> |
| 13. Stipules connate; sepals green with scarious margins | 13. <i>Spergularia</i> |
| Stipules not connate; sepals usually white, pink or purplish, all or only margins scarious | 14. <i>Polycarpaea</i> |

1. PETRORHAGIA (Ser.) Link

Annual or perennial herbs. Leaves narrow. Inflorescences in Australian species capitate with bracts enclosing calyx; calyx 5-toothed, 5–15-veined with scarious commissures; petals 5, exceeding calyx, without appendages; stamens 10; styles 2. Capsules dehiscent with 4 teeth; seeds dorsiventrally compressed.

20 species, Mediterranean; 2–3 species naturalized Australia; 2 species south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Internodes in midsection of stem glabrous to puberulent with simple hairs; leaf sheaths 1–2 times as long as wide; seeds tuberculate, longer than 1.3 mm | 1. <i>P. nanteuilii</i> |
| Internodes in midsection of stem glandular pubescent; leaf sheaths at least twice as long as wide; seeds with cylindrical papillae, shorter than 1.3 mm | 2. <i>P. velutina</i> |

1. **Petrorhagia nanteuilii* (Burnat) Ball & Heywood PROLIFEROUS PINK
Dianthus nanteuilii Burnat; *Kohlruschia prolifera* auct. non L., in part; *Petrorhagia prolifera* auct. non (L.) Ball & Heywood, in part
 Erect herb up to 90 cm tall. Leaves sessile, linear-elliptic, apex acute, 1–6 cm × 0.1–0.3 cm. Inflorescences of 2–8 flowers in terminal clusters surrounded by scarious bracts, outermost mucronate, largest usually obtuse; petals pink to purplish, scarcely protruding. Seeds 1.3–1.9 mm long, tuberculate. **Fig. 14B.**

Native of Europe; fairly common weed of region. Flowers spring–summer.

2. **Petrorhagia velutina* (Guss.) Ball & Heywood VELVET PINK
Dianthus velutinus Guss.; *Kohlruschia prolifera* auct. non L., in part; *Petrorhagia prolifera* auct. non (L.) Ball & Heywood, in part
 Erect herb up to 60 cm tall. Leaves sessile, linear-elliptic, apex acute, 1–6 cm × 0.1–0.35 cm. Inflorescences of 2–8 flowers in terminal clusters surrounded by scarious bracts, outermost mucronate, largest usually obtuse; petals pink to purplish, scarcely protruding. Seeds 1–1.3 mm long, covered with cylindrical papillae.

Native of Europe; throughout the area, uncommon. Flowers spring–summer.

2. SCLERANTHUS L.

Annual or perennial herbs, stems diffusely branched, pubescent on two opposite sides. Leaves connate at base. Inflorescences of ± dense terminal or axillary cymose clusters; perianth segments 5, inserted on rim of urceolate perigynous zone; stamens 1, 2, or 5; styles 2. Fruits indehiscent 1–2-seeded nutlets enclosed by hardened wall of perigynous zone and persistent perianth segments, falling as a whole at maturity; seeds lenticular, smooth.

10 species, Europe, Asia, Africa, Australia; 5 species Australia; 1 species south-eastern Queensland.

1. *Scleranthus biflorus* (J. R. & G. Forster) Hook. f.
Mniarum biflorum J. R. & G. Forster

Tufted perennial, usually forming dense mats. Leaves crowded, sessile, linear-subulate, apex acute, margin serrulate, 3–7 mm × 0.1–0.5 mm, thick, rigid. Inflorescences clusters of 2 flowers on solitary axillary peduncles which elongate up to 1 cm long in fruit, each flower subtended by 2 small bracts; perianth segments ca 0.5 mm long; stamen 1. Fruits ovoid, 1–1.5 mm long.

Restricted to Granite Belt area in rock crevices or damp areas. Flowers summer.

3. **SILENE L.**

Annual to perennial herbs or small shrubs. Flowers 5-merous, epicalyx absent; calyx tubular, 10-30-veined, 5-toothed; petals distinctly clawed; stamens 10; styles 3, rarely 5. Fruits capsular with variably developed basal septa, opening by twice as many teeth as styles, carpophore present; seeds without tuft of hairs.

500 species north temperate especially Mediterranean; 6 species naturalized Australia; 1 species south-eastern Queensland.

1. ****Silene gallica* L.**

FRENCH CATCHFLY

Annual, 15-45 cm tall, glandular-pubescent on upper parts. Lower leaves with petioles 2-10 mm long, upper sessile; blades narrowly obovate or oblong-obovate, apex obtuse or mucronate, base cuneate, 2-5.5 cm \times 0.5-1.8 cm. Inflorescences raceme-like monochasial cymes; calyx 0.9-1.1 cm long, 10-veined; petals white, pink or purplish, sometimes with crimson spot, 1-1.2 cm long; anthophore 1-1.5 mm long. Capsules ovoid-conical, 6-10 mm long; seeds dark brown, faces deeply concave, striate. **Fig. 14I.**

Native of Europe; common weed of disturbed sites, roadsides, crops, etc., throughout most of the region. Flowers spring to early summer.

4. **VACCARIA Moench**

Glabrous annuals. Flowers in spreading dichasial panicles; calyx tubular, inflated below, whitish with 5 green wings at angles, without scarious commissures; petals 5, long-clawed; ovary \pm 1-locular, styles 2. Capsules ovoid with thick papery exocarp, dehiscing with 4 teeth, and thinner endocarp dehiscing irregularly.

4 species central and eastern Europe, Mediterranean, temperate Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. ****Vaccaria pyramidata* Medik.**

BLADDER SOAPWORT; COWHERB; NANCY

Saponaria vaccaria L.; *Vaccaria segetalis* Garcke ex Aschers.; *V. parviflora* Moench
Erect herb up to 1 m tall. Leaves sessile, bases of opposite pair connate, stem-clasping; blades narrowly ovate to ovate, apex acute, 2-5 cm \times 1-2 cm. Inflorescences with scarious bracts; calyx 1-1.7 cm long, teeth acute; petals pink or purplish, 1.3-1.7 cm long, sometimes exserted, entire or bifid. Capsules ovoid to \pm globose, 1-1.3 cm long; seeds subglobose, 2-2.5 mm diameter.

Native of Europe; minor weed of crops and gardens of the region. Flowers spring.

5. **GYPSOPHILA L.**

Annual to perennial herbs. Inflorescences dichasially paniculate to capitate, bracts green or scarious, bracteoles absent; calyx 5-toothed with scarious commissures; petals 5, longer than calyx; stamens 10; styles 2. Capsules dehiscing with 4 valves; seeds subreniform.

125 species temperate Eurasia, especially Mediterranean; 1 species Australia, occurring in south-eastern Queensland.

1. ***Gypsophila australis* (Schlechtendal) A. Gray**

ANNUAL CHALKWORT

Dichoglottis australis Schlechtendal; *Gypsophila tubulosa* auct. non L.

Erect or decumbent much-branched herb, glandular-pubescent, particularly on pedicels. Leaves sessile, bases of opposite pair connate; blades linear-subulate, apex acute, 0.3-1.5 cm \times 0.02-0.1 cm. Flowers pink or red, often solitary in lower leaf axils, pedicels 0.5-2 cm long; calyx 4-5 mm long, glandular-pubescent with 5 green ribs; petals 5-6 mm long. Capsules \pm ovoid, 4-5 mm long. **Fig. 14E.**

Cosmopolitan, uncommon, southern areas of Darling Downs district. Flowers usually summer.

6. SAGINA L.

Small annual or perennial herbs. Leaves in slightly connate pairs, exstipulate. Flowers solitary or in few-flowered cymes, 4-5-merous; sepals free; petals free, usually white, minute or absent; stamens 4-5, or 10; ovary 1-locular, styles 4-5. Capsules splitting to base into 4-5 valves; seeds numerous.

20-30 species north temperate; 2 species Australia, occurring in south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Perennials, with vegetative stems present at time of flowering, mat-forming; fruiting peduncles curved | 1. <i>S. procumbens</i> |
| Annuals, only reproductive stems present at time of flowering, often tufted; fruiting peduncles straight | 2. <i>S. apetala</i> |

1. **Sagina procumbens* L.

SPREADING PEARLWORT

Mat-forming perennial. Leaves sessile, linear-subulate, apex aristate, 0.5-1.5 cm \times ca 0.1 cm. Flowers solitary, axillary, pedicels 0.5-2 cm long, usually 4-merous; sepals ca 2 mm long; petals minute or absent. Mature capsules 2-3 mm long, sepals spreading, peduncle curved.

Native of Europe; recorded from Granite Belt, possibly a weed of gardens in that area. Flowers mainly summer.

2. **Sagina apetala* Ard.

ANNUAL PEARLWORT

Erect or ascending annual with non-persistent basal leaves in lax cluster. Leaves sessile, linear-subulate, apex aristate, 0.2-1 cm \times ca 0.1 cm. Flowers usually solitary, axillary, pedicels filiform, 0.3-1.5 cm long; sepals 2-3 mm long; petals minute or absent. Mature capsules 2-3 mm long, sepals spreading or appressed, peduncle straight.

Native of Europe; rare, Darling Downs district. Flowers mainly summer.

7. CERASTIUM L.

Herbs, often glandular-pubescent; exstipulate. Inflorescences usually cymose; sepals 5, free; petals white, 4-5, emarginate or bifid for half their length; stamens 5-10; nectaries present; styles 3-5. Capsules \pm curved, dehiscent with twice as many small teeth as styles; seeds numerous, spherical or reniform.

60 species, almost cosmopolitan; 2-3 species naturalized Australia; 1-2 species south-eastern Queensland.

1. **Cerastium glomeratum* Thuill.

MOUSE EAR CHICKWEED

Cerastium viscosum auct. non L.

Annual with only erect or ascending flowering stems, simple and glandular hairs present. Lower leaves with petioles up to 1.2 cm long, upper sessile; blades elliptic to obovate, apex obtuse, mucronate, base cuneate, 0.5-3 cm \times 0.3-1.5 cm. Inflorescences compact cymes, remaining so in fruit; sepals 4-5 mm long; petals 4-5 mm long. Capsules cylindrical, 7-9 mm long, dehiscent with 10 small teeth.

Native of Europe; weed of gardens and moist shady areas in mainly the coastal districts. Flowers winter-spring.

**C. fontanum* Baumg. subsp. *triviale* (Link) Jalas (*C. vulgatum* L., *C. holosteoides* Fries), a native of Europe, possibly occurs on the Granite Belt. This is a perennial herb with decumbent vegetative shoots as well as flowering ones, has a lax inflorescence in fruit and has a cylindrical capsule 0.9-1.2 cm long.

8. STELLARIA L.

Annual or perennial herbs; exstipulate. Inflorescences \pm dichasial, bracts scarious or herbaceous; sepals 5, free; petals white, 5, rarely absent, usually deeply bifid; stamens 10-5, rarely absent; nectaries usually present; styles 3. Fruits capsular, dehiscent with 6 valves to about the middle.

120 species cosmopolitan; 4 native and 1-2 naturalized species Australia; 3 species south-eastern Queensland.

- | | | |
|--|---------------------------|---|
| 1. Leaves linear-ovate, at least 8 times as long as broad; capsule usually less than 4 mm long | 1. <i>S. angustifolia</i> | |
| Leaves narrowly ovate or ovate, 2-4 times as long as broad; capsule 4-6 mm long | | 2 |
| 2. Flowers solitary, axillary on peduncles 1.5-5 cm long; petals longer than sepals | 2. <i>S. flaccida</i> | |
| Flowers in terminal cymes on pedicels 0.5-1.5 cm long; petals slightly shorter than sepals | 3. <i>S. media</i> | |

1. *Stellaria angustifolia* Hook.

SWAMP STARWORT

Stellaria glauca With.; *Stellaria palustris* auct. non Ehrh. ex Retz.

Perennial, stems erect, ascending or diffuse. Leaves \pm sessile, linear to linear-ovate, apex acuminate, 0.5-4 cm \times 0.05-0.3 cm. Flowers solitary, on axillary or terminal peduncles 1-6 cm long; sepals 4-6 mm long; petals 4-8 mm long. Capsules ovoid, 2.5-4 (-5) mm long.

Recorded mainly from the Granite Belt area. Flowers spring to early summer.

There are possibly a number of taxa included in this species, the most notable being a form with much-branched inflorescences and small flowers.

2. *Stellaria flaccida* Hook.

Perennial with procumbent or ascending stems, often rooting at nodes. Leaves with petioles 1-5 mm long; blades narrowly ovate, apex acute, base cuneate, rarely truncate, margin undulate, 0.5-2.8 cm \times 0.2-0.8 cm. Flowers solitary, axillary on peduncles 1.5-5 cm long; sepals 4-7 mm long; petals 6-8 mm long. Capsules ovoid, ca 6 mm long; seeds dark brown.

Margins of, or along tracks in rainforest, and *Nothofagus moorei* forest of McPherson Ra. Flowers spring-summer.

3. **Stellaria media* (L.) Cyr.

CHICKWEED

Alsine media L.

Annual with \pm puberulent, procumbent or ascending stems. Lower leaves with petioles 0.5-2 cm long, upper \pm sessile; blades \pm ovate, apex acute to abruptly acuminate, base cuneate, 0.5-2.5 cm \times 0.3-1.5 cm. Flowers in terminal cymes on pedicels 0.5-1.5 cm long; sepals ca 3-5 mm long, glandular; petals 3-4 mm long. Capsules ovoid, 4-6 mm long; seeds dark brown, tuberculate. **Fig. 14F.**

Native of Europe; common weed of gardens, disturbed sites, mainly in the coastal districts. Flowers spring. Young shoots are edible, raw or cooked.

9. PARONYCHIA Miller

Usually perennial herbs, often woody-based with procumbent to erect, usually much-branched stems. Leaves sometimes apparently alternate; stipules conspicuous, scarious. Flowers small, in axillary or terminal spherical clusters, bracts silvery-scarious, very conspicuous, often concealing flowers; calyx deeply 5-lobed, often awned and with membranous margins; petals 5, minute or absent; stamens 5; styles 2, free or fused and 2-fid near apex. Fruits achenes enclosed in persistent calyx.

50 species cosmopolitan; 2 species naturalized Australia; 1 species south-eastern Queensland.

1. *Paronychia brasiliiana DC.

BRAZILIAN WHITFLOW

Prostrate perennial. Leaves sessile, very narrowly elliptic to narrowly obovate, apex acute, mucronate, base attenuate, 2.5–10 mm × 1–3 mm, appressed strigose. Inflorescences pseudoaxillary clusters of 3–10 flowers; flowers dark brown; calyx awned, 1–1.5 mm long; petals absent. Achenes dark brown, ± obovoid, 1 mm long; seeds subglobose, 0.9 mm × 0.8 mm. **Fig. 14D.**

Native of South America; weed of gardens and areas near habitation in southern coastal areas and eastern Darling Downs district. Flowers mainly spring-summer.

10. SPERGULA L.

Usually annual herbs, stems ascending, often decumbent and much-branched at base. Leaf fascicles borne on both sides of each node; stipules scarious, free; blades linear, obtuse, decussate. Flowers 5-merous; sepals free, margins scarious; petals white, entire; stamens 5–10; styles 5, rarely 3. Capsules dehiscent by 5, rarely 3, valves; seeds often winged.

5 species temperate; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. *Spergula arvensis L.

CORN SPURRY

Glandular-puberulent herb. Leaves with petioles up to 1 mm long; blades linear, apex acute, base truncate, 0.8–4 cm × 0.05–0.1 cm, fleshy, channelled beneath. Inflorescences leafless, terminal, cymose; sepals 3–5 mm long; petals 4–6 mm long. Capsules ovoid to subglobose, 4–5 mm long; seeds subglobose, 1–2 mm long, keeled or very narrowly winged. **Fig. 14G.**

Native of Europe; naturalized weed of disturbed sites, irrigated crops or pastures, usually near habitation, and commonly in sandy soils, mainly in southern coastal areas. Flowers late winter-spring.

11. DRYMARIA Willd. ex Roemer & J. A. Schultes

Annuals or perennials, prostrate, spreading or erect, glabrous or pubescent. Leaves opposite or pseudovercillate, usually with persistent or fugaceous small stipules. Flowers few to many, usually in dichasial cymes; sepals 5, free; petals 3–5, rarely absent, usually bifid; stamens 2–5; ovules few to many, styles 3, ± united below. Capsules ovoid to spheroid, usually dehiscent into 3 entire valves; seeds 1-many.

48 species almost exclusively American; 2 species Australia; 1 species south-eastern Queensland.

1. Drymaria cordata (L.) Willd. ex Roemer & J. A. Schultes

TROPICAL CHICKWEED

Holosteum cordatum L.; *H. diandrum* Sweet; *Drymaria diandra* auct. non Blume, Macfad.; *D. cordata* var. *pacifica* Mizush.

Annual, often rooting at nodes, glabrous to densely glandular-pubescent. Leaves with petioles 0.2–1.5 cm long; blades broadly ovate to reniform, apex obtuse, occasionally mucronate, base cuneate to truncate, 0.5–2.5 cm × 0.5–3 cm. Flowers white, on pedicels 0.2–1.5 cm long; sepals erect or spreading, margins membranous, 2.5–4.5 mm long; petals 2–3 mm long; stamens usually 2–3. Capsules ovoid, 1.5–2.5 mm long; seeds cochleate, 1–1.5 mm broad, tuberculate. **Fig. 14C.**

Weed of pasture, disturbed sites, etc., of the coastal districts. Flowers most of the year. Related American species of *Drymaria* are toxic to stock, but there is no definite evidence for this species.

12. POLYCARPON L.

Small herbs. Leaves opposite or apparently verticillate, with conspicuous membranous stipules. Flowers small in cymose clusters, with scarious bracts; sepals 5; petals 5, shorter than sepals; stamens 1–5, filaments ± united basally; style 3-lobed. Capsules dehiscent with 3 valves almost to base, valves twisting spirally into tubes; seeds several.

16 species, cosmopolitan; 1–2 species naturalized Australia; 1 species south-eastern Queensland.

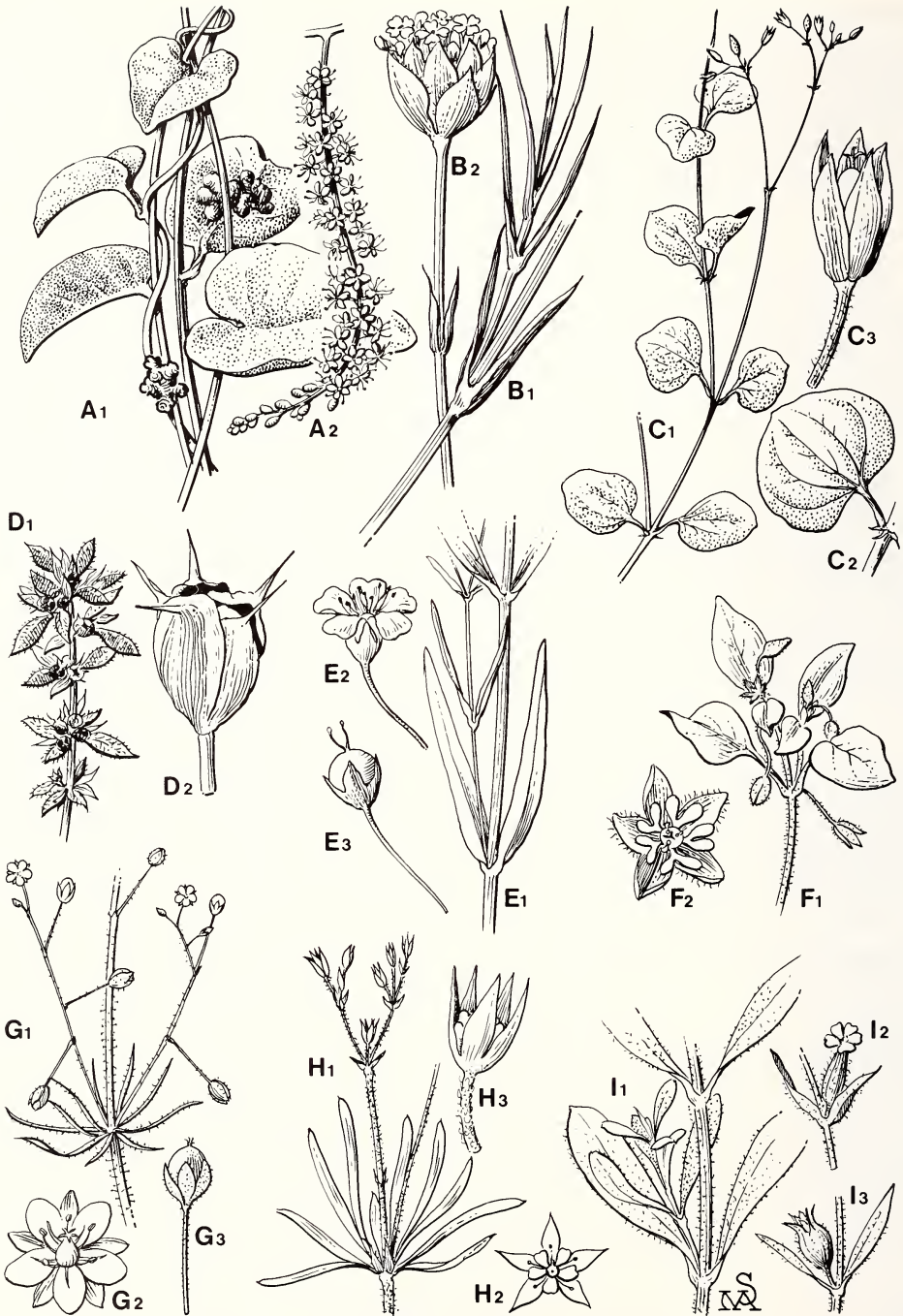


Fig. 14

A BASELLACEAE – A₁-A₂, *Anredera cordifolia*, A₁, part of plant $\times \frac{1}{2}$, A₂, inflorescence $\times \frac{1}{2}$; B-I CARYOPHYLLACEAE – B₁-B₂, *Petrorhagia nanteuilii*, B₁, part of stem $\times \frac{2}{3}$, B₂, inflorescence $\times \frac{2}{3}$; C₁-C₃, *Drymaria cordata*, C₁, part of flowering stem $\times 1$, C₂, leaf with stipules $\times 1$, C₃, fruit $\times 6$; D₁-D₂, *Paronychia brasiliiana*, D₁, part of fertile stem $\times 1\frac{1}{2}$, D₂, fruit enclosed in persistent awned calyx $\times 12$; E₁-E₃, *Gypsophila australis*, E₁, part of stem $\times 1$, E₂, flower $\times 2$, E₃, fruit $\times 2$; F₁-F₂, *Stellaria media*, F₁, part of flowering stem $\times 1$, F₂, flower with bifid petals $\times 3$; G₁-G₃, *Spergula arvensis*, G₁, part of fertile stem $\times \frac{2}{3}$, G₂, flower $\times 4$, G₃, fruit $\times 1\frac{1}{2}$; H₁-H₃, *Polycarpea corymbosa* var. *minor*, H₁, part of fertile stem $\times 2$, H₂, flower $\times 3$, H₃, fruit $\times 6$; I₁-I₃, *Silene gallica*, I₁, part of stem $\times \frac{2}{3}$, I₂, flower $\times 1$, I₃, fruit $\times 1$.

1. *Polycarpon tetraphyllum (L.) L.

FOUR-LEAF ALLSEED

Mollugo tetraphylla L.

Usually annual, ascending or decumbent. Leaves usually in whorls of 4; petioles 1–6 mm long; blades obovate, apex obtuse, base cuneate, 0.3–1.1 cm × 0.25–0.8 cm, glabrous. Inflorescences spreading, lax; sepals green, 1.5–2.5 mm long; petals emarginate; stamens 3–5. Seeds punctulate, up to 0.5 mm diameter.

Native of southern Europe; common weed of disturbed sites and sandy littoral areas. Flowers spring–summer.

13. SPERGULARIA (Pers.) J. & C. Presl

Herbs, sometimes woody-based; stems erect, procumbent, or decumbent, dilated at nodes, somewhat flattened. Leaf fascicles when present borne only on one side of node; stipules united, scarious; blades linear, decussate. Flowers 5-merous; sepals free, green, margins scarious; petals entire; stamens 1–10; styles 3. Capsules dehiscent with 3 valves; seeds often winged.

40 species cosmopolitan; 1 native and 2–3 naturalized species Australia; 1 species south-eastern Queensland.

1. *Spergularia rubra (L.) J. & C. Presl

SAND SPURRY

Arenaria rubra L.; *Spergularia campestris* (L.) Aschers.

Annual or perennial, glandular-pubescent. Leaves with silvery stipules; petioles up to 1 mm long; blades linear, apex acute, base truncate, 0.5–4.5 cm × 0.05–0.2 cm. Inflorescences of terminal leafy cymes, flowers sometimes appearing solitary, axillary, pink; sepals and petals 3–5 mm long; stamens 10, rarely 5. Capsules 4–5 mm long; seeds dark brown, subtrigonal, 0.4–0.6 mm long, unwinged.

Native of Europe; weed of southern districts.

14. POLYCARPAEA Lam.

Annual or perennial herbs, erect or diffuse. Leaves often clustered in axils, appearing verticillate; stipules scarious. Inflorescences usually terminal cymes, sometimes paniculate or capitate; sepals 5, entirely scarious or herbaceous with scarious margins; petals 5, entire or toothed; stamens 5, free or united with petals in ring, style sometimes 3-lobed. Capsules 3-valved; seeds numerous, obovoid or flattened.

50 species, tropical and subtropical; 16 species Australia; 1 species south-eastern Queensland.

1. Polycarphaea corymbosa (L.) Lam. var. *minor* Pedley*Achyranthes corymbosa* L.; *Polycarphaea breviflora* auct. non F. Muell., F. M. Bailey

More or less erect, pubescent herb up to ca 30 cm tall. Leaves with petioles up to 1 mm long; blades linear, apex acute, aristate, 0.4–2 cm × 0.03–0.1 cm. Inflorescences usually dense corymbs; sepals 2.5–3 mm long; petals ca 1.5 mm long. Capsules ovoid, 1.5–2 mm long. **Fig. 14H.**

Growing in sand or sandy soils of the region. Flowers mainly autumn–winter.

23. CHENOPODIACEAE

(Including DYSPHANIACEAE)

Annual or perennial herbs or shrubs, often glaucous, halophytic; stems sometimes jointed. Leaves alternate, rarely opposite, exstipulate, simple. Flowers small or minute, unisexual or bisexual, mostly actinomorphic, often bracteate; perianth 3–5-lobed, rarely absent, often accrescent in fruit, imbricate; stamens often same number as perianth lobes, opposite them, anthers 2-locular; ovary superior or immersed in base of calyx, 1-locular, ovule 1, erect or suspended from basal funicle, styles 1–3, terminal. Fruits nuts, rarely berries, indehiscent, rarely circumscissile; embryo peripheral, surrounding perisperm.

102 genera with 1400 species, cosmopolitan, mainly littoral or saline areas; ca 35 genera with 226 species Australia; 13 genera with 46 species south-eastern Queensland.

1. Branches not articulate or fleshy; leafy plants	2
Branches articulate, fleshy with embedded flowers; leafless plants	12
2. Leaves flat, usually broad; fruit without dorsal appendages	3
Leaves narrow, or if 2-5 mm broad then fruit with dorsal appendages or spines	7
3. Fruiting perianths absent, replaced by 2 broad bracteoles, free or \pm united	1. <i>Atriplex</i>
Fruiting perianths herbaceous, of 1-5 segments	4
4. Perianth segments 1-3	2. <i>Dysphania</i>
Perianth segments 4-5	5
5. Fruits berries	3. <i>Rhagodia</i>
Fruits dry	6
6. Perianth segments 5, rarely fewer on a few flowers	4. <i>Chenopodium</i>
Perianth segments 4, erect, keeled and hardened in fruit	5. <i>Scleroblitum</i>
7. Fruiting perianths with dorsal appendages (rarely <i>Maireana microphylla</i> fruit without wing but leaves usually less than 5 mm long)	8
Fruiting perianths without dorsal appendages	11
8. Appendages consisting of 2-12 spines	9
Appendages broad, membranous, wing-like	10
9. Appendages consisting of 2-6 spines	6. <i>Sclerolaena</i>
Appendages consisting of ca 11 short radiating teeth	7. <i>Stelligera</i>
10. Perianth 5-lobed; leaves in Queensland species without spinescent tips	8. <i>Maireana</i>
Perianth 5-partite; leaves in Queensland species with spinescent tips	9. <i>Salsola</i>
11. Perianth scarcely enlarged, \pm dry in fruit; testa crustaceous, without albumen; embryo spirally coiled	10. <i>Suaeda</i>
Perianth enlarged and succulent in fruit; testa membranous, with albumen; embryo curved around albumen	11. <i>Enchylaena</i>
12. Flowers always 3 per row in inflorescence	12. <i>Halosarcia</i>
Flowers in Australian species 3-9 per row in inflorescence, usually 5-7 in most fertile articles	13. <i>Sarcocornia</i>

1. ATRIPLEX L.

Herbs or shrubs, often mealy or scaly-tomentose. Leaves flat. Flowers clustered, unisexual; males 5-merous, perianth small; females without perianth but with 2 broad opposite bracteoles, styles 2. Fruits enclosed within bracteoles, pericarp membranous; seeds compressed, vertical.

200 species temperate and subtropical; 35-40 species endemic to Australia; 6 species south-eastern Queensland.

1. Fruiting bracteoles swollen, spongy, united almost to summit; bracteoles with 2 broad lobes	1. <i>A. lindleyi</i>
Fruiting bracteoles not swollen nor spongy, partly united or \pm free	2
2. Fruiting bracteoles united and tubular for at least $\frac{3}{4}$ of their length, or abruptly expanded at apex and on peduncle 2-5 mm long	3
Fruiting bracteoles obtriangular, obovoid or rhomboid, sessile or on peduncles less than 1 mm long	4

- | | | |
|---|---------------------------|---|
| 3. Bracteoles expanded in upper part, with 2 short appendages at base of tube, peduncle 2-5 mm long
Bracteoles narrowly tubular for entire length, no appendages on tube, ± sessile | 2. <i>A. eardleyae</i> | |
| | 3. <i>A. leptocarpa</i> | |
| 4. Most fruiting bracteoles with 3 small tooth-like appendages on the tube
Bracteoles never with appendages | 4. <i>A. elachophylla</i> | 5 |
| 5. Prostrate perennial plant; bracteoles red, succulent when fresh, 4-6 mm long; leaves generally narrowly oblong to narrowly ovate
Ascending annual plant; bracteoles not succulent when fresh, 3-4 mm long; leaves oblong to obovate | 5. <i>A. semibaccata</i> | |
| | 6. <i>A. muelleri</i> | |

1. *Atriplex lindleyi* Moq.

Atriplex halimoides auct. non Tineo, Lindl.; *A. conduplicata* F. Muell.; *Blackiella conduplicata* (F. Muell.) Aellen

Semi-erect, mealy-grey shrub. Leaves with petioles 0.3-1.3 cm long; blades obovate or narrowly ovate, apex obtuse, base cuneate, margin irregularly dentate, 0.7-2 cm × 0.3-1.5 cm. Fruits spongy, 3-angled; bracteoles ca 1.5 cm long, wings broad, rounded, arising from near base of bracteoles, spreading, upper part of bracteoles depressed, opening in 2 small lips. **Fig. 15A.**

Possibly in most western parts of Darling Downs district. Fruits may be found most of the year.

2. *Atriplex eardleyae* Aellen

Atriplex campanulata auct. non Woods, Benth.

Small plant; stems rigid, prostrate or ascending. Leaves with petioles 1-8 mm long; blades obovate, apex obtuse, base cuneate, margin entire or dentate, 0.4-2 cm × 0.25-1.5 cm, mealy-white. Fruiting peduncles 2-5 mm long; bracteoles ca 4 mm long, united around campanulate tube, apex expanded, 3-5 mm broad, 3-5-toothed, anterior bracteoles with 2 small inflated appendages at base, rarely 1 or absent. **Fig. 15B.**

Darling Downs district. Fruits may be present most of the year.

3. *Atriplex leptocarpa* F. Muell.

SLENDER FRUIT SALTBUUSH

Procumbent subshrub; stems rigid. Leaves with petioles 2-7 mm long, blades linear-oblong or narrowly obovate, apex obtuse, base cuneate, margin entire or with a few teeth, 1-2.5 cm × 0.2-1.2 cm, greyish-scaly. Fruiting bracteoles subsessile, (2-)4-6 mm long, lower ¼ tubular and hardened, upper part ± same width as lower, minutely lobed at top.

In saline or very dry areas of the region. Fruits present mainly spring and summer.

Some authors refer to the form with fruiting bracteoles 2-4 mm long as *A. leptocarpa* var. **inermis** Aellen forma **minor** R. H. Anders., but there appears to be a continuous gradation in size.

4. *Atriplex elachophylla* F. Muell.

Atriplex varia Ewart & Davies

Small, scaly, possibly perennial. Leaves with petioles 0.1-1.2 cm long; blades narrowly oblong-ovate to obovate, apex obtuse or acute, base cuneate, margin entire or irregularly dentate, 0.3-3 cm × 0.2-1.4 cm, mealy beneath. Fruiting bracteoles subsessile, obtriangular, 2-3 mm long, ½ united, apex obtuse, 3-5-lobed, tube with usually 3 longitudinal nerves ending in 3 erect, sometimes minute or almost obsolete teeth. **Fig. 15C.**

Western Darling Downs district. Fruits may be found most of the year.

5. *Atriplex semibaccata* R.Br.

CREEPING SALTBUUSH

Perennial; stems prostrate. Leaves sometimes clustered, petioles 1-5 mm long; blades oblong to narrowly ovate, or ovate, apex obtuse or acute, base cuneate, margin entire or sinuate-dentate, 0.5-4 cm × 0.2-1.5 cm, green or glaucous beneath. Fruiting bracteoles red, succulent and smooth when fresh, strongly 3-nerved when dry, subsessile, rhomboid, 4-6 mm long, united and globular in basal half, free, entire or toothed in upper half. **Fig. 15E.**

Three varieties occur in the region:

- | | | |
|--|---|---|
| 1. Bracteoles scaly, leafy or muricate | <i>A. semibaccata</i> var. <i>appendiculata</i> | |
| Bracteoles not scaly, leafy or muricate | | 2 |
| 2. Bracteoles of two different sizes on same plant, 5 mm × 5 mm, and 2-3 mm × 2-3 mm | <i>A. semibaccata</i> var. <i>biformis</i> | |
| Bracteoles of one size on same plant, 4-6 mm long | <i>A. semibaccata</i> var. <i>semibaccata</i> | |

A. semibaccata var. *semibaccata*, *A. semibaccata* var. *biformis* Aellen and *A. semibaccata* var. *appendiculata* Aellen all occur mainly in the Darling Downs district, and drier areas of the region. Fruits most of the year.

6. *Atriplex muelleri* Benth.

ANNUAL SALT BUSH

Low annual with rigid, ascending stems. Leaves with petioles 1-10 mm long; blades oblong or obovate, apex obtuse, base cuneate or tapered, margin coarsely dentate, 1-7 cm × 0.6-3.5 cm, mealy-white at least beneath. Fruiting bracteoles subsessile, subrhomboid or obovoid, 3-4 mm long, united and 3-nerved in swollen lower part, sinuately 3-5-toothed in free upper part, rarely with 1-2 minute tubercles on swollen tube, mealy. **Fig. 15D.**

In saline or drier areas of the region. Fruits present most of the year. Can be poisonous to hungry stock under certain conditions.

2. DYSPHANIA R.Br.

Small, branched, ± prostrate herbs. Leaves alternate, exstipulate. Flowers small, in dense axillary fascicles, sometimes crowded into false spikes, bisexual or female; perianth valvate, membranous, persistent, accrescent, 3-, rarely 1-lobed; stamens 3-1, opposite perianth lobes, exserted, anthers introrse, filaments straight; ovary superior, 1-, rarely 2-3-locular, with 1 ovule per loculus and 1-2 filiform styles. Fruits small achenes surrounded by broadly winged accrescent perianth; embryo not strongly curved.

5-6 species endemic to Australia; 2 species south-eastern Queensland.

- | | |
|--|---------------------------|
| 1. Leaves oblong-ovate; perianth segments 1-2, falling singly; style mostly 2-branched | 1. <i>D. myriocephala</i> |
| Leaves ± obovate; perianth segments rarely 2, united at base, falling together; style single | 2. <i>D. littoralis</i> |

1. *Dysphania myriocephala* Benth.

RED CRUMBWEED

Chenopodium myriocephalum (Benth.) Aellen

Slightly glandular-pubescent herb; stems ascending. Leaves with petioles 2-10 mm long; blades oblong-ovate, apex acute or obtuse, base cuneate, 0.4-2 cm × 0.15-0.6 cm. Perianth segments whitish in fruit, *ca* 0.75 mm long; stamen 1, or absent. Seeds reddish-brown, vertical. **Fig. 16G.**

Throughout the region, mainly Darling Downs district. Fruits may be found most of the year. Suspected of poisoning sheep; cyanogenic.

2. *Dysphania littoralis* R.Br.

RED CRUMBWEED

Chenopodium blackianum Aellen

Glabrous herb; stems ascending. Leaves with petioles 1-5 mm long; blades obovate, apex ± obtuse, base cuneate, 2-7 mm × 1-3 mm. Perianth segments whitish in fruit, *ca* 0.75 mm long; stamen 1. Seeds reddish-brown, vertical. **Fig. 16H.**

Littoral areas in salt marshes or in poor saline areas inland. Fruits may be found most of the year. Suspected of poisoning sheep; cyanogenic.

3. RHAGODIA R.Br.

Herbs or small shrubs, erect, prostrate or trailing. Leaves alternate, subopposite or opposite, flat. Flowers sessile in small clusters in terminal or axillary panicles, unisexual or bisexual; perianth 5-lobed or 5-partite; stamens usually 5; styles usually 2. Fruits small depressed-globular berries; seeds horizontal with crustaceous testa.

13–16 species Australia and New Zealand; 12–15 species Australia; 5 species south-eastern Queensland.

Generally called BERRY SALT BUSHES.

- | | | |
|--|-------------------------|---|
| 1. Inflorescences large branched panicles | 1. <i>R. parabolica</i> | 2 |
| Inflorescences spikes, or small, only slightly branched panicles | | |
| 2. Branches rigid, often ending in a spine; leaves mostly alternate, usually white-tomentose | 2. <i>R. spinescens</i> | 3 |
| Branches flexible and slender; leaves mostly opposite, green | | |
| 3. All leaf bases attenuate; female flowers pedicellate | 3. <i>R. linifolia</i> | 4 |
| At least some leaf bases hastate or truncate, particularly at base; female flowers sessile, rarely a few pedicellate | | |
| 4. Leaf blades mostly 3–5 times as long as broad; perianth slightly longer than fruit | 4. <i>R. nutans</i> | |
| Leaf blades up to 2 times as long as broad; perianth slightly shorter than fruit | 5. <i>R. hastata</i> | |

1. *Rhagodia parabolica* R.Br.

Erect shrub 1–3 m tall. Leaves with petioles 0.3–1.5 cm long; blades oblong-ovate or ovate, apex mostly obtuse, mucronate, base cuneate, 0.7–4 cm × 0.5–3 cm, mealy-grey at least below. Flowers in terminal panicles 4–10 cm long, with spreading branches; stamens 5. Fruits red, *ca* 3 mm diameter, exceeding perianth.

Western areas of region, mainly Darling Downs district. Fruits may be found most of the year.

2. *Rhagodia spinescens* R.Br.

Shrub, branchlets sometimes ending in spines. Leaves with petioles 2–10 mm long; blades oblong-ovate or broadly ovate, apex obtuse, sometimes mucronate, base cuneate or truncate, rarely hastate, 0.5–1.5 cm × 0.3–1.2 cm, usually white-tomentose. Flowers in interrupted spikes, or very short panicles; perianth mealy; stamens 5. Fruits red, *ca* 3–4 mm diameter, exceeding perianth. **Fig. 15L.**

Darling Downs district. Fruits present mainly during the cooler months of the year.

3. *Rhagodia linifolia* R.Br.

Einadia nutans (R.Br.) A. J. Scott var. *linifolia* (R.Br.) A. J. Scott

Subshrub or prostrate herb. Leaves subopposite or alternate; petioles 1–5 mm long; blades green, linear to linear-elliptic, apex acute, base attenuate, 0.5–3 cm × 0.05–0.4 cm, glabrous. Inflorescences of terminal spikes, or female flowers pedicellate; stamens 1–2. Fruits red, *ca* 2–3 mm diameter, slightly smaller than perianth.

Mainly Darling Downs district but not restricted to it. Fruits may be found most of the year.

4. *Rhagodia nutans* R.Br.

Einadia nutans (R.Br.) A. J. Scott var. *nutans*

Small weak herb. Leaves usually opposite; petioles 0.2–2.5 cm long; blades green, narrowly ovate, apex ± acute, base hastate, truncate, rarely cuneate, 0.5–3.6 cm × 0.15–2.5 cm, glabrous, flaccid. Flowers mealy, in short terminal spikes or small leafy panicles, female flowers rarely pedicellate. Fruits red, 2–3 mm diameter, scarcely exceeded by extended red, rarely yellow perianth, which falls off with fruit. **Fig. 15K.**

Drier parts of the region. Fruits may be found most of the year.

5. *Rhagodia hastata* R.Br.*Einadia hastata* (R.Br.) A. J. Scott

Herb, stems weak. Leaves usually opposite; petioles 0.2–1.5 cm long; blades green, ovate, apex obtuse, sometimes mucronate, base hastate, 0.5–2.5 cm × 0.5–2.5 cm, glabrous. Inflorescences usually of short spikes; stamens 1–2. Fruits red, 2–3 mm diameter, slightly larger than perianth.

Usually in moister areas of region. Fruits may be found most of the year.

4. CHENOPODIUM L.

Herbs or shrubs. Flowers mostly bisexual, small, sessile, clustered; perianth 5-lobed or 5-partite, imbricate in bud, herbaceous, closing over fruit; stamens 5 or fewer; style branches 2–3. Fruits nuts enclosed in persistent perianth with membranous pericarp ± adhering to minute seed; seeds horizontal or vertical, testa crustaceous.

100–150 species north and south temperate; 15–20 endemic and *ca* 6 naturalized species Australia; 11–12 species south-eastern Queensland.

- | | |
|--|---------------------------------|
| 1. Plants ± glandular-pubescent; seed horizontal or vertical | 2 |
| Plants mealy or glabrous, not glandular; seed horizontal | 6 |
| 2. Inflorescence a terminal panicle; seed horizontal | 1. <i>C. ambrosioides</i> |
| Inflorescence of axillary clusters; seed vertical | 3 |
| 3. Perianth segments with broad vertical wings fringed with ciliate bristles | 2. <i>C. cristatum</i> |
| Perianth segments glabrous or pubescent, but without bristles | 4 |
| 4. Perianth segments turning blackish when fruit mature | 3. <i>C. melanocarpum</i> |
| Perianth segments remaining whitish when fruit mature | 5 |
| 5. Perianth segments winged or keeled on back, appearing triangular in cross-section, <i>ca</i> 0.5 mm wide, usually covering seed | 4. <i>C. carinatum</i> |
| Perianth segments rounded on back, not keeled, <i>ca</i> 0.2–0.3 mm wide, not covering seed | 5. <i>C. pumilio</i> |
| 6. Leaves entire, hastate, or with one angular tooth on each side | 7 |
| Leaves with irregularly dentate margins | 10 |
| 7. Tall, erect plants; inflorescences a number of long dense spikes | 6. <i>C. auricomiforme</i> |
| Small, erect or trailing plants; inflorescences either dense spikes shorter than leaves, or distant axillary clusters forming interrupted usually leafy spikes | 8 |
| 8. Inflorescences dense spikes shorter than leaves | 7. <i>C. pseudomicrophyllum</i> |
| Inflorescences axillary clusters, sometimes forming interrupted spikes | 9 |
| 9. Leaves with strong fishy odour when crushed; blades broadly triangular or ovate | 8. <i>C. trigonon</i> |
| Leaves without characteristic fishy odour; blades linear-ovate or narrowly triangular | 9. <i>C. polygonoides</i> |
| 10. Leaves and flower clusters mealy-white | 10. <i>C. album</i> |
| Leaves and flower clusters green | 11. <i>C. murale</i> |

1. **Chenopodium ambrosioides* L.**MEXICAN TEA**

Annual or perennial, strongly aromatic, pubescent with many sessile glands, or subglabrous. Leaves with petioles 0.5–3 cm long; blades narrowly ovate, apex acute, base cuneate to attenuate, margin sinuate-dentate or ± entire, 2–12 cm × 0.5–8 cm; upper leaves very small, ± entire. Inflorescences leafy panicles, cymes sessile on ultimate branchlets. Fruiting perianths depressed; seeds horizontal, edge obtuse, 0.5–0.8 mm diameter.

Native of America; weed of the region. Flowers and fruits spring to autumn. Possibly poisonous when eaten in large quantities; contains nitrate and ascaridol.

2. *Chenopodium cristatum* (F. Muell.) F. Muell. CRESTED GOOSEFOOT*Blitum cristatum* F. Muell.

Aromatic pubescent herb. Leaves with petioles 0.3–1.2 cm long; blades narrowly ovate to ovate, apex acute or obtuse, base cuneate to attenuate, margin sinuate-dentate, 0.5–2 cm × 0.3–1.3 cm. Flowers in axillary clusters; perianth segments with broad vertical wings fringed with ciliate bristles. Seeds dark brown, vertical. **Fig. 15H.**

Western Darling Downs district, uncommon. Fruits present much of the year.

3. *Chenopodium melanocarpum* (J. M. Black) J. M. Black BLACK CRUMBWEED*Chenopodium carinatum* R.Br. var. *melanocarpum* J. M. Black

Aromatic pubescent annual. Leaves with petioles 0.2–2.5 cm long; blades oblong or ovate, apex ± obtuse, base cuneate, margin sinuate-dentate, 0.6–3.5 cm × 0.4–2.5 cm. Flowers in dense axillary clusters, becoming black when ripe. Fruiting perianths depressed, segments pubescent, concealing vertical papillose seed.

Mainly Darling Downs district but other areas as well. Fruits may be found most of the year.

4. *Chenopodium carinatum* R.Br. GREEN CRUMBWEED; KEELED GOOSEFOOT

Aromatic pubescent spreading herb. Leaves with petioles 0.3–3 cm long; blades narrowly ovate to ovate, apex acute or obtuse, base cuneate, margin sinuate-dentate, 0.5–4.5 cm × 0.3–3 cm. Flowers in axillary clusters; perianth segments ± pubescent outside, winged or keeled. Seeds dark brown ± shining, vertical, edge acute. **Fig. 15G.**

Throughout the region. Fruits may be found most of the year. Young plants can be poisonous but are rarely eaten.

5. *Chenopodium pumilio* R.Br. SMALL CRUMBWEED

Aromatic pubescent herb. Leaves with petioles 0.2–1.2 cm long, blades ovate, apex acute or obtuse, base cuneate, margin sinuate-dentate, 0.4–2.5 cm × 0.2–0.7 cm. Flowers in axillary clusters; perianth segments 0.2–0.3 mm wide, rounded, pubescent towards summit. Seeds reddish-black, vertical. **Fig. 15I.**

Throughout the region but uncommon. Fruits may be found spring to autumn.

6. *Chenopodium auricomiforme* Murr & Thell.

Robust, possibly annual herb up to 50 cm tall, subglabrous; stems green-striped. Leaves with petioles 0.5–4 cm long; blades narrowly ovate, apex obtuse or subacute, base cuneate, margin entire or with 1–2 angular teeth, 1–7 cm × 0.3–3.5 cm, young leaves mealy or glaucous. Inflorescence pyramido-spicate with clusters in narrow dense subaphyllous spikes, axes between clusters tomentose-villous with white hairs; flowers yellow, mealy. Seeds black, *ca* 1 mm diameter, minutely rugulose.

Weed of Darling Downs district. Flowers summer–autumn.

7. *Chenopodium pseudomicrophyllum* Aellen GIDYEA SALTBUSSH

Small woody-based herb; stems procumbent or ascending. Leaves with petioles 3–10 mm long; blades ovate, apex ± obtuse, base cuneate, 0.5–2 cm × 0.3–1.2 cm, mealy. Flower clusters usually forming small spikes shorter than leaves in upper axils; perianth mealy; stamens 3–5. Seeds black, depressed, horizontal, edge obtuse.

Uncommon, western Darling Downs district. Fruits present during cooler months.

It is very close to *C. desertorum* (J. M. Black) J. M. Black which has spikes longer than leaves, but this species has not been recorded in south-eastern Queensland.

8. *Chenopodium trigonon* Roemer & J. A. Schultes FISHWEED*Chenopodium triangulare* R.Br.

Spreading herb, odour like decaying fish. Leaves with petioles 0.3–1.5 cm long; blades ovate, hastate to triangular, apex obtuse or acute, base cuneate or lobed, margin entire, 0.6–2.5 cm × 0.4–2.5 cm, green or mealy beneath. Flowers in clusters forming slender terminal interrupted spikes; stamen 1. Seeds black, horizontal, edge blunt.

Scattered throughout region. Fruits present most of year.

C. stellulatum (Benth.) Aellen (*C. triangulare* var. *stellulatum* Benth.) is a closely related species. The only difference is that in **C. stellulatum** the perianth lobes are very narrowed at the base, whereas in **C. trigonon** the lobes are broad throughout their length.

9. *Chenopodium polygonoides* (Murray) Aellen ex Probst.

Chenopodium triangulare R.Br. var. *polygonoides* Murray; *C. triangulare* R.Br. var. *angustifolium* Benth.

Stems weak, procumbent, green or mealy on young shoots. Leaves with petioles 2–10 mm long; blades ovate or linear-ovate, apex \pm obtuse to acute, base cuneate or hastate, 0.7–4.5 cm \times 0.2–0.8 cm. Flower clusters forming distant, \pm leafy terminal spikes; perianth segments ovate, when ripe much contracted towards base exposing horizontal fruit; stamen 1. Seeds black, edge blunt. **Fig. 15J.**

Drier parts of the region. Fruits present most of the year.

10. **Chenopodium album* L.

FAT-HEN; WHITE GOOSEFOOT

Annual up to 2 m tall; stems green- or red-tinged, usually erect, angular, \pm grey-mealy. Leaves with petioles 0.5–5 cm long; blades rhombic-ovate to narrowly ovate, apex acute, base cuneate, margin sinuate-dentate, or in upper leaves \pm entire, 1–8 cm \times 0.3–6 cm, mealy. Inflorescences spicate or cymosely branched panicles, axes subglabrous; stamens 5. Seeds shining black, horizontal, edge blunt, 1.2–1.8 mm diameter, \pm smooth.

Cosmopolitan weed; found throughout the region. Flowers and fruits may be found most of the year. Has been used as a spinach substitute. Can cause taints in milk; contains oxalates.

11. **Chenopodium murale* L.

GREEN FAT-HEN; NETTLE-LEAF GOOSEFOOT

Annual, aromatic, erect or spreading; stems reddish, angular, \pm mealy. Leaves with petioles 0.5–5 cm long; blades rhombic-ovate or narrowly ovate, apex acute, base cuneate, margin dentate, 1–10 cm \times 0.4–7 cm. Inflorescences terminal and axillary panicles; flower clusters green, finally red; stamens 5. Seeds dull black, horizontal, edge acute, 1.2–1.75 mm diameter, punctulate. **Fig. 15F.**

Cosmopolitan weed; found throughout the area. Flowers and fruits may be found most of the year. Has been used as a spinach substitute. Can cause taints in milk; contains nitrates.

5. SCLEROBLITUM Ulbr.

Annual or short-lived perennials. Leaves alternate. Flowers in globular sessile axillary clusters, unisexual or bisexual; perianth segments 4; stamen solitary; stigmas 2. Pericarps hard, thick and rugose; seeds erect, fused to endocarp, testa membranous, embryo terminal, horseshoe-shaped, perisperm copious.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Scleroblitum atriplicinum* (F. Muell.) Ulbr.

PURPLE-LEAVED GOOSEFOOT;
LAMB'S TONGUE

Blitum atriplicinum F. Muell.; *Chenopodium atriplicinum* (F. Muell.) F. Muell.

Prostrate to erect herb with prominent taproot. Basal leaves rosetted; petioles slender, 3–10 cm long; blades narrowly ovate to hastate, apex acute or obtuse, base cuneate, margin usually with a large tooth or lobe on either side; 1.5–5 cm \times 0.5–3 cm, almost glabrous; cauline leaves becoming sessile and elliptic towards apex. Fruiting perianths cartilaginous, erect, narrowly oblong-acuminate, 2.5 mm long, thickened and keeled at base; seeds dark red, lenticular, 1.5 mm long.

Darling Downs district. Flowers and fruits winter-spring. Very young succulent plants eaten in large quantities can be toxic.

6. SCLEROLAENA R.Br.

Small perennial shrubs or subshrubs. Leaves narrow, thick, mostly crowded. Flowers sessile, usually solitary, axillary, bisexual; perianth 5-lobed; stamens usually 5; styles 2-3. Fruits nuts enclosed in enlarged perianth which becomes tubular and membranous or hardened at ± hollow and oblique base, bearing 2-12 spines or teeth near summit.

89 species central Europe to central Asia, Australia; 79 species Australia; 9 species south-eastern Queensland.

Most contain oxalates.

- | | |
|---|---|
| 1. Leaves elliptic to obovate, densely villous; fruiting perianth villous, spines glabrous for entire length | 1. <i>S. birchii</i> |
| Leaves linear or narrowly elliptic, glabrous or pubescent; fruiting perianth at most puberulent, or lanate with puberulent spines | 2 |
| 2. Spines 2 | 3 |
| Spines more than 2 | 4 |
| 3. Base of fruiting perianth deeply hollowed; fruiting perianth glabrous | 2. <i>S. diacantha</i> |
| Base of fruiting perianth not or slightly hollowed; fruiting perianth lanate, spines puberulent for at least ½ length | 3. <i>S. bicornis</i> var. <i>horrida</i> |
| 4. Spines 3 | 4. <i>S. tricuspis</i> |
| Spines 4-6 | 5 |
| 5. Spines 4 | 5. <i>S. tetracuspis</i> |
| Spines 5-6 | 6 |
| 6. Spines 5 | 7 |
| Spines 6 | 8 |
| 7. Perianth about as long as wide; base not hollowed | 6. <i>S. muricata</i> |
| Perianth much longer than wide; base deeply hollowed | 7. <i>S. tubata</i> |
| 8. Perianth with 2 spurs at base | 8. <i>S. calcarata</i> |
| Perianth not spurred at base | 9. <i>S. anisacanthoides</i> |

1. *Sclerolaena birchii* (F. Muell.) Domin

GALVANIZED BURR

Anisacantha birchii F. Muell.; *Bassia birchii* (F. Muell.) F. Muell.; *Sclerolaena muricata* (Moq.) Domin var. *birchii* (F. Muell.) Ulbr.

Shrub up to ca 80 cm tall, densely appressed-villous, white or tawny. Leaves with petioles up to 2 mm long; blades elliptic to obovate, apex acute to obtuse, base cuneate, 0.5-1.5 cm × 0.25-0.7 cm. Fruiting perianths without hollowed base, ca 2-3 mm × 3-4 mm, densely villous, spines usually 5, rarely 4, 2 small, close together, often difficult to see among hairs, 2-3 larger, divergent, 3-10 mm long, glabrous for entire length. **Fig. 15Q.**

Weed of drier areas of region. Fruits present most of the year. Declared a noxious weed throughout the State.

2. *Sclerolaena diacantha* (Nees) Benth.

GREY COPPER BURR

Anisacantha diacantha Nees; *Bassia diacantha* (Nees) F. Muell.; *Chenolea diacantha* (Nees) F. Muell.

Shrub up to 1 m tall, pubescent, long appressed on leaves, shorter on fruit and stems. Leaves sessile, linear, ± terete, apex obtuse, 0.5-2.5 cm × 0.1-0.25 cm. Fruiting perianths compressed-cylindrical with expanded base, to ± compressed-conical, 2-3 mm long, spines 2, divergent, 2-4 mm long.

Western Darling Downs district. Fruits present most of the year.

3. *Sclerolaena bicornis* Lindl. var. *horrida* Domin

GOATHEAD BURR

Bassia bicornis (Lindl.) F. Muell. var. *horrida* (Domin) C. T. White

Shrub up to ca 60 cm tall, densely lanate on branches, appressed-pilose on leaves. Leaves sessile, linear-terete, apex acute, 0.8-2.5 cm × 0.1-0.2 cm. Fruiting perianths ± globose, base oblique, scarcely hollowed, 4-5 mm × 5 mm, densely lanate, spines short rigid, divergent, ca 5 mm long, woolly for at least half their length. **Fig. 15M.**

Western Darling Downs district. Fruits present most of the year.

S. bicornis var. **bicornis** differs in having spines 1–1.5 cm long and fruiting perianth *ca* 7–8 mm diameter, but has not been recorded from the region.

4. *Sclerolaena tricuspis* (F. Muell.) Ulbr.

GIANT RED BURR

Anisacantha tricuspis F. Muell.; *Bassia tricuspis* (F. Muell.) R. H. Anders.; *Chenolea tricuspis* (F. Muell.) F. Muell.; *B. divaricata* auct. non (R.Br.) F. Muell., F. Muell.

Small erect, compact subshrub, glabrous, branches sometimes striate. Leaves sessile, linear-terete, apex acute, 0.5–1.2 cm × 0.05–0.1 cm. Fruiting perianths ± cylindrical, base expanded, slightly hollowed, 3–4 mm × *ca* 2 mm, oblique, spines ± thick, pungent, diverging, often ± horizontally, 0.5–1.5 cm long.

Mainly western Darling Downs district. Fruits present most of the year.

5. *Sclerolaena tetracuspis* (C. T. White) A. J. Scott

BRIGALOW BURR;
DOG BURR

Bassia tetracuspis C. T. White

Low spreading subshrub, ± glabrous, branches striate. Leaves sessile, linear-terete, apex acute, 0.5–1.5 cm × 0.1–0.2 cm. Fruiting perianths ± cylindrical, base not hollowed, *ca* 1.5–2 mm × 2–3 mm, spines thick, pungent, diverging, often ± horizontally, 5–10 mm long.

Darling Downs district. Fruits present most of the year.

6. *Sclerolaena muricata* (Moq.) Domin

PRICKLY ROLY-POLY;
BLACK ROLY-POLY

Anisacantha muricata Moq.; *Bassia quinquecuspis* (F. Muell.) F. Muell.; *Anisacantha quinquecuspis* F. Muell.; *Chenolea quinquecuspis* (F. Muell.) F. Muell.

Shrub up to 75 cm tall, ± glabrous, branchlets striate, sometimes glaucescent. Leaves with petioles up to 1.5 mm long; blades linear to narrowly elliptic or sometimes narrowly obovate, apex acute, base cuneate-attenuate, 0.5–3.5 cm × 0.1–0.3 cm. Fruiting perianths depressed, base oblique, not hollowed, attached very firmly to twig, 1–2.5 mm × 2 mm, glabrous, spines 5, slender spreading, 3 longest 0.4–1.5 cm long, other 2 smaller, shortly united at base. **Fig. 150.**

Three varieties occur in the region:

- | | | |
|---|---|---|
| 1. Plants glabrous; leaves up to 3.5 cm long | <i>S. muricata</i> var. <i>muricata</i> | |
| Plants pubescent, leaves up to 1.5 cm long | | 2 |
| 2. Leaves ± narrowly obovate, glabrous above, villous below | <i>S. muricata</i> var. <i>semiglabra</i> | |
| Leaves ± linear-ovate, sparsely villous both sides | <i>S. muricata</i> var. <i>villosa</i> | |

Throughout the region, often a weed of drier areas. **S. muricata** var. **semiglabra** (Ising) A. J. Scott (*Bassia quinquecuspis* var. *semiglabra* Ising) and **S. muricata** var. **villosa** (Benth.) Ulbr. (*Anisacantha muricata* var. *villosa* Benth.; *B. quinquecuspis* var. *villosa* (Benth.) J. M. Black) occur mainly in more western areas of region. Fruits present throughout the year. Potentially toxic if eaten in quantity; contains oxalate.

7. *Sclerolaena tubata* (R. H. Anders.) A. J. Scott

Bassia tubata R. H. Anders.

Puberulent subshrub. Leaves sessile, linear, apex acute, 3–10 mm × 0.5–1 mm. Fruiting perianths laterally compressed, ± cylindrical, base deeply hollowed, sometimes expanded, 3–4 mm × 1–1.5 mm, spines 5, divergent, up to 4 mm long, 1 very short.

Rare, recorded from south-western Darling Downs district. Fruits present summer.

8. *Sclerolaena calcarata* (Ising) A. J. Scott

RED BURR; COPPER BURR

Bassia calcarata Ising

Subshrub, branches ribbed, glabrous or with scattered hairs. Leaves ± linear-terete, apex obtuse, base expanded, 0.6–1.4 cm × 0.05–0.1 cm, hirsute. Fruiting perianths reddish, cylindrical, base ± circular, hollowed, oblique with 2 spurs; *ca* 2.5 mm × 2 mm, pilose



Fig. 15

CHENOPODIACEAE — A-E *Atriplex* spp. — A *A. lindleyi*, fruit x1; B *A. eardleyae*, fruit x6; C *A. elachophylla*, fruit x6; D₁-D₂, *A. muelleri*, D₁ leaf x1, D₂ fruit x6; E₁-E₂, *A. semibaccata*, E₁ part of stem x1, E₂ fruit x6; F-J *Chenopodium* spp. — F₁-F₂, *C. murale*, F₁ part of fertile stem x1, F₂ fruiting perianth x12; G₁-G₂, *C. carinatum*, G₁ part of fertile stem x1, G₂ fruiting perianth x12; H *C. cristatum*, fruiting perianth x6; I *C. pumilio*, fruiting perianth x12; J₁-J₂, *C. polygonoides*, J₁ part of fertile stem x1, J₂ fruiting perianth x12; K-L *Rhagodia* spp. — K *R. nutans*, part of fertile stem x1; L₁-L₂, *R. spinescens*, L₁ part of fruiting stem x1, L₂ fruit x6; M₁-M₂, *Sclerolaena bicornis* var. *horrida*, M₁ leaf x1, M₂ fruit x3; N *Stelligera endecaspinis*, fruit x6; O-Q *Sclerolaena* spp. — O *S. muricata*, fruit x6; P *S. calcarata*, fruit x6; Q₁-Q₂, *S. birchii*, Q₁ leaf x1, Q₂ fruit x6.

with ca 8 longitudinal ribs alternating with grooves, spines 6, diverging, pungent-pointed, ca 2–3 mm long. **Fig. 15P.**

Darling Downs district. Fruits present most of the year. Suspected of poisoning sheep; contains oxalates.

9. *Sclerolaena anisacanthoides* (F. Muell.) Domin

YELLOW BURR

Echinopsilon anisacanthoides F. Muell.; *Bassia anisacanthoides* (F. Muell.) R. H. Anders.; *Anisacantha brevicuspis* F. Muell.; *Chenolea echinopsila* (F. Muell.) F. Muell.; *A. echinopsila* F. Muell.

Tufted herb or small shrub, glabrous or with a few hairs, particularly in leaf axils. Leaves sessile, linear, apex acute, 0.4–1.7 cm × 0.05–0.1 cm, ± glaucous green. Fruiting perianths pale yellow, ± urceolate, base deeply hollowed, ca 2.5 mm × 1.5 mm, spines 6, erect to slightly diverging, 1–1.5 mm long.

Western Darling Downs district. Fruits present mainly spring–summer. Suspected of poisoning hungry animals, particularly sheep; contains oxalates.

7. STELLIGERA A. J. Scott

Subshrubs. Leaves alternate, slender. Flowers solitary, sessile, axillary, bisexual; perianths 5-lobed; stamens 5; stigmas 2. Fruiting perianths globular, hardened, with a narrow apical horizontal toothed wing, pericarp membranous; seeds horizontal with central perisperm, radicle centrifugal.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Stelligera endecaspinis* A. J. Scott

Maireana stelligera F. Muell.; *Kochia stelligera* (F. Muell.) Benth.; *Bassia stelligera* (F. Muell.) F. Muell.

Straggly, woolly subshrub up to 50 cm tall. Leaves sessile, linear, fleshy, apex obtuse, 3–10 mm × 0.5–1 mm, glabrescent. Fruiting perianths depressed-globular, 2 mm diameter, hard, ribbed or smooth, glabrous, wing narrow, hard (sometimes absent), irregularly ± 11-toothed. **Fig. 15N.**

Western Darling Downs district. Fruits present most of year.

8. MAIREANA Moq.

Perennial herbs or small shrubs. Leaves alternate or opposite, globular to terete or narrowly oblong, often succulent. Flowers axillary, solitary or paired, sessile, bisexual or unisexual; perianth 5-lobed, tube flat or cup-shaped; stamens 5; style with 2–3 stigmas. Fruiting perianths spongy, leathery, crustaceous or woody; tube patelliform to globular, wing(s) arising at base of perianth lobes, simple and continuous or divided into 5; utricle discoid, turbinate or globular, pericarp membranous overall, or variously crustaceous.

58 species endemic to Australia; 3 species south-eastern Queensland.

- | | | |
|--|-----------------------------|---|
| i. Fruit with 5 ± horizontal wings surrounding upper perianth | 1. <i>M. enchylaenoides</i> | |
| Fruit with single wing surrounding upper perianth, or rarely wing absent | | 2 |
| 2. Leaves not fleshy; stems sparsely pubescent with short, straight, appressed hairs | 2. <i>M. microphylla</i> | |
| Leaves fleshy; stems sparsely pubescent with short woolly hairs | 3. <i>M. decalvans</i> | |

1. *Maireana enchylaenoides* (F. Muell.) P. G. Wilson

Bassia enchylaenoides F. Muell.; *Enchylaena villosa* F. Muell.; *Kochia crassiloba* R. H. Anders.; *Duriala villosa* (F. Muell.) Ulbr.; *Duriala crassiloba* (R. H. Anders.) Beadle

Perennial up to 20 cm tall, sparsely puberulous to villous. Leaves scattered, ± fleshy; blades narrowly oblong-elliptic, apex obtuse, 0.4–2 cm × 0.1–0.25 cm. Flowers solitary, bisexual, depressed-globose, minutely hirsute. Fruiting perianths sparsely puberulous; tube slightly convex, ca 3 mm diameter, 10-ribbed; wings 5, only slightly exceeding tube, coriaceous, broadly lunate, total 4 mm diameter.

Western Darling Downs district. Fruits present most of the year.

2. *Maireana microphylla* (Moq.) P. G. Wilson

Enchylaena microphylla Moq.; *Kochia microphylla* (Moq.) F. Muell.; (?) *E. tomentosa* R.Br. var. *leptophylla* Benth.; *K. tamariscina* auct. non (Benth.) J. M. Black

Divaricately branched bushy shrub, up to 1 m tall, sparsely strigose or villous to glabrous. Leaves slender, subterete, 2–5 (–8) mm × 0.5–1 mm. Flowers solitary, forming dense leafy spikes, bisexual, depressed. Fruiting perianths thin, slightly fleshy; tube shallowly hemispherical, 1.5–2 mm diameter, wing when present pale brown, simple, horizontal, chartaceous with single radial slit, margin crenulate, ca 7 mm diameter. **Fig. 16A.**

Throughout region, mainly drier areas. Fruits present mainly autumn.

3. *Maireana decalvans* (Gandoger) P. G. Wilson

BLACK COTTONBUSH

Enchylaena decalvans Gandoger; *Kochia villosa* Lindl. var. *tenuifolia* F. Muell. ex Benth.; *K. tomentosa* F. Muell. var. *tenuifolia* (F. Muell. ex Benth.) J. M. Black

Tufted to bushy subshrub up to 50 cm tall, sparsely lanate to glabrous, often densely lanate in leaf axils. Leaves fleshy, slender, terete to narrowly fusiform, 0.5–1.3 cm × 0.1–0.2 cm. Inflorescences lax, flowers bisexual, solitary, depressed-globose. Fruiting perianths glabrous; tube shallowly hemispherical, ca 3 mm diameter, wing pale brown, simple, horizontal, chartaceous, with a single radial slit, margin entire, ca 8 mm diameter.

Drier areas of region. Fruits present mainly autumn.

9. SALSOLA L.

Herbs or shrubs with succulent semicylindrical leaves. Flowers sessile, axillary, usually solitary, bisexual, with 2 lateral opposite bracteoles; perianth 5-partite, closing over fruit, each segment developing a scarious horizontal wing; stamens 5; styles 2–3. Fruits depressed, enclosed in perianth, pericarp and testa membranous; seeds horizontal.

150 species cosmopolitan, maritime and arid areas; 1 species Australia, occurring in south-eastern Queensland.

1. *Salsola kali* L.

SOFT ROLY-POLY

Glabrous or slightly pubescent spreading annual up to 1 m tall; stems striate. Leaves sessile, terete or linear-subulate, apex pungent-pointed, 1–5 cm × 0.1–0.4 cm. Floral bracts ovate, pungent-pointed, rigid, thick, usually less than 1 cm long. Fruiting perianths 4–7 mm broad, usually with 5, obovate, horizontal, dorsal wings.

Throughout the region, mainly in dry areas with poor soil, or in littoral saline areas. Flowers and fruits present mainly spring–summer.

10. SUAEDA Forssk. ex Scop.

Glabrous subshrubs with alternate, succulent leaves. Flowers sessile, axillary, mostly bisexual, subtended by 1 bract and 2 bracteoles; perianth with 5 succulent lobes closing over fruit. Pericarp membranous; seeds horizontal or vertical, testa shining black, crustaceous.

110 species cosmopolitan, sea coasts and salt plains; 2–3 species Australia; 2 species south-eastern Queensland.

1. Leaves ± linear; flowers up to 9 in each cluster; seeds shining black, ± 1.5 mm diameter, testa hard

1. *S. australis*

Leaves narrowly elliptic; flowers rarely more than 3 per cluster; seeds pale, ca 3.6 mm diameter, testa thin, transparent

2. *S. arbusculoides***1. *Suaeda australis* (R.Br.) Moq.**

A SEABLITE

Chenopodium australe R.Br.; *Suaeda maritima* of “Qd Flora”

Usually ± ascending herb up to 80 cm tall, lower branches often decumbent and rooting. Leaves ± sessile, linear, apex acute, 0.3–5.5 cm × 0.05–0.25 cm, upper surface slightly convex. Flowers in axillary clusters, often apparently forming dense leafy spikes; flowers ca 1–1.5 mm × 1–1.5 mm; stamens 5; styles 2. Fruits ± globose, 1.5–2 mm diameter. **Fig. 16C.**

Common on better drained mangrove flats and at base of sand dunes along sea-shore. Flowers spring–summer. Tips of stems with leaves can be eaten raw, after boiling, or pickled.

2. *Suaeda arbusculoides* L. S. Smith

A SEABLITE

Compact, erect herb up to ca 30 cm tall, lower branches never decumbent nor rooting. Leaves ± sessile, narrowly elliptic, apex acute, occasionally mucronate, 0.6–2.5 cm × 0.15–0.4 cm, upper surface often slightly channelled. Flowers 1–3, 1–2 mm × 2 mm; stamens 5; style 2-lobed above middle. Fruits depressed-globose, ± 3.5 mm diameter. **Fig. 16D.**

Uncommon, on poorly drained mangrove flats and fringing shallow depressions where salt water lies along beaches. Flowers mainly summer.

11. ENCHYLAENA R.Br.

Subshrubs. Flowers sessile, small, solitary, axillary, bisexual. Fruiting perianths depressed, enlarged, enclosing fruit, succulent, tube not hardened, pericarp and testa membranous; seeds horizontal, embryo annular.

6 species, or 1–2 very variable species endemic Australia; 1 species south-eastern Queensland.

1. *Enchylaena tomentosa* R.Br.

RUBY SALTBUSH; BARRIER SALTBUSH;
BERRY COTTONBUSH

Shrub up to 1.5 m tall with long, often procumbent, tomentose or glabrous stems. Leaves sessile, linear, ± terete, apex acute, 0.6–2 cm × 0.05–0.2 cm, usually tomentose or villous. Fruiting perianths red or yellow, drying black, depressed-globose, succulent, 5–8 mm diameter, slightly beaked laterally, limb cleft to base on one side, tube convex. **Fig. 16B.**

Two varieties occur in the region.

- | | |
|---|---|
| 1. Stems and leaves tomentose | <i>E. tomentosa</i> var. <i>tomentosa</i> |
| Stems and leaves ± glabrous | <i>E. tomentosa</i> var. <i>glabra</i> |

E. tomentosa var. **tomentosa** occurs in drier parts of the region, while **E. tomentosa** var. **glabra** Benth. occurs in salt marshes along the coast. Both flower and fruit most of the year. Fruits edible, sweet; young parts suitable for green vegetable.

12. HALOSARCIA P. G. Wilson

Shrubs or subshrubs, apparently leafless, glabrous; young branches segmented, made up of succulent globular to cylindrical articles. Inflorescences spike-like, terminal, of opposite, united, decussate fleshy bracts; flowers in opposite triads immersed in joints at apex of bract pairs, bisexual; perianth succulent (sometimes hard or pithy in fruit), very shortly 3-lobed; stamen 1; stigmas 2. Pericarps membranous to horny; seeds compressed, vertical, testa crustaceous to membranous; perisperm copious.

23 species Australia, Malaysia, India; 23 species Australia; 3 species south-eastern Queensland.

- | | |
|--|---|
| 1. Pericarps horny; seeds smooth, white | 1. <i>H. indica</i> |
| Pericarps membranous or soft; seeds ornamented, reddish-brown to black | 2 |
| 2. Seeds concentrically ribbed all over | 2. <i>H. pergranulata</i> |
| Seeds tuberculate around upper margin | 3. <i>H. halocnemoides</i> subsp. <i>tenuis</i> |

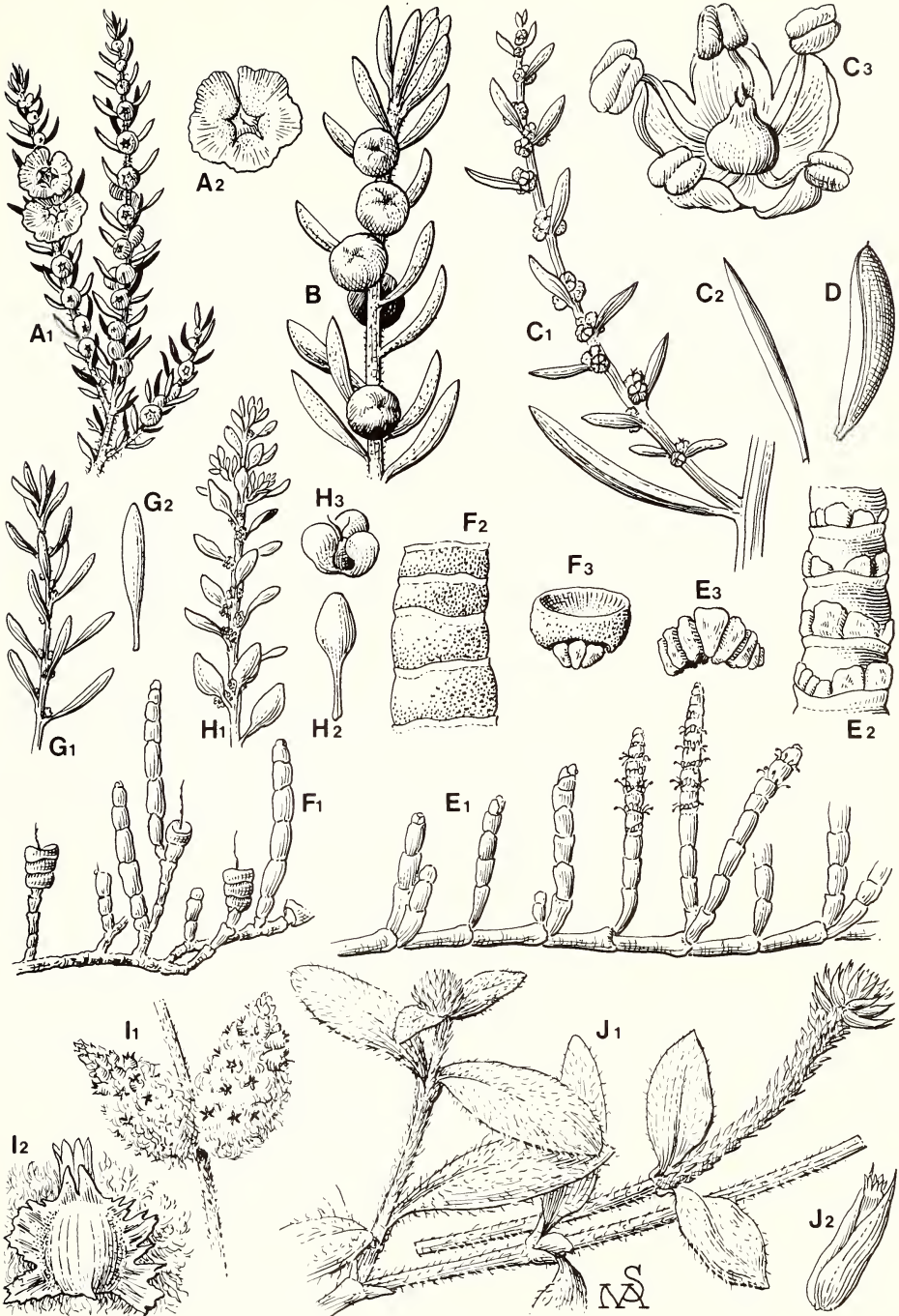


Fig. 16

A-F CHENOPODIACEAE — A₁-A₂, *Maireana microphylla*, A₁, part of fruiting branchlet x1½, A₂, winged fruit x3; B *Enchylaena tomentosa*, part of fruiting branchlet x1½; C-D *Suaeda* spp. — C₁-C₃, *S. australis*, C₁, part of fertile branchlet x1½, C₂, leaf x1½, C₃, flower x12; D *S. arbusculoides*, leaf x1½; E₁-E₃, *Sarcocornia quinqueflora*, E₁, part of immature fruiting spike x4, E₂, mature fruiting segment x4; F₁-F₃, *Halosarcia indica*, F₁, part of mature fruiting stem x1, F₂, part of immature fruiting spike x4, F₃, mature fruiting segment x4; G-H *Dysphania* spp. — G₁-G₃, *D. myriocephala*, G₁, part of fertile inflorescence x1, G₂, leaf x1½; H₁-H₃, *D. littoralis*, H₁, part of fertile inflorescence x1, H₂, leaf x1½, H₃, fruit x12; I-J AMARANTHACEAE — I₁-I₂, *Froelichia floridana*, I₁, part of inflorescence x1, I₂, fruit with wool removed to show winged perianth x4; J₁-J₂, *Gomphrena celosioides*, J₁, part of fertile stem x1, J₂, flower x4.

1. Halosarcia indica (Willd.) P. G. Wilson SAMPHIRE

Salicornia indica Willd.: *Arthrocnemum leiostachyum* auct. Qld.

Decumbent perennial; articles *ca* 3 mm thick, shortly 2-lobed. Spikes cylindrical, 2–5 cm × 0.4 cm, of closely overlapping fertile articles, often corky when mature. Fruiting perianths pithy, triangular in outline, adhering to horny pericarp; seeds subcircular, *ca* 1.5 mm diameter, testa whitish, smooth. **Fig. 16F.**

Salt marshes in littoral areas.

Although south-eastern Queensland specimens are most likely to be *H. indica* subsp. *leiostachya* (Benth.) P. G. Wilson (*Salicornia leiostachya* Benth.; *Arthrocnemum leiostachyum* (Benth.) Paulsen) there appears some intergrading between this and *H. indica* subsp. *indica* as a number of specimens have some characters of *H. indica* subsp. *indica* (plants decumbent or prostrate, articles of branchlets corky with age, ± truncate, entire) as well as some of *H. indica* subsp. *leiostachya* (plants ± erect, cortical tissue of articles shrivelling with age, truncate or shallowly lobed, ± ciliate).

2. Halosarcia pergranulata (J. M. Black) P. G. Wilson subsp. **queenslandica** P. G. Wilson SAMPHIRE

Arthrocnemum halocnemoides Nees var. *pergranulatum* J. M. Black

Straggly or decumbent subshrub with slender branches. Spikes narrowly cylindrical, 1–3 cm × 0.2–0.3 cm; flowers totally fused to upper bract. Fruiting perianth succulent (spongy on drying), fused to and similar in texture to pericarp; seeds broadly ovate, *ca* 1 mm long, testa dark reddish-brown to black, crustaceous, concentrically ribbed all over.

Salt marshes in littoral areas. Flowers usually summer.

3. Halosarcia halocnemoides (Nees) P. G. Wilson subsp. **tenuis** P. G. Wilson SAMPHIRE

Arthrocnemum halocnemoides Nees; probably *A. arbusculum* of "Qd Flora"

Subshrub with slender branches. Spikes narrowly cylindrical, 1–2.5(–7) cm × 0.2–0.3 cm; flowers free from bracts, slightly protruding. Fruiting perianth firmly chartaceous outside, spongy inside, fused to the membranous pericarp; seeds suborbicular, *ca* 1 mm diameter, testa reddish-brown, crustaceous, tuberculate on upper margin.

Salt marshes in littoral areas. Flowers usually summer.

13. SARCOCORNIA A. J. Scott

Low shrubs with procumbent rooting stems and ascending or erect branches; stems succulent, composed of articles as in *Halosarcia*. Flowers usually immersed in rows of 3–9, bisexual; stamens usually 2, pericarp hyaline. Fruiting perianths thickened and rather hard, dilated and truncate at summit, opening by 2 short broad lobes, so that aperture appears as a slit down the middle of summit; seeds compressed, suborbicular, testa chartaceous.

15 species temperate and tropical maritime and arid saline areas; 3 species Australia; 1 species south-eastern Queensland.

1. Sarcocornia quinqueflora (Bunge ex Ung.-Sternb.) A. J. Scott SAMPHIRE
Salicornia quinqueflora Bunge ex Ung.-Sternb.; *Salicornia australis* Banks & Solander ex Benth.

Succulent herb; articles terete, 1–1.5 cm long, lobes inconspicuous. Inflorescences terminal spikes, 1.5–6 cm long with 10–20 fertile articles; flowers usually in 7s, often 5–3 in upper articles, rarely 9 in lower; perianth tubular, 3–4-angled, 0.8 mm long, almost closed at summit; ovary and fruit enclosed in perianth tube, testa ± covered with curved hairs. **Fig. 16E.**

Salt marshes in littoral areas. Flowers spring–summer. Edible boiled or pickled.

24. AMARANTHACEAE

Annual or perennial herbs, rarely undershrubs or climbers. Leaves alternate or opposite, exstipulate, simple. Flowers small, in spikes, heads or racemes, usually bisexual, actinomorphic, with 1 bract and 2 bracteoles (often scarious) subtending each flower; perianth segments 3–5, \pm free, imbricate, \pm dry membranous; stamens mostly 5, opposite perianth segments, filaments basally united, often with staminodes present between them, anthers 1- or 2-locular, opening by longitudinal slits; ovary superior, 1-locular, ovules solitary or rarely several, on basal funicle, style 1, stigma capitate or 2–3-fid. Fruits indehiscent or circumscissile; seeds globose, compressed or ellipsoid, smooth, embryo annular, surrounding copious endosperm.

65 genera with 850 species, tropical and temperate; 10 genera with 147 species Australia; 9 genera with 25 species south-eastern Queensland.

1. Leaves alternate	2
Leaves opposite	4
2. Woody climbers in Queensland species	1. <i>Deeringia</i>
Herbs	3
3. Flowers bisexual; perianths more than 10 mm long in south-eastern Queensland species	2. <i>Ptilotus</i>
Flowers unisexual; perianths and bracts less than 7 mm long in south-eastern Queensland species	3. <i>Amaranthus</i>
4. Perianth segments 4, tipped with spines 3–10 mm long; stamens 2 or 4	4. <i>Nyssanthes</i>
Perianth segments 5 (one species with pungent points up to 2 mm long); stamens 5	5
5. Inflorescences of axillary, short, sessile spikes or heads	6
Inflorescences of terminal heads or often long spikes or panicles	7
6. Filament tubes resembling short cups or adnate to fused perianths; stigma 2-fid or notched	5. <i>Guilleminea</i>
Filament tubes longer than ovaries and free from perianths; stigma capitate	6. <i>Alternanthera</i>
7. Anthers 2-locular; flowers of inflorescence maturing only a few at a time, forming an elongated spike	7. <i>Achyranthes</i>
Anthers 1-locular; flowers of inflorescence maturing at \pm same time	8
8. Stigmas single, capitate; inflorescences long lax panicles in Queensland species	8. <i>Froelichia</i>
Stigmas 2; inflorescences heads or short dense spikes in south-eastern Queensland species	9. <i>Gomphrena</i>

1. DEERINGIA R.Br.

Erect herbs or scandent or clambering shrubs, unarmed. Leaves alternate. Inflorescences axillary and/or terminal, spicate, racemose or paniculate; perianth segments 5, rarely 4; stamens 5, rarely 4, without staminodes, anthers 2-locular; ovules few to many, with long funicles, stigmas 2–3, rarely 4, linear or \pm clavate. Fruits baccate, thin-walled, falling from perianth when ripe; seeds shining black or brownish-black, 0-many, circular or reniform, very finely verruculose or \pm smooth.

12 species Madagascar to Indomalesia; 2 species Australia, occurring in south-eastern Queensland.

1. Lateral inflorescences simple racemes 5–40 cm long, each flower on pedicel 0.7–2 mm long; flowers bisexual; fruit 4–7 mm diameter, perianth segments \pm reflexed	1. <i>D. amaranthoides</i>
Lateral inflorescences panicles 4–15 cm long; flowers sessile, functionally unisexual; fruit 3–4 mm diameter, perianth segments appressed	2. <i>D. arborescens</i>

1. *Deeringia amaranthoides* (Lam.) Merr.*Achyranthes amaranthoides* Lam.: *Deeringia celosioides* auct. non Hassk., R.Br.

Scandent shrub, young parts finely appressed pubescent. Leaves with petioles 0.4–6 cm long; blades ovate, apex attenuate or acuminate, base cuneate to ± obtuse, often oblique, 2.7–15 cm × 1–8 cm. Terminal inflorescences often divaricately branched at base; perianth segments pale greenish or yellowish, 1.5–2.5 mm long. Fruits bright red, globose or obovoid, 4–7 mm diameter; seeds 0–5, rarely up to 9, circular with emarginate base, 1–1.3 mm long. **Fig. 17B.**

Rainforests of the coastal districts west to the Great Dividing Ra. Flowers mainly summer-autumn.

2. *Deeringia arborescens* (R.Br.) Druce*Lestibudesia arborescens* R.Br.: *Deeringia altissima* (Moq.) F. Muell.

Woody liane, young parts with brown crisped hairs, soon glabrous. Leaves with petioles 1–3.5 cm long; blades narrowly ovate to ovate, apex acute, sometimes acuminate, base cuneate to obtuse, 3–20 cm × 1–10 cm. All inflorescences paniculate, with individual branchlets spicate, 1–3 cm long; perianth segments greenish or white, 1.25–2 mm long. Fruits red, globose, top exserted from perianth, 3–4 mm diameter; seeds black, 1–2, reniform, ± 1 mm diameter, verruculose. **Fig. 17A.**

Rainforests, mainly of the coastal districts. Flowers spring-summer.

2. PTILOTUS R.Br.

Herbs. Leaves alternate, entire, often narrow. Flowers terminal in dense globose, conical or cylindrical heads or spikes, bisexual, bracts and bracteoles scarious; perianth segments free or basally connate, usually dimorphous, glabrous or pubescent; stamens 5, filaments free or shortly basally connate, anthers 2-locular, sometimes pseudostaminodes present; ovule 1, pendent from long, erect, basal funicle, style long, thin, stigma capitate. Utricles enclosed by perianth, indehiscent; seeds vertical, sometimes arillate.

100 species almost entirely Australian; 3 species south-eastern Queensland.

- | | |
|--|--|
| 1. Spikes globose or ovoid; perianth segments pink or red in upper part | 1. <i>P. exaltatus</i> var. <i>semilanatus</i> |
| Spikes long cylindrical; perianth segments usually yellowish or greenish | 2 |
| 2. Spikes 2.5–3 cm diameter | 2. <i>P. polystachyus</i> |
| Spikes 5–6 cm diameter | 3. <i>P. macrocephalus</i> |

1. *Ptilotus exaltatus* Nees var. *semilanatus* (Lindl.) Maiden & Betche

PRINCE-OF-WALES FEATHER; FOX BRUSH

Trichinium semilanatum Lindl.; *Ptilotus semilanatus* (Lindl.) F. Muell. ex J. M. Black

Leaves with petioles 0.5–4 cm long; blades linear-elliptic to very narrowly oblong-obovate, apex obtuse or acute, base attenuate, margin undulate, 2–6 cm × 0.2–0.7 cm; upper leaves reducing. Inflorescences ± globose, up to 3 cm long and wide, peduncle initially woolly; bracts and bracteoles brownish, mucronate, 4–7 mm long, initially villous; perianth 1.5–1.8 cm long; ovary stipitate, style excentric, glabrous.

Darling Downs district. Flowers mainly late spring to summer but have been recorded in winter.

2. *Ptilotus polystachyus* (Gaudich.) F. Muell.*Trichinium polystachyum* Gaudich.; *Ptilotus alopecuroideus* (Lindl.) F. Muell.; *T. alopecuroideum* Lindl.

Leaves with petioles 0.5–2.5 cm long; blades linear to very narrowly elliptic, apex acute, base attenuate, margin generally undulate, 1.2–15 cm × 0.15–2 cm. Spikes on long peduncles, finally cylindrical, 4–15 cm × 2.5–3 cm; bracts and bracteoles broadly obtuse, hyaline, 4–5 mm long, glabrous, shining; perianth 1.2–1.6 cm long; ovary glabrous, style excentric, with long hairs on lower half. **Fig. 17K.**

Western Darling Downs district. Flowers most of the year.

3. *Ptilotus macrocephalus* (R.Br.) Poiret

GREEN PUSSYTAILS

Trichinium macrocephalum R.Br.

Leaves with petioles 0.3–3 cm long; blades linear to very narrowly elliptic, apex acute, base attenuate, margin undulate, 1.5–14 cm × 0.1–1.2 cm. Spikes on long peduncles, oblong, 5–12 cm × 5–6 cm; bracts and bracteoles whitish, ovate, apex acute or mucronate, 0.8–1.2 cm long, glabrous, shining; perianth (2–)2.5–4 cm long; ovary pubescent, style with long hairs for at least half length.

Darling Downs and the southern Burnett districts. Flowers most of the year.

3. AMARANTHUS L.

Erect or decumbent annuals, spiny or unarmed. Leaves alternate, entire. Flowers in dense, sessile clusters, axillary, or in axillary and terminal spikes or panicles, unisexual, bracts and bracteoles small, scarious; perianth segments 3 or 5, rarely 4, free, subequal, membranous, after anthesis sometimes basally hardened; stamens as many as perianth segments, filaments free, anthers 2-locular, pseudostaminodes absent; ovule 1, sessile, erect, style short or absent, stigmas 2–4. Utricles laterally compressed, membranous, circumcissile when ripe, bursting irregularly, or falling off unopened with perianth; seeds black or brown, shining, erect, lenticular.

60 species tropical and temperate; ca 12 species Australia; 8 species south-eastern Queensland.

A number of species of this genus have been suspected of poisoning livestock. Potentially toxic amounts of nitrate and/or oxalate have been reported from several species.

- | | | |
|---|--------------------------|---|
| 1. Plants with axillary spines 0.5–1.2 cm long | 1. <i>A. spinosus</i> | |
| Plants without axillary spines | | 2 |
| 2. Bracts and bracteoles longer than perianth segments, 2.5–6 mm long; fruit circumcissile | | 3 |
| Bracts and bracteoles shorter than perianth segments, less than ca 1.5 mm long; fruit indehiscent or bursting irregularly | | 4 |
| 3. Bracts 5–6 mm long | 2. <i>A. powellii</i> | |
| Bracts 2.5–4 mm long | 3. <i>A. hybridus</i> | |
| 4. Utricles 3–5 mm long, much longer than perianth segments | | 5 |
| Utricles 1.5–2.5 mm long, only slightly longer than perianth segments | | 6 |
| 5. Blades of perianth segments ± as narrow as claw, ca 0.5–0.75 mm wide, 3–4 per flower; utricles with 2–3 slender styles | 4. <i>A. macrocarpus</i> | |
| Blades of perianth segments obovate, 1–1.5 mm wide, 5 per flower; utricles with 3 thick styles | 5. <i>A. mitchellii</i> | |
| 6. Perianth segments 5; utricles 2–2.5 mm long; seeds ca 1.5 mm diameter | 6. <i>A. interruptus</i> | |
| Perianth segments 3; utricles 1.5–2 mm long; seeds ca 1–1.2 mm diameter | | 7 |
| 7. Leaf apices broadly, deeply emarginate; seeds ± smooth, shining | 7. <i>A. lividus</i> | |
| Leaf apices acute, obtuse or retuse, not emarginate; seeds verruculose, not or slightly shining | 8. <i>A. viridus</i> | |

1. **Amaranthus spinosus* L.

NEEDLE BURR; SPINY AMARANTH

Erect herb up to 1 m tall; stems green or purplish, glabrous or puberulent. Leaves with 2 prominent axillary spines present, 0.5–1.2 cm long; petioles 0.5–4 cm long; blades ovate, obovate or elliptic, apex acute, obtuse or retuse, aristate, base cuneate to attenuate, 0.8–5 cm × 0.3–2.3 cm, glabrous or puberulent on veins beneath. Inflorescences dense axillary clusters, often forming terminal spikes; perianth segments 5, 1.5–2.5 mm long; styles mostly 3, rarely 2. Utricles oblong, apex 3-lobed, circumcissile; seeds black, shining, margin thin, ± 1 mm diameter.

Native of tropical America; weed of disturbed sites or poor soils mainly in coastal districts. Flowers much of the year.

2. *Amaranthus powellii S. Watson

Previously included with *Amaranthus hybridus* L.

Erect herb up to 1 m tall; stems glabrous or puberulent. Leaves with petioles 0.5–5 cm long; blades ovate to elliptic, apex obtuse or retuse, mucronate, base attenuate to cuneate, 1.4–9.5 cm × 0.6–4.5 cm. Inflorescences of dense terminal and upper axillary spikes, up to ca 8 cm long, occasionally clusters in lower axils; perianth segments 5, rarely 3, 1.75–2.5 mm long; styles 2–3. Utricles ca 2–2.5 mm long, smooth, circumcissile; seeds black, shining, edge obtuse, 1.5 mm × 1.25 mm, smooth.

Native of tropical America; weed throughout the region mainly in disturbed sites or cultivation. Flowers most of the year.

3. *Amaranthus hybridus L.

REDSHANK; PANICLED AMARANTH;
WILD AMARANTH

Amaranthus cruentus L.; *A. paniculatus* L.

Somewhat fleshy herb up to 1.3 m tall; stems often reddish, puberulent. Leaves with petioles 0.6–8.5 cm long; blades narrowly ovate, ovate or elliptic, apex obtuse, base cuneate, margin undulate, 1.7–11 cm × 0.6–6.5 cm. Inflorescences of terminal or upper axillary dense panicles or spikes; perianth segments greenish, 5, 1.5–2 mm long; styles 3, rarely 2. Utricles ± urceolate, circumcissile; seeds dark brown, shining, orbicular or oblong, ca 1 mm diameter. **Fig. 17D.**

Native of North America; weed throughout the region in disturbed sites, creek flats, etc. Flowers most of the year.

4. Amaranthus macrocarpus Benth.

DWARF AMARANTH

Ascending or prostrate herb; stems reddish, glabrous. Leaves with petioles 0.4–2.5 cm long; blades ovate to obovate, apex retuse, often mucronate, base cuneate, 0.5–2.5 cm × 0.4–1.3 cm. Flowers in dense axillary clusters; perianth segments 3–4, ca 1.75–2 mm long. Utricles pyriform, ca 5 mm long, spongy, wrinkled, styles 2–3, persistent; seeds black, shining, ovoid, margin blunt, ca 1–1.5 mm long, smooth. **Fig. 17E.**

Weed mainly of Darling Downs district. Flowers mainly autumn.

5. Amaranthus mitchellii Benth.

BOGGABRI

Erect or ascending herb, glabrous. Leaves with petioles 0.5–5 cm long; blades ovate to elliptic, apex obtuse, retuse, mucronate, base cuneate to attenuate, 0.7–6.5 cm × 0.5–2 cm. Inflorescences of axillary clusters or short spikes; perianth segments 5, 2–2.5 mm long. Utricles pyriform, 3–4 mm long, wrinkled often appearing ribbed, summit smooth, styles 3, thick, persistent, seeds shining black, ± orbicular, margin blunt, ca 1–1.5 mm diameter.

Weed of Darling Downs district. Flowers most of the year.

6. Amaranthus interruptus R.Br.

Erect or ascending herb up to 60 cm tall, glabrous or puberulent. Leaves with petioles 0.5–3 cm long; blades ovate, elliptic or obovate, apex obtuse or retuse, mucronate, base cuneate or attenuate, 0.8–5 cm × 0.35–2.3 cm. Flowers in dense axillary clusters or long ± interrupted spikes or panicles; perianth segments 5, 1.2–1.8 mm long; styles 2–3. Utricles falling off with perianth, broadly ellipsoid, 2–2.5 mm long; seeds brownish-black, ± orbicular, margin obtuse, ca 1.5 mm diameter, minutely verruculose.

Weed of Darling Downs district and Mt. Perry area. Flowers mainly summer.

7. *Amaranthus lividus L.

Amaranthus viridus auct. non L.; *A. blitum* auct. non L.

Erect or prostrate annual up to 80 cm tall; stems often purplish, glabrous. Leaves with petioles 0.3–4 cm long; blades ovate, elliptic or obovate, apex broadly deeply emarginate, base cuneate, 0.4–3 cm × 0.15–2.5 cm. Inflorescences chiefly axillary clusters, or collected in few-flowered terminal or axillary spikes 1–2 cm long; perianth segments 3, ca 1.5 mm long; stigmas 2–3. Utricles falling off with perianth, broadly ellipsoid, 1.5–2 mm long; seeds shining black, ± orbicular, margin blunt, 1–1.3 mm diameter.

Probably native of Europe; weed of disturbed sites of mainly the coastal districts. Flowers most of the year.

8. **Amaranthus viridus* L.

GREEN AMARANTH

Amaranthus gracilis Desf.

Erect herb up to 1 m tall, glabrous or puberulent. Leaves with petioles 0.7–7 cm long; blades ovate or triangular-ovate, apex acute, obtuse or retuse, base cuneate to truncate, 1.4–8.5 cm × 0.9–5.5 cm. Inflorescences mainly panicles 5–10 cm long, or few upper axillary clusters; perianth segments 3, *ca* 1.5 mm long. Utricles compressed-ovoid to ellipsoid, 1.5–2 mm long, rugose; seeds black-brown, orbicular, margin blunt, 1–1.2 mm diameter, verruculose. **Fig. 17C.**

Native of tropical America; common weed of region of roadsides, cultivation, disturbed sites, etc. Flowers much of the year. Has been boiled as a spinach substitute.

4. NYSSANTHES R.Br.

Herbs. Leaves opposite. Flowers rigid in sessile clusters or capitate spikes, bisexual, bract and bracteoles spinescent, very spreading; perianth segments 4, 2 inner ones smaller, all or 2 outer ± spinescent; stamens 2 or 4, basally connate, anthers 2-locular, pseudostaminodes present; stigma capitate. Fruits membranous, indehiscent, utricle enclosed in perianth, whole spreading or reflexed, hardened after flowering; seeds solitary.

2 species endemic to Australia, occurring in south-eastern Queensland.

- | | |
|---|----------------------|
| 1. Stamens 4; spines slender, 2.5–3.5 mm long; leaves 3 or more times as long as broad | 1. <i>N. erecta</i> |
| Stamens 2; spines very slender, 3–10 mm long; leaves less than 3 times as long as broad | 2. <i>N. diffusa</i> |

1. *Nyssanthes erecta* R.Br.

Erect, woody-based herb up to 1 m tall, puberulent. Leaves with petioles 1–7 mm long; blades linear-elliptic to narrowly oblong or narrowly elliptic, apex acute or obtuse, mucronate, base attenuate, 0.5–4 cm × 0.15–1.3 cm. Flowers in axillary clusters; perianth 6–8 mm long, pubescent, spiny tips slender, 2.5–3.5 mm long. Seeds brown, *ca* 1–1.5 mm long. **Fig. 17I.**

Mainly found in Darling Downs district. Flowers spring to autumn, mainly summer.

2. *Nyssanthes diffusa* R.Br.

BARB-WIRE WEED

Erect or usually diffuse herb, glabrous to puberulent. Leaves with petioles up to 2 mm long; blades elliptic to oblong-obovate, apex acute or obtuse, mucronate to aristate, base cuneate, 0.5–3 cm × 0.3–1.2 cm. Flowers in axillary clusters; perianth 0.5–1.1 cm long, glabrous or with scattered hairs, spiny tips very slender, 3–10 mm long. Seeds shiny brown, *ca* 1–1.25 mm long. **Fig. 17H.**

Weed mainly of wetter coastal districts, but has been recorded from Bunya Mts. and Gayndah area. Flowers spring to autumn, mainly summer.

5. GUILLEMINEA Kunth

Perennial herbs, stems often procumbent. Leaves opposite, very variable. Inflorescences solitary flowers or spikes of 2–30 flowers, spikes often densely aggregated at nodes; flowers bisexual; perianth segments 5, free, pubescent, with membranous margin; stamens 5, partly connate, anthers 1-locular, pseudostaminodes absent; stigma 2-lobed. Fruits membranous, indehiscent; seed 1, pendulous.

5 species tropical and temperate areas of western America; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. *Guilleminea densa (Willd. ex Roemer & J. A. Schultes) Moq.

Illecebrum densum Willd. ex Roemer & J. A. Schultes; *Brayulinea densa* (Willd. ex Roemer & J. A. Schultes) Small

Decumbent herb with thick taproot, usually villous. Leaves with petioles up to 5 mm long, broad and basally dilated; blades obovate or elliptic, apex acute, base cuneate, 0.3–2 cm × 0.15–1.3 cm, ± glabrous above, villous below. Inflorescences of up to 10 flowers densely clustered into a head or short spike; perianth segments whitish, 1.5–2 mm long. **Fig. 17J.**

Native of tropical and subtropical America; weed mainly of disturbed sites, lawns, footpaths. Flowers mainly autumn.

6. ALTERNANTHERA Forssk.

Annual or perennial herbs, habit various. Leaves opposite, entire. Flowers in axillary or rarely terminal, sessile or pedunculate heads or short spikes, mostly bisexual, bracts and bracteoles scarious; perianth often dorsally compressed, segments 5, free; stamens 2–5, filaments basally connate, free parts short, usually alternating with pseudostaminodes, anthers 1-locular; ovule 1, pendulous from long funicle, style short, stigma capitate. Utricles indehiscent, sometimes corky, falling off with perianth, with or without bracteoles; seeds vertical.

200 species tropical and subtropical; 10–11 species Australia; 6 species south-eastern Queensland.

- 1. Stems ± pubescent, particularly on upper internodes or young parts; leaves obovate, 1–3 times as long as broad 2
- Stems glabrous or only with scattered hairs except at nodes; leaves linear or very narrow, 4–10 times as long as broad 5
- 2. Inflorescences, bracts or perianth segments with barbed hairs; perianth segments 3-nerved in lower 1/3 3
- Inflorescences, bracts or perianth segments with smooth or multicellular hairs; perianth segments 1-nerved throughout 4
- 3. Perianth segments 5–7 mm long, pungent-pointed; leaf blades obovate or oblong-obovate 1. *A. pungens*
- Perianth segments 3.5–4 mm long, acuminate; leaf blades rhombic to rhombic-obovate 2. *A. bettzickiana*
- 4. Perianth segments 1.5–3 mm long, ± glabrous; leaf blades pubescent at least below 3. *A. nana*
- Perianth segments 2.5–3.5 mm long, sparsely pubescent; leaf blades glabrate or puberulent in young growth 4. *A. sessilis*
- 5. Perianth segments 1.5–3 mm long, acuminate; spikes few per axillary cluster 5. *A. denticulata*
- Perianth segments 4–5 mm long, long acuminate; spikes several per axillary cluster 6. *A. nodiflora*

1. *Alternanthera pungens Kunth

KHAKI WEED

Alternanthera echinata Smith; *A. repens* (L.) Link

Prostrate perennial; stems, and sometimes petioles pubescent. Leaves with petioles 2–10 mm long; blades obovate or oblong-obovate, apex obtuse, mucronate, base cuneate, often oblique, margin ± undulate, 0.8–6 cm × 0.6–2.7 cm. Flower spikes 0.8–1.2 cm × 0.6–1 cm; perianth segments whitish or straw-coloured, 3-nerved for lower 1/3, apex pungent, 5–7 mm long, with small tufts of barbed hairs at base. Fruits broadly obovate, apex truncate, ca 1–1.5 mm long.

Native of South America; weed of region usually on disturbed sites. Flowers spring to autumn.

2. **Alternanthera bettzickiana* (Regel) Nichol.

Telanthera bettzickiana Regel

Erect or ascending annual or perennial up to 40 cm tall, stems villous when young but soon glabrate. Leaves with petioles 0.5–2.5 cm long; blades rhombic to rhombic-obovate, apex acute to obtuse, base abruptly attenuate, margin undulate or crisped, 2–8 cm × 0.7–3.7 cm, sparsely appressed pilose when young, soon glabrate. Flowers in axillary sessile spikes 5–7 mm diameter, few per axil; perianth segments whitish with brown base, 3-nerved for lower 1/3, apex acuminate, 3.5–4 mm long, puberulent with barbed hairs. Fruits not seen.

Native of Brazil; recorded from Gympie and Brisbane areas, not commonly collected. Flowers ? winter.

This species may have arisen as a cultivated form of *A. ficoidea* (L.) R.Br. (*Gomphrena ficoidea* L.) which differs in having entire pilose lower floral bracts, while *A. bettzickiana* has laciniately lobed, glabrous lower floral bracts.

3. *Alternanthera nana* R.Br.

HAIRY JOYWEED

Usually prostrate herb, stems and at least underside of leaves ± pubescent. Leaves with petioles up to 4 mm long; blades obovate or occasionally elliptic, apex acute or obtuse, mucronate, base cuneate, margin undulate or denticulate, 0.7–2.5 cm × 0.3–1.4 cm. Flower spikes few, clustered in axils, short, ca 3–5 mm diameter; perianth segments whitish, 1-nerved, apex acute to acuminate, 1.5–3 mm long, ± glabrous. Fruits broadly obovate, apex truncate, 1.25–1.5 mm long.

Weed of the region, usually of disturbed sites, roadsides, creek banks, railway yards. Flowers spring to autumn.

4. *Alternanthera sessilis* (L.) DC.

Gomphrena sessilis L.

Usually decumbent herb, internodes on young growth pubescent, glabrate with age. Leaves with petioles 2–5 mm long; blades obovate or narrowly obovate, apex obtuse or mucronate, base cuneate to attenuate, margin undulate to crisped, 1.2–4.5 cm × 0.7–1.5 cm, green, puberulent below, eventually glabrate. Flowers in axillary sessile spikes ca 5–7 mm diameter, few per axil; perianth segments whitish, 1-nerved, apex acuminate, 2.5–3.5 mm long, very sparsely pilose with smooth multicellular hairs. Fruits pale brownish, broadly obovate, apex ± truncate to retuse, ca 1.5 mm long.

Apparently Old World tropical species, recorded from Gympie and Brisbane areas, not commonly collected.

5. *Alternanthera denticulata* R.Br.

LESSER JOYWEED

Usually prostrate herb, glabrous, or pubescent at nodes with a few scattered hairs on upper internodes. Leaves with petioles 1–4 mm long; blades linear-obovate, narrowly elliptic or narrowly obovate, apex acute or obtuse, base attenuate, margin entire or usually denticulate, 0.7–9 cm × 0.15–1 cm. Flower spikes clustered in axils, short, 3–6 mm diameter; perianth segments whitish, apex acuminate, 1.5–3 mm long, glabrous. Fruits broadly obovate, apex retuse, 1.5–2 mm long. **Fig. 17G.**

Weed usually of damp or swampy low-lying areas, lawns, flood plains, creek banks, melon holes, etc. Flowers spring to autumn.

6. *Alternanthera nodiflora* R.Br.

JOYWEED

Usually prostrate herb, glabrous, or pubescent at nodes with a few hairs scattered on upper internodes. Leaves with petioles up to 4 mm long; blades very narrowly ovate or very narrowly oblong, apex acute or obtuse, mucronate, base attenuate or cuneate, margin entire or denticulate, 1.2–9 cm × 0.15–1 cm. Flower spikes in large clusters in axils, short, 6–10 mm diameter; perianth segments whitish, apex long acuminate, 3.5–5 mm long, glabrous. Fruits compressed, broadly obovoid, apex retuse, 1.5–2 mm long.

Weed of damp or low-lying areas. Flowers mainly spring to autumn.



Fig. 17

AMARANTHACEAE — A-B *Deeringia* spp. — A *D. arborescens*, inflorescence x1; B *D. amarantoides*, part of fruiting inflorescence showing pedicellate fruit and reflexed sepals x1; C-E *Amaranthus* spp. — C₁-C₂, *A. viridus*, C₁ part of fertile stem x½, C₂ fruit x12; D *A. hybridus*, fruit showing circumsessile cap x12; E *A. macrocarpus*, fruit x6; F₁-F₂, *Achyranthes aspera*, F₁ part of inflorescence x1, F₂ fruit x3; G₁-G₂, *Alternanthera denticulata*, G₁ part of fertile stem x1, G₂ fruit x6; H₁-H₂, *Nyssanthes* spp. — H₁-H₂, *N. diffusa*, H₁ part of stem with axillary fruits x1, H₂ fruit x4; I₁-I₂, *N. erecta*, I₁ part of stem with axillary fruits x1, I₂ fruit x4; J *Guilleminea densa*, part of fertile stem x1; K₁-K₂, *Ptilopus polystachyus*, K₁ part of fertile stem x1, K₂ flower x3.

7. **ACHYRANTHES L.**

Erect or ascending terrestrial herbs. Leaves opposite, herbaceous. Inflorescences of terminal or axillary, erect, many-flowered spikes, with only a few flowers open at the same time, flowers bisexual; perianth segments 5, apex very acute; stamens 5, filaments connate, alternating with short, broad pseudostaminodes; ovary glabrous, ovule 1, pendulous from long funicle, style filiform, short, persistent, stigma capitate. Utricles falling off together with perianth and bracteoles, ellipsoid with truncate or depressed apex, thin-walled, indehiscent; seeds erect.

About 100 species, or perhaps 3-5 very variable ones, tropical and subtropical, mostly Africa and Asia; 1 species Australia, occurring in south-eastern Queensland.

1. *Achyranthes aspera* L.

CHAFF-FLOWER

Achyranthes canescens R.Br.; *A. argentea* Decaisne; *A. grandiflora* Moq.

Erect herb up to 1.5 m tall, usually densely pubescent or puberulent with age. Leaves with petioles 0.5-2.5 cm long; blades ovate, obovate or oblong-elliptic, apex acute to obtuse, base cuneate to obtuse, 1.5-13.5 cm × 0.7-6 cm. Spikes terminal, 10-75 cm long, spiny bracteoles appressed against perianth, 2.75-4.5 mm long; perianth segments with acute apex, 3.5-5.5 mm long at anthesis, hardened and becoming pungent, up to 6.5 mm long in fruit, erect initially, to finally reflexed. Utricles 2.5-2.75 mm long. **Fig. 17F.**

Weed mainly of the coastal districts. Flowers and fruits late summer through autumn. Young leaves can be boiled as a green vegetable.

8. **FROELICHIA Moench**

Annual, biennial or perennial herbs, from semi-woody taproots, foliage woolly or silky-appressed pubescent. Leaves opposite, usually ± sessile; blades entire or undulate. Inflorescences dense spikes or panicles, flowers bisexual, inconspicuous; perianth segments 5, woolly, tube longitudinally crested or tubercled at maturity; stamens 5, filaments united into a tube, anthers 1-locular; ovary 1-locular, style short or absent, stigma capitate or brush-like. Utricles indehiscent, enclosed in filament tube, perianth tube forming 2 wings.

About 20 species warm America, Galapagos Is.; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Froelichia floridana* (Nutt.) Moq.

COTTONTAILS

Oplotheca floridana Nutt.

Sparingly branched annual, puberulent or villous with whitish or brownish hairs on upper part of branches. Leaves with petioles 0.1-2.5 cm long, basally dilated; blades elliptic, oblong or obovate, apex obtuse or acute, sometimes mucronate, base cuneate, 2-10 cm × 0.5-4 cm, canescent to subglabrous above, silky-tomentose beneath. Inflorescences elongated panicles up to 40 cm long, of opposite short dense spikes 1-10 cm long, bracts acuminate; perianth white, oblong, deeply dentate, ca 4 mm long, woolly, narrowly winged at maturity. Seeds brown, 1.5 mm long. **Fig. 16I.**

Native of southern U.S.A.; weed of usually disturbed sandy sites in some areas of Darling Downs district. Flowers mainly summer.

9. **GOMPHRENA L.**

Usually annual herbs. Leaves opposite. Inflorescences of terminal, solitary, sessile or subsessile heads or short spikes, receptacle cylindrical or swollen; flowers bisexual, bracts and bracteoles scarious, glabrous, bracteoles boat-shaped, apex acute, often coloured, falling with perianth; perianth segments 5, erect, free, ± pilose or woolly outside; stamens monadelphous, anthers 1-locular; ovary compressed, glabrous, ovule pendulous from long, erect funicle, style short or long, stigmas 2. Utricles compressed, indehiscent.

100 species Central and South America, Australia and Malaysia; 18 native and 1 naturalized species Australia; 1 species south-eastern Queensland.

1. *Gomphrena celosioides Mart. GOMPHRENA WEED; SOFT KHAKI WEED
 Ascending or decumbent annual, stem finely appressed white-pilose. Leaves with petioles 1–10 mm long; blades ovate to oblong-obovate, apex acute or obtuse, base cuneate, 2–6.5 cm × 0.5–2 cm. Inflorescences subglobose spikes, sessile above uppermost pair of leaves, elongating up to *ca* 4 cm long in fruit, bracteoles white, *ca* 6 mm long; perianth segments 4.5–5.5 mm long. **Fig. 16J.**

Native of South America; common weed of the region. Flowers spring to autumn. Can be toxic to horses.

25. CACTACEAE

Highly specialized fleshy perennials of diverse habit: stems terete, globular, flattened or fluted, mostly leafless and variously spiny, spines and flowers always arising from cushion-like axillary areoles. Flowers solitary, rarely clustered, almost always sessile, ± bisexual, usually actinomorphic; perianth segments indefinite in sepaloïd to petaloïd series; stamens numerous, variously inserted in throat and tube, anthers 2-locular; ovary mostly inferior, 1-locular, 3–many parietal placentas, ovules numerous, style 1, stigmas 3–many, variously papillate, rarely 2-fid. Fruits berries, naked, scaly, hairy, bristly or spiny, indehiscent or variously dehiscent; seeds numerous, often arillate or strophiolate, testa variously patterned, embryo mostly curved, cotyledons reduced or vestigial, rarely foliaceous.

84 genera with *ca* 2000 species, mostly in semi-arid regions of tropical and temperate America; 6 genera with *ca* 25 species naturalized Australia, chiefly semi-arid regions of eastern Australia; 6 genera with 12–13 species south-eastern Queensland.

All species of the family Cactaceae have been declared noxious under the Lands Acts of 1962–1965, while **Opuntia** spp. and **Eriocereus** spp. have been declared noxious under the Stock Routes and Rural Lands Protection Acts of 1944–1967.

- | | | |
|---|-------------------------|---|
| 1. Leaves broad, flat, alternate along ± woody stem; flowers pedunculate, often clustered | 1. <i>Pereskia</i> | |
| Leaves rudimentary or absent; stems jointed, succulent; flowers sessile, solitary | | 2 |
| 2. Flowers rotate, without tubes; areoles with glochids | 2. <i>Opuntia</i> | |
| Flowers with definite tubes; areoles without glochids | | 3 |
| 3. Stems with 3–6 broad, thin often crenate ribs | | 4 |
| Stems with 10–15 ribs, or with 5–6 narrow thick ribs with broad gibbosities at intervals | | 5 |
| 4. Areoles with slender spines less than 1 cm long or spineless; stems often with aerial roots | 3. <i>Hylocereus</i> | |
| Areoles with at least some stiff spines 1–5 cm long; stems without aerial roots, though they may root where they touch the ground | 4. <i>Acanthocereus</i> | |
| 5. Stems ± cylindrical in cross-section, with 10–15 ribs; areoles with weak spines or bristles | 5. <i>Nyctocereus</i> | |
| Stems 5–6-angled in cross-section, not cylindrical; areoles with 1–several long rigid spines and a number of smaller radiating spines | 6. <i>Eriocereus</i> | |

1. PERESKIA Miller

Trees, shrubs or scramblers; areoles with spines in pairs or clusters, glochids absent. Leaves somewhat succulent, exstipulate, sessile or petiolate, broad, flat, deciduous. Flowers solitary, subcorymbose or subpaniculate; receptacle not produced into tube beyond ovary, with numerous ± leafy persistent scales, often areolate and spiny; perianth multiseriata, segments ± free, spreading or rotate; stamens numerous; filaments inserted

at base of perianth and shorter than it; ovary superior to inferior; placentas basal or parietal. Fruits pear-shaped or obovoid, fleshy, seeds with black, glossy, brittle testa, cotyledons not succulent, foliaceous.

About 20 species Mexico to South America; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Pereskia aculeata* Miller

BLADE APPLE; LEMON VINE;
BARBADOS GOOSEBERRY

Cactus pereskia L.; *Pereskia pereskia* (L.) L.

Shrub, initially erect, later branches long and clambering; spines on lower parts of stem 1–3 together, slender, straight, spines in leaf axils 2–3, short, recurved. Leaves with petioles up to 5 mm long; blades oblong, narrowly ovate or ovate, apex acuminate, base cuneate to rounded, up to 7 cm × ca 3 cm. Inflorescences paniculate or corymbose; flowers white, pale yellow or pinkish, 2.5–4.5 cm diameter; ovary leafy, often spiny. Fruits light yellow, 1.5–2 cm diameter, smooth when mature.

Native of tropical America; isolated occurrence as garden escape.

2. **OPUNTIA** Miller

Shrubs or trees with fleshy, cylindrical, club-shaped, subglobose, flattened, or rarely ribbed branches; areoles often raised on ± prominent tubercles, with glochids and usually 1–many spines, sometimes sheathed and barbed. Leaves terete or subulate, usually small, caducous. Flowers solitary, sessile, lateral or subterminal; receptacle produced ± beyond ovary, bearing leaf-like scales, areoles, glochids, and often spines; perianth rotate, spreading or erect, inserted at rim of receptacle tube, segments numerous; stamens inserted in throat, often sensitive; ovary inferior. Fruits fleshy or dry, globose or ovoid, areolate, with glochids, sometimes spines; seeds encased in hard white aril, cotyledons fleshy, foliaceous.

150 species, mainly America, ca 17 species naturalized Australia; 6 species south-eastern Queensland.

Species of **Opuntia** are often collectively referred to as PRICKLY PEARS.

Opuntia fruits are edible, and suitable for jams or jelly. The young stem segments are also edible.

- | | | |
|---|-------------------------|---|
| 1. Segments densely velvety pubescent; flowers orange-red | 1. <i>O. tomentosa</i> | 2 |
| Segments glabrous; flowers yellow or dull reddish-purple | | |
| 2. Segments covered with short raised ridges ca 2–2.5 cm long, bearing areole which tuft of spines at or near apex; flowers dull reddish-purple | 2. <i>O. imbricata</i> | 3 |
| Segments ± smooth, flattened, not with raised ridges; flowers yellow | | |
| 3. Segments fragile, readily detached, ± terete at base, dark green | 3. <i>O. aurantiaca</i> | 4 |
| Segments not readily detached, persistent, not ± terete at base, mid-green or light green | | |
| 4. Segments elliptic, with 1–7 stout spines per areole; segments erect | 4. <i>O. stricta</i> | 5 |
| Segments obovate or oblong, usually spineless, or with 1–2 per areole; segments erect or drooping | | |
| 5. Segments erect, ca 1.5–2 cm thick; shrubs | 5. <i>O. inermis</i> | |
| Uppermost segments drooping, ca 4–6 mm thick; shrub often tree-like | 6. <i>O. vulgaris</i> | |

1. **Opuntia tomentosa* Salm-Dyck

VELVETY TREE PEAR

Tree up to 6 m tall, forming central woody trunk; segments dull green, oblong or elliptic, ca 15–35 cm × 8–12 cm, ca 2 cm thick; velvety pubescent; areoles on young parts with 2–4 spines up to 2.5 cm long, older parts spineless or with 1–several short spines. Flowers

deep orange. Fruits dull red, ellipsoid or obovoid, *ca* 5 cm × 3.5 cm, pulp reddish; seeds numerous. **Fig. 18A.**

Native of central Mexico; scattered plants throughout the region, mainly drier parts. Flowers spring-summer. The fruit of this species is better flavoured than most.

2. *Opuntia imbricata (Haw.) DC.

DEVIL'S ROPE

Cereus imbricatus Haw.

Open branching shrub up to *ca* 3 m tall; segments dull green, cylindrical, covered with short raised ridges *ca* 2–2.5 cm long, bearing areole with tuft of 3–11 spines at or near apex; spines 2–3 cm long. Flowers dull reddish-purple, borne at ends of segments; ovary tuberculate. Fruits yellow, 2.5–5 cm diameter, tuberculate with spineless areoles.

Native of northern Central America; recorded from Gladfield, near Warwick.

3. *Opuntia aurantiaca Lindl.

TIGER PEAR

Low, much-branched spreading subshrub; stems ± terete; segments terete particularly near base, 3–12 cm × 1.5–2.5 cm, very fragile; areoles somewhat elevated, white-woolly, spines 2–7, 1–3 cm long. Flowers lemon-yellow, 2.5 cm diameter. Fruits purplish-red, pear-shaped, 2–2.5 cm long, spiny.

Native of Argentina and Uruguay; widely scattered in drier parts of region.

4. *Opuntia stricta Haw.

SPINY PEST PEAR

Shrub up to 1.5 m tall, forming large clumps; segments elliptic, sometimes oblique, commonly 12–20 cm × 5–8 cm, *ca* 2 cm thick; areoles with 1–7 stout spines 2–4 cm long, and short bristles. Flowers yellow. Fruits globose or pear-shaped, *ca* 5 cm × 3–4 cm, with at most shallow depression at apex, pulp rich carmine; seeds numerous.

Native of southern U.S.A. and Cuba; scattered throughout drier parts of region, but mainly in northern parts, e.g. Burnett district; infested *ca* 5 million ha at height of spread.

5. *Opuntia inermis DC.

COMMON PEST PEAR

Spreading shrub up to 1.5 m tall, forming large clumps; segments obovate or oblong, commonly 20–30 cm × 10–15 cm, *ca* 2 cm thick; usually spineless, or with 1–2 per areole, otherwise bristly. Flowers bright lemon-yellow, *ca* 7.5 cm diameter. Fruits purple, ± obovoid, *ca* 7 cm × 4 cm, usually with deep cavity at apex; pulp carmine.

Native of southern U.S.A.; throughout the drier areas of the region. It is the worst weed pest of all the prickly pears. At its peak it infested *ca* 20 million ha of countryside. Flowers spring-summer.

Some authors regard this species and *O. stricta* as all one species, in which case the name *O. stricta* Haw. should be used, since it was published before *O. inermis*.

6. *Opuntia vulgaris Miller

DROOPING TREE PEAR

Opuntia monacantha Willd.

Mostly shrub up to 2 m tall, but often larger, tree-like; segments oblong to obovate, commonly 10–15 cm × 7.5–10 cm, usually 4–6 mm thick, drooping; areoles with 1–2 prominent spines 2–3 cm long. Flowers bright lemon-yellow, *ca* 5 cm diameter. Fruits purplish-red, globose or pear-shaped, *ca* 5 cm × 3.5 cm, pulp rich red.

Native of tropical South America; recorded from the Lowood area.

3. HYLOCEREUS (A. Berger) Britton & Rose

Epiphytes, climbers or scramblers; stems usually 3-winged or 3-angled, margins often horny, often producing aerial roots; areoles producing short spines, rarely spineless. Flowers white, or rarely red, usually very large, nocturnal, funnel-shaped; receptacle tube stout, usually elongated, bearing broad foliaceous scales; stamens very numerous, inserted in tube and throat; stigma lobes sometimes 2-fid or flabellate. Fruits large, globose or ovoid, fleshy, with broad scales; seeds numerous, ovate-reniform in outline, testa shining black, smooth or minutely spotted.

15–20 poorly defined species Central America, West Indies, Venezuela, Columbia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. ****Hylocereus undatus*** (Haw.) Britton & Rose NIGHT BLOOMING CACTUS
Cereus undatus Haw.

Stems long, climbing; ribs green, mostly 3, broad, thin, margin usually strongly undulate, \pm horny; areoles 3–4 cm apart with 1–3 spines 2–4 mm long. Flowers white, up to 30 cm long. Fruits red, oblong, 10–12 cm diameter. **Fig. 18C.**

Native of tropical and subtropical areas; recorded as naturalized near Biggenden and Brisbane, possibly sporadic occurrence elsewhere near habitation. Fruits edible.

4. **ACANTHOCEREUS** (A. Berger) Britton & Rose

Weak elongated, many-jointed cacti, at first erect, but soon clambering or trailing; joints usually strongly 3-angled, sometimes 4–5-angled; areoles bearing short wool or felt and several stiff spines. Flowers nocturnal, funnel-shaped, 1 per areole; floral tube remaining rigid after anthesis, gradually drying, persistent on fruit, bearing a few areoles similar to those of branches, subtended by small scales; limb somewhat shorter than tube, widely expanded, outer perianth segments green, very narrowly ovate to linear, apex acuminate, shorter than the white inner segments; stamens not extending as far as perianth segments, attached all along upper half of tube, or throat; style very slender, divided apically into several linear stigmatic lobes. Fruits spiny or naked, with thick dark red skin breaking irregularly from top downwards, pulp red; seeds black, numerous.

7 species, tropical and subtropical, semi-arid America; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. ****Acanthocereus pentagonus*** (L.) Britton & Rose SWORD PEAR
Cactus pentagonus L.

Stems clambering, at length arching and rooting at tips; joints 3–5-angled, margin low crenate, 3–8 cm broad; areoles on normal branches 3–5 cm apart, radial spines 6–7, rarely up to 12, 1–4 cm long, central spine often solitary, longer than radials. Flowers 14–20 cm long, tube and ovary bearing conspicuous areoles with brown felt and several subulate spines. Fruits oblong.

Native of southern U.S.A. and Central America; reported from the Gayndah area; a pest of Gogango region near Rockhampton. Flowers spring–summer. Fruits edible.

5. **NYCTOCEREUS** (A. Berger) Britton & Rose

Shrubby or clambering, with rather slender, cylindrical ribbed stems; areoles woolly with small radiating acicular bristles or weak spines. Flowers white, nocturnal, funnel-shaped; receptacle tube \pm elongate, bearing small scales with woolly areoles and bristly spines; perianth segments elongate, spreading; stamens inserted in throat and tube. Fruits globose or ovoid, fleshy, spiny; seeds large, testa shiny black, smooth.

5–6 species Mexico, Guatemala, Nicaragua; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. ****Nyctocereus serpentinus*** (Lag. & L. Rodr.) Britton & Rose SNAKE CACTUS
Cactus serpentinus Lag. & L. Rodr.

Stems clustered, at first erect, later creeping or clambering, 10–13-ribbed, low and rounded, 2–5 cm diameter; areoles close together, felty, spines *ca* 12, acicular, up to 3 cm long. Flowers white, borne at upper areoles, 15–19 cm long, limb 8 cm broad. Fruits red, 4 cm long, spines deciduous; seeds few per fruit, *ca* 5 mm long.

Native of Mexico; occurring sporadically in southern areas. Flowers summer.

6. **ERIOCEREUS** (A. Berger) Riccob.

Stems slender, branched, branches fluted or angled; areoles with several acicular spines. Flowers solitary, borne near ends of branches, large, nocturnal, funnel-shaped; tube cylindrical, scaly, scales subtending areoles bearing tufts of hairs, outer perianth segments mostly pink or greenish, inner white or pinkish; stamens shorter than perianth; ovary and young fruit tubercled. Fruits globose to ovoid-globose, spineless or spiny, or with small deciduous scales, splitting at maturity, perianth withering-persistent; seeds numerous, small.

7-8 species Brazil to Argentina; 2-3 species naturalized Australia, occurring in south-eastern Queensland.

- | | |
|---|------------------------|
| 1. Ribs on branches strongly tuberculate or gibbous | 1. <i>E. martinii</i> |
| Ribs not tuberculate, or only slightly so | 2. <i>E. tortuosus</i> |

1. ***Eriocereus martinii** (Labouret) Riccob.

HARRISIA CACTUS

Cereus martinii Labouret

Much-branched clambering shrub; some roots tuberous; older stems terete, spineless, young stems vigorous, 5-6-angled, strongly tuberculate; areoles with 1-3 stout central spines 2-3 cm long, surrounded by 3-5 shorter radial ones. Flowers white or pinkish, ca 20 cm long; ovary tuberculate, scales acuminate, brown felt in axils. Fruits red, ± globose, 3.5-6 cm diameter, with small scales and 3-5 spines on areoles. **Fig. 18B.**

Native of Argentina; distributed throughout the region; the main infestation covered much valuable brigalow land near Collinsville.

A very closely related species *E. regelii* (Weingart) Backels (*Cereus regelii* Weingart) has been recorded from the Jandowie district. It has 4-5-ribbed stems with shallow gibbositities, and fruit without spines or tubercles, and is very difficult to distinguish from *E. martinii*, as descriptions in the literature have been confused.

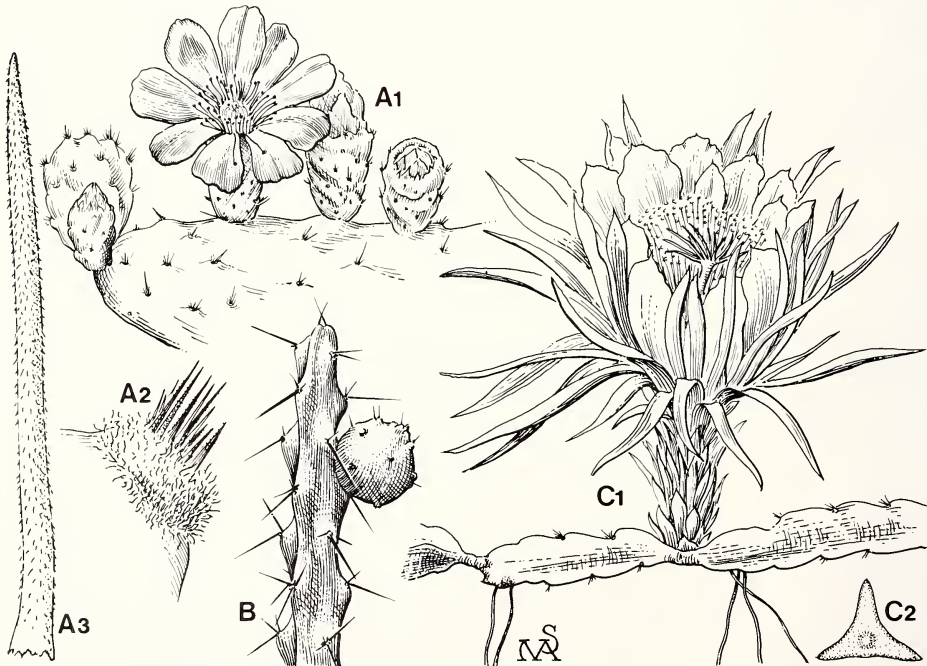


Fig. 18 CACTACEAE - A, A, *Opuntia tomentosa*, A, flowering stem $\times 2/9$, A₂, areole with glochids $\times 8$, A₃, glochid showing barbs $\times 33$; B *Eriocereus martinii*, stem with fruit $\times 2/9$; C₁-C₂ *Hylocereus undatus*, C₁, stem with flower $\times 2/9$, C₂, T.S. of stem $\times 1/2$.

2. **Eriocereus tortuosus* (Forbes ex Otto & Dietr.) Riccob. HARRISIA CACTUS
Cereus tortuosus Forbes ex Otto & Dietr.

Some roots tuberous; stems initially erect, soon arching, ribs usually 7, low, rounded, sometimes shallowly tuberculate, spines 1-3 central, stout, 8-10 radial. Flowers white or pinkish, 12-15 cm long; ovary only slightly tuberculate, scales acute, brown felt in axils. Fruits red, \pm globose, up to 7 cm diameter, slightly tuberculate with 2-7 spines on areoles.

Native of Argentina; recorded from Millmerran and Toowoomba areas of the Darling Downs district.

A number of other species are cultivated and may have become garden escapes at some stage. These include *Opuntia streptacantha* Lemaire, *O. ficus-indica* (L.) Miller, *O. elatior* Miller, *O. dillenii* (Ker.-Gawl.) Haw., *O. sulphurea* G. Don, *O. subulata* Engelm., *Nopalea cochenillifera* (L.) Salm-Dyck, *Echinopsis multiplex* (Pfeiffer) Zucc. and *Cleistocactus baumannii* Lemaire. Further information may be obtained from 'Cacti Naturalized in Australia and their Control' by John Mann, Dept. Lands, Qd. (1970).

26. HIMANTANDRACEAE

Aromatic trees covered with peltate scaly indumentum. Leaves alternate, exstipulate, entire, pellucid-dotted. Flowers solitary or paired on short axillary branches, bisexual, initially involucre by 2 calyptiform, leathery, deciduous sepals; inner sepals 1 within the other; petals *ca* 7; stamens petaloid, *ca* 40, with anther-loculi separated on each side towards the base, staminodes several, subulate; carpels 7-10, contiguous, \pm free, 1-locular. Fruits globose, fleshy, 7-10-locular by the coalescence of the carpels; seeds pendulous.

1 genus with 2-3 species north-eastern Australia, New Guinea, Moluccas; 1 species Australia, occurring in south-eastern Queensland.

1. GALBULIMIMA F. M. Bailey

Characters of the family.

1 species south-eastern Queensland.

1. *Galbulimima belgraveana* (F. Muell.) Sprague

Himantandra belgraveana F. Muell.; *Galbulimima baccata* F. M. Bailey; *Himantandra baccata* (F. M. Bailey) Diels

Tree. Leaves with petioles 0.8-2 cm long; blades oblong to narrowly ovate, apex subacute to shortly acuminate, base acute to attenuate, 7-11.5 cm \times 2-4 cm, rusty-lepidote beneath. Flowering shoots up to 2 cm long; calyx up to 1.5 cm long; stamens 0.6-1.5 cm long. Fruits reddish, up to 2 cm diameter. **Fig. 19B.**

Uncommon, in rainforest of coastal districts. Flowers spring.

27. WINTERACEAE

Trees or shrubs with alternate, exstipulate, aromatic, pellucid-dotted leaves. Flowers small, mostly cymose or fasciculate, bisexual; sepals 2-6, free and valvate, or united; petals 2- or more-seriate, mostly conspicuous in bud, imbricate; stamens several, hypogynous; carpels 1-several \pm in a single whorl, free or partly united, 1-many-ovuled, stigma sessile or styles distinct. Fruits dehiscent or berries.

9 genera with 120 species, Malaysia to the Pacific, eastern Australia, New Zealand, Central and South America; 2 genera with 8 species Australia; 1 species south-eastern Queensland.

1. TASMANNIA R.Br. ex DC.

Flowers in apparently terminal umbels; unisexual or bisexual; sepals 2-3, connate into a cap; petals 2-3; male flowers with 30-40 stamens, sometimes with 1-few sterile carpels; female flowers with 1-9 free carpels, ovules several per carpel, stigma longitudinal. Fruits berries.

About 40 species Borneo, New Guinea, New Caledonia, Australia, New Zealand; 6 species endemic to Australia; 1 species south-eastern Queensland.

1. *Tasmannia insipida* R.Br. ex DC.

PEPPER BUSH

Drimys insipida (R.Br. ex DC.) Pilger; *Drimys dipetala* (R.Br.) F. Muell.

Shrub. Leaves with petioles 1-5 mm long; blades narrowly elliptic to obovate, apex acuminate or acute, base truncate and slightly auriculate, 4-21 cm × 0.5-5 cm. Flowers on peduncles 1-3.5 cm long. Fruits often purplish, ovoid, up to 2 cm long, fleshy. **Fig. 19A.**

Usually in or near rainforest throughout the region. Flowers mainly spring. Fruits edible; flesh insipid, seeds very hot flavour.

28. ANNONACEAE

Trees, shrubs or climbers; branchlets usually zig-zag, lenticellate. Leaves alternate, ex-stipulate, petiolate, entire. Flowers bisexual, hypogynous; sepals 3, free or partly united; petals 6 in 2 series, free or connate; stamens numerous, spirally arranged, filaments short, anthers 2-locular, opening lengthwise; carpels usually numerous, ovules 1-several per carpel, basal or parietal, styles short, thick, stigmas usually capitate or oblong. Fruits dry or fleshy, indehiscent, usually stipitate.

About 120 genera with 2100 species, chiefly tropical; 12 genera with 21 species Australia; 4 genera with 4 species south-eastern Queensland.

- | | | |
|---|------------------------|---|
| 1. Flowers leaf-opposed or pseudo-terminal; sparse stellate pubescence on branchlets and reproductive parts | 1. <i>Rauwenhoffia</i> | 2 |
| Flowers axillary; pubescence of simple hairs, or glabrous | | |
| 2. Petals ± glabrous; fruits ovoid or globular, 1-seeded | 2. <i>Polyalthia</i> | 3 |
| Petals pubescent; fruits ± cylindrical, few- to several-seeded | | |
| 3. Fruits ± glabrous at maturity; inner petals not clawed; leaves ± glabrous beneath | 3. <i>Fissistigma</i> | |
| Fruits densely pubescent at maturity; inner petals shortly clawed, callose; leaves rusty pubescent beneath, particularly on veins | 4. <i>Fitzalania</i> | |

1. RAUWENHOFFIA Scheffer

Climbing shrubs or vines, young parts with stellate hairs. Leaves glabrous or with sparse stellate pubescence. Sepals valvate; petals thick, outer broadly ovate, open, inner much narrower, valvately connivent; stamens numerous; ovules several per carpel, stigmas large. Fruits stipitate.

5 species Indochina to New Guinea and eastern Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Rauwenhoffia leichhardtii* (F. Muell.) Diels

Unona leichhardtii F. Muell.; *Melodorum leichhardtii* (F. Muell.) Benth.

Leaves oblong, apex acuminate, 5-14 cm × 2-5 cm. Flowers dark, dull yellowish, solitary or paired, stellate-pubescent, peduncle 1.2-2.5 cm long; sepals broadly triangular, 2-3

mm long; outer petals 0.8–1.1 cm long, inner *ca* 7 mm long. Fruiting peduncles 2–3 cm long; stipes 0.9–1.4 cm long; fruits yellow, irregularly constricted between the 1-several seeds, up to 2.5–3 cm long. **Fig. 19E.**

Mainly depauperate rainforests throughout the region, often at the bases of cliffs. Flowers spring–summer. Fruits with edible, soft pulp.

2. POLYALTHIA Blume

Trees or shrubs. Flowers axillary in Australian species; sepals valvate or slightly imbricate; petals valvate, flat, subequal; stamens numerous; carpels numerous, ovules 1 or 2, erect, style oblong. Fruits stipitate, globose or oblong, 1-seeded.

About 90 species chiefly Old World tropics; 5 species Australia; 1 species south-eastern Queensland.

1. *Polyalthia nitidissima* (Dunal) Benth.

Unona nitidissima Dunal

Leaves narrowly ovate to ovate, apex acuminate, 8–13 cm × 2.5–5 cm, ± glabrous. Flowers yellowish, solitary or paired, peduncle 1–1.5 cm long; sepals triangular, 1–1.25 mm long; petals narrowly ovate, 1–1.6 cm long. Fruiting peduncles 1–1.5 cm long; stipes 3–6 mm long; fruits bright red, ovoid, 7.5–9 mm × 6–6.5 mm, glabrous, fleshy. **Fig. 19D.**

Closed forests of the region. Flowers summer.

3. FISSISTIGMA Griff.

Climbing shrubs. Flowers in Australian species solitary, axillary, pubescent; sepals valvate; petals valvate, outer narrowly ovate, inner subsimilar, smaller; stamens numerous; carpels usually numerous, ovules 2 or more, or 2-seriate, style oblong. Fruits stipitate, spherical or ovoid; seeds numerous.

About 70 species eastern India to north-eastern Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Fissistigma stenopetala* (F. Muell.) R. E. Fries

Ancana stenopetala F. Muell.

Leaves narrowly ovate, apex acuminate, 7–12 cm × 1.5–3 cm. Flowers cream with reddish base, peduncle 3–5 mm long; sepals broadly ovate, apex acuminate, 4–5 mm long; outer petals usually 2–3.5 cm long, inner $\frac{3}{4}$ the length. Fruiting peduncles 4–5 mm long, stipes 2–3 mm long, fruits cylindrical, up to 3 cm long, verrucose, ± glabrous at maturity; seeds usually several. **Fig. 19F.**

In and near rainforests of Gold Coast hinterland and McPherson Ra. Flowers summer–autumn.

4. FITZALANIA F. Muell.

Shrubs or small trees, subscaudent. Flowers axillary, solitary, subsessile; sepals small, distinct, valvate, deciduous; petals hypogynous, outer conspicuously longer than inner, outer with lower part ± valvate, upper part open, inner imbricate; stamens indefinite, connective terminated by a short broad appendage; torus tomentose; carpels numerous, free, 6–8 ovuled, stigma subsessile, depressed. Fruits cylindrical or globose-ovoid, dry, indehiscent, 2–few-seeded.

1 species Australia, occurring in south-eastern Queensland.



Fig. 19

A WINTERACEAE - A₁-A₃, *Tasmannia insipida*, A₁, part of flowering stem $\times \frac{3}{4}$, A₂, flower $\times 1 \frac{1}{2}$, A₃, fruit $\times 1$; B HIMANTANDRACEAE - B₁-B₂, *Galbulimima belgraveana*, B₁, part of flowering stem $\times \frac{3}{4}$, B₂, fruit $\times 1$; C EUPOMATIACEAE - C₁-C₂, *Eupomatia laurina*, C₁, part of flowering stem $\times 1$, C₂, fruit $\times 1$; D-F ANNONACEAE - D₁-D₂, *Polyalthia nitidissima*, D₁, part of flowering stem $\times \frac{3}{4}$, D₂, fruit $\times 1$; E₁-E₂, *Rauwenhoffia leichhardtii*, E₁, part of flowering stem $\times 1$, E₂, fruit $\times \frac{3}{4}$; F₁-F₂, *Fissistigma stenopetala*, F₁, part of flowering stem $\times 1$, F₂, fruit $\times 1$.

1. *Fitzalania heteropetala* (F. Muell.) F. Muell.*Uvaria heteropetala* F. Muell.; *Saccopetalum bidwillii* auct. non Benth.

Shrub or tree. Leaves broadly oblong to oblong-obovate, apex obtuse or abruptly acuminate, base obtuse, 4–13 cm × 2.5–5.5 cm, puberulent below with long silky hairs, especially on nerves. Flowers described as dark purple, rusty-pubescent; sepals narrowly triangular, 5–6 mm long; petals ovate, outer sessile, 2–2.5 cm long, leathery, inner clawed, claw *ca* 3 mm long, blade 5–10 mm long, fleshy, very concave, 2 callosities in lower part; anthers *ca* 1 mm long, connective with broad triangular appendage across apex of anthers. Fruiting peduncles 4–6 mm long; stipes ± absent; fruits cylindrical to ovoid, up to 2.5 cm long, rusty-tomentose; seeds few to several.

Coastal rainforest from the vicinity of Maryborough northwards. Flowers probably late spring to early summer.

29. EUPOMATIACEAE

Shrubs. Leaves alternate, exstipulate, simple, entire, ± glabrous. Flowers solitary, bisexual, perigynous; sepals and petals not differentiated, but united into a deciduous cap on the rim of the expanded torus; stamens in several series, inner sterile and petaloid, outer with two linear extrorse anther loculi and acuminate connective; carpels numerous, immersed in receptacle, ovules *ca* 3 per carpel, style connate. Aggregate fruits drupaceous, top truncate, remains of perianth present; true fruits are 1–2-seeded achenes immersed in the enlarged receptacle; seeds irregularly angular, pitted.

1 genus with 2 species, easter; Australia and New Guinea, both occurring in south-eastern Queensland.

1. EUPOMATIA R.Br.

Characters of the family.

2 species south-eastern Queensland.

1. Shrub up to 1 m tall; petioles decurrent on stem; flowers terminal;
 aggregate fruit turbinate
 Shrub or small tree; petioles not decurrent; flowers axillary; aggregate
 fruit urceolate

1. *E. bennettii*
 2. *E. laurina*

1. *Eupomatia bennettii* F. Muell.*Eupomatia laurina* auct. non R.Br., Hook.

Roots fleshy, tuber-like. Leaves oblong or narrowly obovate, apex abruptly acuminate, 8.5–18 cm × 2.5–4.5 cm. Flowers up to *ca* 2.5 cm diameter; stamens 6–10 mm × 2–3 mm, staminodes 7–10 mm × 3–4 mm, occasionally much larger, reflexed and covering the stamens. Aggregate fruits up to *ca* 3 cm diameter, 1–1.5 cm deep.

In or near rainforests of the region. Flowers spring or early summer.

2. *Eupomatia laurina* R. Br.

NATIVE GUAVA

Roots fibrous. Leaves oblong to obovate, apex acuminate, 7–16 cm × 2.5–5.5 cm. Flower peduncles *ca* 7 mm long, flowers up to *ca* 2 cm diameter; stamens 0.7–1.2 cm × 0.1 cm, staminodes 5–10 mm × 2–3 mm, not concealing the reflexed anthers. Aggregate fruits up to *ca* 2 cm diameter, 1.5 cm deep, peduncle *ca* 1 cm long. **Fig. 19C.**

In or near rainforests of the region. Flowers spring–summer. Pulp of ripe fruit sweet, edible.

30. TRIMENIACEAE

Trees, shrubs or climbers. Leaves alternate or opposite, exstipulate, simple, entire or dentate. Flowers small, arranged in axillary or terminal racemes or panicles, unisexual or bisexual, bracts small or absent; perianth segments 6 or 4, 2-1-seriate, imbricate; stamens free, numerous to 6, anthers opening by slits lengthwise, loculi parallel; ovary superior, 1-2-locular, ovule solitary, pendulous, anatropous, stigma sessile. Fruits baccate; seeds compressed.

4 genera with 13-14 species tropical and southern Africa, New Guinea, New Caledonia, Fiji, eastern Australia; 2 genera with 2 species Australia; possibly 1 genus with 1 species south-eastern Queensland.

1. PIPTOCALYX Oliver ex Benth.

Scandent shrubs or climbers. Leaves opposite, entire. Inflorescences of simple racemes; perianth segments 6, 2-seriate; stamens numerous; ovary 1-locular.

2 species New Guinea, eastern Australia; 1 species restricted to north-eastern New South Wales, possibly also south-eastern Queensland.

1. *Piptocalyx moorei* Oliver

Woody climbers; branches and inflorescences rusty-pubescent. Leaves with rusty-pubescent petioles 0.4-2 cm long; blades ovate, apex acuminate, base obtuse, margin entire or obscurely crenate, 2.5-10 cm × 1.3-4.5 cm, rusty-pubescent on main veins beneath, gland-dotted. Terminal flower of racemes bisexual, lower flowers usually male but occasionally bisexual, opposite on rachis; perianth segments 2-3 mm long; bisexual and male flowers with 6-15 stamens. Fruits 1-seeded berries.

Rainforest and margins at higher altitudes, often in or on margins of *Ceratopetalum apetalum* (COACHWOOD) forests along or just south of Queensland-New South Wales border. Flowers early summer.

31. MONIMIACEAE

Trees or shrubs, rarely climbers, usually fragrant. Leaves usually opposite, exstipulate, pellucid-dotted. Inflorescences of axillary, rarely terminal, cymes or racemes, rarely flowers solitary; flowers bisexual or unisexual, usually actinomorphic; perianth with 4-many often connivent teeth or lobes in 2-many series, imbricate, equal, or outer sepaloid, inner petaloid, rarely absent (often bud opening by throwing off the outer ends of the lobes like a lid); disc adnate to perianth-tube; stamens various in 2-many series, filaments very short, anthers erect, 2-locular, opening by longitudinal slits; female flowers with or without staminodes; carpels superior, usually several, 1-locular, ovule solitary, basal, erect. Carpels separate in fruit, sometimes enclosed by enlarged perianth, indehiscent, often drupaceous; seeds erect.

20 genera with 150 species chiefly subtropical, especially in Madagascar, Australia, Polynesia; 8 genera with ca 18 species Australia; 3 genera with 5 species south-eastern Queensland.

- | | |
|---|---------------------|
| 1. Fruits enclosed by expanded fleshy hypanthium, producing an aggregate fruit; woody climbers or scandent shrubs | 1. <i>Palmeria</i> |
| Fruits not enclosed by hypanthium, free on receptacle; shrubs or small trees | 2 |
| 2. Perianth segments 6-10 in 1 whorl; leaves soft, veins not tough | 2. <i>Hedycarya</i> |
| Perianth segments 4, rarely 8 by duplication on the inside; leaves rigid, with prominent, usually raised, tough veins | 3. <i>Wilkiea</i> |

1. PALMERIA F. Muell.

Woody climbers or scandent shrubs. Leaves entire. Inflorescences axillary racemes; flowers small, unisexual; male flowers with perianth hemispherical with 5 inflexed lobes, anthers \pm sessile, numerous; female flowers with perianth \pm globular, lobes absent, carpels numerous, glabrous, with filiform styles protruding through small perianth orifice. Fruiting perianths enlarged, fleshy, enclosing drupaceous fruits, at length splitting.

20 species south-eastern Asia to Australia; 3 species endemic to Australia; 1 species south-eastern Queensland.

1. *Palmeria scandens* F. Muell.

Young branches and leaves \pm tomentose with simple and stellate hairs. Leaves with petioles 0.5–1.2 cm long; blades ovate or elliptic, apex acuminate, base \pm rounded, 4–12 cm \times 1.5–6 cm. Inflorescences densely tomentose; male flowers 3–4 mm diameter; female flowers 2–3 mm diameter. Fruiting perianths 1.5–2 cm diameter, splitting to expose \pm globular fruits 5–7 mm diameter. **Fig. 20B.**

Uncommon, rainforest mainly of coastal areas. Flowers winter.

2. HEDYCARYA J. R. & G. Forster

Shrubs or trees. Leaves serrate or entire. Inflorescences short, axillary, raceme-like cymes or panicles; flowers unisexual; receptacle hemispherical or flat, with 6–10 inflexed perianth segments; male flowers with anthers numerous, \pm sessile; female flowers without staminodes, carpels numerous, styles short, thick. Fruiting carpels drupaceous, crowded, seeming almost coherent in smaller fruits.

21 species western Pacific Is. and Australia; 2 species endemic to Australia; 1 species south-eastern Queensland.

1. *Hedycarya angustifolia* Cunn.

Tall shrub or tree. Leaves with petioles 0.5–3 cm long; blades ovate or elliptic, apex acuminate, base rounded or cuneate, margin serrate, 4–13 cm \times 1.5–6 cm, pubescent beneath with simple hairs, or glabrous, often glaucous. Inflorescences densely tomentose; male flowers 5–7 mm diameter; female flowers 4–5 mm diameter. Aggregates of fruits on discs compressed-globular, up to 10 mm diameter, each drupe ovoid, *ca* 3 mm long. **Fig. 20A.**

Higher altitude rainforests of region. Flowers late winter to spring.

3. WILKIEA F. Muell.

Trees or shrubs. Leaves entire or toothed. Inflorescences of axillary or terminal cymes or panicles; flowers unisexual; perianth ovoid-globular, nearly closed by 4, rarely 8, short, connivent lobes or teeth, usually inflexed; stamens in male flowers *ca* 8–30, all fertile, irregularly lining perianth-tube; female perianth circumcising after flowering, staminodes absent, carpels numerous, covering receptacle. Fruiting carpels drupaceous, few to several, sessile or stipitate, not closely appressed, not enclosed in hypanthium.

About 6 species endemic to Australia; 3 species south-eastern Queensland.

- | | |
|---|----------------------------------|
| 1. Whole inflorescence densely silky-pubescent; male flowers with 8 perianth lobes and <i>ca</i> 30 stamens; leaves with 10–16 pairs main primary lateral veins | 1. <i>W. austroqueenslandica</i> |
| Inflorescences usually \pm glabrous (rarely a few hairs in <i>W. huegeliana</i>); male flowers with 4 perianth lobes and <i>ca</i> 8 stamens; leaves with 5–8 pairs main primary lateral veins | 2 |
| 2. Whole plant glabrous; finest leaf reticulation usually \pm obscure; fruiting receptacles 3–8 mm diameter, carpels <i>ca</i> 15 | 2. <i>W. macrophylla</i> |
| At least carpels and female receptacle and often young leaves pubescent; finest leaf reticulation prominent; fruiting receptacles 0.7–1.2 cm diameter, carpels 20–30 | 3. <i>W. huegeliana</i> |

1. *Wilkiea austroqueenslandica* Domin

Shrub. Leaves with petioles 1–2 cm long; blades oblong or elliptic, apex usually acute, base cuneate, margin entire or with short teeth, 6–18 cm × 2.5–8 cm, glabrous, thinly coriaceous. Male flowers 4–5 mm diameter; female flowers 5–7 mm diameter. Fruiting carpels black, *ca* 15, ovoid, up to 2.2 cm long, disc 1–1.2 cm diameter.

Rare, recorded from rainforest of Gold Coast and hinterland, and McPherson Ra. Flowers early spring–summer.

2. *Wilkiea macrophylla* (Cunn.) A. DC.

Hedycarya macrophylla Cunn.; *Kibara macrophylla* (Cunn.) Benth.

Shrub or small tree. Leaves with thick petioles 3–10 mm long; blades narrowly elliptic, obovate or broadly oblong, apex acute to obtuse, base cuneate to subcordate, margin entire or with teeth up to *ca* 2 mm long, 8–25 cm × 3–11 cm, thickly coriaceous. Male flowers 2–3 mm diameter; female flowers 4–5 mm diameter. Fruiting carpels black, ovoid, up to 1.8 cm long. **Fig. 20C.**

Common throughout the area in rainforest. Flowers summer.

3. *Wilkiea huegeliana* (Tul.) A. DC.

Mollinedia huegeliana Tul.

Shrub or small tree. Leaves with petioles 0.5–1.2 cm long; blades narrowly oblong to elliptic, apex acute, base cuneate, margin entire or with teeth occasionally up to 2 mm long, 5–15 cm × 1.3–6 cm, thickly coriaceous. Male flowers 3–4 mm diameter; female flowers 5–6 mm diameter. Fruiting carpels black, ovoid, up to 1.5 cm long.

Common in coastal rainforest. Flowers spring–summer.

32. ATHEROSPERMATACEAE

Trees or shrubs, usually fragrant; medullary rays of wood usually narrow. Leaves opposite, exstipulate, usually pellucid-dotted. Inflorescences of usually axillary cymes, panicles or solitary flowers; flowers bisexual or unisexual, actinomorphic; perianth of 4–many often connivent teeth or lobes in 2–many series, rarely absent; disc adnate to perianth tube; stamens various in 1–2 series, filaments very short, anthers 2-locular, opening from the base upwards in convex valves; female flowers with or without staminodes, carpels superior, usually several, 1-locular, ovule solitary, pendulous or erect. Fruiting carpels separate or enclosed by enlarged perianth, indehiscent, often drupaceous.

5 genera with *ca* 12 species New Guinea to New Zealand, Mexico to Chile, western tropical Africa; 3 genera with 7 species Australia; 2 genera with 3 species south-eastern Queensland.

- | | |
|--|----------------------|
| 1. Inflorescences 3-, rarely 2-flowered; perianth segments 4–6; bark on trunk with strong sassafras odour when cut | 1. <i>Doryphora</i> |
| Inflorescences 5- or more-flowered; perianth segments 10–15; bark on trunk with, at most, a slight aromatic odour when cut | 2. <i>Daphnandra</i> |

1. DORYPHORA Endl.

Highly aromatic trees. Inflorescences 3-flowered cymes initially enclosed by 2 valvate, deciduous bracts; flowers bisexual; perianth segments 4–6 in 2 whorls; stamens usually 6, connective produced into a long terminal subulate appendage, staminodes 6–12; carpels several, pubescent, style attached laterally, plumose, persistent and enlarging in fruit. Fruiting carpels enclosed by enlarged hypanthium which splits at maturity.

2 species endemic to Australia; 1 species south-eastern Queensland.

1. *Doryphora sassafras* Endl.

SASSAFRAS

Young shoots and inflorescences densely silky-pubescent, otherwise plant glabrous. Leaves with petioles 0.5–1.5 cm long; blades narrowly elliptic, apex bluntly acuminate, base cuneate, margin \pm coarsely serrate, 4–13 cm \times 1.5–5.5 cm. Perianth segments white, 6, narrowly ovate, 0.8–1.2 cm long. Fruiting hypanthium ovate, *ca* 1.2 cm long. **Fig. 20E.**

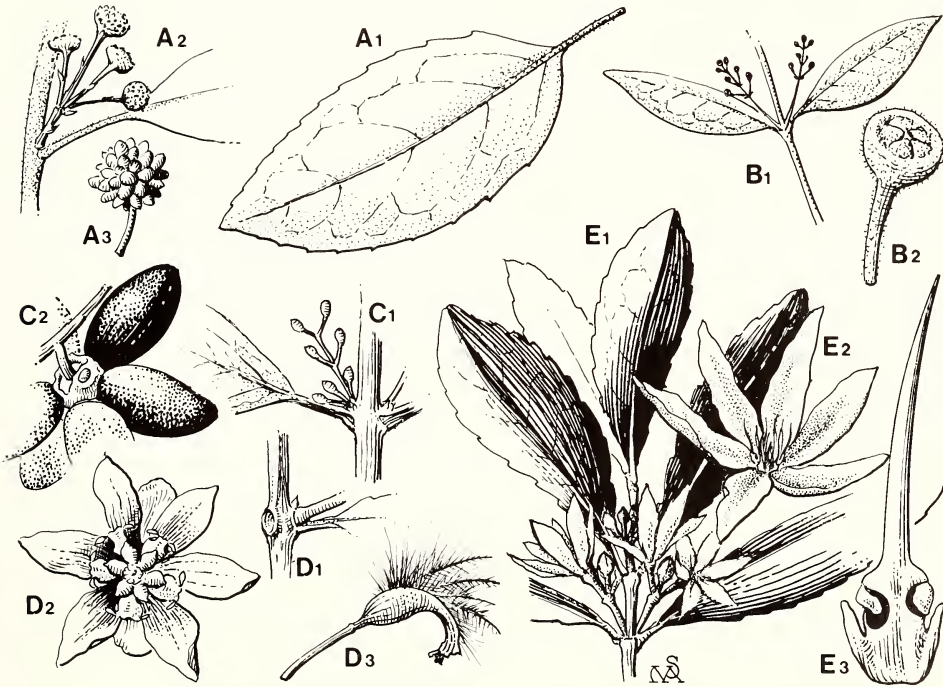
Common in rainforest of McPherson Ra., Mt. Tamborine, etc. and southernmost areas of Great Dividing Ra. Flowers late winter to early spring. Has been used for general indoor building.

2. DAPHNANDRA Benth.

Inflorescences axillary panicles, rarely reduced to racemes; flowers bisexual; perianth segments *ca* 15 in 3 whorls; stamens 4–5, connective broad, truncate, staminodes usually 6, minute; carpels numerous, pubescent, tapering into a terminal plumose persistent style. Fruiting carpels dry, pubescent, enclosed by enlarged hypanthium which splits at maturity.

5 species New Guinea, Australia; 4 species Australia; 2 species south-eastern Queensland.

1. Flowers white, on pedicels 2–5 mm long; hypanthium green, tinged with red when ripe; tree of rainforests of the region
Flowers pinkish to red, on pedicels 2–8 mm long; hypanthium orange-red when ripe; shrub or small tree restricted to high altitude rainforests of the McPherson Ra.

1. *D. micrantha*2. *D. tenuipes***Fig. 20**

A-C MONIMIACEAE – A₁-A₃, *Hedycarya angustifolia*, A₁, leaf $\times 1/2$, A₂, inflorescence $\times 1$, A₃, fruit $\times 1$; B₁-B₂, *Palmeria scandens*, B₁, part of flowering stem $\times 1/4$, B₂, flower $\times 3$; C₁-C₂, *Wilkiea macrophylla*, C₁, part of flowering stem $\times 1$, C₂, fruit $\times 2/3$; D-E ATHEROSPERMATACEAE – D₁-D₃, *Daphnandra micrantha*, D₁, branchlet showing "socket" joint $\times 1$, D₂, flower $\times 6$, D₃, fruit $\times 1$; E₁-E₃, *Doryphora sassafras*, E₁, part of flowering stem $\times 3/5$, E₂, flower $\times 1$, E₃, stamen $\times 4$.

1. *Daphnandra micrantha* (Tul.) Benth.

SOCKETWOOD

Atherosperma micranthum Tul.

Tree up to 35 m tall; branchlets sometimes with enlarged nodes. Leaves with petioles 3–9 mm long; blades very narrowly ovate to ovate, apex acute to acuminate, base cuneate to obtuse, margin serrate, serrations often hooked, 3–11 cm × 0.8–4 cm. Inflorescences generally small panicles, pedicels 2–5 mm long; perianth segments whitish, ca 10–12, 0.5–3.5 mm long, inner longest. Fruiting hypanthiums narrowly ovoid, 0.7–1.2 cm long, crowned by persistent perianth segments; carpels crowned by persistent plumose style. **Fig. 20D.**

Rainforest of the coastal districts and Great Dividing Ra. Flowers spring–summer. Timber suitable for plywood, furniture, joinery, cases, etc. The common name results from the manner in which the branches often break at the joints, revealing a ball-and-socket-like fracture.

2. *Daphnandra tenuipes* Perkins

Shrub or small tree. Leaves with petioles 3–7 mm long; blades narrowly elliptic to narrowly ovate, apex long acuminate, rarely acute, base cuneate, margin shallowly, irregularly toothed, often entire towards base, 4–11 cm × 1.2–3.5 cm. Inflorescences small panicles, sometimes reduced to racemes, pedicels 2–8 mm long; perianth segments pale maroon, 13–15, 1–4 mm long, inner longest. Fruiting hypanthiums ± ovoid, 0.8–1.4 cm long, crowned by persistent perianth segments; carpels crowned by persistent plumose style.

Rainforest of McPherson Ra. Flowers autumn–winter.

33. LAURACEAE

Evergreen trees or shrubs, rarely twining parasitic herbs, all parts with aromatic oil glands. Leaves alternate, rarely ± opposite, exstipulate, entire, coriaceous. Inflorescences paniculate, racemose or capitate; flowers small, bisexual or, by abortion, unisexual, actinomorphic, usually 3-merous; perianth segments partly united or free, rotate funnel-shaped or urceolate, with usually 6 or 4 segments in 2 whorls, tube either deciduous or variously enclosing fruit, or adnate to ovary; stamens attached to throat of tube, in 4 whorls, usually innermost reduced to staminodes, rarely the 2 outer also, filaments usually with 2 ± stalked glands near base, anthers continuous with filaments, 2- or 4-valved, opening from base upwards; ovary usually superior, 1-locular, ovule solitary, pendulous, style terminal, stigma small. Fruits baccate, sometimes enveloped by enlarged perianth tube, or seated in cup at base, with or without all or part of perianth persisting, or seated on a bare pedicel.

About 32 genera with 2000–2500 species tropical and subtropical, chiefly south-eastern Asia and Brazil; 7 genera with ca 65 species Australia; 7 genera with 36 species south-eastern Queensland.

All leaf dimensions have been taken from leaves from adult trees. Leaves from seedlings or juveniles are often larger and of a somewhat different shape than that given.

A hand lens with a magnification of at least × 10 is often necessary to check pubescence and floral characters.

Venation patterns are more distinct when the leaves have been at least partly dried.

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|--|--------------------|---|
| 1. Parasitic twiners; leaves absent or reduced to scales | 1. <i>Cassytha</i> | |
| Trees or shrubs; leaves well developed | | 2 |
| 2. Flowers in pseudumbels rarely solitary, surrounded by decussate bracts forming an involucre, the bracts persisting at least till flowering time | | 3 |
| Flowers not in pseudumbels, usually in panicles, not surrounded by bracts | | 4 |

- | | |
|--|-------------------------|
| 3. Perianth 6-lobed; hypanthium enlarging below fruit to form a cup in which fruit is seated; lowest 2 lateral veins of leaf blade not prominent, leaf penninerved | 2. <i>Litsea</i> |
| Perianth 4-lobed; hypanthium not enlarging below fruit but remaining as a disc; lowest 2 lateral veins prominent, leaf appearing triplinerved | 3. <i>Neolitsea</i> |
| 4. Ovary immersed in perianth tube which encloses the fruit; remains of perianth lobes often still present on top of fruit | 4. <i>Cryptocarya</i> |
| Ovary free, not immersed in perianth tube; perianth at base of young fruit | 5 |
| 5. Anthers 4-locular; hypanthium developed into cup covering base of fruit | 5. <i>Cinnamomum</i> |
| Anthers 2-locular; fruit seated on bare pedicel | 6 |
| 6. Perfect stamens 9 or 6; leaves reticulate | 6. <i>Beilschmiedia</i> |
| Perfect stamens 3; leaves areolate | 7. <i>Endiandra</i> |

1. CASSYTHA L.

Parasitic or partly autotrophic twiners with small suckers. Stems filiform, containing chlorophyll. Leaves reduced to minute scales, arranged spirally. Inflorescences capitate, spicate or racemose, bracteoles 2; flowers bisexual, actinomorphic, perianth segments 6, in 2 whorls, outer smaller; stamens usually 9, innermost 3 glandular, anthers 2-locular; stigma small. Fruits completely enclosed in enlarged, succulent perianth tubes with small orifice at apex, crowned by persistent perianth segments.

About 17 species tropical or subtropical, especially Australia; 14 species Australia, 3 species south-eastern Queensland.

These species are commonly called DODDER LAURELS.

- | | |
|---|-------------------------|
| 1. Robust pubescent twiner, stems 1-1.5 mm thick; perianth and ovary pubescent | 1. <i>C. pubescens</i> |
| Filiform twiners, stems mostly 0.5-0.75 mm thick, glabrous or puberulent; perianth and ovary glabrous | 2 |
| 2. Inflorescence capitate, with 3-6 flowers | 2. <i>C. glabella</i> |
| Inflorescence spicate, with 3-10 flowers | 3. <i>C. filiformis</i> |

1. *Cassytha pubescens* R.Br.

Robust twiner, pubescent at least in young parts with reddish crinkled hairs and often whitish ones. Inflorescences spikes up to 10 cm long, or sometimes branched panicles; flowers 5-12 per spike, ca 0.5-1.5 cm apart; perianth 2-2.5 mm long, pubescent, lobes 1-1.5 mm long; 9 stamens fertile; ovary pubescent at apex. Fruits greenish, or striped with purple, ellipsoid to globose, ca 5-6 mm long.

Mainly the coastal districts but not confined to them, in heathy or forested areas. Flowers spring-summer.

2. *Cassytha glabella* R.Br.

Glabrous, filiform parasite. Inflorescences heads of 3-6 flowers on peduncle 3-8 mm long; perianth 1.5-2 mm long, glabrous, lobes 1-1.5 mm long; ovary glabrous. Fruits ovoid, ca 3-4 mm long.

Mainly coastal districts, often in heathy areas. Flowers mainly spring to autumn.

3. *Cassytha filiformis* L.

Filiform parasitic twiner, glabrous or young parts loosely pubescent. Inflorescences spikes 1.5-8 cm long, of 3-10 flowers, flowers usually in top 2-5 cm, ca 2 mm apart, bracts sometimes with ciliate margins; perianth 1.5-2 mm long, glabrous, lobes 1-1.5 mm long. Fruits globose, ca 4-5 mm long. **Fig. 21A.**

Common parasite throughout the region. Flowers most of the year.

A form with pedicellate flowers and scattered hairs on perianth has been recorded from southern Darling Downs district. It has a glabrous ovary and 9 fertile stamens. This form requires further study.

2. LITSEA Lam.

Leaves alternate, frequently crowded. Flowers in \pm sessile clusters surrounded by an involucre of \pm persistent, large, decussate bracts, unisexual; perianth 6, 4 or absent; stamens in males usually 9 or 12, 3rd and inner whorls glandular, filaments slender, anthers 4-locular; ovary rudimentary or absent; female flowers with 9 or 12 staminodes, stigma peltate, conspicuous. Fruits seated on \pm developed cups, perianth usually caducous.

About 400 species subtropical to temperate Asia, America, Australia; 3-4 species eastern Australia; 2 species south-eastern Queensland.

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|--|-------------------------|
| 1. Leaves glabrous, reticulate venation prominent, apex usually obtuse | 1. <i>L. reticulata</i> |
| Leaves rusty-pubescent beneath on veins, only midrib and primary lateral veins prominent, impressed above, raised below, apex abruptly bluntly acuminate | 2. <i>L. leefeana</i> |

1. *Litsea reticulata* (Meissner) F. Muell. BOLLY GUM; BROWN BEECH;
BOLLY BEECH; BROWN BOLLY BEECH; BOLLYWOOD

Tetranthera reticulata Meissner

Large tree up to 40 m tall, often buttressed or flanged; bark grey or brown, often scaly, pustulate. Leaves with petioles 0.8-1.5 cm long; blades thick, narrowly oblong or oblong-elliptic, apex obtuse, occasionally bluntly acute, base cuneate, margin pale or translucent when fresh, yellowish when dry, 4.5-11 cm \times 1.5-4.5 cm, midvein \pm flat above, reticulate venation yellowish and prominent both surfaces when dry, dark green above, paler beneath. Inflorescences irregular, white-pubescent, axillary racemes of clusters, sometimes single clusters, flowers 2-6 per cluster; perianth lobes 6, narrow, 2-2.5 mm long; filaments not or slightly exerted. Fruits black, ovoid, 0.8-1.3 cm \times 0.6-1 cm, enclosed for lower third by cup 8-10 mm diameter. **Fig. 21F.**

Rainforests of region. Flowers autumn; fruits spring-summer. Wood generally pale brown, soft and easy to work and can be used for turnery, carving, furniture, plywood, etc. The sapwood is very susceptible to borer attack.

2. *Litsea leefeana* (F. Muell.) Merr. BROWN BOLLY GUM;
BROWN BOLLYWOOD

Cylocodaphne leefeana F. Muell.; *Litsea ferruginea* (R.Br.) Benth.

Tree up to 20 m tall, sometimes slightly buttressed; bark brown, pustulate, scaly on older trees. Leaves with petioles 0.6-2 cm long; blades thick, elliptic to obovate, apex shortly, abruptly acuminate, occasionally obtuse, base cuneate, occasionally rounded, margin opaque, 4.5-21 cm \times 2-9 cm, upper surface often puberulent in young foliage, densely pubescent below, particularly on venation, venation impressed above, raised below, dark glossy green above. Inflorescences axillary clusters, flowers 2-8 per cluster; perianth lobes 6, narrow or oblong-obtuse, ca 2 mm long; filaments exerted. Fruits black, ellipsoid to ovoid, 1.5-2 cm \times 0.8-1.2 cm, seated in cup 6-8 mm diameter.

On poorer soils or riverine rainforest of coastal districts. Flowers autumn; fruits spring to early summer. Trees usually too small for commercial use, otherwise similar to *L. reticulata*.

3. NEOLITSEA (Benth.) Merr.

Leaves alternate, often crowded. Flowers in \pm sessile clusters surrounded by involucre of persistent, large, decussate bracts, unisexual; perianth 4; stamens in males 6 in 3 whorls, inner whorl glandular, anthers 4-locular; females with 6 staminodes, stigma peltate, conspicuous. Fruits seated on disc-like cups, perianth usually persistent; pedicel often slightly thickened.

80 species eastern and south-eastern Asia to Australia; 3-4 species eastern Australia; 2 species south-eastern Queensland.

- | | |
|--|----------------------------|
| 1. All parts except inflorescence glabrous; perianth lobes not persistent on disc at base of fruit | 1. <i>N. australiensis</i> |
| At least nerves on undersurface of leaf, petiole, and usually young shoots rusty-pubescent; perianth lobes persistent on disc at base of fruit | 2. <i>N. dealbata</i> |

1. *Neolitsea australiensis* Kosterm.

Litsea zeylanica auct. non Nees, Benth.; *Neolitsea zeylanica* auct. non (Nees) Merr., Webb; *Neolitsea cassia* auct. non (L.) Kosterm.

Tree up to 15 m tall; bark smooth, dark brown. Leaves with petioles 0.6–2.5 cm long; blades narrowly elliptic to ovate, apex acuminate, base cuneate, 5–17 cm × 1.5–7 cm, basal lateral veins usually extending ½ length of leaf, all primary veins usually drying yellowish, glossy green above, glaucous below. Inflorescences ± sessile, usually ± pale-pubescent; flowers cream, on pedicels 2–3 mm long; perianth segments 4, obtuse, 2–2.5 mm long; filaments exserted. Fruits black, globular or slightly ovoid, 1–1.5 cm diameter, disc ± entire or slightly angular, 5–7 mm diameter. **Fig. 21B.**

Rainforests of the wetter parts of region, usually at high altitudes, common as understorey tree. Flowers late summer–autumn; fruits late autumn. Too small for commercial use.

2. *Neolitsea dealbata* (R.Br.) Merr.

Tetranthera dealbata R.Br.; *Litsea dealbata* (R.Br.) Nees

Tree up to 15 m tall; bark pustular or slightly scaly, dark brown. Leaves with petioles 0.7–2.5 cm long; blades elliptic, ovate or obovate, apex acuminate, base cuneate, 7–20 cm × 2.5–9 cm, usually ± pubescent particularly on younger leaves, basal lateral veins usually extending ½ length of leaf, all primary veins usually drying yellowish, glossy green above, glaucous beneath. Inflorescences ± sessile, usually rusty-pubescent; flowers on pedicels 2–4 mm long; perianth segments 4, apex acute, 2 mm long; filaments long exserted. Fruits black, ± globular, 7–10 mm diameter, disc toothed due to persistent acute perianth lobes, 3–4 mm diameter. **Fig. 21C.**

Common, in coastal and wet upland rainforest of the region as understorey tree. Flowers autumn; fruits spring. Too small for commercial use, but lightweight and easy to work for small turnery or carving.

4. CRYPTOCARYA R.Br.

Leaves alternate or opposite. Inflorescences paniculate; flowers bisexual; perianth tube slender, conspicuous, lobes 6, equal; stamens 9, 6 or 3, 3rd whorl glandular, anthers 2-locular; stigma small or inconspicuous, rarely peltate. Fruits entirely included in enlarged perianth tubes, leaving only minute orifice at apex, lobes sometimes persistent, endocarp and exocarp often long and ribbed.

About 200–250 species, tropics and subtropics except central Africa; ca 23 species Australia, mainly in eastern areas; 14 species south-eastern Queensland.

1. Leaves with large hollow glabrous domatia	1. <i>C. foveolata</i>	2
Leaves without domatia or with hairy domatia		
2. Leaves 3-nerved at base		3
Leaves penninerved		4
3. Leaves pubescent beneath, sometimes finely so, lateral veins other than the 2 basal ones distinct when leaf dried; usually tree	2. <i>C. triplinervis</i>	
Leaves glabrous beneath, venation other than midrib and basal lateral nerves obscure when leaf dried; shrub	3. <i>C. laevigata</i> var. <i>bowiei</i>	
4. Leaves glaucous or white on undersurface		5
Leaves greenish on undersurface		10
5. Most leaves oblong, or often broadest above middle, rounded at apex		6
Most leaves ovate or elliptic, tapering to a blunt acuminate point		7
6. Fruit globose, smooth when dried; leaves with rusty pubescence along veins beneath, especially when young, leaf relatively thick	4. <i>C. obovata</i>	
Fruit globose or ellipsoid, longitudinally ribbed when dried; leaves never with rusty pubescence on veins beneath, leaf relatively thin	5. <i>C. hypospodia</i>	

- | | | |
|---|---|----|
| 7. Midrib \pm distinctly raised on upper surface; reticulation areolate, prominent on both surfaces; all leaves glabrous
Midrib impressed on upper leaf surface; reticulation coarse or fine, but not areolate and not equally prominent on both surfaces; leaves glabrous or pubescent | 6. <i>C. microneura</i> | 8 |
| 8. Leaves pubescent beneath at least on midrib, young leaves especially so; perianth lobes persistent on top of fruit
Leaves glabrous; perianth lobes not persistent on top of fruit | 7. <i>C. rigida</i> | 9 |
| 9. Bark brown; fruit oddly compressed (see Fig. 22H.); leaves \pm glaucous with petioles 0.6–1.5 cm long
Bark grey or white; fruit ellipsoid; leaves glaucous, white when fresh, with petioles 1–2.5 cm long | 8. <i>C. glaucescens</i>
9. <i>C. erythroxylon</i> | |
| 10. Venation obscure, reticulation not visible on either surface
Venation distinct, reticulation clearly visible on both surfaces | 10. <i>C. meissnerana</i> | 11 |
| 11. Midrib impressed on upper leaf surface, venation very finely areolate, more prominent beneath, slightly raised when dry
Midrib flat or raised on upper leaf surface, venation reticulate, or if areolate then equally prominent both surfaces | 11. <i>C. sp. 1.</i> | 12 |
| 12. Leaves thick, bright green when fresh; flowers with offensive odour; tree restricted to littoral closed forest
Leaves thin, dark green when fresh; flowers without offensive odour; one species sometimes found in littoral closed forest but not restricted to it | 12. <i>C. foetida</i> | 13 |
| 13. Leaves with coarse reticulation, more prominent on upper surfaces when dry
Leaves with fine, often areolate reticulation equally prominent on both surfaces when dry | 13. <i>C. bidwillii</i> | 14 |
| 14. Leaves elliptic or narrowly obovate, apex acute, midrib raised on upper surface
Leaves narrowly ovate to ovate, apex long attenuate, midrib flat on upper surface | 6. <i>C. microneura</i>
14. <i>C. floydii</i> | |

1. *Cryptocarya foveolata* C. T. White & Francis SMALL-LEAVED CRYPTO-CARYA
Cryptocarya cinnamomifolia Benth. var. *parvifolia* F. M. Bailey

Tree up to 40 m tall, not prominently buttressed; bark brown or reddish-brown. Leaves alternate; petioles 3–6 mm long; blades ovate to broadly ovate, apex acute, base rounded, occasionally cuneate, 1.5–8 cm \times 1–4.5 cm; midrib \pm flattened, basal lateral veins often prominent, appearing \pm triplinerved, with 1–2 pairs hollow domatia in axils, venation areolate, prominent both surfaces when dry, dark green above, paler beneath. Inflorescences very slender panicles generally shorter than leaves; perianth *ca* 4 mm long, lobes ovate, *ca* 2 mm long. Fruits black, globose, *ca* 1–2 cm diameter. **Fig. 22K.**

Rainforest of McPherson Ra. and southern parts of Great Dividing Ra. Timber said to be suitable for flooring and cases.

2. *Cryptocarya triplinervis* R.Br.

Small or medium-sized tree, not buttressed; bark dark chocolate-brown; young branchlets and inflorescences \pm densely pubescent. Leaves alternate; petioles 4–8 mm long; blades narrowly elliptic to ovate, apex acute or bluntly acuminate, base cuneate, rarely rounded, 4–16 cm \times 1–5.5 cm, glabrous above, pubescent often finely below, dense along raised midrib and lateral veins, areolation distinct both surfaces when dry, glossy green above, often glaucescent below. Inflorescences paniculate, usually shorter than leaves; perianth yellowish, *ca* 3–3.5 mm long, lobes ovate, *ca* 1.5 mm long, pubescent. Fruits black, ellipsoid, 0.8–1.2 cm \times 0.6–0.9 cm. **Fig. 22J.**

Usually riverine or littoral closed forest of coastal districts, occasionally in drier areas. Flowers spring–summer. Timber close-grained, tough, hard, grey, has been used for cases.

3. *Cryptocarya laevigata* Blume var. *bowiei* (Hook.) Kosterm.*Laurus bowiei* Hook.; *Cryptocarya australis* Benth.

Shrub. Leaves alternate; petioles 3–9 mm long; blades narrowly elliptic, rarely elliptic, apex acuminate, often bluntly so, base attenuate to cuneate, 4–16 cm × 1–5 cm, venation obscure when dry except for flattened midrib and 2 basal lateral nerves, glossy green above, pale or glaucous beneath. Inflorescences open panicles shorter than leaves; perianth greenish, 3–4 mm long, lobes broad or ovate, 2 mm long. Fruits orange-yellow to red, ellipsoid to globose, 1.5–2 cm × 1.3–1.7 cm, usually crowned by persistent perianth lobes.

Usually riverine rainforest of coastal districts. Flowers spring–summer.

4. *Cryptocarya obovata* R.Br.

PEPPERBERRY TREE; WHITE WALNUT

Tree up to 40 m tall, often buttressed; bark usually brown, smooth with numerous vertical lines of pustules; branchlets and inflorescences shortly rusty-pubescent, older branchlets with prominent lenticels. Leaves alternate; petioles thick, 0.4–1.5 cm long; blades narrowly obovate, ovate or oblong, apex usually obtuse to emarginate, occasionally with blunt point, base cuneate, 4–10 cm × 1.5–6.5 cm, midrib and lateral veins raised beneath, often rusty-pubescent, reticulation sometimes also distinct, green above, ± glaucous below. Inflorescences dense panicles usually shorter than leaves; perianth whitish or yellowish, 3–5 mm long, white-pubescent, lobes ovate, apex acute, ca 1.5–2 mm long. Fruits black, ellipsoid or globose, ca 1.3 cm × 1–1.2 cm. **Fig. 22F.**

Rainforest of coastal districts and Great Dividing Ra. Flowers summer–autumn. Timber suitable for plywood, flooring, cases. Sapwood subject to attack by borers.

5. *Cryptocarya hypospodia* F. Muell.

NORTH QUEENSLAND PURPLE LAUREL

Cryptocarya obovata R.Br. var. *tropica* F. M. Bailey; *C. obovata* R.Br. var. *hypospodia* (F. Muell.) C. T. White & Francis

Tree up to 30 m tall; bark grey, often spotted or patchy, rough or cracked; young branchlets and inflorescences finely pubescent, older branchlets with prominent lenticels. Leaves alternate; petioles 0.6–1.5 cm long; blades narrowly obovate to oblong-obovate, apex obtuse or bluntly acuminate, base cuneate to abruptly contracted, 4.5–17 cm × 2–8 cm, sometimes finely pubescent beneath, midrib and lateral veins ± raised beneath, reticulation obscure, glossy green above, ± glaucous below. Inflorescences spreading panicles; perianth ca 3 mm long, white-pubescent, lobes ovate, ca 1.5 mm long. Fruits black, globose, 1.5 cm diameter, longitudinally ribbed when dry.

Uncommon, occasionally in rainforest of coastal districts. Flowers summer–autumn. Timber very tough and hard on tools.

6. *Cryptocarya microneura* Meissner

MURROGUN

Cryptocarya glaucescens R. Br. var. *reticulata* Meissner

Tree up to 25 m tall; bark thick, grey, corky or finely scaly. Leaves alternate; petioles 5–9 mm long; blades narrowly elliptic, occasionally narrowly obovate, apex bluntly acuminate, base cuneate, 6–15 cm × 1.8–4.5 cm, midrib raised both surfaces, creamy-white when fresh, lateral veins distinct, curving ± unbranched towards margin, areolation ± equally prominent both surfaces, glossy green above, pale green below or young leaves glaucous. Inflorescences spreading panicles generally shorter than leaves, pubescent; perianth yellowish, 3–4.5 mm long, lobes oblong-ovate, 1.5–2 mm long, pubescent. Fruits black, globose, 1–1.2 cm diameter. **Fig. 22E.**

Rainforest of mainly lowland coastal districts. Flowers spring to early summer. Timber pale-coloured, but tree generally too small for commercial use.

7. *Cryptocarya rigida* Meissner

A BROWN BEECH; ROSE MAPLE

Cryptocarya patentinervis F. Muell.

Tree up to 35 m tall, often flanged; bark grey or light grey, odourless; young branchlets rusty-pubescent. Leaves alternate; petioles 0.5–1.2 cm long; blades narrowly ovate to ovate, apex acuminate, base cuneate to contracted, 3–15 cm × 1–5 cm, pubescent at least on veins below, reticulation coarse, distinct below when dry, glossy green above, glaucous

below. Inflorescences few-flowered panicles much shorter than leaves, pubescent; perianth 3–3.5 mm long, lobes ovate, 1.5 mm long. Fruits black, ellipsoid, 1.2–1.6 cm × 0.9–1.2 cm, perianth lobes persistent.

Rainforest of coastal districts. Flowers spring–summer. Timber used for veneer, flooring, lining and internal fittings. Sapwood susceptible to attack by borers.

8. *Cryptocarya glaucescens* R.Br.

SILVER SYCAMORE

Tree up to 35 m tall, sometimes buttressed; bark brown, ± scaly with numerous shallow indentations and lines. Leaves alternate; petioles 0.6–1.5 cm long; blades thin, elliptic or ovate, apex acute or bluntly acuminate, base cuneate to rounded, 3–15 cm × 1.5–7 cm, midrib nearly always impressed above, raised rounded beneath, often drying yellowish, lateral veins looping ± unbranched towards margin, reticulation indistinct below when dry, green or yellowish-green above, glaucous or glaucescent beneath. Inflorescences paniculate, usually shorter than leaves, pubescent; perianth yellowish, 2.5–3 mm long, lobes oblong-ovate, 1–1.5 mm long. Fruits black, oddly compressed, horizontal axes up to 2 cm × 1.5 cm, vertical axis up to 1.3 cm, ribbed when dry. **Fig. 22H.**

Common in rainforest of coastal districts. Flowers spring to early summer. Timber pale brown, not attacked by powder post borer, used for interior joinery, cabinet work and cases.

9. *Cryptocarya erythroxylon* Maiden & Betche

SOUTHERN MAPLE;

RED-WOODED CRYPTO-CARYA; ROSE MAPLE;

PIGEONBERRY ASH; ROSE WALNUT

Tree up to 35 m tall; bark white or grey, corky, fragrant when cut; young shoots pubescent. Leaves alternate; petioles 1–2.5 cm long; blades narrowly elliptic, occasionally rounded, 4–16 cm × 1.2–6 cm, midrib slightly raised, rounded below, lateral veins distinct, reticulation ± coarse, dark shining green above, glaucous, ± white when fresh below. Inflorescences paniculate, usually shorter than leaves, pubescent; perianth *ca* 2 mm long. Fruits black, ellipsoid, 1.5–2 cm × 1–1.5 cm. **Fig. 22G.**

Rainforest of higher altitudes in southern parts of region. Timber light pinkish-brown, weathering to an orange shade with distinctive odour; used in flooring, lining, panelling, internal fittings, furniture and as plywood. It is moderately light, durable in weather, and has a good figure.

10. *Cryptocarya meissnerana* Frodin

THICK-LEAVED CRYPTO-CARYA

Cryptocarya meissneri auct. non F. Muell.

Small tree up to 10 m tall; bark smooth, brown or greyish, with vertical rows of small pustules. Leaves alternate; petioles 3–8 mm long; blades narrowly elliptic, apex bluntly acuminate, base cuneate to attenuate, 2.3–12 cm × 1–4 cm, lateral venation obscure, more distinct above, dark glossy green above, paler, glossy, rarely glaucous below. Inflorescences very small panicles, sparsely pubescent; perianth yellowish or greenish, 2–2.5 mm long, lobes ovate. Fruits black, ellipsoid, 1.5–2 cm × 1–1.5 cm, often longitudinally ribbed.

Rainforest of higher altitudes in southern areas. Flowers late spring–summer. Wood should be suitable for small turnery.

11. *Cryptocarya* sp. 1.

Tree up to at least 20 m tall; bark white; young shoots pubescent. Leaves alternate; petioles 5–10 mm long; blades ovate or elliptic, apex bluntly acuminate, base cuneate to rounded, 3.5–14 cm × 1.7–5 cm, midrib raised beneath, lateral veins curving unbranched towards margin, reticulation obscure above, areolation very fine, raised beneath, prominent when dry, numerous oil dots within finest areoles, shining green above, pale beneath, sometimes so pale that it appears glaucous in fresh material. Inflorescences paniculate, generally as long as leaves, pubescent; perianth yellowish, *ca* 3 mm long, pubescent, lobes oblong-ovate, *ca* 1.5 mm long. Fruits black, ellipsoid, *ca* 1–1.2 cm × 0.8–1 cm (possibly immature).

Rainforest of coastal district. Flowers probably summer.

This species has, at times, been referred to as *Cryptocarya* sp. aff. *C. cunninghamii*.

12. *Cryptocarya foetida* R. T. Baker

STINKING CRYPTO-CARYA

Small tree up to 10–15 m tall; young branchlets pubescent. Leaves alternate, rarely opposite; petioles 5–10 mm long; blades thick, elliptic, apex acute or obtuse, base cuneate, 4.5–15 cm × 1.5–6 cm, midrib slightly raised, but flattened, beneath, reticulation prominent beneath when dry, glossy green above, paler beneath. Inflorescences dense panicles much shorter than leaves, pubescent, flowers with very offensive odour; perianth *ca* 2 mm long, pubescent, lobes narrowly ovate, apex acute. Fruits blackish with a bloom, globose, 1–1.4 cm diameter.

Littoral closed forest, relatively rare now through clearing of these areas.

13. *Cryptocarya bidwillii* Meissner

Cryptocarya moretoniana auct. non Meissner

Tree up to *ca* 20 m tall; bark grey to greyish-brown, aromatic when cut; branchlets with numerous lenticels. Leaves alternate; petioles 6–8 mm long; blades elliptic to narrowly obovate, apex bluntly acuminate, base cuneate, 6–12 cm × 2–4.5 cm, midrib raised both surfaces, brownish when fresh, lateral veins usually branching into 2 towards margin, reticulation coarse, more prominent above when dry, shining green above, paler beneath. Inflorescences paniculate, often as long as leaves, pubescent; perianth *ca* 3 mm long, lobes ± oblong, *ca* 1.5 mm long. Fruits black, ovoid, 1.2–1.8 cm × 0.8–1.2 cm, often ribbed when dry. **Fig. 221.**

Rainforest of coastal districts. Flowers spring to early summer. Timber yellow or creamy-white before drying, close-grained, hard and tough to chop, not durable. Wood should be suitable for turnery, carving etc.

14. *Cryptocarya floydii* Kosterm.

GORGE LAUREL

Tree up to 15 m tall; bark brownish-grey to black, shallowly fissured, verrucose. Leaves alternate; petioles 4–10 mm long; blades narrowly ovate to ovate, apex long attenuate, base broadly cuneate, 3–10 cm × 0.8–3.5 cm, midrib flattened above, areolation ± equally prominent both surfaces when dried, dark shiny green above, paler, ± dull below. Inflorescences axillary panicles shorter than leaves, pubescent; perianth greenish, fragrant, 3–4.5 mm long, pubescent, lobes 1.5–2 mm long. Fruits black, globose, 1–1.2 cm diameter, longitudinally ribbed.

Recorded from Bunya Mts., rare, confined to depauperate rainforest on dry rocky slopes or sides of gorges. Flowers spring. Timber white, but tree too small and rare for use.

5. CINNAMOMUM Schaeffer

Leaves usually opposite and triplinerved. Inflorescences axillary or subterminal panicles; flowers bisexual, rarely unisexual; perianth lobes 6; stamens usually 9 in 3 whorls, third whorl glandular, anthers 4-, rarely 2-locular; stigma discoid or peltate. Fruits seated in enlarged cup-shaped perianth tubes, basal part of perianth persistent on rim.

About 250 species eastern Asia, Pacific Is., Australia; 6 species Australia; 4 species south-eastern Queensland.

- | | | |
|---|--------------------------|---|
| 1. Leaves alternate, blades 2–4 times longer than petioles | 1. <i>C. camphora</i> | 2 |
| Leaves ± opposite, blades more than 5 times longer than petioles | | |
| 2. Leaves ovate, more than 5 cm long, almost always distinctly triplinerved; inflorescences few-flowered; species found on Fraser I. only | 2. <i>C. baileyianum</i> | |
| Leaves narrowly ovate, or if ovate then 3–4 cm long, not or sometimes triplinerved; inflorescences many-flowered; 1 species may be found on Fraser I., but not confined to it, nor triplinerved | | 3 |
| 3. Leaves glaucous or glaucescent beneath, reticulation obscure beneath when dry, not triplinerved; bark fragrant when cut; fruits purplish-black when ripe | 3. <i>C. oliveri</i> | |
| Leaves green or pale green beneath, not glaucescent, reticulation distinct beneath when dry, at least some leaves triplinerved; bark not or only slightly fragrant when cut; fruits black when ripe | 4. <i>C. virens</i> | |

1. **Cinnamomum camphora* (L.) Nees & Eberm.

CAMPHOR LAUREL

Laurus camphora L.

Tree up to 15 m tall, aromatic; bark brown, scaly. Leaves alternate; petioles 1.5–4 cm long; blades ovate to broadly ovate or elliptic, apex abruptly acuminate, base cuneate to rounded, 4.5–11 cm × 2.4–6 cm, midrib ± flat, prominently triplinerved at base, often with small domatia in axils, venation more distinct above than below, glossy green above, dull or glaucescent beneath. Inflorescences panicles; perianth *ca* 3 mm long, lobes ovate, 1.5–2 mm long, puberulent. Fruits shining black, globose, 8–10 mm diameter, cup not well developed, often conical or disc-like, *ca* 5 mm diameter.

Native of Taiwan, Japan and some areas of China; introduced and widely cultivated in gardens and as a street tree; now naturalized especially along watercourses near habitation. Flowers spring–summer. Source of commercial camphor.

2. *Cinnamomum baileyana* (F. Muell. ex F. M. Bailey) Francis CANDLEWOOD*Persea baileyana* F. Muell. ex F. M. Bailey

Tree up to 20 m tall; bark strongly fragrant. Leaves usually opposite; petioles 0.5–1.2 cm long; blades thick, narrowly ovate to ovate, apex usually acute or bluntly acuminate, base cuneate or rounded, 5–13 cm × 2.5–6 cm, prominently triplinerved, finely reticulate, more prominent beneath, glossy green above, paler beneath. Inflorescences shortly paniculate or ± racemose with distant, few-flowered clusters; perianth *ca* 4 mm long, silky-pubescent. Fruits probably black, ellipsoid, 0.9–1.2 cm long, enclosed at base by cup *ca* 5 mm diameter.

Only recorded Fraser I. Flowers late summer–autumn; fruits spring. Wood slightly fragrant, close-grained, dark grey.

3. *Cinnamomum oliveri* F. M. Bailey OLIVER'S SASSAFRAS;
SASSAFRAS; CAMPHORWOOD; BLACK SASSAFRAS

Tree up to 35 m tall, butt sometimes flanged; bark brown or dark brown with vertical rows of corky pustules, with strong sassafras-like fragrance when cut. Leaves subopposite; petioles 0.6–1.2 cm long; blades relatively thin, narrowly ovate, apex acute or bluntly acuminate, base cuneate, 6.5–15 cm × 1.5–4.5 cm, reticulation relatively coarse, obscure when dry, shining green above, glaucous or glaucescent below. Inflorescences paniculate, white-puberulent; perianth 6–7 mm long, lobes ovate, 2.5–3.5 mm long, pubescent. Fruits ellipsoid, *ca* 1.2 cm × 0.6–0.7 cm, enclosed at base by lobeless cup *ca* 5–7 mm diameter.

Rainforest of coastal districts. Flowers spring. Timber fragrant, pale brownish, easy to work, used in indoor work, lining and cabinet work.

4. *Cinnamomum virens* R. T. Baker

Tree up to 35 m tall, butt sometimes flanged; bark reddish-brown, smooth or finely scaly, sometimes with pustules, not or slightly fragrant. Leaves subopposite; petioles 4–10 mm long; blades relatively thick, narrowly ovate, apex acute to acuminate, base cuneate, 5.5–12 cm × 1.5–3.5 cm, often obscurely triplinerved, reticulation fine, distinct below when dry, shining green above, not or only slightly paler below. Inflorescences paniculate, white-pubescent; perianth 6–7 mm long, lobes ovate, 3–4 mm long, pubescent. Fruits black, ellipsoid, *ca* 1–1.3 cm × 0.6–0.8 cm, enclosed at base by slightly obtusely lobed cup 6–9 mm diameter. **Fig. 21E.**

Rainforest of the mountain ranges of the southern border regions. Flowers probably autumn. Timber white to pale brown, soft, used in interior linings or cabinet work, but not usually available in large quantities.

A variant with ovate leaves 3–4 cm long has been recorded from McPherson Ra., having fewer flowers in the inflorescence and a lobeless fruiting receptacle. On further study it may prove significantly different.



Fig. 21

LAURACEAE — A, -A, *Cassytha filiformis*, A₁ part of plant showing twining habit x1, A₂ flower x12, A₃ fruit, enveloped by perianth x2; B, -C *Neolitsea* spp. — B₁, -B₃, *N. australiensis*, B₁ part of flowering stem x1, B₂ partly opened male flower cluster x6, B₃ single male flower (1 lobe removed) x4; C *N. dealbata*, part of fruiting branchlet x $\frac{1}{2}$; D, -D₄ *Beilschmiedia obtusifolia*, D₁ leaf x $\frac{1}{2}$, D₂ part inflorescence x1, D₃ flower x12, D₄ fruit x1; E, -E₄ *Cinnamomum virens*, E₁ part of flowering branchlet x $\frac{1}{2}$, E₂ flower x6, E₃ stamen showing 4-locular anther x8, E₄ fruit x1; F, -F₃ *Litsea reticulata*, F₁ part of branchlet in bud x $\frac{1}{2}$, F₂ partly opened female flower cluster x4, F₃ fruit x1.

6. BEILSCHMIEDIA Nees

Leaves often subopposite; reticulation lax, usually conspicuous. Inflorescences axillary panicles; flowers bisexual; perianth segments 6, ± equal; stamens 9 or 6 in 3 whorls, third whorl glandular, anthers 2-locular; stigma inconspicuous, of differently coloured tissue decurrent at one side from style apex. Fruits on bare pedicels, perianth deciduous.

About 200 species tropical and subtropical Africa, Asia to New Zealand; 4 species endemic to eastern Australia; 2 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Leaves usually obovate, obtuse with young shoots densely pale silky-pubescent; inflorescences longer than leaves; fruits ellipsoid | 1. <i>B. obtusifolia</i> |
| Leaves usually elliptic, bluntly acuminate, with young shoots at most rusty-puberulent; inflorescences shorter than leaves; fruits globose | 2. <i>B. elliptica</i> |

1. *Beilschmiedia obtusifolia* (F. Muell. ex Meissner) F. Muell.

HARD BOLLY GUM; BLUSH WALNUT

Cryptocarya obtusifolia F. Muell. ex Meissner

Tree up to 35 m tall, occasionally flanged; bark brown; young shoots and inflorescences densely silky-pubescent; branchlets with numerous lenticels. Leaves with petioles 0.5–1.5 cm long; blades elliptic or narrowly obovate, apex obtuse, sometimes bluntly acute, base cuneate, 4.5–11 cm × 1.5–4 cm, venation distinct both surfaces, more so beneath, glossy green above, paler beneath. Inflorescences paniculate, longer than leaves; flowers whitish, with an offensive odour; perianth lobes triangular, ca 1 mm long, pubescent. Fruits black, ± ellipsoid, ca 1.3–1.6 cm × 1 cm. **Fig. 21D.**

Rainforest of better soils of coastal areas. Flowers autumn. Timber dull pink, fine-grained, of moderate weight, used for plywood, indoor work, flooring, building, etc.

2. *Beilschmiedia elliptica* C. T. White & Francis

BROWN WALNUT; GREY WALNUT

Tree up to 35 m tall, sometimes moderately buttressed or flanged; bark red-brown, rarely grey, pustular; very young shoots sometimes puberulent; branchlets with few lenticels. Leaves with petioles 4–8 mm long; blades elliptic or narrowly ovate, apex bluntly acuminate or acute, base cuneate, 5–11 cm × 1.5–4 cm, venation distinct both surfaces, more so beneath, grey-green above, paler green beneath. Inflorescences paniculate, shorter than leaves, puberulent with rusty hairs; perianth lobes ovate, ca 1.5 mm long, puberulent. Fruits black with a fine glaucous bloom, globose, 1–1.2 cm diameter.

Rainforest of coastal districts. Flowers possibly spring. Timber has been used for cases.

7. ENDIANDRA R.Br.

Leaves alternate or opposite, with areolate reticulation. Inflorescences of axillary panicles; flowers bisexual; perianth segments 6, subequal; stamens 3, third whorl often sessile, glandular, 2-locular, staminodes minute or none; stigma inconspicuous, decurrent at one side of style apex. Fruits on bare pedicels, perianth deciduous.

About 80 species Malaysia, Pacific region, Australia; 26 species Australia; 9 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Leaves glaucous or ashy-coloured on undersurface | 2 |
| Leaves green or pale green on undersurface | 3 |
| 2. Leaves with prominent domatia in nerve axils on undersurface | 1. <i>E. discolor</i> |
| Leaves without prominent domatia or sometimes very small domatia present | 2. <i>E. crassiflora</i> |
| 3. Veins on undersurface pubescent | 4 |
| Veins on undersurface glabrous | 5 |

- | | |
|--|------------------------|
| 4. Leaves with midrib and lateral veins impressed on upper surface; areolation fine | 3. <i>E. hayesii</i> |
| Leaves with midrib and lateral veins not impressed on upper surface; areolation coarse | 4. <i>E. pubens</i> |
| 5. Midrib flattened on undersurface; leaves with pale yellowish margin, translucent when fresh | 5. <i>E. sieberi</i> |
| Midrib raised and rounded on undersurface; leaves without pale yellowish margin | 6 |
| 6. Leaves more than 3 times longer than wide; fruits globose, yellow when ripe | 6. <i>E. virens</i> |
| Leaves less than 3 times longer than wide; fruits various, not yellow, usually blackish | 7 |
| 7. Leaves shining on both surfaces when fresh, drying dull black; fruits globose | 7. <i>E. globosa</i> |
| Leaves \pm dull or only slightly glossy beneath when fresh, drying green or brown; fruits ellipsoid or globose | 8 |
| 8. Midrib warty to touch below; venation finely areolate; fruits ellipsoid | 8. <i>E. muelleri</i> |
| Midrib smooth to touch below; venation coarsely areolate; fruits compressed-globose | 9. <i>E. compressa</i> |

1. *Endiandra discolor* Benth.

DOMATIA TREE; ROSE WALNUT

Tree up to 40 m tall, buttressed; bark brown or greyish-brown, smooth or rough on old trees. Leaves alternate; petioles 0.5–1.2 cm long; blades elliptic, ovate or obovate, apex obtuse to bluntly acuminate, base cuneate, 4–11 cm \times 2–5.5 cm, midrib often warty beneath, midrib and lateral nerves raised, distinct beneath, large domatia present in axils, reticulation distinct both surfaces, glossy green above, glaucous or glaucescent beneath. Inflorescences racemose or paniculate, shorter than leaves; perianth *ca* 2 mm long, \pm pubescent, lobes ovate. Fruits black, ellipsoid, 2–2.5 cm \times 1.2–1.5 cm. **Fig. 22D.**

Mainly in lowland rainforest of coastal districts, often along alluvial flats. Flowers spring. Fruits eaten by birds. Timber hard, pinkish, suitable for plywood, flooring, interior and cabinet work. Attacked by powder post borer.

2. *Endiandra crassiflora* C. T. White & Francis

Tree up to 20 m tall, shortly buttressed; bark pale grey, either smooth or pitted; young branchlets and inflorescences densely golden- or rusty-pubescent. Leaves alternate to subopposite; petioles 0.6–1.5 cm long; blades ovate to elliptic, apex acute, obtuse or shortly, bluntly acuminate, base cuneate to rounded, 4.5–10 cm \times 2–5 cm, midrib raised, \pm pubescent below, lateral veins prominent, areolation distinct both surfaces when dry, dark green above, \pm glaucous below. Inflorescences very slender raceme-like panicles, shorter than leaves; perianth 3–3.5 mm long, glabrous, lobes ovate. Fruits possibly black, possibly ellipsoid. **Fig. 22A.**

Rainforest of McPherson Ra. Timber pale pink, close-grained.

Endiandra introrsa C. T. White has been recorded from Dorrigo to McPherson Ra. (N.S.W.) but may be found further north. It can be distinguished from *E. crassiflora* by its red-brown pustular bark, the glabrous undersurface of its elliptic leaf and the glossy black globose fruit *ca* 5 cm diameter.

3. *Endiandra hayesii* Kosterm.

Tree up to *ca* 17 m tall; young branchlets and inflorescences densely rusty-pilose. Leaves alternate; petioles 4–10 mm long, often pilose; blades ovate to elliptic, apex obtuse or bluntly acuminate, base rounded or broadly cuneate, 5–10 cm \times 3–6.5 cm, glabrous above, \pm rusty-pilose beneath, particularly on veins, midrib and lateral veins impressed above, raised, prominent, looping beneath, areolation fine, distinct both surfaces or obscured by hairs beneath, glossy above. Inflorescences axillary, few-flowered, much shorter than leaves; perianth lobes 1.5–2 mm long, rusty-pubescent; stamens glabrous. Fruits not seen.

Rare, recorded from Gold Coast hinterland in lowland remnant riverine rainforest. Flowers spring.

4. *Endiandra pubens* Meissner

Tree up to 20 m tall, sometimes slightly buttressed; bark brown, light grey to \pm white, smooth scaly or corky; young parts and inflorescences densely rusty-pubescent. Leaves alternate; petioles 0.8–2 cm long; blades elliptic, ovate or obovate, apex rounded or bluntly acuminate, base cuneate, 5–15 cm \times 2–7.5 cm, \pm glabrous above, rusty-pubescent beneath, at least on raised midrib and lateral veins, areolation coarse, distinct both surfaces when dry, often obscured beneath by pubescence, glossy green above. Inflorescences compact panicles shorter than leaves; perianth 2–2.5 mm long, rusty-pubescent, lobes triangular, 1.5–2 mm long. Fruits pale green to deep red, globose, 2–5 cm diameter. **Fig. 22B.**

Usually in cool moist riverine rainforest of coastal districts. Flowers generally autumn. Usually too small for commercial use, but wood pale to dark brown, close-grained, firm; suitable for cabinet work, indoor fittings, cases.

5. *Endiandra sieberi* Nees

CORKWOOD; TILL

Tree up to 35 m tall, sometimes shortly flanged; bark grey, soft, corky, often fissured; branchlets reddish. Leaves alternate or subopposite; petioles red when fresh, 4–9 mm long; blades narrowly elliptic, apex attenuate or bluntly acuminate, base attenuate, margin translucent or pale yellow, 5–13 cm \times 1–3 cm, midrib flat both sides, venation distinct both surfaces when dry, more so beneath, glossy green above, paler beneath. Inflorescences paniculate, shorter than leaves; perianth *ca* 2 mm long, lobes ovoid, puberulent. Fruits glossy black or purplish, ellipsoid or obovoid, *ca* 2–2.7 cm \times 1.4–1.7 cm.

Forests on poor soils or sands near the coast, e.g. near Jacobs Well, Moreton Bay Is., Cooloola, Fraser I. Flowers spring. Fruits eaten by birds. Timber hard, close-grained, pale coloured, suitable for tool handles, lining, flooring, cabinet work.

6. *Endiandra virens* F. Muell.*Endiandra lowiana* F. M. Bailey

Usually small tree up to 10 m tall; bark grey to light grey, with vertical corky ridges. Leaves alternate or opposite; petioles 0.5–1.5 cm long; blades narrowly elliptic, narrowly obovate to elliptic, apex acute or obtuse, base cuneate or attenuate, 4–16 cm \times 1.3–4.5 cm, midrib slightly warty, venation distinct both surfaces when dry, more so below, areolation coarse, light shining green above, paler below. Inflorescences paniculate, much smaller than leaves; perianth *ca* 2 mm long, glabrous, lobes broad, obtuse. Fruits yellow when mature, globose, up to *ca* 4 cm diameter.

Low elevation rainforest of coastal districts. Flowers autumn. Timber light coloured, strong, hard, suitable for weatherboards, flooring, tool handles.

7. *Endiandra globosa* Maiden & Betche

Large tree, not buttressed; bark grey or brown, finely scaly. Leaves alternate or opposite; petioles 0.8–1.5 cm long; blades ovate or elliptic, apex bluntly acuminate, base cuneate to rounded, 6.5–20 cm \times 3–9 cm, midrib raised, warty beneath, areolation distinct both surfaces when dry, mid-green above, paler beneath, both surfaces glossy when fresh, drying dull black. Inflorescences compact panicles much smaller than leaves; perianth 3–4 mm long. Fruits black, globose, 4–5 cm diameter.

Only recorded from river valley rainforest of Gold Coast hinterland. Flowers probably spring. Timber pinkish-brown when seasoned, close-grained, hard.

8. *Endiandra muelleri* Meissner

Tree up to 35 m tall, often shortly buttressed or flanged; bark brown, craterous with loose plates, underbark red, streaked with white. Leaves alternate or opposite; petioles 0.3–1.2 cm long; blades ovate or elliptic, occasionally oblong-ovate, apex bluntly acuminate or obtuse, base cuneate to rounded, 4.5–14 cm \times 2–6 cm, midrib warty beneath, midrib and lateral veins raised, prominent when dry, domatia often present in axils, areolation distinct both surfaces when dry, glossy green above, paler beneath. Inflorescences loose panicles shorter than leaves; perianth yellow, *ca* 2 mm long, puberulent, lobes ovate. Fruits dull black, ellipsoid, 2.5 cm \times 1.3 cm. **Fig. 22C.**

Rainforest of wetter areas of the region, usually on poorer soils. Flowers summer. Heartwood brown with faint spicy odour, used for cases and lining.



Fig. 22

LAURACEAE — A-D *Endiandra* spp. — A₁-A₂, *E. crassiflora*, A₁ part of flowering branchlet x1, A₂ flower x4; B₁-B₂, *E. pubens*, B₁ leaf x $\frac{2}{3}$, B₂ part of upper surface showing coarse areolation x6, B₃ flower x6, B₄ fruit x $\frac{1}{2}$; C₁-C₃, *E. muelleri*, C₁ leaf showing domatia on undersurface x1, C₂ part of inflorescence x1, C₃ partly opened flower x6; D *E. discolor*, leaf showing domatia on undersurface x $\frac{2}{3}$; E-K *Cryptocarya* spp. — E₁-E₂, *C. microneura*, E₁ part of flowering branchlet x $\frac{2}{3}$, E₂ part of leaf undersurface showing fine areolation x6, E₃ flower x8, E₄ flower showing perianth tube enveloping ovary x4, E₅ globose fruit x1; F₁-F₄, *C. obovata*, F₁ part of flowering branchlet x $\frac{1}{2}$, F₂ expanded view x6, F₃ fruit with persistent perianth lobes x1; G *C. erythroxyton*, fruit x1; H *C. glaucescens*, fruit x1; I *C. bidwillii*, fruit x1; J *C. triplinervis*, leaf showing triplinerved base x $\frac{2}{3}$; K *C. foveolata*, leaves showing domatia, raised on upper surface (right) slit-like entrance on lower surface (left) x1.

9. *Endiandra compressa* C. T. WhiteQUEENSLAND GREENHEART;
WHITEBARK

Tree up to 35 m tall, sometimes buttressed; bark grey to \pm white, usually smooth. Leaves alternate or subopposite; petioles 0.6–1.4 cm long; blades narrowly ovate to elliptic, apex obtuse or bluntly acuminate, base cuneate, 5–16 cm \times 1.5–6.5 cm, midrib smooth, raised below, areolation coarse, prominent both surfaces when dry, glossy green above, paler beneath. Inflorescences paniculate, much shorter than leaves; perianth 2–3 mm long, puberulent, lobes oblong-ovate. Fruits blackish, broadly ovoid or depressed globose, *ca* 5 cm \times 4 cm \times 3 cm, fruiting pedicels thickened at top.

Rainforests of coastal districts, often near creeks. Timber hard, strong resilient, suitable for dance floors, fishing rods, etc.

34. HERNANDIACEAE

Trees or shrubs, sometimes scandant. Leaves alternate, exstipulate, simple or digitate, with oil cells. Flowers in bracteate cymes, unisexual or bisexual, actinomorphic; perianth segments 6–10, usually in 2 whorls, outer \pm valvate; stamens 3–5, staminodal in female flowers, opposite outer perianth segments, sometimes with 1–2 glands at base; ovary inferior, 1-locular, ovule solitary, pendulous. Fruits dry, indehiscent, winged or enclosed in inflated receptacle.

2–3 genera with *ca* 50 species, tropical; 2 genera with 4 species Australia; 1 species south-eastern Queensland.

1. HERNANDIA L.

Trees. Flowers in loose panicles, each panicle branch terminating in an involucre of 4–5 verticillate bracts enclosing 3 flowers, central one female, sessile within cup-shaped involucre, 2 laterals male and pedicellate. Fruits \pm leathery, enclosed in the enlarged fleshy or thickly membranous involucre.

20 species, tropical; 2–3 species Australia; 1 species south-eastern Queensland.

1. *Hernandia bivalvis* Benth.

Leaves with petioles 1.5–4 cm long; blades ovate, apex shortly bluntly acuminate, base rounded to truncate, 3.5–11 cm \times 1.5–6 cm, \pm glabrous. Inflorescences shortly pubescent, peduncles 1.5–9 cm long, involucre of 2 broad bracts enclosing perianth tube. Fruiting involucre reddish, broadly ovate, up to 7 cm \times 5 cm; fruits black, ovoid, *ca* 2 cm diameter.

Coastal districts in rainforest. Flowers spring–summer.

35. RANUNCULACEAE

Perennial or annual herbs with radical and/or alternate leaves, or climbers, rarely shrubs, with opposite leaves, often compound or dissected, exstipulate but sometimes a stipule-like, petiolar basal sheath present. Inflorescences racemose, paniculate, or flowers solitary; flowers bisexual or unisexual, actinomorphic; sepals 3–8, usually 5, imbricate to valvate, sometimes petaloid if petals absent, mostly caducous, rarely spurred at base; petals 0–many, often 5, free, usually with nectariferous claw, showy; stamens numerous, filaments free in several series, anthers 2-locular; carpels superior, free, usually many, inserted on short globular to elongated receptacle, ovule 1, erect or pendulous, style slightly bifid or stigma sessile. Fruits achenes, sometimes with long plumose appendages, rarely berry-like.

50 genera with 1900 species chiefly northern temperate; 5 genera with 39 species Australia; 3 genera with 14 species south-eastern Queensland.

- | | | |
|--|----------------------|---|
| 1. Woody climbers; leaves opposite; style of carpel becoming long plumose awn on achene | 1. <i>Clematis</i> | |
| Erect herbs; leaves radical or alternate; style of carpel becoming short glabrous beak on achene | | 2 |
| 2. Petals yellow or cream, with nectary at base; achenes in globular heads, or if in short cylindrical spikes achenes ca 1 mm long | 2. <i>Ranunculus</i> | |
| Petals red, without nectary; achenes in short cylindrical spikes, achenes ca 3-4 mm long | 3. <i>Adonis</i> | |

1. CLEMATIS L.

Woody climbers. Leaves opposite, ternately compound; petioles often twisted or twining, adapted for climbing. Inflorescences panicles, or flowers solitary, usually unisexual; sepals 4, petaloid, valvate in bud; petals absent or minute; stamens numerous; carpels numerous, ovules pendulous, style plumose. Achenes in globular heads, sessile, style persistent, enlarged, forming plumose awn.

250 species, cosmopolitan, chiefly temperate; 4 species endemic to Australia, occurring in south-eastern Queensland.

- | | | |
|--|---|---|
| 1. Leaf blades ternately divided once, the three leaflets more than 1 cm wide | | 2 |
| Leaf blades ternately divided at least twice, leaflets less than 1 cm wide | | 4 |
| 2. Leaflets deeply lobed, margins of lobes \pm serrate | 1. <i>C. fawcettii</i> | |
| Leaflets with entire or irregularly toothed margins | | 3 |
| 3. Anthers tipped with subulate appendage more than 1.5 mm long, often longer than anther; margins of leaflets usually irregularly toothed | 2. <i>C. aristata</i> var. <i>longiseta</i> | |
| Anthers tipped with blunt appendages less than 1 mm long, mostly less than 0.5 mm long; margins of leaflets entire or with a few teeth near base | 3. <i>C. glycinoides</i> | |
| 4. Leaflets deeply lobed, margins of lobes \pm serrate | 1. <i>C. fawcettii</i> | |
| Leaflets with entire margins | 4. <i>C. microphylla</i> | |

1. *Clematis fawcettii* F. Muell.

Clematis microphylla DC. var. *fawcettii* (F. Muell.) F. M. Bailey

Leaves once or twice divided; petioles 2-6 cm long, petiolules 2-5 mm long; leaflet blades ovate, apex acute, base cuneate, margin \pm serrate and deeply lobed, 0.6-4 cm \times 0.5-3 cm, often \pm pubescent. Sepals narrow, apex acute, 0.8-2.5 cm long, \pm pubescent outside; stamens with filaments 2-6 mm long, anthers 0.7-1 mm long, without appendages; ovary puberulent. Achenes ca 4 mm long, slender, awn 2-2.5 cm long.

Rare, only collected from border ranges of western Moreton district and adjacent areas of the Great Dividing Ra. Flowers possibly spring.

2. *Clematis aristata* R.Br. ex DC. var. *longiseta* F. M. Bailey

Leaves once ternately divided; petioles 2-6 cm long, petiolules 0.4-1.5 cm long; leaflet blades narrowly ovate to ovate, apex acute, base cuneate to subcordate, margin usually irregularly dentate, 2-8 cm \times 1-3 cm, glabrous, 3-nerved at base. Sepals with acute apex, 1-2.5 cm long, \pm pubescent outside; stamens with filaments 3-8 mm long, anthers ca 1.5-2 mm long with subulate appendages 2-4 mm long; ovary pubescent. Achenes narrowly ovate, compressed, 4-5 mm long, pubescent, awn 3-4 cm long.

Recorded from Killarney and Upper Nerang; may be found in border region. Flowers possibly spring. Has been suspected of poisoning stock.

3. *Clematis glycinoides* DC.

HEADACHE VINE; TRAVELLER'S JOY

Leaves once ternately divided; petioles 2-8 cm long, petiolules 0.5-2 cm long; leaflet blades narrowly ovate to broadly ovate, apex acute, base cuneate to subcordate, margin usually entire, 2-11 cm \times 1-7 cm, glabrous or pubescent, 3-nerved at base. Sepals with

mucronate apex, 0.5–2 cm long, ± pubescent outside; stamens with filaments 2–8 mm long, anthers 1–2 mm long with blunt appendages usually 0.1–0.5 mm long, occasionally in southern mountain areas up to 0.9 mm long, but still blunt; ovary pubescent. Achenes narrowly ovate, compressed, 3–4 mm long, ± pubescent, awn 2–3.5 cm long. **Fig. 23B.**

Two varieties occur in the region:

- 1. Leaves ± glabrous; anthers 1–2 mm long with appendages usually *ca* 0.5 mm long *C. glycinoides* var. *glycinoides*
- Leaves pubescent; anthers 1–1.25 mm long with appendages up to 0.2 mm long *C. glycinoides* var. *submutica*

Both *C. glycinoides* var. *glycinoides* and *C. glycinoides* var. *submutica* Benth. are widespread and common, usually in wet eucalypt or rainforest areas. Flowers spring. Young leaves crushed and sniffed strongly cause irritation of nose and watering of eyes, and are said to relieve headache. Prolonged rubbing of crushed leaves can blister palms of hands.

4. *Clematis microphylla* DC.

SMALL-LEAVED CLEMATIS

Leaves at least twice ternately divided; petioles 1–9 cm long, petiolules 2–10 mm long; leaflet blades linear to narrowly ovate, apex acute or mucronate, base cuneate, 0.4–8 cm × 0.1–0.9 cm, glabrous. Sepals narrow, apex acute, 0.5–1.5 cm long, ± pubescent outside, stamens with filaments 2–4 mm long, anthers 0.6–1 mm long, without appendages; ovary pubescent. Achenes brown, ovate, compressed, 3–4.5 mm long, becoming glabrous, awn 2–2.5 cm long. **Fig. 23A.**

Darling Downs district in sandy or granite areas. Flowers winter to early spring. This plant has an irritant effect similar to *Clematis glycinoides*.

C. microphylla DC. var. *leptophylla* F. Muell. ex Benth. has referred to the smallest-leaved variants, with leaflets 4–10 mm × 1–3 mm, but there seems to be a continuous gradation from the largest to the smallest.

2. RANUNCULUS L.

Annual or perennial herbs, erect or stoloniferous. Leaves radical and/or alternate; petioles dilated at base into scarious sheaths. Flowers in cymose panicles or solitary, terminal or axillary on leaf-opposed peduncles; sepals usually 5, imbricate, caducous; petals 5–12, usually with nectary at base; stamens numerous; carpels numerous, ovules erect. Achenes in globular, occasionally slightly oblong heads, persistent glabrous style forming beak.

400 species cosmopolitan, temperate and cold tropical mountains; *ca* 30 native species and 4 naturalized species Australia; 9 species south-eastern Queensland.

Generally called BUTTERCUPS. Most species are considered potentially poisonous but generally appear unpalatable.

- 1. Achenes smooth or minutely rugose or with obscure obtuse ridges, glabrous, not twisted 2
- Achenes with bristly or spiny tubercles, or if smooth then ± twisted 6
- 2. Plants ± glabrous 3
- Plants hirsute to densely hirsute 5
- 3. Achenes in short cylindrical head at maturity; leaves coarsely, obtusely lobed, or with crenate margins 1. *R. scleratus*
- Achenes in globose head at maturity; leaves finely dissected, segments often linear, acute 4
- 4. Achenes with distinct ripple pattern of numerous rounded ridges on lateral surfaces; flowers 2–2.5 cm diameter; sepals almost always sparingly pilose outside 2. *R. undosus*
- Achenes with irregular warty pattern on lateral surfaces; flowers 1–1.5 cm diameter; sepals always glabrous 3. *R. inundatus*

- | | | |
|--|----------------------------|---|
| 5. Sepals spreading, appressed to petals; flowers 1.5–4 cm diameter; beak on achene slender, recurved with recoiled tip, 0.8–1.8 mm long
Sepals reflexed; flowers 0.7–1.6 cm diameter; beak on achene slender, strongly recurved, 0.7–1 mm long | 4. <i>R. lappaceus</i> | |
| | 5. <i>R. plebeius</i> | |
| 6. Achenes 4–5 mm long, with spiny tubercles on lateral surfaces; flowers 1–1.5 cm diameter; sepals reflexed
Achenes less than 3 mm long, with bristly tubercles or glabrous; flowers 2–3 mm diameter; sepals spreading | 6. <i>R. muricatus</i> | 7 |
| 7. Achenes strongly compressed and \pm twisted, either glabrous or with few tubercles topped by recurved bristles in centre of lateral surfaces
Achenes \pm lenticular, not twisted, with bristly tubercles over most of lateral surfaces | 7. <i>R. pentandrus</i> | 8 |
| 8. Leaves ternate or palmatisect with linear lobes; achenes with obscure tubercles
Leaves palmatifid or palmatisect, segments coarsely toothed or lobed; achenes with prominent conical tubercles | 8. <i>R. pumilio</i> | |
| | 9. <i>R. sessiliflorus</i> | |

1. **Ranunculus scleratus* L. CELERY BUTTERCUP; POISON BUTTERCUP;
CURSED CROWFOOT

Erect, stout, hollow-stemmed herb up to 60 cm tall, \pm glabrous. Radical leaves with petioles 3–15 cm long; blades reniform, 1–6 cm \times 1.5–8 cm, palmatifid with 3 lobes, each again obtusely lobed; cauline leaves reduced. Flowers 5–10 mm diameter; sepals reflexed, 2–4 mm long, pubescent outside; petals yellow, 5, 2–4 mm long. Achenes lenticular, obovate-cuneate, *ca* 1 mm long, lateral surfaces smooth or obscurely warty, beak straight, thick, *ca* 0.1 mm long; receptacle \pm hirsute. **Fig. 23I.**

Native of northern temperate regions; recorded only from Brisbane and environs, near water or swampy areas. Flowers mainly spring. Generally regarded as most toxic of the buttercups; there are many overseas reports of poisoning in stock and man.

2. *Ranunculus undosus* Melville

Stoloniferous herb, flowering stems up to 30 cm long, usually glabrous. Radical leaves with petioles 3–18 cm long; blades 2–5 cm \times 2–6 cm, palmatisect with segments 2–9 mm broad, or linear-acute, 1–3 mm broad on aquatic plants; cauline leaves smaller. Flowers 2–2.5 cm diameter; sepals usually sparingly pilose outside; petals golden, 5–11. Achenes sublenticular, broadly subcuneate, *ca* 2 mm long, lateral surfaces with transverse ridges, beak slender, 1–1.5 mm long; receptacle with long hairs among achenes, shorter ones in staminal zone. **Fig. 23D.**

Throughout the area, mainly Darling Downs district, beside creeks or in damp areas. Flowers sporadically, mainly winter–spring.

3. *Ranunculus inundatus* R.Br. ex DC. RIVER BUTTERCUP

Sometimes misidentified as *Ranunculus rivularis* Banks & Solander

Stoloniferous herb, flowering stems up to 30 cm long, \pm glabrous. Radical leaves with petioles 1–15 cm long; blades 1–4 cm \times 2–4 cm, palmatisect with segments 0.5–2 mm broad; cauline leaves smaller. Flowers 1–1.5 cm diameter; sepals glabrous; petals golden, 5–7. Achenes sublenticular, broadly obovate, *ca* 1.5–1.8 mm long, lateral surfaces irregularly warty, beak reflexed, 0.7–1.2 mm long; receptacle with dense circle of hairs in staminal zone, otherwise glabrous. **Fig. 23C.**

Southern districts near creeks or sometimes in shallow water. Flowers mainly spring.

4. *Ranunculus lappaceus* Smith COMMON BUTTERCUP

Erect, perennial herb up to 70 cm tall; roots fibrous; plant hirsute. Radical leaves with petioles 2–30 cm long; blades 1–8 cm \times 1–8 cm, ternately or biternately dissected or lobed with dentate, usually acute segments, hirsute with appressed hairs; cauline leaves smaller. Flowers 1.5–4 cm diameter; sepals hirsute outside; petals golden, 5. Achenes

lenticular, obovate-cuneate, 1.7–3.5 mm long, lateral surfaces smooth or dimpled, beak slender, 0.8–1.8 mm long, arched with recoiled tip; receptacle with hirsute achene zone, otherwise glabrous. **Fig. 23H.**

Common and widespread throughout the region in damp areas, roadsides, drainage ditches, etc. Flowers mainly early spring to summer.

5. *Ranunculus plebeius* R. Br. ex DC.

Erect perennial herb up to 80 cm tall; roots fibrous; plant hirsute. Radical leaves with petioles 3–18 cm long; blades 1–7 cm × 1–7 cm, ternate, segments ternately lobed and acute, hirsute with appressed hairs; cauline leaves reducing. Flowers 0.7–1.6 cm diameter; sepals reflexed, hirsute outside; petals golden, 5. Achenes lenticular, obovate-cuneate, 1.8–2.8 mm long, lateral surfaces smooth, beak slender, 0.7–1 mm long, strongly recurved; receptacle with sparingly hirsute achene zone, otherwise glabrous.

Rare, southern districts near creeks. Flowers possibly spring.

6. **Ranunculus muricatus* L.

SHARP BUTTERCUP

Stout, hollow-stemmed, ± glabrous annual herb up to 50 cm tall, erect or decumbent, rooting at nodes. Radical leaves with petioles 10–15 cm long; blades 2.5–5 cm × 3–8 cm, entire and broadly ovate, or palmatifid or palmatisect with 3–5 lobes, each acutely lobed or crenate; cauline leaves reducing. Flowers 1–1.5 cm diameter; sepals reflexed; petals yellow, 5. Achenes strongly compressed, ovate, ca 4–5 mm long, margin smooth, broad, lateral surfaces each with ca 20 spiny tubercles, beak broad, flat, 2–3 mm long; receptacle hirsute.

Native of Mediterranean region; southern districts, in damp areas usually near habitation. Flowers spring.

7. *Ranunculus pentandrus* J. M. Black

Annual herb up to 20 cm tall. Leaves with petioles 1.5–6 cm long, blades 1–3 cm × 1–3 cm, ternate, and ternately dissected into narrowly ovate to linear lobes, apex acute, usually glabrous. Flowers 2–3 mm diameter, upper subsessile, lower pedicellate, pedicel up to 3 cm long when fruiting; sepals 3–5; petals white, 1–2. Achenes strongly compressed and ± twisted, suborbicular to broadly ovate, 2–3 mm long, margins smooth, beak short; receptacle glabrous.

Two varieties occur in the region:

- | | |
|--|--|
| 1. Lateral surfaces of achenes smooth, without tubercles (Fig. 23F) | <i>R. pentandrus</i> var. <i>pentandrus</i> |
| Lateral surfaces of achenes with a few conical tubercles each terminated by a recurved bristle (Fig. 23G) | <i>R. pentandrus</i> var. <i>platycarpus</i> |

Darling Downs and farther west, usually near water or damp areas. Flowers possibly late winter to spring. *R. pentandrus* var. *platycarpus* (F. Muell.) H. Eichler (*R. sessiliflorus* R.Br. ex DC. var. *platycarpus* F. Muell.; *R. pentandrus* var. *glabrescens* (J. M. Black) Melville) is the more common variety.

8. *Ranunculus pumilio* R.Br. ex DC.

Ranunculus leptocaulis Hook.; *R. parviflorus* L. var. *australis* Benth. pro parte
Annual herb up to 20 cm tall. Leaves with petioles 1–7 cm long; blades 1–3 cm × 1–3 cm, ternate or palmatisect with ± linear-acute segments, ± densely pilose. Flowers 2–3 mm diameter, upper subsessile or with pedicels up to 1 cm long, lower with pedicels 0.3–1.5 cm long; sepals 5, rarely 3; petals yellow, 2–4. Achenes lenticular, suborbicular, 1.5–2 mm long, lateral surfaces with curved bristles set on minute papillae, beak short; receptacle glabrous.

Rare, Darling Downs district. Flowers possibly spring.

9. *Ranunculus sessiliflorus* R.Br. ex DC.

Ranunculus parviflorus L. var. *australis* Benth. pro parte
Annual herb up to 35 cm tall. Leaves with petioles 2–5 cm long; blades 0.5–2 cm × 0.5–2 cm, palmatisect, median segment 3-dentate, laterals 2-fid, pilose. Flowers 2–3 mm diameter, upper subsessile, lower subsessile or on pedicels up to 1.5 cm long when fruiting;

sepals 3-4; petals probably yellow, 1-2. Achenes sublenticular, suborbicular to obovate, 1.5-2 mm long, beak short; receptacle glabrous. **Fig. 23E.**

Southern districts usually along creeks or in damp areas. Flowers possibly late winter to spring.

3. ADONIS L.

Herbs with 1-3-pinnate, alternate leaves with \pm linear segments. Sepals usually 5, often petaloid; petals glossy, 3-20, longer than sepals, nectaries absent; stamens numerous; ovule pendulous. Achenes numerous, rugose, forming an elongated head or short spike at maturity.

20 species temperate Europe, Asia and Africa; 2-3 species naturalized Australia; 1 species south-eastern Queensland.

1. **Adonis microcarpus* DC.

PHEASANT'S EYE

Adonis annua auct. Aust. non L.; *A. cupaniana* Guss.; *A. dentatus* Delile subsp. *microcarpus* (DC.) Riedl.

Erect annual herb up to 40 cm tall. Leaves with petioles 2-7 cm long; blades 4-5 cm long, 3-pinnately dissected into linear-acute segments, glabrous. Flowers solitary, terminal; sepals 5; petals scarlet with dark basal spot, 6-10; anthers blackish-purple; carpels numerous. Achenes 3-4 mm long, lateral surfaces rugose, beak with obtuse projection at base on inner surface.

Native of southern Europe; southern Darling Downs district, garden escape, occasional occurrence as weed. Flowers spring. Has been suspected of poisoning stock.

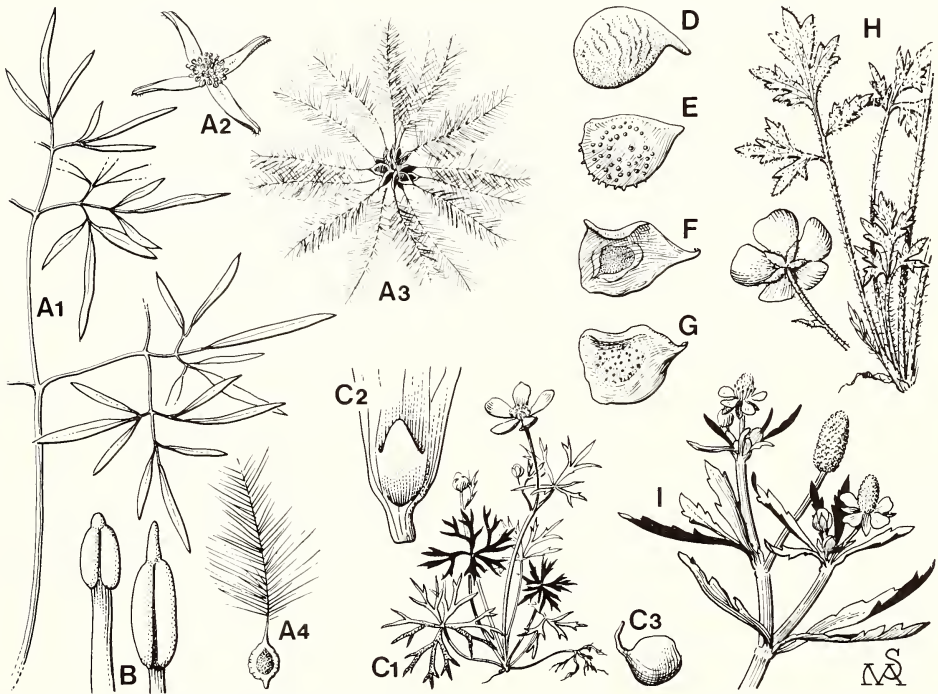


Fig. 23

RANUNCULACEAE — A-B *Clematis* spp. — A₁-A₄, *C. microphylla*, A₁ leaf, ternately divided $\times \frac{1}{2}$, A₂ male flower $\times \frac{1}{2}$, A₃ fruits $\times \frac{1}{2}$, A₄ single fruit $\times 1 \frac{1}{2}$; B *C. glycinoides*, anthers showing variation in length of apical appendage $\times 8$; C-I *Ranunculus* spp. — C₁-C₃, *R. inundatus*, C₁ part of flowering stem $\times \frac{1}{2}$, C₂ nectary at base of petal $\times 4$, C₃ fruit $\times 6$; D *R. undosus*, fruit $\times 8$; E *R. sessiliflorus*, fruit $\times 8$; F *R. pentandrus* var. *pentandrus*, fruit $\times 4$; G *R. pentandrus* var. *platycarpus*, fruit $\times 4$; H *R. lappaceus*, part of flowering stem $\times \frac{1}{2}$ (sepals appressed to petals); I *R. scleratus*, part of flowering stem $\times \frac{1}{2}$.

36. MENISPERMACEAE

Climbers, or rarely erect shrubs or small trees, dioecious; wood with broad medullary rays, root bitter. Leaves alternate, exstipulate, petiolate, usually simple. Inflorescences cymose, paniculate, fasciculate, rarely flowers solitary, axillary, or borne on older wood; flowers small, inconspicuous, unisexual, actinomorphic; sepals in 2-4 series, imbricate, outer smaller; petals usually smaller than sepals, minute or absent, free or rarely united; male flowers with 6, 3, or numerous stamens, usually opposite petals, free or variously united, anthers short, ovary rudimentary; female flowers with or without staminodes, carpels superior, usually 3-6, free, sessile or stipitate, ovules 2, reduced to 1 by abortion, attached to ventral suture, stigma terminal, entire or lobed. Fruits drupaceous, usually curving in development so that style is no longer terminal.

65 genera with 350 species, tropical and warm temperate; 13 genera with 21 species Australia; 7-8 genera with 8-9 species south-eastern Queensland.

- | | |
|--|------------------------|
| 1. Leaves peltate | 2 |
| Leaves not peltate | 3 |
| 2. Leaves distinctly peltate, petiole more than 5 mm from edge of leaf; usually herbaceous climber; inflorescence a compound umbel | 1. <i>Stephania</i> |
| Leaves only slightly peltate, petiole not more than 5 mm from edge of leaf; woody climber; inflorescence racemose | 2. <i>Sarcopetalum</i> |
| 3. Leaves palmately nerved | 4 |
| Leaves pinnately nerved, sometimes 3-nerved at base | 6 |
| 4. Leaves pubescent; inflorescence of pedunculate cymes | 3. <i>Legnephora</i> |
| Leaves glabrous; inflorescence of racemes or pseudoracemes | 5 |
| 5. Sepals 2-5; stamens united into a column; leaves broadly ovate | 2. <i>Sarcopetalum</i> |
| Sepals 6; stamens free; leaves \pm triangular | 4. <i>Tinospora</i> |
| 6. Leaves with 7 or more main lateral nerves; male flowers with 6 stamens; female flowers with 6 densely pilose carpels | 5. <i>Carronia</i> |
| Leaves with up to 5 main lateral nerves; male flowers with 3, or 9-40 stamens; female flowers with 2-3 carpels or, if 6, then not densely pilose | 7 |
| 7. Flowers with 3 stamens or 6 carpels; leaves coarsely reticulate, reticulation raised, prominent when dried | 6. <i>Pleogyne</i> |
| Flowers with 9-40 stamens, or 2-3 carpels; final reticulation areolate, veins not raised when dried | 7. <i>Hypserpa</i> |

1. STEPHANIA Lour.

Climbers; roots often tuberous; stems woody or herbaceous, longitudinally grooved. Leaves petiolate, petiole usually swollen at both ends; blades peltate, palmately nerved. Inflorescences axillary or on old leafless stems, of 1-many peduncled umbelliform cymes, sometimes condensed to disciform heads; male flowers with 6-8 sepals in 2 series, usually \pm obovate, petals 3-4, usually \pm broadly obovate with involute margin, stamens 2-6, connate in peltate syndrium, anthers dehiscent transversely; female flowers with 1-8 sepals, 2-4 petals, carpel 1, style very short or absent, stigma shortly lobed or divaricately lacinate. Fruits drupaceous, obovoid with style-scar near base, glabrous, endocarp long, horseshoe-shaped, tuberculate or ridged; seeds curved.

40 species tropical Africa, Asia, Australia; 2-4 species Australia; 2 species south-eastern Queensland.

- | | |
|--|-----------------------|
| 1. Stems and petioles without prickles | 1. <i>S. japonica</i> |
| Stems and leaves with prickles | 2. <i>S. aculeata</i> |

1. *Stephania japonica* (Thunb.) Miers

TAPE VINE

Menispermum japonicum Thunb.; *Stephania hernandiifolia* (Willd.) Walp.; *S. discolor* (Blume) Sprengel

Stems glabrous or pubescent. Leaves with petioles 3–12 cm long; blades broadly triangular-ovate to ovate, apex usually \pm acuminate to obtuse, mucronate, base broad, rounded to subcordate, 4–17 cm \times 4–14 cm, glabrous above, glabrous to crisply pubescent, sometimes glaucous, below. Inflorescences up to 8 cm long; flowers in dense subcapitate cymose clusters, glabrous or puberulous. Fruits red, \pm sessile, \pm obovoid to suborbicular, 4–8 mm \times 4–6 mm. **Fig. 24A.**

Three varieties occur in the region:

- | | | |
|---|--|---|
| 1. Leaves puberulous below | <i>S. japonica</i> var. <i>discolor</i> | |
| Leaves glabrous below, though region around insertion of petiole sometimes puberulous | | 2 |
| 2. Inflorescence puberulous | <i>S. japonica</i> var. <i>timoriensis</i> | |
| Inflorescence glabrous, though back of sepals sometimes papillose | <i>S. japonica</i> var. <i>japonica</i> | |

Coastal districts, common, particularly in littoral areas or closed forest; **S. japonica** var. **discolor** (Blume) Forman (*S. hernandiifolia* var. *discolor* (Blume) Miq.) is found as far west as Bunya Mts.; **S. japonica** var. **japonica** is rare, while **S. japonica** var. **timoriensis** (DC.) Forman (*Cocculus japonicus* (Thunb.) DC. var. *timoriensis* DC.) is more common.

This species has been suspected of poisoning stock on numerous occasions.

A \pm glabrous variant with broadly ovate leaves with lobed base and very obtuse tip has been recorded from the Eidsvold (and Rockhampton) areas. On further study this may prove to be an undescribed species.

2. *Stephania aculeata* F. M. Bailey

Stems with prickles up to 3 mm long. Leaves with petioles 0.8–6 cm long; blades triangular or broadly ovate, apex acute, mucronate, or acuminate, base \pm truncate or subcordate, 1–8 cm \times 1–8.5 cm, glabrous, dark green above, glaucous beneath. Inflorescences lax, up to 15 cm long. Fruits obovoid to subglobose, 5–6 mm \times 5–7 mm.

Climber in closed forest areas of southern coastal districts. Flowers mainly summer.

2. SARCOPETALUM F. Muell.

Woody climbers. Leaves palmately nerved. Inflorescences racemose; sepals 2–5, small; petals 2–6, thickly fleshy, nearly globose, usually longer than sepals; male flowers with stamens united into a column, divided at apex into 2–3 short, horizontal lobes each bearing 2-locular anthers; female flowers with 3–6 carpels, stigmas lobed, recurved. Drupes flattened, style-scar near base, endocarp horseshoe-shaped, rugose, lateral surfaces concave.

1 species endemic to eastern Australia, occurring in south-eastern Queensland.

1. *Sarcopetalum harveyanum* F. Muell.

Glabrous. Leaves with petioles 1–10 cm long; blades usually slightly peltate, broadly ovate, apex acute or obtuse mucronate, base truncate to cordate, 2.5–15.5 cm \times 2–14.5 cm, 5–7-nerved. Inflorescences reddish-yellow, of racemes 3–7 cm long, usually borne on older wood. Drupes flattened laterally, obovoid, 6–8 mm \times ca 6 mm. **Fig. 24D.**

In or near rainforest, or riverine closed forests of the coastal districts. Flowers summer.

3. LEGNEPHORA Miers

Woody climbers. Leaves \pm broadly ovate, palmately nerved. Inflorescence of 1-few pedunculate cymes, supra-axillary or racemously arranged; sepals 6 in 2 series, outer narrower than inner; male flowers with 6 petals, sides folded inwards around opposite stamen, glabrous, stamens 6, free; female flowers without petals, staminodes 6, clavate, carpels 3, stigmas recurved, flattened. Fruits drupaceous, endocarp rotund in outline, dorsal wing entire, lateral horseshoe-shaped or hooded crests prominent; seeds curved.

5 species eastern Malaysia and Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Legnephora moorei* (F. Muell.) Miers

NATIVE GRAPES

Cocculus moorei F. Muell.; *Tristichocalyx diffusus* Miers; *Pericampylus incanus* auct. non (Colebr.) Miers, Benth.

Young stems, petioles tawny-puberulous. Leaves with petioles 4–11 cm long; blades broadly ovate, apex obtusely pointed or rounded, 7–20 cm \times 7–21 cm, usually subglabrous above, puberulent and usually glaucous below. Inflorescences mostly 2–6 cm long, peduncle 1–3 cm long, puberulent, flowers shortly pedicellate. Fruits \pm compressed-globose, 1–1.2 cm long. **Fig. 24E.**

Climber in closed forest or remnant rainforest along creeks of the region. Flowers mainly summer. It is reputed to be poisonous to stock, and the fruits are said to have made children ill.

4. TINOSPORA Miers

Woody climbers; old twigs warty; bark thin, easily separating from stem. Leaves not or hardly peltate, cordate or ovate, palmately nerved, glabrous. Flowers 1–3 together along axis of axillary or cauliflorous, solitary or fascicled, pendulous pseudoraceme; sepals 6, inner largest; petals 3–6, obovate-spathulate, apex obtuse, shorter than calyx, often marginally clasping stamens; male flowers with 6 stamens, basally shortly united with base of petals, anthers longitudinally dehiscent; female flowers with 6 staminodes, carpels 3, stipitate, stigma \pm sessile, broad, lobed. Drupes 1–3, oblong, stigma-scar terminal, endocarp rugulose, dorsally keeled, sometimes warty.

40 species tropical Africa, south-eastern Asia, Indomalaysia, Australia; 1–2 species Australia; 1 species south-eastern Queensland.

1. *Tinospora smilacina* Benth.

Plant glabrous. Leaves with petioles 1–12 cm long, sometimes slightly twisted basally but not swollen; blades thin, \pm ovate-triangular, apex acute or bluntly pointed, base contracted, truncate or slightly cordate, sometimes hastate, lobes rounded, 2.5–18 cm \times 2–13 cm. Inflorescences 4–8 cm long, borne among leaves. Fruits red, ellipsoid, 6–10 mm \times 4–6 mm. **Fig. 24B.**

Closed forest of the area. Flowers summer.

Fawcettia tinoporoides F. Muell. was reported by Bailey in "Qd. Flora" to occur in the region, but there are no authenticated records at Queensland Herbarium. It can be distinguished from the above by the petioles being swollen and twisted at the base, and swollen at the junction with the blades, which may be penninerved. The inflorescence is a panicle borne, according to Bailey, on the old wood.

5. CARRONIA F. Muell.

Lianes, branchlets often bearing prominent discoid petiole scars. Leaves \pm elliptic, penninerved. Inflorescences axillary, terminal or on old wood, pseudospicate or thyrsoid; flowers in congested clusters; sepals 9–30 in whorls of 3, inner larger, externally densely pilose, internally glabrous, innermost whorl(s) valvate; petals 6, minute, \pm clawed; male flowers with 6 stamens, free, anthers introrse with vertical or oblique slits; female flowers

without staminodes, carpels 6, densely pilose, styles erect or recurved, subulate, glabrous. Drupes stipitate or subsessile on gynophore, subobovoid or elongate-obovoid with style-scar near base, endocarp with or without ridge, lateral surface verrucose, rugose or \pm smooth; seeds horseshoe-shaped.

3 species eastern Australia, New Guinea; 2 species Australia; 1 species south-eastern Queensland.

1. *Carronia multisepelea* F. Muell.

Stems glabrous with age, longitudinally grooved. Leaves with petioles 0.7–7 cm long, swollen both ends, twisted near junction with blade; blades \pm very narrowly ovate to narrowly elliptic, occasionally broad, apex acute, occasionally obtuse, base cuneate to rounded, 11–25 cm \times 3.3–11 cm, \pm glabrous, with 7–15 prominent lateral nerves. Inflorescences usually axillary, pseudospicate, up to 18 cm long, male flowers in few-flowered clusters, female flowers usually solitary; sepals up to 30. Drupes shortly stipitate, subobovoid, 1.3–1.6 cm \times 0.8–1.1 cm, endocarp without dorsal ridge, verrucose or rugose. **Fig. 24F.**

Liane of rainforest in the coastal districts.

6. PLEOGYNE Miers

Scandent shrubs. Leaves ovate, penninerved. Inflorescences axillary, thyrsoid, females often reduced to pseudoracemes; flowers with 9–12 small outer sepals, 3 larger inner valvate sepals, all pilose; petals 6, minute, 3 alternating with stamens, bearing well-developed auricles; male flowers with 3 stamens dehiscing transversely, female flowers without staminodes; carpels 6, style subterete, recurved. Drupes narrowed at base into short stipe, radiating from margin of tomentose gynophore, reniform-globose with style-scar near base.

1 species tropical eastern Australia, occurring in south-eastern Queensland.

1. *Pleogyne australis* Benth.

Microclisia australis (Benth.) Benth.; *Pleogyne cunninghamii* Miers

Leaves with tomentose petioles 0.5–3 cm long, often slightly swollen both ends; blades narrowly ovate to ovate, apex obtuse to acute, mucronate, base rounded to cordate, margin on juveniles often toothed, 4–11 cm \times 2.5–7.5 cm, \pm glabrous to pubescent, more so beneath, with 3–5 pairs of prominent anastomosing nerves in adults. Inflorescences 2–8 cm long, tomentose. Drupes with stipes *ca* 1 mm long, \pm globose, 0.7–1.1 cm long, puberulent, endocarp thin crustaceous, smooth. **Fig. 24C.**

Climber mainly of coastal and littoral closed forest, occasionally further west. Flowers probably summer.

7. HYP SERPA Miers

Scandent shrubs or woody climbers; stems with young growing tips sometimes tendrilliform. Leaves petiolate; blades 3–7-nerved at base. Inflorescences axillary or supra-axillary, cymose or paniculate; sepals 7–12, not whorled, outer minute, inner larger, imbricate, glabrous or subglabrous; petals 5–9, fleshy; male flowers with 9–40, free or connate stamens; female flowers with 2–3 carpels, styles solitary, reflexed, stigma entire. Drupes subcompressed, obovoid to globose, style-scar near base; endocarp perforated or not, surface rugose to rugulose; seeds curved.

20 species China, south-eastern Asia, Malaysia, Australia and Polynesia; 2 species Australia; 1 species south-eastern Queensland.

1. *Hypserpa decumbens* (Benth.) Diels

Adeliopsis decumbens Benth.

Young stems, petioles densely pubescent. Leaves with petioles 0.3–2 cm long; blades ovate to broadly ovate, apex obtuse, sometimes emarginate, terminated by hirsute mucro up to 1 mm long, base rounded to subcordate, 3–10 cm \times 1.3–7 cm, densely pubescent when young, becoming glabrous above except for midrib, puberulent beneath, penninerved, triplinerved at base, final venation areolate, depressed, so that dried leaf surface appears slightly knobby. Inflorescences narrow, up to 4 cm long. Fruits compressed laterally, orbicular, 5–7 mm diameter.

Climber in rainforest of the coastal districts. Flowers possibly spring.

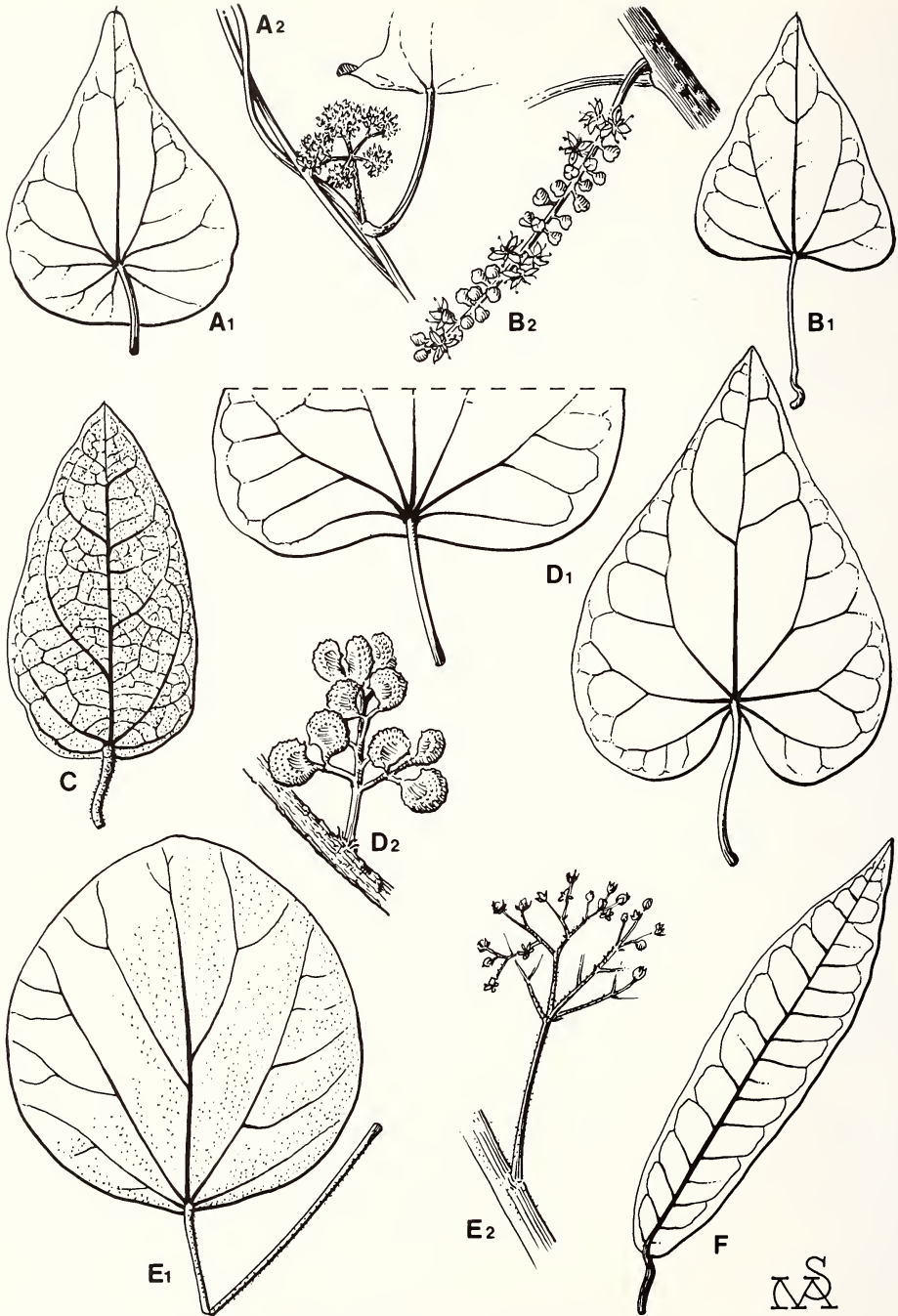


Fig. 24

MENISPERMACEAE – A,–A, *Stephania japonica*, A, leaf $\times \frac{1}{2}$, A, inflorescence $\times 1$; B,–B, *Tinospora smilacina*, B, leaf $\times \frac{1}{2}$, B, inflorescence $\times 1$; C *Pleogyne australis*, leaf $\times \frac{1}{2}$; D,–D, *Sarcopetalum harveyanum*, D, leaves, showing variation in leaf bases $\times \frac{1}{2}$, D, fruiting inflorescence showing hard endocarp (dried material) $\times 1$; E,–E, *Legnephora moorei*, E, leaf $\times \frac{1}{2}$, E, inflorescence $\times 1$; F *Carronia multiseptalea*, leaf $\times \frac{1}{2}$.

37. CABOMBACEAE

Aquatic herbs with perennial rhizomes; stems branched, covered with mucilage. Leaves alternate, submerged ones finely dissected, floating ones peltate. Flowers axillary, solitary, bisexual, actinomorphic; sepals 3, petaloid; petals 3; stamens 3–18, anthers extrorse; carpels superior, 2–18, free, 1-locular, ovules 2–3, placentation parietal, stigma subsessile, entire. Fruits indehiscent; seeds 1–3.

2 genera with 7 species, cosmopolitan; 1 genus with 1 species Australia, occurring in south-eastern Queensland.

1. BRASENIA Schreber

Leaves all peltate. Flowers with 12–18 stamens; carpels 6–18.

1 species endemic to Australia, possibly occurring in south-eastern Queensland.

1. *Brasenia schreberi* J. F. Gmelin

WATER-SHIELD

Brasenia peltata Pursh

Leaves long petiolate; blades elliptic, 3.5–11 cm × 2.5–7.5 cm. Flowers dark reddish-black or purplish, on long peduncles; perianth segments 6–8, up to 1.8 cm long; stamens 12 or more; carpels 6–16, ovules 2. Fruits 6–8 mm long; seeds globose, 2.5–3 mm diameter.

Rare, possibly coastal lagoons and rivers. Flowers spring–summer.

38. NYMPHAEACEAE

Aquatic plants. Leaves with long petioles; blades floating, with a basal sinus, veins palmate. Flowers solitary; terminal, bisexual; sepals 4–6, adnate to torus; petals numerous, rarely absent, sometimes scale-like and nectariferous, imbricate, passing into stamens; stamens numerous, anthers introrse, opening longitudinally; carpels superior or semi-inferior, 5–35, ovules many, placentation parietal. Fruits spongy berries, dehiscing by means of the swelling of mucilage surrounding seeds; seeds with endosperm and perisperm, sometimes arillate.

3 genera with 75 species, cosmopolitan; 2 genera with up to 10 species Australia; 1 genus with 2 species south-eastern Queensland.

1. NYMPHAEA L.

Emergent perennials with either thick, submerged rhizomes creeping horizontally on or in mud, or very short, erect tuberous stems buried in mud except for apex, both producing fibrous roots, leaves and flowers. Flowers actinomorphic, large, showy, solitary on stout peduncles, held on or above water surface; sepals usually 4, rarely 3 or 5; petals 6–50, usually multi-seriate; anthers basifixed; carpels semi-inferior, stigma 1 per carpel, sessile, radiating from central axis to form stigmatic disc across ovary summit. Fruits ± globular, ellipsoid or urceolate, ripening under water; seeds with mucilaginous aril which keeps seed afloat for various periods after fruit dehisces.

50 species tropical and temperate regions; 5–9 species Australia; 2–3 species south-eastern Queensland.

1. Anthers shorter than filaments, without appendages or with appendage up to 1.5 mm long; stamens strongly incurved, ± covering stigmas
Anthers longer than filaments, with appendages 5–8 mm long; stamens ± straight, not covering stigmas

1. *N. gigantea*
2. *N. capensis*

1. *Nymphaea gigantea* Hook.

GIANT WATERLILY

Nymphaea stellata auct. non Willd., F. Muell.; *N. brownii* F. M. Bailey; *N. coerulea* F. M. Bailey

Leaf blades ovate to broadly ovate, apex obtuse, base cordate, margin entire, sinuate or irregularly dentate, 10–60 cm × 10–60 cm. Flowers blue, purplish-blue, pink or white, 6–30 cm diameter; stamens separated from petals by empty space on receptacle. **Fig. 25B.**

Uncommon, in still water in lagoons and rivers of the region. Flowers summer–autumn. Seeds edible, better if fried.

This is a very variable species, and some of the smaller forms with entire or sinuate leaves have been referred by various authors to *N. violacea* Lehm. (*N. brownii* F. M. Bailey). Other forms have been given varietal names but have not been used here. Further research is needed on this group.

2. **Nymphaea capensis* Thunb.

CAPE BLUE WATERLILY

Leaf blades broadly ovate to orbicular, apex obtuse, base cordate, margin sinuate to irregularly dentate, 5–48 cm × 5–48 cm. Flowers blue to purple, 8–20 cm diameter; stamens inserted on receptacle adjacent to petals. **Fig. 25C.**

Native of Africa and Madagascar; coastal districts where it is more common than *N. gigantea*. Flowers mainly summer–autumn. Seeds edible, better if fried.

Nymphaea mexicana Zucc., YELLOW WATERLILY (*N. flava* Leitner ex Audobon), a yellow-flowered species introduced from Florida was reported by Bailey as naturalized around Wellington Pt. in 1899. It was reported to have become quite common in areas which have since become Brisbane suburbs. It is cultivated in ponds, dams, etc., in the region, but no naturalized populations are now known.

39. NELUMBONACEAE

Aquatic plants. Rhizomes consisting of long internodes followed by scale-leaf on underside, then one on upper side, then a foliage leaf, this arrangement being repeated. Foliage leaves peltate, held above water. Flowers solitary, arising from axil of second scale-leaf, held above water; sepals 4, not distinctly different from petals; petals numerous; stamens numerous, anthers introrse; carpels numerous, embedded separately in top of obconical spongy receptacle, ovules solitary, pendulous. Fruits achenes, lying free when mature in cavities of light, dry receptacle which breaks off stalk and floats for some time before decaying and settling to bottom; seeds not arillate.

1 genus with 2 species, generally tropical and subtropical Asia, Australia and America; 1 species tropical Australia, occurring in south-eastern Queensland.

1. NELUMBO Adans.

Characters as for the family.

1. *Nelumbo nucifera* Gaertn.

PINK WATERLILY; PINK LOTUS-LILY

Nelumbium speciosum Willd.

Robust perennial, pedicels and petioles tuberculate. Mature leaf-blades ± orbicular, 20–90 cm diameter, concave, veins radiating from centre. Flowers actinomorphic, showy, pink, sometimes purplish-pink or white, fragrant, 15–25 cm diameter; anthers with appendage 4–8 mm long; receptacle superior, carpels 12–40. Fruiting receptacles 6–11 cm diameter, achenes ± ellipsoid, ca 2 cm long. **Fig. 25A.**

Recorded from lagoon off Condamine R. near Condamine. Seeds edible, raw or cooked, also rootstock and lower leaf stalks after removing tough outer layer.

40. CERATOPHYLLACEAE

Aquatic, submerged herbs; rootless: stems flexuose, branching. Leaves verticillate, variously divided into linear segments. Flowers minute, solitary, axillary, sessile, unisexual, male and female at separate nodes; male flowers with *ca* 12 perianth segments, subvalvate, stamens 10–20, anthers almost sessile, 2-locular, connective produced to form appendage; female flowers with 9–10 perianth segments, ovary superior, sessile, 1-locular, ovules solitary, pendulous. Fruits achenes, crowned by persistent styles, but reproduction also by vegetative means.

1 genus with 10 species, cosmopolitan; 1 species Australia, occurring in south-eastern Queensland.

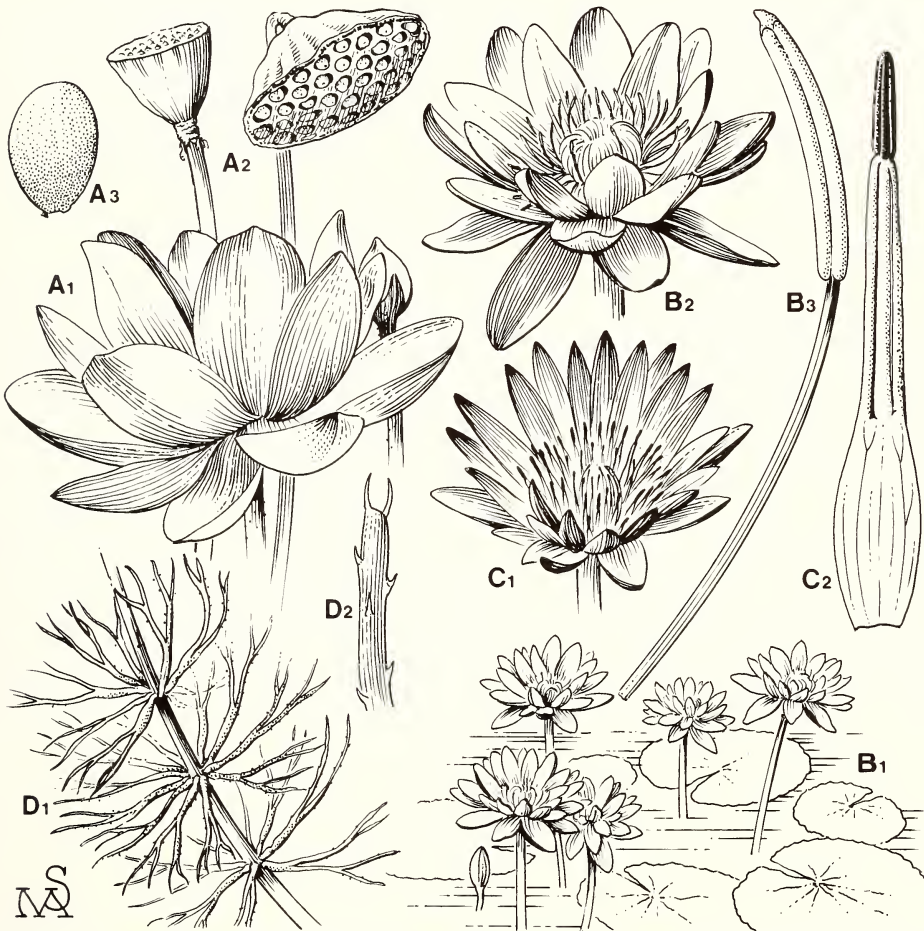


Fig. 25

A NELUMBONACEAE – A₁-A₃, *Nelumbo nucifera*, A₁ flower $\times \frac{1}{3}$, A₂ fruiting receptacle, early and late stages $\times \frac{1}{3}$, A₃ fruit $\times 1$; B-C NYMPHAEACEAE – B-C *Nymphaea* spp. – B₁-B₃, *N. gigantea*, B₁ plants in natural habitat $\times \frac{1}{10}$, B₂ flower $\times \frac{1}{3}$, B₃ stamen showing anther without prominent sterile tip $\times 3$; C₁-C₂, *N. capensis*, C₁ flower $\times \frac{1}{3}$, C₂ stamen showing anther with prominent sterile tip $\times 3$; D CERATOPHYLLACEAE – D₁-D₂, *Ceratophyllum demersum*, D₁ part of stem $\times 1$, D₂ leaf apex showing teeth $\times 6$.

1. CERATOPHYLLUM L.

Characters as for the family.

1. *Ceratophyllum demersum* L.

HORNWORT

Perennial. Stems up to 2 m long. Leaves 7–12 per whorl, 1.5–4 cm long, dichotomously divided 1–4 times, segments irregularly denticulate. Fruits black, indehiscent, ellipsoid, 4–5 mm long, with 3 soft spines much longer than fruit, 1 apical (the persistent style), 2 near basal. **Fig. 25D.**

Common in fresh, still or stagnant to slow-flowing waters up to 5 m deep, mainly in lagoons, rivers or creeks of the region. Flowers mainly summer. Often grown in aquaria.

41. PIPERACEAE

Shrubs, climbers or small trees; inner vascular bundles \pm scattered, outer united in a ring. Leaves alternate; stipules adnate, caducous or rarely obsolete; blades simple, entire; taste and odour pungent. Flowers in dense, leaf-opposed, rarely axillary, solitary, rarely umbellate, spikes, unisexual or bisexual; perianth absent; stamens 1–10 with opposite discrete loculi; ovary superior, 1-locular, with 1 basal ovule, stigmas 1–5, short. Fruits baccate, small; seeds with much mealy perisperm.

4 genera with *ca* 2000 species, mainly tropical; 2 genera with *ca* 10 species Australia; 1 species south-eastern Queensland.

1. PIPER L.

Shrubs or climbers, mostly aromatic. Leaves stipulate; petioles with expanded bases, scars extending around nodes; blades with palmate venation. Spikes or racemes simple and leaf-opposed, bracts closely appressed to stem; stamens several, anther-loculi short and separate on distinct connective; ovary glabrous, stigmas usually 2–4. Fruits fleshy, often immersed in swollen fleshy rachis or connate with bracts.

About 2000 species pantropical and warm temperate; *ca* 19 species Australia; 1 species south-eastern Queensland.

1. *Piper novae-hollandiae* Miq.

PEPPER-VINE

Climber with adventitious roots at nodes. Leaves with petioles 0.6–3 cm long; blades ovate to broadly ovate, apex bluntly acuminate, base rounded to cordate, 4–12 cm \times 2–11 cm, glabrous above, glabrous or sparsely pubescent beneath, green above, paler below. Spikes dense, 1.5–3 cm \times 0.3 cm, peduncles up to 1 cm long. Fruits red, ovoid, *ca* 6 mm \times 5 mm, on stipe 5–10 mm long. **Fig. 26A.**

Climber on trees and rocks of closed forest or fringing rainforest along creeks. Flowers mainly spring. Fruits edible, the seeds when ground an acceptable pepper substitute.

42. PEPEROMIACEAE

Succulent herbs or subshrubs. Leaves alternate, opposite, or verticillate, exstipulate, simple. Flowers in axillary or terminal, solitary or aggregate spikes with succulent bracts, bisexual; perianth absent; stamens 2, anthers 2-locular, finally confluent; ovary superior, 1-locular with 1 basal ovule, stigma simple, rarely divided, pilose. Fruits baccate, small; seeds with copious mealy perisperm.

4 genera with *ca* 1000 species, mainly tropical; 1 genus with *ca* 5 species Australia; 1 genus with 2 species south-eastern Queensland.

1. PEPEROMIA Ruiz & Pavon

Epiphytic or terrestrial herbs, usually fleshy. Lower leaves on stems often reduced; petioles sometimes expanded at base; blades dotted and venation palmate in Australian species. Spikes fleshy, flowers subtended by stalked, peltate bract. Fruits sticky, minute.

About 1000 species tropical and subtropical, especially America; *ca* 5 species Australia; 2 species south-eastern Queensland.

- | | |
|---|---------------------------|
| 1. Leaves opposite, paired, both surfaces \pm pubescent | 1. <i>P. leptostachya</i> |
| Leaves in whorls of 4, at most lower surfaces sparsely hispid | 2. <i>P. tetraphylla</i> |

1. *Peperomia leptostachya* Hook. & Arn.

Leaves with petioles 3–10 mm long, blades elliptic to broadly obovate, apex acute to obtuse, base cuneate, sometimes rounded, margin entire, 1.2–7 cm \times 0.8–4.5 cm, \pm pubescent. Spikes very slender, 2–12 cm \times 0.1–0.3 cm. **Fig. 26B.**

Understorey herb in wet eucalypt or closed forest. Flowers mainly summer to late autumn.

2. *Peperomia tetraphylla* (Forster f.) Hook. & Arn.

Piper tetraphyllum Forster f.; *Peperomia reflexa* (L.f.) A. Dietr.; *Peperomia affinis* Domin
Leaves with petioles 1–3 mm long; blades ovate, elliptic to broadly elliptic, apex obtuse to subacute, base cuneate, sometimes rounded, margin entire, 0.8–1.5 cm \times 0.6–1.1 cm, glabrous above, glabrous or sparsely hispid below. Spikes 1–3 cm \times 0.2–0.3 cm.

Usually epiphyte on rocks near waterfalls or creeks in closed forests of the region. Flowers late winter to spring.

43. ARISTOLOCHIACEAE

Climbing shrubs, rarely herbs and erect; woody stems with broad medullary rays. Leaves alternate, exstipulate, petiolate, simple, mostly entire. Flowers solitary or racemose, bisexual, zygomorphic; calyx often enlarged and petaloid, often tubular, limb either symmetrically 3-lobed, or unilateral and entire or lobed, usually highly coloured and foetid; petals rarely present or vestigial; stamens 6–many in 1–2 series around apex of ovary or style column, filaments short, anthers 2-locular; ovary inferior or semi-inferior. 4–6-locular, rarely carpels free, ovules numerous. Fruits capsular, rarely indehiscent; seeds numerous, 3-sided or flattened.

10 genera with 400 species, tropical and warm temperate; 1 genus with 8 species Australia; 4 species south-eastern Queensland.

1. ARISTOLOCHIA L.

Leaves often with small leaf surrounding stem at base of petiole, resembling stipule, but actually first leaf of an axillary shoot which may or may not develop. Perianths zygomorphic, constricted above ovary, then dilated into a usually unilateral limb; stamens 6–8, 1-seriate, adnate to style column. Fruits capsular, splitting into *ca* 6 parts when ripe.

350 species tropical and temperate; 8 species Australia; 4 species south-eastern Queensland.

- | | |
|---|---|
| 1. Leaf base rounded or shallowly cordate; inflorescence a short axillary raceme | 2 |
| Leaf base hastate; inflorescence of solitary axillary flowers | 3 |
| 2. Scandent, sun-loving vine of lowland depauperate rainforest or littoral rainforest | 1. <i>A. praevanosa</i> |
| Vine of high altitude rainforest of McPherson Ra. | 2. <i>A. delanthia</i> var. <i>laheyana</i> |
| 3. Leaves broadly ovate-triangular; flowers showy, up to 7.5 cm long; fruits oblong | 3. <i>A. elegans</i> |
| Leaves narrowly triangular or narrowly obovate; flowers up to 1.5 cm long; fruits globose | 4. <i>A. pubera</i> |

1. *Aristolochia praevenosa* F. Muell.

Climber. Leaves with usually twisted petioles 1–3 cm long; blades narrowly oblong to oblong-ovate, apex bluntly acuminate, base rounded, occasionally cordate, 7.5–20 cm × 2.5–10 cm, glabrous or pubescent, venation conspicuously reticulate. Inflorescences few-flowered racemes; flowers purplish, ca 2 cm long. Fruits oblong, fleshy, apparently indehiscent, 3–4 cm long, apex without projection. **Fig. 26D.**

Rainforest of the coastal areas. Flowers mainly summer–autumn.

There is some confusion between this species and *A. deltantha* var. *laheyana* and even some doubt as to whether this species is the same as that described by Mueller, as his description states that *A. praevenosa* has a capsular fruit. However, until further research is carried out, it seems wise to leave these taxa under the commonly used names.

2. *Aristolochia deltantha* F. Muell. var. *laheyana* F. M. Bailey

Slender climber. Leaves with twisted petioles 1–2.5 cm long; blades narrowly oblong-ovate to narrowly triangular, apex acuminate, base rounded to truncate, 4–13.5 cm × 1–5 cm, venation conspicuously reticulate. Inflorescences usually few-flowered racemes. Fruits narrowly oblong, 3–6 cm long. **Fig. 26C.**

High altitude rainforest of McPherson Ra. Flowers mainly summer. (See note under *A. praevenosa*).



Fig. 26

A PIPERACEAE – A₁–A₂, *Piper novae-hollandiae*, A₁, part of fertile branchlet $\times \frac{3}{2}$, A₂, fruiting inflorescence $\times 1$; B PEPEROMIACEAE – B₁–B₂, *Peperomia leptostachya*, B₁, part of fertile branchlet $\times 1$, B₂, part of fruiting inflorescence $\times 6$; C–D ARISTOLOCHIACEAE – C–D *Aristolochia* spp. – C *A. deltantha* var. *laheyana*, part of flowering branchlet $\times 1$; D *A. praevenosa*, part of fruiting branchlet $\times 1$ (fruit, although strongly ridged, is fleshy, appears indehiscent).

3. **Aristolochia elegans* Mast.

CALICO-FLOWER; DUTCHMAN'S PIPE

Climber. Leaves with petioles 1.5–5 cm long; blades broadly triangular-ovate, apex obtuse, base obtusely hastate, 3–10 cm × 3–12 cm, glabrous, pale or ± glaucous beneath. Flowers solitary, axillary on peduncles up to 7 cm long; perianth showy, pale with purplish-brown blotches on limb, up to *ca* 7.5 cm long. Fruits oblong, 4–6 cm long, apex with projection *ca* 1 cm long.

Native of South America; relatively common in closed forests of the region. Flowers mainly summer.

This species is cultivated, as is *A. tagala* Cham., a northern native species. *A. tagala* has flowers in racemes, globose to ovoid fruit, and the obtuse lobes at the base of the leaf point inwards towards the petiole, and thus can be distinguished from *A. elegans*.

4. *Aristolochia pubera* R.Br.

Slender twiner. Leaves with petioles 1–6 cm long; blades narrowly oblong-triangular, rarely narrowly obovate, apex usually acute, base usually obtusely hastate, 2–11 cm × 1–4 cm, glabrous, paler beneath. Flowers solitary, axillary on peduncles up to 1 cm long, perianth purplish-brown, up to 1.5 cm long. Fruits ± globose, up to *ca* 2 cm diameter, apex without projection.

Vine usually of open or wet eucalypt forests of the area. Flowers usually summer to autumn.

44. DILLENiaceae

Trees, shrubs or twiners. Leaves alternate, rarely opposite; stipules absent or wing-like; blades entire or dentate, rarely pinnatifid or 3-lobed, usually with prominent parallel veins. Sepals 5, imbricate, persistent; petals 5 or fewer, imbricate, often crumpled in bud, deciduous; stamens usually numerous; carpels free, rarely 1, styles free. Fruiting carpels dehiscent or indehiscent and succulent.

About 10 genera and 400 species mainly from tropical and subtropical areas; 4 genera with *ca* 107 species Australia; 1 genus with *ca* 17 species south-eastern Queensland.

1. HIBBERTIA Andr.

Shrubs or undershrubs, rarely trees, erect or procumbent or climbing. Leaves alternate or sometimes clustered; stipules absent or minute; blades simple. Flowers solitary, sessile or pedunculate; sepals 5; petals usually yellow, 5; stamens few to many, sometimes all on one side of carpels, all perfect or sometimes a few reduced to staminodes; carpels superior, usually 2–5. Fruits dehiscent at apex.

About 105 species from Madagascar to Fiji; *ca* 100 species Australia; *ca* 17 species south-eastern Queensland.

Species of *Hibbertia* are usually known as GUINEA FLOWERS.

The genus is in need of revision.

1. Stamens placed all round carpels	2
Stamens all on one side of carpels	13
2. Leaves mostly 1.5–3 cm wide	3
Leaves less than 1.2 cm wide	4
3. Leaf margins entire	1. <i>H. scandens</i>
Leaf margins toothed or sinuate	2. <i>H. dentata</i>
4. Flowers sessile or almost so	5
Flowers on peduncles 3 mm long or longer	12
5. Stamens in 2 rows, filaments flattened and united at base	3. <i>H. salicifolia</i>
Stamens not or scarcely united at base	6

6. Leaves clustered, usually margins incurved	7
Leaves not clustered, flat or with recurved margins	8
7. Leaves up to 1 cm long	4. <i>H. fasciculata</i>
Leaves 1.5 cm long or longer	5. <i>H. elata</i>
8. Carpels hairy	6. <i>H. vestita</i>
Carpels glabrous	9
9. Leaves ± canescent; sepals ± obtuse	7. <i>H. obtusifolia</i>
Leaves not canescent; sepals mucronate to acuminate, occasionally obtuse but then leaves linear and glabrous	10
10. Leaves not paler below, or if so then sepals acuminate or long mucronate	8. <i>H. linearis</i>
Leaves paler below; sepals shortly mucronate	11
11. Margins of sepals white-ciliate; leaves not toothed	9. <i>H. monticola</i>
Margins of sepals not ciliate; leaves often toothed	10. <i>H. diffusa</i> vel aff.
12. Leaves 0.4-0.6 cm long	11. <i>H. pedunculata</i>
Leaves 2.5-6 cm long	12. <i>H. hexandra</i>
13. Flowers on peduncles 3 mm long or longer	14
Flowers sessile or almost so	16
14. Leaves pungent-pointed	13. <i>H. acicularis</i>
Leaves not pungent-pointed	15
15. Leaves linear	14. <i>H. cistoidea</i>
Leaves narrowly obovate or narrowly elliptic to obovate or elliptic	15. <i>H. aspera</i>
16. Leaves and young stems covered with long soft hairs	16. <i>H. sericea</i>
Leaves glabrous or sparsely hairy, often tuberculate, stems scabrous with simple or stellate hairs	17. <i>H. stricta</i> sens. lat.

1. *Hibbertia scandens* (Willd.) Gilg

Dillenia scandens Willd.; *Hibbertia volubilis* Andr.

Weak trailer or climber; stems woody. Leaves with short petioles or ± sessile; blades ovate to elliptic to obovate, apex obtuse or acuminate, base tapered, margin entire, 3-9 cm × 1-3 cm, glabrous or sparsely silky-hairy above, sparsely to densely silky-hairy below. Flowers solitary, 2.5 cm diameter; sepals silky-hairy outside; petals obovate; stamens numerous, all round carpels, staminodes absent; carpels 3-8, glabrous. **Fig. 27A.**

Common in eastern south-eastern Queensland.

Two forms of this species occur in this region. One is found near the beach and is characterized by ± sessile leaves with obtuse tips and densely silky-hairy undersides. The second is found at high elevations often on the edges of rainforest and is characterized by being shortly petiolate, with acute tips and sparsely hairy undersides and is referred by some authors to *H. scandens* var. *oxyphylla* Domin.

2. *Hibbertia dentata* R.Br. ex DC.

Trailing or twining; stems woody at base. Leaves with petioles 0.8-1.2 cm long; blades oblong-elliptic to ovate, apex obtuse or acute, base obtuse, margin with a few teeth or sinuate, 3-8 cm × 1.5-3.5 cm, pubescent when young, becoming glabrous with age. Flowers solitary, ca 3 mm diameter; sepals hairy outside; petals obovate, sometimes notched at apex; stamens numerous, all round carpels, staminodes several, outside stamens; carpels 3, glabrous.

Known from open forests and margins of rainforest of the eastern Moreton district.

3. *Hibbertia salicifolia* (DC.) F. Muell.*Adrastaea salicifolia* DC.

Trailing or occasionally \pm erect; stems up to ca 50 cm long. Leaves linear to oblong or narrowly elliptic, apex mucronate, margin recurved, sometimes larger leaves with a few teeth, 1–5 cm \times 0.2–0.7 cm, glabrous above, silky-hairy below. Flowers solitary or few together, sessile, subtended by a cluster of leaves; sepals 4–6 mm long; petals 5–7 mm long; stamens 10 in 2 rows, filaments flattened and slightly connate at base, staminodes absent; carpels 2, sparsely hairy.

Known from the Moreton and Wide Bay districts, on margins of coastal swamps and in wallum heaths, occasionally in coastal eucalypt forests.

4. *Hibbertia fasciculata* R.Br. ex DC.

Erect or procumbent shrub up to ca 40 cm tall. Leaves clustered, narrowly linear, 5–7 (–10) mm long, glabrous or with a few hairs, concave above. Flowers solitary, terminal on short axillary shoots, sessile; sepals 4–6 mm long; petals 7–9 mm long; stamens 8–12, all round carpels; carpels 3, glabrous.

In south-eastern Queensland known only from Moreton I. and Fraser I.

5. *Hibbertia elata* Maiden & Betche

Erect shrub up to ca 1.5 m tall. Leaves clustered, linear, 1.5–3.5 cm long, glabrous or with short hairs, concave above. Flowers solitary, terminal on short axillary shoots, sessile; sepals ca 8 mm long, ciliate on margins; petals ca 10 mm long; stamens 15–20, all round carpels, staminodes absent; carpels 3, glabrous.

Known from around Wallangarra in the southern Darling Downs district.

6. *Hibbertia vestita* Cunn. ex Benth.

Diffuse or prostrate shrub up to ca 30 cm tall. Leaves linear to oblong, margin recurved, 4–7 mm \times 1–2 mm, glabrous or minutely hairy. Flowers terminal, sessile in clusters of floral bracts similar to leaves; sepals 6–8 mm long, silky-hairy outside; petals 8–10 mm long; stamens ca 30, all round carpels, staminodes several, outside the stamens; carpels 3, hairy.

Known from sandy near-coastal areas and also from sandy areas further inland.

7. *Hibbertia obtusifolia* DC.*Hibbertia linearis* R.Br. ex DC. var. *obtusifolia* (DC.) Benth.

Erect or diffuse shrub, branches often weak and trailing, mostly less than 60 cm tall, but occasionally up to 1 m tall. Leaves narrowly obovate to obovate, occasionally elliptic or linear, apex rounded or with a mucro or notched, sometimes recurved, margin rarely with a few teeth in south-eastern Queensland (see note below), mostly 0.6–3 cm \times 0.15–1 cm, usually \pm canescent with grey, often crisped hairs, sometimes hairs silky and appressed. Flowers solitary, terminal on short axillary branches, sessile; sepals 6–9 mm long, \pm obtuse; petals mostly 0.7–1.5 cm long; stamens numerous; carpels 3, glabrous.

Found throughout the region, mainly in sandy soils, often in open forests.

This is an extremely variable species probably consisting of more than one taxon. Toothed-leaved forms are known from central Queensland.

8. *Hibbertia linearis* R.Br. ex DC.

Erect or diffuse shrubs from less than 60 cm up to ca 2 m tall. Leaves linear to linear-oblong to obovate, margin rarely with a few teeth, mostly 0.6–3 cm \times 0.15–0.6 cm but sometimes longer, glabrous or with few hairs mostly at base, or if with \pm spreading hairs then sepals with a long point. Flowers solitary, terminal or axillary, sessile or almost so; sepals 4–10 mm long, apex mucronate or acuminate, if almost obtuse then leaves narrow and \pm glabrous; petals mostly 6–10 mm long; carpels mostly 3, glabrous.

Found in sandy soils mainly in the eastern part of the region.

A very variable species. Several varieties of this species have been described but, because of difficulties with typification, have not been included here.

A complete revision is needed before the limits of taxa included under *H. obtusifolia* and *H. linearis* can be defined.

9. *Hibbertia monticola* Stanley

Erect shrub up to *ca* 1.5 m tall. Leaves petiolate; blades elliptic to obovate, apex obtuse, base tapered, 1.5–5 cm × 0.25–1.2 cm, glabrous except for a few crisped hairs at base below and mostly along midrib above, pale below. Flowers solitary, terminal on short axillary shoots; sepals 7–8 mm long, conspicuously white-ciliate along margins; petals *ca* 1.2 cm long; stamens numerous; carpels glabrous.

Known from mountains of the southern Moreton district at altitudes above 300 m.

10. *Hibbertia diffusa* R.Br. ex DC. vel aff.

Erect or straggling shrub up to *ca* 1.1 m tall; young stems with sparse to dense ± spreading hairs. Leaves with petioles 1–5 mm long; blades very variable, obovate, margin entire or toothed, mostly 0.5–2.5 cm × 0.3–0.9 cm, occasionally a few larger, glabrous or sometimes with sparse appressed hairs. Flowers terminal on short lateral branches, almost sessile; sepals 6–8 mm long; petals *ca* 7–10 mm long; stamens *ca* 20; carpels apparently 3.

Widespread in the eastern Moreton district, usually in open eucalypt forests, often on sandy or stony soils. Queensland plants differ from plants from further south in being ± erect instead of being prostrate or decumbent and may constitute a distinct taxon.

11. *Hibbertia pedunculata* R.Br. ex DC.

Erect shrub up to *ca* 2 m tall. Leaves ± sessile, linear, margins recurved, 4–6 mm × *ca* 1 mm, minutely hairy, often tuberculate. Flowers mostly solitary, terminal, on peduncle 0.4–1.2 cm long; sepals 3–6 mm long, pubescent; petals 6–7 mm long; stamens *ca* 20, placed all round carpels; carpels 3, hairy.

In south-eastern Queensland recorded once from near Dalveen in southern Darling Downs district.

12. *Hibbertia hexandra* C. T. White

Large shrub or small tree. Leaves with petioles 0.5–2 mm long; blades obovate, apex obtuse or emarginate, base tapered, 2.5–6 cm × 0.6–1.5 cm, glabrous or minutely hairy above, densely white-stellate-hairy below. Flowers solitary, axillary, on peduncles 7–10 mm long; sepals 7–8 mm long; petals *ca* 7 mm long; stamens 6, rarely more, all round carpels; carpels 2, silky-hairy.

In south-eastern Queensland known only from McPherson Ra. in the southern Moreton district.

13. *Hibbertia acicularis* (Labill.) F. Muell.

Pleurandra acicularis Labill.

Procumbent to erect shrub *ca* 15–100 cm tall. Leaves linear, rigid, pungent-pointed, margin recurved, 0.5–2 cm long, glabrous or almost so. Flowers terminal or axillary on slender peduncles 3–10 mm long; sepals 4–6 mm long, glabrous to sparsely hairy; petals 0.8–1.1 cm long; stamens 8 or fewer, all on one side of carpels; carpels 2, minutely hairy. **Fig. 27B.**

Known from sandy coastal areas of Moreton and Wide Bay districts and also from granite areas in the southern Darling Downs district.

14. *Hibbertia cistoidea* (Hook.) C. T. White

Pleurandra cistoidea Hook.; *Hibbertia stricta* (DC.) R.Br. ex F. Muell. var. *canescens* Benth.

Shrub, prostrate or ± erect, up to *ca* 1.2 m tall but often less than 60 cm tall; young branches with dense stellate hairs. Leaves linear, margin revolute, 0.5–2.5 cm × 0.15–0.2 cm, upper surface with sparse, often tubercular-based stellate hairs, lower surface with dense stellate hairs. Flowers solitary, terminal, often on short axillary shoots, peduncle 3–8 mm long; sepals 4–10 mm long, stellate-hairy; petals 0.6–1.2 cm long; stamens numerous, all on one side of carpels; carpels 2, densely hairy.

In south-eastern Queensland found mainly in open eucalypt forests of Darling Downs and Burnett districts.

15. *Hibbertia aspera* DC.

Previously misidentified in south-eastern Queensland as *Hibbertia empetrifolia* (DC.) Hoogl. (*H. ovata* (Labill.) Domin.) and included under *H. billardieri* F. Muell., which is conspecific with *H. empetrifolia*.

Erect, spreading or diffuse shrub up to 1 m tall; branches with stellate hairs. Leaves narrowly ovate to narrowly elliptic to obovate or elliptic, apex obtuse or emarginate, sometimes mucronulate, margin recurved, 0.5–1.8 cm × 0.15–0.8 cm, hairs mainly stellate, occasionally above, dense and whitish, rarely sparse, below. Flowers solitary, axillary, on slender peduncles 0.5–1.5 cm long; sepals 4–6 mm long with scattered often stellate hairs; petals 5–7 mm long; stamens *ca* 6, all on one side of carpels; carpels 2, silky-hairy.

A very variable species known from coastal plains and near-coastal ranges and mountains of the Moreton and Wide Bay districts.

16. *Hibbertia sericea* (R.Br. ex DC.) Benth.

Pleurandra sericea R.Br. ex DC.

Much-branched shrub up to *ca* 1 m tall but mostly less than 50 cm tall; young stems and leaves conspicuously hairy. Leaves narrowly oblong, apex rounded or emarginate, margin recurved, 0.5–1.2 cm × 0.1–0.15 cm, upper and lower surfaces with soft silky hairs. Flowers terminal on short lateral branches, sessile; sepals *ca* 6 mm long; petals *ca* 8 mm long; stamens 10–16; carpels 2, hairy.

In south-eastern Queensland known from Mt. Ernest, Mt. Maroon, and Mt. Barney at altitudes above 600 m.

17. *Hibbertia stricta* (DC.) R.Br. ex F. Muell. sens. lat.

Pleurandra stricta DC.

Erect or diffuse shrub up to *ca* 1 m tall but mostly less than 60 cm tall; stems scabrous with simple or stellate hairs. Leaves linear, apex obtuse, margin revolute, 0.5–2.8 cm × 0.1–0.15 cm, glabrous or sparsely hairy, often tuberculate. Flowers solitary, terminal on short axillary shoots, ± sessile; sepals mostly 5–9 mm long, from almost glabrous to silky-hairy; petals 0.7–1.2 cm long; stamens mostly 8–12; carpels 2, densely hairy.

Found throughout the region, mostly on sandy soils.

An extremely variable species. Further study may show more than one taxon included. One rather common form, with sepals 7–9 mm long covered with long spreading hairs has been referred to *H. stricta* var. *hirtiflora* Benth.

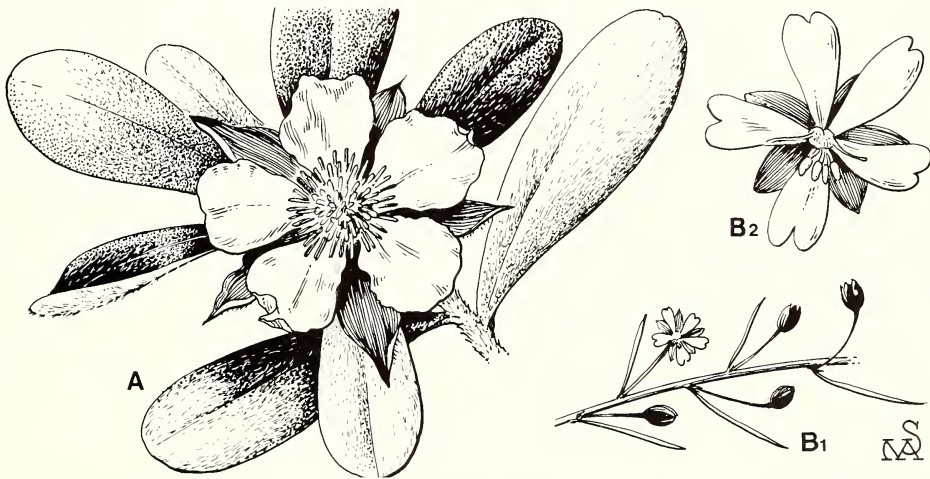


Fig. 27

DILLENIACEAE – A–B *Hibbertia* spp. – A *H. scandens*, part of flowering stem x1; B₁–B₂, *H. acicularis*, B₁ part of flowering stem x1, B₂ flower x4.

45. OCHNACEAE

Trees or shrubs, rarely herbs. Leaves alternate, stipulate, rarely pinnate. Flowers mostly in racemes or panicles, occasionally solitary, actinomorphic; sepals 4–5, rarely 10, free; petals 4–10, free; stamens few–many, free, staminodes sometimes present; ovary entire or deeply lobed, 1–10-locular, ovules 1–many. Fruiting carpels often becoming quite separate on the enlarged receptacle, drupaceous or capsular and septicidal.

About 40 genera with 600 species, tropical and subtropical areas; 2 genera with 2 species, 1 native, Australia; 1 species south-eastern Queensland.

1. OCHNA L.

Trees or shrubs. Leaves simple. Sepals 5–6, persistent; petals 5–10, deciduous; stamens numerous; ovary deeply 3–6-lobed on a hemispherical receptacle, style central between the lobes. Fruiting carpels drupaceous, 3–6 or fewer, clustered on an enlarged fleshy receptacle.

About 85 species from tropical and southern Africa and from tropical Asia; 1 species cultivated and naturalized south-eastern Queensland.

1. **Ochna serrulata* (Hochst.) Walp.

OCHNA

Diporidium serrulatum Hochst.

Small shrub 1–1.7 m tall; branches densely covered with raised lenticels. Leaves subsessile or with a petiole up to *ca* 1.3 cm long; blades elliptic or occasionally elliptic-ovate or elliptic-oblong, apex obtuse, margin serrate-dentate, 2–5 cm × 0.7–2 cm, glabrous. Flowers solitary on top of short axillary shoots, peduncles 1–2 cm long; sepals green in flower, 6–7 mm long, enlarged and red in fruit; petals yellow, 0.9–1.3 cm long, soon deciduous; ovary of 5–6 carpels. Drupes green becoming black, 1–6, up to *ca* 7 mm long; receptacle red.

Native of southern Africa, naturalized in the region. Flowers mainly spring–summer.

46. CLUSIACEAE

(GUTTIFERAE)

Trees or shrubs with resinous juice. Leaves opposite, exstipulate, simple, often oil-dotted. Flowers unisexual or bisexual, actinomorphic, sepals 6–2, imbricate; petals 6–2, hypogynous, contorted or imbricate; stamens mostly numerous, hypogynous, free or variously connate, anthers 2-locular; rudimentary ovary sometimes present in males; staminodes often present in females; ovary sessile, 1–many-locular, ovules 1–many, stigmas various. Fruits dehiscent or indehiscent; seeds often arillate, without endosperm, embryo large, cotyledons often minute.

40 genera with 1000 species, chiefly tropical; 6 genera with *ca* 23 species Australia; 1 genus with 2–3 species south-eastern Queensland.

1. HYPERICUM L.

Glabrous herbs or shrubs. Leaves ± sessile, oil-dotted. Flowers bisexual; sepals 5; petals 5, free; stamens numerous, usually connate into bundles, anthers subglobose with small gland at summit; ovary superior, 1-locular, with mostly 3 parietal placentas, styles usually 3. Fruits 3-valved septicidal capsules or berries.

400 species, temperate and tropical mountain regions; 2 species native, 6 naturalized Australia; 2–3 species south-eastern Queensland.

Sometimes this genus is placed in a separate family, Hypericaceae.

1. Stout herb up to 90 cm tall; flowers 2–2.5 cm diameter in broad terminal leafy panicle

1. *H. perforatum* var.
angustifolium

Slender herb, usually *ca* 30 cm tall; flowers *ca* 1 cm diameter in slender dichasial or monochasial inflorescence, or ± solitary

2. *H. gramineum*

1. ***Hypericum perforatum** L. var. **angustifolium** DC. ST. JOHN'S WORT
Rhizomatous perennial. Leaves with petioles up to 1 mm long; blades narrowly oblong or narrowly elliptic, apex subacute, base obtuse, margin entire, 0.8–2 cm × 0.2–0.5 cm. Flowers on stout pedicels 2–5 mm long; sepals *ca* 4 mm long, apex acute; petals bright yellow with black dot on margin, 1–1.2 cm long; stamens 50–100 in 3 bundles. Capsules ovoid, striate, 8 mm long.

Native of Europe and western Asia; small infestation recorded from eastern Darling Downs district. Flowers summer. Causes photosensitization in sheep.

2. **Hypericum gramineum** Forster f. SMALL ST. JOHN'S WORT
Slender perennial up to *ca* 50 cm tall; roots fibrous. Leaves sessile, narrowly ovate to narrowly oblong, apex obtuse, base cordate to rounded, margin entire, 0.4–2 cm × 0.2–0.7 cm. Flowers on pedicels 0.6–2 cm long; sepals 4–6 mm long, apex acute; petals orange-yellow, 6–8 mm long; stamens 30–50, free. Capsules cylindrical or narrowly ovoid, 2.5–6 mm long. **Fig. 28A.**

Widespread, common throughout the region. Flowers spring–summer. Suspected of poisoning stock.

This species and **H. japonicum** Thunb. ex Murray have often been confused in the past. True **H. japonicum** has only been recorded possibly once from the Ballandean area on the Granite Belt and is essentially a southern species. It differs from **H. gramineum** in having ovate, suborbicular or spatulate leaves, often rounded sepals, 5–30 free stamens and a narrow capsule often longer than the sepals.

47. DROSERACEAE

Small, terrestrial or aquatic, insectivorous herbs; primary root often undeveloped, stem base with adventitious roots, sometimes tuberous. Leaves spirally arranged, often in basal rosette, rarely whorled, with sessile or stipitate sticky glands, marginal glands longest, often circinnate when young; stipules usually present. Inflorescences lateral or terminal, cymose, often circinnate, pedicels not articulated; flowers bisexual, actinomorphic; sepals 5, imbricate ± basally connate, persistent; petals 5, imbricate, long persistent; stamens usually 5, free, alternating with petals, pollen in tetrads; ovary superior, free, 1-locular, with 3–5 carpels, ovules numerous, placentas parietal, styles 3–5, mostly free, simple or divided. Capsules loculicidally 3–5-valved; seeds small, numerous, with endosperm, embryo basal, straight, cotyledons short.

4 genera with 103 species, **Drosera** cosmopolitan, the rest ± endemic to restricted areas; 2 genera with 55 species Australia; 2 genera with 7 species south-eastern Queensland.

- | | |
|---|----------------------|
| 1. Terrestrial; leaf blades with sticky capitate glands, not articulated; petioles free; flowers in narrow racemes, rarely solitary | 1. <i>Drosera</i> |
| Submerged aquatic; leaf blades without sticky capitate glands, articulated; petioles basally connate; flowers solitary, axillary | 2. <i>Aldrovanda</i> |

1. DROSEREA L.

Mostly perennials, often stemless, often with subterranean tubers. Leaves with glandular capitate tentacles sensitive to external stimuli. Flowers usually in simple, bracteate inflorescences; petals spatulate or obovate, after anthesis contracted and cohering together with anthers and stigmas as a hood over ovary and capsule.

100 species tropical and temperate; 54 species Australia; 6–7 species south-eastern Queensland.

Commonly called SUNDEWS, and may have red or green leaves. Many species yield HCN.

- | | | |
|---|------------------------|---|
| 1. Leaves radical, dichotomously divided into 2, 4 or more linear segments
5–10 cm long | 1. <i>D. binata</i> | 2 |
| Leaves radical or cauline, undivided | | |
| 2. Leaves all in basal rosette, stipulate | | 3 |
| Leaves mostly cauline, sometimes ill-defined basal rosette present,
usually absent at flowering, exstipulate | | 5 |
| 3. Leaf blades orbicular, 1.5–2 mm across; scape up to 2.5 cm long | 2. <i>D. pygmaea</i> | |
| Leaf blades obovate or cuneate, 3–10 mm across; scape up to 30 cm long | | 4 |
| 4. Styles and carpels 3, styles bifid from near base | 3. <i>D. spatulata</i> | |
| Styles and carpels 5, styles divided into lobes from near apex | 4. <i>D. burmannii</i> | |
| 5. Leaves linear, petiole indistinct | 5. <i>D. indica</i> | |
| Leaf blades peltate, broadly ovate, petiole distinct | 6. <i>D. peltata</i> | |

1. *Drosera binata* Labill.

Robust herb. Leaves all radical; stipules short, fringed; petioles 5–60 cm long; blades dichotomously divided. Inflorescences loose cymes or panicles, peduncles longer than leaves; sepals 5–6 mm long; petals white, 1–1.2 cm long; styles usually 3, lobed. **Fig. 28C.**

Swamps and wallum areas along the coast, also recorded from a swamp at South Bald Rock near Wallangarra. Flowers spring–summer.

2. *Drosera pygmaea* DC.

Tiny rosulate herb. Stipules scarious, laciniate; petioles 4–6 mm long; blades ± orbicular, cup-shaped, *ca* 1.5–2 mm diameter. Inflorescences of 1–few scapes, 1.5–2.5 cm long, bearing 1, rarely 2, flowers; flowers 4-merous; sepals *ca* 1.5–2 mm long; petals white, *ca* 2–2.5 mm long; styles 4, thick.

Damp coastal wallum areas. Flowers spring.

3. *Drosera spatulata* Labill.

Rosulate herb. Stipules mostly 3-fid, ending in bristle; petioles 0.2–1(–1.8) cm long, often indistinct from blade; blades narrowly obovate to broadly obovate, apex obtuse, base cuneate or attenuate, 0.5–1 cm × 0.3–0.6 cm. Inflorescences 1–5 per plant, racemose, scape up to 25 cm long; flowers 1–15 on pedicels 0.5–3 mm long; petals white or pink to red, 3.5–6 mm long; styles 3, bifid from near base. **Fig. 28D.**

Coastal swamps and wallum areas, or moist seepage areas in poor or stony soil. Flowers spring to autumn.

D. lovellae F. M. Bailey, collected from Fraser I. and described in “Qld Flora”, seems to be an aberrant form of the above species.

4. *Drosera burmannii* Vahl

Rosulate herb. Stipules mostly 3-parted with acute tips; petioles 0.2–1(–1.5) cm long; blades cuneate, middle part cup-shaped, apex ± truncate, base cuneate, 0.4–1 cm × 0.4–1.2 cm. Inflorescences 1–3 per plant, racemose, scape up to *ca* 30 cm long; flowers 2–25 on pedicels 1.5–4 mm long; petals white, *ca* 4 mm long; styles 5, divided at apex into very short lobes.

Moist or low lying areas with poor soils, throughout the region. Flowers mainly spring.

5. *Drosera indica* L.

Stems flexile, up to *ca* 30 cm long. Lower leaves recurved, often stem-supporting, central spreading, upper erect; petioles 0.1–1.5 cm long; blades linear, 2–20 cm × 0.1–0.3 cm. Inflorescences lateral, up to 40 cm long, 3–20-flowered on pedicels 0.3–1.3 cm long; sepals 3–5 mm long; petals pink to pale purple, 7–10 mm long; styles 3, bifid from base.

Uncommon, inland localities. Flowers mainly autumn–winter.

6. *Drosera peltata* Thunb.

Stems erect, up to ca 40 cm tall, simple or branched. Basal leaves rosulate, reniform, often soon disappearing; cauline leaves with petioles 0.5–2 cm long; blades peltate, broadly ovate, with 2 long basal lobes (2–)4–6(–7) mm diameter. Inflorescences lateral, unbranched, racemose; flowers 2–10 on pedicels ca 10 mm long; sepals usually with \pm fimbriate margins, 2–3 mm long, glabrous or sparsely pubescent; petals white or pale pink, 5–6 mm long; styles 3, divided near base into a few, thickened branches. Seeds oblong or ellipsoid, ca 0.5 mm long, minutely ribbed. **Fig. 28B.**

Throughout the region, in damp grassy or heathy areas. Flowers most of the year.

Under this species is grouped a number of forms, and a critical review is necessary to establish whether they are worthy of separate taxonomic status. Two more notable forms are: a very robust form with rosulate leaves always present when flowering, cauline leaves with blades 6–7 mm across, collected from the Granite Belt and some sandstone outcrops of the region, and a very slender form which never has basal rosette present when flowering, cauline leaves single or in threes with blades 2–5 mm across, glabrous sepals with \pm entire margins, collected mainly from coastal swampy wallum areas, and flowering in autumn. This latter form has previously been referred to in Queensland as *D. auriculata* Bakh. ex Planchon, but this species is a native of southern Australia and New Zealand, similar in appearance but with linear seeds 1–2 mm long which have been likened in appearance to iron filings. It also has larger flowers and generally is a more robust plant.

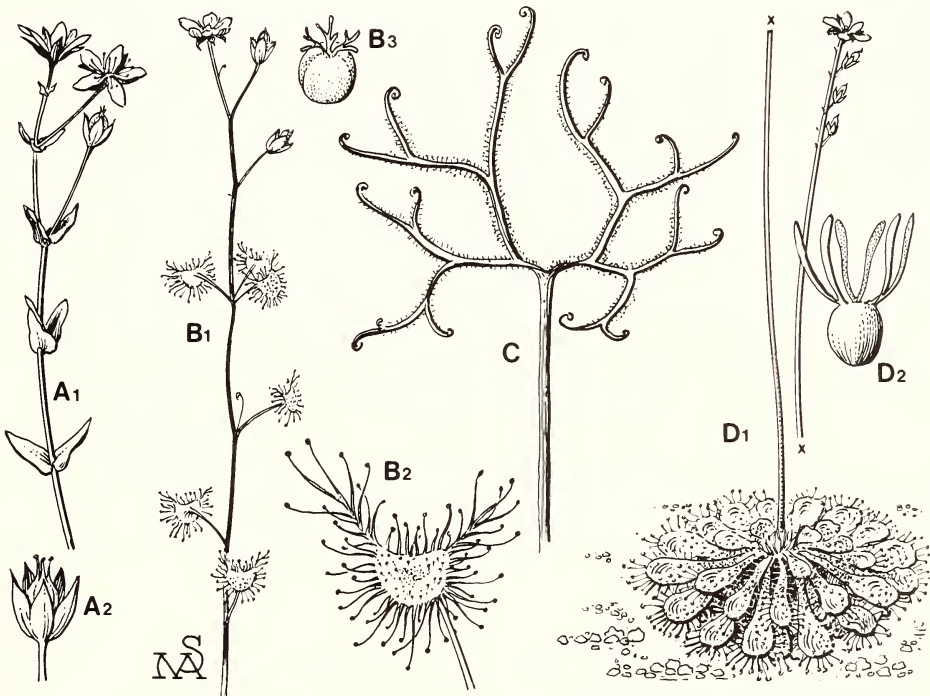


Fig. 28

A CLUSIACEAE – A₁-A₂, *Hypericum gramineum*, A₁ part of flowering stem x1, A₂ fruit x2; B-D DROSERACEAE – B-D *Drosera* spp. – B₁-B₃, *D. peltata*, B₁ part of flowering stem x1, B₂ leaf x3, B₃ ovary showing styles x6; C *D. binata*, leaf x½; D₁-D₂, *D. spatulata*, D₁ flowering plant x1, D₂ ovary showing styles x6.

2. ALDROVANDA L.

Rootless, submerged, free-floating aquatics; stems simple or sparsely branched. Leaves in whorls of 7-9, basally connate; petiole swollen, apex with subulate, dentate segments; blades articulated, reniform to orbicular when flattened, upper surface with hairs sensitive to external stimuli, glands present, reduced in flowering whorl. Flowers solitary, axillary, pedicels robust, reflexed in fruit; sepals 5; petals initially calyptrately connivent; styles 5, filiform, patent, incurved, apex expanded and penicillate. Capsules 5-valved.

1 species, Europe and Asia, to Western Australia and Queensland, occurring in south-eastern Queensland.

1. *Aldrovanda vesiculosa* L.

ALDROVANDA; WATERWHEEL PLANT;
WATERBUG TRAP

Stems up to 20 cm long. Petioles 3-9 mm long, with 4-6 apical, subulate segments 6-8 mm long; flattened blade 4-7 mm x 4.5-10 mm. Flowers few on peduncles 1-1.5 cm long; sepals 3-4 mm long; petals 4-5 mm long. Capsules subglobose; seeds 6-8, 1 mm x 1.5 mm.

Rare, recorded only from Burnett R.; prefers still, fresh tropical waters, apparently poor in lime and rich in organic substance.

48. PAPAVERACEAE

Annual or perennial herbs, often with coloured sap. Leaves alternate, exstipulate, often much divided. Flowers mostly solitary, bisexual, actinomorphic, showy; sepals 2-3, caducous, free or calyptrate; petals 4-6 or 8-12, free, 2-seriate, imbricate, crumpled in bud; stamens numerous, free, anthers 2-locular; ovary superior with 2-12 connate carpels, 1-locular, rarely 2-locular by a spurious wall, ovules numerous, placentas parietal, intruding, sometimes fusing in middle, stigmas ± sessile. Fruits capsules dehiscing by valves or pores; seeds small, arillate or with crested or smooth raphe, embryos minute, in copious fleshy or oily endosperm.

26 genera with 200 species, chiefly northern temperate; 4 genera with ca 11 species Australia; 3 genera with 7 species south-eastern Queensland.

- 1. Sepals connate into calyptra; capsule dehiscing from below by 2 valves 1. *Eschscholtzia*
- Sepals free; capsule dehiscing by 4-6 valves opening from above, or 2
- dehiscing by pores under stigmatic lobes, rarely indehiscent
- 2. Sepals 3; petals 6; capsule dehiscing by 4-6 valves 2. *Argemone*
- Sepals 2; petals 4; capsule dehiscing by pores under stigmatic lobes, 3. *Papaver*
- rarely indehiscent

1. ESCHSCHOLTZIA Cham.

Herbs with watery sap. Sepals connate into calyptra which is shed when flower opens, leaving 2 rims at ovary base; petals 4, entire. Capsules ribbed, opening from below by 2 valves which separate from placentas; seeds without aril.

About 10 species Pacific, North America; 1 species naturalized in temperate Australia, occurring in south-eastern Queensland.

1. **Eschscholtzia californica* Cham.

CALIFORNIAN POPPY

Herb, ± glabrous, often glaucous; stems up to 60 cm tall. Basal leaves long petiolate; blades alternately dissected into ± linear segments 2-4 mm wide; cauline reducing. Flowers terminal, solitary, peduncles 3-15 cm long; calyptra 1-4 cm long; petals deep orange to light yellow, 2-6 cm long, obovate. Capsules 3-10 cm x 4-5 cm; seeds broadly oblong, 1.2-1.5 mm long, reticulate.

Native of California; recorded from the Granite Belt. Flowers summer.

2. ARGEMONE L.

Annual herbs with yellow sap. Leaves radical and cauline, radical withering as aerial stems develop. Flowers solitary, terminal; sepals usually 3, horned, free, caducous; petals 6, entire; stamens numerous; style very short or stigmatic lobes sessile, 4–6. Capsules spiny, opening at apex into as many valves as stigmas.

10 species Americas and West Indies; 2, possibly 3, species naturalized Australia; 2 species south-eastern Queensland.

- | | |
|--|-------------------------|
| 1. Buds subspherical; stigmatic lobes appressed to styles at anthesis | 1. <i>A. mexicana</i> |
| Buds oblong; stigmatic lobes spreading, not appressed to style at anthesis | 2. <i>A. ochroleuca</i> |

1. **Argemone mexicana* L.

PRICKLY POPPY; MEXICAN POPPY

Prickly herb, up to 1 m tall. Leaves deeply pinnatifid, lobes ± oblong, margin with acute teeth tipped with slender spines, glabrous, greenish or glaucous. Flower buds 1–1.5 cm × 0.9–1.3 cm; flowers usually bright yellow, 4–7 cm diameter; stamens 30–50; stigma purple, ca 1.5–4 mm diameter, lobes appressed to each other and style. Capsules cylindrical to broadly ellipsoid, 2.5–4.5 cm × 1.2–2 cm, spinescent usually with slender spines.

Native of Central America; western Darling Downs district, uncommon. Flowers mainly spring. Seeds are poisonous to fowls.

2. **Argemone ochroleuca* Sweet

PRICKLY POPPY; MEXICAN POPPY

Prickly herb, up to 1 m tall. Leaves very deeply pinnatifid, lobes ± oblong, margin with acute teeth tipped with coarse spines, glabrous, conspicuously glaucous. Flower buds 0.8–1.8 cm × 0.4–1.1 cm; flowers mostly pale yellow, 3–7 cm diameter; stamens 20–75; stigma purple, ca 2–3 mm diameter, lobes spreading, the bluish non-receptive surfaces between them usually plainly visible. Capsules narrowly ovoid or elongate-ellipsoid, 2–5 cm × 1–1.8 cm, larger spines stout, spreading or reflexed. **Fig. 29A.**

Native of Central America; widespread, common throughout region. Flowers mainly spring–summer. Seeds are poisonous to fowls.

3. PAPAVER L.

Annual or perennial herbs with milky sap. Leaves pinnately lobed or divided, generally glaucous. Flowers solitary on long peduncles, buds nodding; sepals 2, free, caducous; petals 4, crumpled in bud, usually caducous; ovary with 4–20 intruded placentas, appearing several-locular, stigmas 4–15, sessile over placentas. Fruits capsules, dehiscent by transverse pores under edge of sessile, round, flat or subconical disc formed by united radiating stigmas; seeds numerous, without aril, minute, reniform.

100 species Europe, Asia, South Africa, Australia, America; 1 species native, 5 species naturalized Australia; 4 species south-eastern Queensland.

Most species are potentially poisonous if eaten.

- | | | |
|---|-------------------------|---|
| 1. Capsule bristly | 1. <i>P. hybridum</i> | 2 |
| Capsule glabrous | | |
| 2. Capsule 6–8 mm diameter, at least twice as long as broad | 2. <i>P. aculeatum</i> | 3 |
| Capsule 1–4 cm diameter, not more than twice as long as broad | | |
| 3. Plant glabrous or only a few hairs on flowering peduncle; capsule ± globose, indehiscent | 3. <i>P. somniferum</i> | |
| Plant setulose; capsule obovoid, dehiscent by pores | 4. <i>P. setigerum</i> | |

1. **Papaver hybridum* L.

ROUGH POPPY

Annual up to 50 cm tall. Lower leaves petiolate, upper sessile; blades 1–3-pinnatisect into ± linear or narrowly oblong-ovate segments, apex often aristate, sparsely appressed hispid. Peduncles appressed hispid; petals crimson with purplish blotch at base, 1–2.5 cm long. Capsules obovoid to subglobose, 1.2–1.4 cm × 0.7–1 cm, ribbed, with stiff erect bristles. **Fig. 29B.**

Native of Europe; weed mainly of southern localities in the region. Flowers mainly spring.

2. *Papaver aculeatum* Thunb.

BRISTLE POPPY

Papaver horridum DC.

Annual up to 50 cm tall; stems and leaves with stiff spreading bristles. Lower leaves shortly petiolate, upper sessile; blades pinnatifid, lower ones narrowly obovate in outline, apex aristate, margin irregularly toothed, up to 20 cm × 4 cm. Petals red, ca 1.2 cm long. Capsules obovoid, 1–2 cm × 0.7–1 cm, ± glabrous. **Fig. 29C.**

Wetter parts of mainly inland areas of region. Flowers mainly spring.

3. **Papaver somniferum* L.

OPIUM POPPY

Annual up to 1.5 m tall, subglabrous, glaucous. Lower leaves petiolate; blades ovate-oblong, pinnately shallowly lobed, apex acute, margin dentate, 4.5–30 cm × 2–13 cm; upper leaves stem clasping, reducing, generally broadly ovate. Flowers white to purple, 7.5–10 cm diameter. Capsules ± globose, 2.5–7 cm × 2–4 cm, indehiscent, glaucous, with 8–12 stigmatic lobes.

Native of Europe and Asia; rare. It is a declared noxious weed and unauthorised cultivation or possession is prohibited. Flowers spring. Morphine and codeine are alkaloids derived from opium, the dried latex from unripe capsules.

Sometimes the double flowered ornamental poppy, *P. somniferum* var. *paeoniflorum* hort. is met with as a stray from cultivation. This variety has not been declared noxious.

4. **Papaver setigerum* DC.

SMALL-FLOWER OPIUM POPPY

Papaver somniferum L. var. *setigerum* (DC.) Boiss.

Annual up to ca 1.5 m tall, setulose, glaucous. Lower leaves petiolate, upper stem-clasping; blades ovate-oblong, pinnately lobed, apex acute, margin dentate, the teeth usually aristate, 4–20 cm × 2–10 cm; upper leaves reducing. Flowers pale violet to mauve with darker spot at base, up to ca 5 cm diameter. Capsules obovoid, 2–2.5(–6) cm × 1–1.5(–4) cm, dehiscing by pores under 7–8, rarely 9, stigmatic lobes. **Fig. 29D.**

Native of Europe; weed of cultivation. Flowers spring.

49. FUMARIACEAE

Herbs with brittle stems. Leaves radical or alternate, usually much divided. Flowers bisexual, often zygomorphic; sepals 2, small, deciduous; petals 4, imbricate, ± connivent, 2 outer often basally saccate or spurred, 2 inner narrower, sometimes coherent to apex; stamens 4, free, or 6 and united into 2 bundles; ovary superior, 1-locular, ovules 1-many, parietal placentas 2, style slender. Fruits capsules or achenes; seeds shining.

16 genera with 450 species northern temperate; 1 genus with ca 8 species naturalized Australia; 5 species south-eastern Queensland.

1. FUMARIA L.

Long-stemmed annuals, usually diffuse. Leaves cauline, 2–4-pinnatisect. Inflorescences racemose, bracteate; corolla zygomorphic with spurred upper petal; stamens 6 in 2 bundles. Fruits 1-seeded achenes, smooth or rugose when dry, with 2 apical pits due to clefts in mesocarp.

55 species Mediterranean to Central Asia and eastern Africa; ca 8 species naturalized Australia; 5 species south-eastern Queensland.

In the key and following descriptions the measurement of the corolla is that of the largest flowers. Cleistogamous or ± depauperate corollas produced by unfavourable conditions have not been considered.

- | | |
|---|--------------------------|
| 1. Corolla at least 9 mm long; lower petal not spatulate | 2 |
| Corolla 5-8, rarely 9, mm long; lower petal spatulate | 3 |
| 2. Raceme shorter than peduncle; flowers whitish with purple apex; fruiting pedicels recurved | 1. <i>F. capreolata</i> |
| Raceme longer than peduncle; flowers mauve or pinkish with purple apex; fruiting pedicels straight | 2. <i>F. bastardii</i> |
| 3. Sepals minute, less than 1.5 mm long; corolla whitish, less than 5 mm long | 3. <i>F. parviflora</i> |
| Sepals 2-3 mm long; corolla pinkish or mauve, at least 5 mm long | 4 |
| 4. Bracts shorter than fruiting pedicels; fruits truncate or emarginate at apex; leaf segments flat above | 4. <i>F. officinalis</i> |
| Bracts longer than fruiting pedicels; fruits rounded at apex; leaf segments channelled above | 5. <i>F. densiflora</i> |

1. **Fumaria capreolata* L.

WHITE-FLOWERED FUMITORY

Climbing herb. Leaf segments obovate-cuneate, usually 3-lobed. Racemes up to 20-flowered, shorter than peduncles, bracts nearly as long as pedicels; sepals ± dentate, 2.5-3 mm × 1.5 mm; corolla creamy-white with purplish or black-red apex, 1-1.4 cm long. Fruiting pedicels recurved; fruits globose, 2-2.5 mm × 2-2.5 mm, smooth. **Fig. 29F.**

Native of Europe; scattered throughout the region. Flowers spring.

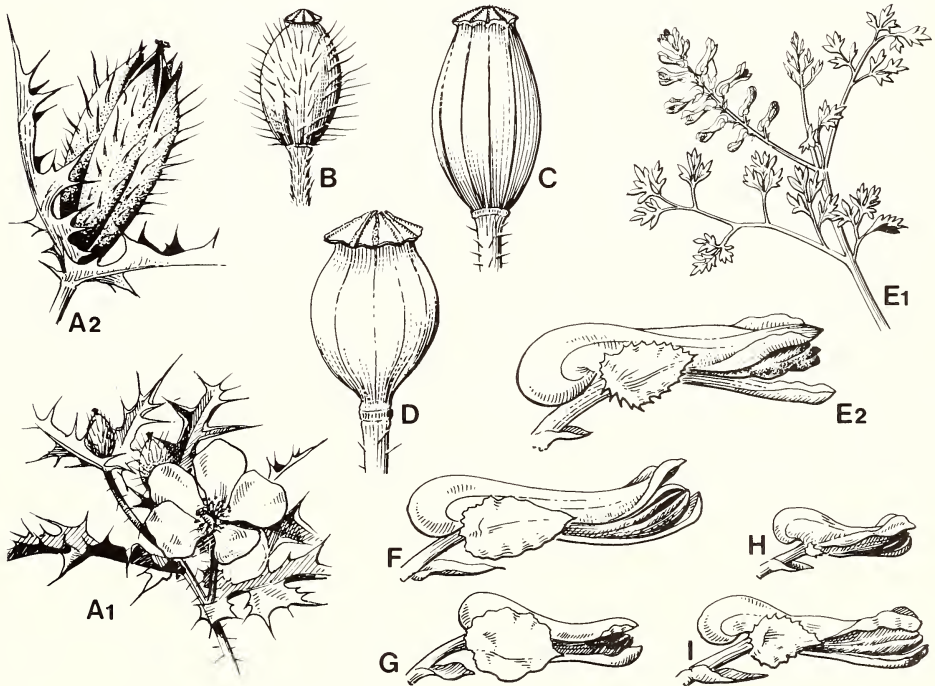


Fig. 29

A-D PAPAVERACEAE — A₁-A₂, *Argemone ochroleuca*, A₁ part of flowering stem x $\frac{1}{2}$, A₂ fruit x $\frac{2}{3}$; B-D *Papaver* spp. — B *P. hybridum*, fruit x $\frac{1}{3}$; C *P. aculeatum*, fruit x $\frac{1}{3}$; D *P. setigerum*, fruit x1; E-I FUMARIACEAE — E-I *Fumaria* spp. — E₁-E₂, *E. bastardii*, E₁ part of flowering stem x $\frac{2}{3}$, E₂ flower x4; F *F. capreolata*, flower x4; G *F. densiflora*, flower x4; H *F. parviflora*, flower x4; I *F. officinalis*, flower x4.

2. **Fumaria bastardii* Bor.

BASTARD FUMITORY

Leaf segments oblong-obovate. Racemes 15–25-flowered, longer than peduncles, bracts $\frac{1}{3}$ – $\frac{1}{2}$ as long as pedicels; sepals \pm serrate, 2–3 mm \times 1–2 mm; corolla pale pink with dark purple apex, 0.9–1.2 cm long. Fruiting pedicels straight; fruits ovoid, 2–2.5 mm \times 2–2.5 mm, \pm rugose. **Fig. 29E.**

Native of Europe and Britain; generally on wetter areas of southern districts. Flowers spring.

3. **Fumaria parviflora* Lam.

SMALL-FLOWERED FUMITORY

Leaf segments narrowly linear, slightly channelled. Racemes up to 20-flowered, subsessile, bracts as long as, or longer than fruiting pedicels; sepals minute; corolla whitish with purplish or green apex, 3–5 mm long. Fruits globose, *ca* 2 mm \times 2 mm, rugulose. **Fig. 29H.**

Native of Europe and Britain; weed of Darling Downs, Lockyer Valley, etc. Flowers spring.

4. **Fumaria officinalis* L.

COMMON FUMITORY

Leaf segments linear-oblong, flat above. Racemes up to 25-flowered, longer than peduncle, bracts $\frac{1}{2}$ to as long as fruiting pedicel; sepals irregularly dentate, 2–3.5 mm \times 1–1.5 mm; corolla purplish-pink, with blackish-red apex, 7–9 mm long. Fruits \pm obreniform, rugose. **Fig. 29I.**

Native of Europe; common weed throughout the region. Flowers spring.

5. **Fumaria densiflora* DC.

DENSE-FLOWERED FUMITORY

Fumaria micrantha Lag.

Leaf segments linear-oblong, channelled above. Racemes 20–25-flowered, much longer than very short peduncle, bracts longer than fruiting pedicels; sepals subentire or lacinate, 2–3.5 mm \times 1.5–3 mm; corolla pinkish with blackish-red apex, 5–7 mm long. Fruits subglobose, 2–2.5 mm \times 2–2.5 mm, rugose. **Fig. 29G.**

Native of Europe; weed of Darling Downs, Burnett districts. Flowers spring.

50. CAPPARACEAE

Trees or shrubs, sometimes climbers, glabrous, stellate-tomentose or lepidote. Leaves alternate, rarely opposite; stipules spinescent or minute; blades simple or 1–several-foliate. Flowers bisexual or unisexual, variously arranged; sepals 8–4, free or variously connate, 1–2-seriate; petals usually 4, free; stamens few to many, anthers 2-locular, longitudinally dehiscent; ovary usually \pm stipitate, 1-locular or 2–8-locular with spurious septa from parietal placentas, ovules few to many, style usually short or absent. Fruits drupes or berries; seeds reniform or angular, often immersed in shining pulp, endosperm absent or scanty, embryo curved.

32 genera with *ca* 650 species tropical and warm temperate, sometimes arid; 4 genera with *ca* 22 species Australia; 2 genera with 7 species south-eastern Queensland.

- | | |
|--|----------------------|
| 1. Flowers bisexual; ovules more than 2; inflorescences of 1–4 flowers,
each on separate peduncle | 1. <i>Capparis</i> |
| Flowers unisexual; ovules 1–2; inflorescences short lateral racemes | 2. <i>Apophyllum</i> |

1. CAPPARIS L.

Trees or shrubs, sometimes armed. Stipules spiny or setaceous; leaf blades simple, rarely reduced. Inflorescences various; sepals 4–5, imbricate in 2 series, rarely the outer pair valvate; petals 4–5, free, imbricate; stamens mostly numerous, inserted on short torus, filaments free; ovary usually long stipitate, 1–4-locular, placentas 2–6, ovules numerous, stigmas sessile. Berries ovoid or globose, sometimes elongated or torulose; seeds numerous and shining, embryo convolute.

About 250 species tropical and subtropical; 17 species Australia; 6 species south-eastern Queensland.

Generally called WILD ORANGE, WILD POMEGRANATE or BUMBLE TREE. Ripe fruits are edible, the pulp sweet.

Juvenile leaves are generally different from adult, and spiny.

- | | |
|---|----------------------------|
| 1. All sepals free, imbricate in bud | 2 |
| Outer sepals connate in bud, splitting apart at anthesis | 3 |
| 2. Mature leaves less than 2.5 cm long; plants of moist areas, often rainforest | 1. <i>C. sarmentosa</i> |
| Mature leaves greater than 2.5 cm, usually 3–9 cm long; plants of western, dry areas | 2. <i>C. lasiantha</i> |
| 3. Ovary pubescent at anthesis | 3. <i>C. mitchellii</i> |
| Ovary glabrous at anthesis | 4 |
| 4. Buds 1.7–2.3 cm long, often conspicuously 4-ridged | 4. <i>C. canescens</i> |
| Buds up to 1.5 cm long, never conspicuously 4-ridged | 5 |
| 5. Mature leaves linear-elliptic to very narrowly ovate, 4–8.5 cm × 0.8–1.8 cm; fruits globose, smooth or tuberculate | 5. <i>C. loranthifolia</i> |
| Mature leaves narrowly ovate or narrowly elliptic, 5–14 cm × 1.5–6 cm; fruits globose, smooth | 6. <i>C. arborea</i> |

1. *Capparis sarmentosa* Cunn. ex Benth.

Shrub up to 2 m tall; stems sometimes climbing, prickles recurved, branchlets with long hairs. Mature leaves with petioles up to 2 mm long; blades ovate to broadly ovate, apex obtuse, sometimes mucronate base rounded, 0.3–2.5 cm × 0.2–1.8 cm, glabrous. Flowers 1–2, axillary on peduncles 0.8–1.5 cm long; petals creamy-white, 0.8–1.3 cm long. Fruits ovoid or ± cylindrical, up to 2.5 cm × 2.5 cm, on stipes 1.4–2.5 cm long. **Fig. 30B.**

Wetter parts of region, mainly on edges of depauperate rainforest. Flowers spring.

2. *Capparis lasiantha* R.Br. ex DC.

NIPAN; SPLIT JACK

Shrub up to 8 m tall; stems climbing, thorns recurved. Mature leaves with petioles 2–6 mm long; blades narrowly oblong to elliptic, apex obtuse, often mucronate, base obtuse, 2.5–9.5 cm × 1–3 cm, all parts whitish- or rusty-pubescent. Flowers usually 1–3 axillary, on peduncles 1–2.5 cm long; petals pale yellow to white, 0.8–1.6 cm long. Fruits ovoid, *ca* 3 cm × 2 cm, on stipes 1.5–2.5 cm long.

Western areas of region. Flowers mainly spring.

3. *Capparis mitchellii* Lindl.

Shrub or small tree. Leaves with petioles 0.4–1.1 cm long; blades ovate, elliptic or obovate, apex ± obtuse, base cuneate, 3.5–6.5(–9) cm × 1.3–3.3 cm, white- or yellow-tomentose, or ± glabrous with age above. Flowers 1–4, ± terminal, on peduncles 3–5 cm long; petals creamy-yellow, 2–3 cm long. Fruits ± globose, *ca* 4–7 cm diameter, on stipes 4–8 cm long, surface pubescent or glabrous, smooth or sometimes with a few irregular protrusions. **Fig. 30C.**

Drier parts throughout region. Flowers spring–summer.

4. *Capparis canescens* Banks ex DC.

Capparis areolata F. M. Bailey; *Capparis armata* Domin

Small tree, indumentum of very dense short appressed hairs, ± thorny. Mature leaves with petioles 1.75–4 cm long; blades ± elliptic, ovate or broadly ovate, apex acute to obtuse, sometimes mucronate, base cuneate to obtuse, 4.5–10 cm × 2.5–6 cm. Flowers up to 4 together, usually axillary, on peduncles 3–9.5 cm long, buds prominently 4-ridged; petals white, sometimes pink-tinged, *ca* 3 cm long. Fruits ± globose, 2.5–7.5 cm diameter, on stipes 6–9 cm long.

Open eucalypt forest in Darling Downs and more northern districts of the region. Flowers mainly summer.

5. *Capparis loranthifolia* Lindl.**NARROW LEAF BUMBLE-TREE***Busbeckia loranthifolia* (Lindl.) F. Muell.

Dense tree up to 8 m tall, with appressed pubescence. Mature leaves with petioles 3–10 mm long; blades linear-elliptic to very narrowly ovate, apex \pm acute or obtuse, base attenuate, 4–7 cm \times 0.8–1.8 cm, soon \pm glabrous. Flowers 1–5, \pm terminal or upper axillary, on peduncles 2–4.5 cm long; petals cream, *ca* 1.75 cm long. Fruits globose, *ca* 2.5–6 cm diameter, on stipes 4.5–9 cm long, pericarp \pm smooth.

Two varieties occur in the region:

- | | |
|---|---|
| 1. Leaf blades linear-elliptic; fruits 2.5–4.5 cm diameter, smooth | <i>C. loranthifolia</i> var. <i>loranthifolia</i> |
| Leaf blades very narrowly ovate; fruits up to 6 cm diameter, densely covered with tubercles up to 3 mm high | <i>C. loranthifolia</i> var. <i>bancroftii</i> |

Both *C. loranthifolia* var. *loranthifolia* and *C. loranthifolia* var. *bancroftii* C. T. White ex M. Jacobs occur in more western areas of the region. Flowers usually summer.

6. *Capparis arborea* (F. Muell.) Maiden*Busbeckia arborea* F. Muell.; *Capparis nobilis* auct. non (Endl.) F. Muell., Benth.

Shrubby tree. Mature leaves with petioles 0.6–2 cm long; blades narrowly ovate to narrowly elliptic, apex obtuse or acute, mucronate, base cuneate, 5–14 cm \times 1.5–6 cm. Flowers usually solitary, axillary, peduncles 3–6 cm long; petals cream, 1.5–3 cm long. Fruits \pm globose, *ca* 2–4 cm diameter, on stipes 3–5 cm long.

Throughout the region, in rainforest or depauperate closed forest. Flowers summer.

2. APOPHYLLUM F. Muell.

Shrubs, almost leafless; young branches puberulous. Flowers in lateral, fascicle-like or very short racemes, unisexual, buds globose, tomentose; sepals 4–3, imbricate, outer 2 covering inner; petals 4–2, sessile, imbricate; male flowers with 8–16 stamens; female flowers with petals villous inside, stamens absent or rarely 1–3, ovary stipitate, on short torus, stigma sessile, ovule 1, rarely 2, pendent from above middle of ovary wall. Fruits globose, small, 1–2 seeded; seeds with smooth testa, cotyledons circinate-involute.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Apophyllum anomalum* F. Muell.**BROOM BUSH**

Shrub or small tree. Leaves hoary-tomentose, petioles 1–2 mm long; blades linear to linear-elliptic, apex \pm obtuse, base cuneate, 0.4–1.5 cm \times 0.1–0.2 cm. Flowers greenish-yellow, on pedicels *ca* 5 mm long, fragrant; sepals and petals 2–3 mm long. Fruits 5 mm diameter, on stipes 2–3 mm long. **Fig. 30D.**

Western areas of region. Flowers spring–summer.

51. CLEOMACEAE

Annual or perennial herbs, glabrous, pilose or glandular. Leaves alternate, exstipulate; blades simple or 3–7-foliolate. Flowers mostly in racemes or corymbs, often with foliaceous bracts, bisexual, rarely unisexual; sepals mostly 4, free or variously united; petals usually 4, free, hypogynous, often clawed, imbricate; stamens mostly 6, filaments free or partly adnate to gynophore, anthers 2-locular; ovary usually stipitate, 1-locular with 2–3 parietal placentas, ovules numerous or few, style usually filiform, stigma various. Fruits 2- or 3-valved capsules, usually dehiscent; seeds often reniform, smooth, rugose or pubescent, endosperm absent, cotyledons 2.

12 genera with 275 species, tropical and subtropical; 2 genera with 11 species Australia; 1 genus with 3 species south-eastern Queensland.

1. CLEOME L.

Erect, often glandular-pubescent herbs. Leaves usually 3–7-foliolate, digitately arranged. Flowers in terminal, bracteate racemes; sepals 4; petals 4, distinctly clawed; stamens 6 or 8–16; style very short or absent. Capsules linear to oblong, many-seeded.

150 species tropical and subtropical; 3 native, 1 naturalized species Australia; 3 species south-eastern Queensland.

- 1. Leaves with spinose stipules, and often spines on midveins beneath; floral bracts 1-foliolate 1. *C. hasslerana*
- Leaves without spinose stipules or spines; floral bracts 3-foliolate 2
- 2. Flowers yellow; ovary ± sessile 2. *C. viscosa*
- Flowers white or purplish; ovary stipitate 3. *C. gynandra*

1. **Cleome hasslerana* L. Chodat

PRICKLY SPIDER-FLOWER

Cleome spinosa auct. non Jacq.; *Cleome pungens* Willd.

Woody herb up to ca 1.2 m tall. Leaves with petioles 2–12 cm long; blades 3–7-foliolate, each leaflet narrowly elliptic, apex acute, base cuneate, 2–8 cm × 0.7–3 cm, pubescent with simple and glandular hairs. Flowers on pedicels 3–4 cm long; sepals 3–4 mm long; petals white, pink or purple, 2.5–3 cm long, long-clawed; stamens 6; ovary stipitate. Capsules 3–8 cm long, on stipe 4–8 cm long. **Fig. 30A.**

Native of tropical America; weed of coastal districts. Flowers much of the year.

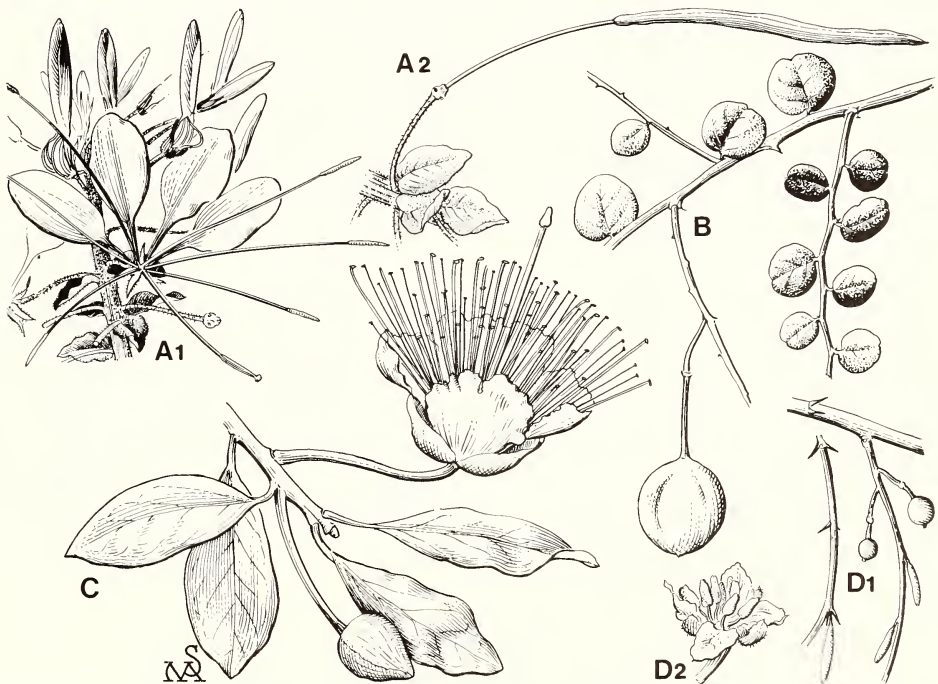


Fig. 30

A CLEOMACEAE — A₁-A₂, *Cleome hasslerana*. A₁, part of inflorescence $\times \frac{2}{3}$, A₂, fruit $\times \frac{2}{3}$; B-D CAPPARACEAE — B-C *Capparis* spp. — B-C *C. sarmentosa*, part of fruiting branch $\times \frac{2}{3}$; C *C. mitchellii*, part of flowering branch $\times \frac{2}{3}$; D₁-D₂, *Apophyllum anomalum*. D₁, fruiting stem $\times \frac{2}{3}$, D₂, flower $\times 2$.

2. *Cleome viscosa* L.

TICK-WEED

Polanisia viscosa (L.) DC.

Erect, viscid herb up to ca 1 m tall, all parts glandular-pubescent. Leaves with petioles 0.5-3 cm long; blades 3-5-, rarely 7-foliolate, each leaflet elliptic to obovate, apex acute, base cuneate, 0.6-4 cm × 0.2-2 cm. Flowers on pedicels 1-2 cm long; sepals 5-8 mm long; petals yellow, 1-1.8 cm long, short-clawed; stamens 8-16; ovary ± sessile. Capsules 3-10 cm long.

Weed, may be found around stockyards, railway sidings, etc.; uncommon in region. Flowers much of the year.

3. *Cleome gynandra* L.

Gynandropsis pentaphylla DC.; *G gynandra* (L.) Merr.

Erect, woody, glandular-pubescent herb up to ca 1 m tall. Leaves with petioles 2-8 cm long; blades 3-5-foliolate, each leaflet obovate, apex mostly obtuse, base cuneate, 1-6.5 cm × 0.5-4 cm. Flowers on pedicels 1.5-2 cm long; sepals 3-4 mm long; petals white or purplish, 0.8-1.2 cm long, long-clawed; stamens 6, attached almost at apex of stipe. Capsules 4-10 cm long, on stipes 2-3 cm long, scar where stamens attached ca midway along stipe.

Uncommon weed, found around stockyards or railway sidings. Flowers mainly autumn.

52. BRASSICACEAE
(CRUCIFERAE)

Annual or perennial herbs, rarely undershrubs. Leaves usually alternate. Inflorescences usually terminal, simply racemose, corymbose or paniculate, usually ebracteate; flowers actinomorphic, nectiferous; sepals 4 in 2 whorls; petals 4, usually clawed; stamens usually 6 in 2 whorls, 2 outer filaments shorter than 4 inner; ovary superior, carpels 2, divided by false septum which often persists after seed dispersal, style 1, stigma 2-lobed. Fruits siliques or siliculas, rarely lomentaceous or indehiscent; seeds mucose or dry.

About 375 genera with 3200 species, cosmopolitan but chiefly northern temperate; 53 genera with ca 160 species Australia; 18 genera with 41 species south-eastern Queensland.

- 1. Fruits dehiscent from the base of two valves 2
Fruits not dehiscent, separating at maturity into 1-seeded articles 13
- 2. Fruits more than twice as long as broad 3
Fruits less than twice as long as broad 11
- 3. Fruits with a long beak, more than 4 mm long 4
Fruits without a beak or style only projecting less than 4 mm beyond valves 6
- 4. Fruits appressed to stem, beak swollen basally 1. *Hirschfeldia*
Fruits not appressed to stem, nor beak swollen basally 5
- 5. Valves with 3 or more veins; sepals spreading 2. *Sinapis*
Valves with 1 prominent midvein, and fainter lateral reticulations; sepals almost erect 3. *Brassica*
- 6. Fruits ± 4-angled in cross-section 4. *Conringia*
Fruits terete or compressed, not 4-angled in cross-section 7
- 7. Fruits cylindrical, usually 3-veined (1 species appressed to stem, narrowly conical); seeds in 1 row 5. *Sisymbrium*
Fruits subcylindrical or compressed, not appressed to stem, vein 1 or none per valve; seeds in 1-2 rows 8
- 8. Plants with branched hairs 6. *Harmsiodoxa*
Plants glabrous, or with simple or papillose hairs 9

- | | | |
|--|-------------------------|----|
| 9. Seeds sticky, especially when soaked; south-eastern Queensland species with hispid hairs at least on the upper part of the stem | 7. <i>Arabidella</i> | |
| Seeds not sticky; south-eastern Queensland species without hispid hairs on the stem | | 10 |
| 10. Valves \pm convex, fruit often appearing inflated; seeds in \pm 2 rows, often markedly so | 8. <i>Rorippa</i> | |
| Valves \pm flattened, fruit compressed; seeds in 1 row | 9. <i>Cardamine</i> | |
| 11. Fruits containing 1, rarely 2, seeds | 10. <i>Lepidium</i> | |
| Fruits containing several seeds | | 12 |
| 12. Fruit apex notched or emarginate | 11. <i>Capsella</i> | |
| Fruit apex not notched or emarginate | 12. <i>Stenopetalum</i> | |
| 13. Fruits with 2 loculi side by side, each containing 1, rarely 2 seeds | | 14 |
| Fruits with loculi superposed, or if two upper side by side and 1 lower, then the upper two sterile | | 15 |
| 14. Fruits 2-lobed, not cordate, apex notched | 13. <i>Coronopus</i> | |
| Fruits cordate, apex rounded with persistent style present, not notched | 14. <i>Cardaria</i> | |
| 15. Fruits with upper 2 loculi sterile, side by side, lower 1 with 1 rarely 2 seeds | 15. <i>Myagrum</i> | |
| Fruits with loculi superposed | | 16 |
| 16. Fruits 3–8-seeded with long conical beak, a \pm moniliform lomentum breaking into more than two articles | 16. <i>Raphanus</i> | |
| Fruits consisting of 2 superposed 1-seeded articles, sometimes lower not developed | | 17 |
| 17. Upper article globular, ribbed, tipped with terete style | 17. <i>Rapistrum</i> | |
| Upper article flattened, conical, apex beak-like, sometimes 3 veins raised, but otherwise not ribbed | 18. <i>Cakile</i> | |

1. HIRSCHFELDIA Moench

Annual or biennial scabrous herbs. Inflorescences corymbose panicles; sepals erect, inner slightly saccate; petals clawed; stigma capitate. Siliquas dehiscent, valves with 3 prominent veins when young, later obscure, beak swollen at base; seeds in 1 row per loculus, ovoid.

2 species Mediterranean; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Hirschfeldia incana* (L.) Lagreze-Fossat

BUCHAN WEED

Sinapis incana L.

Erect, eventually sprawling, usually branched herb up to 1 m tall, scabrous hairs simple, retrorse. Lower leaves petiolate, blades lyrate-pinnatisect to appearing pinnate, with ovate terminal lobe, margin dentate or crenate; upper sessile, simple, narrowly obovate, margin dentate. Sepals 3–4 mm long; petals pale yellow, often with dark veins, 6–8 mm long; style 4–8 mm long, swollen basally. Siliquas erect, appressed, 0.7–1.7 cm \times 0.1–0.15 cm, on thick pedicels 2–4 mm long; seeds mucose. **Fig. 31F.**

Native of southern Europe; weed of roadsides in southern parts of region, mainly Darling Downs. Flowers late winter–spring.

2. SINAPIS L.

Annual, erect, branched herbs. Leaves pinnatifid or pinnatisect. Inflorescences racemose; sepals spreading, \pm equal, not saccate; petals clawed. Siliquas beaked, dehiscent, valves 3–7-veined; seeds in 1 row per loculus, globose, not mucose.

10 species Europe and Mediterranean; 2 species naturalized Australia; 1 species south-eastern Queensland.

1. **Sinapis arvensis* L.

CHARLOCK

Annual up to 1 m tall, usually hispid. Basal leaves petiolate, blades lyrate-pinnatisect to appearing pinnate with large coarsely-toothed terminal lobes, up to 20 cm long; cauline leaves sessile, usually ovate, decreasing in size. Sepals 4–7 mm long; petals yellow, 0.9–1.2 cm long. Siliquas 2.5–5.5 cm × 0.15–0.4 cm, on thick spreading pedicels 3–7 mm long, valves glabrous or hispid, beak 1–1.5 cm long. **Fig. 31A.**

Native of southern Europe; weed, not common. Flowers spring. Seeds contain oils which can be poisonous if eaten in quantity.

3. BRASSICA L.

Erect annuals or biennials, glaucous or with scattered bristly hairs. Inflorescences elongating from corymbs; sepals erect or ± spreading; petals clawed, obovate; glands present at base of stamens; ovary usually sessile, stigma large, depressed-capitate. Fruits pedicellate dehiscent siliquas with valve and beak region; valves with 1 midvein and obscure lateral veins, 1 row of seeds per loculus, beak conical, 0–3-seeded.

About 100 species Europe, Mediterranean, Asia; ca 9 species naturalized Australia; 5 species south-eastern Queensland.

Brassica spp. generally contain mustard oils in seeds and goitrogenic substances, and can be poisonous to stock if eaten in large quantities.

- | | |
|---|---------------------------|
| 1. Basal or lowest leaves entire | 2 |
| Basal or lowest leaves deeply pinnatifid | 3 |
| 2. All leaves glabrous, glaucous; petals 1.5–2 cm long, pale yellow | 1. <i>B. oleracea</i> |
| At least lower leaves green, with prominent white venation; petals ca 1 cm long, bright yellow | 2. <i>B. chinensis</i> |
| 3. Cauline leaves deeply cordate, often broadened and ± stem-clasping | 4 |
| Cauline leaves petiolate or narrowed into a stalk-like base | 5 |
| 4. All leaves glaucous; petals 1–1.8 cm long; open flowers scarcely overtopping buds of inflorescences | 3. <i>B. napus</i> |
| Lowest leaves grass-green; petals 6–10 mm long; open flowers overtopping buds of inflorescences | 4. <i>B. rapa</i> |
| 5. Lower leaves lyrate-pinnatifid, sparsely bristly; beak 4–10 mm long, narrower than the stigma at its tip | 5. <i>B. juncea</i> |
| Lower leaves runcinate-pinnatifid, ciliate and densely bristly; beak 1–1.6 cm, as wide as the stigma at its tip | 6. <i>B. tournefortii</i> |

1. **Brassica oleracea* L.

WILD CABBAGE

Erect glabrous biennial or perennial; stem thick, ± decumbent and irregularly curved. Lower leaves petiolate, blades broad, rarely a few small basal lobes, margin sinuate to crenate, up to 40 cm long; cauline leaves sessile, up to 1/3 stem-clasping but not broadened, oblong, entire. Inflorescences extended racemes; sepals 6–10 mm long; petals pale yellow, 1.2–2.5 cm long. Siliquas 5–10 cm × 0.2–0.5 cm, on spreading pedicels, beak seedless, up to 1 cm long; seeds 2–4 mm diameter.

Native of western Europe and Britain; occasional garden escape. Cultivated as a vegetable. Flowers winter.

2. **Brassica chinensis* L.

CHINESE CABBAGE

Erect annual, up to 75 cm tall, sometimes developing tuberous root. Basal leaves petiolate, blades obovate, margin entire, up to 20 cm, long with prominent white veins; cauline leaves sessile, narrowly oblong-ovate, base cuneate to broadened, stem-clasping. Inflorescences elongating from flat or concave corymbs; sepals ± erect, 5–6 mm long; petals yellow. Beak seedless, up to 1 cm long; seeds 1.5 mm diameter.

Native of eastern Asia; market garden escape. Cultivated. Flowers winter.

3. **Brassica napus* L.

RAPE

Erect branched annual or biennial, up to 1.5 m tall, with strong taproot. Leaves all glaucous; lower leaves petiolate, blades lyrate-pinnatisect, sparsely bristly; upper leaves sessile, blades narrowly oblong-ovate, stem-clasping. Inflorescences elongating from convex corymbs; sepals 5–7 mm; petals pale yellow, 1.1–1.8 cm long. Siliquas 4.5–11 cm × 0.25–0.4 cm, on horizontal to ascending pedicels, beak 0.5–3 cm long, thin, narrower than stigma; seeds blue-black with whitish bloom, globular, 1.5–2.5 mm diameter. **Fig. 31E.**

Native of Europe; escape from cultivation mainly on Darling Downs. Flowers late winter to spring. Can contain potentially toxic amounts of nitrate.

4. **Brassica rapa* L.

BIRD RAPE

Brassica campestris L.

Erect branched annual or biennial, up to 1 m tall, with stout or tuberous taproot and setiform hairs. Basal leaves petiolate, blades pinnatisect, bristly, bright green; cauline leaves sessile, blades narrowly oblong-ovate, tending glabrous, glaucous, ± completely stem-clasping with broadened, deeply cordate base. Inflorescences elongating from concave corymbs; sepals spreading, 4–6 mm long; petals bright yellow, 6–10 mm long. Siliquas 4–6.5 cm long on ascending pedicels, beak seedless, 1–3 cm long, narrower than stigma, seeds red- to black-brown, 1.5–2 mm diameter. **Fig. 31D.**

Native of Europe; escape from cultivation mainly in Darling Downs district. Flowers late winter to spring.

5. **Brassica juncea* (L.) Czernj. & Coss.

INDIAN MUSTARD

Sinapis juncea L.

Erect branched, glabrous annual, up to 1 m tall, rarely taller. Leaves often glaucous; basal leaves petiolate, blades lyrate-pinnatisect, margin serrate, up to 20 cm long, sparsely setose; cauline leaves decreasing in size, ± undivided. Inflorescences elongating from flat corymbs; sepals 3–5 mm long; petals pale yellow, 7–9 mm long. Siliquas 2–6 cm × 0.2–0.35 cm, on ascending pedicels 0.8–1.7 cm long; beak seedless, tapering, narrower than stigma, 4–10 mm long; seeds yellow or reddish-brown, 1–1.5 mm diameter. **Fig. 31B.**

Native of Asia; weed, mainly in Darling Downs district. Flowers mainly winter.

6. **Brassica tournefortii* Gouan

WILD TURNIP

Erect branched annual, up to 60 cm tall, densely hispid at least at base. Basal leaves petiolate, blades runcinate-pinnatisect, up to 30 cm long; upper leaves decreasing in size rapidly until sessile and bract-like. Inflorescences elongating from a flat to concave corymb; sepals erect, 3–4 mm long; petals pale yellow, narrow, 5–8 mm long. Siliquas 3–7 cm × 0.25–0.3 cm, on pedicels 1–3 cm long, beak 1–2-seeded; conical, as wide as stigma, seeds reddish-brown with black hilum, 2 mm diameter. **Fig. 31C.**

Native of Mediterranean region; common weed of Darling Downs district and drier parts of the region. Flowers winter.

4. CONRINGIA Heister ex Fabr.

Glabrous, glaucous annuals. Leaves simple. Inflorescences terminal racemes; inner sepals saccate; petals clawed. Siliquas dehiscent, valves angled, 1-veined in local species; seeds 1 row per loculus.

7 species Mediterranean, Europe and Central Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Conringia orientalis* (L.) Dumort.

HARE'S EAR; TREAKLE MUSTARD

Brassica orientalis L.

Stout, erect, sparsely branched herb, up to 70 cm tall. Basal leaves petiolate, blades obovate, margin entire, 10–12 cm long; cauline leaves sessile, blades obovate to elliptic, stem-clasping. Sepals 5.5–7 mm long; petals yellow, 0.8–1.3 cm long; style up to 4 mm long. Siliquas cylindrical-quadrangular, 6–14 cm × 0.2–0.3 cm, on erect to spreading pedicels 4–5 mm long. **Fig. 31L.**

Native of central and eastern Europe; weed of cultivation or roadsides in the Darling Downs and Moreton districts. Flowers late winter to spring.

5. SISYMBRIUM L.

Erect, annual or perennial herbs. Inflorescences of multiple terminal racemes; sepals equal, not saccate; petals clawed; style distinct. Siliquas not beaked, dehiscent, valves 3-veined; seeds small, 1 row per loculus.

90 species, temperate; 6 species naturalized Australia, 5 species south-eastern Queensland.

- 1. Siliquas 1-2 cm long, appressed to stem 1. *S. officinale*
- Siliquas longer than 2 cm, spreading 2
- 2. Flowers large, petals more than 6 mm long 3
- Flowers small, petals less than 6 mm long 4
- 3. Upper cauline leaves petiolate, lobes of other leaves ± acute; stem softly pubescent 2. *S. orientale*
- Upper cauline leaves sessile, stem-clasping, lobes usually obtuse; stem hispid, hairs harsh 3. *S. thellungii*
- 4. Pedicels 2-3 mm long, ± as thick as siliqua; petals less than 2.5 mm long 4. *S. erysimoides*
- Pedicels 0.6-2 cm long, thinner than siliqua, ca 0.5 mm diameter at base, petals more than 2.5 mm long 5. *S. irio*

1. **Sisymbrium officinale* (L.) Scop. HEDGE MUSTARD

Erysimum officinale L.
Annual or biennial herb, up to ca 1 m tall, hispid. Basal leaves in rosette, petiolate, blades deeply pinnatifid to pinnatisect, 5-8 cm long; cauline leaves reducing. Sepals 2-2.5 mm long; petals pale yellow, 2-4 mm long. Siliquas conical-cylindrical, 0.8-2 cm × 0.2 cm, erect on thick pedicels 1-2 mm long, closely appressed to stem. Fig. 31G.

Native of Europe; common weed of southern and inland regions. Flowers late winter-spring.

2. **Sisymbrium orientale* L. INDIAN HEDGE MUSTARD

Sisymbrium columnae Jacq.
Annual or biennial herbs, up to 1 m tall, softly pubescent. Basal leaves in rosette, petiolate, blades pinnatifid, not persistent; cauline leaves petiolate, blades simple or 3-lobed, up to ca 11 cm long. Sepals 4-5 mm long, hispid; petals pale yellow, 6-10 mm long. Siliquas 4-10 cm × 0.1-0.2 cm, on spreading pedicels 3-10 mm long. Fig. 31H.

Native of Asia and southern Europe; common widespread weed. Flowers winter-spring.

3. **Sisymbrium thellungii* O. E. Schulz AFRICAN TURNIP-WEED

Annual, up to ca 1 m tall; stems and leaves hispid. Stems elongating from basal rosette; lower leaves petiolate, blades deeply lyrate-pinnatifid to pinnatisect, up to 35 cm long; upper leaves sessile, stem clasping, becoming smaller and not lobed, margin serrate. Sepals 4-5.5 mm long, hispid; petals yellow, 6-8 mm long. Siliquas 3-11 cm × ca 0.15 cm, spreading on thick pedicels 0.5-3 cm long. Fig. 31I.

Native of southern Africa; weed of the drier areas of the region. Flowers winter-spring.

4. **Sisymbrium erysimoides* Desf. SMOOTH MUSTARD

Annual, up to 80 cm tall, glabrous or softly pubescent. Leaves lyrate-pinnatisect, rarely entire, narrowly ovate in outline, margin serrate. Sepals ca 1.5 mm long; petals yellow, 1-2.5 mm long; style less than 1 mm long. Siliquas 2.5-5 cm × ca 0.1 cm on ± horizontal pedicels 2-5 mm long. Fig. 31K.

Native of western Mediterranean region; uncommon weed. Flowers late winter-spring.

5. **Sisymbrium irio* L. LONDON ROCKET

Glabrous annual, up to 60 cm tall. Lower leaves petiolate, blades deeply sinuate-pinnatifid; cauline leaves shortly petiolate, blades lobed or entire and hastate. Sepals 2.5-3 mm long; petals pale yellow, usually 2.5-3.5 mm long. Siliquas 2.5-6.5 cm × 0.1 cm, curved and ascending on slender pedicels 0.6-2 cm long. Fig. 31J.

Native of western Mediterranean region; common weed of southern districts. Flowers winter-spring.



Fig. 31

BRASSICACEAE — A₁-A₃, *Sinapis arvensis*, A₁, upper leaf x1/2, A₂, fruit x1 1/2, A₃, T.S. showing 3 veins and septum x3; B₁-B₄, *Brassica* spp. — B₁-B₃, *B. juncea*, B₁, upper leaf x1, B₂, part of inflorescence x1, B₃, fruit x1 1/2, B₄, T.S. showing 1 main vein and septum x3; C₁-C₂, *B. tournefortii*, C₁, leaf x1, C₂, fruit x1; D *B. rapa*, flower x1; E₁-E₃, *B. napus*, E₁, upper leaf x1/2, E₂, flower x1, E₃, fruit x1; F₁-F₂, *Hirschfeldia incana*, F₁, leaf x1, F₂, part of fruiting inflorescence x1; G-G, *Sisymbrium* spp. — G₁-G₂, *H. incana*, G₁, leaf x1, G₂, part of fruiting inflorescence x1; H *S. orientale*, fruit x1; I₁-I₂, *S. thellungii*, I₁, upper leaf x1, I₂, fruit x1; J *S. irio*, fruit x1; K *S. erysimoides*, fruit x1; L₁-L₃, *Conringia orientalis*, L₁, upper leaf x1, L₂, fruit x1, L₃, T.S. showing quadrangular shape x6.

6. **HARMSIODOXA** O. E. Schulz

Annual, pubescent, prostrate to erect herbs. Inflorescences racemose; sepals erect to spreading, dimorphic; petals clawed. Siliquas dehiscent, terete, quadrangular or \pm flattened, valves with 1 midvein; seeds in 2 rows, mucose.

3 species endemic to Australia; 1 species south-eastern Queensland.

1. *Harmsiodoxa blennodioides* (F. Muell.) O. E. Schulz HAIRYPOD CRESS
Erysimum blennodioides F. Muell.; *Blennodia lasiocarpa* F. Muell.; *B. cunninghamii* Benth.

Erect branched herb, up to 30 cm tall, densely pubescent. Basal leaves petiolate, blades narrowly obovate, lobed or toothed, up to 10 cm long; cauline leaves sessile or petiolate, blades obovate, toothed, up to 8 cm long. Sepals 1.7–3 mm long, pubescent; petals white, pink or mauve, 3.6–6 mm long. Siliquas 0.4–1.5 cm \times 0.1–0.3 cm on horizontal to spreading pedicels 0.25–1.3 cm long, valves pubescent with sessile or shortly stipitate bifid hairs proximally, grading distally into terete or flattened acute, simple hairs. **Fig. 32F.**

Rare in region, Darling Downs district. Flowers mainly spring–summer.

7. **ARABIDELLA** (F. Muell.) O. E. Schulz

Annuals or perennials. Inflorescences elongating from corymbs; sepals erect or spreading; petals clawed. Siliquas dehiscent, beakless; seeds in 1 or 2 rows per loculus, mucose.

6 species endemic to Australia; 1 species south-eastern Queensland.

1. *Arabidella eremigena* (F. Muell.) E. A. Shaw
Sisymbrium eremigenum F. Muell.; *Blennodia eremigena* (F. Muell.) Benth. (misspelt as *B. eremigera*)

Erect or prostrate multistemmed herb, up to 35 cm tall, pubescent with erect or appressed simple hairs. Basal leaves petiolate, blades obovate, pinnatifid, up to 6 cm long; cauline leaves sessile or shortly petiolate, blades pinnatifid, up to 4 cm long. Sepals 1.9–3 mm long; petals usually white or yellow, 2.5–4 mm long. Siliquas 0.4–2 cm long on spreading pedicels 0.3–1.5 cm long; seeds in 1 row per loculus. **Fig. 32E.**

Rare in region, western Darling Downs district. Flowers winter–spring.

8. **RORIPPA** Scop.

Annual or perennial herbs, glabrous or with unbranched hairs. Leaves simple to pinnate. Inflorescences racemose; inner sepals saccate. Siliquas short, dehiscent, not beaked, midvein obscure; seeds \pm in two rows.

70 species, almost cosmopolitan; 5 native, 3 naturalized species Australia; 4 species south-eastern Queensland.

- | | | |
|---|-----------------------------------|---|
| 1. All, or at least lower leaves entire, denticulate | 1. <i>R. gigantea</i> | 2 |
| Lower leaves pinnatifid or pinnatisect | | |
| 2. Plants aquatic; stoloniferous herbs | 2. <i>R. nasturtium-aquaticum</i> | 3 |
| Plants not aquatic, though may be found in damp or shady areas; erect herbs | | |
| 3. Large herbs up to 1.5 m tall; siliquas inflated, 5–9 mm \times 1.5–2 mm, held \pm horizontally | 3. <i>R. palustris</i> | |
| Small herbs up to 20 cm tall; siliquas 1.5–3 cm \times 0.15 cm, held oblique to erect | 4. <i>R. eustylis</i> | |

1. *Rorippa gigantea* (Hook.) Garnock-Jones*Arabis gigantea* Hook.; *Rorippa stylosa* (DC.) Allan

Coarse glabrous branched decumbent or \pm erect herb, up to ca 1 m tall. Lower leaves oblong-elliptic, margin entire or sinuate-denticulate, 7–12 cm long; upper leaves sessile, sagittate. Sepals ca 3 mm long; petals white, up to 5 mm long; stamens 6. Siliquas 2.5–3.5 cm long, on spreading pedicels 5–10 mm long.

Recorded only from Gold Coast hinterland. Flowers spring.

2. **Rorippa nasturtium-aquaticum* (L.) Hayek

WATERCRESS

Sisymbrium nasturtium-aquaticum L.; *Nasturtium officinale* R. Br.

Aquatic or semi-aquatic perennial herbs; stems hollow, decumbent, stoloniferous, 10–60 cm long, glabrous. Leaves petiolate; blades lyrate-pinnatisect, up to 12 cm long, lobes elliptic. Sepals 1.5–2 mm long; petals white, 3–4 mm long. Siliquas 1.3–1.8 cm \times 0.2 cm, ascending, on pedicels 0.8–1.2 cm long. **Fig. 32B.**

Native of Europe; naturalized in creeks and lagoons of the region. Flowers winter–spring. The tips of the leafy stems may be eaten as a salad or used as a garnish, and it can also be cooked as a vegetable.

3. **Rorippa palustris* (L.) Besser

MARSH CRESS

Sisymbrium amphibium L. var. *palustre* L.; *Nasturtium palustre* (L.) DC.; *N. terrestre* (With.) R. Br.; *Rorippa islandica* auct. non (Oeder) Borbas

Annual or biennial herb; stems erect, up to 15 cm long, glabrous. Leaves petiolate; blades lyrate-pinnatisect, up to 15 cm long, lobes irregularly serrate. Inflorescences paniculate; sepals 1.5 mm long; petals yellow, 1–2 mm long. Siliquas inflated, 5–9 mm \times 2 mm, curved slightly upwards, on spreading pedicels 4–10 mm long. **Fig. 32C.**

Native of Europe; common weed of southern coastal areas. Flowers late winter–spring. Can be used as a pot herb.

4. *Rorippa eustylis* (F. Muell.) L. A. S. Johnson*Cardamine eustylis* F. Muell.

Small, erect, glabrous annual up to 20 cm tall. Leaves petiolate; blades lyrate-pinnatisect, up to 5 cm long, segments coarsely irregularly toothed. Sepals 3 mm long; petals white, 2 mm long. Siliquas 1.5–3 cm \times 0.15 cm, valves convex.

Scattered throughout drier parts of region. Flowers winter.

9. CARDAMINE L.

Annual to perennial herbs, glabrous or with simple hairs. Leaves simple to pinnate. Inflorescences elongating from terminal corymbs; inner sepals slightly saccate; petals clawed; stamens 4–6. Siliquas strongly compressed, valves coiling spirally from the base at dehiscence; seeds in 1 row per loculus.

About 160 species cosmopolitan, chiefly temperate; ca 7 native, 2 naturalized species Australia; ca 5 species south-eastern Queensland.

A revision is needed to clarify the position and status of a number of species.

- | | | |
|--|--------------------------|---|
| 1. Leaves pinnatifid; fruiting pedicels 2–6 mm long | 1. <i>C. sp. 1.</i> | 2 |
| Leaves entire, or pinnatisect; fruiting pedicels 0.5–2 cm long | | |
| 2. Lower leaf blades usually entire, or with 1–2 pairs of leaflets and a large terminal leaflet; petiole usually longer than blade; fruiting pedicels 1–2 cm long | | 3 |
| Lower leaf blades with 3–6 pairs of leaflets and a terminal leaflet only a little larger than others; petiole usually much shorter than blade; fruiting pedicels 0.5–1 cm long | | 4 |
| 3. Stamens 6; plant of rainforest and wet gullies | 2. <i>C. circaeoides</i> | |
| Stamens 4; plant of drier areas of Darling Downs district | 3. <i>C. sp. 2.</i> | |
| 4. Plant branched only at base; basal leaves in a distinct rosette, cauline leaves few, smaller; stamens 4 | 4. <i>C. hirsuta</i> | |
| Plant branched above as well as at the base; basal leaves not in a distinct rosette, cauline leaves at first larger, numerous; stamens 6 | 5. <i>C. flexuosa</i> | |

1. *Cardamine* sp. 1.

Herb, up to 50 cm tall. Lower leaves long petiolate, blades deeply pinnatifid, up to ca 10 cm long, lobes narrow, sometimes toothed, terminal lobe broader; cauline leaves reducing. Inflorescences racemose; sepals 2–2.5 mm long; petals white, 2.5–3 mm long; stamens possibly 4. Siliquas 1.5–3.5 cm × 0.1–0.15 cm, curved upwards on ascending pedicels 2–6 mm long.

Coastal districts of the region, in wetter areas. Flowers late winter–spring.

2. *Cardamine circaeoides* Hook. f. & Thomson

Herb, up to 40 cm tall. Leaves in a basal rosette, long petiolate, blades usually entire, broadly ovate, apex obtuse, base cordate, margin sinuate, up to ca 3 cm long; cauline leaves absent. Inflorescences racemose; sepals 2 mm long; petals white to lilac, ca 3 mm long; stamens 6. Siliquas 1.5–3 cm × 0.15 cm on spreading pedicels 1–1.5 cm long.

Cool, wet areas of McPherson Ra., Mt. Tamborine, etc. Flowers mainly summer.

Some authors regard this as a species of **Rorippa** and then it is known as **R. dietrichiana** Hewson.

3. *Cardamine* sp. 2.

Herb up to 40 cm tall. Leaves mainly in basal rosette, long petiolate; blades usually entire, broadly ovate, apex ± obtuse, base truncate, margin sinuate or widely toothed, ca 2 cm long; a few smaller cauline leaves present on larger plants. Inflorescences racemose; sepals ca 2 mm long; petals white, 3–4 mm long; stamens 4. Siliquas 2–2.5 cm × 0.15 cm on spreading pedicels 1.5–2 cm long.

Drier areas of Darling Downs district.

4. **Cardamine hirsuta* L.**COMMON BITTERCRESS**

Slender, glabrescent annual 7–30 cm tall. Leaves in a distinct basal rosette, petiolate, blades pinnate, up to 5 cm long, with 2–4 pairs obovate-orbicular leaflets and 1 larger terminal reniform leaflet, all lobed and sparsely pubescent on margin; cauline leaves absent or very few, smaller. Inflorescences racemose; sepals 1.5 mm long; petals white, up to 3 mm long; stamens 4. Siliquas 1.8–2.5 cm × 0.1 cm, erect on slender, curved pedicels 5–10 mm long.

Native of Europe; weed of gardens, and near habitation in damp or shady areas. Flowers winter–spring. Can be used as a pot herb.

5. **Cardamine flexuosa* With.***Cardamine sylvatica* Link**

Slender puberulent branched herb; stems erect, flexuose, up to 50 cm tall. Lower leaves petiolate, blades pinnate, up to 6 cm long, with 3–6 pairs ovate to reniform leaflets and a larger terminal leaflet, all glandular-toothed; cauline leaves often larger with narrower leaflets, at length reducing. Inflorescences racemose; sepals 1.5 mm long; petals white, 2.5–3 mm long; stamens 6, rarely fewer. Siliquas 1.2–2.5 cm × 0.1 cm, erect on slender, curved pedicels 5–10 mm long. **Fig. 32A.**

Native of Europe; weed of gardens or near habitation in damp or shady areas. Flowers winter.

10. LEPIDIUM L.

Annual or perennial herbs, sometimes small shrubs. Inflorescences dense terminal corymbs, usually elongating into racemes in fruit; flowers small; sepals not saccate; petals variable, rarely absent; stamens 6–2; style short or absent, stigma capitate or slightly bilobed. Siliquas dehiscent, flattened at right angles to septum, usually apically notched, valves strongly keeled or winged; seeds 1 per loculus.

150 species cosmopolitan; 35 native, 8 naturalized species Australia; 6–8 species south-eastern Queensland.

- | | | |
|--|---------------------------|---|
| 1. Inflorescences dense corymbs, not elongating in flower or fruit | 1. <i>L. fasciculatum</i> | 2 |
| Inflorescences corymbs, elongating in early fruit to form racemes | | |
| 2. Fruits 5–6 mm × 3–5 mm | 2. <i>L. sativum</i> | 3 |
| Fruits less than 5 mm long | | |

- | | | |
|--|---|---|
| 3. Fruits with acuminate and notched apex | 3. <i>L. monoplocoides</i> | 4 |
| Fruits with rounded and notched apex | | |
| 4. Lower leaves pinnatifid or dissected, upper sessile, auriculate or stem
claspings | | 5 |
| Lower leaves entire or pinnatifid, upper petiolate or not, but narrowed
into base | | 6 |
| 5. Lower leaves pinnatifid, segments 1–2 mm wide; upper leaves auriculate
Lower leaves dissected, segments 0.25–0.75 mm wide; upper leaves
stem-clasping | 4. <i>L. sagittulatum</i>
5. <i>L. perfoliatum</i> | |
| 6. All or most leaves pinnatifid | 6. <i>L. bonariense</i> | 7 |
| All or most leaves entire or dentate | | |
| 7. Plants pubescent or puberulent | 7. <i>L. virginicum</i> | |
| Plants glabrous | 8. <i>L. hyssopifolium</i> | |

1. *Lepidium fasciculatum* Thell.**FASCICLED PEPPERCRESS**

Lepidium ruderale auct. non L., Benth. pro parte

Erect, glabrous annual up to 50 cm tall. Lower leaves pinnatisect to bipinnatisect, up to 10 cm × 2 cm, segments linear, dentate; upper leaves reducing to sessile, ± linear, entire. Inflorescences dense corymbs, not elongating; sepals 0.5–1 mm long; petals reduced or absent; stamens 2. Siliquas ± obovate, apex scarcely notched, ca 3 mm × 1.5–2 mm, on erect pedicels up to 2 mm long. **Fig. 32I.**

Weed of cultivation, usually on heavy black soils. Flowers spring to late summer.

2. **Lepidium sativum* L.**GARDEN CRESS**

Erect, glabrous annual up to 40 cm tall. Basal leaves petiolate, blades lyrate-pinnatifid, up to 10 cm × 5 cm, lobes dentate, not persistent; cauline leaves reducing to sessile and entire. Sepals 1–1.5 mm long; petals reddish or white, 2–3 mm long; stamens 6. Siliquas broadly elliptic, 5–6 mm × 3–5 mm, on erect pedicels 2–4 mm long. **Fig. 32H.**

Native of Egypt and western Asia; recorded once as a weed of flax, doubtfully established. Flowers winter to early spring. Used as a salad vegetable.

3. *Lepidium monoplocoides* F. Muell.

Nasturtium monoplocoides (F. Muell.) Kuntze

Erect branched annual up to 40 cm tall. Leaves pinnatisect to entire, linear or linear-elliptic, apex acute, base attenuate, 1.5–5 cm long. Sepals 1 mm long; petals reduced or absent; stamens 4, filaments basally dilated and contiguous. Siliquas ± orbicular, apex acuminate, 4–5 mm × 3–5 mm, on spreading pedicels 2–3 mm long. **Fig. 32M.**

Recorded from Yelarbon area in Darling Downs district. Flowers spring to early summer.

4. *Lepidium sagittulatum* Thell.

Erect, glabrous, possibly perennial up to 70 cm tall. Lower leaves bipinnatifid; upper entire, sessile, narrowly oblong or linear-ovate, apex acute, base auriculate, 1–6 cm × 0.1–0.4 cm. Sepals 0.5–0.75 mm long; petals reduced or absent; stamens 2. Siliquas elliptic to obovate, 2.5–3 mm × 1.5–2 mm, on erect to spreading pedicels 2.5–4 mm long. **Fig. 32J.**

Recorded from Darling Downs district, usually on heavy soils. Flowers winter–spring.

5. **Lepidium perfoliatum* L.

Erect, puberulent annual or biennial up to 40 cm tall. Leaves dimorphic: lower leaves petiolate, blades 2–3-pinnatisect, up to 10 cm long; upper leaves sessile, entire, broadly ovate, apex acute, base cordate, stem-clasping, up to 2 cm × 1.8 cm. Sepals ca 1 mm long; petals pale yellow, ca 1.5 mm long; stamens 6. Siliquas broadly elliptic, 4–4.5 mm × 3.5–4 mm, on spreading pedicels 4–6 mm long. **Fig. 32G.**

Native of Europe; recorded once as a weed in Brisbane, doubtfully established. Flowers spring.



Fig. 32

BRASSICACEAE A.-A, *Cardamine flexuosa*, A, part of fertile stem x1, A, mature fruit x1; B-C *Rorippa* spp. — B₁-B₃, *R. nasturtium-aquaticum*, B₁, leaf x½, B₂, part of fruiting inflorescence x1, B₃, mature fruit x1; C₁-C₂, *R. palustris*, C₁, leaf x½, C₂, part of fruiting inflorescence x1; D₁-D₃, *Stenopetalum velutinum*, D₁, part of fertile stem x1, D₂, flower x3, D₃, fruit x1½; E.-E, *Arabidella eremigena*, E₁, part of fertile stem x1, E₂, fruit x1½; F₁-F₃, *Harmsiodoxa blennodioides*, F₁, part of fruiting stem x1, F₂, fruit x1½, F₃, branched hairs x25; G.-N *Lepidium* spp. — G₁-G₃, *L. perfoliatum*, G₁, lower leaf x1, G₂, upper leaves x1, G₃, fruit x1½; H *L. sativum*, fruit x1½, I *L. fasciculatum*, fruiting inflorescence x1½; J₁-J₂, *L. sagittulatum*, J₁, upper leaf x1, J₂, fruit x1½; K *L. virginicum*, fruit x1½; L₁-L₃, *L. hyssopifolium*, L₁, upper leaf x1, L₂, fruiting inflorescence x1, L₃, fruit x1½; M₁-M₂, *L. monoplocoides*, M₁, fruit x1½, M₂, enlargement of apex x9; N₁-N₂, *L. bonariense*, N₁, upper leaf x1, N₂, fruit x1½.

6. *Lepidium bonariense L.

ARGENTINE PEPPERCRESS

Erect, \pm pubescent annual or biennial up to 60 cm tall. Lower leaves petiolate, blades 2–3-pinnatisect, up to 6 cm long, lobes linear to linear-elliptic, up to 2 mm broad; uppermost leaves pinnatifid. Sepals 0.5–1 mm long; petals whitish, shorter than sepals; stamens 2, rarely 4. Siliquas broadly elliptic, 3–4 mm \times 2.5–3.5 mm, on erect or spreading pedicels 2–4.5 mm long. **Fig. 32N.**

Native of South America; common and widespread throughout the region. Flowers mainly spring–summer, sometimes autumn. Milk-tainting weed.

7. *Lepidium virginicum L.

VIRGINIAN PEPPERCRESS

Erect, \pm pubescent annual or biennial up to 50 cm tall. Basal leaves pinnatifid, caducous; lower and upper leaves very narrowly elliptic to very narrowly obovate, apex acute, base attenuate, margin dentate to entire, 0.7–4 cm \times 0.1–0.8 cm. Sepals 0.75–1 mm long; petals white, 1–2 mm long; stamens 2–4. Siliquas broadly elliptic to broadly obovate, 3–4 mm \times 2.5–3.5 mm, on pedicels 3–5 mm long. **Fig. 32K.**

Native of North America; weed mainly of coastal districts. Flowers mainly spring–summer.

8. Lepidium hyssopifolium Desvaux

PEPPERCRESS

Lepidium ruderae auct. non L., Benth. pro parte

Erect, glabrous annual or biennial up to 50 cm tall. Leaves with ill-defined petioles up to 1 cm long; blades linear-elliptic to narrowly elliptic or narrowly obovate, apex acute, base attenuate, margin dentate to entire, 0.8–6.5 cm \times 0.1–1.5 cm. Sepals 0.75 mm long; petals white, *ca* 1.5 mm long; stamens 6. Siliquas broadly elliptic, 4–4.5 mm \times 3.5–4 mm, on spreading pedicels 4–6 mm long. **Fig. 32L.**

Weed throughout the region. Flowers most of the year, but mainly spring–summer. Milk-tainting weed.

11. CAPSELLA Medik.

Erect, branching annuals, glabrous or with simple hairs. Basal leaves entire or pinnatifid, cauline leaves sagittate, stem-clasping. Inflorescences racemose; sepals erect, not saccate; petals clawed, rarely absent; stigma minute, capitate. Siliquas compressed at right angles to septum; seeds in 2 rows per loculus.

About 5 very polymorphic species temperate to subtropical, 1 species naturalized Australia, occurring in south-eastern Queensland.

1. *Capsella bursa-pastoris (L.) Medik.

SHEPHERD'S PURSE

Thlaspi bursa-pastoris L.

Herb up to 40 cm tall, \pm glabrous to hispid with simple or stellate hairs. Basal leaves petiolate, blades narrowly obovate, margin entire or denticulate to pinnatisect, 4–13 cm \times 1–2.5 cm; upper leaves sessile, sagittate, stem-clasping. Sepals 1–2.5 mm long, pubescent; petals white, 2–3 mm long; style short. Siliquas dehiscent, triangular-obovate, apex not beaked, but notched, 4–9 mm \times 3–9 mm, on spreading pedicels 0.7–1.7 cm long; seeds 10–15 per loculus. **Fig. 33C.**

Native of Europe; common weed of cultivation, gardens, roadsides, pastures, etc. Flowers most of the year.

12. STENOPETALUM R. Br. ex DC.

Erect, glabrous or pubescent annuals or perennials. Inflorescences racemose; sepals erect, dimorphic; petals clawed, often produced into a long, narrow tip; ovules 4–20 per loculus. Siliquas dehiscent, not beaked; seeds in 2 rows, mucose.

9 species, endemic to Australia; 1 species south-eastern Queensland.

1. *Stenopetalum velutinum* F. Muell.

Pubescent annual up to 65 cm tall; hairs irregularly branched, \pm sessile. Basal leaves petiolate, not persistent, blades narrowly ovate, margin entire or remotely dentate, up to 7 cm long; cauline leaves \pm sessile, sometimes linear. Sepals 3.5–5.5 mm long; petals greenish-yellow, 0.6–2.1 cm long; ovules 10–20 per loculus, stigmas depressed-capitate, \pm fleshy. Siliquas 4.5–8 mm \times 4–4.5 mm, on spreading to erect pedicels 2–10 mm long. **Fig. 32D.**

Uncommon weed of western Darling Downs district. Flowers mainly spring.

13. CORONOPUS Zinn

Branched, usually prostrate annual or perennial herbs. Inflorescences of terminal or lateral racemes; sepals \pm spreading, equal; petals small or absent; stamens 6–2. Siliquas indehiscent or splitting into 1-seeded articles, valves subglobose, verrucose or reticulate; seeds 2.

10 species native to Mediterranean, south-eastern Africa and South America, now almost cosmopolitan; 3 species naturalized Australia; 1 species south-eastern Queensland.

1. **Coronopus didymus* (L.) Smith

LESSER SWINE-CRESS; LESSER
WART-CRESS

Lepidium didymum L., *Senebiera didyma* (L.) Pers.

Annual or biennial herb up to 30 cm tall, usually \pm pubescent. Lower leaves petiolate, blades pinnatisect, or appearing pinnate, up to 8 cm long, segments pinnatifid to pinnatisect; upper leaves becoming sessile and entire. Sepals 1–2 mm long; petals white, 0.5 mm long, or absent; stamens 2 or 4; stigma sessile. Siliquas bilobed, 1.5 mm \times 2–3 mm, on \pm horizontal pedicels 1.5–3 mm long, valves globose, reticulate pitted, separating into 1-seeded units. **Fig. 33B.**

Native of Europe; common weed of cultivation, disturbed sites, waste places, etc. Flowers mainly winter.

14. CARDARIA Desvaux

Erect, hoary, perennial herbs, hairs simple. Leaves simple. Inflorescences dense corymbose panicles; sepals spreading, non-saccate; petals clawed; stigma capitate. Siliquas indehiscent, cordate, inflated, 1, rarely 2 seeds per loculus.

1 species Europe, naturalized Australia, occurring in south-eastern Queensland.

1. **Cardaria draba* (L.) Desvaux

HOARY CRESS; HOARY PEPPERWORT;
WHITE WEED

Lepidium draba L.

Glabrous or sparsely pubescent herb up to 90 cm tall, producing adventitious buds on roots. Basal leaves long petiolate, blades obovate to oblong-ovate, base cuneate or lobed, margin sinuate-dentate, 4–15 cm \times 1–4 cm; cauline leaves sessile, stem-clasping. Sepals 1.5–2 mm long; petals white, 3–4 mm long; style persistent, distinct. Siliquas cordate, 3–4.5 mm \times 3.5–5 mm, separating into two 1-seeded articles. **Fig. 33F.**

Native of Europe; common weed of Lockyer Valley and Darling Downs. Flowers mainly spring. A declared noxious weed.

15. MYAGRUM L.

Erect, glabrous annuals. Inflorescences racemose; sepals erect, inner slightly saccate; petals not clawed, spatulate; ovules 2, 1 aborting. Siliquas 1-seeded, with 3 loculi, upper 2 loculi side by side, sterile, lower containing seed, beak apical, conical.

1 species native of southern Europe, now common elsewhere, naturalized Australia, occurring in south-eastern Queensland.

1. **Myagrurn perfoliatum* L.

MUSK WEED

Branched, glaucous herb up to 1 m tall. Basal leaves petiolate, but stem-clasping, blades narrowly obovate, pinnatisect or margin sinuate-dentate, up to 30 cm × 6 cm; cauline leaves sessile, base sagittate to stem-clasping, margin entire or denticulate. Sepals 3 mm long; petals yellow, 3–5 mm long. Siliquas broadly clavate, 6–8 mm × 5 mm, appressed to stem on thick pedicels 3.5–5.5 mm long. **Fig. 33E.**

Native of southern Europe; uncommon weed on Darling Downs. Flowers spring.

16. RAPHANUS L.

Annual or perennial herbs, usually hispid. Inflorescences terminal panicles; sepals erect, dimorphic; petals long-clawed. Fruits lomentaceous, indehiscent and cylindrical or constricted, articulating at the constrictions; seeds globular, pitted.

8 species western and central Europe, central Asia; 3 species naturalized Australia; 1 species south-eastern Queensland.

1. **Raphanus raphanistrum* L.

WILD RADISH

Annual herb up to 1.5 m tall, ± hispid. Basal and lower cauline leaves petiolate, blades lyrate-pinnatisect to appearing pinnate, margin serrate, up to 30 cm long; upper leaves reducing, entire. Sepals 5–10 mm long; petals pale yellow, white or lilac, 1–2 cm long. Fruits 3–8 cm × 0.3–0.5 cm, on pedicels 1–3 cm long, breaking readily into 1-seeded units, beak 1–2 cm long; seeds 3–8, ovoid, 1.5–4 mm long. **Fig. 33A.**

Native of Europe; weed of cultivation and waste places. Flowers much of the year. Can be poisonous to stock.

17. RAPISTRUM Crantz

Annual or biennial herbs, hispid. Inflorescences paniculate; sepals half-spreading, dimorphic; petals short-clawed. Siliquas indehiscent, with 2 superimposed segments separated by a constriction, upper segment globular, ribbed, 1-seeded, narrowed at apex into a slender conical beak larger than lower segment, lower segment cylindrical with 0–2 pendulous seeds, articulating at the constriction; seeds ovoid, dimorphic.

3 species central Europe, Mediterranean, and western Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Rapistrum rugosum* (L.) All.

TURNIP-WEED

Myagrurn rugosum L.

Erect herb up to 90 cm tall, somewhat glaucous and hispid. All leaves petiolate; lower leaf blades lyrate-pinnatifid to appearing pinnate with a large terminal lobe, margin dentate, up to 25 cm long; upper leaf blades usually dentate, reducing. Sepals up to 3 mm long; petals bright yellow, 6–10 mm long. Siliquas 3–10 mm long, appressed to stem, on pedicels 2–5 mm long. **Fig. 33G.**

Native of southern Europe; common weed of cultivation, roadsides and waste places throughout the region. Flowers usually winter-spring.

18. CAKILE Miller

Glabrous, glaucous, succulent annuals. Inflorescences racemose; sepals erect, slightly dimorphic, petals clawed. Fruits indehiscent, constricted into 2 segments, corky at maturity, articulating at constriction, upper segments larger, ovoid, ± quadrangular, 1-seeded, lower obconical, usually 1-seeded.

7 species mainly Europe and North America; 2 species naturalized Australia; 1 species south-eastern Queensland.

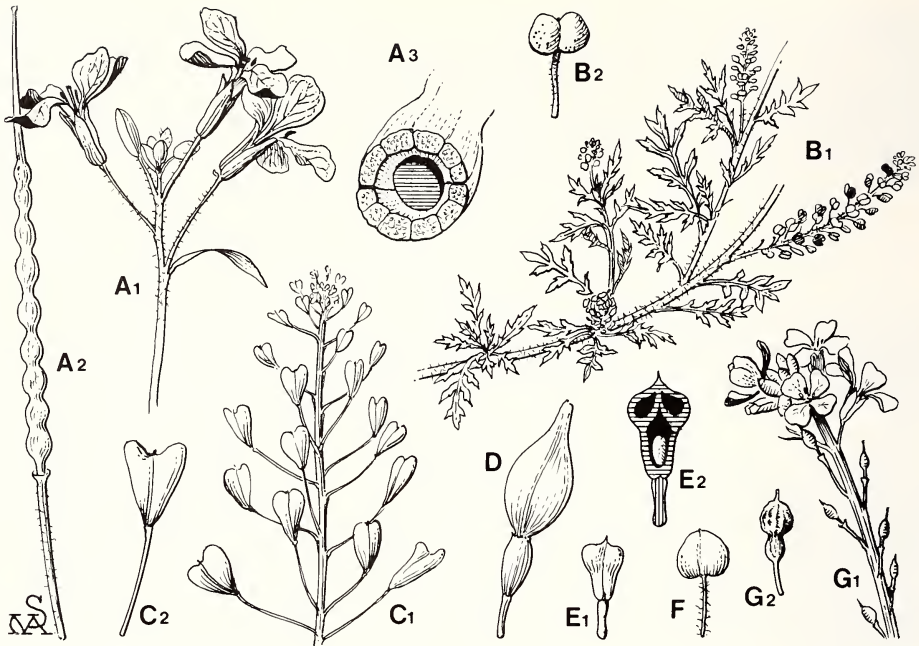


Fig. 33

BRASSICACEAE – A₁-A₃, *Raphanus raphanistrum*, A₁, young inflorescence x1, A₂, mature fruit x1, A₃, T.S. showing indehiscent 1-seeded units x3; B₁-B₂, *Coronopus didymus*, B₁, part of fertile stem x1, B₂, fruit x3; C₁-C₂, *Capsella bursa-pastoris*, C₁, part of fruiting inflorescence x1½, C₂, mature fruit x1½; D *Cakile edentula*, mature fruit x1½; E₁-E₂, *Myagrum perfoliatum*, E₁, fruit x1½, E₂, T.S. showing empty upper locule x2; F *Cardaria draba*, fruit x1½; G₁-G₂, *Rapistrum rugosum*, G₁, part of inflorescence x1, G₂, mature fruit x1½.

1. **Cakile edentula* (Bigel.) Hook.

SEA ROCKET

Bunias edentula Bigel.; previously misidentified as *Cakile maritima* Scop.

Branched annual up to 80 cm tall. Leaf blades oblong to obovate, apex obtuse, base attenuate, margin subentire or variously lobed, up to 15 cm long. Sepals 3.5–5 mm long; petals white, pink or violet, 4–8 mm long. Fruits turbate, slightly constricted, 1.2–2.4 cm × 0.4–0.8 cm on spreading pedicels up to 8 mm long, upper segment with apex narrowed into a flattened, beak-like region. Fig. 33D.

Native of western North America; on sand dunes on beaches. Flowers most of the year.

53. RESEDACEAE

Annual to perennial herbs, rarely woody, sap watery. Leaves alternate; stipules small, gland-like; blades simple or pinnatifid. Flowers racemose or spicate, usually bisexual, mostly zygomorphic; calyx 4–8-lobed, imbricate, persistent; petals 4–8, small, or absent, valvate, free or slightly coherent, sometimes with basal scale; stamens 3–40, perigynous or on a disc, not covered by the petals in bud, filaments free or basally united, anthers 2-locular, introrse; ovary of 2–6 free or connate carpels, each with separate stigma, ovules numerous on parietal placenta or at base of ovary. Fruits berries or capsules; seeds numerous.

6 genera with 70 species, chiefly Mediterranean, also Europe to Central Asia and India, southern Africa, California; 1 genus with 3 species naturalized Australia; 1 genus with 2 species south-eastern Queensland.

1. RESEDA L.

Glabrous herbs. Calyx 4–6-lobed; petals 4–6, unequal, usually with dilated base (claw) and lobed limb; stamens 10–25, inserted on a disc which is often produced dorsally; ovary superior, of 3–4 ± connate carpels, ovules numerous, stigmas 3–4. Fruits capsules, open at summit with 3–4 teeth; seeds numerous, reniform, smooth, shining.

60 species Europe, Mediterranean, to Central Asia; 3 species naturalized Australia; 2 species south-eastern Queensland.

- | | | |
|---|---|----------------------|
| 1. Leaves entire or rarely basally toothed; calyx lobes 4, petals 4 | . | 1. <i>R. luteola</i> |
| Leaves mostly pinnatisect or trifid; calyx lobes 6, petals 6 | . | 2. <i>R. lutea</i> |

1. **Reseda luteola* L.

WILD MIGNONETTE

Robust herb 0.5–1.3 m tall. Leaves sessile, very narrowly oblong to very narrowly obovate, apex obtuse, base broad, margin entire, rarely basally toothed, 2.5–15 cm × 0.25–1.4 cm. Inflorescences narrowly racemose, up to 30 cm long, pedicels *ca* 1 mm long; calyx 1.5–2 mm long, lobes 4; petals yellow, 4, up to *ca* 2.5 mm long. Capsules 3.4 mm × 4.5 mm, 3-toothed, gaping widely at maturity.

Native of Europe; naturalized in eastern Darling Downs district; uncommon. Flowers summer.

2. **Reseda lutea* L.

CUT-LEAF MIGNONETTE

Bushy herb. Leaves sessile, deeply pinnatisect or 3-lobed, 3–12 cm long, lobes linear, very narrowly elliptic or very narrowly obovate, apex acute. Inflorescences racemes up to 30 cm long, pedicels 4–5 mm long, elongating to 7 mm in fruit; calyx 1.5–2 mm long, lobes 6; petals yellow, 6, up to *ca* 2.5 mm long. Capsules 0.8–1.2 cm × 0.4–0.5 cm, 3-toothed, open at apex at maturity.

Native of Europe, naturalized in eastern Darling Downs district; uncommon. Flowers spring.

54. CRASSULACEAE

Herbs or undershrubs, usually succulent. Leaves opposite or alternate, exstipulate. Flowers solitary or in spikes, racemes or cymes, actinomorphic; sepals usually 4–5, free or united; petals same number as sepals, free or united; stamens as many as or twice as many as petals, filaments free; carpels superior, same number as petals, free or united at base, 1-locular. Fruits membranous or leathery, opening on adaxial side; seeds minute.

About 35 genera with 1500 species, mostly from southern Africa; 2 genera with 15 species Australia; 2 genera with 6 species south-eastern Queensland.

- | | |
|--|-----------------------|
| 1. Stamens same number as petals; flowers minute in Australian species | 1. <i>Crassula</i> |
| Stamens twice as many as petals; flowers conspicuous and usually showy | 2. <i>Bryophyllum</i> |

1. CRASSULA L.

Small herbs, succulent. Leaves opposite, cylindrical or globose. Flowers variously arranged; sepals 4–5; petals 4–5; stamens same number as petals, alternating with them; carpels 4–5; ovules 1-several.

Over 300 species, especially in southern Africa; *ca* 10 species Australia; 1 species south-eastern Queensland.

1. *Crassula sieberana* (J. A. & J. H. Schultes) Druce AUSTRALIAN CRASSULA
Tillaea sieberana J. A. & J. H. Schultes

Annual, ± erect, up to *ca* 12 cm tall, whole plant frequently reddish, often tufted. Leaves crowded, connate at base, narrowly ovate, apex obtuse, 2–5 mm long. Flowers in dense clusters in axils of leaves of very short lateral shoots, ± sessile or pedunculate; sepals 4 or 5; petals 4 or 5, *ca* 2 mm long, usually shorter than sepals; carpels shorter than sepals. Fig. 34B.

Widespread in region on rocks or gravel, often in fairly dry places. Flowers most of the year.

C. helmsii (Kirk) Cockayne (*Tillaea recurva* Hook. f.) and *C. peduncularis* (Smith) F. Meigen (*Tillaea purpurata* Hook. f.) have been reported from the region; however the Queensland Herbarium has no specimens of either species from Queensland. Both these species have solitary, rarely two together, axillary, 4-merous flowers. *C. helmsii* has pedicels in the fruiting stage shorter than the leaves whereas *C. peduncularis* has pedicels in the fruiting stage longer than the leaves.

Tillaea verticillaris as used in Bailey, "Qd Flora" 2:244 (1900) refers in part to *C. sieberana* and in part to *C. colorata* which is known from western Queensland.

2. BRYOPHYLLUM Salisb.

Herbs, usually succulent. Leaves opposite, simple or imparipinnate. Inflorescences cymose-paniculate; calyx 4-toothed; corolla 4-lobed; stamens 8, epipetalous; carpels 4.

About 200 species from Africa to China and south-eastern Asia. 1 species in South America; 5 species escaped from garden cultivation and become naturalized Australia, all occurring in south-eastern Queensland.

1. Leaves pinnate	2
Leaves simple	3
2. Leaflets 3-5, early leaves often 1-foliolate	1. <i>B. pinnatum</i>
Leaflets usually 7 or more	2. <i>B. proliferum</i>
3. Leaves subcylindrical	3. <i>B. tubiflorum</i>
Leaves with flattened blade	4
4. Blades up to ca 8 cm × 2 cm	4. <i>B. daigremontianum</i> x <i>B. tubiflorum</i>
Blades 10 cm × 2.5 cm or larger	5. <i>B. daigremontianum</i>

1. ***Bryophyllum pinnatum** (Lam.) Kurz LIVE PLANT; RESURRECTION PLANT
Cotyledon pinnata Lam.; *Kalanchoe pinnata* (Lam.) Pers.; *Bryophyllum calycinum* auct. Aust.

Stout perennial; stems erect, mostly 0.6-1 m tall, but up to 2 m tall. Leaves succulent; lower leaves 1-foliolate; upper leaves with 3-5 leaflets, terminal leaflet larger than laterals, margin lobed, up to ca 18 cm × 12.5 cm, young plants often produced in the marginal notches. Flowers yellowish-green tinged with pink, pendulous, up to 7 cm long.

Country of origin uncertain; commonly cultivated as a garden plant; widely naturalized in south-eastern Queensland, chiefly on waste ground. Flowers mainly winter-spring. This species has been suspected of poisoning cattle but there is no real evidence.

2. ***Bryophyllum proliferum** Bowie

Erect succulent, ± woody at base, up to 2 m or more tall; branches angular. Leaves up to ca 40 cm long, usually with 7 or more leaflets, leaflets with subdentate-crenate margins, up to ca 10 cm × 3.5 cm. Inflorescences terminal on lateral shoots; flowers greenish-yellow with a pink tinge, ca 1 cm long.

Native of Africa; cultivated in gardens, occasionally found as an escape around rubbish dumps, etc. Flowers mainly winter-spring.

3. ***Bryophyllum tubiflorum** Harvey

MOTHER-OF-MILLIONS

Kalanchoe tubiflora (Harvey) Raymond-Hamet

Erect, succulent perennial; stems stiff, mostly 30-60 cm tall, occasionally taller, stems and leaves mottled. Leaves simple, subcylindrical, toothed near apex, 3-10 cm long, grooved longitudinally above, often producing plantlets in marginal notches. Inflorescences terminal; flowers orange-red, 2-3 cm long. Fig. 34C.

Native of southern Africa; cultivated as a garden plant, widely naturalized and considered a weed in many parts of south-eastern Queensland, often on waste ground and spare allotments, etc. Flowers mainly winter-spring. It is known to be poisonous to stock.

4. **Bryophyllum daigremontianum* (Raymond-Hamet & H. Perrier) A. Berger x
Bryophyllum tubiflorum Harvey HYBRID MOTHER-OF-MILLIONS
 Erect, succulent perennial; stems stiff, 30–60 cm tall, occasionally taller, stems and leaves mottled. Leaves simple; petioles succulent, subcylindrical, 1–2.5 cm long; blades folded, apex attenuate, margin notched, 4–8 cm × 0.8–2 cm, often producing plantlets in marginal notches. Inflorescences terminal; flowers orange-red, 2–3 cm long. **Fig. 34D.**

Not as common as *B. tubiflorum* but found in similar places. Flowers mainly winter–spring. It is known to be poisonous to stock.

5. **Bryophyllum daigremontianum* (Raymond-Hamet & H. Perrier) A. Berger
Kalanchoe daigremontiana Raymond-Hamet & H. Perrier

Erect, succulent perennial; stems stiff, up to *ca* 45 cm tall. Leaves simple; petioles subcylindrical, up to *ca* 2.5 cm long; blades ± flat, apex tapering to a blunt point, margin notched, 10 cm × 2.5 cm or larger. Inflorescences terminal; flowers orange-red, *ca* 2.5 cm long.

Native of Africa; cultivated as a garden plant, occasionally found as a garden escape around rubbish dumps, etc. Flowers mainly winter–spring.

55. BAUERACEAE

Erect or prostrate shrubs with slender leafy branches, sometimes glandular-hairy. Leaves opposite, exstipulate, sessile, 3-foliolate, leaflets sessile, hence the plant appears to have whorls of 6 separate leaves. Flowers axillary, solitary, sessile or pedunculate, sometimes crowded towards tips of branches; calyx 4–10-partite; petals 4–10, free; stamens 4–10 or more in 1–2 series, anthers opening by pore-like slits; ovary superior or half-inferior, 2-locular, hairy. Fruits capsules.

1 genus with 3 species all endemic to eastern Australia and Tasmania; 2 species south-eastern Queensland.

1. BAUERA Banks ex Andr.

Characters as for the family.

- | | | |
|---|-----------|------------------------|
| 1. Flowers pedicellate; leaflets mostly serrate | | 1. <i>B. rubioides</i> |
| Flowers ± sessile; leaflets mostly 3-lobed | | 2. <i>B. capitata</i> |

1. *Bauera rubioides* Andr.

Shrub up to *ca* 2 m tall; branches thin and wiry, glabrous or with spreading or appressed hairs. Leaflets oblong to obovate to ovate, apex acute, margin mostly serrate, 0.4–1.2 cm × 0.2–0.4 cm, glabrous or with few hairs. Flowers pink or white, on peduncles up to *ca* 1.5 cm long; petals up to 8 mm long or longer; ovary superior.

Known only from Mt. Barney and from Mt. French in the southern Moreton district. Flowers spring–summer. Sometimes cultivated in home gardens.

2. *Bauera capitata* Ser. ex DC.

Small diffuse shrub up to *ca* 40 cm tall, often with a woody root-stock; stems usually slightly hairy. Leaflets narrow, with a prominent lobe on each side, central lobe obtuse, 3–6 mm × 1.5–2.5 mm, glabrous or almost so. Flowers pink, almost sessile, solitary in each axil but several pairs close together at ends of branches forming leafy heads; sepals 3-lobed; petals 5–8 mm long; ovary superior. **Fig. 34A.**

Moderately common in wallum areas of the Moreton and Wide Bay districts. Flowers spring and autumn.

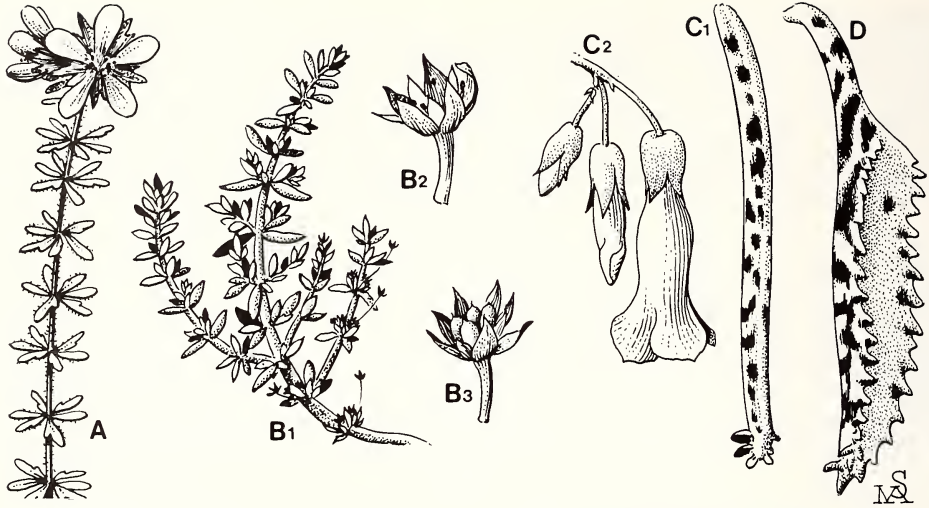


Fig. 34 A BAUERACEAE — A *Bauera capitata*, flowering stem x1; B-D CRASSULACEAE — B₁-B₃, *Crassula sieberana*, B₁ habit x1, B₂ flower x8, B₃ fruit x8; C-D *Bryophyllum* spp. — C₁-C₂, *B. tubiflorum*, C₁ leaf x1, C₂ part of inflorescence, x1; D *B. daigremontianum* x *tubiflorum*, leaf x1.

56. ESCALLONIACEAE

Trees or shrubs. Leaves alternate, rarely subopposite or subverticillate, exstipulate; blades simple, mostly with gland-tipped teeth. Inflorescences mostly racemose, sometimes paniculate; sepals mostly united in lower part, rarely free; petals free, rarely connate; stamens 5, rarely 4 or 6, anthers 2-locular, opening lengthwise; ovary superior or inferior, 1-6-locular, ovules numerous. Fruits capsules or berries.

About 7 genera with 150 species tropical and southern temperate; 7 genera with 19 species Australia; 6 genera with 7 species south-eastern Queensland.

1. Leaves opposite or nearly so	1. <i>Polyosma</i>
Leaves alternate	2
2. Leaves not toothed	2. <i>Quintinia</i>
Leaves toothed	3
3. Leaves silvery-white beneath	3. <i>Argophyllum</i>
Leaves not silvery-white beneath	4
4. Fruits berries; petals 5	4. <i>Abrophyllum</i>
Fruits capsules; petals 5-9	5
5. Capsules 4-5-valved; seeds not winged; petals 5-7	5. <i>Cuttisia</i>
Capsules 2-valved; seeds winged; petals 6-9	6. <i>Anopteris</i>

1. POLYOSMA Blume

Trees. Leaves opposite or nearly so. Flowers in simple, terminal racemes; calyx tubular, 4-toothed; petals 4, linear, erect, frequently cohering into a tube and spreading at end; stamens 4; ovary inferior, 1-locular. Fruits berries with a single large seed.

About 60 species Himalayas to Australia; 6 species all endemic to Australia; 1 species south-eastern Queensland.

1. *Polyosma cunninghamii* Benn.

Tree up to *ca* 16 m tall, stem diameter up to *ca* 20 cm; young shoots and inflorescences with sparse to moderately dense appressed hairs. Leaves elliptic-obovate, apex acute-acuminate, base narrowed to a short petiole, margin irregularly toothed, each tooth ending in a callous point, 3–9.5 cm × 1–3.5 cm, midrib sunken above, raised below, venation more distinct below. Racemes shorter than leaves, 2 small bracteoles under each flower. Flowers white to greenish, narrow, tubular, up to *ca* 1 cm long; sepals and petals appressed-hairy. Fruits black, ovoid, 1–1.5 cm long, longitudinally fluted. **Fig. 35B.**

Found in rainforest from the N.S.W. border north to Gympie and west to the south-eastern Darling Downs district. Flowers autumn–winter.

2. QUINTINIA A. DC.

Trees or shrubs. Leaves alternate. Flowers in racemes, either simple in the axils or terminal and forming a panicle; calyx obconical with 5 teeth; petals 5; stamens 5; ovary inferior, 3–5-locular, style 3–5-furrowed, stigma 3–5-lobed. Fruits capsules, opening at the summit in valves continuous with the style ridges which separate up to the stigma; seeds spindle-shaped.

About 20 species Philippines, New Guinea, Australia and New Zealand; 4 species all endemic to Australia; 2 species south-eastern Queensland.

- | | |
|--|-----------------------|
| 1. Inflorescences terminal panicles | 1. <i>Q. sieberi</i> |
| Inflorescences simple axillary racemes | 2. <i>Q. verdonii</i> |

1. *Quintinia sieberi* A. DC.**OPOSSUM WOOD**

Tree 10–14 m tall. Leaves with petioles up to *ca* 1 cm long; blades coriaceous, ovate-elliptic or obovate-elliptic, apex acuminate, margin entire, 5–13 cm × 1.5–5 cm, glabrous, reticulation usually conspicuous above. Inflorescences terminal panicles about as long as leaves, pedicels 1–1.5 mm long; flowers white; calyx less than 1 mm long; petals spreading, 2–4 mm long. Capsules 2–3 mm across. **Fig. 35A.**

Rainforest along the border ranges as far west as Wallangarra. Flowers spring. Wood suitable for small turnery.

2. *Quintinia verdonii* F. Muell.

Tree 10–18 m tall, stem diameter up to *ca* 30 cm. Leaves with petioles up to *ca* 2 cm long; blades ovate-elliptic or obovate-elliptic, 5–15 cm × 1.5–5.5 cm, glabrous, reticulation scarcely visible above. Inflorescences simple axillary racemes, usually in upper axils, up to *ca* 15 cm long, pedicels 3–4 mm long; flowers white; calyx lobes 1–1.5 mm long; petals 2–3 mm long. Capsules *ca* 2 mm across.

Rainforest of the Moreton district from the McPherson Ra. as far north as the Maroochy R. Flowers spring.

3. ARGOPHYLLUM J. R. & G. Forster

Shrubs. Leaves alternate, usually white beneath. Flowers small, in terminal or axillary corymbose panicles; calyx tube turbinate or hemispherical, lobes 5 or 6; petals as many as calyx lobes, fringed inside below the middle with long hairs; stamens as many as petals; ovary inferior or semi-inferior, 2–5-locular. Fruits capsules, 3–5-locular.

11 species Australia and New Caledonia; 3 species all endemic to Australia; 1 species south-eastern Queensland.

1. *Argophyllum nullumense* R. T. Baker

Included under *Argophyllum nitidum* Forster (a new Caledonia species) in "Qd Flora". Shrub or tree up to 7 m tall; young branches and undersides of leaves clothed with dense, silvery-white, short, silky hairs. Leaves shortly petiolate; blades ovate-elliptic, apex acuminate, margin entire or toothed, 6–15 cm × 1.5–5 cm, glabrous above, midrib sunken above, raised below, venation more prominent below. Inflorescences terminal and exceeding the leaves, or in upper axils and shorter than the leaves; flowers up to ca 6 mm across; calyx lobes 5, 1–1.5 mm long; petals 5. Capsules hemispherical, mostly 3-valved, ca 4 mm diameter.

Rainforest of the McPherson Ra. and nearby areas and has been collected once from Mt. Perry in the Burnett district. Flowers summer.

4. ABROPHYLLUM Hook. f. ex Benth.

Shrubs or small trees. Leaves alternate. Flowers in corymbose panicles, terminal or in upper axils; calyx tube very short, segments 5; petals 5; stamens 5, anthers on very short filaments; ovary superior, 5-locular and 5-furrowed, stigma sessile, 5-lobed. Fruits berries; seeds numerous.

1, possibly 2 species endemic to eastern Australia; 1 species south-eastern Queensland.

1. *Abrophyllum ornans* (F. Muell.) Hook. f. ex Benth.

Brachynema ornans F. Muell.

Shrub or small tree up to ca 5 m tall, stem diameter up to ca 30 cm; branchlets without lenticels, young shoots and inflorescences with sparse to moderately dense short appressed hairs. Leaves with petioles up to ca 4 cm long; blades thin, ovate-elliptic, apex acuminate, margin toothed, 8–25 cm × 3–8 cm, glabrous or with a few appressed hairs, venation more distinct below. Flowers yellowish, in panicles shorter than the leaves; calyx segments ca 1 mm long; petals ca 4–5 mm long. Berries 5–8 mm diameter. **Fig. 35C.**

Usually found in fringing rainforest along watercourses in the Moreton and Wide Bay districts. Flowers spring.

5. CUTTSIA F. Muell.

Leaves alternate, margin serrate. Flowers in terminal corymbose panicles; calyx 5–7-lobed; petals 5–7; stamens 5–7, alternate with petals; ovary superior, 4–5-locular, style short, simple, stigma depressed-globular. Fruits capsules, 4–5-locular.

1 species endemic to eastern Australia, occurring in south-eastern Queensland.

1. *Cuttsia viburnea* F. Muell.

Tall shrub or bushy tree up to ca 10 m tall, stem diameter up to 22 cm; branchlets with lenticels, young shoots and inflorescences with appressed hairs. Leaves with petioles up to ca 4 cm long; blades thin, ovate-elliptic, apex acuminate, margin toothed, 8–25 cm × 2.5–6.5 cm. Flowers white, in panicles usually shorter than the leaves; calyx ca 2 mm long, deeply divided; petals 3–4 mm long; ovary glabrous. Capsules globose-ovoid, ca 3–4 mm long. **Fig. 35D.**

Rainforest along the border ranges as far west as Killarney and Cunningham's Gap. Flowers spring to autumn.

6. ANOPTERUS Labill.

Shrubs or small trees. Leaves alternate, coriaceous. Flowers rather large in short terminal racemes; calyx tube short, 6–9-lobed; petals as many as calyx lobes; stamens as many as petals; ovary superior, 1-locular, style 2-lobed. Fruits capsules, thickly coriaceous, opening in 2 recurved valves; seeds flattened, winged.

2 species endemic to Australia; 1 species south-eastern Queensland.



Fig. 35

ESCALLONIACEAE — A₁-A₄, *Quintinia sieberi*, A₁, part of flowering branch $\times \frac{1}{2}$, A₂, flower $\times 6$, A₃, fruit $\times 6$; B₁-B₃, *Polyosma cunninghamii*, B₁, part of flowering stem $\times 1$, B₂, flower $\times 3$, B₃, fruit $\times 1$; C₁-C₄, *Abrophyllum ornans*, C₁, leaf $\times \frac{1}{2}$, C₂, leaf venation $\times 1$, C₃, flower $\times 3$, C₄, fruiting inflorescence $\times 1$; D₁-D₄, *Cuttisia viburnea*, D₁, leaf $\times \frac{1}{2}$, D₂, leaf venation $\times 1$, D₃, flower $\times 3$, fruit $\times 6$.

1. *Anopterus macleayanus* F. Muell.

Tree up to 16 m tall, stem diameter up to *ca* 22 cm, but mostly smaller; young parts sparsely hairy. Leaves with petioles up to *ca* 4 cm long; blades elliptic-obovate, apex acuminate, base narrowed to petiole, margin toothed, 10–45 cm × 2.5–7 cm, glabrous above, often with a few hairs below, mainly on the midrib. Flowers white, pedicels up to *ca* 2.5 cm long; calyx lobes *ca* 2 mm long, equal to or shorter than tube; petals 0.8–1.2 cm long. Capsules 2.5–4 cm long, softly hairy; seeds including wing up to *ca* 2 cm long. Rainforest of the McPherson Ra.

57. CUNONIACEAE

Trees or shrubs. Leaves mostly opposite; stipules sometimes large and united in pairs; blades compound. Flowers solitary or in panicles, racemes, cymes or heads; sepals 4–6; petals 4–6 or absent; stamens few to numerous, filaments free, anthers 2-locular; disc often annular; carpels superior, rarely half-inferior, 2–5, free or united; ovules few to many. Fruits capsules, nuts or drupes.

About 26 genera with 250 species, mainly from Australasia, with a few in south-eastern Asia, central and South America and southern Africa; 13 genera with 23 species Australia; 7 genera with 7 species south-eastern Queensland.

1. Leaves simple or 1-foliolate		2
Leaves compound		5
2. Straggling climbers	1. <i>Aphanopetalum</i>	
Shrubs or trees		3
3. Flowers in dense globular heads; leaves whitish or rusty-coloured beneath	2. <i>Callicoma</i>	
Flowers in panicles or cymes; leaves green beneath		4
4. Calyx enlarging after flowering	3. <i>Ceratopetalum</i>	
Calyx not enlarging after flowering	4. <i>Schizomeria</i>	
5. Inflorescences axillary	5. <i>Pseudoweinmannia</i>	
Inflorescences terminal		6
6. Leaflets ± sessile	3. <i>Ceratopetalum</i>	
Leaflets petiolulate		7
7. Stamens 10	6. <i>Caldcluvia</i>	
Stamens 15–30	7. <i>Geissois</i>	

1. APHANOPETALUM Endl.

Straggling or climbing shrubs. Leaves opposite; stipules small or absent; blades simple. Flowers few in short cymes or solitary in the leaf axils; calyx lobes 4, persistent, enlarging as fruit develops; petals minute or absent; stamens 8; ovary 4-locular. Fruits nuts, surrounded by persistent calyx.

2 species endemic to Australia; 1 species south-eastern Queensland.

1. *Aphanopetalum resinum* Endl.

Glabrous. Leaves with petioles 2–5 mm long; blades ovate, apex acute to acuminate, occasionally obtuse, margin obtusely serrate, 3–10 cm × 0.9–4 cm. Flowers in axillary cymes; calyx lobes small at first but enlarging up to 1.3 cm long in fruit. Nuts *ca* 2–3 mm diameter. **Fig. 36C.**

Rainforest of the southern Moreton district and the south-eastern edge of the Darling Downs district. Flowers spring.

2. CALLICOMA Andr.

Trees or shrubs. Leaves simple. Flowers small in dense terminal heads; sepals 4–5, free, not enlarging; petals absent; stamens numerous; ovary 2–3-locular, styles distinct, filiform. Fruits capsules, separating into distinct carpels opening along inner edge.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Callicoma serratifolia* Andr.

Tall shrub or tree up to 20 m tall, stem diameter up to 60 cm; young shoots densely covered with brown or rusty-coloured hairs. Leaves with petioles 0.5–1.5 cm long; blades elliptic or narrowly elliptic or ovate, apex acute or acuminate, margin serrate, 3–13 cm × 1–4.5 cm, upper surface with sparse rusty-coloured hairs when young, at length glabrous, undersurface with short dense white or rusty-coloured hairs, often long and usually rusty-coloured on the veins. Flowers in globular heads, 1–2.5 cm diameter; stamens much exceeding calyx. Capsules 2–3 mm diameter, hairy. **Fig. 36G.**

Rainforest of the eastern Moreton district as far north as the Maroochy R. Flowers spring. The heartwood is reputed to be a good cabinet timber.

3. CERATOPETALUM Smith

Trees or shrubs, glabrous. Leaves with small stipules; blades 1- or 3-foliolate; leaflets articulated on the rachis. Flowers in terminal panicles or cymes; calyx tube short, lobes 4–5, persistent and enlarging as fruit develops; petals small and lacinate or absent; stamens 10, perigynous, anthers small, connective produced into a recurved appendage; ovary half-inferior, 2-locular. Fruits nuts, surrounded by enlarged calyx lobes.

5 species Australia and New Guinea; 1 species Australia, occurring in south-eastern Queensland.

1. *Ceratopetalum apetalum* D. Don COACHWOOD; SCENTED SATINWOOD
Ceratopetalum apetalum D. Don var. *microphyllum* J. F. Bailey & C. T. White; *C. montanum* D. Don; *C. apetalum* D. Don forma *montanum* (D. Don) Pampalon; *C. apetalum* D. Don var. *montanum* (D. Don) Domin

Tall shrub or tree up to ca 25 m tall, stem diameter up to ca 1 m, larger trees often shortly buttressed; young branchlets often angled. Leaves with stipules 3–5 mm long, often falling early; petioles 0.4–2 cm long; blades 1-foliolate, elliptic to ovate, apex obtuse to acute, or sometimes ± acuminate, margin obtusely serrate, 2.5–12 cm × 0.8–4.5 cm. Flowers in corymbose cymes; sepals enlarging to 0.7–1.2 cm long and turning red or reddish. Fruits ovoid, ca 3 mm long. **Fig. 36A.**

Rainforests of the McPherson Ra. Flowers spring–summer. Timber suitable for cabinet-making.

4. SCHIZOMERIA D. Don

Trees. Stipules small; blades simple. Flowers small in terminal cymes; calyx tube short, lobes 4–6, not enlarging; petals small, lacinate; stamens 10, anther connective produced into a short appendage; ovary 2-locular, free except at base, styles free, recurved. Fruits drupes.

18 species Moluccas, New Guinea and Australia; 2 species Australia; 1 species south-eastern Queensland.

1. *Schizomeria ovata* D. Don WHITE CHERRY; WHITE BIRCH
Tree up to ca 15 m tall, stem diameter up to ca 60 cm, sometimes even larger. Leaves with petioles 0.5–2.5 cm long; blades ovate or elliptic, apex acute or obtusely acuminate, margin serrate to entire, 5–15 cm × 2–5 cm, glabrous. Calyx lobes ca 2 mm long; petals shorter. Drupes yellow or whitish, ovoid or globular, 1–1.5 cm long. **Fig. 36B.**

Rainforest or wet eucalypt forest of the Moreton and Wide Bay districts. Flowers spring.

5. PSEUDOWEINMANNIA Engl.

Trees. Leaves 3-foliolate; leaflets almost sessile or very shortly petiolulate. Flowers in racemes, the racemes solitary or several together; sepals 6, united at base; petals absent; stamens 12–20, somewhat longer than sepals; ovary 2–3-locular but appearing 4–6-locular through false dissepiments, densely hairy. Fruits capsules.

2 species endemic to Australia; 1 species south-eastern Queensland.

1. *Pseudoweinmannia lachnocarpa* (F. Muell.) Engl. MARARA; ROSE MARARA
Weinmannia lachnocarpa F. Muell.

Tree up to *ca* 40 m tall, stem diameter up to *ca* 1 m, usually prominently buttressed. Petioles 1–4 cm long; blades \pm digitately 3-foliolate; leaflet blades elliptic, apex acute to acuminate, margin serrate, 3–15 cm \times 1–6 cm, glabrous. Racemes *ca* 5 cm long; calyx lobes *ca* 2–2.5 mm long; stamens shorter than calyx. Capsules ovoid, *ca* 4 mm diameter, densely woolly-hairy. **Fig. 36D.**

Uncommon; reported from as far north as Gympie in riverine or coastal rainforests, but because of clearing of rainforests it is possible that this species may now be found only in the vicinity of the McPherson Ra. Flowers spring. The wood is suitable for flooring, wood carving, tool handles.

6. CALDCLUVIA D. Don

Trees. Leaves imparipinnate. Flowers small, numerous, in panicles, terminal or in upper axils; calyx lobes 5; petals 5; stamens 10, inserted around a lobed disc, anthers small, connective produced into a minute appendage; ovary 2-locular. Fruits capsules, septicidally dehiscent; seeds hairy.

11 species Philippines to Australia to South America; 2 species Australia; 1 species south-eastern Queensland.

1. *Caldcluvia paniculosa* (F. Muell.) Hoogland. ROSE-LEAF MARARA
Weinmannia paniculosa F. Muell.; *Ackama muelleri* Benth.; *A. paniculata* Endl., *A. mollis* Schlechter.

Tree described as reaching *ca* 40 m tall, stem diameter up to *ca* 1 m but mostly smaller, stem often buttressed. Petioles up to *ca* 5 cm long; leaflets 3–7; petiolules 0.2–1.5 cm long, terminal one longer than others; leaflet blades elliptic to ovate, apex acute to acuminate, margin serrate, 5–15 cm \times 1.5–7 cm, mostly glabrous except for tufts of hairs in axils below, occasionally also with long scattered \pm appressed hairs on both surfaces. Petals *ca* 1 mm long; stamens exerted. Capsules subglobular, 2–3 mm long. **Fig. 36E.**

A fairly common tree in rainforest and wet eucalypt forest of the Moreton and Wide Bay districts. Flowers spring. Wood suitable for plywood, furniture, joinery, flooring, lining.

7. GEISSOIS Labill.

Trees. Stipules conspicuous, large, deciduous; leaflets 3–5, digitate, margin entire or serrate. Flowers conspicuous in simple, axillary racemes; sepals 4–5, connected at the base; petals absent; stamens *ca* 20; ovary 2-locular, with numerous ovules. Fruits capsules, septicidally dehiscent.

About 20 species Australia, New Hebrides, New Caledonia and Fiji; 2 species both endemic to Australia; 1 species south-eastern Queensland.

1. *Geissois benthamii* F. Muell. RED CARRABEEN; LEATHER JACKET
Weinmannia benthami (F. Muell.) F. M. Bailey

Tree up to *ca* 30 m tall, stem diameter up to *ca* 1 m, mostly buttressed at base. Stipules present on young branches, large, *ca* 1–2.5 cm diameter; petioles 2–4 cm long; leaflets 3, leaflet blades ovate or elliptic, apex acute or acuminate, margin serrate, 8–18 cm \times 2–7 cm, glabrous. Panicles large, individual branches up to *ca* 15 cm long; sepals *ca* 3 mm long. Capsules cylindrical, 1–1.5 cm long, *ca* 3 mm diameter, covered with short, dense, rusty-coloured hairs. **Fig. 36F.**

Rainforests of the southern Moreton district mainly from the McPherson Ra. to the ranges around Killarney in the Darling Downs district. Flowers winter–spring. Timber suitable for furniture, joinery, plywood, flooring, lining. Sapwood susceptible to attack by borers.



Fig. 36

CUNONIACEAE – A₁-A₃, *Ceratopetalum apetalum*, A₁, leaf x1, A₂, flower x3, A₃, fruit x1½; B₁-B₃, *Schizomeria ovata*, B₁, leaf x1, B₂, flower x3, B₃, fruit x1; C *Aphanopetalum resinosum*, flower x1½; D₁-D₂, *Pseudoweinmannia lachnocarpa*, D₁, part of leaf x1, D₂, fruit x3; E₁-E₃, *Caldcluvia paniculosa*, E₁, part of leaf x1, E₂, flower x8, E₃, fruit x6; F₁-F₃, *Geissois benthamii*, F₁, part of leaf with stipules x½, F₂, inflorescence x½, F₃, fruit x1½; G₁-G₂, *Callicoma serratifolia*, G₁, leaf x1, G₂, flower x1.

58. PITTOSPORACEAE

Trees, shrubs or climbers, sometimes spiny. Leaves alternate or whorled, exstipulate, simple. Inflorescences various, from a solitary flower to corymbose; sepals 5, free or connate below, imbricate; petals 5, imbricate; stamens 5, alternate with the petals, hypogynous, free or somewhat connivent; ovary superior, completely or incompletely 2–5-locular. Fruits capsules or berries; seeds mostly immersed in a sticky liquid, rarely winged.

About 8 genera and 200 species tropical Africa to the Pacific Is.; 8 genera with *ca* 42 species Australia; 6 genera with 15 species south-eastern Queensland.

- | | | |
|--|------------------------|---|
| 1. Anthers opening by terminal pores; herbs or undershrubs with conspicuous blue flowers | 1. <i>Cheiranthera</i> | |
| Anthers opening by longitudinal splits; if herbs or undershrubs then flowers not blue | | 2 |
| 2. Fruits capsules with thick hard valves | | 3 |
| Fruits capsules with thin valves or fruits berries | | 4 |
| 3. Flowers less than 2 cm long; seeds sticky, not winged | 2. <i>Pittosporum</i> | |
| Flowers mostly 3–4 cm long; seeds not sticky, winged | 3. <i>Hymenosporum</i> | |
| 4. Undershrubs or twiners, not spiny | 4. <i>Billardiera</i> | |
| Shrubs or small trees, usually spiny | | 5 |
| 5. Fruits globular, indehiscent | 5. <i>Citriobatus</i> | |
| Fruits flat, dehiscent | 6. <i>Bursaria</i> | |

1. CHEIRANTHERA Brongn.

Undershrubs or twiners. Leaves narrow. Flowers in terminal racemes or corymbs or solitary; petals distinct, spreading; anthers longer than filaments, all turned towards one side, opening by 2 pores at apex; ovary 2-locular, style subulate. Fruits hard capsules, 2-valved.

3 species endemic to Australia; 1 species south-eastern Queensland.

1. *Cheiranthera cyanea* Brongn. var. *borealis* E. M. Benn.

Cheiranthera linearis auct. Qld.

Undershrub up to *ca* 50 cm tall, glabrous. Leaves alternate below, clustered above; blades linear, often appearing terete, apex acute to obtuse, entire or minutely toothed and usually incurved or involute, 1–2.2 cm × 0.1–0.15 cm. Flowers blue, solitary or in short racemes or corymbs, each flower 2–3 cm diameter. Capsules up to *ca* 1.5 cm long. **Fig. 37C.**

Known from the Stanthorpe-Wallangarra area of the southern Darling Downs district. Flowers summer–autumn.

2. PITTOSPORUM Banks ex Solander

Trees or shrubs, occasionally spiny. Leaves usually petiolate; blades simple, margin entire or minutely toothed. Flowers axillary or terminal, solitary or in corymbs, racemes, panicles or clusters; petals usually connivent or coherent in a tube at base or above middle, upper part spreading; ovary almost sessile, incompletely 2-locular, rarely 3–5-locular. Fruits capsules, globose, ovoid or obovoid, often laterally compressed; valves coriaceous or hard; seeds not winged, often enveloped in a sticky fluid.

About 150 species, subtropical and tropical areas Africa, through Asia, Australia and New Zealand; 9 species, 8 endemic, Australia; 5 species south-eastern Queensland.

- | | | |
|--|-----------------------------|---|
| 1. Leaves small, up to 2 cm long; plants spiny | 1. <i>P. oreillyanum</i> | 2 |
| Leaves large, greater than 2 cm long; plants not spiny | | |
| 2. Leaves coarsely and irregularly toothed | 2. <i>P. rhombifolium</i> | 3 |
| Leaves not toothed, but margins sometimes undulate | | |
| 3. Flowers axillary, solitary or in clusters or umbels, occasionally the upper ones forming a terminal cluster | 3. <i>P. phylliraeoides</i> | 4 |
| Flowers terminal, in clusters or corymbose racemes | | |
| 4. Young shoots and inflorescences densely rusty hairy; shrub | 4. <i>P. revolutum</i> | |
| Young shoots glabrous or slightly hairy; tree | 5. <i>P. undulatum</i> | |

1. *Pittosporum oreillyanum* C. T. White

Shrub or small tree 1.5–5 m tall; branchlets ending in spines. Leaves ovate to almost orbicular, 0.2–2 cm × 0.2–0.5 cm, mostly less than 1 cm long, sparsely hairy when young, glabrous when older. Flowers solitary, axillary or terminal, on pedicels up to *ca* 2 mm long; petals 6–9 mm long. Capsules ± globose, 7–10 mm long.

Known only from rainforest on the McPherson Ra.

2. *Pittosporum rhombifolium* Cunn. ex Hook.

Tree up to 15 m tall, glabrous. Leaves alternate or clustered in groups at ends of branches; blades broadly ovate-rhomboid, apex obtuse to acuminate, margin coarsely and irregularly toothed in upper part, lower part entire, rarely whole margin almost entire, 4–10 cm × 2–5 cm. Flowers white, in dense terminal corymbs; petals *ca* 6 mm long, spreading from below middle. Fruits yellow, ovoid or almost globular, 4–6 mm long; seeds black, usually 2–3.

Widespread in south-eastern Queensland, usually found in or near rainforest but also found in areas of brigalow, occasionally in open woodland. Flowers spring–summer.

3. *Pittosporum phylliraeoides* DC.

MEEMEEI; CUMBY CUMBY;
CATTLE BUSH; WEeping PITTOSPORUM

Shrub or tree up to *ca* 10 m tall, glabrous, branches pendulous. Leaves alternate; blades usually oblong or linear-ovate or narrowly elliptic, apex with a small hooked point, 4–12 cm × 0.4–1.2 cm. Flowers yellow or creamy, axillary, solitary or in sessile or pedunculate clusters or umbels or the uppermost forming a terminal cluster; petals *ca* 8 mm long. Fruits yellowish, ovoid or globular, often somewhat depressed where peduncle joins, 0.8–1.8 cm long; seeds dark or orange-red, few. **Fig. 37B.**

Fairly common in the Burnett and Darling Downs districts, also collected once from near Peak Crossing near Ipswich in the Moreton district. Flowers winter–spring. Good fodder tree.

4. *Pittosporum revolutum* Aiton ex Dryander

Shrub up to *ca* 3 m tall, young shoots and inflorescences densely rusty hairy. Leaves alternate or a few clustered together at top of branches; blades ovate-elliptic or elliptic-oblong, apex shortly acuminate, 5–15 cm × 1.5–6 cm, glabrous above when mature, with loose rusty hairs below. Flowers yellowish, usually in dense corymbose racemes, sometimes few-flowered; petals 0.9–1.2 cm long. Fruits ovoid, hard, almost woody, 1.2–2 cm long, valves very rough or warty outside; seeds red or brown, numerous.

Found in or near rainforest as far west as Killarney and throughout the Moreton and Wide Bay districts. Flowers spring.

5. *Pittosporum undulatum* Vent.

Tree up to *ca* 14 m, occasionally taller, glabrous except for a few hairs on young shoots and inflorescences. Leaves alternate or clustered at top of branches; blades ovate-oblong or ovate, apex acute to acuminate, margin often undulate, 6–15 cm × 1.5–4 cm. Flowers white, in terminal clusters; petals 1–1.2 cm long. Fruits ± globular or somewhat compressed, *ca* 1 cm long.

Moderately common in or near rainforest as far north as Biggenden and west to the Bunya Mts. Flowers spring.

3. HYMENOSPORUM R.Br. ex F. Muell.

Shrubs or small trees. Leaves entire, often crowded towards ends of branches. Flowers in terminal umbellate corymbs; sepals deciduous; petals large and conspicuous; stamens exerted; ovary incompletely 2-locular. Fruits capsules with 2 thick valves; seeds winged.

1 species New Guinea and Australia, occurring in south-eastern Queensland.

1. *Hymenosporum flavum* (Hook.) F. Muell.

NATIVE FRANGIPANI

Pittosporum flavum Hook.

Tree up to *ca* 20 m tall. Leaf blades obovate-oblong or ovate, apex acute or acuminate, base narrowed to petiole, 5–15 cm × 1.5–4.5 cm, often hairy beneath, chiefly along midrib. Inflorescences up to *ca* 20 cm across, rachis and pedicels often hairy; flowers yellow or cream, tinged with yellow, becoming reddish with age, 3–4 cm long; petals silky hairy outside, erect basal part *ca* 2–3 cm long. Capsules stipitate, ± orbicular, compressed, 2.5–3.5 cm long, silky-hairy, becoming less hairy with age; seeds with wing *ca* 8 mm broad. **Fig. 37A.**

Rainforest west to the Bunya Mts. Flowers spring. A showy tree often cultivated in gardens.

4. BILLARDIERA Smith

Undershrubs, often twining. Leaves entire or toothed. Flowers terminal, solitary or clustered and pendulous, or in cymes and erect; petals spreading at top; anthers shorter than filaments; ovary 2-locular. Fruits berries or capsules.

About 14 species endemic to Australia; 2 species south-eastern Queensland.

- | | |
|--|-------------------------|
| 1. Fruits berries; flowers yellow or greenish | 1. <i>B. scandens</i> |
| Fruits capsules; flowers white, often tinged red | 2. <i>B. procumbens</i> |

1. *Billardiera scandens* Smith

Stems twining, mostly woody. Leaf blades narrowly ovate to linear or occasionally ovate or elliptic, apex acute to obtuse, margin flat or undulate, glabrous or with sparse or silky, spreading or appressed hairs above and below. Flowers solitary, pendulous, on slender terminal peduncles, *ca* 0.8–2.5 cm long; petals pale yellow or greenish, 1–2 cm long; ovary glabrous or pubescent. Fruits berries, cylindrical or ± ovoid, 1–2.5 cm long, glabrous or pubescent. **Fig. 37E.**

Two varieties occur in the region:

- | | |
|--|---|
| 1. Leaves glabrous or with sparse hairs, blades narrowly ovate to linear or occasionally ovate | <i>B. scandens</i> var. <i>scandens</i> |
| Leaves silky beneath with close-pressed soft and straight hairs, blades elliptic | <i>B. scandens</i> var. <i>sericata</i> |

B. scandens var. *scandens* occurs in eastern parts of the region, mainly in sandy soils, while *B. scandens* var. *sericata* E. M. Benn. is known from around Springbrook in the south-eastern Moreton district. Flowers most of the year. Fruits edible.

2. *Billardiera procumbens* (Hook.) E. M. Benn.

Pittosporum procumbens Hook.; *Rhytidosporum procumbens* (Hook.) F. Muell.; *Marianthus procumbens* (Hook.) Benth.

Prostrate or suberect, glabrous or slightly hairy. Leaf blades linear to linear-oblong, margin entire or rarely toothed at top, recurved, 0.5–1.2 cm × 0.15–0.3 cm. Flowers solitary or 2–3 together at ends of shoots, peduncles 2–4 mm long; petals white, often tinged with red, up to *ca* 6 mm long. Capsules ovoid, *ca* 6 mm diameter.

Stanthorpe-Wallangarra area of the southern Darling Downs district. Flowers spring.

5. CITRIOBATUS Cunn. ex Putterl.

Stiff, erect, spiny shrubs. Leaves small, entire, toothed or lobed. Flowers small, usually sessile, solitary; petals spreading at the top; anthers oblong, shorter than filaments; ovary 1-locular, with 2–5 parietal placentas, style short. Fruits globular, indehiscent, pericarp thin or hard; seeds few to numerous, immersed in a sticky pulp.

4 species, 3 endemic, Australia, all occurring in south-eastern Queensland.

- | | | |
|--|--------------------------|---|
| 1. Fruits more than 1 cm diameter, pericarp hard | 1. <i>C. spinescens</i> | 2 |
| Fruits up to 1 cm diameter, pericarp thin | | |
| 2. Leaves orbicular to broadly obovate, usually toothed in upper part | 2. <i>C. pauciflorus</i> | 3 |
| Leaves linear to narrowly ovate to narrowly oblong to narrowly obovate, entire | | |
| 3. Flowers pedunculate; leaves without translucent oil cells | 3. <i>C. linearis</i> | |
| Flowers sessile; leaves with orange translucent oil cells | 4. <i>C. lancifolius</i> | |

1. *Citriobatus spinescens* (F. Muell.) Druce WALLABY APPLE; ORANGE THORN
Ixiosporum spinescens F. Muell.; *Citriobatus pauciflorus* non Cunn. ex Ettingsh., Cunn. ex Benth., the *C. pauciflorus* of F. M. Bailey, "Qd Flora".

Shrub or small tree 2–5 m tall, twigs mostly ending in spines. Leaf blades obovate or cuneate, apex rounded, truncate or notched or shortly apiculate, margin entire, 0.5–2 cm × 0.2–1 cm, glabrous. Petals *ca* 8 mm long; ovary densely hairy. Fruits *ca* 1.5–2.5 cm diameter, pericarp hard, initially hairy but becoming glabrous.

Not common, known from the Burnett and Darling Downs districts mostly in dry open forests. Flowers spring–summer.

2. *Citriobatus pauciflorus* Cunn. ex Ettingsh.

Citriobatus multiflorus Cunn. ex Benth.

Rigid, much-branched shrub 1–3 m tall, branches bearing numerous fine spines. Leaf blades orbicular to broadly obovate, usually toothed in upper part, 0.4–1.2 cm × 0.25–0.8 cm. Fruits orange, 4–10 mm diameter, glabrous.

Rainforests as far north as Gympie and as far west as Killarney, most common in the McPherson Ra. Flowers spring–summer.

3. *Citriobatus linearis* (F. M. Bailey) C. T. White

Citriobatus multiflorus Cunn. ex Benth. var. *linearis* F. M. Bailey; *C. multiflorus* Cunn. ex Benth. var. *intermedius* F. M. Bailey

Erect shrub *ca* 1–3 m tall, branches with fine spines. Leaf blades linear to narrowly ovate to narrowly oblong to narrowly obovate, 0.8–3.5 cm × 0.25–0.75 cm, glabrous. Flowers on peduncles up to *ca* 6 mm long; petals *ca* 4–6 mm long. Fruits dull black, 4–10 mm diameter.

Widespread but not common, often in dense woodland or near rainforest. Flowers spring–summer.

4. *Citriobatus lancifolius* F. M. Bailey

Citriobatus lanceolatus F. M. Bailey

Small tree, twigs often ending in spines. Leaf blades narrowly ovate, apex acute or obtuse, 1.5–6 cm × 0.5–2 cm, glabrous, with irregular translucent orange oil cells above and below. Flowers ± sessile; petals *ca* 5 mm long. Fruits 6–10 mm diameter.

Seldom collected; known from along the border ranges west to about Killarney and along the Great Dividing Ra. to about Crows Nest. Flowers spring–summer.

6. BURSARIA Cav.

Rigid, much-branched shrubs or trees, often with spiny branches. Leaves small, entire. Flowers small, in terminal panicles; petals narrow, spreading from near base; anthers ovoid; ovary incompletely 2-locular; style short. Fruits capsules, shortly stipitate, flat, orbiculate or kidney-shaped, opening around the edge with two valves.

3 species endemic to Australia, 2 species south-eastern Queensland.

- | | |
|---|----------------------|
| 1. Leaves glabrous or rarely with a few hairs below; shrubs | 1. <i>B. spinosa</i> |
| Leaves hoary-white below; trees | 2. <i>B. incana</i> |

1. *Bursaria spinosa* Cav. PRICKLY PINE; BLACKTHORN

Shrub 1-3 m tall, branches usually spinose. Leaves often clustered at nodes, variable in shape and size, obovate, oblong or cuneate, apex obtuse, truncate or notched, base narrowed 0.5-4.5 cm × 0.4-1.8 cm, glabrous or almost so. Flowers white, in broad terminal panicles, occasionally reduced to a few flowers; petals narrow, ca 4-6 mm long. Capsules 5-8 mm broad. **Fig. 37D.**

Widespread in eastern parts of the region, usually in open, often fairly dry forests. Flowers spring to autumn.

Leaf shape varies considerably even on the one plant. Young plants or branches lower down on a plant have small leaves and are very spiny, whereas older plants or branches higher up on a plant have larger leaves and are less spiny. A number of varieties of this species have been described. However, detailed field observations of the habit correlated with leaf and floral morphology are required before a detailed account of this species can be achieved. Until this is done it is best to consider the complex as a single polymorphic taxon.

2. *Bursaria incana* Lindl. PRICKLY PINE; MOCK ORANGE

Small tree 3-6 m tall, shoots, inflorescences and undersides of leaves hoary-white. Leaves sometimes clustered; blades obovate or narrowly obovate, apex obtuse to acute, base tapering to a short petiole, mostly 2-9 cm × 0.5-1.2 cm. Flowers white in large terminal panicles; petals narrow, ca 4-7 mm long. Capsule 0.5-1.5 cm broad.

Widespread throughout the region, except for the near coastal areas, mainly on sandy soils in open forests. Flowers spring to autumn.

59. ROSACEAE

Trees, shrubs or herbs. Leaves alternate, rarely opposite; stipules mostly present; blades simple or compound. Flowers mostly actinomorphic; calyx lobes mostly 5, sometimes 4; petals same number as calyx lobes, sometimes absent; stamens usually numerous, filaments ± adnate to calyx tube; ovary superior or inferior. Fruits drupes, pomes, follicles or achenes, sometimes on or in an enlarged, fleshy receptacle.

About 120 genera with 3000 species worldwide, including many important fruits and some important ornamental garden plants; ca 10 genera with ca 8 native and 24 naturalized species Australia; 7 genera with 21 species south-eastern Queensland.

Many other species are cultivated in the region and from time to time seen in an apparently wild stage, but are not truly naturalized (see list at end of treatment).

- | | |
|---|-----------------------|
| 1. Shrubs or trees, often armed; petals conspicuous | 2 |
| Herbs, not armed except sometimes on fruits, petals sometimes absent | 5 |
| 2. Fruits consisting of numerous exposed drupelets on an enlarged convex receptacle | 1. <i>Rubus</i> |
| Fruits not of exposed drupelets | 3 |
| 3. Fruits superior drupes, each containing seed | 2. <i>Prunus</i> |
| Fruits of numerous achenes enclosed in a hollow, inferior, fleshy receptacle (hip) or fruits inferior pomes | 4 |
| 4. Flowers 2 cm or more in diameter | 3. <i>Rosa</i> |
| Flowers 1-1.5 cm in diameter | 4. <i>Crataegus</i> |
| 5. Petals present | 5. <i>Duchesnea</i> |
| Petals absent | 6 |
| 6. Fruiting receptacles spiny and burr-like | 6. <i>Acaena</i> |
| Fruiting receptacles without spines | 7. <i>Sanguisorba</i> |

1. RUBUS L.

Shrubs or herbs, often straggling or climbing, prickly. Leaves alternate; stipules adnate to petiole; blades simple or 3- or more-foliolate, leaflets usually coarsely toothed. Flowers in terminal and axillary panicles or corymbs, rarely solitary; calyx with short tube, 5-lobed; petals 5; stamens numerous; carpels numerous. Fruits drupelets crowded on dry or spongy receptacles.

About 250 species worldwide; some authors divide *Rubus fruticosus* L. into another 300 or more species; 8, possibly 9 species Australia, occurring in south-eastern Queensland.

All *Rubus* fruits in the region are quite good eating but generally are better made into jam.

1. Leaves simple	1. <i>R. moluccanus</i>	2
Leaves compound		
2. Leaves digitate, mostly 5-foliolate (see also <i>R. bellobatus</i>)		3
Leaves pinnate, 3- or more-foliolate		4
3. Tall climber; flowers in loose axillary racemes or panicles	2. <i>R. moorei</i>	
Scrambling or trailing shrubs; flowers in terminal panicles	3. <i>R. fruticosus</i>	
4. Leaves strongly discoloured, densely grey- or white-hairy below		5
Leaves ± concolorous, greenish and glabrous or sparsely hairy below		6
5. Stems covered with long, stiff reddish hairs and few prickles	4. <i>R. ellipticus</i>	
Stems with woolly hairs and few to many prickles	5. <i>R. parvifolius</i>	
6. Calyx lobes mucronate, whole lobe shorter than petals	6. <i>R. bellobatus</i>	
Calyx lobes with a long subulate tip, whole lobe longer than or equal to petals		7
7. Young stems and leaf rachises softly hairy and glandular; upper leaflet mostly 3 or more times as long as broad	7. <i>R. rosifolius</i>	
Young stems and leaf rachises ± glabrous and ± eglandular; upper leaflet mostly less than 3 times as long as broad	8. <i>R. fraxinifolius</i>	

1. *Rubus moluccanus* L.

MOLUCCA RASPBERRY

Rubus hillii F. Muell.

Tall scrambling shrub or climber; stems clothed with short rusty or white woolly hairs, armed with numerous prickles. Leaf blades simple, broadly cordate-ovate, usually 3- or 5-lobed, 3–20 cm × 2.5–18 cm, glabrous or sparsely hairy above, densely white or rusty hairy below. Flowers pinkish-red in irregular panicles in upper axils. Aggregate fruits red, *ca* 1.2 cm diameter.

Widespread in eastern parts of the region, mainly in or near rainforest. Flowers mainly spring–summer.

2. *Rubus moorei* F. Muell.

BUSH LAWYER

Tall scrambling shrub; branches with woolly hairs, armed with numerous small reflexed prickles. Leaves digitate, usually 5-foliolate; leaflet blades ovate, apex acute-acuminate, 4–10 cm × 1.5–7 cm, ± glabrous above, sparsely to densely hairy below. Flowers white in loose axillary racemes or panicles. Aggregate fruits dark red, *ca* 0.8–1 cm diameter, drupelets *ca* 2–3 mm long, sometimes hairy.

In or near rainforest in the eastern Moreton district from about the Blackall Ra. south to the N.S.W. border. Flowers mainly spring–summer.

Almost glabrous specimens collected from the border ranges were referred to *R. moorei* forma *glabra* C. T. White, but, although closely related to *R. moorei* appear to warrant specific rank.

3. **Rubus fruticosus* L.

BLACKBERRY

Large scrambling shrub, often spreading by suckers; stems ± hairy, armed with stout, usually hooked prickles. Leaves digitate, 5-foliolate; leaflet blades ovate, apex acute or acuminate, 3–9 cm × 2.5–5 cm, ± glabrous above, densely grey woolly-hairy below. Flowers white or pale pink in terminal panicles. Aggregate fruits red, becoming black when ripe, up to 1.2–1.5 cm diameter, drupelets *ca* 2–3 mm long.

Introduced from Europe for its edible fruit; naturalized in the eastern Darling Downs and Moreton districts. Flowers mainly spring–summer. This species is a declared noxious weed.

4. **Rubus ellipticus* Smith**YELLOW RASPBERRY**

Ascending or climbing; stems covered with long stiff reddish hairs and few prickles. Leaves 3-foliolate; leaflet blades elliptic, apex obtuse, 2–8 cm × 1.5–5 cm, ± glabrous above, densely grey-hairy below. Flowers white in terminal or axillary panicles. Aggregate fruits yellow, 0.8–1 cm diameter, drupelets *ca* 1–2 mm long.

Native of China; naturalized in the Moreton and Wide Bay districts, not common. Flowers mainly spring–summer. This species is a declared noxious weed.

5. *Rubus parvifolius* L.**PINK-FLOWERED NATIVE RASPBERRY**

Scrambling shrub; stems woolly or appressed-hairy with many ± straight prickles. Leaves pinnate; leaflets 3–5, blades ovate or rhomboid, apex ± obtuse, usually 1–7 cm × 0.6–4 cm, upper surface ± glabrous, lower surface densely white-hairy. Flowers reddish-pink in short terminal panicles or solitary in upper axils. Aggregate fruits red, 0.5–1 cm diameter, drupelets *ca* 2–3 mm long.

Widespread in south-eastern Queensland, often on sandy soils. Flowers mainly spring–summer.

6. **Rubus bellobatus* L. H. Bailey**KITTATINNY BLACKBERRY**

Large scrambling shrub; stems often angular; ± glabrous, prickles stout and recurved. Leaves pinnately 3-foliolate, sometimes lower leaflets split to petiolule to give leaf the appearance of a 5-foliolate digitate leaf; leaflet blades ovate to cordate-ovate, apex acuminate, 2–9 cm × 1.5–6 cm, glabrous above, sparsely hairy below. Flowers white in leafy racemes, pedicels up to *ca* 6 cm long; sepals shorter than petals; petals up to *ca* 1.5 cm long. Aggregate fruits red, turning black at maturity, 0.8–1.5 cm diameter, drupelets *ca* 3 mm long.

Native of the eastern United States of America; naturalized in eastern parts of the Moreton and Wide Bay districts. Flowers mainly spring–summer. This species is a declared noxious weed.

7. *Rubus rosifolius* Smith**NATIVE RASPBERRY**

Weakly erect shrub with creeping stolons; stems glandular, sparsely hairy or glabrous, armed with straight or recurved prickles. Leaves pinnate, leaflets 5, sometimes a few leaves 3- or 7-foliolate; leaflet blades ovate, apex acuminate, 2–8 cm × 0.7–2.5 cm, young leaves softly hairy, becoming less hairy with age, glandular dots above and below. Flowers white, in short terminal panicles or solitary in upper axils; sepals longer than, or equal to petals. Aggregate fruits red, *ca* 1–1.5 cm diameter, drupelets numerous, *ca* 1.5 mm long.

Widespread in the eastern part of the region. Flowers mainly spring–summer.

8. *Rubus fraxinifolius* Poiret

Rubus muelleri F. M. Bailey; *R. probus* L. H. Bailey

Large scrambling shrub; stems ± glabrous, armed with recurved prickles, ± eglandular. Leaves pinnate, leaflets 3–9, commonly 5–7; leaflet blades ovate, apex acuminate, 1.5–10 cm × 0.8–5 cm, ± glabrous, eglandular. Flowers white in terminal panicles; sepals longer than, or equal to petals. Aggregate fruits red, 1–2 cm diameter, drupelets numerous, *ca* 1.5 mm long.

Moreton and Wide Bay districts, often in or near rainforest. Flowers mainly spring–summer.

2. PRUNUS L.

Trees or shrubs, sometimes spiny. Leaves alternate, simple, often serrulate, usually deciduous. Flowers solitary or in corymbose clusters or in very short racemes, bracts conspicuous; calyx deciduous, lobes 5; petals 5, inserted at mouth of calyx; stamens 15–20, inserted with petals; carpel 1. Fruits drupes, stone hard and indehiscent, 1-seeded.

More than 100 species temperate northern hemisphere; *ca* 7 species naturalized Australia; 2 species south-eastern Queensland.

Many species are cultivated for their edible fruits or seeds, including the PLUM, PEACH, APRICOT, CHERRY and ALMOND.

- | | |
|--|-------------------------|
| 1. Flowers 2-4 together; tree suckering and producing dense thickets | 1. <i>P. munsoniana</i> |
| Flowers solitary; tree not suckering | 2. <i>P. persica</i> |

1. **Prunus munsoniana* W. F. Wight & Hedrich

Stout tree or shrub, suckering to produce dense thickets. Leaf blades oblong-ovate to ovate, margin finely serrulate, up to *ca* 10 cm × 3.5 cm. Flowers white, 2-4 together, mostly preceding leaves, *ca* 1-1.5 cm across. Fruits red or yellowish, globular to ovoid, up to *ca* 2 cm long.

Native of eastern United States of America; often found around towns where it forms dense thickets which can cover large areas. Flowers spring. It is considered a nuisance.

2. **Prunus persica* (L.) Batsch PEACH; FLOWERING PEACH

Amygdalus persica L.; *Persica vulgaris* Miller

Small tree. Leaf blades oblong-ovate, margin finely serrulate, *ca* 10 cm × *ca* 3.5 cm, sometimes longer. Flowers various shades of pink, mostly preceding leaves, 1-5 cm across depending on form grown. Fruits very variable, wild form mostly smaller than forms cultivated for fruit, *ca* 3 cm long.

Native of China; naturalized from time to time along roads, creek banks, rubbish dumps etc. Flowers spring. Usually not considered a nuisance. There are many forms cultivated, both for fruit and for ornamental flowers. The kernel, or 'stone', and the seed yield HCN.

3. ROSA L.

Erect, trailing or scandent shrubs, mostly armed with prickles, glabrous to pubescent, glandular hairs also often present. Leaves alternate; stipules adnate to petiole; blades imparipinnate, rarely 1-foliolate; leaflet blades mostly serrate. Flowers solitary or corymbose, showy; calyx lobes 5, rarely 4; stamens numerous, inserted on disc; disc lining the receptacle; carpels numerous. Fruits achenes, numerous, included within inferior, enlarged, fleshy receptacles, usually known as hips.

About 250 species. Europe, Asia and North America; *ca* 8 species naturalized Australia; 5 species in south-eastern Queensland.

Many species and hybrids are cultivated throughout the world.

- | | | |
|--|-------------------------|---|
| 1. Styles connate into a column | 1. <i>R. chinensis</i> | 2 |
| Styles free | | |
| 2. Outer sepals distinctly pinnatifid or lobed; plants erect or sometimes scrambling | | 3 |
| Outer sepals entire; plants climbing or scrambling | | 4 |
| 3. Leaves glandular beneath; peduncles with glandular hairs | 2. <i>R. rubiginosa</i> | |
| Leaves not glandular; peduncles glabrous | 3. <i>R. canina</i> | |
| 4. Branches densely hairy; flowers with prominent bracts | 4. <i>R. bracteata</i> | |
| Branches glabrous; flowers without prominent bracts | 5. <i>R. laevigata</i> | |

1. **Rosa chinensis* Jacq. CHINA ROSE; BENGAL ROSE

Low shrub; branches armed or sometimes almost unarmed. Stipules glandular-ciliate; leaflets 5-7, blades ovate or ovate-oblong, 1-2.5 cm × *ca* 1 cm, larger in cultivation. Flowers red or pink, odourless or only slightly fragrant, usually 1-3 together, up to 5 cm across; outer sepals usually pinnate. Hips ovoid, *ca* 2 cm long.

Native of China. There are many garden forms with both single and double flowers. A double-flowered form has been reported as being naturalized and covering *ca* 0.25 ha in an eastern Brisbane suburb.

2. **Rosa rubiginosa* L. SWEET BRIAR

Erect or scrambling shrub; branches armed, prickles usually mixed with glandular hairs. Leaflets 5-7, blades suborbicular to ovate or obovate, 1-2.5 cm × 0.8-1.5 cm, glabrous or hairy above, usually with at least a few hairs below, glandular below. Flowers pink, 1-3 together, *ca* 2.5-4 cm across, peduncles glandular-hairy. Hips red, ovoid-globular, 1.5-2 cm long. **Fig. 37H.**

Native of Europe; naturalized in the south-eastern Darling Downs district.

3. **Rosa canina* L.

DOG ROSE

Erect shrub 1–3 m tall; stems with prickles, otherwise glabrous. Leaflets 5–7, blades ovate, obovate or elliptic, 1.5–4 cm × 1.2–2 cm, glabrous, glands absent. Flowers white or pinkish, 1–few together, 2–4 cm across, peduncles glabrous. Hips globular to ovoid, *ca* 1 cm long.

Native of Europe and western Asia; reported as apparently naturalized around Stanthorpe in the southern Darling Downs district.

4. **Rosa bracteata* Wendl.

MACARTNEY ROSE

Shrub with long looping or scrambling stems; branches densely hairy. Leaflets 5–9, blades obovate to elliptic, 1–3.5 cm × 0.5–1.8 cm, glabrous or with few hairs, especially on midrib. Flowers white, 1–few together, closely subtended by large pubescent bracts, each flower 5–7 cm across. Hips globose, 2–3 cm across.

Native of China; naturalized in a few places in the Moreton and Darling Downs districts.

5. **Rosa laevigata* Michaux

CHEROKEE ROSE

Rampant shrub, often climbing; branches glabrous. Leaflets 3 or rarely 5, blades elliptic to ovate, 1.5–6 cm × 1–2 cm, glabrous. Flowers white, fragrant, solitary, 6–8 cm across. Hips ovoid, *ca* 2 cm long, bristly.

Native of China and Japan; naturalized in a few places in the Moreton and Wide Bay districts.

4. CRATAEGUS L.

Deciduous small trees or large shrubs, usually thorny. Leaves alternate, stipulate, simple, commonly lobed or pinnatifid. Flowers mostly in cymose corymbs terminating short lateral leafy shoots; sepals and petals 5; stamens 5–25 in 1, 2 or 3 series; ovary inferior, 1–5-locular. Fruits pomes.

About 200 species from temperate areas of the northern hemisphere; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Crataegus monogyna* Jacq.

HAWTHORN

Shrub or small tree with spinose branches. Leaves ovate in outline, deeply 3–5-lobed, lobes dentate at least at apex, whole leaf 1–4.5 cm long. Flowers in umbel-like corymbs; petals white, *ca* 5 mm long. Fruits deep red, 0.8–1.2 cm diameter.

Introduced from Europe as a garden plant; naturalized in the Wallangarra area in the southern Darling Downs district. Flowers spring.

5. DUCHESNEA Smith

Perennial herbs; stems several, procumbent. Radical and cauline leaves present, stipules paired, adnate to base of petiole; blades digitately 3-foliolate, leaflets dentate. Flowers solitary, pedicels leaf-opposed, bracteoles 5, larger than calyx lobes; calyx lobes 5; petals yellow, 5; stamens numerous; receptacle pulpy. Fruits achenes, minute.

6 species India and eastern Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Duchesnea indica* (Andr.) W. O. Focke

INDIAN STRAWBERRY

Fragaria indica Andr.

Herb with long runners. Petioles up to 15 cm or more long; leaflet blades ovate-rhomboid, margin bluntly toothed, 1–3.5 cm × 0.7–2.5 cm. Petals *ca* 5 mm long. Achenes red, numerous, covering persistent receptacle, the whole surrounded by persistent calyx. **Fig. 37G.**

Native of Asia; found in the eastern Moreton district, often along creek banks, not common. Flowers most of the year. Fruits edible.

6. **ACAENA** Mutis ex L.

Herbs, often \pm woody at base, decumbent or spreading, with flowering branches often erect. Leaves alternate; stipules sheathing at base, adnate to petiole; blades imparipinnate, leaflets incised or serrate. Flowers in globular heads or interrupted spikes. bracts present; calyx tubes persistent, usually armed with spreading hooks or spines, lobes 3–7; petals absent; stamens 1–10, inserted in throat of calyx. Fruits achenes included in calyx tube.

About 100 species mainly southern hemisphere; 6 species Australia; 3 species south-eastern Queensland.

- | | | |
|--|----------------------------|---|
| 1. Flowers and fruits in globular, terminal heads | 1. <i>A. anserinifolia</i> | |
| Flowers and fruits in elongated interrupted spikes | | 2 |
| 2. Spines of fruits unequal, 3–6 longer than remainder | 2. <i>A. ovina</i> | |
| Spines of fruits \pm equal | 3. <i>A. agnipila</i> | |

1. *Acaena anserinifolia* (J. R. & G. Forster) Druce

BIDDY BIDDY

Ancistrum anserinaefolium J. R. & G. Forster

Prostrate, creeping perennial herb, rooting at nodes. Leaflets 7–11; blades oblong, margin deeply serrate, 0.5–1.5 cm \times 0.2–0.7 cm, sparsely hairy above, silky-hairy below. Flowers in dense globular heads *ca* 1–2 cm diameter, peduncles erect, up to *ca* 15 cm long. Fruits with 4 divergent spines. **Fig. 37F.**

Found at high elevations in the border ranges and also in the Bunya Mts. Flowers mainly spring. Leaves have been used as a tea substitute.

2. *Acaena ovina* Cunn.

SHEEP'S BURR

Erect or ascending perennial herb, with moderately dense spreading hairs, occasionally \pm appressed. Leaflets mostly 15–21; blades with deeply serrate margin, mostly 0.8–2 cm \times 0.5–1 cm, appressed silky-hairy above and below, more densely so below. Flowers in slender spikes much elongating in fruiting stage up to 15 cm or more long. Fruits ovoid, angular, spines unequal in length.

Two varieties occur in the region:

- | | |
|--|--------------------------------------|
| 1. Body of fruit glabrous | <i>A. ovina</i> var. <i>ovina</i> |
| Body of fruit with dense spreading hairs | <i>A. ovina</i> var. <i>velutina</i> |

A. ovina var. *ovina* is known from the south-eastern Darling Downs district, often in open forests, while *A. ovina* var. *velutina* Orchard is known from a single collection from Stanthorpe in the southern Darling Downs district. Both varieties flower mainly spring.

3. *Acaena agnipila* Gandoger

SHEEP'S BURR

Erect or ascending perennial herb, with \pm dense spreading hairs. Leaflets mostly 17–23; blades ovate-oblong, margin deeply serrate, mostly 0.8–1.5 cm \times 0.6–0.9 cm, \pm appressed hairy above and below, more densely so below. Flowers in slender spikes mostly 15 cm or more long. Fruits with spines equal in length.

Three varieties occur in the region:

- | | | |
|--|---|---|
| 1. Fruits densely spreading hairy; stamens 4–5, rarely 3, 1.5–2 mm long;
stipules 1–3 mm long | <i>A. agnipila</i> var. <i>tenuispica</i> | |
| Fruits glabrous | | 2 |
| 2. Stamens 3–4, rarely 5, 1.5–2 mm long; stipules 2–3.5 mm long | <i>A. agnipila</i> var. <i>aequispina</i> | |
| Stamens 6, rarely 5 or 7, 4 mm long; stipules 4–5 mm long | <i>A. agnipila</i> var. <i>protenta</i> | |

A. agnipila var. *tenuispica* (Bitter) Orchard (*A. ovina* subsp. *monachena* Bitter var. *tenuispica* Bitter) is known from the Darling Downs district. *A. agnipila* var. *aequispina* Orchard is known from the Stanthorpe-Wallangarra area and from the Bunya Mts. *A. agnipila* var. *protenta* Orchard is known from Silverwood in the southern Darling Downs district. All varieties flower mainly spring.



Fig. 37

A-E PITTOSPORACEAE - A₁-A₃, *Hymenosporum flavum*, A₁, part of inflorescence x1, A₂, fruit x $\frac{1}{2}$, A₃, seed x1; B *Pittosporum phylliraeoides*, part of fruiting branch x1; C₁-C₂, *Cheiranthra cyanea* var. *borealis*, C₁, top of flowering stem x $\frac{1}{2}$, C₂, top of anther showing terminal pore x12; D *Bursaria spinosa*, flowering twig and fruit x1; E *Billardiera scandens*, flowering and fruiting branch x1; F-H ROSACEAE - F *Acaena anserinifolia*, fertile stem x $\frac{1}{2}$; G *Duchesnea indica*, part of stem showing runners, flowering stem and fruit x $\frac{1}{2}$; H₁-H₃, *Rosa rubiginosa*, H₁, leaf x1, H₂, flower x1, H₃, fruit x3.

7. SANGUISORBA L.

Perennial herbs. Leaves alternate, or in rosettes; stipules sheathing; petioles sheathing; blades imparipinnate, leaflets serrate. Flowers in dense heads or in spikes; calyx tube constricted at throat, lobes 4, petaloid; petals absent; stamens many, inserted in throat of calyx; carpels 1-3, included in calyx tube. Fruits achenes, included in calyx tube.

About 30 species temperate Europe and Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Sanguisorba minor* Scop.

Poterium sanguisorba L.; *P. polygamum* Desf.

Erect, glabrous or sparsely hairy. Lower leaves in rosettes, upper leaves cauline; leaflets 7-21, blades oblong-ovate, margin deeply serrate, 0.8-2 cm × 0.5-0.8 cm. Heads globose, 0.7-1.8 cm diameter; calyx in fruiting stage quadrangular, angles winged, strongly wrinkled between ridges, 4-6 mm long.

Native of the Mediterranean region; found once near Murgon in the Burnett district.

The following species are widely cultivated and often persist in old gardens, around old farm areas etc., and may appear to be naturalized. Sometimes young plants do come up but the species do not appear to spread far.

Cotoneaster spp.
Eriobotrya japonica
Malus sylvestris
Prunus armeniaca
Prunus domestica
Prunus dulcis
Rhaphiolepis indica

LOQUAT
 APPLE
 APRICOT
 PLUM
 ALMOND
 INDIAN HAWTHORN

60. FABACEAE

(PAPILLIONACEAE; LEGUMINOSAE in part)

Trees, shrubs or herbs. Leaves alternate or rarely opposite, rarely simple, mostly compound. Inflorescences variable; calyx mostly 5-toothed, rarely 4-toothed; petals imbricate in bud, the uppermost (standard) outside the adjacent lateral (wing) petals and, with the lowermost (keel) petals, forming a strongly zygomorphic corolla (**Fig. 38**); stamens mostly 10, free or variously united; anthers uniform or dimorphic; ovary superior. Fruits dehiscent or indehiscent.

About 480 genera with 12 000 species world wide; 86 genera with ca 846 species Australia; 79 genera with 251 species south-eastern Queensland.

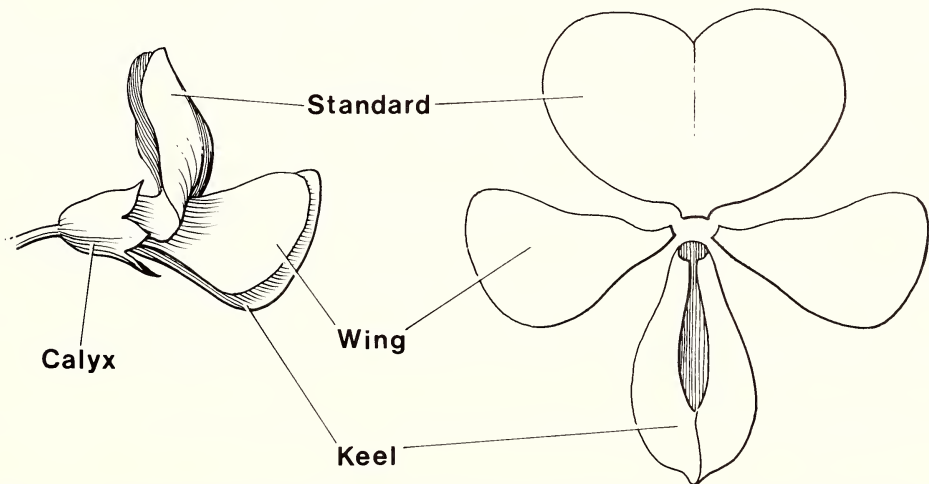


Fig. 38

Diagrammatic representation of a Fabaceae flower.

KEY TO GROUPS

- | | | |
|--|---------|---|
| 1. Leaves all simple, 1-foliolate, absent, or reduced to spines | Group A | |
| Leaves compound | | 2 |
| 2. Leaves digitately 2- or more-foliolate | Group B | |
| Leaves pinnate, 3- or more-foliolate | | 3 |
| 3. Leaves paripinnate, rachis sometimes produced as a spine or tendril | Group C | |
| Leaves imparipinnate, terminating in a leaflet | | 4 |
| 4. Leaves 5- many-foliolate | Group D | |
| Leaves all or mostly 3-foliolate | Group E | |

KEY TO GROUP A

- | | | |
|---|-------------------------|----|
| 1. Leaves reduced to spines | 23. <i>Ulex</i> | 2 |
| Leaves not reduced to spines or absent | | |
| 2. Plants leafless or only occasionally with a few leaves or reduced to filiform petioles | | 3 |
| Plants leafy | | 7 |
| 3. Branches flattened and winged; flowers solitary | 17. <i>Bossiaea</i> | |
| Branches not flattened and winged, or if winged then flowers in terminal or lateral racemes or spikes | | 4 |
| 4. Leaves reduced to filiform petioles; calyx lobes short and almost equal; fruits indehiscent | 9. <i>Viminaria</i> | |
| Leaves absent or if few present then blade present; upper calyx lobes broader than lower lobes or lobes \pm equal and very deeply lobed; fruits dehiscent | | 5 |
| 5. Upper calyx lobes deeply lobed | 7. <i>Jacksonia</i> | |
| Upper calyx lobes united to form a broad lip | | 6 |
| 6. Stems wiry, erect | 8. <i>Sphaerolobium</i> | |
| Stems diffuse or ascending | 4. <i>Isotropis</i> | |
| 7. Fruits jointed | | 8 |
| Fruits not jointed | | 11 |
| 8. Stipels absent | 39. <i>Scorpiurus</i> | |
| Stipels present | | 9 |
| 9. Fruit articles ovoid or globose, often truncate at ends | 50. <i>Alysicarpus</i> | |
| Fruit articles flat or nearly so | | 10 |
| 10. Fruits \pm enclosed by calyx, fruit articles folded back on each other | 49. <i>Uraria</i> | |
| Fruits not enclosed by calyx, fruit articles not folded back on each other | 47. <i>Desmodium</i> | |
| 11. Filaments variously united, sometimes 1 free or sheath split along 1 side | | 12 |
| Filaments all free | | 18 |
| 12. Plants with appressed medifixed hairs, sometimes mixed with other hairs | 30. <i>Indigofera</i> | |
| Plants without medifixed hairs | | 13 |
| 13. Styles bearded near stigmas | 22. <i>Crotalaria</i> | |
| Styles glabrous | | 14 |
| 14. Vexillary filament free, remainder connate | 60. <i>Hardenbergia</i> | |
| Filaments all connate into a sheath split above, rarely also split below | | 15 |

15. Fruits turgid	19. <i>Hovea</i>	16
Fruits flattened		
16. Fruits winged along upper suture	16. <i>Platylodium</i>	17
Fruits not winged along upper suture		
17. Fruits with thickened ridge along edge	17. <i>Bossiaea</i>	
Fruits not thickened on edge	18. <i>Templetonia</i>	
18. Ovaries and fruits 2-locular, divided by a longitudinal septum	3. <i>Mirbelia</i>	19
Ovaries and fruits 1-locular, not divided by a septum		
19. Calyx lobes much longer than tube	4. <i>Isotropis</i>	20
Calyx lobes not longer than tube		
20. Fruits triangular, compressed	10. <i>Daviesia</i>	21
Fruits not triangular		
21. Bracteoles persistent, close to or adnate to calyx		22
Bracteoles absent or small and separate from calyx		23
22. Petals adnate at base with stamens	12. <i>Phyllota</i>	
Petals not adnate to stamens	13. <i>Pultenaea</i>	
23. Leaves mostly alternate		24
Leaves \pm opposite or verticillate		26
24. Leaf margins inrolled or leaves terete with a groove on upper surface	15. <i>Dillwynia</i>	
Leaf margins recurved or revolute		25
25. Flowers in short terminal racemes	2. <i>Chorizema</i>	
Flowers 1-many in axillary clusters	11. <i>Aotus</i>	
26. Flowers in terminal or axillary racemes	1. <i>Oxylobium</i>	27
Flowers 1-several in axillary clusters		
27. Leaves with incurved margins	14. <i>Eutaxia</i>	
Leaves with recurved or revolute margins	11. <i>Aotus</i>	

KEY TO GROUP B

1. Leaflets conspicuously toothed	27. <i>Trifolium</i>	2
Leaflets entire		
2. Leaves usually with 2 or 4 leaflets	45. <i>Zornia</i>	3
Leaves with 3, 5 or more leaflets		
3. Leaflets gland-dotted, at least below		4
Leaflets not gland-dotted		5
4. Fruits indehiscent, 1-seeded	29. <i>Psoralea</i>	
Fruits dehiscent, several-seeded	74. <i>Flemingia</i>	
5. Plants \pm clothed with appressed medifixed hairs, sometimes mixed with other hairs	30. <i>Indigofera</i>	6
Plants without medifixed hairs		
6. Filaments all free	5. <i>Gompholobium</i>	7
Filaments variously united, sometimes 1 free or sheath split along one side		
7. Stipels present	58. <i>Glycine</i>	8
Stipels absent		

8. Fruits indehiscent, compressed, 1-seeded	52. <i>Kummerowia</i>	9
Fruits dehiscent, compressed or turgid, 2- or more-seeded		
9. Fruits compressed		10
Fruits turgid		11
10. Prostrate herbs	31. <i>Muelleranthus</i>	
Erect shrubs	24. <i>Chamaecytisus</i>	
11. Styles bearded	22. <i>Crotalaria</i>	
Styles glabrous	21. <i>Lotononis</i>	

KEY TO GROUP C

1. Fruits developing underground, receptacle long and filiform, resembling a pedicel	46. <i>Arachis</i>	2
Fruits not developing underground		
2. Fruits jointed		3
Fruits not jointed		4
3. Fruits exserted from calyx	42. <i>Aeschynomene</i>	
Fruits included in calyx	43. <i>Smithia</i>	
4. Leaves ending in simple or branched tendrils		5
Leaves not ending in a tendril		6
5. Leaflets 2	54. <i>Lathyrus</i>	
Leaflets 4 or more	53. <i>Vicia</i>	
6. Fruits 4-6 cm long; seeds red with a black end; climbers	55. <i>Abrus</i>	
Fruits longer than 6 cm; seeds dark; non-climbers	35. <i>Sesbania</i>	

KEY TO GROUP D

1. Majority of hairs medifixed		2
Hairs not medifixed		4
2. Styles bearded	36. <i>Swainsona</i>	
Styles glabrous		3
3. Flowers pink to red to purple	30. <i>Indigofera</i>	
Flowers white or yellow	37. <i>Astragalus</i>	
4. Styles bearded		5
Styles glabrous		7
5. Stipels present	57. <i>Clitoria</i>	
Stipels absent		6
6. Standards hairy	32. <i>Tephrosia</i>	
Standards glabrous	36. <i>Swainsona</i>	
7. Fruits jointed, separating into 1-seeded articles		8
Fruits not jointed, not separating into 1-seeded articles (in <i>Sophora</i> constricted between seeds)		11
8. Stipels present	49. <i>Uraria</i>	
Stipels absent		9

9. All filaments connate into a sheath open on one or both sides Vexillary filament free, remainder connate into a tube	42. <i>Aeschynomene</i>	10
10. Fruits smooth Fruits spinulose	40. <i>Ornithopus</i> 41. <i>Hedysarum</i>	
11. Trees Herbs, shrubs or climbers		12 15
12. Fruits constricted between seeds Fruits not constricted between seeds	78. <i>Sophora</i>	13
13. Fruits turgid, large and woody Fruits flat	79. <i>Castanospermum</i>	14
14. Plants with spinescent stipules Plants without spinescent stipules	34. <i>Robinia</i> 77. <i>Pongamia</i>	
15. Woody climbers Erect herbs or shrubs or if climbing then herbaceous		16 18
16. Fruits woody, turgid Fruits not woody, flattened	33. <i>Millettia</i>	17
17. Fruits with a narrow wing along upper suture Fruits not winged	76. <i>Derris</i> 75. <i>Kunstleria</i>	
18. Fruits constricted between seeds Fruits not constricted between seeds	78. <i>Sophora</i>	19
19. Filaments all free Filaments variously united, sometimes 1 free		20 21
20. Leaflets less than 5 mm long Leaflets more than 5 mm long	6. <i>Burtonia</i> 5. <i>Gompholobium</i>	
21. Leaflets 5, 2 near stem resembling stipules Leaflets more than 5, none stipule-like	28. <i>Lotus</i>	22
22. Fruits linear, not prickly Fruits ovoid with hard straight or hooked prickles	32. <i>Tephrosia</i> 38. <i>Glycyrrhiza</i>	

KEY TO GROUP E

1. Trees Herbs or shrubs, creeping or erect		2 3
2. Branches prickly; fruits constricted between seeds Branches not prickly; fruits 1-seeded	62. <i>Erythrina</i> 77. <i>Pongamia</i>	
3. Leaflet margins conspicuously toothed Leaflet margins entire (occasionally minutely spinulose-toothed in <i>Stylosanthes</i>)		4 6
4. Leaflets marked with glandular dots Leaflets without glandular dots	29. <i>Psoralea</i>	5
5. Fruits spirally coiled Fruits subglobose or ovoid (see also <i>Medicago lupulina</i>)	25. <i>Medicago</i> 26. <i>Melilotus</i>	
6. Majority of hairs medifixed Hairs not medifixed	30. <i>Indigofera</i>	7

7. Leaves glandular-dotted below (inconspicuously so in <i>Atylosia</i>)		8
Leaves not glandular-dotted		10
8. Plants twining	73. <i>Rhynchosia</i>	
Plants erect		9
9. Fruits obliquely depressed between seeds	71. <i>Cajanus</i>	
Fruits transversely depressed between seeds	72. <i>Atylosia</i>	
10. Stipels absent		11
Stipels present		14
11. Calyx tubes very slender, stalk-like; fruits 1- or 2-jointed, narrowed into a distinct hooked beak	44. <i>Stylosanthes</i>	
Calyx tubes not slender; fruits not jointed nor with an apical hook		12
12. Fruits indehiscent, 2-3 mm long, enclosed in perianth	51. <i>Lespedeza</i>	
Fruits dehiscent, more than 1 cm long, not enclosed in perianth		13
13. Corollas white	24. <i>Chamaecytisus</i>	
Corollas yellow with purple markings	20. <i>Goodia</i>	
14. Fruits jointed		15
Fruits not jointed		16
15. Fruit articles ovoid, folded back on each other, \pm enclosed in calyx	49. <i>Uraria</i>	
Fruit articles flattened, not folded back on each other, free of calyx	47. <i>Desmodium</i>	
16. Styles bearded lengthwise		17
Styles glabrous		21
17. Keels spirally twisted sideways		18
Keels not spirally twisted sideways		19
18. Keels twisted through more than 360°	66. <i>Phaseolus</i>	
Keels twisted through <i>ca</i> 90°	67. <i>Macroptilium</i>	
19. Stigmas lateral	68. <i>Vigna</i>	
Stigmas terminal		20
20. Styles flattened laterally	69. <i>Lablab</i>	
Styles not flattened laterally	70. <i>Dipogon</i>	
21. Fruits more than 1 cm broad		22
Fruits less than 1 cm broad		23
22. Fruits with a conspicuous rib near upper suture of each valve	65. <i>Canavalia</i>	
Fruits without any ribs but with irritant hairs at least when young	63. <i>Mucuna</i>	
23. Flowers more than 1.2 cm long		24
Flowers less than 1.2 cm long		25
24. Calyces hairy	61. <i>Kennedia</i>	
Calyces glabrous	56. <i>Centrosema</i>	
25. Calyces 4-lobed		26
Calyces 5-lobed, upper lobes often free only at tip		27
26. Fruits hanging down along rachis	59. <i>Neonotonia</i>	
Fruits erect or spreading	64. <i>Galactia</i>	
27. Fruits conspicuously inflated	48. <i>Pycnospora</i>	
Fruits flattened		28
28. Flowers solitary along rachis of inflorescence	58. <i>Glycine</i>	
Flowers in clusters of 3 or more along rachis of inflorescence	59. <i>Neonotonia</i>	

1. OXYLOBIUM Andr.

Shrubs. Leaves opposite or verticillate or rarely alternate; stipules sometimes absent; blades simple. Flowers yellow or orange sometimes mixed with purplish-red, in terminal or axillary racemes; calyx lobes imbricate, 2 upper broader and united higher up; petals clawed, standard emarginate and longer than lower petals; stamens free; ovary usually pubescent. Pods turgid, valves usually thick; seeds estrophiolate.

About 40 species endemic to Australia; 5 species south-eastern Queensland.

- | | | |
|---|---------------------------|---|
| 1. Leaves with pungent-pointed lobes | 1. <i>O. ilicifolium</i> | 2 |
| Leaves entire or crenulate | | |
| 2. Plants procumbent or climbing | 2. <i>O. scandens</i> | 3 |
| Plants erect | | |
| 3. Stipules spinose | 3. <i>O. aciculiferum</i> | 4 |
| Stipules absent | | |
| 4. Fruits less than 9 mm long, ovoid-acuminate | 4. <i>O. arborescens</i> | |
| Fruits more than 9 mm long, obliquely beaked, strongly laterally compressed | 5. <i>O. robustum</i> | |

1. *Oxylobium ilicifolium* (Andr.) Domin

Pultenaea ilicifolia Andr.; *Oxylobium trilobatum* (R.Br.) Benth.

Shrub up to 3 m tall, but mostly 1–2 m, glabrous except for inflorescence, or stems and sometimes underside of leaves pubescent. Leaves mostly opposite; stipules spinose, curved, 1–2 mm long; blades broadly ovate to narrowly ovate, apex pungent-pointed, margin irregularly lobed, each lobe pungent-pointed, 2–10 cm × 1–3 cm. Racemes axillary or terminal, up to *ca* 6 cm long; flowers usually 0.8–1.2 cm long; calyx pubescent; ovary stipitate, ovules usually 4. Pods 0.8–2 cm long, hairy, with stipe up to *ca* 4 mm long. **Fig. 39D.**

In open forests of the Moreton and Wide Bay districts, often on rocky slopes, sometimes forming thickets. Flowers late winter to autumn.

2. *Oxylobium scandens* (Smith) Benth.

Chorizema scandens Smith

Prostrate shrub, inflorescences and young parts pubescent. Leaves usually opposite; stipules setaceous, 1.5–2.5 mm long; blades mostly ovate to elliptic (in Queensland), apex with a small pungent point, margin often crenulate, 2–5 cm × 0.7–2.2 cm. Racemes terminal or axillary, up to *ca* 7 cm long; flowers mostly 7–9 mm long; calyx appressed-pubescent; ovary stipitate, ovules usually 8. Pods 1–1.5 cm long, sparsely hairy, shortly stipitate. **Fig. 39F.**

In open forests of the Moreton and Wide Bay districts, mostly on poor stony soils. Flowers spring and autumn.

3. *Oxylobium aciculiferum* (F. Muell.) Benth.

Podolobium aciculiferum F. Muell.

Shrub up to *ca* 2 m tall; branches pubescent. Leaves opposite or alternate; stipules spinose, 5–7 mm long; blades broadly ovate to narrowly ovate, apex pungent-pointed, 1–3 cm × 0.3–0.9 cm. Flowers solitary or in axillary racemes, each flower 5–8 mm long; calyx ± pubescent; ovary stipitate, ovules 2–4. Pods curved, *ca* 1–1.5 cm long, stipitate. **Fig. 39E.**

Open forests of the Moreton, Wide Bay and eastern Burnett districts, mostly on stony soil. Flowers summer–autumn.

4. *Oxylobium arborescens* Aiton f.*Oxylobium ellipticum* (Labill.) R.Br. var. *angustifolium* Benth.

Shrub up to *ca* 3 m tall; branches pubescent or becoming glabrous. Leaves irregularly opposite or in irregular whorls of 3; stipules absent; blades narrowly elliptic or narrowly ovate, apex with short pungent points, margins recurved, 2–6 cm × 0.3–0.8 cm, upper surface glabrous, reticulate, covered with minute tubercles, lower surface pubescent. Racemes short, terminal or axillary; flowers 0.7–1 cm long; calyx usually rusty-pubescent; ovary sessile, ovules more than 8. Pods ovoid, acuminate, 6–8 mm long, pubescent. **Fig. 39B.**

Known from eucalypt forests of the border ranges and from the Stanthorpe-Wallangarra area of the Darling Downs district. Flowers spring–summer.

5. *Oxylobium robustum* Joy ThompsonIncluded under *Oxylobium ellipticum* (Labill.) R.Br. in “Qd Flora”

Shrub up to *ca* 3 m tall; branches pubescent. Leaves irregularly opposite or in irregular whorls of 3; stipules absent; blades narrowly ovate to linear, apex shortly pungent-pointed, margins recurved, 2.5–7.5 cm × 0.3–0.7 cm, upper surface pilose or glabrous, occasionally covered with small tubercles. Racemes short, terminal or axillary, each flower *ca* 1 cm long; calyx usually rusty-pubescent; ovary sessile, ovules usually more than 10. Pods oblong, laterally compressed, obliquely beaked, *ca* 1 cm long. **Fig. 39C.**

Open forests on well-drained soils of the Moreton and Wide Bay districts. Flowers late winter to spring.

2. CHORIZEMA Labill

Shrubs. Leaves alternate or rarely opposite or whorled; stipules small; blades simple. Flowers in terminal or axillary racemes; calyx lobes ± equal in length, upper 2 connate higher up; petals clawed, keel much shorter than wings; stamens free; ovary sessile or stipitate, pubescent, ovules 8 to many, style usually short, incurved with a usually oblique stigma. Pods usually ovoid, turgid or compressed, not partitioned within; seeds estrophiolate.

About 16 species endemic to Australia; 1 species south-eastern Queensland.

1. *Chorizema parviflorum* Benth.

Undershrub, with thick rootstock and slender, ± glabrous, ± ascending, angular, striate stems up to *ca* 40 cm tall. Leaves alternate, sparse; blades linear or narrowly obovate, apex obtuse or emarginate, pungent-pointed, margin recurved, 0.5–4.0 cm × 0.1–0.2 cm, lower surface pubescent. Racemes terminal; flowers 5–7 mm long; calyx ± pubescent, lobes shorter than tube; corolla orange-yellow with red centre; ovary shortly stipitate. Pods *ca* 5–7 mm long. **Fig. 39G.**

Found as far west as Tara and Miles, on sandy soils, moderately common on the sand dunes near coastal areas of the Moreton and Wide Bay districts. Flowers late winter to summer.

3. MIRBELIA Smith

Shrubs. Leaves simple, alternate, opposite or irregularly whorled; stipules small, setaceous, minute or absent; petioles very short; blades simple. Flowers solitary or clustered in the axils or in terminal or axillary racemes, bracts and bracteoles small or absent; upper calyx lobes united higher up; petals clawed; stamens free; style incurved, stigma terminal, capitate. Pods turgid, divided longitudinally into 2 locules; seeds estrophiolate.

About 20 species endemic to Australia; 5 species south-eastern Queensland.

- | | |
|---|------------------------|
| 1. Upper surfaces of leaves conspicuously reticulate | 1. <i>M. rubifolia</i> |
| Upper surfaces of leaves not conspicuously reticulate, smooth or occasionally tuberculate | |

- | | | |
|--|--|---|
| 2. Flowers in racemes, terminal or in upper axils, sometimes much reduced
Flowers single in axils | 2. <i>M. confertiflora</i> | 3 |
| 3. Calyx lobes as long as tube
Calyx lobes shorter than tube | 3. <i>M. speciosa</i> | 4 |
| 4. Leaves with a straight pungent point; ovaries pubescent
Leaves with a hooked pungent point; ovaries glabrous | 4. <i>M. pungens</i>
5. <i>M. aotooides</i> | |

1. *Mirbelia rubiifolia* (Andr.) G. Don

Pultenaea rubiifolia Andr.; *Mirbelia reticulata* Smith

Diffuse shrub up to *ca* 50 cm tall, sometimes taller; branches angular, glabrous or minutely pubescent. Leaves usually in whorls of 3; blades narrowly ovate to oblong-linear, apex acute, pungent-pointed, 1–2.2 cm × 0.15–0.3 cm, upper surface reticulate, lower surface ± glabrous. Flowers in axillary clusters or short terminal racemes, each flower *ca* 8 mm long; calyx sparsely pubescent, lobes shorter than tube; petals pink to purple, rarely white. Pods ovoid, apex acute, *ca* 5 mm long. **Fig. 39J.**

On sandy soils, moderately common in wallum country of the Moreton and Wide Bay districts, also known from the granite country around Wallangarra in the southern Darling Downs district. Flowers late winter to early summer.

2. *Mirbelia confertiflora* Pedley

Mirbelia aotooides auct. non F. Muell.

Shrub up to *ca* 2 m tall; branches with sparse, appressed silky hairs. Leaves alternate or irregularly whorled; stipules absent; blades linear, apex acute-mucronate, margin revolute, mostly 1.5–2.5 cm × up to 0.15 cm, glabrous or minutely tuberculate above, glabrous or with few appressed hairs below. Flowers in racemes, terminal or in upper axils, each flower *ca* 8 mm long; calyx 6–7 mm long, with dense white ascending hairs, lobes longer than tube; petals yellow-orange. Pods *ca* 4.5 mm long.

Known from the granite areas around Stanthorpe on the southern Darling Downs district. Flowers spring.

3. *Mirbelia speciosa* Sieber ex DC.

Erect shrub up to *ca* 1 m tall; branches angular, glabrous or silky-pubescent. Leaves in irregular whorls of 3 or alternate; stipules absent; blades linear, apex usually obtuse, very shortly pungent-pointed. Flowers axillary, 0.8–1.2 cm long; calyx *ca* 6 mm long, silky-pubescent, lobes as long as tube; petals bluish-purple. Pods ± cylindrical, apex shortly acute, mostly 1–1.5 cm long. **Fig. 39K.**

Two subspecies occur in the region:

- | | |
|---|--|
| 1. Leaves 1–2 cm long, rarely longer; bracteoles shorter than calyx tube | <i>M. speciosa</i> subsp. <i>speciosa</i> |
| Leaves 2–3 cm or more long, those subtending flowers sometimes shorter; bracteoles longer than calyx tube | <i>M. speciosa</i> subsp. <i>ringrosei</i> |

M. speciosa subsp. *speciosa* is known from the granite areas around Stanthorpe. *M. speciosa* subsp. *ringrosei* (F. M. Bailey) Pedley (*M. ringrosei* F. M. Bailey) is known from sandstone areas in the western parts of the Moreton district and Darling Downs district.

4. *Mirbelia pungens* Cunn. ex G. Don

Shrub, erect or prostrate, up to *ca* 50 cm tall; branches pubescent, at least when young. Leaves opposite or irregularly whorled; stipules absent; blades linear, apex acute, pungent-pointed, margin revolute, 0.8–1.8 cm × *ca* 0.1 cm. Flowers axillary, solitary or several together, up to *ca* 7 mm long; calyx *ca* 2.5 mm long, pubescent, lobes shorter than tube; petals orange-yellow with blue or purple markings; ovary pubescent. Pods ovoid, beaked, *ca* 3 mm long.

Widespread but not common in the Moreton and Darling Downs districts, often in stony areas. Flowers spring.

5. *Mirbelia aotoides* F. Muell.

Bushy shrub up to 2 m tall. Leaves alternate or irregularly whorled; stipules absent; blades linear, apex acute, pungent-pointed, point recurved, margin revolute, mostly 0.8–1.8 cm × *ca* 0.1 cm. Racemes terminal or in upper axils, often reduced; flowers *ca* 8 mm long; calyx *ca* 4 mm long, pubescent, lobes shorter than tube; petals orange; ovary glabrous. Pods ovoid, apex obtuse, 6–7 mm long.

Widespread but not common in the Darling Downs and Burnett districts. Flowers late winter.

4. ISOTROPIS Benth.

Herbs or undershrubs; stems diffuse or ascending. Leaves alternate; stipules linear or minute; blades simple or 1-foliolate. Flowers solitary, axillary or in loose terminal racemes; calyx deeply lobed, 2 upper lobes united almost to top; petals clawed, standard longer than wings, keel incurved, almost as long as wings; stamens free; ovary sessile, pubescent, style incurved, filiform. Pods usually turgid, ± cylindrical, apex acute; seeds estrophiolate.

About 12 species endemic to Australia; 1 species south-eastern Queensland.

1. *Isotropis filicaulis* Benth.

Ascending or decumbent undershrubs up to *ca* 30 cm tall, glabrous or ± appressed-pubescent. Leaves 1-foliolate, leaflet articulate on petiole *ca* 3–6 mm long; blades linear to narrowly elliptic, 2–4 cm × 0.15–0.6 cm. Flowers in loose, mostly leaf-opposed racemes up to *ca* 8 cm long, each flower yellow-orange with the standard marked with purple veins, mostly 7–8 mm long, on pedicels *ca* 5 mm long; calyx up to *ca* 5 mm long. Pods 1–2.5 cm × 0.4–0.6 cm, stipitate. **Fig. 39I.**

Not common, found on dry, stony soils mainly east of the ranges. Flowers most of the year.

5. GOMPHOLOBIUM Smith

Shrubs. Leaves alternate; stipules small or absent; blades simple, 3-foliolate, digitate or pinnate, terminal leaflet sessile. Flowers mostly terminal or sometimes in upper axils, solitary or 2 or 3 together or in short racemes, bracts small, bracteoles small, well below base of calyx; calyx lobes longer than tube, inner margins somewhat tomentose; petals shortly clawed, standard longer than other petals, keel broader than wings; stamens free; ovary with 4–many ovules, styles incurved. Pods turgid, broadly ovoid or nearly globular, oblique; seeds estrophiolate.

25 species Australia and New Guinea; 24 species endemic Australia; 5 species south-eastern Queensland.

- 1. Leaves pinnate, leaflets usually 19 or more 1. *G. pinnatum*
- Leaves digitately 3-foliolate 2
- 2. Keels conspicuously ciliate, the cilia clearly visible to naked eye 3
- Keels not conspicuously ciliate 4
- 3. Leaflets flat or margins slightly recurved 2. *G. latifolium*
- Leaflets with revolute margins 3. *G. huegeli*
- 4. Stems densely tuberculate; corolla orange to red 4. *G. uncinatum*
- Stems smooth or rarely with a few tubercles; corolla yellow 5. *G. virgatum*

1. *Gompholobium pinnatum* Smith

POOR-MAN'S GOLD

Shrub up to *ca* 30 cm tall, almost glabrous; stems erect, flexuose. Leaves pinnate; leaflets usually 19 or more, occasionally few on lower leaves; leaflet blades linear or narrowly elliptic, 0.8–1.2 cm long, mostly less than 1 mm wide. Flowers yellow, few in short terminal racemes, pedicels *ca* 0.5–1.2 cm long, each flower 0.7–1.2 cm long; calyx 4–6 mm long. Pods 0.6–1.2 cm long, shortly stipitate. **Fig. 39A.**

Common in sandy coastal areas. Flowers mainly summer but occasional flowers all year.

2. *Gompholobium latifolium* SmithBROAD WEDGE PEA;
GOLDEN GLORY PEA

Erect, almost glabrous shrub up to *ca* 1.5 m tall. Leaves digitately 3-foliolate; leaflet blades linear or linear-cuneate, apex acute or truncate and mucronate, margin flat or slightly recurved, 2–5 cm × 0.15–0.5 cm, darker on upper surface. Flowers yellow, usually solitary or 2 or 3 together, terminal or axillary, pedicels up to *ca* 1 cm long but often appearing longer by suppression of other flowers on peduncle, each flower 2–2.5 cm long; calyx *ca* 1.2 cm long; standard up to 3 cm wide, keel with a conspicuous dense fringe of cilia on margin. Pods 1.2–1.8 cm long, stipitate.

Common on coastal, rocky hillsides of the Moreton district but extending west to the Stanthorpe-Wallangarra area of the Darling Downs district. Flowers late winter to early summer.

3. *Gompholobium huegelii* Benth.

Erect, almost glabrous shrub up to *ca* 1 m tall. Leaves digitately 3-foliolate; leaflet blades linear, apex acute with minute often recurved point, margin revolute, 0.5–2.5 cm long. Flowers yellow, 1–few in terminal racemes, pedicels up to at least 1.5 cm long but often appearing longer due to suppression of other flowers on peduncle, each flower *ca* 1.5 cm long; calyx *ca* 9 mm long; standard *ca* 1.5 cm wide, keel with conspicuous dense ciliate fringe on margin. Pods up to *ca* 1.5 cm long, stipitate.

Known only from the Stanthorpe-Wallangarra area of the Darling Downs district. Flowers spring–summer.

4. *Gompholobium uncinatum* Cunn. ex Benth.

Small diffuse or decumbent shrub up to *ca* 35 cm tall; stems tuberculate, often with few crisped hairs. Leaves digitately 3-foliolate; leaflet blades linear, apex with minute, often recurved point, margin revolute, 0.4–1 cm long. Flowers orange to red with yellow patch on standard, solitary or few together, pedicels 3–6 mm long; calyx *ca* 5 mm long. Pods mostly 8–10 mm long.

Known only from the southern Darling Downs district around Stanthorpe. Flowers spring.

5. *Gompholobium virgatum* Sieber ex DC.

Erect, almost glabrous shrub up to *ca* 1.2 m tall; stems smooth. Leaves digitately 3-foliolate; leaflet blades 1.2–3 cm × 0.1–0.5 cm. Flowers yellow, solitary or few together in upper axils, pedicels up to *ca* 1.2 cm long, each flower up to *ca* 1.8 cm long; standard *ca* 1.8 cm wide. Pods *ca* 10 mm long stipitate.

Three varieties occur in the region:

- | | |
|--|--|
| 1. Leaflets narrowly obovate or linear, usually 1.2 cm long or longer and up to 0.3 cm broad, apex usually with ± recurved point | <i>G. virgatum</i> var. <i>virgatum</i> |
| Leaflets linear, revolute, mostly less than 1.6 cm long, apex obtuse, blunt | <i>G. virgatum</i> var. <i>aspalathoides</i> |
| Leaflets cuneate or obovate, up to 1.5 cm long and 0.5 cm wide apex usually emarginate and with short mucro | <i>G. virgatum</i> var. <i>emarginatum</i> |

G. virgatum var. *virgatum*, WALLUM WEDGE PEA, is common in sandy coastal areas. *G. virgatum* var. *aspalathoides* (Cunn. ex Benth.) Benth. (*G. aspalathoides* Cunn. ex Benth.) is known only from the Girraween National Park near Wallangarra. *G. virgatum* var. *emarginatum* F. M. Bailey is known only from sandy coastal areas around Noosa. All three varieties flower late winter to spring.

6. BURTONIA R.Br.

Shrubs. Leaves alternate; stipules small or absent; blades simple, digitate or pinnate with terminal leaflet sessile. Flowers solitary in axils of upper leaves or in terminal racemes, bracts small, bracteoles small, well below base of calyx; calyx lobes longer than tube, inner margins somewhat tomentose; petals shortly clawed, standard longer than other petals, keel broader than wings; stamens free; ovary with 2 ovules, style incurved. Pods turgid, broadly ovoid to nearly globular, oblique; seeds estrophiolate.

About 13 species endemic to Australia; 1 species south-eastern Queensland.



Fig. 39

FABACEAE — A₁-A₂, *Gompholobium pinnatum*, A₁, part of flowering stem x1, A₂, fruit x1; B-F *Oxylobium* spp. — B *O. arborescens*, part of fruiting plant x1; C₁-C₂, *O. robustum*, C₁, part of flowering stem x $\frac{3}{2}$, C₂, fruit x1; D *O. ilicifolium*, part of fruiting stem x $\frac{1}{2}$; E₁-E₂, *O. aciculiferum*, E₁, part of stem showing leaves with spine-like stipules x1, E₂, fruit x1 $\frac{1}{2}$; F *O. scandens*, leaf x1; G₁-G₂, *Chorizema parviflorum*, G₁, part of flowering stem x1, G₂, fruit x1; H₁-H₂, *Burtonia foliolosa*, H₁, part of fertile plant x1, H₂, fruit x1; I₁-I₃, *Isotropis filicaulis*, I₁, leaf x1, I₂, part of inflorescence x1, I₃, fruit x1; J₁-J₂, *Mirbelia* spp. — J₁-J₂, *M. rubiifolia*, J₁, part of flowering stem x1, J₂, part of fruiting stem x1; K *M. speciosa* subsp. *speciosa*, part of flowering stem x1.

1. *Burtonia foliolosa* (Benth.) Benth.*Gompholobium foliolosum* Benth.

Shrub, from less than 30 cm tall up to *ca* 1 m tall; stems pubescent. Leaves \pm glaucous, pinnate; leaflets usually 11–21; leaflet blades usually cuneate or obovate, apex mostly notched, mostly 1.5–4 mm \times 1–1.5 mm. Flowers orange-red, in short loose terminal racemes, each flower *ca* 5–6 mm long; calyx *ca* 4 mm long. Pods *ca* 5 mm long. **Fig. 39H.**

Found in western Moreton district and in Darling Downs district, on sandy soils. Flowers spring–summer.

7. JACKSONIA R.Br.

Shrubs or small trees, mostly leafless; branches rigid terete, angular or winged, often phyllodineous. Leaves usually reduced to minute scales at nodes or occasionally a few 1-foliolate leaves present. Flowers in terminal or lateral spikes or racemes or scattered along branches, bracts small, bracteoles small; calyx deeply lobed; petals shorter than calyx or rarely exceeding it, almost equal in length, very shortly clawed; stamens free; ovary pubescent, ovules usually 2. Pods flat or turgid; seeds estrophiolate.

About 40 species endemic to Australia; 3 species south-eastern Queensland.

- | | | |
|--|--------------------------|---|
| 1. Branches angled or winged; large shrubs or small trees | 1. <i>J. scoparia</i> | |
| Branches terete; small, mostly decumbent shrubs | | 2 |
| 2. Ovary and pod stipitate; found west of the Great Dividing Ra. | 2. <i>J. turnerana</i> | |
| Ovary and pod sessile; found in coastal lowlands | 3. <i>J. stackhousii</i> | |

1. *Jacksonia scoparia* R.Br.

DOGWOOD

Tall shrub or small tree up to *ca* 3 m tall; branches erect or pendulous, strongly angled or winged, usually minutely pubescent. Leaves usually reduced to scales. Flowers few together in racemes, terminal and in upper axils, pedicels 3–5 mm long, each flower 6–8 mm long; calyx 4–6 mm long, silky-pubescent; petals yellow, standard *ca* 9 mm wide. Pods flat, 0.6–1.2 cm \times *ca* 0.3 cm pubescent, stipitate.

Widespread throughout the region, mainly in sandy or rocky situations; common on coastal lowlands. Flowers late winter to spring.

2. *Jacksonia turnerana* Domin

Decumbent shrub up to *ca* 40 cm tall; branches terete, longitudinally furrowed, young branches with minute, appressed silky hairs, older stems glabrous. Leaves reduced to small scales. Flowers yellow with a darker keel, solitary, scattered along branches, each flower 6–8 mm long; calyx *ca* 6–8 mm long, silky-pubescent; corolla shorter than calyx; ovary stipitate. Pods ovoid, 4–5 mm long, not concealed by calyx, stipitate. **Fig. 40C.**

Occasionally found on stony soils in the Darling Downs district. Flowers late winter to spring, sometimes also autumn.

3. *Jacksonia stackhousii* F. Muell.

WALLUM DOGWOOD

Decumbent or rarely erect shrub up to *ca* 50 cm tall, rarely taller; branches terete, longitudinally furrowed, glabrous or minutely pubescent. Leaves reduced to scales. Flowers yellow, solitary or in pairs in upper axils, each flower 6–9 mm long; calyx 6–9 mm long, silky-pubescent; corolla shorter than calyx; ovary sessile. Pods compressed, concealed by calyx, sessile.

Coastal lowlands, common in wallum country. Flowers midwinter to spring.

8. SPHAEROLOBIUM Smith

Shrubs or undershrubs, glabrous; stems often rush-like, terete or winged. Leaves alternate or irregularly opposite or whorled, linear or absent. Flowers in terminal or lateral racemes or in lateral clusters, bracts and bracteoles deciduous; calyx lobes imbricate, 2 upper larger, united higher up; petals shortly clawed; stamens free; ovary glabrous, stipitate, ovules 2, style incurved, subulate or dilated at base, longitudinally winged or with ring of hairs below stigma. Pods oblique, globular or compressed, stipitate; seeds estrophiolate.

12 species endemic to Australia; 1 species south-eastern Queensland.

1. *Sphaerolobium vimineum* Smith

Wiry shrub up to ca 70 cm tall. Stems green, terete, leafless or with few leaves less than 5 mm long. Flowers yellow, usually 2 or 3 clustered together, the clusters in terminal racemes, each flower ca 5 mm long; calyx dark, ca 2.5 mm long, lobes longer than tube; keel as long as wings; style with narrow membranous wing along inner edge. Pods almost globular, ca 3 mm diameter. **Fig. 40E.**

Swampy areas of coastal lowlands and border ranges and also from around Wyberba in the southern Darling Downs district. Flowers midwinter to spring.

9. VIMINARIA Smith

Shrubs with rush-like branches. Leaves alternate, mostly reduced to long filiform petiole; stipules small. Flowers in racemes, terminal or in upper axils, bracts small, bracteoles absent; calyx lobes short; petals clawed, wings and keel equal in length and shorter than standard; stamens free; ovary sessile, style filiform. Fruits usually indehiscent, obovoid, obliquely beaked, sessile; seeds with a small strophiole.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Viminaria juncea* (Schrader) Hoffmanns.

Sophora juncea Schrader; *Viminaria denudata* (Vent.) Smith

Shrubs usually less than 2 m tall in Queensland but reaching 5 m tall elsewhere. Leaves reduced to filiform petioles, very variable in length, mostly 10 cm or less long but up to 25 cm long. Racemes up to ca 20 cm long or longer, pedicels 3–5 mm long; flowers yellow, 7–8 mm long; calyx 2–3 mm long. Fruits ca 4 mm long. **Fig. 40F.**

Not common, found in wallum areas. Flowers midwinter to early summer.

10. DAVIESIA Smith

Shrubs or occasionally trees. Leaves alternate; stipules minute or absent; blades simple, entire, coriaceous-rigid, sometimes reduced or absent. Flowers yellow to red in axillary or lateral, rarely terminal racemes, pedunculate umbels, clusters, or solitary, bracts small, bracteoles absent; calyx lobes usually short or 2 upper united to form a lip; petals clawed, standard as long as or longer than other petals; stamens free; ovary glabrous. Pods flattened, triangular, upper suture straight, lower suture curved; seeds strophiolate.

About 55 species endemic to Australia; 10 species south-eastern Queensland.

1. Leaves not pungent-pointed		2
Leaves pungent-pointed		5
2. Inflorescences umbelliform	1. <i>D. wyattiana</i>	3
Inflorescences not umbelliform		
3. Leaves more than 1.5 cm wide; racemes mostly more than 3 cm long	2. <i>D. latifolia</i>	4
Leaves less than 1.5 cm wide; racemes mostly less than 3 cm long		
4. Trees or shrubs usually more than 3 m tall; leaves mostly 8–20 times as long as wide, mostly drooping	3. <i>D. arborea</i>	
Shrubs 2 m or less tall; leaves mostly 2.5–8 times as long as wide, stiff and erect	4. <i>D. mimosoides</i>	
5. Flowers in pedunculate, umbelliform inflorescences		6
Flowers not in umbelliform inflorescences		7
6. Leaves linear, 5 cm long or longer	1. <i>D. wyattiana</i>	
Leaves ovate or narrowly ovate, less than 2.5 cm long	5. <i>D. umbellulata</i>	
7. Leaves linear-terete, sometimes laterally flattened	6. <i>D. genistifolia</i>	8
Leaves flat horizontally		

- | | |
|---|--|
| 8. Pedicels 5 mm long or longer | 9 |
| Pedicels less than 5 mm long | 10 |
| 9. Leaves recurved, base not cordate | 7. <i>D. filipes</i> |
| Leaves not recurved, base usually cordate | 8. <i>D. squarrosa</i> var. <i>villifera</i> |
| 10. Branches ending in spines | 9. <i>D. ulicifolia</i> |
| Branches not ending in spines | 10. <i>D. acicularis</i> |

1. *Daviesia wyattiana* F. M. Bailey

Shrub up to *ca* 3 m tall; stems acutely triangular, surfaces striate. Leaf blades linear, apex obtuse or acute, 5–30 cm × 0.15–0.6(–0.9) cm, midrib conspicuous. Flowers in umbelliform racemes, umbels 1–several per axil, peduncles 1–2.5 cm long, pedicels 1–2 cm long; flowers 5–8 mm long; calyx *ca* 3 mm long. Pods 0.8–1.1 cm long, almost sessile.

Open eucalypt country of the Moreton district, mainly on sandy or gravelly soils on ridges or mountain slopes, also known from granite country in the southern Darling Downs district. Flowers midwinter to spring.

2. *Daviesia latifolia* R.Br.

Shrubs 1–3 m tall. Leaf blades ovate to elliptic, apex obtuse or acute, usually with mucro, 3–10 cm × 1.5–5 cm, usually strongly reticulate. Flowers in axillary racemes usually more than 3 cm long, racemes 1–few per axil, bracts 2–4 mm long, pedicels 2–5 mm long; flowers 4–7 mm long; calyx *ca* 2 mm long. Pods 7–10 mm long, stipitate.

Granite country of the Stanthorpe-Wallangarra area of the southern Darling Downs district. Flowers spring.

3. *Daviesia arborea* W. Hill

GOLDEN PEA

Shrub or tree up to *ca* 9 m tall. Leaves mostly drooping; blades narrowly ovate, apex acuminate, 6–12 cm × 0.4–0.9 cm, usually 8–20 times as long as wide, veins usually conspicuous. Flowers in axillary racemes mostly 1–3 cm long, racemes 1–2 per axil, pedicels 3–5 mm long, bracts 1–2 mm long; flowers 6–7 mm long; calyx 2–3 mm long. Pods 7–10 mm long, on stipe *ca* 2 mm long. **Fig. 40B.**

Known only from the Moreton district from Mt. Tamborine to Mt. Glorious in open eucalypt forests, in areas of fairly high rainfall and on edges of rainforest. Flowers spring.

4. *Daviesia mimosoides* R.Br.

Daviesia corymbosa Smith var. *mimosoides* (R.Br.) Benth.

Shrub 1–2 m tall. Leaf blades ± thick textured, narrowly obovate to elliptic or occasionally narrowly ovate and ± falcate, apex obtuse or acute, usually 2.5–10.5 cm × 0.4–1.4 cm, mostly 2.5–8, rarely 10 times as long as broad, veins usually conspicuous. Flowers in axillary racemes 1–2.5 cm long, racemes 1–few per axil, bracts 1–2 mm long; flowers often only on upper part of peduncle, 5–7 mm long; calyx 2–3 mm long. Pods 7–10 mm long, on stipe *ca* 2 mm long.

Moderately common in the southern Darling Downs district, between Warwick and the New South Wales border, also occasionally collected in the Moreton district, mainly along road or railway embankments. Flowers spring.

5. *Daviesia umbellulata* Smith

Daviesia concinna R.Br. ex Benth.

Shrub up to 2.5 m tall; stems usually pubescent. Leaf blades ovate or narrowly ovate, apex acute-acuminate and pungent-pointed, 0.7–2.2 cm × 0.2–0.4 cm, often hairy along margins and midvein, midvein prominent. Flowers in pedunculate, umbelliform, axillary racemes, peduncle 0.5–1.2 cm long, pedicels 4–8 mm long; flowers 4–7 mm long; calyx *ca* 2 mm long, upper lobes united to form a broad lip. Pods 8–10 mm long.

Found in coastal wallum areas and in open eucalypt forests on stony soils. Flowers spring.

6. *Daviesia genistifolia* Cunn. ex Benth.

Shrub up to 2 m tall; stems glabrous. Leaf blades rigid, linear, terete or laterally flattened, apex pungent-pointed, 1–3 cm long. Flowers in short, axillary racemes, racemes 1–several per axil, pedicels 1–5 mm long; flowers 5–7 mm long; calyx *ca* 2 mm long, lobes short. 2 upper lobes united to form lip. Pods 7–10 mm long.

Seldom collected in the region, known from around Helidon in the Moreton district, Glenleigh in the Burnett district and the Warwick-Inglewood area of the southern Darling Downs district. Flowers spring.

7. *Daviesia filipes* Benth.

Shrub up to *ca* 1.5 m tall; branches and leaves softly hairy. Leaf blades ovate-elliptic, apex acute and pungent-pointed, 0.5–1.8 cm × 0.15–0.5 cm. Flowers in racemes reduced to 1–2 flowers, pedicels 5–10 mm long; flowers 4–7 mm long; calyx *ca* 2.5 mm long, 2 upper lobes united to form a lip. Pods *ca* 8 mm long, sessile.

Widespread but not common in the Darling Downs and Burnett districts, often on stony ridges. Flowers late winter to spring, sometimes also autumn.

8. *Daviesia squarrosa* Smith var. *villifera* (Cunn. ex Benth.) Benth.

Daviesia villifera Cunn. ex Benth.

Shrub up to *ca* 2 m tall; stems covered with long, spreading hairs. Leaf blades ovate, apex acuminate and pungent-pointed, base cordate, 5–9 mm × 2–4 mm, pubescent. Flowers in axillary racemes reduced to 1 or 2 flowers, pedicels 0.5–1.5 cm long; flowers 4–6 mm long; calyx *ca* 2.5 mm long, upper lobes united to form a broad lip. Pods 7–10 mm long. **Fig. 40A.**

Found in open eucalypt forests on sandy or stony soils of the Moreton district. Flowers late winter to early spring.

9. *Daviesia ulicifolia* Andr.

NATIVE GORSE

Daviesia ulicina Smith; *D. ulicina* var. *angustifolia* Benth.

Shrub up to 2 m tall; branches ending in spines, glabrous or pubescent with spreading hairs. Leaf blades rigid, linear to narrowly ovate, apex acuminate and pungent-pointed, 0.5–2 cm long, up to 3 mm wide but mostly less than 2 mm wide. Flowers in racemes reduced to 1 or few flowers, pedicels *ca* 2 mm long; flowers 5–7 mm long; calyx 2–3 mm long, lobes almost equal. Pods 7–10 mm long.

Widespread throughout the region in open eucalypt forests on sandy or stony soils. Flowers spring.

10. *Daviesia acicularis* Smith

Shrub up to *ca* 1 m tall; stems glabrous or pubescent. Leaf blades narrowly ovate to linear, apex acute and pungent-pointed, margin recurved or revolute, 1.5–3.5 cm × 0.15–0.25 cm, occasionally a few leaves at base of stem broad and flat. Flowers solitary or occasionally few per axil; pedicel *ca* 2 mm long; flowers 5–7 mm long; calyx *ca* 3 mm long, deeply lobed, lobes almost equal. Pods 8–10 mm long.

Known from granite areas around Wallangarra in the southern Darling Downs district, also known from Fraser I. Flowers late winter to spring.

11. AOTUS Smith

Shrubs. Leaves, alternate or whorled; stipules absent; blades simple, entire, margins recurved or revolute. Flowers axillary, solitary or clustered or rarely in short terminal racemes, bracts small deciduous, bracteoles absent; calyx with 2 upper lobes broad, ± united into a lip; petals clawed, standard longer than lower petals; stamens free; ovary sessile or stipitate, style filiform. Pods ovate, flat or turgid; seeds estrophiolate.

About 15 species endemic to Australia; 4 species south-eastern Queensland.

- | | | |
|---|------------------------|---|
| 1. Petals yellow; stems covered with long, soft, usually dark hairs | 1. <i>A. lanigera</i> | |
| Petals yellow with red or purple markings; stems pubescent but rarely with long, soft hairs | | 2 |
| 2. Upper leaf surfaces, at least on young leaves, pubescent; plants from the western Darling Downs district | 2. <i>A. mollis</i> | |
| Upper leaf surfaces glabrous or with a few long hairs, often tuberculate | | 3 |
| 3. Stems with white, silky pubescence; plants of granite or sandstone areas | 3. <i>A. subglauca</i> | |
| Stems with close, often rusty pubescence; plants of coastal wallum areas | 4. <i>A. ericoides</i> | |

1. *Aotus lanigera* Cunn. ex Benth.

Shrub up to *ca* 1.5 m tall; stems covered with long, soft, usually dark hairs. Leaves alternate or irregularly opposite or whorled; petioles 1–2 mm long; blades narrowly ovate to elliptic, apex acute, margin recurved or revolute, 0.8–2 cm × 0.15–0.25 cm, upper surface often glabrous. Flowers yellow, 1–several per axil, 0.8–1.3 cm long; calyx *ca* 4–5 mm long, villous, lobes acute to acuminate, ± as long as tube. Pods *ca* 8 mm long, villous. **Fig. 40D.**

Common in wallum country of coastal areas, also known from near Wyberba in the southern Darling Downs district. Flowers spring.

2. *Aotus mollis* Benth.

Shrub; stems with a close tomentum. Leaves in irregular whorls of 3, or occasionally opposite or alternate; petioles *ca* 1 mm long; blades linear, margin revolute, 0.5–2 cm × *ca* 0.15 cm, upper surface at least on young leaves pubescent. Flowers yellow with red or purple markings, 1–several in upper axils, 6–10 mm long; calyx *ca* 3 mm long, villous, lobes acute, shorter than tube. Pods *ca* 6 mm long, villous.

Sandstone areas around Barakula near Chinchilla in the Darling Downs district. Flowers spring.

3. *Aotus subglauca* Blakely & McKie

Shrub up to *ca* 1 m tall; stems with appressed, white, silky pubescence, sometimes with a few long spreading hairs. Leaves in ± irregular whorls of 3 or sometimes opposite or alternate; petioles *ca* 1.5 mm long; blades linear to narrowly ovate, margin recurved or revolute, 0.7–2.5 cm × 0.1–0.3 cm. Flowers yellow with large patches of purple or red, 1–several per axil, 5–9 mm long; calyx *ca* 4 mm long, villous. Pods 5–7 mm long, villous.

Two varieties occur in region:

- | | | |
|--|-----------|--|
| 1. Leaves 1–3 mm wide, upper surface often tuberculate | | <i>A. subglauca</i> var. <i>subglauca</i> |
| Leaves <i>ca</i> 1 mm wide, upper surface smooth | | <i>A. subglauca</i> var. <i>filiformis</i> |

A. subglauca* var. *subglauca is known from sandstone areas around Helidon in the Moreton district and on granite areas around Stanthorpe in the southern Darling Downs district. ***A. subglauca* var. *filiformis*** Blakely & McKie is rarely collected, but is known from a few areas in the Darling Downs district. Both varieties flower mainly in spring.

4. *Aotus ericoides* (Vent.) G. Don

Pultenaea ericoides Vent.; *Aotus villosa* Smith

Shrub up to *ca* 2 m tall; stems with a close, often rusty pubescence. Leaves in irregular whorls of 3 or more, or opposite or alternate; petioles *ca* 1 mm long; blades linear to narrowly ovate to narrowly elliptic, 0.5–2 cm × up to 0.2 cm. Flowers yellow with red, 1–several in axils, 5–10 mm long; calyx *ca* 3 mm long, villous, lobes acute, shorter than tube or rarely almost equal to tube. Pods 4–6 mm long.

Common on coastal wallum country. Flowers late winter to spring, sometimes also autumn.

12. PHYLLOTA Benth.

Shrubs. Leaves alternate; stipules minute or absent; blades simple, entire, margins revolute. Flowers axillary, solitary, sometimes crowded near ends of branches or occasionally terminal, bracts small or absent, bracteoles persistent, often leaf-like, inserted under the calyx; calyx with 2 upper lobes broader and sometimes united into a lip; petals clawed, standard usually longer than lower petals; stamens all or at least the outer adnate to petals at base; ovary sessile, pubescent, style thickened at base, incurved. Pods ovoid, somewhat turgid; seeds estrophiolate.

About 10 species endemic to Australia: 1 species south-eastern Queensland.



Fig. 40

FABACEAE — A-B *Daviesia* spp. — A₁-A₃, *D. squarrosa* var. *villifera*, A₁, part of flowering stem x1½, A₂, fruit x1, A₃, seeds showing strophioles x3; B *D. arborea*, part of flowering stem x1; C₁-C₃, *Jacksoniaturnerana*, C₁, part of flowering plant x1, C₂, fruit x1½; D₁-D₂, *Aotus lanigera*, D₁, part of flowering stem x1, D₂, fruit x2; E₁-E₃, *Sphaerolobium vimineum*, E₁, part of flowering plant x1, E₂, calyx x6, E₃, fruit x2; F₁-F₄, *Viminaria juncea*, F₁, part of flowering plant x1, F₂, part of fruiting inflorescence x1, F₃, calyx x6, F₄, fruit x2; G₁-G₂, *Phyllota phyllicoides*, G₁, part of flowering stem x1, G₂, flower x3.

1. *Phyllota phyllicoides* (Sieber ex DC.) Benth.*Pultenaea phyllicoides* Sieber ex DC.

Erect shrub up to *ca* 1.5 m tall; stems pubescent when young, with tuberculate or elongated leaf scars when older. Leaves erect, spreading or reflexed; blades narrowly linear, apex obtuse or with recurved points, 0.5–2 cm long. Flowers yellow, axillary but usually crowded at ends of branches, bracteoles 0.4–1.5 cm long; flowers 0.7–1.5 cm long; calyx 4–9 mm long. Pods concealed by calyces. **Fig. 40G.**

Common in the Moreton and Wide Bay districts on sandy soils of coastal flats and near-coastal ranges. Flowers late winter to spring, often again in autumn.

13. PULTENAEA Smith

Shrubs. Leaves alternate or sometimes opposite or verticillate; mostly stipulate. Flowers usually orange-yellow often with the keel purple, axillary and solitary or crowded in terminal heads, often surrounded by bracts, bracteoles persistent; upper calyx lobes usually united higher up; petals clawed, standard equal to or longer than lower petals, wings oblong, keel incurved; stamens free; ovary sessile or rarely shortly stipitate, ovules 2. Pods turgid or compressed, 2-valved; seeds strophiolate.

About 90 species endemic to Australia; 19 species south-eastern Queensland.

- | | |
|---|---------------------------|
| 1. Leaves with incurved or involute margins, or if flat then darker below | 2 |
| Leaves with recurved or revolute margins, or if flat then darker above | 12 |
| 2. Leaves mostly opposite or in whorls of 3 | 3 |
| Leaves all alternate | 5 |
| 3. Flowers 7 mm or less long | 1. <i>P. spinosa</i> |
| Flowers more than 7 mm long | 4 |
| 4. Calyx hairy | 2. <i>P. subternata</i> |
| Calyx glabrous | 3. <i>P. cunninghamii</i> |
| 5. Leaves pungent-pointed | 6 |
| Leaves not pungent-pointed | 7 |
| 6. Leaves more than 1.5 mm wide | 4. <i>P. flexilis</i> |
| Leaves less than 1 mm wide, often terete with a groove above | 5. <i>P. boormanii</i> |
| 7. Leaves less than 10 mm long | 8 |
| Leaves 10 mm long or longer | 10 |
| 8. Branches with \pm appressed hairs; flowers in small, dense terminal heads | 6. <i>P. cambagei</i> |
| Branches with spreading hairs; flowers axillary | 9 |
| 9. Leaves 4–10 mm \times 1–2 mm | 7. <i>P. villosa</i> |
| Leaves 1–3 mm \times <i>ca</i> 1 mm | 8. <i>P. foliolosa</i> |
| 10. Calyx glabrous | 9. <i>P. euchila</i> |
| Calyx hairy | 11 |
| 11. Flowers in dense terminal heads; plants of mountains of the border ranges, found at altitudes above 600 m | 10. <i>P. whiteana</i> |
| Flowers axillary; widespread in eastern parts of the region | 7. <i>P. villosa</i> |
| 12. Flowers in heads surrounded by conspicuously imbricate bracts | 13 |
| Flowers with bracts not conspicuously imbricate or bracts absent | 17 |
| 13. Bracts deciduous | 14 |
| Bracts persistent | 15 |
| 14. Leaves 4 mm wide or wider; flowers mostly 0.7–1.5 cm long | 11. <i>P. daphnoides</i> |
| Leaves less than 3 mm wide; flowers mostly 0.5–0.7 cm long | 12. <i>P. retusa</i> |

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|--|----------------------------|----|
| 15. Bracts drawn out to a long point | 13. <i>P. paleaceae</i> | |
| Bracts obtuse to acuminate but not drawn out to a long point | | 16 |
| 16. Bracts with hairy margins and a dorsal pubescent line, otherwise glabrous; shrub of damp coastal areas | 14. <i>P. myrtoides</i> | |
| Bracts silky-pubescent at least in lower parts; low shrub of high altitudes | 15. <i>P. pycnocephala</i> | |
| 17. Calyx with silky, appressed hairs | | 18 |
| Calyx with spreading hairs | | 19 |
| 18. Most leaves more than 1 cm long | 16. <i>P. millarii</i> | |
| Most leaves less than 1 cm long | 17. <i>P. microphylla</i> | |
| 19. Leaves linear | 18. <i>P. petiolaris</i> | |
| Leaves oblong to elliptic | 19. <i>P. hartmannii</i> | |

1. *Pultenaea spinosa* (DC.) Williamson

Oxylobium spinosum DC.; *Pultenaea ternata* F. Muell. var. *cuspidata* (F. Muell.) Benth.; *Euchilus cuspidatus* F. Muell.

Erect shrub up to ca 2 m tall or sometimes prostrate and forming mats up to 2 m across; stems pubescent, sometimes sparsely so, with spreading hairs. Leaves opposite or in whorls of 3; stipules 1–2 mm long; blades ovate, apex acute-acuminate and pungent-pointed, margin flat or incurved, 4–7 mm × 2–5 mm, glabrous or with few hairs below. Flowers solitary, axillary, peduncles 4–7 mm long, bracts absent, bracteoles 2–3 mm long, attached at or near base of calyx; flowers 7 mm or less long; calyx mostly 2–4 mm long, glabrous, lower lobes longer than tube. Pods turgid, ca 5–7 mm long.

Known from open, gravelly or rocky areas of the eastern half of the Moreton and Wide Bay districts. In the Wide Bay district it is also found as a prostrate plant along roadsides. Flowers winter to spring.

The prostrate variant is probably, at least a distinct variety.

2. *Pultenaea subternata* Williamson

Erect shrub up to ca 2 m tall; branches with long spreading hairs. Leaves opposite or in whorls of 3; stipules ca 2–2.5 mm long; blades ovate, apex acute and pungent-pointed, margin flat or incurved, 5–9 mm × 2–6 mm, pubescent with spreading hairs at least below. Flowers solitary, usually in upper axils, peduncles ca 3–4 mm long, bracts absent, bracteoles ca 3–5 mm long, attached near base of calyx; flowers ca 10 mm long; calyx mostly 5–7 mm long, pubescent with long spreading hairs, lower lobes longer than tube. Pods turgid, ca 4–6 mm long.

Known from the northern Darling Downs district from near Barakula, but possibly more widespread in the Darling Downs and Burnett districts. Flowers winter–spring, sometimes a second flowering in autumn.

3. *Pultenaea cunninghamii* (Benth.) Williamson

Spadostylis cunninghamii Benth.; *Pultenaea ternata* F. Muell.; *P. ternata* F. Muell. var. *pubescens* Benth.; *P. cunninghamii* var. *pubescens* (Benth.) Williamson

Shrub up to ca 2 m or more tall; branches glabrous or with spreading hairs. Leaves opposite or in whorls of 3, rarely alternate; blades ovate to transversely ovate, apex acute to acuminate, pungent-pointed, margin flat or incurved, 0.6–1.5 cm × 0.4–1.6 cm, glabrous or with few hairs below. Flowers 1–3 together, axillary, peduncles 2–5 mm long, bracts absent, bracteoles 2–5 mm long; flowers 0.8–1.5 cm long; calyx 5–8 mm long, glabrous, lower lobes longer than tube. Pods turgid, 6–7 mm long. **Fig. 41A.**

Known from stony areas of the Moreton district. Flowers winter–spring, often with a second flush in autumn.

4. *Pultenaea flexilis* Smith

Shrub up to ca 3 m tall; branches pubescent at least when young. Leaves alternate; stipules 2–4 mm long; blades narrowly elliptic to narrowly obovate, apex obtuse or acute, pungent-pointed, margin flat or incurved, 1–2 cm × 0.2–0.3 cm, glabrous or with few hairs below. Flowers solitary, axillary, often clustered towards ends of branches, peduncles 2–5 mm long, bracts absent, bracteoles 1–3 mm long, attached near base of calyx; flowers ca 8–10 mm long; calyx 3–5 mm long, glabrous or sparsely hairy. Pods turgid, ca 6 mm long. **Fig. 41B.**

Granite and sandstone areas of the Moreton district and also the Stanthorpe area of the Darling Downs district. Flowers winter–spring.

5. *Pultenaea boormanii* Williamson

Shrub up to *ca* 1 m tall; branches pubescent. Leaves alternate; stipules 2–3 mm long; blades narrowly linear, usually terete with a groove on the upper surface but sometimes with inrolled margins, apex with a minute, recurved, pungent point, 0.5–1.2 cm long, usually with a few fine hairs. Flowers axillary, peduncles short, bracts if present, 2-lobed, *ca* 3 mm long, bracteoles 3-lobed, 4–7 mm long, attached to upper or occasionally lower part of calyx tube, central lobe narrowly linear, pubescent, lateral lobes broader and shorter than central and \pm glabrous; flowers 7–10 mm long; calyx 5–9 mm long, very deeply lobed. Pods turgid, *ca* 5 mm long.

Known only from near Durikai west of Warwick in the southern Darling Downs district. Flowers spring.

6. *Pultenaea cambagei* Maiden & Betche

Pultenaea subumbellata Hook. var. *cambagei* (Maiden & Betche) Williamson

Shrub up to *ca* 60 cm tall; branches few, with \pm appressed hairs. Leaves alternate; stipules less than 1 mm long; blades linear to narrowly obovate, apex obtuse, margin incurved or involute, 4–7 (–9) mm \times 1–1.5 mm, glabrous or pubescent. Flowers in small, dense terminal heads, bracts *ca* 2 mm long, \pm pubescent, bracteoles 1–2 mm long, attached to pedicel below calyx; flowers *ca* 8 mm long; calyx *ca* 4 mm long, pubescent, lower lobes slightly shorter than tube. Pods *ca* 4 mm long.

Known from in or near swamp areas around Wallangarra in the southern Darling Downs district. Flowers spring.

7. *Pultenaea villosa* Willd.**HAIRY BUSH PEA**

Pultenaea villosa var. *glabrescens* Benth.; *P. villosa* var. *lanata* Domin

Variable shrub to over 3 m tall, but often less than 1 m tall; stems with long, spreading white or ferruginous hairs. Leaves alternate; stipules 1–4 mm long; blades variable, narrowly obovate, apex rounded to obtuse and recurved, margin incurved, 4–10 mm \times 1–2 mm, upper surface glabrous or with few hairs, lower surface with spreading usually tubercular-based hairs, rarely appressed or absent. Flowers axillary, peduncles very short, bracts if present 2-lobed, *ca* 2 mm long, bracteoles usually 3-lobed, lateral lobes shorter, mostly 2–4 mm long but variable, attached on lower half of calyx tube; flowers 0.5–1.2 cm long; calyx 0.4–1.1 cm long, with spreading hairs, deeply lobed. Pods turgid, 4–6 mm long. **Fig. 41G.**

Widespread in the Moreton and Wide Bay districts, in drier areas. Flowers autumn to spring, main flush in spring.

8. *Pultenaea foliolosa* Cunn. ex Benth.

Shrub up to *ca* 2 m tall, but often less than 1 m tall; stems with spreading hairs. Leaves alternate; stipules 1–2 mm long; blades elliptic, apex obtuse, recurved, margin incurved, 1–3 mm \times *ca* 1 mm, with spreading, tubercular-based hairs or glabrous above. Flowers axillary, peduncles short, bracts absent, bracteoles 3-lobed, central lobe leaf-like, 2–5 mm long, lateral lobes shorter; flowers 7–10 mm long; calyx 4–5 mm long, pubescent, deeply lobed. Pods turgid, *ca* 5 mm long.

Darling Downs district from a few widely separated localities, mainly on granite or sandstone areas. Flowers late winter to autumn.

9. *Pultenaea euchila* DC.**ORANGE PULTENAEA**

Shrub up to *ca* 2 m tall; branches somewhat angular, glabrous. Leaves alternate; stipules 1–2 mm long; petioles 1–1.5 mm long; blades narrowly obovate, apex rounded, often with an apical notch, margin incurved, 1–2 cm \times 0.2–0.35 cm glabrous, midvein and often 2 lateral veins conspicuous. Flowers solitary, axillary, often clustered towards ends of branches, peduncles 0.5–1.3 cm long, bracts absent, bracteoles 1–3 mm long, attached at or below base of calyx; flowers 1–1.5 cm long; calyx 6–8 mm long, glabrous, lower lobes longer than tube. Pods turgid, *ca* 8 mm long often with long conspicuous remains of style at apex.

Not common, found on stony hillsides. Flowers winter–spring.

10. *Pultenaea whiteana* S. T. Blake

Shrub up to ca 50 cm tall; branches pubescent. Leaves alternate; stipules recurved, 3–6 mm long, ± covering branches; petioles ca 1.5 mm long; blades linear, apex acute, margin incurved or involute, 1.5–2.2 cm × ca 0.15 cm, glabrous above, appressed-pubescent or glabrous below. Flowers in dense terminal heads, bracts 2-lobed, ca 7 mm long, silky hairy, bracteoles ca 4 mm long, 2-lobed, attached below calyx; calyx ca 6 mm long, silky hairy, lobes longer than tube. Pods not seen. **Fig. 41D.**

Known from Mt. Maroon and Mt. Barney in the southern Moreton district at altitudes above 600 m. Flowers spring to early summer.

11. *Pultenaea daphnoides* Wendl.

Shrub up to 1 m or more tall; branches usually angular, pubescent. Leaves alternate; stipules 1–2 mm long; blades obovate, concave, apex obtuse to emarginate, usually pungent-pointed, margin flat or slightly recurved, 1–4 cm × 0.4–1.3 cm, both surfaces glabrous or lower surface with appressed hairs. Flowers in terminal heads, pedicels silky-pubescent, up to ca 3 mm long, bracts imbricate, up to ca 5 mm long, deciduous, bracteoles 2–4 mm long, attached to upper part of calyx tube; flowers 0.7–1.5 mm long; calyx 4–6 mm long, silky-pubescent, lobes shorter than tube. Pods flattened, mostly 5–7 mm long.

Known from mountains of the border ranges at altitudes above 600 m, also from the Girraween National Park near Wallangarra in the southern Darling Downs district. Flowers spring–summer.

12. *Pultenaea retusa* Smith

Shrub up to ca 2 m tall; branches angular, appressed-pubescent. Leaves alternate; stipules ca 1 mm long; blades linear to narrowly oblong, apex emarginate, sometimes somewhat dilated, margin flat or slightly recurved, 0.5–1.5 cm × 0.15–0.3 cm, both surfaces ± glabrous. Flowers in small terminal heads, pedicels up to ca 2 mm long, silky-pubescent, bracts imbricate, up to ca 5 mm long, bracteoles 2–4 mm long, attached to upper part of calyx tube; flowers 5–7 mm long; calyx 3–4 mm long, silky-pubescent, lobes shorter than tube. Pods flattened, mostly 5–7 mm long. **Fig. 41E.**

Known from coastal ranges and plains and border ranges of the Moreton district, also from near Stanthorpe in the Darling Downs district and Gympie in the Wide Bay district. Flowers late winter to spring.

13. *Pultenaea paleacea* Willd.

Pultenaea paleacea var. *obtusata* Benth.; *P. paleacea* var. *sericea* Benth.; *P. williamsonii* Maiden; *P. paleacea* var. *williamsonii* (Maiden) Williamson; *P. paleacea* var. *robusta* Williamson

Shrub up to ca 1.5 m tall; branches with appressed, silky pubescence, at least when young. Leaves alternate; stipules conspicuous, ± membranous, 5–10 mm long; blades linear to elliptic to obovate, apex obtuse with a short recurved point, margin recurved to revolute or rarely flat (0.8–)1–4 × 0.15–0.6 cm, upper surface usually glabrous, ± silky-pubescent below. Flowers in 1–many-flowered terminal heads, bracts imbricate, usually 2- or 3-lobed, lobes acuminate and drawn out to a long point, whole bract 0.4–1.2 cm long, usually pubescent or sometimes central lobe if present pubescent with ciliate margins, bracteoles 3–7 mm long; flowers ca 6–10 mm long; calyx 4–7 mm long, pubescent, but sometimes sparsely so, lobes shorter than tube. Pods ca 6 mm long.

Two varieties occur in the region:

- 1. Flower heads with many flowers; leaves 1–4 cm long, densely silky-pubescent beneath *P. paleacea* var. *paleacea*
- Flower heads with 1 or few flowers; leaves 0.8–1.2 cm long, sparsely to moderately densely silky-pubescent beneath *P. paleacea* var. *pauciflora*

P. paleacea var. *paleacea* is common in coastal districts in sandy often swampy areas, also known from the Wallangarra and Chinchilla areas of the Darling Downs district and the far north of the Burnett district. Flowers late winter to spring. *P. paleacea* var. *pauciflora* C. T. White is found on sandy coastal areas of the northern Wide Bay district, and is common in areas where it occurs. Flowers late winter to early spring.

14. *Pultenaea myrtoides* Cunn. ex Benth.

Shrub up to *ca* 1.5 m tall; stems appressed silky-pubescent, at least when young. Leaves alternate; stipules 3–5 mm long; blades usually obovate or rarely elliptic or linear, apex obtuse or acute with a short recurved point, base tapering gradually, margin recurved or revolute, 0.7–2.5 cm × 0.15–0.5 cm, upper surface glabrous except sometimes along midvein, silky-pubescent below. Flowers in terminal heads, bracts imbricate, usually 2- or 3-lobed, apex obtuse to acuminate but not drawn out to a point, or rarely central lobe with short point, margin usually densely hairy, otherwise surface glabrous except for a dorsal pubescent line, whole bract 4–5 mm long, bracteoles 3–4 mm long; flowers 6–10 mm long; calyx 4–8 mm long, silky-pubescent but often sparser on lower half, lobes shorter than tube. Pods flattened, *ca* 6 mm long. **Fig. 41F.**

Known from damp, usually sandy areas of the Moreton and Wide Bay districts. Flowers late winter to spring.

15. *Pultenaea pycnocephala* F. Muell. ex Benth.

Shrub up to *ca* 40 cm tall; stems densely appressed pubescent. Leaves alternate; stipules *ca* 5 mm long; blades obovate, apex obtuse and recurved, *ca* 0.5–1.2 cm × 0.3–0.5 cm, upper surface grooved, ± glabrous, densely silky hairy below. Flowers in terminal heads, bracts usually 3-lobed, lobes acute, 3–8 mm long, silky-pubescent at least in lower half, bracteoles 5–7 mm long, attached below base of calyx; flowers *ca* 10 mm long; calyx 4–8 mm long, pubescent with spreading hairs. Pods flattened, *ca* 5–10 mm long.

Rare; known only from high altitudes of the McPherson Ra. and from near Wallangarra. Flowers spring.

16. *Pultenaea millarii* F. M. Bailey

Shrub mostly less than 1 m tall; branches with ± appressed silky hairs. Leaves alternate; stipules *ca* 1.5–2 mm long; petioles *ca* 1.5–4 mm long; blades with ± recurved margin, sparsely hairy above, silky appressed hairy below, darker above. Flowers solitary in axils, pedicels short, bracts absent, bracteoles *ca* 1–1.5 mm long, attached at base of calyx; flowers *ca* 7–10 mm long; calyx *ca* 4–5 mm long, silky appressed pubescent, lobes ± equal to tube. Pods not seen.

Two varieties occur in the region:

- | | |
|---|---|
| 1. Leaves obovate, apex rounded or ± retuse with a minute recurved point, 0.7–1.5 cm × 0.3–0.5 cm | <i>P. millarii</i> var. <i>millarii</i> |
| Leaves linear-elliptic, apex acute with short conspicuous point, 1–3 cm × 0.15–0.2 cm | <i>P. millarii</i> var. <i>angustifolia</i> |

P. millarii var. *millarii* is known from the Cania Gorge in the northern Burnett district. *P. millarii* var. *angustifolia* Williamson is known from Eidsvold in the Burnett district. Both varieties flower spring.

Specimens intermediate between *P. millarii* var. *angustifolia* and *P. petiolaris* Cunn. ex Benth. have also been collected from the Eidsvold area of the Burnett district.

17. *Pultenaea microphylla* Sieber ex DC.

Pultenaea microphylla var. *cuneata* (Benth.) Benth.; *P. kennyi* Williamson
Erect or prostrate shrub, mostly 30–50 cm tall; branches terete with close, usually appressed pubescence. Leaves alternate; stipules 1–3 mm long; blades narrowly linear to obovate, apex usually retuse and usually recurved, margin usually recurved, *ca* 0.3–1 cm 0.1–0.25 cm, both surfaces pubescent or glabrous above, sometimes tuberculate above. Flowers often clustered towards ends of branches, bracts absent, bracteoles 1–3 mm long, pubescent; flowers *ca* 0.5–1.3 cm long; calyx 3–6 mm long, with silky appressed pubescence, lobes usually shorter than tube. Pods flattened, 3–5 mm long.

Widespread in the Moreton and Darling Downs districts, often in open, stony situations. Flowers late winter to spring.



Fig. 41

FABACEAE — A-G *Pultenaea* spp. — A, -A, *P. cunninghamii*, A, part of flowering stem x1, A₂, fruit with calyx showing bracteole x2; B, -B, *P. flexilis*, B₁, part of flowering stem x1, B₂, fruit with calyx showing bracteole x2; C, -C, *P. petiolaris*, C₁, top of flowering stem x1, C₂, fruit with calyx showing bracteole x2; D *P. whiteana*, top of flowering stem x1; E, -E, *P. retusa*, E₁, part of flowering stem x1, E₂, fruit with calyx showing bracteole x2; F, -F, *P. myrtilloides*, F₁, part of flowering stem x1, F₂, fruit with calyx showing bracteole x2; G, -G, *P. villosa*, G₁, part of flowering stem x1, G₂, fruit with calyx showing bracteole.

18. *Pultenaea petiolaris* Cunn. ex Benth.

Procumbent shrub; branches with spreading hairs. Leaves alternate, often crowded towards ends of branches; stipules 3–5 mm long; petioles *ca* 0.25–1.2 cm long, usually longest just below flower head; blades linear, apex obtuse with a slightly recurved point, margin revolute, 1–3 cm × 0.15–0.4 cm, upper surface grooved, glabrous or with coarse hairs, lower surface with coarse hairs. Flowers clustered in dense terminal heads, bracts absent, bracteoles bristle-like, *ca* 5 mm long, with dense spreading hairs, attached ± at centre of calyx tube; flowers *ca* 9 mm long; calyx *ca* 3–5 mm long, with dense spreading hairs. Pods flattened, 6–9 mm long. **Fig. 41C.**

Widespread but not common throughout the region, mostly on sandstone areas. Flowers late winter to spring.

19. *Pultenaea hartmannii* F. Muell.

Shrub *ca* 1–2 m tall; branches with long spreading hairs. Leaves alternate; stipules 1–2 mm long; petioles usually conspicuous, *ca* 1–1.5 mm long; blades oblong to elliptic, apex rounded, usually recurved, margin usually recurved, 4–8 mm × 1.5–3 mm, both surfaces with spreading hairs. Flowers usually clustered at ends of branches, bracts absent, bracteoles 1–2 mm long; flowers *ca* 8–10 mm long; calyx 4–5 mm long, with sparse spreading hairs, lower lobes equal to or longer than tube. Pods 6–8 mm long.

Known from granite areas around Stanthorpe in the southern Darling Downs district. Flowers spring.

14. EUTAXIA R.Br.

Shrubs. Leaves opposite, decussate; stipules minute or absent; blades small, simple, concave or with involute margins. Flowers axillary, solitary or few together, bracts small or absent, bracteoles short, on pedicel well below calyx; calyx with upper 2 lobes often broader and ± connate; petals clawed, standard orbicular and longer than lower petals, keel shorter than wings; stamens free; ovary narrowed at base or stipitate, style filiform, incurved or hooked. Pods ovoid, flattened or turgid; seeds strophiolate.

About 9 species endemic to Australia; 1 species south-eastern Queensland.

1. *Eutaxia microphylla* (R.Br.) J. M. Black

Sclerothamnus microphyllus R.Br.; *Eutaxia empetrifolia* Schlechtendal; *E. leptophylla* Turcz.; *E. diffusa* F. Muell.; *E. microphylla* var. *diffusa* (F. Muell.) Court

Variable shrub, prostrate or erect; stems usually glabrous, sometimes the smaller spinose. Leaves variable; blades usually elliptic to linear, concave, mostly 1–6 mm long, but sometimes longer; usually glabrous, lower surface darker than upper. Flowers yellow with darker markings, usually solitary, *ca* 6 mm long; calyx *ca* 3 mm long, glabrous or with few spreading hairs; ovary usually pubescent, stipitate. Pod turgid, *ca* 4–5 mm long, stipitate. **Fig. 42F.**

Known only from the vicinity of Inglewood in the southern Darling Downs district. Flowers spring.

15. DILLWYNIA Smith

Shrubs. Leaves alternate, usually exstipulate, simple, linear, terete, usually with a groove on upper surface or flat with inrolled margins. Flowers yellow or orange-red, few together in axillary or terminal racemes or corymbs, rarely solitary, bracts small, deciduous, bracteoles small; calyx lobes short or as long as tube, 2 upper ones ± united in a lip; petals clawed, standard broader than long, wings narrow, keel shorter, straight or slightly incurved; stamens free; ovary pubescent, shortly stipitate, style erect, hooked below apex. Pods ovoid or globular, turgid, almost sessile; seeds strophiolate.

About 15 species endemic to Australia; 5 species south-eastern Queensland.

- | | | |
|--|-------------------------|---|
| 1. Calyx obtuse at base | 1. <i>D. juniperina</i> | 2 |
| Calyx tapering at base | | |
| 2. Flowers terminal or in upper axils, in corymbs or racemes or rarely | | |
| solitary | | 3 |
| Flowers axillary, usually in pairs | | 4 |
| 3. Leaves conspicuously spirally twisted | 2. <i>D. retorta</i> | |
| Leaves not spirally twisted or rarely slightly so | 3. <i>D. glaberrima</i> | |
| 4. Branches with silky white hairs; pods 3-4 mm long; plants of the | | |
| southern Darling Downs district | 4. <i>D. sericea</i> | |
| Branches without silky white hairs, glabrous or villous; pods 4-7 mm | | |
| long; plants of coastal areas | 5. <i>D. floribunda</i> | |

1. *Dillwynia juniperina* Lodd.

PRICKLY PARROT PEA

Shrub up to 2 m tall, sometimes taller; stems with short appressed pubescence. Leaf blades rigid, linear, terete, apex acute and pungent-pointed, 0.8-1.5 cm long, grooved above. Flowers in terminal racemes up to ca 2 cm long, often less, or sometimes reduced to a single flower; flowers 6-9 mm long; calyx 3-5 mm long, base obtuse, with short appressed hairs. Pods ca 5-6 mm long. **Fig. 42G.**

Known from Stanthorpe west to Inglewood in the southern Darling Downs district, mostly in open eucalypt forests, also known from the Moggill-Brookfield area of Brisbane, and from near Gympie. Flowers late winter to spring.

2. *Dillwynia retorta* (Wendl.) Druce

Pultenaea retorta Wendl.

Two varieties occur in the region:

- | | |
|--|---|
| 1. Leaves glabrous | (a) <i>D. retorta</i> var. <i>retorta</i> |
| Leaves covered with stiff hairs or at least with a few stiff hairs at apex | (b) <i>D. retorta</i> var. <i>phylicoides</i> |

(a) *Dillwynia retorta* var. *retorta*

Dillwynia ericifolia Smith; *D. ericifolia* var. *normalis* Benth.; *D. ericifolia* var. *parvifolia* (R.Br.) Benth.; *D. ericifolia* var. *peduncularis* (Benth.) Benth.; *D. ericifolia* var. *deflexa* Blakely

Shrub, prostrate or erect, up to ca 2 m tall; stems with very variable hairs. Leaf blades linear, spirally twisted, apex slightly recurved, usually pungent-pointed, up to 1.2 cm long, glabrous, smooth or tuberculate. Flowers 1- many in racemes, terminal or in upper axils, peduncles absent or up to more than 2 cm long; flowers usually 0.4-1.2 cm long; calyx 3-6 mm long, outer surface glabrous or with a few hairs along margin of lobes. Pods 4-7 mm long. **Fig. 42H.**

Common in wallum country along the coast, also known from sandstone areas around Plunkett south of Brisbane, and collected from Gurulmundi in the northern Darling Downs district. Flowers late winter to spring.

(b) *Dillwynia retorta* var. *phylicoides* (Cunn.) Joy Thompson **HAIRY PARROT PEA**

Dillwynia phylicoides Cunn.; *D. ericifolia* Smith var. *phylicoides* (Cunn.) Benth.; *D. phylicoides* var. *leiocalyx* Blakely

Shrub up to ca 1.5 m tall; stems with stiff hairs. Leaf blades linear, spirally twisted, apex slightly recurved, usually pungent-pointed, up to ca 1.5 cm long, but usually less than 1 cm long, covered with stiff hairs or at least with a few stiff hairs at apex. Flowers solitary or few in clusters, terminal or in upper axils, sessile or occasionally pedunculate; flowers ca 0.7-1.2 cm long; calyx 4-6 mm long, usually covered with stiff hairs. Pods 4-7 mm long.

On poor soils of the Moreton district, often on sandstone, also found in the Darling Downs district from around Barakula and around Stanthorpe. Flowers spring-summer with a second flowering in autumn.

3. *Dillwynia glaberrima* Smith

HEATHY PARROT PEA

Dillwynia ericifolia Smith var. *glaberrima* (Smith) Benth.; *D. glaberrima* var. *longipes* Blakely; *D. glaberrima* var. *pubescens* Blakely

Shrub, often semiprostrate, from *ca* 30 cm to more than 1 m tall; stems usually glabrous. Leaf blades linear, apex obtuse and mostly recurved with a small point, 0.5–1.5 cm long or occasionally longer, glabrous or rarely pubescent, smooth. Flowers in short or elongated racemes, rarely reduced to 1 flower, terminal or in upper axils; peduncles from very short up to *ca* 2 cm long; flowers 8–10 mm long; calyx 4–6 mm long, glabrous except for hairs along edges of lobes, occasionally with appressed hairs. Pods 4–6 mm long.

Found in coastal wallum areas. Flowers autumn and spring.

4. *Dillwynia sericea* Cunn.*Dillwynia floribunda* Smith var. *sericea* (Cunn.) Benth.; *D. sericea* var. *glabriflora* Blakely

Shrub up to *ca* 1 m tall; stems with dense, silky hairs at least when young. Leaf blades linear, terete, apex obtuse to acute and sometimes somewhat incurved, usually bearing a short point, 0.5–1 cm long, glabrous or with long hairs, usually covered with minute tubercles. Flowers solitary or in pairs in axils often towards ends of branches, 0.8–1.2 cm long; calyx 4–7 mm long, glabrous or with spreading or appressed hairs. Pods *ca* 3–4 mm long; seeds reticulate.

From granite and sandstone areas in the southern Darling Downs district as far west as Yelarbon. Flowers spring.

This species is difficult to separate from **D. floribunda** and may in fact be only a variant of it.

5. *Dillwynia floribunda* Smith

SHOWY PARROT PEA

Dillwynia floribunda var. *brevifolia* (DC.) Blakely; *D. floribunda* var. *teretifolia* (DC.) Blakely; *D. floribunda* var. *longifolia* Blakely

Shrub up to *ca* 1.5 m tall; stems with long, thin hairs or almost glabrous. Leaf blades linear, terete, sometimes somewhat flattened, often \pm spirally twisted, mostly 0.5–2 cm long, glabrous or with few hairs, smooth or with minute tubercles. Flowers usually in pairs in axils, 0.7–1.2 cm long; calyx 4–7 mm long, glabrous with a few hairs along margins of lobes or with scattered, long, fine hairs. Pods 4–7 mm long; seeds smooth.

Common on coastal sandy areas. Flowers late autumn to spring, mainly in spring.

This is a variable species and several varieties have been recognized (see list of synonyms) but the varieties are indistinct and have not been included in this treatment.

16. PLATYLOBIUM Smith

Shrubs. Leaves opposite; stipules small; blades simple, entire or with pungent angles, reticulate. Flowers yellow, axillary, solitary or few together, bracts scarious, imbricate, bracteoles similar to bracts but longer; 2 upper calyx lobes large, free or united, lower lobes smaller; petals clawed, standard orbicular or reniform, wings oblong-obovate and shorter than standard, keel obovate, \pm as long as wings; stamens connate into sheath, split above, anthers uniform, versatile. Fruits compressed, winged along upper suture, 2-valved, opening elastically, sessile or stipitate; seeds strophiolate.

3 species endemic to Australia: 1 species south-eastern Queensland.

1. *Platylobium formosum* Smith

FLAT PEA

Shrub up to *ca* 1.5 m tall. Leaf blades ovate, apex acute with a small rigid point, base rounded or cordate, margin entire, 2–5 cm \times 1–4 cm. Flowers with hairy pedicels up to *ca* 1 cm long with bracts at base of pedicel; calyx mostly 8–10 mm long, hairy; standard up to *ca* 1.8 cm long; ovary \pm hairy. Pods 2–4 cm long, stipitate. **Fig. 42E.**

Known from the Moreton and Wide Bay districts mainly in sandy or rocky areas. Flowers late winter to spring with a second flowering in autumn.

17. **BOSSIAEA** Vent.

Shrubs, occasionally leafless; branches terete or flattened. Leaves alternate or opposite; stipules present or absent; blades simple, or reduced to scales. Flowers axillary, solitary, bracts imbricate at base of pedicels, bracteoles on pedicel; keels broader than wings, shorter or longer than standard; stamens all connate into a sheath split above, anthers uniform, dorsifixed, versatile. Pods compressed, edges thickened, sessile or stipitate; seeds strophiolate.

35 species endemic to Australia; 11 species south-eastern Queensland.

1. Plants leafless; branches flattened and winged	1. <i>B. ensata</i>	2
Plants with leaves; branches sometimes flattened but not winged		
2. Plants prostrate or decumbent		3
Plants erect		6
3. Ovary glabrous, or margins ciliate		4
Ovary pubescent all over		5
4. Pedicel shorter than calyx; ovary glabrous	2. <i>B. neo-anglica</i>	
Pedicel longer than calyx; ovary glabrous or margins ciliate	3. <i>B. buxifolia</i>	
5. Leaves flat, ovate to elliptic, rounded or cordate at base	4. <i>B. prostrata</i>	
Leaves usually with distinctly recurved margins, narrowing to base, or if flat then obovate with base rounded	5. <i>B. scortechinii</i>	
6. Keel much longer than standard		7
Keel not longer than standard		8
7. Leaves mostly 5-7 times as long as broad, lateral veins not conspicuous	6. <i>B. rupicola</i>	
Leaves mostly 2.5-4 times as long as broad, lateral veins usually conspicuous	7. <i>B. carinalis</i>	
8. Branches much flattened, at least when young; leaves of variable shape on the one plant	8. <i>B. heterophylla</i>	
Branches terete, angular or slightly flattened; leaves all similar on the one plant		9
9. Branches spinescent	9. <i>B. obcordata</i>	
Branches not spinescent		10
10. Branches densely hairy at least when young	10. <i>B. brownii</i>	
Branches glabrous	11. <i>B. rhombifolia</i>	

1. *Bossiaea ensata* Sieber ex DC.

Erect or procumbent shrub up to *ca* 50 cm tall; branches flat and winged, up to *ca* 1 cm wide. Leaves absent. Peduncles up to *ca* 5 mm long; flowers *ca* 6-7 mm long; calyx *ca* 4 mm long, glabrous; keel shorter than standard. Pods *ca* 2.5-3.5 cm long, on stipe *ca* 4 mm long. **Fig. 42D.**

Sandy coastal areas of the Moreton and Wide Bay districts. Flowers late winter to spring and again in autumn.

2. *Bossiaea neo-anglica* F. Muell.

Prostrate or decumbent shrub; branches with sparse spreading hairs at least when young. Leaves alternate; stipules conspicuous, longer than petiole; blades ovate to orbicular, apex obtuse to acute with short recurved point, 3-5 mm × 2-4 mm, sparingly hairy. Peduncles *ca* 2 mm long; flowers *ca* 6 mm long; calyx *ca* 3 mm long, sparsely hairy; keel and wings dark purple; ovary silky-tomentose. Pods *ca* 2 cm long, very shortly stipitate. **Fig. 42B.**

Granite areas in the Darling Downs district. Flowers spring.

3. *Bossiaea buxifolia* Cunn.

Prostrate or decumbent shrub; branches softly pubescent. Leaves alternate; stipules as long as or longer than petioles; blades with apices mostly obtuse with a short often recurved point, mostly 3–6 mm × 2–4 mm, hairy below at least when young. Peduncles 4–8 mm long; flowers *ca* 8 mm long; calyx *ca* 3 mm long, usually with appressed hairs; petals apparently dark purple; ovary glabrous or ciliate along margins. Pods *ca* 2–2.5 cm long. **Fig. 42C.**

Mountains of the Moreton district near the New South Wales border and also from near Crows Nest. Flowers spring.

4. *Bossiaea prostrata* R.Br.

Prostrate shrub; branches ± pubescent when young, becoming less hairy with age. Leaves alternate; stipules conspicuous; petioles 1–2 mm long; blades ovate or elliptic, apex obtuse, often with a small point, base rounded or cordate, 0.6–1.7 cm × 0.3–0.9 cm, sprinkled with hairs. Peduncles up to *ca* 2 cm long; flowers *ca* 8 mm long; calyx *ca* 5 mm long, pubescent. Pods 2–3 cm long.

Known only from a few areas of the eastern part of the region. Flowers late winter to spring.

The Queensland material seen differs from southern material in having the ovary hairy all over and persistent bracteoles about the middle of the peduncle.

5. *Bossiaea scortechinii* F. Muell.

Decumbent shrub; branches appressed-pubescent, at least when young. Leaves alternate; stipules conspicuous; blades ovate to obovate, apex obtuse with a recurved point, base narrowed or, if blade obovate then rounded, margin ± revolute, 2.5–10 mm × 1.5–5 mm, with appressed hairs at least when young. Peduncles 3–4 mm long; flowers *ca* 7 mm long; calyx *ca* 3 mm long, with appressed hairs; ovary pubescent. Pods 1.5–2 cm long.

Stanthorpe-Wallangarra area in the southern Darling Downs district. Flowers spring.

6. *Bossiaea rupicola* Cunn. ex Benth.

Shrub from less than 50 cm up to *ca* 2 m tall; branches pubescent. Leaves with conspicuous stipules; blades narrowly ovate to narrowly elliptic, apex acute, base mostly oblique, 1–2.5 cm × 0.2–0.7 cm, glabrous. Peduncles *ca* 5 mm long; flowers *ca* 2 cm long; calyx *ca* 6 mm long, minutely hairy; keel exceeding other petals by 8–10 mm. Pod *ca* 1.5–2 cm long, on stipe 1–1.2 cm long.

Mountains of the Moreton district near the New South Wales border at altitudes of 600 m or higher, also from Biggenden Bluff in the Wide Bay district at similar altitudes. Flowers winter–spring.

7. *Bossiaea carinalis* Benth.

Shrub up to *ca* 2 m tall; branches softly hairy. Leaves with conspicuous stipules; blades ovate or ovate-elliptic, apex acute, base rounded or ± cordate and usually oblique, 0.5–3 cm × 0.2–1.2 cm, glabrous or hairy, lateral veins usually conspicuous. Peduncles 2–7 mm long; flowers *ca* 2 cm long; calyx 8–10 mm long, glabrous or minutely hairy; keel exceeding other petals by *ca* 8–10 mm. Pods 2.5–3.5 cm × 1–1.3 cm, on stipe 1–1.5 cm long.

Sandstone areas of the northern Burnett district. Flowers late winter to spring.

8. *Bossiaea heterophylla* Vent.

Spreading shrub less than 1 m tall, glabrous and often ± glaucous; branches flattened, at least when young. Leaves alternate; blades very variable, from ovate to almost linear on the one plant, 0.5–2 cm long. Peduncles up to *ca* 5 mm long; flowers *ca* 9–10 mm long; calyx *ca* 5 mm long, glabrous; keel shorter than standard. Pods 2–3 cm long, on stipe *ca* 5 mm long.

Sandy coastal areas of the Moreton and Wide Bay districts. Flowers spring and autumn.

9. *Bossiaea obcordata* (Vent.) Druce

Platylobium obcordatum Vent.; *Platylobium microphyllum* Sims; *Bossiaea microphylla* (Sims) Smith

Rigid shrub mostly less than 1 m tall; branches spinescent, somewhat flattened when young, densely appressed-pubescent when young, becoming less hairy with age. Leaves alternate; blades obovate to broadly obovate, apex often emarginate, usually with a small recurved point, 2-7 mm × 2-6 mm. Peduncles ca 2-3 mm long; flowers ca 8-10 mm long; calyx 4-5 mm long, glabrous. Pods 1-1.5 cm long. **Fig. 42A.**

Known from Ballandean in the southern Darling Downs district. Flowers spring.

10. *Bossiaea brownii* Benth.

Shrub up to ca 2 m tall; branches usually with dense mostly spreading hairs. Leaves alternate; stipules conspicuous; blades ovate to broadly ovate, apex obtuse to acute, base rounded or cordate, mostly 5-10 mm × 3-8 mm, with spreading hairs or glabrous. Peduncles 3-4 mm long; flowers ca 8 mm long; calyx ca 4 mm long; keel almost equal in length to standard; ovary glabrous. Pods 2-3 cm long, on stipe up to ca 8 mm long.

In south-eastern Queensland, from a few widely separated localities in the region, apparently on sandy soils. Flowers mainly autumn and spring but some found all year round.

11. *Bossiaea rhombifolia* Sieber ex DC.

Shrub up to ca 1 m tall; branches somewhat flattened when young, glabrous. Leaves alternate; blades obovate to broadly rhomboid, apex acute or obtuse, 3-10 mm × 2-10 mm, glabrous. Peduncles short; flowers usually 0.7-1.2 cm long; calyx 3-5 mm long, glabrous outside; petals orange-yellow, mostly keel dark purple. Pods 1-1.8 cm long, stipitate.

Two subspecies occur in the region:

- 1. Leaves with acute apex, mostly 8-10 mm × 7-10 mm; flowers orange-yellow with dark purple keel, 0.9-1.2 cm long *B. rhombifolia* subsp. *rhombifolia*
- Leaves with obtuse, truncate or retuse apex, mostly 3-8 mm × 2-6 mm, flowers as above or all orange-yellow, 0.7-0.8 cm long *B. rhombifolia* subsp. *concolor*

B. rhombifolia subsp. **rhombifolia** is known from the Stanthorpe-Wallangarra area in the Darling Downs district. Flowers late winter to spring. **B. rhombifolia** subsp. **concolor** (Maiden & Betche) A. T. Lee (*B. rhombifolia* var. *concolor* Maiden & Betche) is found on sandy soils in the Darling Downs district. Flowers late winter to spring.

18. TEMPLETONIA R.Br.

Glabrous shrubs, occasionally leafless; branches angular or sulcate-striate. Leaves when present alternate; stipules minute or spinescent; blades simple, entire. Flowers red or yellow, axillary, solitary or 2 or 3 together, bracts 2 or 3 at base of peduncles, bracteoles at or above middle of peduncle; 2 upper calyx lobes usually connate, 2 lateral lobes somewhat shorter, lowest lobe the longest; wings usually shorter than standard, keel shorter than or as long as standard; stamens connate into a sheath, split above, anthers alternately long and basifixed and short and versatile. Pods compressed, completely dehiscent; seeds strophiolate.

10 species endemic to Australia; 1 species south-eastern Queensland.

1. *Templetonia stenophylla* (F. Muell.) J. M. Black

Bossiaea stenophylla F. Muell.; *Templetonia muelleri* Benth.

Shrub up to ca 70 cm tall; branches ascending, sulcate-striate. Leaves few; lower blades narrowly oblong, upper blades linear, flat or ± incurved, apex obtuse or with a short point, 1-7 cm long. Peduncles 4-8 mm long, bracteoles 1.5-2 mm long; flowers 8-10 mm long; calyx 4-5 mm long; standard twice as long as calyx. Pods ca 2 cm long, stipitate. **Fig. 43C.**

Known from a few scattered localities in the Darling Downs, Burnett and western Wide Bay districts. Flowers late winter to spring.



Fig. 42

FABACEAE — A-D *Bossiaea* spp. — A *B. obcordata*, part of flowering stem x1; B *B. neo-anglica*, part of fertile stem x1; C *B. buxifolia*, part of fertile stem x1; D₁-D₂, *B. ensata*, D₁ part of flowering stem x1, D₂ fruit x1; E₁-E₄, *Platylobium formosum*, E₁ part of flowering stem x1, E₂ fruit x1, E₃ calyx x3, E₄ stamens and ovary x6; F₁-F₂, *Eutaxia microphylla*, F₁ part of flowering stem x1, F₂ fruit x1½; G-H *Dillwynia* spp. — G₁-G₂, *D. juniperina*, G₁ flowering stem x1, G₂ fruit x6; H₁-H₃, *D. retorta* var. *retorta*, H₁ part of flowering stem x1, H₂ leaf x6, H₃ calyx showing stamens x6.

19. HOVEA R.Br.

Shrubs. Leaves alternate; stipules minute or none; blades simple, usually entire. Flowers blue or purple, rarely white, in axillary clusters or short racemes or solitary; calyx with upper lobes united into a broad lip, 3 lower smaller; petals clawed, standard \pm orbicular, emarginate, wings and keel shorter; stamens united into a sheath split above or rarely below also, anthers alternately long and basifixed and short and versatile. Pods turgid, 2-valved, sessile or stipitate; seeds strophiolate.

12 species endemic to Australia; *ca* 5 species south-eastern Queensland.

A revision of the genus is needed.

- | | | |
|--|-------------------------|---|
| 1. Ovary and pod stipitate; leaves with numerous oblique parallel veins | 1. <i>H. longipes</i> | 2 |
| Ovary and pod sessile; leaves without numerous parallel veins | | |
| 2. Stems decumbent or if erect then plant rarely more than 40 cm tall; lower leaves ovate, upper leaves narrowly ovate to linear | 2. <i>H. linearis</i> | 3 |
| Stems erect, plant more than 40 cm and up to <i>ca</i> 5 m tall | | |
| 3. Leaf blades tapering at both ends, apex acute | 3. <i>H. acutifolia</i> | 4 |
| Leaf blades tapering at apex only, if at all, or sometimes linear, apex obtuse and usually with a small callous point | | |
| 4. Young branches with long, spreading, deep rusty brown hairs; leaves mostly 1 cm or more wide | 4. <i>H. sp. 1.</i> | |
| Young branches with short, close hairs or if long and spreading then grey or dark grey; leaves mostly less than 1 cm wide | 5. <i>H. longifolia</i> | |

1. *Hovea longipes* Benth.

Shrub up to *ca* 3 m tall; branches clothed with short close, greyish or rusty-coloured hairs. Leaf blades coriaceous, ovate-elliptic or obovate, apex obtuse or somewhat emarginate, usually with a minute callous point, margin somewhat recurved, 1.5–5 cm \times 0.7–2 cm, glabrous above, appressed-pubescent below, marked above with numerous, oblique, parallel primary veins. Flowers 2 or 3 together, each on a pedicel longer than calyx; standard twice as long as calyx; ovary glabrous, stipitate. Pod oblique, *ca* 1 cm wide, glabrous, stipitate.

Darling Downs and Burnett districts, widespread but not common. Flowers late winter to spring.

2. *Hovea linearis* R.Br.

COMMON HOVEA

Decumbent shrub, rarely up to 40 cm tall; stems with short, close hairs. Lower leaf blades ovate, upper blades narrowly ovate to linear, apex obtuse or almost acute, margin often recurved, 1–7 cm \times 0.2–0.6 cm, glabrous or slightly hairy beneath, reticulate venation distinct above. Flowers usually in pairs in axils, pedicels very short. Pods oblique, *ca* 1 cm wide, glabrous or shortly hairy.

Mainly from open forests in the Moreton district and also from the Stanthorpe area in the Darling Downs district, possibly also to be found in the Burnett district. Flowers mainly winter–spring with a few flowers throughout the year.

3. *Hovea acutifolia* Cunn. ex G. Don

POINTED-LEAVED HOVEA

Shrub up to *ca* 2 m tall; branches with long, dense, spreading grey or rusty-coloured hairs. Leaf blades elliptic, apex acute, base acute, margin slightly recurved, 2–9 cm \times 0.5–1.8 cm, glabrous above, sparsely to densely hairy below with rusty-coloured hairs, finely reticulate above, reticulation visible below. Flowers in clusters of 1–4 on pedicels 2–3 mm long. Pods *ca* 1.5 cm long, usually sparsely hairy, sessile. **Fig. 43B.**

In a variety of habitats in the eastern half of the Moreton and Wide Bay districts. Flowers spring.

4. *Hovea* sp. 1.*Hovea pannosa* auct. non Cunn. ex Hook

Shrub up to ca 2 m tall; branches with long, dense, spreading rusty-coloured hairs, at least when young, often becoming grey on older stems. Leaf blades elliptic, apex obtuse with a short callous point, base obtuse, 2.5–10 cm × 0.8–2 cm, glabrous above, underside with dense, short, crisped hairs and sparser, long, spreading hairs, venation conspicuous and somewhat raised above, obscurely visible below. Flowers few together on very short pedicels. Pods with dense crisped hairs, sessile.

In open eucalypt forests on stony or sandy soils of the Moreton, Darling Downs and Burnett districts. Flowers late winter to spring with a second flowering in autumn.

RUSTY HOVEA**Fig. 43**

FABACEAE — **A**, **A**, *Goodia lotifolia*, **A**, part of flowering stem x1, **A**, fruit x1, **A**, seed showing strophiole x6; **B**, **B**, *Hovea acutifolia*, **B**, part of flowering stem x1, **B**, fruit x1, **B**, L.S. of fruit showing seed x1; **C**, **C**, *Templetonia stenophylla*, **C**, part of flowering stem x1, **C**, fruit x1; **D**, **D**, *Lotononis bainesii*, **D**, part of flowering stem x1, **D**, anthers of 2 types, versatile (left), basifixed (right).

5. *Hovea longifolia* R.Br. ex Aiton sens. lat.

Shrub up to 5 m tall, but often less; stems with short, crisped, grey or rusty-coloured hairs or with long, spreading, grey or dark grey hairs. Leaf blades variable, ovate to linear, apex usually obtuse but sometimes emarginate, 2–6 cm × 0.3–1 cm, glabrous above or with a few hairs along midrib, crisped spreading hairs below, venation usually conspicuous above and sometimes raised. Flowers solitary or few together on pedicles of varying lengths, or sometimes in short racemes. Pods *ca* 1–1.5 cm long, sparsely to densely hairy, sessile.

Widespread in a variety of habitats. Flowers mainly spring but some found throughout the year.

The species as described above is a complex of more than one taxon. Over 20 specific, varietal and subvarietal names have been applied to different specimens from this complex. It is beyond the scope of this work to sort out the nomenclature and taxonomy of this complex.

20. GOODIA Salisb.

Shrubs. Stipules very deciduous; leaf blades pinnately 3-foliolate, leaflets entire. Flowers yellow with purple markings in terminal or leaf-opposed racemes, bracts and bracteoles membranous, deciduous; 2 upper calyx lobes united into a 2-toothed lip, 3 lower lobes narrow ± equal; petals clawed, standard orbicular, wings narrow, keel incurved, obtuse; stamens all united into a sheath split above, anthers all versatile; ovary stipitate, style incurved. Pods flat, valves thin with nerve-like edges, stipitate; seeds strophiolate.

2 species endemic to Australia; 1 species south-eastern Queensland.

1. *Goodia lotifolia* Salisb.

GOLDEN TIP; CLOVER-LEAVED POISON;
CLOVER TREE

Spreading shrub up to *ca* 3 m tall, glabrous or young shoots pubescent or glaucous. Leaflet blades ovate or obovate, 1–2.5 cm × 0.6–1.5 cm. Flowers 1–1.5 cm long; calyx 5–6 mm long. Pods 2–3 cm × *ca* 1 cm. **Fig. 43A.**

Mainly from the Moreton district. Flowers winter–spring. The plant has been suspected of poisoning travelling stock, but is not normally eaten by animals.

21. LOTONONIS Ecklon & Zeyher

Herbs or shrubs. Leaves stipulate; blades exstipellate, usually digitately 3-foliolate. Flowers solitary or racemose or umbellate, terminal or leaf-opposed; 4 upper calyx lobes connate in pairs, rarely free; keel incurved, mostly obtuse; stamens all connate into a sheath split above, anthers alternately short and versatile and long and basifixed; style glabrous. Fruits dehiscent, compressed or turgid, not septate; seeds estrophiolate.

About 100 species mainly from southern Africa with a few from northern Africa to eastern India; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Lotononis bainesii* Baker

LOTONONIS

Creeping, stems with a few fine hairs. Leaflets 3, blades ovate or elliptic or narrowly ovate or narrowly elliptic, apex obtuse to acute, usually mucronate, 0.7–4 cm × 0.2–1 cm, glabrous or with a few fine hairs below or on margins. Flowers in dense leaf-opposed umbellate or somewhat racemose heads, peduncles up to *ca* 15 cm long; flowers yellow, *ca* 10 mm long; calyx *ca* 3 mm long, upper lobes only slightly connate in pairs, ± woolly hairy; ovary hairy. Pods turgid, somewhat falcate, 8–10 mm long, ± woolly hairy. **Fig. 43D.**

Native of southern Africa; introduced as a pasture plant, naturalized in the eastern part of the region. Flowers spring to autumn.

22. CROTALARIA L.

Herbs or shrubs. Stipules free from the petiole or absent; leaf blades exstipellate, simple or 1-foliolate or digitately 3-7-foliolate. Flowers mostly in terminal or leaf-opposed racemes, rarely solitary, bracts and bracteoles usually small, sometimes absent; calyx lobes free or rarely upper two forming a lip; wings usually shorter than standard, keel incurved, beaked; stamens all connate into a sheath split above, anthers alternately short and versatile and long and basifixed; style incurved, usually bearded above or near stigma. Fruits inflated, 2-valved; seeds estrophiolate.

About 500-600 species from tropical and subtropical areas; *ca* 30 species Australia, *ca* 13 naturalized; 19 species south-eastern Queensland.

The genus in Australia is in need of a critical review.

1. Leaves simple or 1-foliolate	2
Leaves digitate	9
2. Ovary and pod hairy, at least in part	3
Ovary and pod glabrous	4
3. Calyx 0.5-0.7 cm long; petiole 0.5-2 cm long, articulate above middle	1. <i>C. novae-hollandiae</i>
Calyx 1.2-2 cm long; petiole 0.2-0.3 cm long, not articulate	2. <i>C. juncea</i>
4. Stipules large and foliaceous; flowers more than 1.5 cm long	5
Stipules not foliaceous or absent; flowers less than 1.5 cm long	6
5. Calyx 1-1.4 cm long, glabrous	3. <i>C. spectabilis</i>
Calyx 1.5-2 cm long, with long woolly or spreading hairs	4. <i>C. lanata</i>
6. Pods less than 1.5 cm long	7
Pods 1.5 cm long or longer	8
7. Stems creeping or decumbent; petals exceeding calyx	5. <i>C. acicularis</i>
Stems erect; petals not or scarcely exceeding calyx	6. <i>C. linifolia</i>
8. Petioles 0.5-2 cm long, articulate above middle	1. <i>C. novae-hollandiae</i>
Petioles 0.3-0.5 cm long, not articulate	7. <i>C. mitchellii</i>
9. Leaflets 5-7	8. <i>C. grahamiana</i>
Leaflets 3	10
10. Flowers yellow without any other colours or markings	9. <i>C. dissitiflora</i>
Flowers yellow with red, brown or purplish markings	11
11. Pods up to <i>ca</i> 0.5 cm long	10. <i>C. medicaginea</i>
Pods more than 1 cm long	12
12. Pods 2 cm or less long	13
Pods more than 2 cm long	14
13. Stipules large and foliaceous	11. <i>C. goreensis</i>
Stipules not foliaceous, narrow	12. <i>C. senegalensis</i>
14. Stipules 2 mm long or longer; wings almost as long as keel	13. <i>C. incana</i>
Stipules absent, or if present then wings much shorter than keel	15
15. Ovary and pod glabrous; pods on stipes more than 1 cm long	14. <i>C. agatiflora</i>
Ovary and pod usually hairy; pods not, or shortly stipitate	16
16. Calyx lobes more than 5 mm long; keel with long hairs on upper edges	15. <i>C. anagyroides</i>
Calyx lobes less than 5 mm long; keel without hairs	17
17. Calyx tube hairy	18
Calyx tube glabrous	19

- | | |
|---|---------------------------|
| 18. Keel beak less than 7 mm long | 16. <i>C. lanceolata</i> |
| Keel beak more than 7 mm long | 17. <i>C. pallida</i> |
| 19. Pod 3-4 cm × 0.8-1 cm; wing with large purple spot at base | 18. <i>C. zanzibarica</i> |
| Pod ca 5 cm × ca 1.5 cm; wing without a large purple spot at base | 19. <i>C. ochroleuca</i> |

1. *Crotalaria novae-hollandiae* DC.

NEW HOLLAND RATTLEPOD

Erect shrub up to ca 1 m tall; stems with dense silky hairs, or sometimes ± glabrous. Leaves 1-foliolate; stipules narrow; petioles 0.5-2 cm long, articulate above middle; blades ovate-elliptic to oblong, apex obtuse, 2-12 cm × 0.5-4.5 cm, glabrous or silky pubescent above with sparse to dense, silky hairs below. Racemes variable in size, mostly ca 10 cm long, sometimes upper flowers open before lower flowers, pedicels ca 0.3-0.5 cm long; flowers yellow with darker streaks, ca 1 cm long; calyx 5-7 mm long; ovary hairy or glabrous. Pods 2-3.5 cm long, hairy or glabrous.

Recorded once from near Helidon in the western Moreton district. Flowers most of the year. Feeding tests have shown this species to be poisonous to horses.

2. **Crotalaria juncea* L.

SUNN HEMP

Sparsely branched annual up to ca 1 m tall; stem ribbed, appressed pubescent. Leaves simple, stipules filiform; petioles 2-3 mm long; blades narrowly elliptic or narrowly ovate, apex rounded, 4-10 cm × 0.5-1.2 cm, sparsely appressed hairy above, more densely so below. Racemes lax, up to ca 20 cm long but mostly about 10 cm long, pedicels ca 5 mm long; flowers bright yellow with faint reddish marks, ca 2 cm long; calyx 1.2-2 cm long, brownish-tomentose; standard with scattered hairs outside, wings slightly shorter than keel, keel beak about as long as calyx. Pods 2.5-4 cm × 1-1.2 cm, covered with mostly short spreading hairs. Fig. 44C.

Native of India; known from the western half of the region, usually as a weed of cultivation. Flowers most of the year, main flush summer-autumn. The species has been suspected of poisoning stock.

3. **Crotalaria spectabilis* Roth

SHOWY RATTLEPOD

Crotalaria sericea Retz.

Erect annual up to ca 2 m tall; branches angled, ± glabrous, glaucous. Leaves simple; stipules conspicuous, foliaceous, up to 7 mm × 4 mm; petioles 2-8 mm long; blades narrowly obovate to obovate, 3-14 cm × 0.5-6 cm, glabrous above with appressed hairs below. Racemes 10-40 cm long, pedicels ca 1-1.2 cm long; flowers yellow, ca 2 cm long; calyx 1-1.4 cm long, glabrous; wings longer than keel. Pods 4-5 cm × 1.8-2 cm, glabrous, shortly stipitate.

Apparently native to India but now pantropical; widespread in region, often along roadsides, fairly common in the Moreton district. Flowers mostly summer-autumn but a few found all year.

4. **Crotalaria lanata* Bedd.

Previously misidentified as *Crotalaria semperflorens* Vent.

Woody shrub up to ca 3 m tall; stems with sparse to dense woolly hairs. Leaves simple; stipules foliaceous, falcate, 8-10 mm long; petioles 0.8-1.5 cm long, woolly hairy; blades broadly ovate-elliptic, apex acute to obtuse, 6-14 cm × 3-7 cm, ± glabrous above, with dense woolly hairs below. Racemes 15-30 cm long, rachis with spreading or woolly hairs, pedicels 1-2 cm long; flowers yellow with greenish or brown colourations, ca 3 cm long; calyx 1.5-2 cm long, with long woolly or spreading hairs; wings about equal to keel; ovary glabrous. Pods 3-5 cm × 2-2.5 cm, glabrous, stipitate.

Native of India; cultivated as an ornamental, apparently naturalized in the southern Moreton district. Flowers found most of the year.

5. *Crotalaria acicularis* Buch.-Ham. ex Benth.

Included under *Crotalaria humifusa* Graham in "Qd Flora".

Annual; stems decumbent or creeping, up to 30 cm long, plant with long, dense, brown silky hairs. Leaves simple; stipules of each pair usually unequal; petioles 1-2 mm long; blades ovate or elliptic, apex obtuse, 0.5-2.5 cm × 0.2-1.6 cm, hairy on both surfaces. Racemes 2-8 cm long, usually few-flowered, 6-8 mm long, pedicels 3-4 mm long; calyx ca 4-5 mm long; ovary glabrous. Pods up to ca 1 cm long, glabrous.

Before World War II the species was found in the Moreton district but the Queensland Herbarium has no collections since that time. Flowers spring to autumn.

6. *Crotalaria linifolia* L.f.

Perennial with a thick rhizome or sometimes an annual, very variable, usually silky-pubescent but sometimes hairs spreading or woolly, 10–40 cm tall. Leaves simple; stipules absent or very inconspicuous; petioles *ca* 1–1.5 mm long; blades from obovate and obtuse to narrowly-obovate or linear and obtuse to acute, often variable on the one plant, 1–10 cm \times 0.2–1 cm, appressed pubescent above and below or sparsely hairy above. Racemes lax, up to *ca* 15 cm long, pedicels 3–5 mm long; flowers yellow with darker markings, up to *ca* 8 mm long; calyx *ca* 8 mm long; petals not or scarcely exceeding calyx. Pods *ca* 1 cm long, glabrous. **Fig. 44A.**

A common plant, found in a variety of habitats. Flowers mostly summer–autumn but some found all year round. The plant has been suspected of poisoning horses.

7. *Crotalaria mitchellii* Benth.**YELLOW RATTLEPOD**

Perennial with thick rootstock, from *ca* 15–100 cm tall. Leaves simple; stipules narrow; petioles 3–5 mm long; blades ovate to elliptic to obovate, 2.5–10.5 cm \times 1–5 cm. Racemes up to *ca* 20 cm long but mostly *ca* 10 cm long, pedicels *ca* 1–4 mm long; flowers yellow with darker streaks, *ca* 1 cm long; calyx 2–5 mm long with sparse \pm appressed hairs; ovary glabrous. Pods 1.5–3 cm \times 0.6–1 cm, glabrous.

Two subspecies occur in the region:

- | | |
|--|---|
| 1. Stems pubescent, rarely glabrescent; leaves 2–5 cm broad, apex acute or acuminate, pubescent below | <i>C. mitchellii</i> subsp. <i>mitchellii</i> |
| Stems glabrous or hoary, rarely short-pubescent; leaves 1–1.5 cm broad, apex \pm retuse or obtuse, glabrous or hoary below | <i>C. mitchellii</i> subsp. <i>laevis</i> |

C. mitchellii subsp. *mitchellii* is widespread in the region, often on sandy and other light-textured soils and often behind beaches. *C. mitchellii* subsp. *laevis* A. Lee is also widespread in the region on sandy, granitic and occasionally basaltic soils, not known from the sea-coast. Both subspecies flower most of the year. The species has been suspected of poisoning stock but feeding tests have proved negative.

8. **Crotalaria grahamiana* Wight & Arn.

Shrub up to *ca* 3 m tall; branches silky-pubescent. Stipules linear, often reflexed, 5–10 mm long; petioles up to *ca* 12 cm long; blades digitately 5–7-foliolate; leaflet blades obovate, apex rounded, base tapered, 3–10 cm \times 1–3.5 cm, glabrous above, silky-pubescent below. Racemes up to *ca* 15 cm long, usually many-flowered, pedicels up to *ca* 1 cm long; flowers with dark streaks, *ca* 1.5 cm long; calyx *ca* 1 cm long, glabrous or with few hairs; wings longer than keel. Pods 3.5–5 cm long, glabrous, stipitate. **Fig. 44B.**

Native of India; naturalized around Brisbane and nearby coastal areas. Flowers mainly autumn to early winter.

9. *Crotalaria dissitiflora* Benth.**GREY RATTLEPOD**

Soft-wooded perennial, usually less than 30 cm tall; stems several from base, densely silvery-pubescent when young, becoming sparse and brownish with age. Stipules linear, usually 1–3 mm long; petioles up to *ca* 2.5 cm long; blades digitately 3-foliolate; leaflet blades elliptic to ovate or obovate, 0.7–4 cm \times 0.4–1.8 cm, variously pubescent, upper or both surfaces minutely dotted. Inflorescences terminal racemes of 10–20 flowers; flowers yellow without other colours or markings, 0.8–1.1(–1.4) cm long; standard glabrous, wings \pm as long as keel. Pods 1.3–2.5 cm \times 0.4–0.8 cm, pubescent, stipitate.

Recorded from the western Darling Downs district, on heavy soils. Flowers found most of the year.

10. *Crotalaria medicaginea* Lam.**TREFOIL RATTLEPOD**

Included under *C. trifoliatrum* Willd. in “Qd Flora”.

Variable perennial, growing from stout rootstock or in some forms apparently annual; branches erect or decumbent with variable hairs. Stipules narrow, inconspicuous; petioles 0.5–1.5 cm long; blades 3-foliolate; leaflet blades obovate to oblong, apex usually somewhat retuse, 0.5–3 cm \times 0.2–1.5 cm, glabrous above with sparse to moderately dense

hairs below. Racemes 2–10 cm long; flowers usually less than 1 cm long; calyx *ca* 1.5–4 mm long, hairy; keel beak 3.5–5.5 mm long; ovary pubescent. Pods less than 5 mm × 5 mm, pubescent to ± glabrous.

Widespread in the region. Flowers most of the year. It has been suspected of poisoning stock but feeding tests have proved inconclusive.

An extremely variable species previously confused with *C. trifoliatrum* Willd, a species with larger flowers that does not occur in Australia.

11. **Crotalaria goreensis* Guillemin & Perrottet

GAMBIA PEA

Erect annual or short-lived perennial up to *ca* 1 m tall; stems ribbed, pubescent, hairs ± appressed. Stipules foliaceous, acuminate, very oblique, 0.9–2.5 cm × 0.3–0.7 cm; petioles up to *ca* 8 cm long; blades 3-foliolate; leaflet blades variable, narrowly obovate to obovate to elliptic, apex obtuse, 1.5–8.5 cm × 0.5–2.5 cm, glabrous or sparsely appressed hairy above, thinly appressed hairy below. Racemes up to *ca* 25 cm long, many-flowered, pedicels *ca* 3 mm long; flowers yellow with orange, brown or purple streaks, *ca* 1 cm long; calyx 4–5 mm long, ± appressed-pubescent; wings slightly shorter than keel. Pods *ca* 1.5 cm long, thinly pubescent.

Native of tropical Africa; introduced in 1931 as a green manure crop and now widely naturalized; found in the Moreton and Wide Bay districts, often as a weed of roadsides. Flowers most of the year.

12. **Crotalaria senegalensis* (Pers.) DC.

Crotalaria uncinella Lam. var. *senegalensis* Pers.; *C. maxillaris* Klotzsch.

Erect annual or short-lived perennial, 0.3–1 m tall; branches with short appressed hairs. Stipules narrow; petioles 1–4 cm long; blades 3-foliolate; leaflet blades from narrowly obovate to narrowly elliptic to elliptic, 1–5 cm × 0.6–1.4 cm, central leaflet often longer than laterals, glabrous above, with sparse appressed hairs below. Racemes 10–30 cm long, pedicels 6–8 mm long; flowers yellow with brownish colourations, *ca* 1.2 cm long; calyx 4 mm long, with appressed hairs; standard with sparse appressed hairs outside, wings ± as long as keel. Pods 1.2–2 cm × 0.7–0.8 cm, shortly pubescent.

Native of Africa; naturalized in the Moreton district, occasionally met with, mainly as a weed of roadsides or cultivation. Flowers most of the year, but mostly summer–autumn.

13. **Crotalaria incana* L.

WOOLLY RATTLEPOD

Erect, often bushy annual or short-lived perennial, up to *ca* 1 m tall; branches hairy. Stipules filiform; petioles mostly 1.5–5 cm long; blades 3-foliolate; leaflet blades elliptic-obovate to obovate or suborbicular, mostly 1–4 cm × 0.5–3 cm. Racemes up to *ca* 12 cm long, pedicels *ca* 2 mm long; flowers yellow with reddish-brown streaks, *ca* 8 mm long; wings almost as long as keel. Pods 3–4 cm long, with spreading hairs.

Two subspecies occur in the region:

1. Hairs on stem ± curved ascending; leaflets glabrous except for a few hairs on midrib beneath and on margin; stipules 0.2–0.4 cm long; calyx lobes 5–6 mm long, ± glabrous

C. incana subsp. *incana*

- Hairs on stem long, spreading; leaflets ± appressed pubescent below; stipules 0.4–1.5 cm long; calyx lobes 6–9 mm long, spreading hairy

C. incana subsp. *purpurascens*

C. incana subsp. *incana* is a native of tropical America, naturalized throughout the region, often as a weed of cultivation or along roadsides. *C. incana* subsp. *purpurascens* (Lam.) Milne-Redh. (*C. purpurascens* Lam.) is probably native of Africa, less common than subsp. *incana* but found in similar situations. Both flower mostly summer–autumn.

14. **Crotalaria agatiflora* Schweinf.

Shrub up to *ca* 3 m tall, usually much-branched, glabrous or young shoots hairy. Stipules deciduous; petioles 4–12 cm long; blades 3-foliolate; leaflet blades ovate-elliptic, apex rounded, 2–5 cm × 1–4 cm. Racemes up to *ca* 40 cm long, many-flowered, pedicels *ca* 1 cm long; flowers yellow-green, up to *ca* 6 cm long; calyx 2–3 cm long; keel beak up to *ca* 4 cm long. Pods 7–10 cm long, long stipitate. **Fig. 44E.**

Native of Africa; sometimes grown as an ornamental, naturalized in a few places in the Moreton district. Flowers found most of the year.

15. *Crotalaria anagyroides Kunth

Shrub up to *ca* 3 m tall; stems appressed-pubescent. Stipules often deciduous; petioles 2.5–10 cm long; blades 3-foliolate; leaflet blades ovate-elliptic, apex obtuse to acute, 2–10 cm × 0.8–4 cm, ± glabrous above, appressed-pubescent beneath. Racemes 10–50 cm long, many-flowered, pedicels 5–10 mm long; flowers yellow with brownish streaks, 1.5–2 cm long; calyx 8–10 mm long, appressed-pubescent; wings longer than keel, keel with hairs along upper edges. Pods 3–4.5 cm long, appressed-pubescent, shortly stipitate.

Native of South America; apparently naturalized in a few places in the Moreton and Wide Bay districts. Flowers most of the year.

16. *Crotalaria lanceolata E. Meyer

Erect sparsely branched annual, up to *ca* 1.2 m tall; stems ribbed with short appressed, rarely spreading hairs. Stipules absent; petioles 1–4 cm long; blades 3-foliolate; leaflet blades mostly linear to narrowly ovate but lower ones sometimes elliptic, apex obtuse to acute, 2–10 cm × 0.3–1.5 cm, ± glabrous above, with sparse appressed hairs below. Racemes mostly 8–15 cm long, sometimes longer, many-flowered, pedicels 3–6 mm long; flowers yellow, veined reddish-purple, *ca* 8 mm long; calyx 2–3.5 mm long, with sparse appressed hairs; wings usually longer than the keel, keel beak 5–6 mm long. Pods 2–3.5 cm × 0.4–0.6 cm, appressed hairy.

Native of Africa; naturalized in the Moreton and Wide Bay districts, often as a weed along roadsides or in cultivation. Flowers most of the year but mainly summer–autumn.

17. *Crotalaria pallida Aiton

STREAKED RATTLEPOD

Crotalaria striata DC.: *C. mucronata* Desvaux

Erect annual or short-lived perennial, up to *ca* 2 m tall; stems with short appressed hairs. Stipules deciduous; petioles mostly 3–5 cm long; blades 3-foliolate; leaflet blades elliptic to obovate, apex acute, rounded or somewhat retuse, mostly 1.5–8 cm × 0.6–3 cm, glabrous above, with sparse appressed hairs below. Racemes 10–30 cm long; flowers *ca* 1.2 cm long; calyx *ca* 6 mm long, appressed hairy; standard yellow, veined reddish-brown, wings much shorter than keel, keel yellowish-green, usually conspicuously veined purple or brown, beak *ca* 1 cm long. Pods 3–4.5 cm long, with sparse appressed hairs or almost glabrous. **Fig. 44D.**

Native of Africa, common in the Moreton and Wide Bay districts, often as a weed along roadsides and other disturbed situations. Flowers late spring to autumn with a few flowers to be found at other times.

18. *Crotalaria zanzibarica Benth.

Erect annual or short-lived perennial, up to 3 m tall, usually less than 2 m in south-eastern Queensland; stem ribbed, appressed hairy. Stipules absent; petioles 2.5–5.5 cm long; blades 3-foliolate; leaflet blades narrowly ovate to oblong-elliptic, 2.5–10 cm × 1–2.5 cm, glabrous above, with sparse appressed hairs below. Racemes up to *ca* 40 cm long, pedicels 5–7 mm long; flowers *ca* 1.2 cm long; calyx 4–6 mm long, glabrous or rarely with few appressed hairs; standard yellow, veined reddish-purple, wings ± equal to keel, with a purplish spot at base, keel beak 0.9–1.2 cm long. Pods 3–4 cm × 0.8–1 cm, with sparse appressed hairs. **Fig. 44F.**

Native of tropical Africa; naturalized in a few places in the Moreton and Wide Bay districts, not often seen. Flowers mostly summer–autumn.

19. *Crotalaria ochroleuca G. Don

Erect annual or short-lived perennial, up to *ca* 1 m tall; stems ribbed, usually appressed-pubescent, sometimes sparsely so. Stipules absent; petioles 2–4 cm long; blades 3-foliolate; leaflet blades linear to narrowly ovate, often leaflets of upper leaves longer and narrower, 2–10 cm × 0.4–1 cm, glabrous above with sparse appressed hairs below. Racemes 10–50 cm long; flowers cream or pale yellow with reddish markings, *ca* 1.5 cm long; calyx *ca* 4–6 mm long, glabrous; wings usually shorter than keel, keel beak *ca* 1–1.5 cm long. Pods *ca* 5 cm × 1.5 cm, with sparse appressed hairs.

Native of tropical Africa; naturalized in a few places in the Moreton district. Flowers mainly autumn.



Fig. 44

FABACEAE — A-F *Crotalaria* spp. — A *C. linifolia*, part of fertile stem $\times 1$; B₁-B₂ *C. grahamiana*, B₁ leaf $\times \frac{1}{2}$, B₂ flower $\times 1$; C₁-C₂ *C. juncea*, C₁ part of stem with inflorescence $\times 1$, C₂ fruit $\times 1$; D₁-D₃ *C. pallida*, D₁ leaf $\times \frac{1}{2}$, D₂ inflorescence $\times \frac{1}{2}$, D₃ part of fruiting inflorescence $\times \frac{1}{2}$; E *C. agatiflora*, flower $\times \frac{1}{2}$; F₁-F₃ *C. zanzibarica*, F₁ leaf $\times \frac{1}{2}$, F₂ inflorescence $\times \frac{1}{2}$, F₃ flower $\times 1$.

C. calycina, a native species with long rusty hairs on the calyx was collected once in the early part of this century from Mt. Perry in the Burnett district. As it has not been reported since that time it has not been included here. Two African species **C. virgulata** and **C. grantiana** have each been found once only in the Moreton district, probably as strays from cultivation trials, but apparently have not persisted and are not included.

23. ULEX L.

Shrubs, branches sharply spiny. Leaves reduced to spines or scales; stipules absent. Flowers yellow, solitary or in short racemes, bracts small, bracteoles small or absent, calyx membranous, coloured, upper segment 2-toothed, lower segment 3-toothed; petals clawed, subequal; filaments connate into a closed tube, anthers alternately short and versatile and long and basifixed; ovary sessile, style glabrous. Fruits 2-valved pods, compressed or turgid; seeds strophiolate.

About 20 species from Western Europe and Northern Africa; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Ulex europaeus* L.

GORSE; FURZE

Rigid, erect or ascending shrub, 0.6–2 m tall; branches ribbed, ending in spines. Leaves reduced to narrow, rigid spines 0.8–2.5 cm long. Calyx yellowish, 1–1.5 cm long, hairy; corolla 1.5–2 cm long. Pods turgid, 1–2 cm long, with long, dense, spreading hairs.

Native of Europe; occasionally met with in the Moreton and Darling Downs districts. Flowers spring–summer.

24. CHAMAECYTISUS Link

Shrubs. Leaves exstipulate, petiolate, blades exstipellate, 3-foliolate. Flowers in leafy racemes or umbels; calyx tubular, with a prominent upper and lower lip, upper lip with 2 short teeth, lower lip with 3 indistinct teeth; standard larger than wings and keel; filaments united. Fruits pods, flattened; seeds several, strophiolate.

About 20 species from the Atlantic Islands, Europe and the Mediterranean region; 1 species cultivated in gardens and naturalized Australia; occurring in south-eastern Queensland.

1. **Chamaecytisus proliferus* (L.f.) Link

TREE LUCERNE; TAGASASTE

Cytisus proliferus L.f.

Shrub up to ca 4 m tall, with long, drooping, grey-pubescent branches. Petioles 5–10 mm long; leaflet blades ovate-elliptic, apex acute with a short mucro, 1–2.5 cm × 0.3–1 cm, glabrous above, silky-pubescent below. Flowers in umbels at ends of short, usually leafy branches; calyx 1–1.2 cm long, silky-pubescent; corolla white, standard 1.5–2 cm long. Pods 4–5 cm × ca 1 cm, silky-pubescent.

A showy shrub, native of the Canary Is, occasionally cultivated as a fodder plant in some parts of Australia, grown as a garden plant in the Darling Downs and Burnett districts, and occasionally naturalized. Flowers late winter–spring.

25. MEDICAGO L.

Annual or perennial herbs. Stipules shortly adnate to petioles; blades pinnately 3-foliolate; leaflet blades usually toothed. Flowers few to many in axillary, pedunculate racemes, small, pedicellate, bracteate; calyx short, 5-toothed; corolla yellow (except **M. sativa** which is mauve); upper stamen free, remainder connate, anthers uniform; style glabrous. Fruits scarcely dehiscent, mostly spirally coiled, with or without spines; seeds estrophiolate.

About 100 species from Europe, Africa and Western Asia; ca 12 species naturalized Australia; 8 species south-eastern Queensland.

Most, if not all of the species naturalized in Australia were probably introduced as pasture plants, a use to which they are still put.

1. Fruits without spines or tubercles	2
Fruits with spines or tubercles	5
2. Fruits not spirally coiled, <i>ca</i> 2 mm long; flowers yellow, many in ovoid heads	1. <i>M. lupulina</i>
Fruits spirally coiled	3
3. Flowers mauve, numerous in long racemes; perennial	2. <i>M. sativa</i>
Flowers yellow, few in short racemes; annual	4
4. Stems ± glabrous; fruits discoid, the coils not overlapping	3. <i>M. orbicularis</i>
Stems densely hairy; fruit cup-shaped, each coil overlapping the next	4. <i>M. scutellata</i>
5. Fruits discoid to cylindrical, flat at ends, the ends without spines or tubercles	5. <i>M. polymorpha</i>
Fruits ovoid or globular, spines all round	6
6. Stipules entire or minutely toothed	6. <i>M. minima</i>
Stipules with long teeth	7
7. Young branches with scattered multicelled hairs, becoming glabrous with age; leaflets usually with dark spot in centre	7. <i>M. arabica</i>
Branches ± glabrous; leaflets without dark spot in centre	8. <i>M. laciniata</i>

1. **Medicago lupulina* L.

BLACK MEDIC

Annual or biennial; stems prostrate or ascending with sparse to dense, simple or glandular hairs. Stipules broad, tapering, toothed or entire; leaflet blades obovate-cuneate, margin toothed on upper part, 0.3–1.4 cm × 0.25–1 cm, sparsely to densely hairy on both surfaces. Flowers many, in short dense racemes, each flower 2–4 mm long. Fruits 1-seeded pods, often black when ripe, *ca* 2 mm long, spineless, sparsely hairy. **Fig. 45A.**

Native of Europe and temperate Asia; naturalized weed of cultivation, lawns, etc. Flowers late winter to early summer.

2. **Medicago sativa* L.

LUCERNE

Perennial; stems ascending or erect, up to *ca* 60 cm tall, usually angular, appressed hairy or almost glabrous. Stipules usually coarsely toothed; leaflet blades obovate or cuneate-obovate, upper margin toothed, 0.4–1.8 cm × 0.2–1 cm, or even larger in cultivated plants, with fine hairs above and below, usually more dense below. Flowers mauve, many in dense racemes up to *ca* 8 cm long (including peduncle), each flower 0.6–1.2 cm long. Fruits discoid, *ca* 5–9 mm diameter, of 2–4 loose coils, usually appressed hairy, spineless. **Fig. 45B.**

Native of Mediterranean region and western Asia; widely cultivated throughout the region and a weed along roadsides and other disturbed situations. Flowers mainly late winter to early summer, but occasional flowers all year round.

3. **Medicago orbicularis* (L.) Bartal.

BUTTON MEDIC

Medicago polymorpha L. var. *orbicularis* L.

Annual; stems prostrate, glabrous, very rarely with few glandular hairs. Stipules fringed; leaflet blades obovate to cuneate, apex mostly notched, with a small mucro, upper margin toothed, 0.5–1.2 cm × 0.25–1 cm, hairs few, mainly below. Flowers 1–3 in a raceme, each flower 3–4 mm long. Fruits discoid, *ca* 1–2 cm diameter, of 3–7 thin coils, glabrous or with few sometimes glandular hairs, spineless. **Fig. 45C.**

Native of the Mediterranean region; naturalized in the Darling Downs district, often as a weed of cultivation and on footpaths in towns. Flowers spring.

4. **Medicago scutellata* (L.) Miller

SNAIL MEDIC

Medicago polymorpha L. var. *scutellata* L.

Annual; stems prostrate or ascending, up to *ca* 30 cm tall, densely covered with simple and glandular hairs. Stipules tapering, toothed; leaflet blades ovate to obovate, upper margins toothed, 0.5–2.5 cm × 0.3–1.2 cm, glabrous above, with simple and glandular hairs below. Flowers 1–3 in a raceme, each flower 6–9 mm long. Fruits discoid, *ca* 0.7–1.5 cm diameter, of 5–7 coils, each coil enclosing the next, glandular hairy, spineless. **Fig. 45D.**

Native of the Mediterranean region; known from the Moreton and Darling Downs districts. Flowers late winter to spring.

5. **Medicago polymorpha* L.

Medicago lappacea Desr.; *M. hispida* Gaertn. var. *lappacea* (Desr.) Urban
Annual, almost glabrous; stems prostrate. Stipules finely toothed; leaflet blades obovate-cuneate, apex notched often with a short mucro, upper margin toothed, 0.5–2 cm × 0.3–1.5 cm. Flowers 2–6 (–10) in a raceme, each flower 3–6 mm long.

Two varieties occur in the region:

- | | |
|---------------------------------|---|
| 1. Fruit with spines | (a) <i>M. polymorpha</i> var. <i>vulgaris</i> |
| Fruit with tubercules | (b) <i>M. polymorpha</i> var. <i>brevispina</i> |

(a) *Medicago polymorpha* var. *vulgaris* (Benth.) Shinnery

BURR MEDIC

Medicago denticulata Willd. var. *vulgaris* Benth.; *M. denticulata* Willd.; *M. hispida* Gaertn.; *M. hispida* forma *denticulata* (Willd.) Urban

Fruits discoid or somewhat cylindrical, 4–6 mm diameter, of 1½–3½ coils, with slender divergent spines ca 2.5 mm long. **Fig. 45E.**

Native of Europe and the Mediterranean region; naturalized weed of disturbed situations. Flowers late winter to early summer.

(b) *Medicago polymorpha* var. *brevispina* (Benth.) Heyn

Medicago denticulata Willd. var. *brevispina* Benth.; *M. apiculata* Willd.; *M. reticulata* Benth.; *M. hispida* Gaertn. forma *apiculata* (Willd.) Urban; *M. hispida* var. *polygra* Urban; *M. hispida* forma *inermis* Urban; *M. hispida* var. *apiculata* (Willd.) Burnat; *M.*

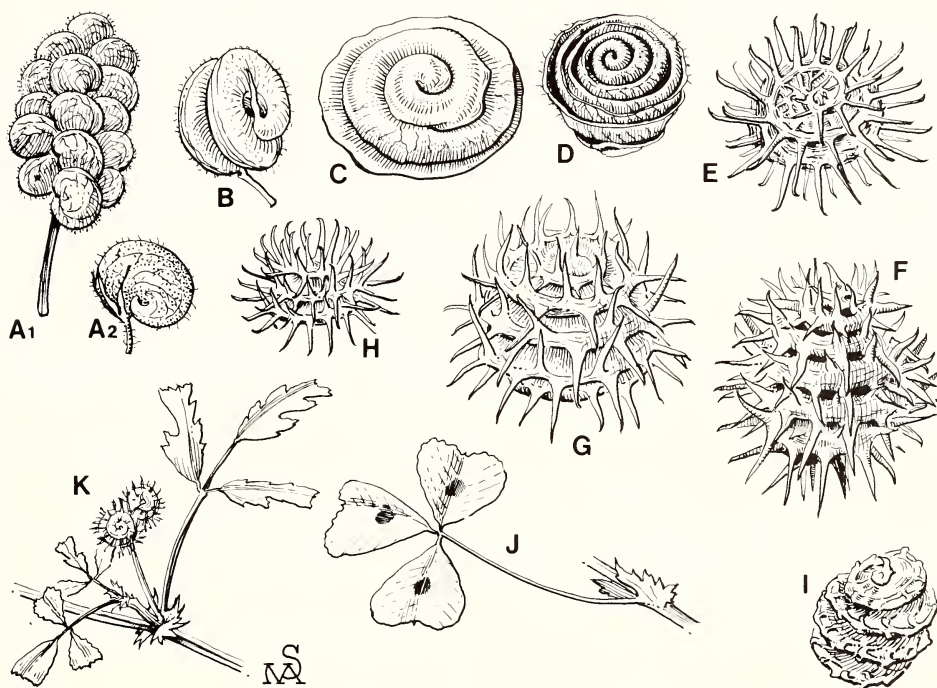


Fig. 45

FABACEAE — A–K *Medicago* spp. — A₁–A₂ *M. lupulina*, A₁ fruiting inflorescence x3, A₂ fruit x6; B *M. sativa*, fruit x3; C *M. orbicularis*, fruit x1½; D *M. scutellata*, fruit x1½; E *M. polymorpha* var. *vulgaris*, fruit x3; F *M. laciniata*, fruit x3; G *M. arabica*, fruit x3; H *M. minima*, fruit x3; I *M. polymorpha* var. *brevispina*, fruit x3; J *M. arabica*, leaf x1; K *M. laciniata*, part of fruiting plant x1.

1. **Melilotus indicus* (L.) All.

HEXHAM SCENT

Trifolium melilotus-indica L.; *Melilotus parviflorus* Desf.

Annual, 15–50 cm tall. Stipules linear-acuminate, subentire or toothed; leaflet blades mostly obovate, apex retuse or emarginate, 1–3 cm × 0.2–1.5 cm, glabrous or sparsely hairy. Racemes dense, up to 5 cm long; flowers yellow, 2–3 mm long; wings and keel shorter than standard. Fruits 2–3 mm long; seeds usually 1.

Native of Mediterranean region; common, often found in disturbed areas. Flowers spring–summer. It is a strong milk tainter and has been suspected of poisoning stock.

2. **Melilotus albus* Medik.

SWEET CLOVER

Biennial, 0.3–1.5 m tall. Stipules subulate, entire; leaflet blades mostly obovate, apex retuse or emarginate, toothed, 1–3 cm × 0.2–2 cm, glabrous or sparsely hairy. Racemes mostly longer than 4 cm; flowers white, 4–5 mm long; wings and keel ± equal, shorter than standard. Fruits 4–5 mm long; seeds 1–2.

Native of Europe and the Mediterranean region; widespread but not as common as *M. indicus*. Flowers mainly spring but some throughout the year.

27. TRIFOLIUM L.

Herbs. Stipules adnate to petiole; blades usually digitately 3-foliolate; leaflet blades usually denticulate. Flowers in spicate, capitate or umbellate inflorescences, rarely solitary, pedicels often deflexed after anthesis, bracts small or absent, bracteoles absent; calyx lobes or teeth sub-equal or lower longer; keel shorter than wings; stamens connate, vexillary stamen usually free, anthers uniform; style filiform, incurved above. Fruits enclosed by calyx, indehiscent; seeds 1 or few, estrophiolate.

About 300 species from temperate and subtropical Europe, Asia and America; ca 25 species naturalized Australia; 14 species south-eastern Queensland.

Many species are used as pasture plants throughout the world.

1. Calyx 5-nerved	2
Calyx 10-nerved	3
2. Standard folded lengthwise, not turned downwards, wings not divergent	1. <i>T. dubium</i>
Standard withering to brown and then turned downwards over divergent wings	2. <i>T. campestre</i>
3. Throat of calyx open, glabrous or almost so inside	4
Throat of calyx with a callous ring or ring of hairs inside, often constricted or closed	9
4. Fertile flowers mostly 2–10, sterile flowers developing after anthesis from a central nodule	3. <i>T. subterraneum</i>
Fertile flowers numerous, no sterile flowers developing	5
5. Calyx bladderly after flowering	6
Calyx not bladderly	7
6. Calyx at fruiting stage with strong net venation conspicuous through the hairs, 2 upper teeth long and conspicuous	4. <i>T. resupinatum</i>
Calyx at fruiting stage covered with dense woolly hairs, with 2 upper teeth short and inconspicuous	5. <i>T. tomentosum</i>
7. Heads on peduncles longer than 1 cm; perennial	6. <i>T. repens</i>
Heads sessile or on short peduncles up to 1 cm long; annual	8
8. Heads on short peduncles	7. <i>T. cernuum</i>
Heads sessile	8. <i>T. glomeratum</i>
9. Heads sessile	10
Heads pedunculate	11

- | | |
|--|-----------------------------|
| 10. Perennial; calyx teeth not equal, the lowest twice as long as the tube | 9. <i>T. pratense</i> |
| Annual; calyx teeth \pm equal, shorter than the tube | 10. <i>T. striatum</i> |
| 11. Leaflets broadly ovate | 11. <i>T. incarnatum</i> |
| Leaflets linear to elliptic to oblong to obovate | 12 |
| 12. Leaflets acute | 12. <i>T. angustifolium</i> |
| Leaflets \pm obtuse, often emarginate | 13 |
| 13. Corolla longer than calyx | 13. <i>T. alexandrinum</i> |
| Corolla shorter than calyx | 14. <i>T. arvense</i> |

1. **Trifolium dubium* Sibth.**YELLOW SUCKLING CLOVER**

Annual, erect or ascending, up to *ca* 40 cm tall. Stipules ovate; leaflet blades obovate, terminal one stalked but sometimes shortly so, 0.5–1 cm \times 0.2–0.6 cm. Inflorescences pedunculate, up to *ca* 8 mm long, pedicels becoming recurved; flowers yellow to white; calyx 1.5–2 mm long; standard folded lengthwise, twice as long as calyx. **Fig. 46B.**

Native of Europe; naturalized and widespread, but not common. Flowers mainly spring–summer.

2. **Trifolium campestre* Schreber**HOP CLOVER**

Annual, prostrate or ascending, 10–30 cm tall, sparsely hairy or glabrous. Stipules ovate; leaflet blades rhombic to obovate, terminal one stalked, 0.5–1.5 cm \times 0.3–0.8 cm. Racemes on slender axillary peduncles, ovoid, up to *ca* 1.5 cm \times 1.2 cm, pedicels deflexing; flowers yellow; calyx 1.5–2 mm long; standard 2–3 times as long as calyx, withering to a brown colour and turning down over divergent wings. **Fig. 46A.**

Native of the Mediterranean region; very occasionally met with. Flowers mainly spring–summer.

3. **Trifolium subterraneum* L.**SUBTERRANEAN CLOVER**

Annual, prostrate or decumbent, 10–30 cm tall. Stipules ovate; petioles long; leaflet blades broadly ovate, apex retuse, 0.8–3 cm \times 0.8–3 cm, sparsely to densely hairy. Inflorescences on long peduncles, globular, sterile flowers without corolla but with rigid calyx lobes developing after anthesis, becoming strongly deflexed over fruiting calyces; fertile flowers few per inflorescence; calyx 5–7 mm long; corolla white or pink, up to 2 times as long as calyx. Fruiting head deflexed, peduncles elongating and recurving so as to carry head to the ground or sometimes force it below ground level. **Fig. 46D.**

Native of Europe; naturalized, but not common. Flowers mainly spring.

4. **Trifolium resupinatum* L.**SHAFTAL CLOVER**

Annual, erect or ascending, up to *ca* 50 cm tall, almost glabrous except for inflorescence. Stipules narrow, free part narrowing to a fine point; leaflet blades obovate, 0.7–1.5 cm \times 0.3–0.8 cm. Inflorescences globose, 0.7–1.5 cm wide; flowers pink; calyx inflated in fruit, strongly net veined, with 2 long upper teeth and long spreading hairs.

Native of the Mediterranean region; very occasionally met with. Flowers mainly spring–summer.

5. **Trifolium tomentosum* L.**WOOLLY CLOVER**

Annual, erect or decumbent, up to *ca* 20 cm tall, glabrous except for inflorescence. Stipules narrow, free part narrowing to a fine point; leaflet blades obovate, 0.7–1.2 cm \times 0.3–0.6 cm. Inflorescences globose, 0.7–1.5 cm wide; flowers pink; calyx inflated in fruit, woolly hairy; corolla 3–6 mm long.

Native of the Mediterranean region; naturalized, but not common. Flowers mainly spring–summer.

6. **Trifolium repens* L.**WHITE CLOVER**

Perennial, prostrate, 10–30 cm tall, rooting at nodes. Stipules broad at base with a short fine point; petioles long; leaflet blades obovate, 1–4 cm \times 0.6–2.5 cm. Inflorescences long pedunculate, ovoid or globular, up to *ca* 2 cm diameter, pedicels soon recurved; flowers white; calyx 2–6 mm long; corolla 0.4–1.2 cm long, longer than calyx.

Native of Europe and Asia; naturalized, very common. Flowers mainly spring–summer. In lawns and gardens it is usually considered a weed.

7. **Trifolium cernuum* Brot. NODDING CLOVER
Annual, prostrate or ascending, 10–20 cm tall, \pm glabrous. Stipules narrow; leaflet blades oblong to obovate, 0.6–1.2 cm \times 0.3–0.6 cm. Inflorescences pedunculate, \pm globular, *ca* 8 mm across; pedicels strongly recurved; flowers pink; calyx 2–3 mm long; standard notched at top, slightly longer than calyx.

Native of south-western Europe; naturalized in a few areas but rarely met with.

8. **Trifolium glomeratum* L. CLUSTERED CLOVER
Annual, procumbent to ascending, 10–30 cm tall, glabrous. Stipules ovate; leaflet blades obovate, 0.5–1.5 cm \times 0.2–1 cm. Inflorescences sessile, globular, *ca* 8 mm across; flowers pink; calyx *ca* 3 mm long, teeth recurved; standard *ca* 5 mm long.

Native of Europe; widely naturalized, but not common. Flowers mainly spring–summer.

9. **Trifolium pratense* L. RED CLOVER
Perennial, erect to decumbent, up to *ca* 50 cm tall, glabrous to densely appressed hairy. Stipules with free part abruptly mucronate; leaflet blades broadly elliptic to obovate, 1.5–4 cm \times 0.6–1.8 cm. Inflorescences sessile, globose to ovoid, 0.7–2.5 cm long, usually with an involucre of stipules of reduced leaves; flowers reddish-purple to pink; calyx tubular-campanulate, 5–6 mm long, usually with long \pm spreading hairs, throat open but with an annular hairy thickening; corolla much longer than calyx, up to *ca* 1.5 cm long. Fig. 46C.

Native of Europe and western Asia; naturalized and occasionally met with. Flowers mainly spring–summer.

10. **Trifolium striatum* L. KNOTTED CLOVER
Annual, erect to decumbent, 10–50 cm tall. Stipules ovate, free portion ending abruptly in a long slender point; leaflet blades obovate to oblong, 1–2 cm \times 0.4–1 cm, appressed hairy. Inflorescences sessile, ovoid to cylindrical, up to *ca* 2 cm long, usually with an involucre of stipules from subtending leaves; flowers pink; calyx *ca* 6 mm long, appressed hairy, throat constricted; corolla 5–7 mm long, shorter or longer than calyx.

Native of Europe and western Asia; reported to be naturalized in the Darling Downs district but seldom met with. Flowers mainly spring–summer.

11. **Trifolium incarnatum* L. CRIMSON CLOVER
Annual, erect or ascending, up to *ca* 50 cm tall, with appressed or spreading hairs. Stipules up to *ca* 1.5 cm long, with free portions ovate; leaflet blades broadly ovate, 1–3 cm \times 0.6–1.5 cm. Inflorescences cylindrical, elongating with age, up to *ca* 5 cm \times 1–1.5 cm; flowers red; calyx tube *ca* 3 mm long; corolla up to *ca* 1.5 cm long.

Native of central and western Europe; naturalized, not common. Flowers mainly spring.

12. **Trifolium angustifolium* L. NARROW-LEAF CLOVER
Annual, erect or ascending, up to *ca* 50 cm tall, with long spreading or appressed hairs at least on stems and inflorescences. Stipules narrowly-subulate, partially free; leaflet blades linear to linear-ovate, 2–5 cm \times 0.2–0.5 cm. Inflorescences pedunculate, cylindrical or conical, up to *ca* 7 cm long; flowers purple to white; calyx with spreading rigid lobes 5–8 mm long, throat closed by a callous ring with hairs when fruiting; corolla scarcely exceeding calyx.

Native of the Mediterranean region; naturalized in a few areas, not common. Flowers mainly spring–summer.

13. **Trifolium alexandrinum* L. BERSEEM CLOVER
Annual, erect or ascending, up to *ca* 60 cm tall. Stipules narrowly subulate with fine spreading hairs above; leaflet blades elliptic to oblong to obovate, 1–3.5 cm \times 0.3–1 cm, with appressed or spreading hairs. Inflorescences sessile or pedunculate, conical to ovoid, 2–3 cm \times 1–1.5 cm; flowers cream to white; calyx lobes 5–8 mm long, with long spreading hairs; corolla longer than calyx.

Native of the African Mediterranean region; sown for fodder, naturalized in a few areas, but not common. Flowers mainly spring–summer.

14. **Trifolium arvense* L.

HARE'S-FOOT CLOVER

Annual, erect or ascending, up to *ca* 30 cm tall, with long spreading hairs. Stipules obovate-oblong with a long tip, whole stipule up to *ca* 1.5 cm long; leaflet blades narrowly oblong to narrowly elliptic, 1–2 cm × 0.2–0.4 cm. Inflorescences shortly pedunculate, elongating in fruit up to *ca* 2 cm long; flowers white or pink; calyx teeth 2–3 times as long as tube, throat open but villous; corolla shorter than calyx. **Fig. 46E.**

Native of Europe and western Asia, naturalized in a few areas, not common. Flowers mainly spring–summer.



Fig. 46

FABACEAE – A-E *Trifolium* spp. – A₁-A₄, *T. campestre*, A₁, part of flowering stem x1, A₂, stipules x2, A₃, flower x6, A₄, flower from below x6; B₁-B₂, *T. dubium*, B₁, flower x6, B₂, flower from below x6; C₁-C₂, *T. pratense*, C₁, part of fertile stem x1, C₂, flower x3; D₁-D₄, *T. subterraneum*, D₁, part of fertile stem x1, D₂, mature fruiting head x2, D₃, sterile calyx x3, D₄, fertile calyx x3; E₁-E₂, *T. arvense*, E₁, part of flowering stem x1, E₂, flower x6.

28. LOTUS L.

Annual or perennial herbs. Stipules usually minute or absent; blades usually 5-foliolate, 3 at apex of petiole and 2 near stem resembling stipules. Flowers umbellate on axillary peduncles or rarely solitary, often with a 3-foliolate bract, bracteoles usually absent; calyx lobes \pm equal or lower longer; standard clawed, keel incurved, beaked; filaments connate but vexillary filament usually free, alternate filaments dilated at apex, anthers uniform. Fruits 2-valved pods, usually septate; seeds estrophiolate.

About 100 species mainly from temperate parts of the world; 2 endemic and 4 naturalized species Australia; 4 species south-eastern Queensland.

- | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------------------------|
| 1. Flowers red, pink or white | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2 |
| Flowers yellow | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3 |
| 2. Flowers more than 1 cm long | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 1. <i>L. australis</i> |
| Flowers less than 1 cm long | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 2. <i>L. cruentus</i> |
| 3. Pods more than 1.5 cm long; flowers more than 8 mm long | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 3. <i>L. corniculatus</i> |
| Pods less than 1.5 cm long; flowers up to 8 mm long | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | 4. <i>L. suaveolens</i> |

1. *Lotus australis* Andr.

AUSTRALIAN TREFOIL

Perennial, erect, up to *ca* 30 cm tall, from almost glabrous to densely hairy. Leaflet blades from narrowly obovate to obovate-cuneate, 0.6–2.5 cm \times 0.2–0.6 cm. Flowers usually 3–8 per umbel, peduncle 2–8 cm long; calyx 5–8 mm long, lobes usually longer than tube; corolla pink or white, 1.1–2 cm long, keel shorter than standard. Pods 3–5 cm \times 0.15–0.3 cm.

Western parts of the region. Flowers mostly spring–summer, but some all year round. It is poisonous to stock.

2. *Lotus cruentus* Court

RED-FLOWERED LOTUS

Lotus australis Andr. var. *parviflorus* Benth.; *L. coccineus* Schlechtendal

Perennial, procumbent or ascending, sometimes forming a mat over ground, sparsely to densely hairy. Leaflet blades narrowly obovate to obovate, 0.3–1.2 cm \times 0.2–0.6 cm. Flower usually 1–3 per umbel, peduncle up to *ca* 2 cm long; calyx *ca* 5 mm long, lobes about as long as tube; corolla red, pink or white, 6–8 mm long, keel about as long as standard. Pods 2–3 cm \times 0.2–0.3 cm.

Western parts of the region. Flowers most of the year. It has been suspected of poisoning stock.

3. **Lotus corniculatus* L.

BIRD'S-FOOT TREFOIL

Perennial, procumbent to ascending, up to *ca* 40 cm tall, glabrous to pubescent. Leaflet blades from narrowly ovate to obovate, 0.5–1.1 cm \times 0.2–0.6 cm. Flowers usually 2–8, rarely 1 per umbel, peduncle up to *ca* 5 cm long; calyx *ca* 7 mm long, lobes about as long as tube; corolla yellow, *ca* 1.2 cm long, keel about as long as standard. Pods *ca* 1.5–3 cm \times *ca* 0.2 cm. **Fig. 47B.**

Native of Europe and Asia; naturalized in southern parts of the region. Flowers mostly spring–summer.

4. **Lotus suaveolens* Pers.

The name *Lotus hispidus* Desf. ex DC. has been wrongly used for this species.

Annual or perennial, prostrate or decumbent, with sparse to dense long hairs. Leaflet blades obovate, 0.3–1.8 cm \times 0.2–0.8 cm. Flowers 1–4 per umbel, peduncle up to *ca* 5 cm long; calyx *ca* 5 mm long, lobes longer than tube; corolla yellow, up to *ca* 7 mm long, keel with long straight-tipped beak, slightly longer than standard. Pods 0.8–1.5 cm \times *ca* 0.2 cm.

Native of Europe; naturalized in the Darling Downs district. Flowers mostly spring–summer.

29. PSORALEA L.

Small shrubs, marked with black or translucent glandular dots. Leaves stipulate; blades digitately 3-7-foliolate or pinnately 1-3-foliolate; leaflet blades entire or toothed. Flowers in Australian species in axillary spikes or racemes, bracts membranous, deciduous, each usually with 2-3 flowers in its axil; calyx lobes subequal or lower larger; petals subequal or keel longer, subcoherent in middle; filaments connate or vexillary stamen free, anthers uniform or alternately attached higher up. Fruits indehiscent; seeds estrophiolate.

About 130 species from tropical and subtropical parts of the world; ca 20 species Australia; 2 species south-eastern Queensland.

- 1. Leaves digitately 3-7-foliolate; leaflet blades entire 1. *P. tenax*
- Leaves pinnately 3-foliolate; leaflet blades toothed 2. *P. patens*

1. *Psoralea tenax* Lindl. EMU-FOOT
 Perennial with a woody rootstock, prostrate or ascending, glabrous or with minute appressed hairs. Leaf blades digitately 3-7-foliolate; leaflet blades linear to ovate to elliptic, apex acute, margin entire, 1-5 cm × 0.15-1 cm. Inflorescences dense to interrupted racemes, up to ca 10 cm long on peduncles usually longer than inflorescence; flowers blue, ca 5 mm long; calyx 2-3 mm long. Fruits black, ovoid, shorter than calyx. **Fig. 47A.**

Throughout the region in a variety of habitats. Flowers most of the year.

2. *Psoralea patens* Lindl. BULLAMON LUCERNE
 Perennial with a woody rootstock, prostrate or ascending, with short to long, sparse to dense, soft white hairs. Leaf blades pinnately 3-foliolate; leaflet blades ovate to ovate-rhomboid, apex obtuse, margin toothed, 1-5 cm × 0.5-2.5 cm. Inflorescences dense spikes, up to ca 15 cm long, peduncles up to ca 12 cm long, usually shorter than inflorescence; flowers blue, 6-9 mm long; calyx ca 6-8 mm long. Fruits ovoid, shorter than calyx, hairy. **Fig. 47C.**

Occasionally collected in the Darling Downs district. Flowers most of the year.

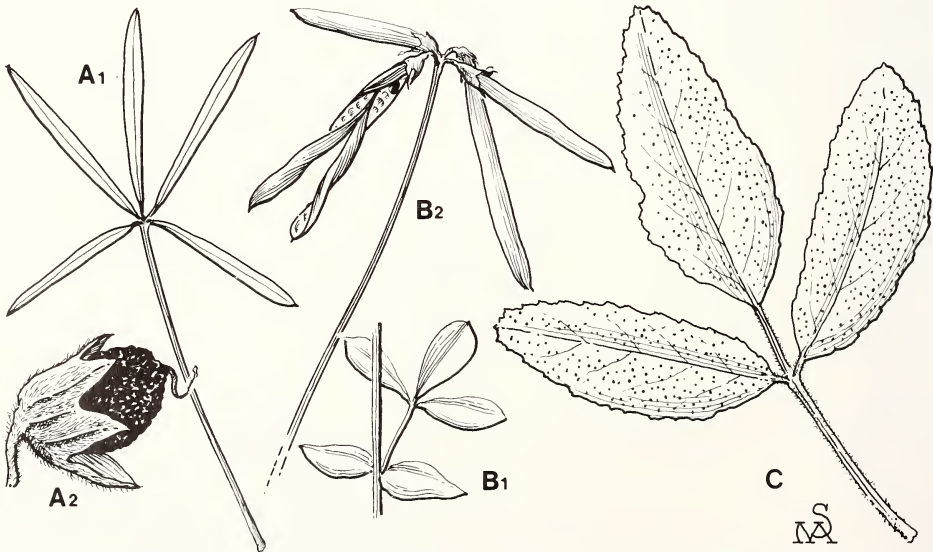


Fig. 47 FABACEAE - A₁-A₂, *Psoralea tenax*, A₁ leaf x1, A₂ fruit x6; B₁-B₂, *Lotus corniculatus*, B₁ leaf x1, B₂ fructing inflorescence x1; C *Psoralea patens*, leaf x1.

30. INDIGOFERA L.

Shrub or herbs. \pm clothed with appressed rarely spreading, medifixed hairs, sometimes mixed with other indumentum. Leaves stipulate; blades imparipinnate or pinnately or digitately 3-foliolate or sometimes 1-foliolate or simple; leaflet blades entire. Inflorescences axillary racemes or spikes, flowers 1 per bract, bracteoles absent; calyx teeth subequal or lower longer; filaments connate, vexillary filament free, anthers uniform, tipped by a gland; ovary sessile, style glabrous. Fruits dehiscent, linear to globose, septate between seeds; seeds estrophiolate.

About 700 species world wide; ca 30 species Australia; 12 species south-eastern Queensland.

1. Leaves simple	1. <i>I. linifolia</i>	
Leaves with 3 or more leaflets		2
2. Leaves with 3 leaflets	2. <i>I. trifoliata</i>	
Leaves with more than 3 leaflets		3
3. Calyx lobes equal to, or longer than the tube		4
Calyx lobes much shorter than the tube		9
4. Stems and fruits with long spreading hairs or with glandular hairs intermixed with appressed ones		5
Stems and fruits with appressed hairs only		6
5. Pods markedly deflexed, with dark spreading hairs	3. <i>I. hirsuta</i>	
Pods not markedly deflexed, with erect glandular hairs intermixed with appressed hairs	4. <i>I. colutea</i>	
6. Pods 4–5 mm long	5. <i>I. linnaei</i>	
Pods 10 mm long or longer		7
7. Leaflets alternate	6. <i>I. spicata</i>	
Leaflets opposite		8
8. Pods strongly curved, 1–2 cm long	7. <i>I. suffruticosa</i>	
Pods straight, 2.5–4.5 cm long	8. <i>I. parviflora</i>	
9. Leaflets with conspicuous lateral veins; corolla 1 cm long or longer	9. <i>I. pratensis</i>	
Leaflets without conspicuous lateral veins; corolla less than 1 cm long		10
10. Pods hairy	10. <i>I. brevidens</i>	
Pods glabrous		11
11. Herbs with several stems arising at ground level, ca 10–30 cm tall; pods deflexed	11. <i>I. baileyi</i>	
Erect shrubs arising from one point, up to ca 1.5 m tall; pods usually erect	12. <i>I. australis</i>	

1. *Indigofera linifolia* (L.f.) Retz.

Hedysarum linifolium L.f.

Annual or perennial, slender diffuse or procumbent, up to ca 30 cm tall, white appressed pubescent. Leaves simple, shortly petiolate; blades linear or sometimes narrowly oblong, 1–3 cm \times 0.15–0.5 cm, white appressed hairy on both surfaces. Inflorescences short, sessile spikes up to ca 1 cm long; flowers pink to reddish; calyx 2–3 mm long, teeth much longer than tube; corolla ca 3 mm long. Pods globular, 1.5–2 mm diameter, white-tomentose. **Fig. 48B.**

Widespread, but not common, usually on sandy soils. Flowers most of the year.

2. *Indigofera trifoliata* L.

Perennial, ascending or erect, *ca* 60 cm tall. Leaf blades digitately or pinnately 3-foliolate; leaflet blades oblong-obovate, 0.5–3.5 cm × 0.15–0.9 cm, sparsely hairy on both surfaces, with immersed glands below. Inflorescences short racemes, less than 1 cm long; flowers red; calyx 2–3 mm long, lobes longer than tube; corolla *ca* 4 mm long, standard and keel pubescent and glandular. Pods 0.8–1.8 cm long, hairy. **Fig. 48A.**

Occasionally found in the region. Flowers spring to summer.

3. *Indigofera hirsuta* L.**HAIRY INDIGO**

Annual, decumbent or erect, up to *ca* 1 m tall, with long spreading asymmetrically medifixed hairs on branches, petioles and inflorescences. Leaflets 7–11, blades obovate to oblong, 1–4 cm × 0.5–2 cm, with appressed hairs on both surfaces. Inflorescences dense racemes, up to *ca* 30 cm long; flowers reddish; calyx up to *ca* 5 mm long, with scarcely any tube; corolla *ca* 5–6 mm long. Pods deflexed, *ca* 1–1.8 cm long, covered with dark, spreading hairs. **Fig. 48D.**

Common and widespread in the region. Flowers late winter to autumn.

4. *Indigofera colutea* (N. L. Burm.) Merr.**STICKY INDIGO**

Galega colutea N. L. Burm.; *Indigofera viscosa* Lam.

Annual or perennial herb, decumbent or erect, up to *ca* 30 cm tall, whole plant but especially pod with spreading, glandular hairs as well as appressed hairs. Leaflets 9–15, blades ovate or oblong, 0.3–1.5 cm × 0.15–0.7 cm, hairy on both surfaces. Inflorescences racemose, up to *ca* 11 cm long; flowers pink-red; calyx *ca* 2 mm long, teeth longer than tube; corolla *ca* 3–4 mm long, standard with a few hairs. Pods 1–2 cm long. **Fig. 48C.**

Known from the Burnett district. Flowers spring to autumn.

5. *Indigofera linnaei* Ali**BIRDSVILLE INDIGO; NINE-LEAVED INDIGO**

Indigofera enneaphylla L.; *I. dominii* H. Eichler

Perennial, prostrate or procumbent, grey or silky pubescent, branches 4-angled. Leaflets 5–9, mostly alternate, blades oblong or obovate, 0.6–1.4 cm × 0.2–0.5 cm. Inflorescences sessile spikes up to *ca* 1 cm long; flowers reddish; calyx 4–5 mm long, teeth much longer than tube; corolla *ca* 4–5 mm long. Pods 4–5 mm long, pubescent; seeds 2. **Fig. 48E.**

Widespread but not common in the region. Flowers most of the year. The plant is toxic to horses, producing **Birdsville Disease**.

6. **Indigofera spicata* Forssk.**CREEPING INDIGO**

Apparently annual, prostrate or ascending; stems flattened and angular, sparsely hairy. Leaflets 5–11, alternate, blades oblong to obovate, 0.5–2.5 cm × 0.4–1 cm, ± glabrous above, with sparse to dense appressed hairs below. Inflorescences racemose, up to *ca* 10 cm long including peduncle, pedicels *ca* 2 mm long; calyx *ca* 3 mm long, lobes much longer than tube; corolla *ca* 5 mm long. Pods terete, deflexed, *ca* 1.5–2.5 cm long, with a short beak, sparsely hairy. **Fig. 48F.**

Native of south-eastern Asia and Africa; reported once as a weed, from Brisbane. Flowers spring. Some forms of the species shown to be toxic to stock.

7. **Indigofera suffruticosa* Miller

Erect shrub up to *ca* 1.5 m tall. Leaflets 5–17, blades oblong or oblong-obovate, 1–4 cm × 0.3–1.7 cm, with appressed hairs below, glabrous or sparsely hairy above. Inflorescences racemose, up to *ca* 9 cm long; flowers pinkish; calyx 1.5–2 mm long, lower lobe about as long as tube, occasionally longer; corolla 4–5 mm long, standard hairy outside. Pods strongly curved, deflexed, 1–2 cm long, appressed hairy. **Fig. 48G.**

Native of America; naturalized in the Moreton and Wide Bay districts. Flowers most of the year.

8. *Indigofera parviflora* Heyne ex Wight & Arn.**SMALLFLOWER INDIGO**

Erect herb up to *ca* 60 cm tall, with a minute greyish pubescence, branches angular. Leaflets mostly 7–13, sometimes fewer, blades linear or occasionally oblong, 1–4.5 cm × 0.15–0.8 cm. Inflorescences ± sessile racemes, lengthening to *ca* 5 cm; flowers pink; calyx

ca 2–2.5 mm long, teeth much longer than tube; corolla 4–5 mm long. Pods linear-terete, 2.5–4.5 cm long, with an incurved or hooked end, pubescent. **Fig. 48I.**

Known only from the Burnett district. Flowers spring–autumn.

9. *Indigofera pratensis* F. Muell.

Perennial, ascending, up to *ca* 60 cm tall, with pale sparse to dense appressed hairs. Leaflets 13–21, blades ovate to narrowly oblong, apex shortly mucronate, 1–4 cm × 0.6–1.3 cm, lateral veins conspicuous. Inflorescences racemose, up to *ca* 15 cm long, including peduncle, pedicels up to *ca* 3 mm long; flowers bluish-purple to reddish; calyx *ca* 2 mm long, teeth very short; corolla 1–1.2 cm long, standard and keel pubescent outside. Pods linear-terete, up to *ca* 4 cm long, conspicuously beaked, glabrous or sparingly hairy. **Fig. 48H.**

Widespread, uncommon. Flowers spring to autumn.

10. *Indigofera brevidens* Benth.

Shrub, up to *ca* 1.5 m tall, usually silvery-pubescent. Leaflets 9–21, blades obovate-oblong, 0.5–1.2 cm × 0.2–0.6 cm, pubescent on both surfaces. Inflorescences racemose, up to *ca* 7 cm long including peduncle; flowers pink or reddish; calyx *ca* 2 mm long, lower lobe about as long as tube; corolla variable in length, mostly *ca* 6 mm long, standard densely silky-pubescent. Pods linear-terete, 2–3 cm long, pubescent.

Western parts of the Darling Downs and Burnett districts. Flowers late winter to autumn.

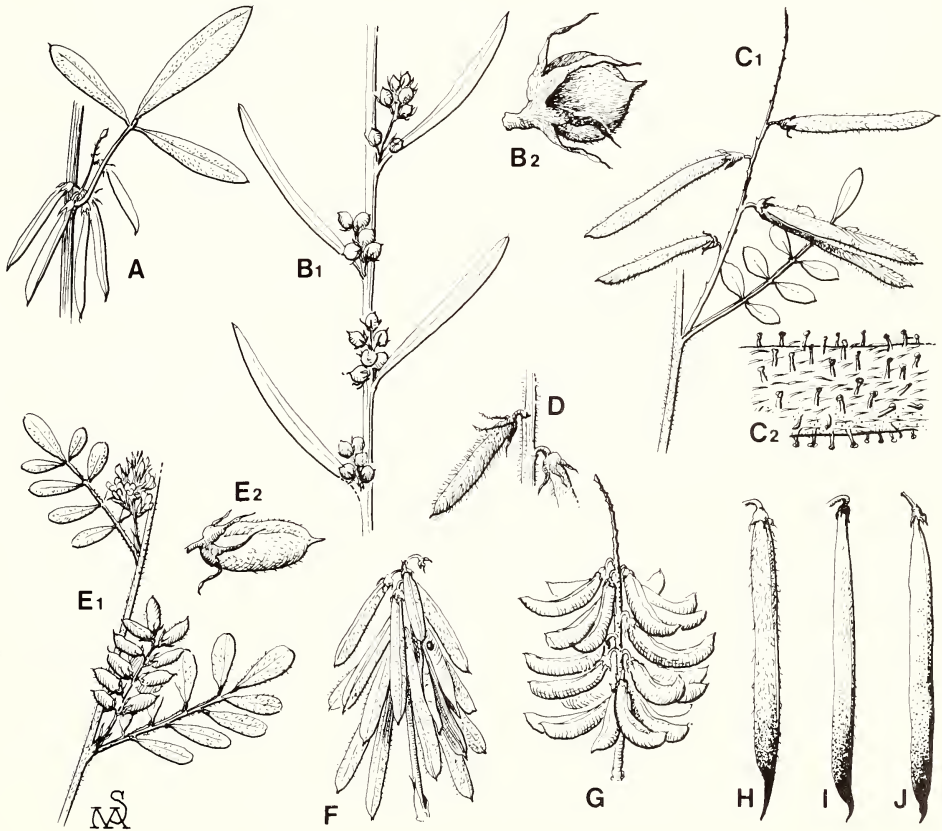


Fig. 48

FABACEAE – A–J *Indigofera* spp. – A *I. trifoliata*, fruiting inflorescence and leaf x1; B₁–B₂, *I. linifolia*, B₁ fruiting stem x1, B₂ fruit x6; C₁–C₂, *I. colutea*, C₁ fruiting inflorescence and leaf x1, C₂ section of fruit showing hairs x6; D *I. hirsuta*, fruit x1; E₁–E₂, *I. linneai*, E₁ part of stem x1, E₂ fruit x3; F *I. spicata*, fruiting inflorescence x1; G *I. suffruticosa*, fruiting inflorescence x1; H *I. pratensis*, fruit x1; I *I. parviflora*, fruit x1; J *I. australis*, fruit x1.

11. *Indigofera baileyi* F. Muell.

Small herb with several slender stems arising at ground level, *ca* 10–30 cm tall. Leaflets 5–11, blades obovate, apex shortly mucronate, 4–10 mm × 2–5 mm, sparsely hairy below. Inflorescences spicate, 6–*ca* 10 cm long including peduncle; flowers pink; calyx 1.5–2 mm long, shortly lobed; corolla *ca* 4 mm long, standard and keel hairy on outside. Pods linear-terete, deflexed, *ca* 2 cm long, glabrous.

Widespread, seldom collected. Flowers spring–summer.

12. *Indigofera australis* Willd.

Erect much-branched shrub, up to *ca* 1.5 m tall. Leaflets usually 9–21, blades (0.2–)0.6–3 cm × (0.15–)0.2–1 cm, with sparse appressed hairs. Inflorescences racemose, up to *ca* 18 cm long including peduncle, pedicels usually somewhat longer than calyx; flowers pink, purplish-pink or red; calyx 1.5–2 mm long, truncate or very shortly lobed; corolla 6–9 mm long, standard glabrous or pubescent on outside. Pods linear-terete, 2–3.5 cm × *ca* 0.2 cm, glabrous. **Fig. 48J.**

Two varieties occur in the region:

- | | |
|---|---|
| 1. Leaflet blades elliptic to oblong-obtuse, more than 5 mm long; petiole not flattened, without prominent interstipellary glands | <i>I. australis</i> var. <i>australis</i> |
| Leaflet blades obcordate-cuneate, 5 mm or less long; petiole flattened, with prominent interstipellary glands | <i>I. australis</i> var. <i>signata</i> |

I. australis* var. *australis, AUSTRALIAN INDIGO or NATIVE INDIGO is widespread and common in the region in various habitats. Flowers late winter to autumn. It has been suspected of poisoning cattle. ***I. australis* var. *signata*** F. Muell. is known from granite country in the southern Darling Downs district.

31. MUELLERANTHUS Hutch.

Herbs, prostrate, stems radiating from a central tap root, ± pubescent. Leaves stipulate; blades exstipellate, digitately 3-foliolate. Inflorescences leaf-opposed, flowers solitary or 2 or 3 per raceme; calyx with two upper lobes short, lowermost longest; stamens connate into a sheath, split adaxially, anthers uniform; ovary shortly stipitate, style glabrous. Pods compressed; seeds estrophiolate but sometimes with a white deciduous aril.

3 species endemic to Australia; 1 species south-eastern Queensland.

1. *Muelleranthus stipularis* (J. M. Black) A. T. Lee

Ptychosema stipulare J. M. Black

Stems up to *ca* 60 cm long, stems and leaves clothed for the most part with ± dense spreading hairs. Stipules leafy, ovate, apex acuminate, 3.5–7 mm × 2–4 mm; leaflet blades broadly ovate to rarely obcordate, margin entire, mostly 0.4–1.5 cm × 0.2–0.5 cm, sometimes larger, hairy on both surfaces or sometimes glabrous above. Inflorescences reduced to single flowers, peduncle up to 4 cm long, pedicel less than 3 mm long, bract at junction of peduncle and pedicel 2 mm or more long; calyx 3–4.5 mm long, sparsely to densely hairy; standard 3–6 mm long. Pods 1.5–3 cm × up to 0.7 cm. **Fig. 49E.**

Rarely collected, usually on sandy soils, known from the western Darling Downs district.

A second species, ***M. trifoliolatus*** (F. Muell.) Hutch. ex A. T. Lee (*Ptychosema trifoliolatum* F. Muell.) may also occur in the western Darling Downs district. ***M. trifoliolatus*** is glabrous or sparsely appressed hairy, with the standard 0.9–1.4 cm broad, whereas ***M. stipularis*** has dense spreading hairs, with the standard 0.3–0.6 cm broad.

32. **TEPHROSIA** Pers.

Herbs or shrubs. Leaves stipulate; blades extipellate, imparipinnate; leaflet blades usually with close parallel nerves oblique to midrib and extended to margin. Inflorescences terminal or leaf-opposed racemes, bracts present, bracteoles absent; calyx lobes subequal or upper 2 connate higher up; petals clawed, standard hairy outside; vexillary stamen free at base, more or less connate with others from middle, at length often free, anthers uniform; style incurved or inflexed, glabrous or bearded. Fruits dehiscent, flattened, linear; seeds sometimes strophiolate.

About 300 species from tropical and subtropical regions of the world; *ca* 55 species Australia, probably *ca* another 10 species undescribed; 11 species south-eastern Queensland.

This genus in Australia is presently under review. The treatment of the native species given below is superficial.

1. Flowers more than 1.5 cm long	2
Flowers less than 1.5 cm long	4
2. Pods glabrous or hairy only on margins	1. <i>T. glomulifera</i>
Pods hairy all over	3
3. Calyx 0.5–0.8 cm long, the lobes shorter than the tube	2. <i>T. candida</i>
Calyx 1–1.5 cm long, the lobes longer than the tube	3. <i>T. vogelii</i>
4. Calyx less than 3.5 mm long	5
Calyx more than 3.5 mm long	9
5. Leaflets more than 7 mm broad	4. <i>T. tinctoria</i>
Leaflets up to 7 mm broad	6
6. Terminal leaflet conspicuously larger than lateral ones	5. <i>T. juncea</i>
Terminal leaflet not conspicuously larger than lateral ones	7
7. Leaflets linear, apex acute and often recurved	6. <i>T. filipes</i>
Leaflets elliptic to obovate to oblong, often narrowly so, apex usually obtuse or retuse	8
8. Branchlets with dense, spreading or sometimes slightly retrorse, usually brown hairs	7. <i>T. rufula</i>
Branchlets with sparse or dense, appressed or ascending hairs	8. <i>T. brachyodon</i>
9. Reticulation between lateral veins conspicuous and darker than surrounding leaflet surface, at least above; leaflets obtuse or retuse at apex	10
Reticulation not conspicuous or darker than surrounding leaflet surface; leaflets acute or obtuse at apex	11
10. Leaflets densely appressed silky hairy below; erect shrub	9. <i>T. astragaloides</i>
Leaflets sparsely appressed hairy; diffuse herb	10. <i>T. baueri</i>
11. Leaflets acute at apex	11. <i>T. bidwillii</i>
Leaflets obtuse at apex	7. <i>T. rufula</i>

1. ***Tephrosia glomulifera** Meissner

PINK TEPHROSIA

Previously misidentified as *Tephrosia grandiflora* (Vahl) Pers.

Erect shrub up to *ca* 2 m tall, branches appressed pubescent. Leaflets usually 11–21, blades obovate, apex obtuse, mucronulate, 1.5–4 cm × 0.6–1.5 cm, sparsely appressed hairy above, with silky appressed hairs below. Racemes terminal and axillary, up to *ca* 15 cm long; flowers pink, 1.6–2.5 cm long; calyx 4–5 mm long, lobes shorter than tube, silvery hairy. Pods up to *ca* 8 cm × 0.8–0.9 cm, glabrous or hairy along margins. **Fig. 49C.**

Native of southern Africa; naturalized in the Moreton and Wide Bay districts, often along roadsides. Flowers late spring to autumn.

2. *Tephrosia candida DC.

Erect shrub up to *ca* 2.5 m tall, branches with silky-rusty hairs. Leaflets 13–27, blades narrowly ovate, apex acute or obtuse, 2.5–7.5 cm × 0.6–1.3 cm, glabrous above, pubescent below. Racemes terminal and lateral, up to *ca* 25 cm long; flowers white, 2–2.5 cm long; calyx 5–8 mm long, lobes shorter than tube, densely hairy. Pods 6–10 cm × 0.8–0.9 cm, densely clothed with rusty, occasionally grey hairs. **Fig. 49A.**

Native of south-eastern Asia; naturalized in a few areas in eastern parts of the Moreton and Wide Bay districts. Flowers autumn–winter.

3. *Tephrosia vogelii Hook. f.

Shrub up to *ca* 3 m tall, branches with grey or rusty-coloured spreading hairs. Leaflets 13–29, blades elliptic-oblong or elliptic-obovate, 3–8 cm × 0.8–2 cm, silky hairy above, more densely so below. Racemes terminal or lateral, stout, up to *ca* 15 cm long; flowers white, 2–2.5 cm long; calyx 1–1.5 cm long, lobes longer than tube, densely hairy. Pods up to *ca* 11 cm × 1.3 cm, densely hairy. **Fig. 49B.**

Native of Africa; recorded once from near Dayboro in the Moreton district.

4. *Tephrosia tinctoria Pers.

Low shrub, branches with soft ± spreading hairs. Leaflets 7–13, blades elliptic-oblong, apex obtuse, 2–6 cm × 0.8–2.8 cm, glabrous above, silky hairy below, conspicuously reticulate above. Racemes terminal and lateral, up to *ca* 8 cm long; flowers 0.8–1.2 cm long; calyx 2.5–3 mm long, silky hairy. Pods *ca* 4–5.5 cm × 0.5–0.6 cm, with sparse appressed hairs.

Native of India; collected once apparently naturalized from the southern Wide Bay district.

5. Tephrosia juncea Benth.

Erect, up to *ca* 60 cm tall, branches sparsely appressed hairy. Leaflets 11–55, terminal one larger than lateral ones, blades linear to obovate, apex of terminal one acute to obtuse, apex of laterals obtuse or retuse, lateral leaflets 0.5–1.7 cm × 0.2–0.4 cm, terminal ones up to *ca* 3.8 cm × 0.45 cm, glabrous above, sparsely appressed hairy below. Flowers pink, *ca* 6–7 mm long; calyx 2.5–3 mm long, appressed hairy. Pods 4–6 cm × 0.25–0.35 cm with sparse appressed hairs.

Known from a single collection from Mt. Perry in the Burnett district. Flowers mainly summer–autumn.

6. Tephrosia filipes Benth.

Diffuse or ascending, branches with sparse to moderately dense ± appressed hairs. Leaflets 7–19, blades linear, apex acute, often recurved, 0.7–1.5 cm × 0.1–0.25 cm, glabrous above, with sparse appressed hairs below. Racemes terminal and lateral, slender, up to *ca* 10 cm long, with 1–3 pairs of flowers; flowers purple, *ca* 6 mm long; calyx *ca* 2 mm long, sparsely appressed hairy. Pods 1.5–3 cm × 0.2–0.25 cm, sparsely appressed hairy.

Moderately common in the Moreton and Wide Bay districts, mainly in open forest or grassland. Flowers mainly summer–autumn.

7. Tephrosia rufula Pedley

Tephrosia purpurea (L.) Pers. var. *rufescens* Benth.; *T. brachyodon* Domin var. *rufescens* (Benth.) Domin

Shrub up to 2 m tall, branchlets with dense spreading or sometimes slightly retrorse brown, rarely whitish hairs. Leaflets 17–37, blades oblong, apex obtuse-mucronulate, 1–2 cm × 0.25–0.7 cm, glabrous or with a few scattered hairs above, sparsely appressed pubescent below. Racemes terminal, 9–15 cm long; flowers purplish, *ca* 6–8 mm long; calyx 3–4.5 mm long. Pods 2–4.5 cm × 0.3–0.35 cm, pubescent.

Known from the Burnett, Darling Downs and Moreton districts. Flowers found most of the year.

8. *Tephrosia brachyodon* Domin

Erect low shrub, branches with sparse, appressed or ascending hairs. Leaflets 9–21, rarely more, blades elliptic to obovate, apex obtuse to retuse, mucronulate, 1.5–4.3 cm × 0.2–0.6 cm, glabrous above, sparsely to moderately densely appressed hairy below. Racemes terminal, up to *ca* 25 cm long; flowers purple, up to *ca* 6 mm long; calyx *ca* 3 mm long. Pods *ca* 3–5 cm × 0.4 cm, sparsely hairy.

Widespread in the region. Flowers most of the year.

This is an extremely variable species, and a number of varieties have been described. The distinctions are not clear and they have not been included in this treatment.

9. *Tephrosia astragaloides* Benth.

Shrub up to *ca* 1 m tall, branchlets softly pubescent or silky. Leaflets usually 7–17, blades oblong-cuneate to narrowly elliptic, apex obtuse or retuse, mostly 1–3 cm × 0.2–0.8 cm, pubescent to glabrous above, ± appressed silky hairy below, upper surface with dark reticulations. Racemes terminal, up to *ca* 15 cm long; flowers whitish with purplish tinge, up to *ca* 1.4 cm long; calyx 4–6 mm long, lobes longer than tube. Pods 3–3.5 cm × *ca* 0.4 cm, sparsely to densely hairy.

Known from the Burnett district, but rare. Flowers found mainly summer–autumn but a few most of the year.

10. *Tephrosia baueri* Benth. ex A. Gray

Diffuse, branchlets with scattered hairs. Leaflets 7–13, blades narrowly elliptic, apex obtuse and mucronate, *ca* 1.2–2 cm × 0.25–0.55 cm, glabrous or sparsely hairy above, with sparse short appressed hairs below, both surfaces with dark reticulations. Inflorescences terminal or leaf-opposed, *ca* 6 cm long; calyx *ca* 5.5 mm long; standard *ca* 7 mm long. Mature pods not seen.

Rare; known from a single collection from the 'Brisbane River'.

11. *Tephrosia bidwillii* Benth.

Low subshrub, branches sparsely appressed hairy to almost glabrous. Leaflets 7–15, blades narrowly elliptic or narrowly ovate to almost linear, apex acute, 1.3–7 cm × 0.3–0.75 cm, glabrous above, sparsely appressed hairy below. Racemes terminal, up to *ca* 30 cm long; flowers pale mauve, up to *ca* 10 mm long; calyx 5–6 mm long, lobes longer than tube. Pods 3–4 cm × 0.3–0.4 cm, sparsely to moderately densely hairy.

Seldom collected, known from localities scattered throughout the region. Flowers mainly spring–summer.

A form with denser, ± spreading hairs is known in the region from one record in the Burnett district. This may prove to be a distinct taxon.

33. MILLETTIA Wight & Arn.

Trees, shrubs or tall woody climbers. Leaves stipulate; blades mostly stipellate, imparipinnate. Inflorescences usually terminal, racemose or paniculate, bracts and bracteoles usually deciduous; calyx tube broad, truncate or with short teeth or lobes, two upper sometimes connate; vexillary stamen free or cohering with the others in the middle, anthers uniform; style inflexed. Fruits coriaceous or woody, 2-valved or tardily dehiscent; seeds orbicular, reniform or ovoid, estrophiolate.

About 180 species from tropical and subtropical regions of the world; 3 species Australia; 2 species south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Pedicels 2–4 times as long as calyx | 1. <i>M. megasperma</i> |
| Pedicels shorter than or scarcely longer than calyx | 2. <i>M. australis</i> |

1. *Millettia megasperma* (F. Muell.) Benth.

NATIVE WISTARIA

Wistaria megasperma F. Muell.

Tall woody climber, glabrous except for young shoots and inflorescences. Leaves 15–30 cm long; leaflets 7–13 pairs, blades obovate or obovate-oblong, apex acuminate, 3.5–10 cm × 2–3.5 cm. Racemes up to *ca* 15 cm long, several arranged in a panicle, pedicels 0.6–1.3 cm long; flowers scattered, purple; calyx 3–4 mm long; standard spreading, *ca* 1 cm or more broad. Pods *ca* 15 cm long, woody, densely velvety hairy; seeds ovoid, 3–4 cm × 1.5–2.5 cm.

Common climber on trees in the Moreton and Wide Bay districts. Flowers spring. Occasionally cultivated.

2. *Millettia australis* Benth.*Millettia maideniana* F. M. Bailey

Tall woody climber, branchlets and often leaves and inflorescences with appressed silky hairs. Leaves 10–20 cm long; leaflets 9 or more; blades oblong or obovate, 3–6 cm × 2–3.5 cm. Racemes solitary and axillary or racemes arranged in a terminal panicle, racemes *ca* 15 cm long, pedicels 3–6 mm long; flowers purple; calyx *ca* 6 mm long; standard 1–1.5 cm wide. Pods up to *ca* 15 cm long, woody, glabrous; seeds ± globular, 1.5–2.5 cm diameter.

Known from the eastern Moreton district, uncommon. Flowers spring. The seeds have been reported to make people violently ill when eaten.

34. ROBINIA L.

Trees or shrubs. Stipules often spinescent; blades often stipellate, imparipinnate; leaflet blades entire. Inflorescences axillary racemes, bracts deciduous, bracteoles absent; calyx teeth short, broad, upper 2 subconnate; standard large, reflexed; vexillary stamen connate in middle with others, anthers ± uniform; ovary stipitate, style inflexed, hairy at apex. Fruits flat, linear, narrowly winged along upper suture, dehiscent; seeds estrophiolate.

About 20 species from eastern North America and Mexico; 1 species introduced and naturalized Australia, occurring in south-eastern Queensland.

1. **Robinia pseudoacacia* L.

BLACK LOCUST

Tree up to *ca* 10 m tall, spreading by root suckers. Stipular spines up to *ca* 1.2 cm long; leaflets 11–21, blades oblong to obovate, apex often notched, 2–5 cm × 1–2.5 cm. Racemes up to *ca* 15 cm long, pedicels 5–10 mm long; flowers white, or purple to pink in horticultural varieties; calyx *ca* 6 mm long, 2 upper lips united higher up, appressed pubescent; petals up to *ca* 1.8 cm long. Pods 4–8 cm long, glabrous. **Fig. 491.**

Native of eastern United States of America and Mexico; introduced and cultivated as a tree of gardens, naturalized in a few areas in the region. Flowers spring. Because of its ability to spread by root suckers it can cover quite large areas.

35. SESBANIA Scop.

Small trees, shrubs or herbs. Stipules deciduous; blades with stipels small or absent, paripinnate; leaflets in many pairs; blades entire. Inflorescences axillary racemes, pedicels slender, bracts and bracteoles usually deciduous; calyx tube broad, truncate or equally lobed or toothed; vexillary stamen free, others united, all curved with keel, anthers uniform or alternately a little longer. Pods usually linear and subterete, 2-valved; seeds estrophiolate.

About 50 species from tropical and subtropical parts of the world; 10 species Australia; 1 species south-eastern Queensland.

1. *Sesbania cannabina* (Retz.) Poiret

SESBANIA PEA

Aeschynomene cannabina Retz.; *Sesbania sericea* DC. var. *glabra* Domin; *S. sericea* var. *subsinguliflora* Domin; described in "Qd Flora" as *S. aculeata* Pers., the varieties excluded.

Annual up to ca 3.5 m tall; young stems with spreading hairs, later ± glabrous. Leaflets in 12–30 pairs, blades oblong, apex obtuse or truncate-apiculate, 7–8 mm × 1.5–3 mm, glabrous or with few appressed hairs. Racemes with 1–3, rarely 5, flowers, pedicels ± equal in length to calyx; calyx 3–4 mm long, lobes up to ca half as long as tube; corolla yellow, standard conspicuously streaked on back, 0.8–1.1 cm long; ovary and style glabrous. Pods slender, 12–20 cm × 0.25–0.3 cm, with a slender terminal point; seeds dark brown, ca 4 mm long. **Fig. 49D.**

Widespread in the region, often in areas subject to inundation. Flowers mainly summer.

From time to time other species have been reported from around wool stores in Brisbane, the seeds apparently having been brought to the area in bales of wool. These species do not persist and are not included.

36. SWAINSONA Salisb.

Herbs or undershrubs. Leaves stipulate; blades exstipellate, imparipinnate; leaflet blades entire. Flowers in axillary racemes, bracts present, bracteoles small or absent; calyx teeth subequal or upper 2 shorter; vexillary stamen free, others united into sheath, anthers uniform; ovary sessile or stipitate, style incurved, bearded lengthwise inside along the upper part, rarely also on back, stigma terminal. Fruits usually dehiscent, longitudinally 2-locular; seeds estrophiolate.

About 50 species in Australia, 1 species from New Zealand; 12 species south-eastern Queensland.

1. Majority of hairs medifixed	1. <i>S. phacoides</i>	
Hairs all basifixed		2
2. Terminal leaflets distinctly longer than laterals		3
Terminal leaflets similar in size to laterals		5
3. Style tip inflexed and bearded along back behind stigma	2. <i>S. parviflora</i>	
Style tip straight or inflexed but not bearded along back		4
4. Keel twisted sideways	3. <i>S. campylantha</i>	
Keel straight	4. <i>S. oroboides</i>	
5. Keel twisted		6
Keel not twisted		7
6. Keel twisted into a complete loop	5. <i>S. procumbens</i>	
Keel twisted but not into a complete loop	6. <i>S. swainsonioides</i>	
7. Style with a tuft of hairs behind the stigma		8
Style without hairs behind the stigma		10
8. Ovary and pod ± sessile	7. <i>S. microphylla</i>	
Ovary and pod distinctly stipitate		9
9. Flowers 0.6–1 cm long on pedicels 1–2 mm long	8. <i>S. brachycarpa</i>	
Flowers 1–1.2 cm long on pedicels 3–7 mm long	9. <i>S. fraseri</i>	
10. Standard not erect, lying along the wings and keel	10. <i>S. luteola</i>	
Standard erect		11
11. Calyx covered with dense, white woolly hairs	11. <i>S. greyana</i>	
Calyx glabrous or with sparse woolly hairs	12. <i>S. galegifolia</i>	

1. *Swainsona phacoides* Benth.

DWARF SWAINSONA

Swainsona phacoides var. *parviflora* Benth.

Plants of diverse habit, from suberect or spreading and 40–50 cm tall, to spreading or prostrate with stems 50–60 cm long, majority of hairs of plant medifixed, often asymmetrically so. Stipules 1–7 mm long; leaflets 5–13, blades variable in shape, linear to elliptic to obovate, apex acute, obtuse or retuse, 1–4 cm × 0.15–0.4 cm, pubescent above and below. Racemes varying with size of plant, 3–20 cm long, flowers usually only near apex, pedicels 1–4 mm long; flowers purple or sometimes white or yellow, 0.9–1.4 cm long; calyx 0.3–1.2 cm long; standard usually 9–10 mm broad; ovary densely pubescent, shortly stipitate, style tapering to apex, evenly bearded. Pods inflated, ovoid and 1–1.5 cm × 0.7–1.2 cm, or cylindrical and 1–3 cm × ca 0.4 cm, pubescent. **Fig. 49J.**

Known only from the Burnett district. Flowers spring to autumn.

2. *Swainsona parviflora* Benth.*Swainsona parviflora* var. *vestita* C. T. White & Francis

Perennial, ascending; stems up to 25 cm long, sparsely hairy with short white hairs, sometimes densely appressed pubescent. Stipules 1–3 mm long; leaflets 5–11, blades linear or very narrowly elliptic or narrowly obovate, terminal ones distinctly longer than laterals, 1–4 cm × 0.1–0.3 cm, laterals 0.7–3 cm × 0.1–0.3 cm. Racemes 8–18 cm long, flowers occupying one-third or less of length, pedicels 2–4 mm long; flowers purple to blue, 5–7 mm long; calyx 2.5–4 mm long, ± glabrous to pubescent; standard 6–10 mm broad; ovary appressed pubescent, very shortly stipitate, style bearded in upper part, tip inflexed and bearded along back. Pods cylindrical, 1–2 cm × 0.6–0.8 cm.

Not common, but known from the Darling Downs and Burnett districts. Flowers spring.

3. *Swainsona campylantha* F. Muell.*Swainsona fragilis* F. M. Bailey

Decumbent or suberect; stems up to ca 60 cm long, glabrous except for a few basifixed hairs. Stipules deciduous, ca 2 mm long; leaflets 3–7, blades linear to narrowly ovate to elliptic, apex mostly acute, terminal ones distinctly longer than laterals, 1.5–5 cm × 0.2–0.5 cm, laterals 1–2.5 cm × 0.2–0.4 cm. Racemes mostly 7–10 cm long, flowers few and occupying upper half, pedicels 3–4 mm long; flowers pink to purple to blue, 7–8 mm long; calyx 4–5.5 mm long, teeth pubescent inside; standard 1–1.5 cm broad, wings with distinct bend about the middle, keel twisted sideways; ovary densely to sparsely appressed pubescent, sometimes glabrous, shortly stipitate, style bearded in upper part, tip hooked or incurved. Pods inflated, 1–8 cm × 0.3–0.6 cm, sparsely hairy or almost glabrous, stipitate. **Fig. 49M.**

Known from the central and western parts of the Darling Downs district. Flowers spring–autumn.

4. *Swainsona oroboides* F. Muell. ex Benth.

VARIABLE SWAINSONA

Prostrate or ascending; stems up to ca 30 cm long, hairs basifixed. Stipules 1–3(–10) mm long; leaflets 5–7, blades narrowly elliptic to narrowly ovate to ovate or elliptic, terminal ones distinctly longer than laterals, 0.9–5 cm × 0.2–0.8 cm, laterals 0.3–3 cm × 0.15–0.5 cm, glabrous or sparsely hairy above, pubescent below. Racemes up to ca 1.5 cm long, flowers few at tip, often clustered, pedicels 2–4 mm long; flowers bluish, red or purple, 7–9 mm long; calyx 4–7 mm long; standard ca 8–10 mm broad; ovary densely appressed pubescent, shortly stipitate, style shortly bearded, tip geniculate. Pods inflated, 0.8–2 cm × 0.5–0.9 cm, with long spreading hairs. **Fig. 49H.**

Known from the Darling Downs district. Flowers mainly spring.

5. *Swainsona procumbens* (F. Muell.) F. Muell.

BROUGHTON PEA

Cyclogyne procumbens F. Muell.

Prostrate or ascending; stems up to ca 30 cm long, with sparse to dense, short, appressed, basifixed hairs. Stipules 2–7 mm long; leaflets 7–23, blades variable, linear to oblong to obovate to elliptic, 0.3–2 cm × 0.15–0.8 cm, ± glabrous above, sparsely to densely

pubescent below. Racemes *ca* 7–30 cm long, flowers few in upper half, pedicels 3–6 mm long; flowers blue, mauve or purple, usually with a yellow tip to keel, 1–1.5 cm long; calyx *ca* 6–7 mm long, \pm glabrous or with few hairs on teeth, standard deeply notched, 1.7–2.6 cm broad, keel twisted in a complete spiral loop; ovary white appressed pubescent, shortly stipitate, style coiled with keel, beard densest near apex. Pods narrowly ellipsoid, 2–3.5 cm \times 0.4–0.7 cm, usually with a few appressed hairs. **Fig. 49O.**

Known from the Darling Downs district. Flowers mostly late winter to spring.

6. *Swainsona swainsonioides* (Benth.) A. T. Lee

DOWNY SWAINSONA

Cyclogyne swainsonioides Benth.; *Swainsona onciptropis* F. Muell.

Decumbent, forming clumps up to 1 m diameter and 60 cm tall from a central root, sparsely to densely pubescent, hairs fine, white, spreading or loosely appressed. Stipules up to 1.5 cm long; leaflets 11–21, blades very variable, narrowly obovate to broadly elliptic to oblong, 0.5–3 cm \times 0.2–1.2 cm, glabrous above, pubescent below. Racemes 10–30 cm long, flowers mainly in upper third, pedicels *ca* 5 mm long; flowers blue to purple, calyx 5–7 mm long; standard 0.9–2.2 cm broad, keel distinctly but incompletely spirally twisted; ovary densely pubescent, very shortly stipitate, style bearded only in upper part. Pods cylindrical, 2–3 cm \times *ca* 0.5–0.7 cm, sparsely hairy or almost glabrous. **Fig. 49N.**

Known from the Darling Downs and Burnett districts. Flowers mostly late winter to spring.

7. *Swainsona microphylla* A. Gray subsp. *affinis* A. T. Lee

Procumbent or ascending, up to *ca* 40 cm tall, glabrous to pubescent, hairs basifixed, short and appressed and usually sparse, or longer and somewhat spreading. Stipules 1–7 mm long; leaflets 9–21, blades oblong or narrowly oblong, apex retuse, 6–9 mm \times 3–5 mm. Racemes variable, up to *ca* 20 cm long, pedicels *ca* 1–2 mm long; flowers purple, pink or blue, 7–8 mm long; calyx 3–4 mm long, usually pubescent; standard 6–10 mm broad; ovary glabrous, shortly stipitate, style sparsely bearded, tapered, slightly inflexed at tip, with a tuft of hairs on back behind stigma. Pods short, cylindrical, *ca* 8 mm \times 6 mm, glabrous. **Fig. 49G.**

Known from the Darling Downs district. Flowers mainly spring.

8. *Swainsona brachycarpa* Benth.

Decumbent or ascending, glabrous; stems up to 60 cm long, sometimes rooting at nodes. Stipules 1–2 mm long; leaflets (11–)15–21(–25), blades narrowly to broadly oblong or obovate, apex rounded and usually shallowly notched, 0.3–1.2 cm \times 0.1–0.4 cm. Racemes 5–20 cm long, with 2–6 or more flowers at upper end, pedicels 1–2 mm long; flowers purple, 6–10 mm long; calyx 2–3.5 mm long; standard 0.65–1.15 cm broad; ovary glabrous, stipitate, style bearded along inner side with a tuft of hairs behind inflexed tip. Pods inflated, 1.5–2.3 cm long, glabrous, stipe up to *ca* 5 mm long.

Uncommon, found in the Moreton and Darling Downs districts. Flowers mainly summer.

9. *Swainsona fraseri* Benth.

Erect, up to *ca* 2 m tall, stems with sparse appressed hairs. Stipules 1.5–6 mm long; leaflets 13–27, blades rounded-oblong or narrowly oblong, apex slightly retuse with a short point, 0.7–1.8 cm \times 0.2–0.7 cm, glabrous above, sparsely hairy below. Racemes up to 25 cm long, flowers occupying upper half to two-thirds, pedicels 3–7 mm long; flowers mauve to purple, 1–1.2 cm long; calyx 3.5–5.5 mm long, glabrous or sparsely pubescent, teeth shorter than tube; standard 1–1.2 cm broad; ovary glabrous, stipitate, style with an incurved or almost coiled tip, sparsely bearded but with a dense tuft of hairs behind stigma. Pods inflated, up to *ca* 3 cm long, beak *ca* 6–10 mm long, glabrous, stipe 6–10 mm long. **Fig. 49L.**

Rare, known from the Moreton district. This species has been found in the past in areas now subject to development for housing, recreational and agricultural use. Flowers mainly spring.

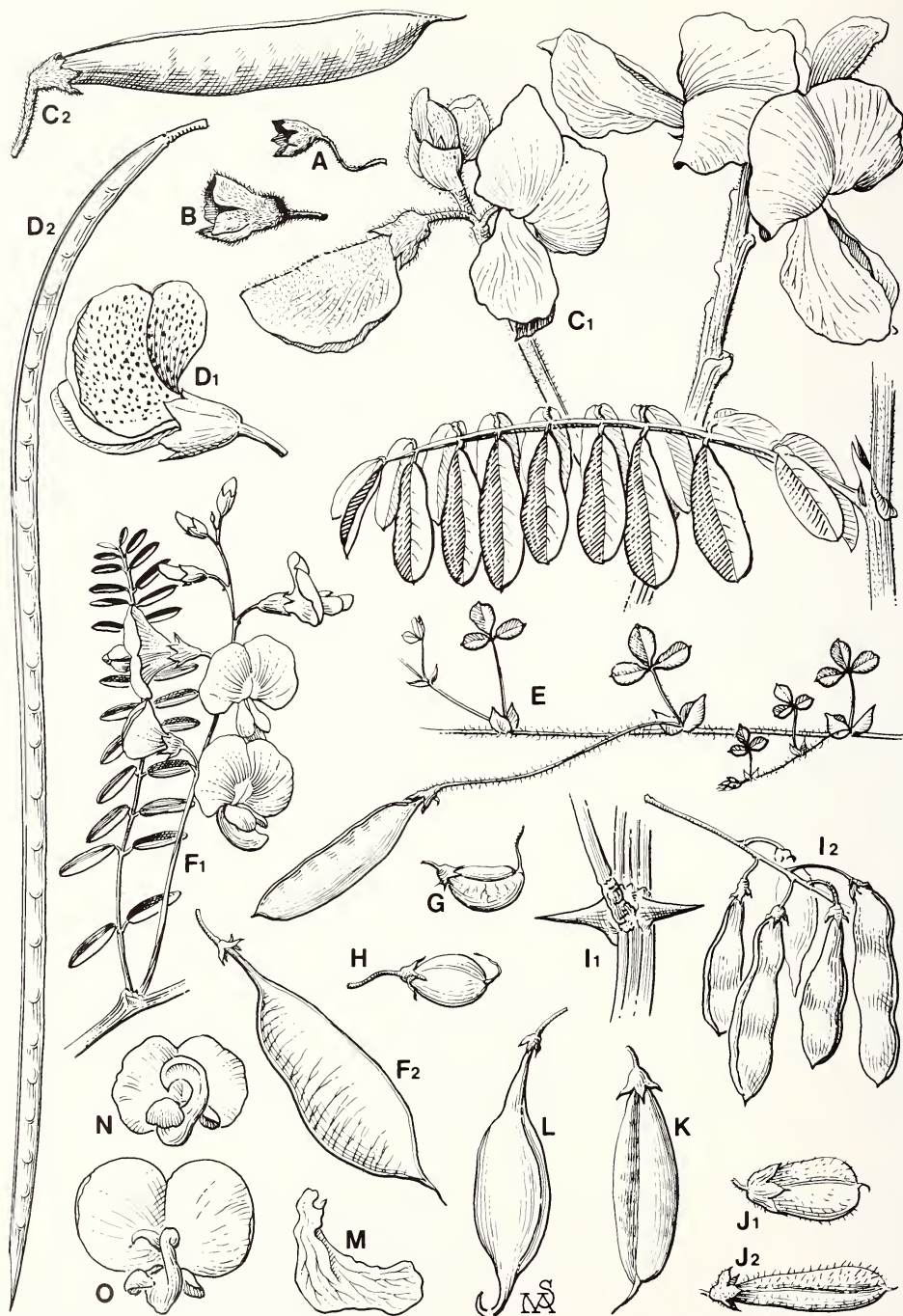


Fig. 49

FABACEAE — A-C *Tephrosia* spp. — A *T. candida*, calyx x1; B *T. vogelii*, calyx x1; C₁-C₂ *T. glomulifera*, C₁ inflorescence and leaf x1, C₂ fruit x1; D₁-D₂ *Sesbania cannabina*, D₁ flower x2, D₂ fruit x1; E *Muelleranthus stipularis*, part of stem with fruit x1; F-H *Swainsona* spp. — F₁-F₂ *S. galegifolia*, F₁ part of flowering plant x1, F₂ fruit x1; G *S. microphylla* subsp. *affinis*, fruit x1; H *S. oroboides*, fruit x1; I₁-I₂ *Robinia pseudoacacia*, I₁ stipular spines x1, I₂ fruiting inflorescence x $\frac{2}{3}$; J-O *Swainsona* spp. — J₁-J₂ *S. phacoides*, showing 2 fruit types x1; K *S. luteola*, fruit x1; L *S. fraseri*, fruit x1; M *S. campylantha*, wing petal x2; N *S. swainsonioides*, flower x1; O *S. procumbens*, flower x1.

10. *Swainsona luteola* F. Muell.**DWARF DARLING PEA**

Prostrate or ascending, often forming mats; pubescence of sparse to dense, \pm appressed, basifixed hairs. Stipules 2–5 mm long; leaflets 9–17, blades narrowly elliptic to elliptic to obovate, 0.7–2 cm \times 0.3–1 cm, \pm glabrous above, pubescent below. Racemes shorter than leaves, 3–8 cm long, flowers occupying upper half, pedicels 1–2 mm long; flowers very variable in colour, pink to purple to blue and perhaps also yellow, 6–8 mm long; calyx 3–4 mm long, glabrous to densely pubescent; standard not erect, lying along wings and keel, 5–9 mm long; ovary glabrous or with a line of hairs along suture or densely appressed pubescent, almost sessile, style bearded in upper part, tip coiled. Pods cylindrical, 2–4 cm \times 0.3–0.5 cm, glabrous or pubescent. **Fig. 49K.**

Known from the Darling Downs and Burnett districts and the western part of the Moreton district. Flowers mainly spring–summer.

11. *Swainsona greyana* Lindl.**DARLING PEA**

Perennial, up to *ca* 2 m tall, several stems arising from woody root, young shoots with fine woolly hairs. Stipules 1.5–10 mm long; leaflets usually 17–19, blades narrowly oblong or elliptic, apex retuse, 0.6–2.5 cm \times 0.2–1 cm, glabrous above, usually with few woolly hairs below. Racemes from 10–40 cm long, flowers occupying upper half to two-thirds, pedicel 4–10 mm long, woolly hairy; flowers purplish-pink or lavender, occasionally white, 1.5–2 cm long; calyx 5–9 mm long, covered with dense white woolly hairs; standard 1.5–2.2 cm broad; ovary glabrous, stipitate, style bearded evenly, tip straight or minutely inflexed. Pods inflated, *ca* 3–5 cm \times 1.5–2 cm, beak *ca* 4 mm long, glabrous, stipe *ca* 10 mm long.

Known from the south-western Darling Downs district. Flowers mostly spring–summer. The species is considered poisonous to stock.

12. *Swainsona galegifolia* (Andr.) R.Br.**SMOOTH DARLING PEA**

Vicia galegifolia Andr.

Perennial, decumbent or erect, up to 2 m tall, many stemmed, glabrous or with very sparse appressed hairs. Stipules *ca* 1.7 mm long; leaflets 21–25, blades linear to narrowly obovate, apex rounded, truncate or retuse, with a small point, 0.6–2 cm \times 0.15–0.8 cm. Racemes up to *ca* 15 cm or more long, flowers in upper half, pedicels up to *ca* 1.1 cm long; flowers blue through mauve to purple to deep red, *ca* 1.2–1.6 cm long; calyx 4–6 mm long, glabrous or sparsely woolly pubescent; standard 1.5–2 cm broad; ovary glabrous or with woolly pubescence, wearing off with age, stipitate, style evenly bearded along length, tip straight. Pods inflated, 1.5–5 cm \times 1.5–2.5 cm, beak 0.5–1.5 cm, glabrous or with a few hairs, stipe 5–10 mm long. **Fig. 49F.**

Widespread throughout the region. Flowers spring–summer. Frequent cases of poisoning of sheep, cattle and horses are attributed to this species.

37. ASTRAGALUS L.

Shrubs or herbs. Leaves stipulate; blades usually imparipinnate. Inflorescences spicate or racemose, rarely umbellate or solitary, peduncles axillary or arising at the rootstock, bracts often small, bracteoles usually small or absent; calyx tubular, teeth subequal; standard erect; vexillary stamen free, remainder connate, anthers uniform; style curved or straight. Fruits 2-valved pods; seeds estrophiolate.

About 2000 species from the Northern Hemisphere, South America and southern Africa; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Astragalus hamosus* L.**MILK VETCH**

Annual, erect or ascending, up to *ca* 50 cm tall; stems with appressed, asymmetrically medifixed hairs. Leaflets 13–31, blades oblong to obovate, apex retuse, 6–10 mm \times 2–4 mm, with appressed, asymmetrically medifixed hairs. Inflorescences spicate, 5–10-flowered, bracts 3–4 mm long; calyx tubular-campanulate, 6–8 mm long, teeth 3 mm long; corolla white or pale yellow; standard *ca* 8 mm long. Pods usually falcate, 3–6 cm \times 0.25–0.3 cm, \pm glabrous or with minute appressed hairs. **Fig. 50A.**

Native of the Mediterranean region and western Asia; occasionally found in the Darling Downs district. Flowers spring–summer.

38. GLYCYRRHIZA L.

Perennial herbs or undershrubs. Leaves stipulate; blades imparipinnate. Inflorescences axillary spikes or racemes, bracts narrow, deciduous, bracteoles absent; calyx lobes subequal or upper 2 shorter or connate; vexillary stamen free, or connate with remainder into sheath split above, anthers alternately smaller; style incurved at apex, glabrous. Fruits \pm indehiscent, usually bristly; seeds estrophiolate.

About 18 species from temperate and subtropical regions of the world; 1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Glycyrrhiza acanthocarpa* (Lindl.) J. M. Black NATIVE LIQUORICE
Indigofera acanthocarpa Lindl.; *Glycyrrhiza psoraleoides* Benth.

Erect, up to *ca* 1 m tall. Leaflets 9–13, blades oblong-ovate or obovate, 1.5–2 cm \times 0.6–0.8 cm, usually with a few curved hairs mostly along the margins and midrib, minutely glandular punctate. Flowers purple in spike-like racemes; calyx 3–4 mm long; standard erect, *ca* 7 mm long, wings and keel shorter. Fruits ovoid-compressed, 5–6 mm long, covered with hard, straight or hooked prickles; seeds usually 1. **Fig. 50B.**

Not common, known from the western parts of the region. Flowers spring to autumn.

39. SCORPIURUS L.

Annual, prostrate herbs. Stipules partly adnate to petiole; leaf blades undivided, margin entire. Inflorescences pedunculate axillary racemes, 1–few-flowered; calyx shortly campanulate; teeth slightly unequal; petals clawed; vexillary stamen free, remainder connate, alternate filaments dilated upwards, anthers uniform; ovary sessile, style incurved. Fruits indehiscent, jointed or subcontinuous, coiled or twisted, with lengthwise ribs smooth or with spines or tubercles; seeds estrophiolate.

About 8 species Europe; 1 species apparently naturalized Australia, occurring in south-eastern Queensland.

1. **Scorpiurus muricatus* L. var. *subvillosus* (L.) Fiori SCORPION PLANT
Scorpiurus subvillosa L.

Stems up to *ca* 30 cm long. Leaves with petioles about as long as blades; blades obovate, base tapered, 3–10 cm long. Peduncles 3–13 cm long; flowers yellow to orange, *ca* 5 mm long; keel with a curved beak. Fruits up to *ca* 2 cm long in coiled state, ribs covered with \pm pointed spines at least half as long as the width of the fruit. **Fig. 50F.**

Native of Europe, recorded once from the outskirts of Toowoomba.

40. ORNITHOPUS L.

Slender herbs. Leaves stipulate; blades exstipellate, imparipinnate. Flowers small, in heads or umbels on long axillary peduncles, bracts and bracteoles small; calyx lobes subequal or upper 2 united higher up; keel almost straight, shorter than wings; vexillary stamen free, remainder connate, alternate filaments dilated above, anthers uniform; style inflexed, glabrous. Fruits linear, compressed or subterete, jointed; seeds estrophiolate.

About 10 species from South America, Africa, southern Europe and western Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Ornithopus pinnatus* (Miller) Druce SLENDER SERRADELLA
Scorpiurus pinnata Miller

Annual, ascending, up to *ca* 50 cm tall, glabrous or sparsely hairy. Leaflets 7–15, blades elliptic, 7–10 mm \times 2–4 mm. Inflorescences 1–5-flowered, peduncle up to *ca* 6 cm long; flowers yellow, 6–8 mm long. Fruits 2–3.5 cm long; segments 8–15. **Fig. 50E.**

Native of the Mediterranean region; occasionally found as a weed in the Stanthorpe area.

41. HEDYSARUM L.

Perennial herbs or shrubs. Leaves stipulate; blades exstipellate, imparipinnate; leaflet blades entire. Flowers in axillary racemes or heads, bracts and bracteoles present; calyx lobes subequal; vexillary stamen free, remainder connate, anthers uniform; ovary subsessile, style filiform, abruptly inflexed. Fruit segments indehiscent, compressed, often spinulose or muricate; seeds estrophiolate.

About 150 species from the Northern Hemisphere; 1 species occasionally cultivated for fodder, naturalized Australia, occurring in south-eastern Queensland.

1. **Hedysarum coronarium* L. SOOLA CLOVER; FRENCH HONEYSUCKLE
Mostly erect, up to *ca* 1 m tall. Leaflets 5–11, blades elliptic to obovate, 1.5–3.5 cm × 1–2 cm, ± glabrous above and below or pubescent below. Racemes dense, up to *ca* 20 cm long, including peduncle, flowers in upper part; calyx 5–6 mm long, sparsely to densely hairy; corolla reddish-purple, 1.2–1.5 cm long. Fruits up to *ca* 1 cm long, with 2–4 glabrous, spinulose segments. **Fig. 50C.**

Native of the Mediterranean region; apparently naturalized in the Moreton, Darling Downs and Burnett districts. Flowers spring.

42. AESCHYNOMENE L.

Shrubs or herbs. Leaves stipulate; blades exstipellate, imparipinnate or paripinnate, leaflets numerous; blades small, entire. Inflorescences usually axillary, simple or branched racemes, bracts and bracteoles present; calyx lobes subequal or connate into lips; stamens connate into sheath split towards keel, rarely one free, anthers uniform; ovary stipitate, style incurved, glabrous. Fruits 2- or more-jointed, articles flat and usually indehiscent, stipitate.

About 150 species from tropical and subtropical parts of the world; 3 species Australia; 2 species south-eastern Queensland.

- | | |
|---------------------------------------|-------------------------|
| 1. Leaves with <i>ca</i> 5–9 leaflets | 1. <i>A. brevifolia</i> |
| Leaves with <i>ca</i> 39–71 leaflets | 2. <i>A. indica</i> |

1. *Aeschynomene brevifolia* L. ex Poiret

Bentham, "Fl. Aust." 2:227 (1864) included this species in *Aeschynomene falcata* DC. var. *paucijuga* Benth., now considered distinct and not occurring in Australia. The species has also been misidentified as *A. brasiliiana* (Poiret) DC.

Perennial from a woody rootstock, decumbent or ascending, up to *ca* 60 cm tall, stems with long spreading hairs, short appressed hairs or almost glabrous. Leaflets mostly 5–9, blades obovate, base somewhat oblique, 5–9 mm × 2–4 mm, glabrous above with a few hairs below. Inflorescences mostly 2- or 3-flowered; flowers *ca* 5 mm long; standard *ca* 6 mm long. Fruits with upper edge nearly straight, lower edge deeply indented between seeds, producing 2–6 articles, 3–4 mm diameter, usually with scattered appressed hairs, stipe 4–8 mm long. **Fig. 50G.**

Widespread but not common in the region. Flowers spring to autumn.

2. *Aeschynomene indica* L.

BUDDA PEA

Erect, up to *ca* 2 m tall, glabrous to hispid. Leaflets mostly 39–71, blades elliptic-oblong, 2–10 mm × 1–2.5 mm, glabrous. Inflorescences 2–4-flowered; flowers 7–10 mm long; standard *ca* 7–9 mm long. Fruits with upper edge nearly straight, lower edge slightly indented, producing 5–10 articles, articles subquadrate 5–6 mm × 4–6 mm, glabrous or sparsely hispid, stipe 4–10 mm long. **Fig. 50H.**

Widespread but not common in the region. Flowers mostly summer–autumn.



Fig. 50

FABACEAE — A₁-A₂, *Astragalus hamosus*, A₁, flowering and fruiting stem $\times \frac{1}{2}$, A₂, fruit $\times 1$; B₁-B₂, *Glycyrrhiza acanthocarpa*, B₁, part of fruiting stem $\times \frac{1}{2}$, B₂, flower $\times 6$, B₃, fruit $\times 3$; C₁-C₂, *Hedysarum coronarium*, C₁, part of flowering stem $\times \frac{1}{2}$, C₂, fruit $\times 2$; D₁-D₃, *Smithia sensitiva*, D₁, part of flowering and fruiting stem $\times \frac{1}{2}$, D₂, fruiting calyx $\times 3$, D₃, stipule $\times 6$; E₁-E₂, *Ornithopus pinnatus*, E₁, part of fruiting stem $\times \frac{1}{2}$, E₂, fruit $\times 1 \frac{1}{2}$; F₁-F₂, *Scorpiurus muricatus* var. *subvillosus*, F₁, part of flowering stem $\times \frac{1}{2}$, F₂, fruit $\times \frac{1}{2}$; G-H *Aeschynomene* spp. — G *A. brevifolia*, fruit $\times 1$; H *A. indica*, fruit $\times 1$.

43. SMITHIA Aiton

Herbs or shrublets. Stipules appendaged; blades exstipellate, paripinnate; leaflets up to *ca* 12 pairs, opposite, blades basally oblique. Inflorescences axillary racemes or fascicles, bracts and bracteoles scarious; calyx scarious, 2-lipped; stamens united into tube split above and below, anthers uniform; ovary shortly stipitate, style inflexed, glabrous. Fruits enclosed by persistent calyx, jointed, indehiscent, stipitate.

About 70 species from tropical Africa, through tropical Asia to Australia; 2 species Australia; 1 species south-eastern Queensland.

1. *Smithia sensitiva* Aiton

Decumbent or ascending, arising from a strong tap-root, stems up to 90 cm long. Leaflets 3–7 pairs, blades oblong, 0.4–1.5 cm × 0.2–0.3 cm, glabrous above with a few long hairs below. Inflorescences racemose, flowers 1–10, peduncle 0.6–3 cm long; flowers yellow, 8–9 mm long; calyx 6–9 mm long; standard 8–9 mm long. Fruits with up to 7 articles. **Fig. 50D.**

Known from near-coastal areas of the Moreton and Wide Bay districts. Flowers mostly autumn.

44. STYLOSANTHES Swartz

Herbs. Stipules adnate to base of petiole; blades exstipellate, pinnately 3-foliolate. Inflorescences dense spikes or heads; calyx tube filiform, lobes membranous, upper 4 connate; petals and stamens inserted at apex of tube; stamens connate into tube; anthers alternately large and sub-basifixed, short and versatile; style long and filiform. Fruits compressed, hooked at apex by persistent style. 1- or 2-jointed, articles indehiscent, sessile; seeds estrophiolate.

About 50 species from tropical and subtropical parts of the world; 2 species naturalized Australia, both occurring south-eastern Queensland.

- | | |
|--|-------------------------|
| 1. Beak of fruits conspicuous, curved, 1.5–5 mm long; calyx lobes acute,
ca 1.5 mm long | 1. <i>S. humilis</i> |
| Beak of fruits inconspicuous, 0.1–0.5 mm long; calyx lobes obtuse to
acute, 3–5 mm long | 2. <i>S. guianensis</i> |

1. **Stylosanthes humilis* Kunth

TOWNSVILLE STYLO

Stylosanthes sundaica Taub.

Ascending or occasionally prostrate, herbaceous to subliguous at base, up to *ca* 50 cm tall. Sheath of stipules 3–5 mm long, teeth 2–3.5 mm long; petioles 2–5 mm long, shortly hairy, often with scattered bristles; leaflet blades ovate or elliptic, apex acute, terminal up to 1.5 cm × 0.35 cm, rarely larger, laterals up to 1.15 cm × 0.3 cm, almost glabrous or with short bristly hairs, lateral veins in 3–4 pairs. Spikes short, 3–4-flowered, bracts 1–3-fid, 2–4.5 mm long, usually bristly, bracteoles up to *ca* 3 mm long; calyx tube 4–5 mm long, lobes acute, *ca* 1.5 mm long; standard 3–4 mm long. Fruits 1.5–4 mm × 1.5–2.5 mm, beak strongly curved and conspicuous, 1.5–5 mm long, up to *ca* 4 times longer than fruit. **Fig. 51B.**

Native of tropical America; grown as a fodder plant and naturalized in many parts of the region. Flowers mostly autumn–winter.

2. **Stylosanthes guianensis* (Aubl.) Swartz

STYLO

Trifolium guianensis Aubl.

Erect, up to *ca* 1 m tall, glabrous or hairy. Stipular sheath 0.2–1.5 cm long, teeth 0.2–1 cm long, glabrous to shortly hairy, hairs often stiff; petioles 1–10 mm long, glabrous to sparsely hairy; leaflet blades ovate to elliptic, apex acute or occasionally obtuse, margin sometimes minutely spinulose-toothed, terminal 0.5–3 cm × 0.2–1 cm, laterals slightly smaller, glabrous to sparsely hairy to tuberculate-bristly, lateral veins in 2–7 pairs. Spikes

2-40-flowered; bracts mostly 1-fid, 3-7 mm long; bracteoles 2-3 mm long; calyx tube 4-8 mm long, glabrous to sparsely hairy, lobes obtuse to acute, 3-5 mm long; standard 4-8 mm long. Fruits with upper articulation fertile, 2-3 mm long, beak minute, 0.1-0.5 mm long.

Native of central America; naturalized in the eastern part of the region. Flowers most of the year.

45. ZORNIA Gmelin

Herbs, rarely subshrubs. Stipules peltate, paired; leaf blades exstipellate, digitately 2- or 4-foliolate. Inflorescences spicate, terminal or axillary, 1-several-flowered, bracts peltate, paired, bracteoles absent; calyx with short tube, two upper lobes united higher up; stamens connate into a closed tube; anthers alternately long and sub-basifixed, short and versatile; ovary sessile, style filiform. Fruits compressed, upper suture ± straight, lower indented, producing 2-5 articles; seeds estrophiolate.

About 73 species mainly from tropical areas; 12 species Australia; 2 species south-eastern Queensland. Both have been included under *Z. diphylla* Pers. by early workers.

- 1. Leaflets of lower and upper leaves essentially the same in shape, although usually smaller below, usually pubescent 1. *Z. muriculata*
- Leaflets of lower and upper leaves different in shape, lower usually broader and shorter than upper, upper narrowly ovate to linear, glabrous or with sparse hairs 2. *Z. dyctiocarpa*

1. *Zornia muriculata* Mohlenbr. **ZORNIA**
 Perennial, prostrate to erect, up to ca 30 cm tall, pubescent or rarely glabrous. Leaflet blades elliptic to linear-ovate to linear, up to ca 3 cm × 0.4 cm, usually glandular punctate as well as pubescent. Inflorescences interrupted, bracts narrow, apex acute, up to ca 1.2 cm × 0.4 cm; calyx ca 3.5 mm long; corolla orange to yellow, ca 10 mm long. Fruits with 3-6 articles, articles ca 1.5-2 mm long and broad, bristles short, glabrous or occasionally ciliate, reticulate. **Fig. 51F.**

Widespread and moderately common throughout the region. Flowers found most of the year.

2. *Zornia dyctiocarpa* DC. **ZORNIA**
 Perennial, prostrate or ascending, glabrous or with sparse hairs. Lower leaflet blades ovate, ca 1-2 cm × 0.5 cm, sometimes larger; upper leaflet blades narrowly ovate to linear, up to ca 3 cm × 0.15-0.35 cm. Inflorescences interrupted, bracts narrowly ovate, apex acute, up to ca 9 mm × 5 mm; calyx ca 4.5 mm long; corolla yellow, 0.6-1.1 cm long. Fruits with 5-9 articles, articles 1.9-2.3 mm × 1.5-1.9 mm, bristles none to many, glabrous to pubescent, reticulate.

Widespread and common throughout the region. Flowers found most of the year.

46. ARACHIS L.

Low herbs. Stipules partly adnate to petiole; leaf blades exstipellate, paripinnate; leaflets usually in 2 pairs. Inflorescences axillary spikes, each flower in axil of bract, bracteoles at base of calyx linear; calyx tube filiform, 4 upper lobes connate, lower lobe distinct; petals and stamens inserted at apex of calyx tube; keel incurved, beaked; stamens connate into closed tube, anthers alternately long and sub-basifixed, short and versatile; style long, hairy at top. After flowering, torus elongates and bends down, forcing young fruit underground, where it matures. Fruits indehiscent, reticulate, continuous between seeds; seeds 1-5, irregularly ovoid, fleshy, estrophiolate.

About 15 species from South America; 1 species widely cultivated Australia, naturalized in south-eastern Queensland.

1. **Arachis hypogaea* L.

PEA-NUT

Annual, up to ca 50 cm tall. Stipules 2–4 cm long, free portion subulate; leaflet blades elliptic to obovate, 1–8 cm × 0.8–4 cm, uppermost largest, glabrous. Flowers yellow, solitary or 2 together in spikes; standard 0.9–1.5 cm broad. Fruits 2–7 cm long, glabrous, ripening woody. Fig. 51C.

Native of tropical South America; cultivated for its edible seeds, occasionally apparently naturalized or a few plants persisting as a relic after harvesting.

47. **DESMODIUM** Desvaux

Herbs or shrubs. Leaves stipulate; blades stipellate, pinnately 3-foliolate or sometimes 1- or 5-foliolate. Inflorescences terminal or axillary racemes, or rarely fascicled, bracts present, sometimes deciduous; calyx tube short, 2 upper lobes ± connate; vexillary stamen connate into tube with others, sometimes free below, anthers uniform; style inflexed or incurved, not bearded. Fruits compressed, jointed, joints mostly indehiscent and separating from each other; seeds estrophiolate.

About 450 species from tropical and subtropical regions of the world; ca 30 species Australia; 11 species south-eastern Queensland.

- | | | |
|---|-----------------------------|----|
| 1. Leaves all 1-foliolate | 1. <i>D. gangeticum</i> | |
| Leaves mostly 3-foliolate, occasionally a few 1-foliolate and 5-foliolate leaves | | 2 |
| 2. Leaflets with a conspicuous longitudinal silver stripe | 2. <i>D. uncinatum</i> | |
| Leaflets without a stripe | | 3 |
| 3. Articles of mature fruit inflated | 3. <i>D. campylocaulon</i> | |
| Articles of mature fruit ± flat | | 4 |
| 4. Width of isthmus between fruit articles less than ½ the width of the articles, upper suture usually indented | | 5 |
| Width of isthmus between fruit articles ½–⅔ the width of articles, upper suture ± straight | | 9 |
| 5. Upper and lower sutures of fruit equally indented | 4. <i>D. tortuosum</i> | |
| Upper suture of fruit less deeply indented than lower suture | | 6 |
| 6. Pedicels 5 mm long or longer | | 7 |
| Pedicels up to 2 mm long | | 8 |
| 7. Stems with dense rusty-coloured hairs | 5. <i>D. rhytidophyllum</i> | |
| Stems glabrous or with sparse pale coloured hairs | 6. <i>D. varians</i> | |
| 8. Stems and lower leaf surface with dense appressed silky hairs | 7. <i>D. nemorosum</i> | |
| Stems and lower leaf surface with sparse spreading hooked hairs, sometimes appearing glabrous | 8. <i>D. brachypodum</i> | |
| 9. Leaflets less than 1.5 cm long; inflorescence a cluster, axillary or leaf-opposed | 9. <i>D. triflorum</i> | |
| Leaflets 1.5 cm or more long; inflorescence racemose, axillary or terminal | | 10 |
| 10. Fruits standing erect | 10. <i>D. heterocarpon</i> | |
| Fruits hanging down | | 11 |
| 11. Plants erect | 7. <i>D. nemorosum</i> | |
| Plants trailing and scrambling | 11. <i>D. intortum</i> | |

1. *Desmodium gangeticum* (L.) DC.*Hedysarum gangeticum* L.

Erect up to 2 m tall, or prostrate with stems up to 40 cm long; young parts glabrous or sparsely to densely hairy with straight appressed to spreading greyish hairs and minute hooked hairs. Stipules (0.4–)0.7–1.5 cm long; blades 1-foliolate; leaflet blades elliptic to ovate to obovate, apex rounded, 1–6 cm × 0.8–4 cm in south-eastern Queensland, up to 18 cm × 8 cm elsewhere, upper surface sparsely to densely hairy with minute hooked hairs, with a few long, straight hairs on main nerves, lower surface clothed with appressed or ± spreading hairs but no hooked hairs. Inflorescences mostly 10–30 cm long, pedicels 3–4 mm long, extending to 4–6 mm in fruit; corolla white to pale yellow or pink to violet, 4–5 mm long. Fruits 1–2.5 cm × 0.2–0.25 cm, 4–8-articled, articles *ca* 3 mm long, upper suture slightly indented, lower suture more deeply indented. **Fig. 51J.**

Known from the Moreton and Wide Bay districts, often in open forests. Flowers summer–autumn.

2. **Desmodium uncinatum* (Jacq.) DC.**SILVER-LEAF DESMODIUM***Hedysarum uncinatum* Jacq.

Robust, trailing and scrambling; stems up to 1.5 m or more long, with dense to sparse spreading hooked hairs. Stipules 3–5 mm long; blades 3-foliolate; leaflet blades elliptic-ovate, apex acute or sometimes obtuse, 2–10 cm × 1–6 cm, silky appressed hairy above and below, upper surface with a characteristic longitudinal silver stripe. Inflorescences up to 30 cm long, pedicels 5–10 mm long; corolla pink to blue, 7–10 mm long. Fruits 1–3 cm × 0.15–0.3 cm, 3–10-articled, articles 5–7 mm long, upper suture slightly indented, lower deeply so, covered with hooked hairs. **Fig. 51I.**

Native of South America; introduced as a pasture plant, occasionally met with along roadsides, fences, etc., apparently naturalized.

3. *Desmodium campylocaulon* F. Muell.

Robust, diffuse or trailing, stems with sparse or moderately dense hooked spreading hairs. Stipules 2.5–10 mm long; blades 3-foliolate, leaflet blades narrowly ovate, apex obtuse or acute, base cuneate, 2–10 cm × 0.5–2 cm, glabrous or sparsely hairy. Inflorescences up to *ca* 10 cm long; pedicels 5–10 mm long; corolla pink or bluish, *ca* 6 mm long. Fruits 1.5–2 cm × 0.2–0.3 cm, 3–6-articled, articles inflated and ± reticulate nerved at maturity.

Rare in the region, known only from the northern Darling Downs district. Flowers mainly summer–autumn but some most of the year.

4. **Desmodium tortuosum* (Swartz) DC.**FLORIDA BEGGAR-WEED***Hedysarum tortuosum* Swartz

Annual or perennial, erect or straggling, up to 1 m tall or taller, with hooked and simple hairs. Stipules 5–7 mm long; blades 3-foliolate; leaflet blades ovate, ovate-elliptic or elliptic, 2–11 cm × 1–4.5 cm, densely to sparsely hairy above and below. Inflorescences up to 30 cm or more long; pedicels slender, up to *ca* 1.5 cm long; corolla white or pink to pale blue, *ca* 4 mm long. Fruits 1.5–2.5 cm × *ca* 0.3 cm, 2–6-articled, articles 4–5 mm long, upper and lower sutures deeply indented, covered with hooked hairs. **Fig. 51L.**

Native of tropical America and Africa; naturalized in the region. Flowers most of the year, mainly summer–autumn.

5. *Desmodium rhytidophyllum* F. Muell. ex Benth.

Perennial with long procumbent ± trailing branches, branches covered with dense, spreading, rusty-coloured hairs. Stipules up to *ca* 8 mm long; blades 3-foliolate; leaflet blades ovate-rhomboid, 1.5–7 cm × 1–3.5 cm, silky appressed hairy above and below. Inflorescences up to *ca* 20 cm long, pedicels slender, 5–7 mm long; corolla purple, *ca* 6 mm long. Fruits 1.5–2.5 cm × 0.2–0.25 cm, 2–7-articled, articles 2–3 mm long, upper sutures indented, lower slightly more so, covered with minute hooked hairs.

Moderately common except in the Darling Downs district, usually found on sandy or stony soils. Flowers most of the year, mostly summer–autumn.

6. *Desmodium varians* Endl.

SLENDER TICK TREFOIL

Prostrate or ascending, stems 15–50 cm long, whole plant \pm glabrous to sparsely hairy. Stipules *ca* 5 mm long; blades 3-foliolate; leaflet blades of lower leaves or sometimes all broadly obovate or almost orbicular or obcordate, 5–10 mm \times 5–10 mm, leaflet blades of upper leaves ovate-oblong to almost linear, 1–4 cm \times 0.5–0.8 cm, sometimes terminal leaflet considerably longer than laterals. Inflorescences *ca* 10–15 cm long, pedicels 0.5–1.5 cm long; corolla pink to white, *ca* 5 mm long. Fruits 1–2 cm \times *ca* 3 mm, 3–6-articled, articles 3–4 mm long, upper suture slightly indented, lower deeply so.

Widespread but not common. Flowers most of the year.

7. *Desmodium nemorosum* F. Muell. ex Benth.

Erect, 0.5–1 m tall; branches densely covered with greyish appressed silky hairs. Stipules 0.5–1.3 cm long; blades 1–3-foliolate; terminal leaflet blades usually very conspicuously larger than laterals, ovate or elliptic, apex acute or obtuse, 2–8 cm \times 1–3.5 cm, laterals similar in shape to terminal ones but smaller, upper surface glabrous, except sometimes along midrib, lower surface with dense appressed greyish silky hairs. Inflorescences up to 20 cm long, pedicels 0.7–2 mm long, ascending in flower, deflexed in fruit; corolla purple, up to *ca* 8 mm long. Fruits mostly 2–5-articled, articles 5–10 mm long, upper suture nearly straight, lower indented, densely covered with hooked hairs.

Not common, known from the Moreton and Wide Bay districts, usually in areas near rainforest. Flowers spring to autumn.

This species has been divided into varieties but in Queensland specimens there does not appear to be a consistent set of characters that can be used to separate them and they are not included here.

8. *Desmodium brachypodum* A. Gray

Perennial, erect or ascending, 30–60 cm tall; stems covered with short, spreading, hooked hairs. Stipules 4–6(–8) mm long; blades 3-foliolate, mixed with 5-foliolate ones; leaflet blades ovate or elliptic, apex mostly obtuse, 1–7 cm \times 0.8–4 cm, glabrous above except for midrib, lower surface and midrib with minute hooked hairs, also with a few straight hairs. Inflorescences usually 15–40 cm long, pedicels 1–2 mm long; corolla purplish-red or yellowish, *ca* 4 mm long, conspicuously clawed. Fruits 2–4 cm \times 0.25–0.3 cm, 5–8-articled, articles 5–6 mm long, upper suture nearly straight, or slightly indented, lower suture deeply indented, densely covered with minute hooked hairs. **Fig. 51K.**

Widespread and moderately common in the region. Flowers spring to autumn.

On drying, the leaves have a characteristic bluish-black tinge.

9. *Desmodium triflorum* (L.) DC.

CREEPING TICK TREFOIL

Hedysarum triflorum L.

Procumbent, stems 10–50 cm long; young shoots and branches sparsely to densely hairy. Stipules 3–5 mm long; blades 3-foliolate, occasionally a few 1-foliolate; leaflet blades obcordate to broadly obovate, apex emarginate, 0.2–1.2 cm \times 0.2–1.1 cm, glabrous above, lower surface appressed silky hairy, becoming glabrous with age. Inflorescences axillary or leaf opposed clusters, 2–5-flowered, pedicels 0.3–0.8 cm long in flower, extending to 0.5–1.3 cm in fruit; corolla pink to purple, occasionally white to yellow, *ca* 4.5 mm long. Fruits 0.6–1.7 cm \times 0.2–0.3 cm, 1–7-articled, articles 2.5–3 mm long, upper suture not indented, lower suture indented, sparsely hairy. **Fig. 51H.**

Not common but widespread except for the Darling Downs district. Flowers mostly autumn to summer.

10. *Desmodium heterocarpon* (L.) DC.

Hedysarum heterocarpon L.

Herb or subshrub, ascending or prostrate; stems up to 3 m long, \pm glabrous when old, subglabrous to densely hairy with spreading or appressed hairs when young. Stipules 0.7–1.5 cm long; petioles 1–3.5 cm long; blades 3-foliolate, occasionally some 1-foliolate; leaflet blades narrowly to broadly elliptic to ovate or obovate, apex retuse, obtuse or acute, (1.5–)2–6(–9) cm \times (1–)1.5–3(–4) cm, upper surface with few appressed hairs.

lower surface appressed hairy. Inflorescences covered with bracts when young, laxly to densely flowered, pedicels 2–8 mm long; corolla white through pink to purple, *ca* 6 mm long. Fruits 1–3 cm × 0.2–0.3 cm, 4–8-articled, each article *ca* 3 mm long, upper suture nearly straight, lower suture indented, ± glabrous to densely hairy, hairs hooked.

2 varieties occur in the region:

- | | |
|--|---|
| 1. Rachis of inflorescence covered with spreading hooked hairs;
inflorescence mostly lax | <i>D. heterocarpon</i> var. <i>heterocarpon</i> |
| Rachis of inflorescence covered with dense straight appressed hairs;
inflorescence mostly dense | <i>D. heterocarpon</i> var. <i>strigosum</i> |

D. heterocarpon var. **heterocarpon** (*D. trichocaulon* DC.) is widespread in the region, often in open forests. Flowers mainly summer–autumn. **D. heterocarpon** var. **strigosum** van Meeuwen (*D. polycarpon* (Poir.) DC.) is known from the Moreton and Wide Bay districts, often in sandy, near-coastal areas. Flowers mainly summer–autumn.

11. **Desmodium intortum* (Miller) Urban GREEN-LEAF DESMIDIUM *Hedysarum intortum* Miller

Robust, trailing and scrambling; stems up to 1.5 m or more long, ± glabrous to densely hairy, hairs straight or hooked but recurved along stem. Stipules up to *ca* 1 cm long, deciduous; blades 3-foliolate; leaflet blades ovate or narrowly ovate, apex acute or acuminate, 2–10 cm × 1–6 cm, sparsely to densely hairy above and below. Inflorescences up to 30 cm long, pedicels 4–6 mm long; corolla pink to blue, *ca* 10 mm long. Fruits 1–3 cm × 0.15–0.3 cm, 3–10-articled, upper and lower sutures indented, with minute hooked hairs.

Native of tropical Africa; introduced as a pasture plant, apparently naturalized on roadsides, uncommon. Flowers mainly summer–autumn.

48. PYCNOSPORA R.Br. ex Wight & Arn.

Shrublets or herbs. Leaves stipulate; blades stipellate, pinnately 3-foliolate, or the lowest often 1-foliolate. Inflorescences terminal racemes or panicles, flowers often paired on rachis, bracts deciduous, bracteoles absent; calyx with 2 upper lobes connate higher up; keel with a narrow lateral appendage on each side; vexillary stamen connate higher up with others or at length free, anthers uniform; style inflexed. Fruits turgid, dehiscent; seeds strophiolate.

1 species from tropical Africa and Asia through to Australia, occurring in south-eastern Queensland.

1. *Pycnospora lutescens* (Poir.) Schindler *Hedysarum lutescens* Poir.; *Pycnospora hedysaroides* R.Br.

Erect or prostrate, with several to many stems up to 50 cm long from a woody rootstock, stems pubescent. Leaflet blades oblong, elliptic, obovate or almost orbicular, 0.6–4 cm × 0.6–2 cm, sparsely to moderately densely hairy above, moderately densely hairy below. Inflorescences 3–7 cm long; corolla pink to blue or violet, *ca* 5 mm long. Pods yellowish at first but becoming black, 0.7–1.2 cm × 0.3–0.5 cm, shortly hairy. **Fig. 51A.**

Seldom collected, but known from the Burnett, Wide Bay and Moreton districts. Flowers spring to autumn, mainly summer–autumn.

49. URARIA Desvaux

Shrubs or herbs. Leaves stipulate; blades stipellate, pinnately 3-foliolate, occasionally 1-, 5- or 7-foliolate. Inflorescences terminal racemes, often spike-like, flowers paired on rachis, pedicels inflexed at top, bracts present, bracteoles absent; calyx with 2 upper lobes (becoming the lower by inflexing of the pedicel) shorter; vexillary stamen free, remainder

connate, anthers uniform; style inflexed above. Fruits constricted between seeds, enclosed in calyx, articles ovoid and folded back on each other; seeds estrophiolate.

About 20 species from tropical Africa, south-eastern Asia to Australia and the Pacific Is; 3 species Australia; 2 species south-eastern Queensland.

- | | |
|--|----------------------------|
| 1. Racemes long and slender, flowers scattered, bracts soon deciduous; pod with 3-6 articles | 1. <i>U. picta</i> |
| Racemes short, flowers dense, bracts long-persistent; pod with 1 or 2 articles | 2. <i>U. lagopodioides</i> |

1. *Uraria picta* (Jacq.) Desvaux

Hedysarum pictum Jacq.

Ascending or erect, 30–100 cm tall; stems with short spreading hairs at least when young. Leaf blades 3- or 5-foliolate, rarely 7-foliolate, lower leaves occasionally 1-foliolate; leaflet blades narrowly ovate to narrowly oblong, 4–8 cm × 1–2.5 cm, lower ones occasionally broadly ovate or broadly oblong, 4–6 cm × 2.5–4 cm. Racemes up to ca 18 cm long, rachis and pedicels with coarse, spreading, often hooked hairs; flowers reddish to violet; standard 6–10 mm long. Pods 3–6-articled, each article greyish white and 2.5–3 mm long, glabrous. **Fig. 51D.**

Uncommon, known from the Burnett and Moreton districts, probably also in the Wide Bay district. Flowers mainly summer–autumn.

2. *Uraria lagopodioides* (L.) Desvaux

Hedysarum lagopodioides L.

Procumbent or ascending, 15–30 cm tall; stems with spreading hairs. Leaf blades 1- or 3-foliolate; single or terminal leaflet blade almost orbicular to broadly cordate-ovate, 2–5 cm × 2–4.5 cm, lateral leaflet blades when present, smaller. Racemes dense, spike-like, up to ca 6 cm long, bracts long-persistent, with long-hairy margins; flowers reddish to violet; standard 5–7 mm long. Pods 1–2-articled, each article ca 3 mm long, glabrous or rarely with a few hairs.

Seldom collected, known from the Moreton district, probably also in the Wide Bay district. Flowers spring to autumn, mostly autumn.

50. ALYSICARPUS Necker ex Desvaux

Herbs. Leaves stipulate; blades stipellate, 1-foliolate, very rarely 3-foliolate. Flowers small, in terminal, rarely axillary racemes, pedicels often paired, bracts scarious and mostly deciduous; calyx deeply divided, 2 upper lobes often connate almost to apex; vexillary stamen free, remainder connate; ovary sessile or shortly stipitate, style filiform, incurved at apex, stigma broad, terminal. Fruits jointed, each article ovoid, globose or truncate at each end, indehiscent; seeds estrophiolate.

About 25 species from Africa to tropical and subtropical Australia; 4 species Australia; 1 species south-eastern Queensland.

1. *Alysicarpus bupleurifolius* (L.) DC.

SWEET ALYS

Hedysarum bupleurifolium L.

Erect or ascending herb, up to ca 60 cm tall. Stipules 3–10 mm long; petioles 1–3 mm long; blades 1-foliolate, linear or narrowly elliptic, occasionally elliptic, apex acute, base rounded, 1–7 cm × 0.2–0.6 cm, glabrous above, thinly hairy beneath. Racemes lax-flowered, up to ca 20 cm long; flowers yellow; calyx 5–8 mm long. Fruits up to ca 1.5 cm long, 3–8-articled, each article cylindrical. **Fig. 51E.**

Known from the northern Wide Bay district; also reported once as a weed of footpaths in Ashgrove, a Brisbane suburb, but has apparently died out there.



Fig. 51

FABACEAE — A₁-A₂, *Pycnospora lutescens*, A₁, inflorescence and leaf x1, A₂, fruit x1; B *Stylosanthes humilis*, fruiting inflorescence and leaves x1; C *Arachis hypogaea*, habit x $\frac{3}{8}$; D *Uraria picta*, fruit x6; E *Alysicarpus bupleurifolius*, fruit x3; F *Zornia muriculata*, fruit x3; G₁-G₂, *Lespedeza juncea* subsp. *sericea*, G₁, flower x3, G₂, fruit x6; H₁-H₂, *Desmodium* spp. — H₁-H₂, *D. triflorum*, H₁, habit x1, H₂, fruit x2; I *D. uncinatum*, leaf x $\frac{3}{8}$; J *D. gangeticum*, fruit x2; K *D. brachypodum*, fruit x2; L *D. tortuosum*, fruit x2; M₁-M₂, *Kummerowia striata*, M₁, flowering branch x1, M₂, fruit x3.

51. **LESPEDEZA** Michaux

Shrubs or shrublets, often with soft or silky indumentum. Leaves stipulate; blades exstipellate, pinnately 3-foliolate; leaflet blades entire. Flowers in axillary fascicles or racemes, bracts persistent, bracteoles 2 per flower; calyx lobes subequal or upper 2 shortly connate; vexillary stamen free or rarely connate with others, anthers uniform; style filiform, incurved. Fruits compressed, indehiscent; seeds estrophiolate.

About 100 species mainly from eastern Asia; 1 species Australia, occurring in south-eastern Queensland.

1. ***Lespedeza juncea* (L.f.) Pers. subsp. *sericea* (Thunb.) Steen.**

PERENNIAL LESPEDEZA

Hedysarum junceum L.f.; *H. sericeum* Thunb. non Miller; *Lespedeza cuneata* G. Don; *L. sericea* Miq.

Perennial, stiffly erect, 60–120 cm tall, sparsely white appressed hairy except upper side of leaves. Leaves dense on stems; leaflet blades obovate or cuneate, 0.7–2.5 cm × 0.2–0.4 cm, glabrous above, sparsely appressed hairy below. Flowers white with purple blotch on standard, 6–7 mm long; calyx 3–4 mm long. Fruits 2–3 mm diameter. **Fig. 51G.**

Widespread throughout the region, except the western Darling Downs district. Flowers mainly autumn.

52. **KUMMEROWIA** Schindler

Annual herbs. Leaves stipulate; blades exstipellate, digitately 3-foliolate; leaflet blades closely parallel-nerved. Flowers axillary, 1-many clustered together, often reduced and without petals, bracts and bracteoles persistent, bracteoles 4 per flower; calyx lobes subequal; vexillary stamen free, remainder connate. Fruits compressed, indehiscent, 1-seeded; seeds estrophiolate.

2 species Japan, and nearby parts of Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. ****Kummerowia striata* (Thunb.) Schindler**JAPANESE CLOVER;
JAPANESE LESPEDEZA

Hedysarum striatum Thunb.; *Lespedeza striata* (Thunb.) Hook & Arn.

Much branched, erect or spreading, up to ca 50 cm tall; stems with downwardly curved short white hairs. Leaflet blades obovate-elliptic, 0.6–1.5 cm × 0.2–0.8 cm, with a few appressed hairs on midrib and margins, lateral nerves conspicuous. Flowers reddish-purple, ca 5 mm long; calyx 3–3.5 mm long. Fruits ca 3.5 mm long with short scattered appressed hairs. **Fig. 51M.**

Native of Japan; naturalized in the Moreton and Wide Bay districts. Flowers summer-autumn.

53. **VICIA** L.

Herbs, usually climbing by means of a tendril. Leaf blades exstipellate, paripinnate, rachis of upper leaves at least usually ending in a simple or branched tendril; leaflets usually numerous. Flowers 1 or few together in axils or in racemes, bracts deciduous, bracteoles absent; calyx lobes subequal or upper 2 shorter; vexillary stamen free or ± connate with remainder, anthers uniform; style compressed dorsally, with at least a few hairs. Fruits compressed, dehiscent; seeds usually globose, arillate.

About 150 species found from the temperate northern hemisphere and South America; ca 6 species naturalized Australia; 4 species south-eastern Queensland.

- | | | |
|---|--|---|
| 1. Flowers on peduncles shorter than flowers, or peduncles absent | 1. <i>V. sativa</i> var. <i>angustifolia</i> | 2 |
| Flowers on peduncles longer than flowers | | |
| 2. Flowers 9 mm or more long | 2. <i>V. monantha</i> | 3 |
| Flowers less than 9 mm long | | |
| 3. Pods 2-seeded; flowers 2–4 mm long | 3. <i>V. hirsuta</i> | |
| Pods 4-seeded; flowers 5–8 mm long | 4. <i>V. tetrasperma</i> | |

1. **Vicia sativa* L. var. *angustifolia* L.
Vicia angustifolia L.

NARROW-LEAF VETCH

Annual, decumbent or climbing, stems up to ca 60 cm long, moderately hairy to ± glabrous. Leaflets usually in 4–8 pairs, blades linear to ovate or elliptic, 1–4 cm × 0.2–0.4 cm, lower ones occasionally wider. Flowers pink to violet, 1–3 together, peduncles absent or very short, each flower 1–1.8 cm long; calyx teeth equal, longer or shorter than tube. Pods black when ripe, 2–5 cm × 0.3–0.6 cm. **Fig. 52A.**

Native of Europe, introduced and naturalized in the region, quite common. Flowers late winter to spring.

2. **Vicia monantha* Retz.

SPURRED VETCH

Annual, prostrate or climbing, 30–60 cm tall, stems sparsely hairy. Leaflets in 4–8 pairs, blades linear to narrowly obovate or oblong-elliptic, 0.5–2.5 cm × 0.1–0.5 cm, sparingly hairy underneath. Flowers violet to blue, 1–4 together on peduncles longer than flowers, rachis produced beyond last flower into a short spur, each flower 1–1.5 cm long; calyx teeth unequal, shorter than tube. Pods 1.5–3.5 cm × 0.6–0.8 cm, glabrous.

Native of the Mediterranean region and south-western Asia; naturalized in the Burnett and Darling Downs districts. Flowers mostly winter–spring.

3. **Vicia hirsuta* (L.) Gray
Ervum hirsutum L.

HAIRY VETCH

Annual, ± ascending or climbing, up to ca 70 cm tall, sparsely to moderately hairy. Leaflets in 5–10 pairs, blades linear or narrowly elliptic, 0.5–1.5 cm × 0.1–0.3 cm. Flowers bluish-white, 2–6 together on peduncle longer than flowers, each flower 2–4 mm long; calyx teeth equal, longer than tube. Pods 6–10 mm × 2–4 mm, appressed hairy, rarely ± glabrous; seeds 1–2 per pod.

Native of the Mediterranean region; naturalized in the Moreton and Darling Downs districts. Flowers late winter to early summer.

4. **Vicia tetrasperma* (L.) Schreber
Ervum tetraspermum L.

SLENDER VETCH

Annual, decumbent or climbing, ± glabrous or with appressed hairs. Leaflets in 3–6 pairs, blades linear to narrowly obovate, lowermost sometimes elliptic, 0.3–2.2 cm × 0.1–0.35 cm. Flowers pale blue, 1–3 together on peduncle longer than flowers, each flower 5–8 mm long; calyx teeth unequal, equal to or slightly shorter than tube. Pod 0.8–1.5 cm × 0.25–0.45 cm, ± glabrous; seeds 3–4 per pod.

Native of the southern Mediterranean region; collected once, apparently naturalized, in the Wide Bay district and probably to be found elsewhere in the region. Flowers spring.

54. LATHYRUS L.

Herbs, sometimes climbing by tendrils. Leaves stipulate; blades exstipellate, paripinnate, terminating in a tendril, bristle or rarely a leaflet. Flowers axillary, solitary or few in pedunculate racemes; vexillary stamen free, remainder connate; style inflexed, slightly flattened dorsally, bearded lengthwise. Fruits compressed, dehiscent, 1–2-seeded; seeds arillate.

About 130 species from the temperate Northern Hemisphere and mountains of tropical Africa and South America; ca 4 species naturalized Australia; 3 species south-eastern Queensland.

- | | | |
|---|-------------------------|---|
| 1. Stems not winged | 1. <i>L. angulatus</i> | |
| Stems broadly winged | | 2 |
| 2. Inflorescences of 5–15 flowers | 2. <i>L. latifolius</i> | |
| Inflorescences of 1–3 flowers | 3. <i>L. tingitanus</i> | |

1. **Lathyrus angulatus* L.

ANGULAR PEA

Annual, creeping or climbing; stems 10–50 cm long, not winged. Leaves ending in a branched tendril; petiole not winged; leaflets 2, blades linear or linear-ovate, mostly 1–3 cm \times 0.1–0.2 cm. Flowers solitary or rarely 2 together, on peduncle mostly 1–3 cm long; calyx lobes subequal; corolla bluish to reddish, *ca* 8 mm long. Pods mostly 2–3.5 cm \times 0.3–0.4 cm.

Native of western Europe and the Mediterranean region; apparently naturalized around Stanthorpe in the southern Darling Downs district, but seldom met with. Flowers mostly spring.

2. **Lathyrus latifolius* L.

PERENNIAL PEA

Perennial, creeping or climbing; stems 60–100 cm or more long, broadly winged. Leaves ending in a branched tendril; petiole broadly winged; leaflets 2, blades ovate or elliptic, 3–10 cm \times 0.5–2 cm. Inflorescences racemes 15–25 cm long, 5–15-flowered; calyx teeth unequal; corolla purple-pink to white, 2–3 cm long. Pods up to *ca* 10 cm \times 1 cm. **Fig. 52B.**

Native of central and southern Europe; probably introduced as a garden plant, occasionally met with in the region, but may not be truly naturalized. Flowers summer.

3. **Lathyrus tingitanus* L.

TANGIER PEA

Annual, creeping or climbing; stems 60–120 cm long, winged. Leaves ending in a branched tendril; leaflets 2, often not opposite, blades narrowly ovate or narrowly elliptic to ovate or elliptic, 2–6.5 cm \times 0.4–2 cm. Racemes 1–3-, rarely 4-flowered; calyx lobes subequal; corolla purple, 2–3 cm long. Pods up to *ca* 10 cm \times 1 cm.

Native of eastern Europe; apparently naturalized in the Wallangarra-Stanthorpe area in the Darling Downs district. Flowers summer.

L. aphaca L. and *L. sativus* L., CHICKLING VETCH, have each been recorded once from the region but are apparently not truly naturalized.

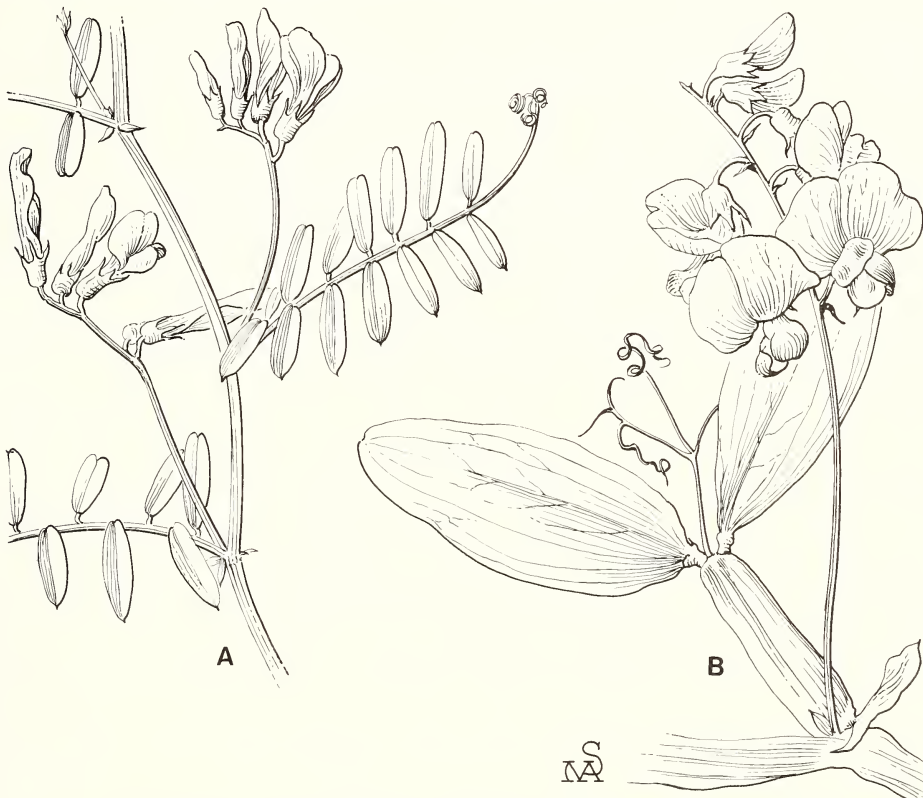


Fig. 52

FABACEAE — A *Vicia sativa* var. *angustifolia*, part of flowering plant $\times 1$; B *Lathyrus latifolius*, part of flowering plant $\times \frac{2}{3}$.

55. **ABRUS** Adans.

Climbers. Leaf blades exstipellate, paripinnate, rachis terminated by a bristle. Inflorescences terminal or axillary racemes, flowers in clusters on lateral thickened nodes; calyx teeth short, upper two subconnate; stamens 9, connate into a sheath split above, vexillary stamen absent, anthers uniform; style incurved, not bearded. Fruits dehiscent, septate between seeds.

About 12 species from tropical areas of the world; 1 species Australia, occurring in south-eastern Queensland.

1. ***Abrus precatorius* L.**

CRAB'S EYE; PRECATORY BEAN; ROSARY PEA

Leaflets usually in 7 or more pairs, blades oblong-elliptic or \pm obovate, 0.6–2.5 cm \times 0.2–0.8 cm, \pm glabrous. Racemes sometimes with 1 or 2 leaves; flowers pink or white, 1–1.2 cm long. Pods 4–6 cm \times ca 1.2 cm; seeds usually bright red with a black spot. **Fig. 53A.**

Common in the eastern part of the region. Flowers most of the year. The seeds are extremely toxic.

56. **CENTROSEMA** Benth.

Shrubs or herbs, erect or climbing. Leaves stipulate; blades stipellate, pinnately 3-, rarely 5- or 7-foliolate, 1-foliolate or digitately 3- or 5-foliolate; leaflet blades entire. Flowers 1 or more together on axillary peduncles, bracts paired, bracteoles appressed to calyx; vexillary stamen free or \pm connate with the others, anthers uniform; style bearded around stigma. Fruits linear, flat, dehiscent, subseptate between seeds, each suture thickened; seeds shortly arillate.

About 45 species from tropical America; 1 species introduced and apparently naturalized Australia, occurring in south-eastern Queensland.

1. ****Centrosema pubescens* Benth.**

CENTRO

Climbing or twining, often forming tangled mats. Leaf blades pinnately 3-foliolate, leaflet blades elliptic to ovate to ovate-oblong, apex obtuse, acute or acuminate, 1.3–7 cm \times 0.6–4.5 cm, \pm glabrous to pubescent on both surfaces. Inflorescences several-flowered, peduncle 4–6 cm long; calyx glabrous, 0.6–1.1 cm long; corolla bluish-purple to pink, standard 1.5–3.5 cm \times 2–3 cm, sparsely to densely hairy outside. Pods linear, 4–17 cm \times 0.6–0.7 cm, \pm glabrous. **Fig. 53D.**

Native of tropical America; introduced as a pasture plant, reported as naturalized in the Wide Bay district. Flowers summer–autumn. This species has a preference for high rainfall, frost-free areas.

57. **CLITORIA** L.

Shrubs or herbs, rarely trees, sometimes climbing. Leaves stipulate; blades stipellate, imparipinnate, 3- or more-foliolate. Inflorescences racemose, axillary, bracts persistent, bracteoles usually large, persistent; flowers showy; calyx with 2 upper lobes subconnate; vexillary stamen free or \pm connate with others, anthers uniform; style incurved, bearded lengthwise. Fruits compressed.

About 40 species from tropical and subtropical parts of the world; 2 species Australia; 1 species south-eastern Queensland.

1. ***Clitoria ternatea* L.**

BUTTERFLY PEA

Perennial, climbing or trailing; rootstock woody. Leaflets 5–7, blades elliptic, oblong, ovate or almost rounded, 1–6.7 cm \times 0.3–4 cm, \pm glabrous above, sparsely appressed hairy below. Flowers solitary or paired, blue or white, up to ca 5 cm long. Pods 5–12 cm \times 0.7–1.2 cm; seeds 3–7 mm long. **Fig. 53E.**

Collected once from the Burnett district. Flowers spring to autumn.

58. GLYCINE Willd.

Perennial twining or climbing, rarely erect annual herbs. Leaves stipulate; blades stipellate, 3-foliolate. Flowers in axillary racemes, rarely terminal panicles or axillary fascicles, bracts and bracteoles present; flowers solitary at each node of inflorescence; calyx 5-toothed, upper pair united higher up; petals long-clawed; stamens all united or upper filament at length free; style glabrous. Fruits linear, straight or falcate, dehiscent, ± septate between seeds; seeds with scale-like thin caruncle.

10 species from tropical to warm temperate areas of Africa and Asia to Australia; 7 species Australia; 4 species south-eastern Queensland.

- | | | |
|---|--------------------------|---|
| 1. Leaves digitately 3-foliolate | 1. <i>G. clandestina</i> | 2 |
| Leaves pinnately 3-foliolate | | |
| 2. Lower calyx teeth shorter than tube; stems with few whitish, usually appressed hairs; leaves with sparse appressed hairs above and below | 2. <i>G. tabacina</i> | |
| Lower calyx teeth equal to or longer than tube; young stems with dense, usually spreading, often silky, white or rusty-coloured hairs; leaves ± silky or velvety hairy on both surfaces | | 3 |
| 3. Leaflets ovate to oblong; inflorescence mostly up to ca 7.5 cm long; pod constricted between seeds | 3. <i>G. tomentella</i> | |
| Leaflets broadly elliptic to rhombic; inflorescence mostly 8 cm or more long; pod not constricted between seeds | 4. <i>G. latifolia</i> | |

1. *Glycine clandestina* Wendl.

TWINING GLYCINE

Twining; stems arising from a woody rootstock, glabrous or sparsely hairy. Petioles 0.5–4 cm long; blades digitately 3-foliolate; leaflet blades commonly narrowly ovate to narrowly oblong, but sometimes ovate to elliptic to linear, those of lower leaves often broadly obovate, apex acute to obtuse, mucronate, 1–4 cm × (0.2–) 0.4–1.2 cm, with sparse to moderately dense appressed hairs, especially below and on midrib. Racemes 3–11 cm long, including peduncle; flowers 6–7 mm long; calyx 3–4 mm long, teeth shorter than or equalling tube. Pods 1.2–3 cm × 0.3–0.4 cm, sparsely appressed hairy or almost glabrous.

Two varieties occur in the region:

- | | |
|-------------------------------------|---|
| 1. Calyx sparsely hairy | <i>G. clandestina</i> var. <i>clandestina</i> |
| Calyx densely rusty-hairy | <i>G. clandestina</i> var. <i>sericea</i> |

G. clandestina var. *clandestina* is widespread throughout the region and fairly common. Flowers most of the year. *G. clandestina* var. *sericea* Benth. is not common but is known from the Darling Downs, Moreton and Wide Bay districts.

2. *Glycine tabacina* (Labill.) Benth

GLYCINE PEA

Kennedia tabacina Labill.; *Glycine tabacina* var. *uncinata* Benth.

Creeping or trailing, rootstock woody. Petioles 0.5–4.5 cm long; blades pinnately 3-foliolate; leaflet blades usually elliptic or narrowly ovate to narrowly oblong to linear, apex apiculate or acute, 0.7–5 cm × 0.3–0.7 cm, terminal leaflets usually larger or longer than laterals, those of lower leaves usually broadly obovate to ovate, 1–1.5 cm × 0.8–1.4 cm, all with sparse appressed hairs above and below. Racemes 4–20 cm long, including peduncle; flowers 6–8 mm long; calyx 3–5 mm long, teeth shorter than tube. Pods 1.4–3 cm × 0.3–0.35 cm, sparsely hairy. **Fig. 53B.**

Common throughout the region. Flowers spring to autumn.

Intermediates between *G. clandestina* and *G. tabacina* are frequent.

3. *Glycine tomentella* Hayata**WOOLLY GLYCINE***Glycine tomentosa* Benth.

Trailing or twining, rootstock woody; stems with usually dense, spreading, usually rusty-coloured hairs. Petioles 1–9 cm long; blades pinnately 3-foliolate; leaflet blades oblong or elliptic to ovate, apex obtuse and usually mucronate, 1.5–6.5 cm × 0.8–3.5 cm, terminal generally larger than laterals, all ± velvety hairy on both surfaces. Racemes 4.5–7.5 (–8.5) cm long, including peduncle; flowers 5–7 mm long; calyx 3.5–6 mm long, teeth longer than tube. Pods 1.2–2.3 cm × 0.25–0.35 cm broad, ± appressed hairy.

Common throughout the region. Flowers most of the year.

4. *Glycine latifolia* (Benth.) Newell & Hymowitz*Leptocyanus latifolius* Benth.; *Glycine tabacina* (Labill.) Benth. var. *latifolia* (Benth.) Benth.

Trailing or occasionally twining, stems ± densely hirsute or sericeous. Petioles 2–11 cm long; blades pinnately 3-foliolate; leaflet blades broadly elliptic to rhombic, rarely ovate to obovate, 2–5.8 cm × 1–3.3 cm, usually silky hairy above and below. Racemes (5–) 8–23 cm long, including peduncle; flowers 6–10 mm long; calyx 4–7 mm long, teeth equal to or longer than tube. Pods 1–3 cm × 0.3–0.55 cm.

Known from the northern Darling Downs district on heavy soils. Flowers most of the year.

59. NEONOTONIA Lackey

Perennial, twining or climbing. Leaves stipulate; blades stipellate, pinnately 3-foliolate. Flowers in axillary racemes, flowers clustered in groups of 3 or more; calyx 4–5-toothed; petals clawed; stamens all united or upper filament at length free; style glabrous. Fruits linear, dehiscent, ± septate between seeds; seeds with thin caruncle.

1 species native of Africa, naturalized Australia, occurring in south-eastern Queensland.

1. **Neonotonia wightii* (Arn.) Lackey*Notonia wightii* Arn.; *Glycine javanica* L.; *G. wightii* (Arn.) Verdc.

Perennial, often woody at base; stems ± glabrous to densely velvety hairy, hairs often ferruginous. Petioles 2–12 cm long; leaflet blades ovate or elliptic, laterals somewhat oblique, apex obtuse to acuminate, 1.3–15 cm × 0.8–12.5 cm, glabrous to densely velvety hairy on both sides. Racemes 2–18 cm long, peduncles 2–10 cm long; flowers white to mauve, up to ca 1.1 cm long; calyx 0.3–1.1 cm long, inside of teeth pubescent. Pods 1.5–3.5 cm long, glabrous to densely hairy with appressed or spreading ferruginous hairs.

Native of Africa; naturalized in a few places in the Moreton district.

60. HARDENBERGIA Benth.

Climbing or twining. Leaves stipulate; blades stipellate, 1- or 3-foliolate. Inflorescences axillary racemes or terminal panicles, bracts small, bracteoles absent; calyx teeth with 2 upper connate; vexillary stamen free, remainder connate, anthers uniform; style short, incurved, not bearded. Fruits compressed or cylindrical, dehiscent; seeds strophiolate.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Hardenbergia violacea* (Schneev.) Stearn**NATIVE SARSAPARILLA; FALSE SARSAPARILLA VINE***Glycine violacea* Schneev.; *Hardenbergia monophylla* (Vent.) Benth.

Prostrate or erect, glabrous. Leaflet blades coriaceous, solitary, ovate or narrowly ovate, apex obtuse to ± acute, base usually cordate, 3–12 cm × 1–5 cm, strongly reticulate. Inflorescences racemose, upper racemes often forming a terminal panicle; flowers violet or occasionally white, 7–10 mm long; calyx 3–4 mm long. **Fig. 53G.**

Common throughout the region, except the western parts of the Darling Downs and Burnett districts. Flowers throughout the year, mostly in spring.

61. KENNEDIA Vent.

Perennial, climbing or prostrate. Leaves stipulate; blades stipellate, usually pinnately 3-foliolate, rarely 1- or 5-foliolate. Flowers showy, solitary or racemose or subumbellate, bracts present, often deciduous, bracteoles absent; calyx lobes \pm equal to tube, upper 2 connate into an entire or emarginate lip; vexillary stamen free, remainder connate, anthers uniform; style inflexed, not bearded. Fruits compressed, dehiscent, septate between seeds; seeds strophiolate.

About 15 species endemic to Australia; 2 species south-eastern Queensland.

- | | | |
|--------------------------------|-----------|-------------------------|
| 1. Flowers more than 2 cm long | | 1. <i>K. rubicunda</i> |
| Flowers less than 2 cm long | | 2. <i>K. procurrens</i> |

1. *Kennedia rubicunda* (Schneev.) Vent.

RED KENNEDY PEA

Glycine rubicunda Schneev.

Prostrate, twining, stems usually pubescent. Leaflets 3; blades very variable, ovate to almost orbicular to narrowly ovate, apex obtuse or acute, 3–10 (–15) cm \times 2–5 cm, from almost glabrous to softly silky hairy on both sides. Flowers racemose, dull or dark red, 2.5–4 cm long; calyx silky hairy, 1–1.2 cm long; standard abruptly reflexed from about the middle. Pods 7.5–10 cm \times 0.8–1 cm, usually silky hairy. **Fig. 53I.**

A common plant in all but the western parts of the region, often found along roadsides. Flowers mostly late winter to spring.

2. *Kennedia procurrens* Benth.

Prostrate, twining, stems usually pubescent. Leaflets 3, blades ovate or elliptic, apex obtuse and often mucronate, 2–5 cm \times 1–3.5 cm, usually \pm glabrous or rarely pubescent above, underside with silky \pm appressed hairs, mostly along veins. Flowers racemose, violet, mostly *ca* 1.5 cm long; calyx silky hairy, 5–6 mm long. Pods 4–5 cm \times 0.5–0.7 cm, glabrous.

Not common, known from the western Moreton district and the Burnett and Darling Downs districts, usually in sandy soils. Flowers mostly spring–summer.

62. ERYTHRINA L.

Trees or shrubs, branches often prickly. Leaves stipulate; blades with gland-like stipels, pinnately 3-foliolate. Inflorescences racemose, axillary and leafless or terminal and leafy at base, bracts and bracteoles small or absent; flowers very showy, paired or clustered on rachis; calyx truncate, split or \pm 5-toothed; vexillary stamen free or connate only at base, remainder connate to middle, anthers uniform; ovary stipitate, style incurved, not bearded. Fruits dehiscent, constricted between seeds; seeds estrophiolate.

About 100 species from tropical and subtropical parts of the world; 3 species Australia; 1 species south-eastern Queensland.

1. *Erythrina vespertilio* Benth.

BAT'S WING CORAL TREE

Small tree, glabrous, branches prickly. Leaflet blades usually 3-lobed, lateral lobes spreading or recurved, sometimes broader than long, apex obtuse, middle lobe \pm triangular, broad or narrow, apex acute, either longer than laterals or much smaller, sometimes disappearing altogether, in which case the 2 lateral lobes are long and narrow and diverging, most leaflet blades less than 10 cm wide. Racemes erect; flowers pendulous, *ca* 3 cm long; calyx *ca* 1 cm long; standard *ca* 3 cm long, wings *ca* 8 mm long, keel *ca* 1.2 cm long. Pods *ca* 8–10 cm \times *ca* 1.2 cm. **Fig. 53F.**

Widespread but not common in the region, sometimes cultivated as a street tree, or in gardens. Flowers mainly spring. This species has been suspected of poisoning cattle.

E. variegata L. may occur in the region. It is distinguished from the above species in having entire, not lobed leaves.

63. MUCUNA Adans.

Climbing. Stipules deciduous; blades sometimes stipellate, pinnately 3-foliolate. Flowers clustered in axillary racemes or subcymose, bracts small; calyx with 2 upper teeth connate, lower longer than others; standard shorter than wings; vexillary stamen free, remainder connate, anthers alternately long and sub-basifixed, short and versatile; style filiform, not bearded. Fruits dehiscent, often clothed with irritant hairs, septate between seeds; seeds estrophiolate.

About 120 species from tropical and subtropical regions; 1 species Australia, occurring in south-eastern Queensland.

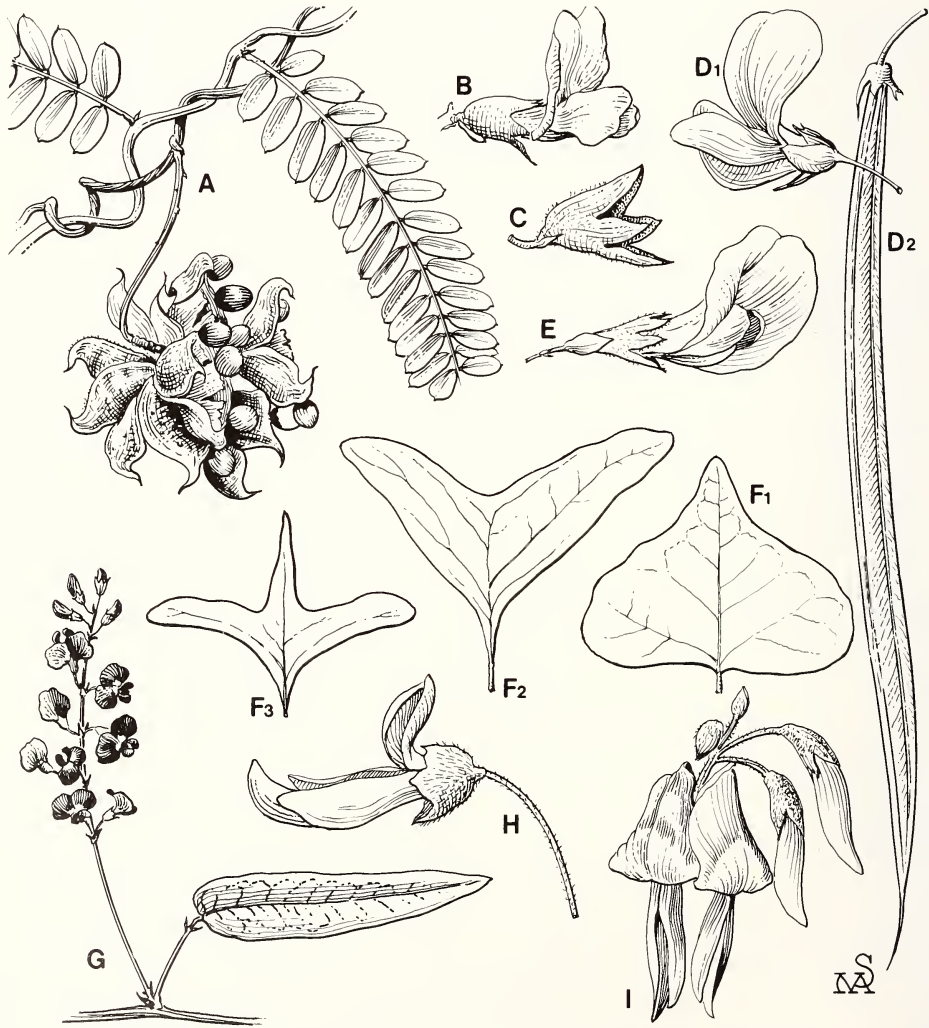


Fig 53

FABACEAE — A *Abrus precatorius*, part of fruiting plant showing dehiscent pods $\times \frac{2}{3}$; B *Glycine tabacina*, flower $\times 3$; C *Galactia tenuiflora*, calyx $\times 3$; D₁-D₂, *Centrosema pubescens*, D₁, flower $\times 1$, D₂, fruit $\times \frac{2}{3}$; E *Clitoria ternatea*, flower $\times \frac{2}{3}$; F₁-F₃, *Erythrina vespertilio*, variation in leaf shape, all $\times \frac{1}{2}$; G *Hardenbergia violacea*, portion of flowering stem $\times \frac{2}{3}$; H *Mucuna gigantea*, flower $\times 1$; I *Kennedia rubicunda*, part of inflorescence $\times \frac{2}{3}$.

1. *Mucuna gigantea* (Willd.) DC.*Dolichos giganteus* Willd.

Often climbing high in trees, glabrous or hairy when young. Leaflet blades broadly ovate, apex acuminate, laterals very oblique, 7–16 cm × 4–9 cm. Flowers greenish-yellow in loose racemes, almost corymbose, peduncles up to ca 30 cm long; each flower ca 3.5–4 cm long; calyx ca 1 cm broad; shorter anthers bearded. Pods black when ripe, thick but flattened, 6–14 cm × 3.5–5 cm, with a narrow longitudinal wing on each side of each suture, irritant hairs often falling off before maturity; seeds 2–6, orbicular, half enclosed by hilum. **Fig. 53H.**

Moderately common in coastal rainforest of the Moreton and Wide Bay districts. Flowers mostly late winter to spring.

64. GALACTIA P. Browne

Prostrate or climbing or suberect herbs. Stipules small or deciduous; blades stipellate, pinnately 3-foliolate, rarely 1-, 5- or 7-foliolate. Inflorescences axillary racemes, flowers ± paired or clustered, bracts and bracteoles present; calyx lobes 4, upper 2 connate, lower 2 often longer; vexillary stamen free, others connate, anthers uniform; styles filiform, not bearded. Fruits dehiscent, ± septate between seeds; seeds estrophiolate.

About 140 species from tropical and subtropical regions of the world; ca 3 species Australia; 1 species south-eastern Queensland.

1. *Galactia tenuiflora* (Willd.) Wight & Arn.*Glycine tenuiflora* Willd.

Perennial, climbing or trailing. Petioles 2–5 cm long; leaflets 3, blades oblong, oblong-ovate or oblong-elliptic, apex rounded or emarginate, 2–6.5 cm × 0.6–3 cm, sparsely appressed hairy above, sparsely to densely appressed hairy below, often velvety. Racemes 5–15 cm long, including peduncle, 1–10-flowered; flowers bluish-white to purple, 8–10 mm long; calyx pubescent, 3–5 mm long. Pods 2–6 cm × 0.5–0.7 cm, appressed hairy. **Fig. 53C.**

Moderately common, from the eastern parts of the region. Flowers mostly summer–autumn.

65. CANAVALIA DC.

Climbing or prostrate herbs. Leaves stipulate; blades pinnately 3-foliolate. Flowers in racemes on long peduncles, bracts and bracteoles small; calyx lobes connate into 2 lips; vexillary stamen free at base, connate with others in middle, anthers uniform; style incurved, beardless. Fruits compressed or turgid, with a wing or rib near the upper suture of each valve; seeds estrophiolate.

About 50 species from tropical and subtropical regions of the world; 4 species Australia; 2 species south-eastern Queensland.

1. Calyx ca 0.8 cm long; standard less than 2 cm long; plants not found

on sea-coast

Calyx ca 1.2 cm long; standard more than 2 cm long; plants of the sea-

coast

1. *C. papuana*

2. *C. rosea*

1. *Canavalia papuana* Merr. & Perry**WILD JACK BEAN**

In Australia this species has been mistakenly included under *Canavalia rosea*.

Trailing or climbing. Leaflet blades ovate, apex acute to acuminate, 5–15 cm × 2–8 cm, ± glabrous to moderately densely hairy above, sparse to moderately densely hairy below and on petiole. Calyx ca 8 mm long, upper lip nearly as long as tube, lowest teeth ca 2 mm long, apex acute, exceeding the obtuse lateral teeth; standard ca 1.75 cm long. Pods up to ca 20 cm × ca 2.5 cm; seeds brown, up to ca 1.3 cm long. **Fig. 54A.**

Found trailing on rocky hillsides and in open grasslands or climbing in open forest or in fringing rainforest along creeks and rivers in the Moreton, Wide Bay and Burnett districts. Flowers most of the year.

2. *Canavalia rosea* (Swartz) DC.**COASTAL JACK BEAN**

Dolichos roseus Swartz; *Canavalia maritima* (Aubl.) Thouars; *C. obtusifolia* DC.

Trailing or climbing. Leaflet blades coriaceous, oblong to almost orbicular, apex obtuse to emarginate, often shortly apiculate, 4–12 cm × 3–10 cm, hairs white, sparse above, sparse to moderately dense below and on petiole. Calyx *ca* 1.2 cm long, upper lip shorter than tube, lowest teeth 2 mm long, apex acute, slightly exceeding acute lateral teeth; standard *ca* 3 cm long. Pods up to *ca* 15 cm × 2.5 cm; seeds brown, often with darker markings, up to *ca* 1.8 cm long. **Fig. 54B.**

A common sea-coast plant, trailing at upper edge of high-tide mark or climbing over vegetation on coastal sand dunes, rarely found further inland. Flowers most of the year. The mature seeds are potentially poisonous, containing HCN. The immature pods are cut up and cooked and eaten as with ordinary beans.

66. PHASEOLUS L.

Herbs, prostrate, climbing or erect. Leaves stipulate; blades stipellate, pinnately 3-foliolate. Flowers in axillary racemes, bracts and bracteoles present; calyx with 2 upper teeth connate or free; keel spirally twisted; vexillary stamen free, remainder connate, anthers uniform; style thickened within beak of keel and twisted with it. Fruits dehiscent, septate; seeds estrophiolate.

About 150 species from warmer parts of the world; 1 species naturalized Australia, occurring in southeastern Queensland.

1. **Phaseolus lunatus* L.**SIEVA BEAN**

Perennial or biennial climber. Lateral leaflet blades oblique, terminals not oblique, ovate to narrowly rhomboid, apex acute to acuminate, 3–15 cm × 1.2–10 cm, glabrous or sparsely pubescent. Racemes 1–7 cm long; calyx tube 1.5–2.5 mm long, teeth 5–8 mm long, upper pair united to form an emarginate lip; standard white to pink, 5–7 mm long. Pods 5–11 cm × 1–2.5 cm. **Fig. 54E.**

Native of tropical America; occasionally found in the region, possibly naturalized. Flowers found most of the year.

67. MACROPTILIUM Urban

Erect or climbing herbs. Leaves stipulate; blades stipellate, pinnately 3-foliolate. Inflorescences racemose, peduncles elongate. 1–several flowered; calyx lobes all free, apex acute; standard with 2 small auricles at base, keel twisted; vexillary stamen free, remainder connate, anthers uniform; style thickened in upper part, bearded below apex. Fruits reflexed, linear, dehiscent.

8 species native to tropical America; 2 species introduced and naturalized Australia, occurring in southeastern Queensland.

1. Leaflet blades narrowly elliptic or narrowly ovate; plant erect, rarely climbing
 Leaflet blades ovate to rhombic, usually lobed below; plant climbing or creeping

1. *M. lathyroides*
 2. *M. atropurpureum*

1. **Macroptilium lathyroides* (L.) Urban**PHASEY BEAN**

Phaseolus lathyroides L.

Erect, tough-stemmed herb up to 1 m tall, rarely climbing. Leaflet blades narrowly elliptic to narrowly ovate, 3–7 cm × 1–2.5 cm, occasionally larger, usually sparsely hairy beneath. Inflorescences up to 40 cm long, few-flowered, flowers often paired; calyx 4–6 mm long; petals dark red, rarely white, standard *ca* 1.5 cm long. Pods 8–10 cm × 0.2–0.3 cm. **Fig. 54D.**

Native of central America, introduced and now found throughout the region, but most common in eastern parts, often found as a weed of disturbed ground. Flowers most of the year.

2. **Macroptilium atropurpureum* (DC.) Urban

SIRATRO

Phaseolus atropurpureus DC.

Creeping or climbing, often covering large areas. Leaflet blades usually ovate to rhombic-ovate, mostly with a short obtuse lobe on one or both sides in lower half, 2–7 cm × 1.8–5 cm, usually silky hairy below, few above. Inflorescences up to *ca* 40 cm long, flowers crowded at tip; calyx 5–8 mm long; petals dark red-purple, standard *ca* 1.5 cm long. Pods 5–10 cm × 0.3–0.5 cm. **Fig. 54C.**

Native of central America and the southern United States of America; introduced as a pasture plant, common in the eastern part of the region and often met with as a weed of roadsides and other disturbed sites. Flowers most of the year.

68. VIGNA Savi

Climbing or prostrate herbs, rarely erect. Leaves stipulate; blades stipellate, pinnately 3-foliolate. Inflorescences racemose, axillary, peduncles long, bracts and bracteoles deciduous; calyx 5-toothed, upper 2 sometimes united into an entire lip; vexillary stamen free, remainder connate, anthers uniform; style bearded lengthwise above, stigma lateral. Fruits dehiscent, narrowly cylindrical, septate; seeds estrophiolate.

About 150 species mainly from tropical regions of the world; *ca* 10 species Australia; 6 species south-eastern Queensland.

- | | |
|---|--------------------------|
| 1. Pods with conspicuous spreading usually bristly hairs | 2 |
| Pods glabrous or with appressed hairs | 3 |
| 2. Stipules conspicuously peltate, ovate or rhomboid or obovate | 1. <i>V. radiata</i> |
| Stipules not peltate, narrowly ovate | 2. <i>V. vexillata</i> |
| 3. Leaflet blades broadly elliptic or almost orbicular, apex rounded or obtuse, sometimes emarginate; plants of the sea-shore | 3. <i>V. marina</i> |
| Leaflet blades linear to ovate, apex acute or acuminate | 4 |
| 4. Calyx less than 3 mm long | 4. <i>V. lanceolata</i> |
| Calyx more than 3 mm long | 5 |
| 5. Mature pods reflexed along rachis | 5. <i>V. luteola</i> |
| Mature pods erect | 6. <i>V. unguiculata</i> |

1. **Vigna radiata* (L.) Wilczek

MUNG BEAN

Phaseolus radiatus L.

Annual, climbing or trailing in Queensland specimens; stems with spreading bristly hairs. Stipules peltate, ovate, rhomboid or obovate, mostly *ca* 1 cm long; leaflet blades elliptic, rhomboid or ovate, usually lobed in Queensland specimens, 3–10 cm × 2–5 cm, usually bristly hairy on both surfaces. Inflorescences up to *ca* 15 cm long; calyx tube 2–3 mm long, lobes 1–3 mm long, glabrous; petals greenish, standard *ca* 1.2 cm long, keel incurved, with a conspicuous pocket on one side. Pods mostly 4–6 cm × 0.3–0.5 cm, with short dark bristly hairs.

Native of Africa and Asia; naturalized, fairly common in the eastern part of the region. Flowers most of the year.

2. *Vigna vexillata* (L.) A. Rich.

WILD COW PEA

Phaseolus vexillatus L.

Perennial, climbing or trailing, rootstock narrow, woody; stems sparsely to densely covered with ± spreading, usually brown hairs or bristles. Stipules narrowly ovate, subcordate at base; leaflet blades very variable, linear to elliptic to ovate, sometimes slightly lobed at base, apex acute or acuminate, up to 16 cm × 4 cm. Inflorescences few-flowered, up to *ca* 40 cm long; calyx tube 5–7 mm long, lobes 0.2–2 cm long, with short or long, brown or white hairs; petals yellow, pink or purple, standard 2–3 cm long, keel incurved, with a distinct pocket on one side. Pods erect, 4–14 cm × 0.25–0.4 cm, with short or long, brown spreading ± bristly hairs.

A fairly common plant especially in the eastern parts of the region.

This is an extremely variable species and a number of infra-specific variants are recognized in different parts of the world. Queensland material can be divided into, at least, the two varieties given below, but intermediates between the two are known. The picture has been further confused by the introduction of variants from overseas for pasture improvement work.

- | | | |
|--|-------|--|
| 1. Leaflets narrow, 4-8 cm × 0.4-1.5 cm; calyx 2-8 mm long | . . . | <i>V. vexillata</i> var. <i>angustifolia</i> |
| Leaflets broad, 5-7 cm × 2-3 cm; calyx over 10 mm long | . . . | <i>V. vexillata</i> var. <i>youngiana</i> |

V. vexillata var. *angustifolia* (Schumacher & Thonn.) Baker (*Plectrotropis angustifolia* Schumacher & Thonn.) is the most common form in the region. Flowers most of the year. *V. vexillata* var. *youngiana* F. M. Bailey is not common but widespread in the region. Flowers most of the year.

3. *Vigna marina* (Burm.) Merr.

DUNE BEAN

Phaseolus marinus Burm.; *Vigna lutea* (Sweet) A. Gray

Perennial, climbing or trailing; stems hairy when young, later ± glabrous. Stipules ovate; leaflet blades broadly elliptic or almost orbicular, apex obtuse, sometimes emarginate, 3-9.5 cm × 2-7.5 cm, appearing glabrous but with a few short appressed hairs on both surfaces. Inflorescences up to *ca* 13 cm long; calyx tube *ca* 2.5 mm long, lobes 1-1.5 mm long, upper 2 connate into an entire lip; petals yellow, standard *ca* 1.2 cm long. Pods 3.5-6 cm × 0.7-0.9 cm.

Common sea-coast plant. Flowers most of the year.

4. *Vigna lanceolata* Benth.

MALOGA BEAN

Twining or occasionally erect, taproot 30-40 cm long; stems glabrous or with a few hairs. Stipules narrow, 2-3 mm long; leaflet blades usually narrowly ovate, apex acute or somewhat obtuse, base entire or lobed, lateral ones usually lobed on one side only, 3-7 cm × 0.4-1.5 cm. Inflorescences up to *ca* 13 cm long; calyx short, *ca* 2-2.5 mm long; flowers greenish-yellow, standard 7-8 mm long. Pods 2-4 cm × 0.5-0.8 cm, glabrous or with a few appressed hairs.

Western half of the region. Flowers most of the year. It can be a nuisance of cultivation on black soils.

5. *Vigna luteola* (Jacq.) Benth.

DALRYMPLE VIGNA

Dolichos luteolus Jacq.

Perennial, climbing or creeping; stems tough, when creeping bearing adventitious roots, young parts often with appressed or spreading hairs. Stipules narrow, 3-4 mm long; leaflet blades narrowly ovate, ovate-elliptic or rarely linear-ovate, apex acute or acuminate, 2.5-10 cm × 0.4-5 cm, sparsely hairy on both surfaces. Inflorescences up to *ca* 40 cm long; calyx tube 2-4 mm long, lobes 2-4 mm long, upper pair united; petals yellow or greenish, standard 1.5-2.5 cm long. Pods recurved along rachis, 4-8 cm × 0.5-0.65 cm, glabrous to densely appressed pubescent. **Fig. 54H.**

Known from eastern parts of the region, often in damp or swampy areas. Flowers most of the year.

6. **Vigna unguiculata* (L.) Walp.

COW PEA

Dolichos unguiculatus L.; *Vigna sinensis* (L.) Hassk.

Annual or perennial, erect or climbing; stems glabrous or with few hairs. Stipules ovate, *ca* 1 cm long; leaflet blades ovate or rhomboid, laterals oblique, sometimes lobed at base, 1.5-15 cm × 1-12 cm, glabrous or sparsely hairy on both surfaces. Inflorescences up to *ca* 40 cm long; calyx tube 3-5.5 mm long, lobes 0.2-1.4 cm long, upper pair partly united; petals white, greenish-yellow to mauve, standard 1.2-3.3 cm long. Pods erect, 5-15 cm × 0.3-1.1 cm, glabrous or with few short hairs.

Native of tropical Africa; occasionally found along roadsides apparently as an escape from cultivation. Flowers mostly autumn.

69. LABLAB Adans.

Erect or climbing herbs. Leaves stipulate; blades stipellate, pinnately 3-foliolate. Inflorescences axillary racemes, bracts deciduous; calyx 2-lipped, upper entire or emarginate, lower 3-toothed; keel beaked, incurved; vexillary stamen free, remainder connate, anthers uniform; style incurved with soft hairs above. Fruits dehiscent, compressed, beaked; seeds with a conspicuous white aril.

1 species tropical parts of the world, introduced Australia, occurring in south-eastern Queensland.

1. **Lablab purpureus* (L.) Sweet

LABLAB

Dolichos purpureus L.; *D. lablab* L.; *Lablab niger* Medik.

Perennial climber; stems glabrous or pubescent. Leaflet blades ovate-triangular, apex acuminate, 2.5–15 cm × 1.5–14 cm, glabrous or pubescent. Inflorescences up to *ca* 40 cm long; calyx 5–8 mm long; petals white, red or purple, standard 1.2–1.5 cm long. Pods 3.5–14 cm × 1.2–4 cm, 2–5-seeded. **Fig. 54F.**

Widespread in tropical parts of the world, apparently naturalized, often along roadsides, creeks, etc. Flowers most of the year.

70. DIPOGON Liebm.

Woody climber. Leaves stipulate; blades stipellate, pinnately 3-foliolate. Flowers in axillary racemes, bracts persistent, bracteoles ± persistent; calyx campanulate; vexillary stamen free, remainder connate, anthers uniform; style cylindrical, dilated at base, strongly curved inwards at top and bottom, gently curved the opposite way in the middle, bearded on inside near top, stigma terminal. Pods cylindrical, attenuate at the ends; seeds estrophiolate but with a conspicuous white hilum.

1 species native to southern Africa; cultivated and naturalized Australia, occurring in south-eastern Queensland.

1. **Dipogon lignosus* (L.) Verdc.

PURPLE DOLICHOS

Dolichos lignosus L.

Petioles up to *ca* 6 cm long; leaflet blades ovate-rhomboid, apex obtusely acuminate or acute, 3–10 cm × 1.5–4 cm (the largest leaflets occurring in cultivated specimens), ± glabrous, paler on underside. Racemes up to *ca* 25 cm long, including peduncle, the flowers at the upper end; flowers pink-purple, 1–1.5 cm long; calyx 3–4 mm long, lobes shorter than tube, margin hairy; standard 1–1.5 cm long. Pods *ca* 4 cm long, glabrous. **Fig. 54G.**

Native of southern Africa; occasionally found apparently naturalized in eastern parts of the region. Flowers mostly late winter to summer. An easily grown creeper cultivated in gardens for its attractive flowers and dense foliage.

71. CAJANUS DC.

Erect shrubs. Leaves stipulate; blades exstipellate, pinnately 3-foliolate; leaflet blades glandular-punctate below. Inflorescences axillary racemes, bracts soon deciduous, bracteoles absent; calyx with 2 upper teeth connate; keel incurved; vexillary stamen free, remainder connate, anthers uniform; style glabrous. Fruits linear, compressed, dehiscent, obliquely depressed between seeds, septate; seeds estrophiolate.

2 species Africa; 1 species introduced Australia, occurring in south-eastern Queensland.

1. **Cajanus cajan* (L.) Millsp.

PIGEON PEA; TREE PEA

Cytisus cajan L.

Erect shrub, up to *ca* 3 m tall; stems prominently ribbed, with short appressed golden pubescence or slightly spreading pubescence. Leaflet blades elliptic to narrowly ovate, apex acute, 2.5–10 cm × 1.4–3.5 cm, short velvety hairy above, with longer whitish hairs

below, both surfaces with small yellow glands, green above, conspicuously silvery green below. Inflorescences up to *ca* 8 cm long; calyx up to *ca* 1.2 cm long, velvety hairy, glandular; petals bright yellow with reddish brown markings, standard 1.2–1.7 cm long. Pods 4.5–10 cm × 0.8–1.4 cm, softly hairy. **Fig. 54J.**

Native of Africa; known from a few places in eastern parts of the Moreton district. Flowers mainly spring–summer.

72. ATYLOSIA Wight & Arn.

Shrubs or herbs, erect or climbing. Leaves stipulate; blades exstipellate, pinnately 3-foliolate; leaflet blades glandular-punctate below. Flowers in axillary fascicles or axillary pedunculate racemes, bracts caducous before flowering, bracteoles absent; calyx lobes with upper 2 connate or 2-toothed; vexillary stamen free, remainder connate, anthers uniform; style inflexed, glabrous. Fruits compressed, dehiscent, ± transversely depressed between seeds; seeds strophiolate.

About 21 species from Africa through Asia to Australia and New Caledonia; 6 species Australia; 1 species south-eastern Queensland.

1. *Atylosia reticulata* (Dryander) Benth.

Dolichos reticulatus Dryander; *Atylosia grandifolia* F. Muell. ex Benth.

Erect or spreading shrub, 0.5–2 m tall; stems ribbed, with dense spreading often rusty-coloured hairs. Leaflet blades broadly ovate or rhomboid, apex obtuse to acute, 2–9 cm × 1.5–6 cm, softly hairy, especially below, inconspicuously glandular-punctate below. Flowers yellow; calyx *ca* 1 cm long, softly hairy; standard *ca* 1–1.3 cm long. Pods 2–3 cm × 0.6–0.9 cm, softly hairy. **Fig. 54M.**

Not common, found in northern parts of the region, mainly in open forest. Flowers found most of the year.

73. RHYNCHOSIA Lour.

Herbs or shrublets, climbing or prostrate, rarely erect. Leaves stipulate; blades with minute stipels or exstipellate, pinnately 3-foliolate; leaflet blades glandular-punctate below. Flowers in axillary racemes, bracts soon deciduous, bracteoles absent; calyx with 2 upper lobes ± connate; keel incurved; vexillary stamen free, remainder connate, anthers uniform. Fruits compressed, dehiscent, continuous within; seeds with or without a strophiole.

About 300 species from tropical and subtropical regions, mainly America and Africa; *ca* 4 species Australia; 2 species south-eastern Queensland.

- | | |
|--------------------------------------|-----------------------------|
| 1. Leaves mostly 5 cm long or longer | 1. <i>R. acuminatissima</i> |
| Leaves less than 5 cm long | 2. <i>R. minima</i> |

1. *Rhynchosia acuminatissima* Miq.

Rhynchosia cunninghamii Benth.

Twining, stems softly hairy. Leaflet blades broadly ovate, apex acuminate, (4.5–) 5–15 cm × 3–12 cm, softly hairy above and below, or sometimes ± glabrous above. Calyx 4–6 mm long, densely hairy; standard *ca* 1 cm long. Pods slightly contracted between seeds, 2–3 cm × 0.5–0.9 cm, covered with dense, short to long greenish-yellow hairs; seeds estrophiolate. **Fig. 54L.**

Not common, often found in or near rainforest. Flowers spring to autumn.

2. *Rhynchosia minima* (L.) DC.

RHYNCHOSIA

Dolichos minima L.

Usually twining, stems glabrous to velvety. Leaflet blades rhomboid, ovate or suborbicular, apex acute or rounded, 0.5–3 cm × 0.5–3 cm, glabrescent to velvety. Flowers yellow; calyx 3–4 mm long; standard 5–7 mm long. Pods 1–1.5 cm × 0.4–0.6 cm; estrophiolate.

Two varieties occur in the region:

- | | |
|--|--|
| 1. Pods with short fine hairs and long tubercular-based hairs (Fig. 54I) | <i>R. minima</i> var. <i>australis</i> |
| Pods with short fine hairs only | <i>R. minima</i> var. <i>minima</i> |

R. minima var. **minima** is uncommon. Flowers mostly summer–autumn. **R. minima** var. **australis** (Benth.) C. Moore (*R. australis* Benth.) is moderately common in the region, usually on heavy soils. Flowers mostly summer–autumn.

74. FLEMINGIA Roxb.

Shrubs or herbs, erect or prostrate. Leaves stipulate; blades exstipellate, digitately 3-foliolate or 1-foliolate; leaflet blades gland-dotted below. Inflorescences densely spicate-racemose or paniculate, bracts foliaceous or dry, persistent or deciduous, bracteoles absent; calyx lobes subequal or lowest longer; vexillary stamen free, remainder connate, anthers uniform; style glabrous. Pods turgid, dehiscent, continuous within; seeds estrophiolate.

About 35 species from tropical regions of Africa and Asia to Australia; 6 species, 1 naturalized, Australia; 3 species south-eastern Queensland.

- | | | |
|---|--------------------------|---|
| 1. Inflorescences small loose panicles; plants erect | 1. <i>F. lineata</i> | 2 |
| Inflorescences spike-like racemes | | |
| 2. Plants prostrate or ascending, up to ca 30 cm tall | 2. <i>F. parviflora</i> | |
| Plants erect, up to ca 2 m tall | 3. <i>F. macrophylla</i> | |

1. *Flemingia lineata* (L.) Roxb.*Hedysarum lineatum* L.; *Moghania lineata* (L.) Kuntze

Erect low shrub up to ca 1 m tall. Leaflets 3; blades obovate to elliptic to ovate, apex obtuse, 3–10 cm × 1–4 cm, ± glabrous above, with short soft hairs below, especially on veins. Inflorescences small loose panicles, calyx 4–5 mm long, softly hairy; corolla greenish-yellow to pinkish-red, ca 5–8 mm long. Pods ca 1 cm × 0.5 cm. Fig. 54K.

Known only from the northern Wide Bay district. Flowers most of the year.

2. *Flemingia parviflora* Benth.*Moghania parviflora* (Benth.) Kuntze

Prostrate or ascending, mostly less than 30 cm tall. Leaflets 3, blades elliptic to obovate, apex obtuse or acute, 2–10 cm × 1.5–3 cm, softly hairy above and below, usually less dense above, usually rugose. Inflorescences short dense spike-like racemes; calyx 4–6 mm long, silky hairy; corolla greenish-yellow to pinkish-red, ca 6–8 mm long. Pods 8–10 mm × ca 5 mm.

Seldom collected, but known from the Moreton, Wide Bay and Burnett districts. Flowers found most of the year.

3. **Flemingia macrophylla* (Willd.) Merr.*Crotalaria macrophylla* Willd.; *Flemingia congesta* (Willd.) Roxb.; *Moghania macrophylla* (Willd.) Kuntze

Erect, up to ca 2 m tall. Leaflets 3, blades ovate to oblong, apex shortly acuminate, 8–15 cm × 4–7 cm, hairy on nerves and veins below. Inflorescences dense spike-like racemes; calyx 0.7–1.3 cm long; corolla white to pink or yellowish, up to ca 1.4 cm long. Pods ca 1.2 cm long.

Native of Africa and Asia; reported twice from the region in 1963, possibly introduced as an impurity in CENTRO (*Centrosema pubescens*) seed. Flowers found most of the year.

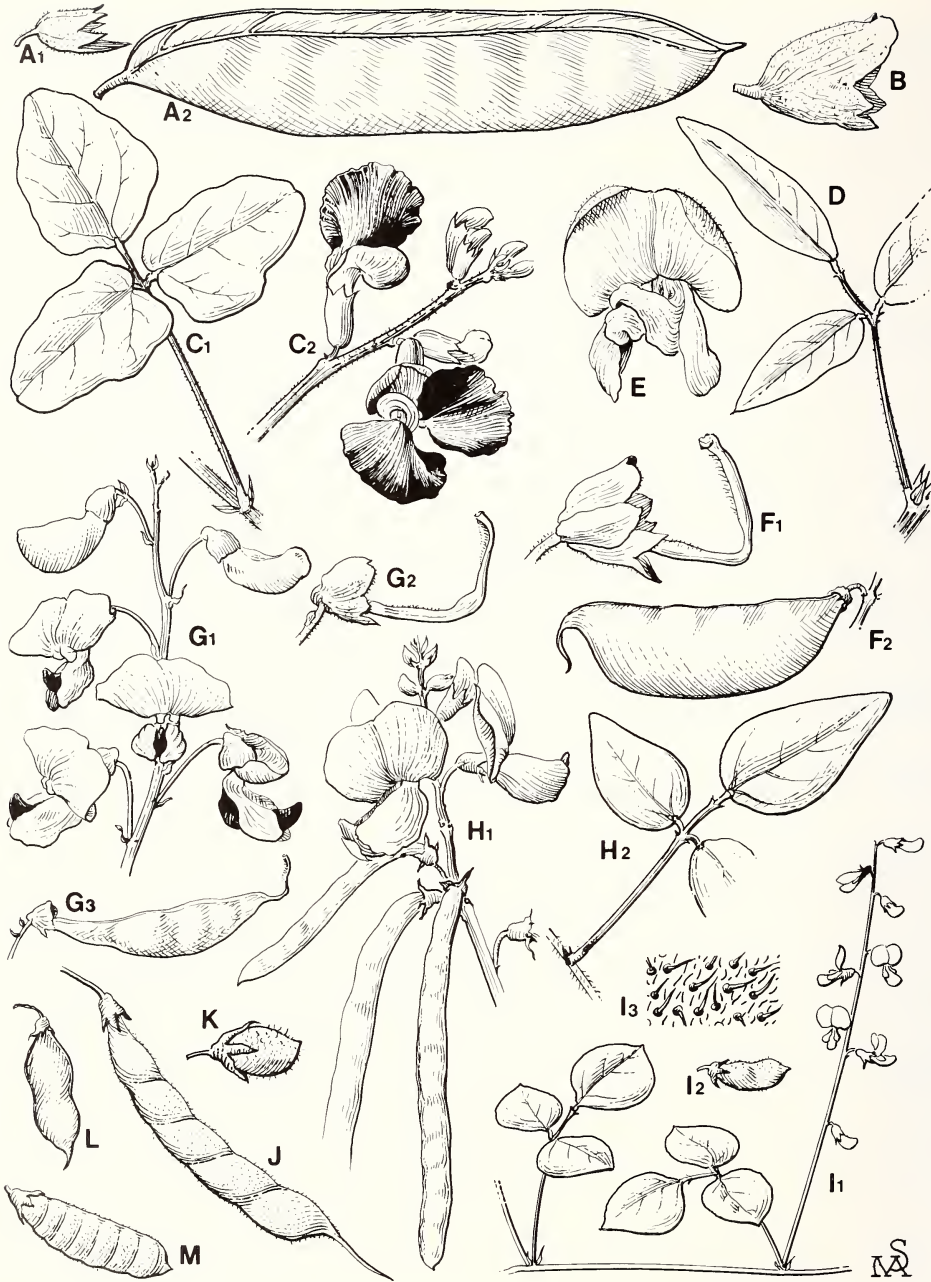


Fig. 54

FABACEAE — A-B *Canavalia* spp. — A₁-A₂, *C. papuana*, A₁, calyx x2, A₂, fruit x²/₃; B *C. rosea*, calyx x2; C-D *Macroptilium* spp. — C₁-C₂, *M. atropurpureum*, C₁, leaf x²/₃, C₂, upper part of inflorescence x1; D *M. lathyroides*, leaf x²/₃; E *Phaseolus lunatus*, flower x3; F₁-F₂, *Lablab purpureus*, F₁, flower with petals and stamens removed x2, F₂, fruit x²/₃; G₁-G₂, *Dipogon lignosus*, G₁, upper part of inflorescence x1, G₂, flower with petals and stamens removed x2, G₃, fruit x1; H₁-H₂, *Vigna luteola*, H₁, upper part of inflorescence x1, H₂, leaf x¹/₂; I₁-I₃, *Rhynchosia minima* var. *australis*, I₁, part of flowering stem x²/₃, I₂, fruit x1, I₃, enlargement of part of pod showing two types of hairs x12; J *Cajanus cajan*, fruit x²/₃; K *Flemingia lineata*, fruit x1; L *Rhynchosia acuminatissima*, fruit x²/₃; M *Atylosia reticulata*, fruit x²/₃.

75. **KUNSTLERIA** Prain

Woody climbers. Stipules small, deciduous; blades rarely stipellate, imparipinnate. Inflorescences terminal thyrsoid panicles, extending into the axils of the upper leaves, pedicels solitary; calyx campanulate, toothed, upper two teeth connate; stamens diadelphous, upper one quite free, anthers uniform; ovary sessile, style incurved, stigma capitate. Fruits thin, compressed, indehiscent; seeds 1-3.

11 species from south-eastern Asia and Australia; 2 species Australia; 1 species south-eastern Queensland.

1. *Kunstleria blackii* (F. Muell.) Polhill

BLOOD VINE

Millettia blackii F. Muell.; *Lonchocarpus blackii* (F. Muell.) Benth.; *L. nesioties* F. M. Bailey

Tall woody climber, young branches and foliage rusty pubescent, at length glabrous. Leaflets 7-11, blades ovate, apex shortly and obtusely acuminate, 3-9.5 cm × 1.5-5.5 cm. Flowers dark purple, in loose racemes forming large terminal panicles, flowers usually in pairs; calyx *ca* 4 mm long; standard *ca* 6 mm long. Pods thin, 5-12.5 cm × 1-2 cm, stipitate. **Fig. 55C.**

Found in coastal parts of the region, fairly common, usually on creek or river banks or near rainforest. Flowers early summer. When cut, the plant exudes a red juice, hence the common name.

76. **DERRIS** Lour.

Tall climbers, rarely trees. Leaves alternate; blades exstipellate, imparipinnate; leaflets opposite. Flowers in racemes or panicles, bracts small, deciduous, bracteoles usually deciduous; vexillary stamen free at base but connate from the middle with the others into a closed tube, anthers uniform; style glabrous. Fruits flat, indehiscent, upper suture or both sutures margined by a narrow wing.

About 80 species mainly from tropical Africa and Asia; *ca* 3 species Australia; 1 species south-eastern Queensland.

1. *Derris involuta* (Sprague) Sprague

Wisteria involuta Sprague; previously included by some authors under *Derris scandens* Benth.

Tall woody climber. Leaflets 9-13, blades, ovate to elliptic, apex obtuse, laterals asymmetrical, 2.5-7 cm × 1.5-3.5 cm, glabrous above, with sparse, short, rusty hairs below. Racemes axillary, many-flowered; flowers white, flushed with purple, *ca* 1.25 cm long. Fruits 3-7 cm × 1-1.2 cm, wing *ca* 2 mm wide. **Fig. 55B.**

Found from the New South Wales border to about as far north as Maryborough and west to the ranges, usually in or near rainforest. Flowers mainly spring to midsummer.

77. **PONGAMIA** Vent.

Tree. Leaf blades exstipellate, imparipinnate; leaflets opposite. Flowers in axillary racemes, bracts soon deciduous, bracteoles minute or absent; standard sparsely silky hairy outside; vexillary stamen free at base but connate from the middle with others into a closed tube, anthers versatile; style glabrous. Fruits flat, beaked, indehiscent, subfleshy or almost woody, 1-seeded.

Probably several species from Asia through New Guinea to Australia and the Pacific Is; 1, possibly 2 species Australia; 1 species south-eastern Queensland.

1. *Pongamia pinnata* (L.) Pierre

PONGAMIA TREE

Cytisus pinnatus L.; *Pongamia glabra* Vent.

Leaflets 3, 5 or 7, blades ovate or ovate-elliptic, apex shortly acuminate, 5-15 cm × 2-7 cm, glabrous. Racemes up to *ca* 20 cm long; flowers white or pale pink; calyx 4-5 mm long; standard 1-1.8 cm long. Pods 4-7 cm × 1.5-3 cm. **Fig. 55D.**

This species is known to occur naturally in northern Queensland and is often seen in parks and gardens in south-eastern Queensland. It occurs occasionally on islands at the mouth of the Brisbane River and other localities near cities, probably from seed off cultivated trees. Flowers spring-summer.

78. SOPHORA L.

Trees or shrubs. Stipules small; blades with small stipels or exstipellate, imparipinnate. Flowers in racemes, racemes simple and terminal or collected into large terminal panicles, bracts small, deciduous, bracteoles absent; calyx campanulate, teeth small; standard broad, erect or united, reflexed, wings oblong, erect, keel similar to wings, overlapping but scarcely united; stamens 10, free, or 9 rarely connate into ring at base; ovary shortly stipitate, style incurved, stigma terminal. Fruits moniliform, terete or slightly compressed, fleshy to woody, indehiscent or tardily 2-valved; seeds estrophiolate.

About 50 species from tropical, subtropical and temperate regions of both hemispheres; 2 species Australia, both occurring in south-eastern Queensland.

- | | | |
|--------------------------|-----------|------------------------|
| 1. Leaflets more than 20 | | 1. <i>S. fraseri</i> |
| Leaflets less than 20 | | 2. <i>S. tomentosa</i> |

1. *Sophora fraseri* Benth.

Sparsely branched shrubs up to *ca* 2 m tall, softly pubescent. Leaves up to *ca* 15 cm long; leaflets mostly 21–39, shortly petiolate, blades elliptic, 0.4–2.5 cm × 0.2–0.8 cm, rarely larger. Racemes simple, *ca* 10 cm long, pedicels *ca* 1 cm long; flowers pale yellow; calyx *ca* 5 mm long; petals *ca* 1 cm long. Fruits indehiscent, up to *ca* 12 cm long, irregularly constricted between seeds; seeds ovoid, *ca* 6 mm long.

Widespread but not common in the region. Flowers spring to autumn.

2. *Sophora tomentosa* L.

Shrubs or small trees up to *ca* 6 m tall, closely white tomentose. Leaves up to *ca* 30 cm long; leaflets mostly 11–17, blades broadly ovate to orbicular, apex obtuse or retuse, 2–5 cm × 1.2–4.5 cm. Racemes simple, up to 15 cm long or longer, pedicels *ca* 5–7 mm long; flowers pale yellow; calyx broad, *ca* 6 mm long; petals up to *ca* 2.5 cm long. Fruits indehiscent, up to *ca* 15 cm long, much contracted between seeds; seeds globular, *ca* 6 mm diameter. **Fig. 55A.**

Not common, found along the sea-coast. Flowers spring to autumn.

79. CASTANOSPERMUM Cunn. ex Hook.

Trees. Leaves imparipinnate. Flowers in racemes, usually on old wood, bracts small, bracteoles absent; calyx campanulate, thick, with short broad teeth; petals oblong, standard larger than others, recurved and clawed; filaments free; ovary long stipitate, tapering into an incurved style, ovules several, stigma terminal. Pods large, thick almost woody, turgid, 2-valved, spongy inside between seeds; seeds large, subglobose.

1 species endemic to tropical and subtropical areas of eastern Australia, occurring in south-eastern Queensland.

1. *Castanospermum australe* Cunn. & C. Fraser ex Hook.

BLACK BEAN;
MORETON BAY CHESTNUT

Tree, capable of reaching 40 m tall and 1.2 m stem diameter, but usually smaller, glabrous or young branches and inflorescences rusty-tomentose. Leaves dark green, 30–60 cm long; leaflets 7–17, shortly petiolulate; leaflet blades oblong-elliptic, apex usually acuminate, base often oblique, margin entire, 9–15 cm × 3–5 cm. Racemes 4–15 cm long, pedicels 2.5–3.5 cm long; flowers 3–4 cm long; calyx *ca* 1 cm long; petals bright orange or red; stamens longer than petals. Pods usually 12–18 (–25) cm × 4–6 cm; seeds dark brown, 3–5 per pod, *ca* 3 cm diameter. **Fig. 55F.**

Moderately common along creek banks and in rainforest of the Moreton and Wide Bay districts, inland as far as the Bunya Mountains. Flowers spring–summer. Commonly cultivated as a street tree. The seeds are poisonous to stock and to man.



Fig. 55

A-D FABACEAE — A *Sophora tomentosa*, pod $\times\frac{3}{2}$; B₁-B₂, *Derris involuta*, B₁ flower $\times 3$, B₂ calyx $\times 3$; C₁-C₂, *Kunstleria blackii*, C₁ part of flowering plant $\times 1$, C₂ flower $\times 3$; D *Pongamia pinnata*, fruit $\times\frac{3}{2}$; E CAESALPINIACEAE — E₁-E₄, *Barklya syringifolia*, E₁ leaf $\times\frac{3}{2}$, E₂ part of inflorescence $\times 1$, E₃ flower $\times 3$, E₄ petal showing long claw $\times 3$; F FABACEAE — F₁-F₂, *Castanospermum australe*, F₁ flower $\times 1$, F₂ fruit $\times\frac{3}{4}$.

61. MIMOSACEAE (LEGUMINOSAE in part)

Trees, shrubs, lianes rarely herbs, sometimes prickly or spiny. Leaves bipinnate, often with glands, modified to phyllodes in most Australian species of *Acacia*. Inflorescences spikes, racemes or heads of small, regular, 4–6-merous flowers; sepals and petals valvate in bud; stamens as many as, or twice as many as petals or numerous, free, united into tube or adnate to corolla at base, free part usually exserted, anthers small sometimes with minute apical gland. Fruits and pods rather variable in structure; seeds often marked with an areole.

About 60 genera and 3 000 species, mainly tropics and subtropics; 11 genera with *ca* 930 species Australia; 9 genera with 137 species south-eastern Queensland.

- | | | |
|---|--------------------------|---|
| 1. Stamens 5 or 10 | | 2 |
| Stamens more than 10 | | 7 |
| 2. Lower flowers of inflorescence staminate or neuter or apetalous with staminodes; plants without prickles, occasionally with spines | | 3 |
| All flowers of inflorescence bisexual; plants sometimes prickly or with stipular spines | | 5 |
| 3. Anthers without glands | 1. <i>Desmanthus</i> | |
| Anthers glandular | | 4 |
| 4. Upper part of inflorescence yellow, lower part white or mauve; spines terminating short branches | 2. <i>Dichrostachys</i> | |
| Upper part of inflorescence green or yellow, lower part yellow; unarmed | 3. <i>Neptunia</i> | |
| 5. Plants unarmed; anthers (in the single species) hairy | 4. <i>Leucaena</i> | |
| Plants either prickly or with stipular spines | | 6 |
| 6. Trees with stipular spines, all flowers of inflorescence bisexual | 5. <i>Prosopis</i> | |
| Shrubs or occasionally herbs, some with prickles, flowers sometimes staminate or neuter with staminodes | 6. <i>Mimosa</i> | |
| 7. Stamens free, considerably more than 10 | 7. <i>Acacia</i> | |
| Stamens united at base into distinct tube | | 8 |
| 8. Flowers of inflorescence dimorphic, central one or two flowers having an elongated tubular corolla and a long exserted staminal tube; valves membranous to chartaceous, not twisted after dehiscence | 8. <i>Albizia</i> | |
| Flowers of inflorescence all alike; valves twisted after dehiscence | 9. <i>Pithecellobium</i> | |

1. DESMANTHUS Willd.

Trees or shrubs. Leaves bipinnate; gland often between lowest pair of pinnae. Flowers in solitary axillary heads, bisexual or lower neuter; calyx campanulate; petals \pm free; stamens 5 or 10, free, exserted; ovary sessile. Pods linear, straight or falcate, 2-valved, continuous within or septate between seeds, seeds longitudinal.

About 20 species subtropical and tropical America, Madagascar; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Desmanthus virgatus* (L.) Willd.

Mimosa virgata L.

Erect subshrub up to *ca* 1.3 m tall \pm glabrous. Leaves with 2–7 pairs of pinnae; glands \pm circular, between lowest pair or between several pairs of pinnae, petiole 5–10 mm long, rachis 2–4 cm long; axis of pinnae up to 6 cm long with 10–20 pairs of leaflets; leaflet blades 2–6 mm long. Pods linear, 3–6 cm long; seeds oblique. **Fig. 56C.**

Native of North and South America; uncommon weed in waste places in Brisbane. Flowers summer.

2. DICHROSTACHYS (DC.) Wight & Arn.

Shrubs or small trees; branchlets spinescent. Leaves bipinnate; gland between each pair of pinnae. Flowers in axillary spikes, upper part of spike with bisexual yellow flowers, lower part of differently coloured neuter flowers; calyx shortly toothed; petals 5, united below middle; stamens free, 10 in bisexual flowers, anther with stipitate gland; staminodes in neuter flowers 10, filiform, without anthers; ovary sessile. Pods clustered, sessile, compressed, usually irregularly contorted or spiral, dehiscent or not; seeds \pm compressed, ovoid to ellipsoid.

About 20 species tropical Africa, Asia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Dichrostachys cinerea* (L.) Wight & Arn. subsp. *malesiana* Brenant & Brummitt *Mimosa cinerea* L.

Shrub or small tree up to 5 m tall, armed with spines terminating short lateral twigs which often bear leaves and flowers. Leaves with 5–10 pairs of pinnae, rachis with petiole 1–20 cm long with a stipitate gland between each pair of pinnae; minute reddish glands also present near insertion of pinnae and leaflets; axes of pinnae 1.5–3 cm long with 10–40 pairs of leaflets each 2.5–4.5 mm \times 1–1.5 mm, glabrous except for ciliate margins. Spikes 2–5 cm long, upper part yellow, lower part pink; calyx 0.6–1.2 mm long; corolla 1.5–3 mm long; staminodes 0.4–1.6 cm long. Pods 2–10 cm \times 0.6–1 cm, irregularly coiled; seeds 4–6 mm \times 3–4.5 mm. **Fig. 56B.**

Native of East Indies and the Northern Territory; naturalized on roadsides in some parts of Brisbane. Flowers summer.

3. NEPTUNIA Lour.

Undershrubs or perennial herbs, sometimes prostrate. Leaves bipinnate; stipules membranous, obliquely cordate; petiolar glands rare. Flowers in heads on axillary peduncles, 5-merous, some males and some neuter; calyx and corolla small; stamens 10 or rarely 5; anthers with a stipitate gland; staminodes 10, linear, petaloid. Fruits oblong, deflexed from stipe, 2-valved, subseptate between seeds within, rarely 1-seeded; seeds transverse.

11 species in tropics and subtropics; 5 species Australia; 1 species south-eastern Queensland.

1. *Neptunia gracilis* Benth.

NATIVE SENSITIVE PLANT

Prostrate perennial herb. Leaves sensitive, with 2–4(–6) pairs of pinnae; stipules persistent, 4.5–9 mm \times 1.5–3 mm, membranous; petiole 0.8–3 cm long; stipellae at base of each pair of pinnae; axis of pinnae distinctly winged, 1.5–3 cm long with 7–22(–32) pairs of glabrous or pubescent, oblong leaflets, each 0.35–1.1 cm \times 0.08–0.25 cm. Heads of 15–35 flowers on axillary peduncles 4–13.5 cm long; calyx 5-lobed, 1–2 mm long; petals free, 1.8–3 mm long; stamens 5, up to 5 mm long; sterile flowers smaller with 5 yellow petal-like staminodes each 0.65–1.2 cm long. Pods flat, membranous, 1.5–2.5 cm \times 0.5–0.8 cm, stipe 2.5–4 mm long; seeds 3–8 per pod, 4 mm \times 3.5 mm. **Fig. 56E.**

Throughout region in eucalypt open forest, occasionally a weed on heavy soil. Flowers summer.

4. LEUCAENA Benth.

Trees or shrubs. Leaves bipinnate, a gland often on petiole. Flowers in heads, 5-merous; calyx tubular campanulate, dentate; petals free; stamens 10, free, exserted; anthers often pilose. Pods stipitate, broadly linear, compressed; seeds transverse.

About 50 species tropical America; 1 species cultivated and naturalized Australia, occurring in south-eastern Queensland.

1. *Leucaena leucocephala (Lam.) de Wit

LEUCAENA

Mimosa leucocephala Lam.; *Leucaena glauca* auct. non (L.) Benth.

Shrub or tree up to 7 m tall. Leaves with (2-)3-6 pairs of pinnae; petiole 2-5 cm long often with a gland at junction of lowest pair of pinnae, rachis 7-14 cm long; axis of pinnae 2-10 cm long with (5-)8-20 pairs of oblong-ovate leaflets 0.7-1.8 × 0.15-0.4 cm, puberulous on margins. Heads on peduncles 2-5 cm long; calyx 2-3.5 mm long; petals pale green, 4-5 mm long; stamens 6.5-7.6 mm long; filaments white; anthers hairy. Pods 8-18 cm × ca 2 cm with a stipe up to 3 cm long; seeds 7.5-9 mm × 4-5 mm. **Fig. 56A.**

Native of tropical America, cultivated to a limited extent as a fodder plant, naturalized in coastal parts of south-eastern Queensland. Flowers summer. The plant contains mimosine and is toxic to animals when eaten in large quantities.

5. PROSOPIS L.

Trees or shrubs, unarmed or with prickles, axillary spines or spinescent stipules. Leaves bipinnate; glands small, rarely absent. Flowers small, in axillary racemes or rarely heads; calyx shortly dentate; petals at first united; stamens 10, free; anthers with or without a deciduous gland. Fruits linear, thick and compressed, straight or falcate, indehiscent, mesocarp thick and spongy.

About 44 species, south-western Asia, Africa and predominantly America; 4 species naturalized Australia; 1 species south-eastern Queensland.

1. *Prosopis glandulosa Torrey

Prosopis juliflora (Swartz.) DC. var. *glandulosa* (Torrey) Cockerell; *P. chilensis* (Molina) Stuntz var. *glandulosa* (Torrey) Standley

Tree up to 9 m tall, deciduous; spines 1-4.5 cm long, mostly solitary or solitary and paired alternately on same twig. Leaves glabrous, with 1-2 pairs of pinnae; petioles 2-15 cm long; axes of pinnae 6-17 cm long, with 6-17 pairs of leaflets each 2-6.5 cm × 0.15-0.45 cm, 5-15 times as long as wide. Racemes 5-14 cm long; petals 2.5-3.5 mm long; ovary stipitate villose. Pods straight, 8-20 cm × 0.7-1.3 cm, compressed to subterete, submoniliform, 5-18-seeded; seeds oblique to longitudinal. **Fig. 56D.**

Native of North America, naturalized in a few places in the Darling Downs and Burnett districts. Flowers summer. It is a declared noxious weed.

6. MIMOSA L.

Trees, shrubs or herbs, mostly armed. Leaves bipinnate, usually sensitive; petiolar glands rarely present. Flowers in heads or spikes, solitary or fasciculate in axils; flowers 6-3-merous, sessile, bisexual, polygamous or neuter in a few species; calyx usually minute; petals ± connate; stamens as many as or twice as many as petals, free, exserted; anthers without gland. Pods oblong or linear, membranous or coriaceous, dehiscent, continuous or subseptate inside; seeds flat, ovate or orbicular.

About 600 species, tropics and subtropics, most of them in South America; 3 species naturalized Australia; 1 species south-eastern Queensland.

1. *Mimosa pudica L.

COMMON SENSITIVE PLANT

Perennial herb sometimes woody, often prostrate; stems armed with prickles 2.5-5 mm long. Leaves sensitive, unarmed, with 1-2 pairs of pinnae, rachis extremely short, petiole 1.5-5.5 cm long; axis of pinnae 5-8 cm long with 10-25 pairs of linear-oblong leaflets, each 0.6-1.5 cm × 0.1-0.3 cm, margins setulose. Flowers pink, in ovoid heads 1-1.5 cm long; calyx minute; corolla 2-2.3 mm long; stamens 4. Pods clustered, densely setose-prickly, 1-2 cm × 0.3-0.5 cm. **Fig. 56F.**

Native of South America; naturalized weed of roadsides in coastal areas. Flowers summer to early winter.



Fig. 56

MIMOSACEAE — A₁-A₃, *Leucaena leucocephala*, A₁, part of flowering stem $\times \frac{1}{2}$, A₂, flower showing hairy anthers $\times 4$, A₃, fruit $\times \frac{1}{2}$; B₁-B₃, *Dichrostachys cinerea*, B₁, part of flowering stem $\times 1$, B₂, fruit $\times \frac{1}{2}$, B₃, anther with stipitate gland $\times 17$; C₁-C₂, *Desmanthus virgatus*, C₁, part of flowering stem $\times 1$, C₂, fruit $\times \frac{1}{2}$; D₁-D₄, *Prosopis glandulosa*, D₁, part of flowering stem $\times \frac{1}{4}$, D₂, fruit $\times \frac{1}{2}$; E₁-E₄, *Neptunia gracilis*, E₁, sterile flower $\times 4$, E₂, fertile flower $\times 4$, E₃, anther with gland $\times 6$, E₄, fruit $\times \frac{1}{2}$; F₁-F₂, *Mimosa pudica*, F₁, part of fruiting stem $\times \frac{3}{8}$, F₂, inflorescence $\times 1$.

7. ACACIA Miller

Trees or shrubs. Leaves bipinnate at least on young plants, often modified to phyllodes on older plants, glands often present on leaf rachis or on dorsal margin of phyllode. Flowers in heads or spikes, 4-5-merous; calyx campanulate, variously divided, petals ± united; stamens numerous, exserted, free, usually yellow. Pods flat to terete, membranous to woody, usually dehiscent; seeds often with conspicuous aril.

About 1 200 species in all continents except Europe, ca 900 species Australia; 124 species south-eastern Queensland.

The species in the Key and following descriptions are arranged in phylogenetic order. Most species of *Acacia* are commonly called WATTLES.

1. Mature plants with phyllodes; pinnate and bipinnate leaves on seedlings or "reversion" shoots of mature plants, rarely persisting		2
Plants never with phyllodes, always with bipinnate leaves on mature plants		124
2. Phyllodes in whorls of 6-9, rarely scattered	1. <i>A. baueri</i>	3
Phyllodes sometimes occasionally in groups but not regularly whorled		
3. Flowers in spikes		4
Flowers in heads		42
4. Phyllodes decurrent on stem for some distance, pungent pointed	3. <i>A. triptera</i>	5
Phyllodes articulate on stem, not broadly decurrent		
5. Phyllodes terete or flattened, less than 2.5 mm wide and more than 20 times as long as wide, longitudinally striate or ribbed, nerves not anastomosing, or without nerves and punctulate		6
Phyllodes more than 2.5 mm wide, or if narrower then less than 20 times as long as wide, longitudinally striate, the nerves sometimes anastomosing		10
6. Phyllodes less than 5 cm long	5. <i>A. aneura</i>	7
Phyllodes more than 5 cm long		
7. Branchlets with long silky hairs, becoming glabrous; phyllodes usually with similar hairs at least at base and apex, rather flexuose, 13-18 cm long; spikes less than 1 cm long	2. <i>A. curranii</i>	
Branchlets glabrous or with short appressed hairs; phyllodes without silky hairs, often shorter; spikes (except in <i>A. granitica</i>) longer		8
8. Calyx divided ± to base; branchlets often with appressed hairs or greyish bloom; phyllodes often with minute appressed hairs	5. <i>A. aneura</i>	
Calyx truncate sinuate, or lobed, but not lobed to middle, branchlets glabrous, rarely scurfy and sometimes glutinous, phyllodes glabrous		9
9. Spikes less than 1 cm long on peduncles 0.5-2 mm long; phyllodes 10-20 cm long	8. <i>A. granitica</i>	
Spikes more than 1 cm long on peduncles 1-4 mm long; phyllodes 5-18 cm long	9. <i>A. caroleae</i>	
10. Phyllodes with parallel longitudinal nerves, not anastomosing, sometimes obscure		11
Phyllodes with definitely anastomosing nerves, usually conspicuously so		28
11. Phyllodes less than 6 times as long as wide, or if slightly longer then with rather spreading hairs; usually more than 1 cm wide, with numerous rather crowded parallel longitudinal nerves (at least when dry), pods narrow with longitudinal seeds		12
Phyllodes more than 6 times as long as wide, glabrous or with indumentum of appressed hairs, if spreading hairs then more than 10 times as long as wide, nervature various; pods various, including narrow and opening elastically from the apex and broad sometimes transversely veined but not opening elastically from the apex		14

12. Phyllodes on mature plants markedly pubescent; spikes on pubescent peduncles up to 3 mm long
Phyllodes on mature plants glabrous or with rather sparse indumentum at base; spikes usually on longer peduncles 15. *A. pubifolia* 13
13. Phyllodes \pm symmetrical, elliptic (both margins concave) 16. *A. striatifolia*
Phyllodes asymmetrical, lower margin straight or convex, upper concave 17. *A. tenuinervis*
14. Branchlets pubescent with short appressed hairs (rarely long and somewhat spreading); mature phyllodes often silvery grey with short appressed hairs or rarely longer and somewhat spreading hairs; young tips not dark; phyllodes straight or slightly falcate 15
Branchlets of mature plants glabrous or rarely with scattered hairs; phyllodes glabrous or with scattered hairs at the base, young tips sometimes dark; phyllodes straight or markedly falcate 17
15. Branchlets angular with translucent ribs; spikes 3–4 cm long; calyx membranous (0.4–) 0.6–0.75 mm long with short obtuse lobes; pods flat from 3 mm wide with longitudinal seeds to 9 mm wide with transverse seeds
Branchlets slender, angular; spikes 1–3 cm long; calyx 0.4–1.1 mm long, deeply lobed; pods flat, winged or constricted between the seeds, but seeds longitudinal 7. *A. leptostachya* 16
16. Calyx 0.6–1.1 mm long; pod leaf-like, flat with a wing up to 2 mm broad on the dorsal edge
Calyx 0.4–0.7 mm long; pod flat, constricted between seeds 5. *A. aneura*
6. *A. catenulata*
17. Spikes subsessile, less than 1 cm long; phyllodes more than 30 times as long as wide
Spikes more than 1 cm long or not subsessile; phyllodes often less than 30 times as long as wide 8. *A. granitica* 18
18. 2–5 spikes on axillary shoot 4–8 mm or more long, sometimes elongating into leafy shoot; nerves of phyllode not running into margin at base nor phyllode pubescent; phyllodes up to 2 cm, rarely 2.5 cm, wide
Spikes usually single or in pairs on minute axis in axils usually not long nor elongating but if so then nerves of phyllode running into margin at base or phyllodes pubescent or more than 1 cm broad 19
21
19. Phyllodes linear, 0.2–0.5 cm wide, 15–60 times as long as wide
Phyllodes narrowly elliptic or narrowly ovate, straight or falcate, 0.4–1.8 (–2.5) cm wide, 4–20 times as long as wide 9. *A. caroleae* 20
20. Phyllodes 4–10 (–12) cm \times 0.4–1 cm, 3.5–16 (–19) times as long as wide, leaves on young plants elliptic; calyx pubescent at base
Phyllodes 8–16 (–19) cm \times 0.8–1.8 (–2.5) cm, 6–15 (–19) times as long as wide, broader on young plants; calyx glabrous or pubescent at the base 11. *A. burrowii*
12. *A. blakei*
21. Pods broad, woody, transversely veined, not opening elastically from the apex, more than 1.5 cm wide with transverse seeds; phyllodes 7–20 \times 0.6–4 cm, up to 12 times as long as wide; young tips not dark
Pods usually not woody but if so then up to 1.2 cm wide and opening elastically from the top; phyllodes usually less than 1.7 cm wide or if wider then young tips dark 31. *A. aulacocarpa* 22
22. Spikes on peduncles more than 5 mm long; phyllodes often more than 15 times as long as wide 23
Spikes on peduncles up to 5 mm long; phyllodes often less than 20 times as long as wide 25
23. Phyllodes more or less straight with midnerve slightly or markedly more prominent than the rest, more than 10 cm long, 2–10 mm wide, branchlets and nerves and margins of phyllodes rather yellowish
Phyllodes straight or falcate with more than 1 major longitudinal nerve; branchlets and nerves and margins of phyllodes usually not yellowish, or less than 10 cm long 18. *A. shirleyi* 24

24. Phyllodes on mature trees falcate (i.e. both upper and lower margins curved), 8–20 cm long; on young plants ovate and pubescent; spikes 2–4.5 cm long; pod 3 mm wide
Phyllodes ± straight, 6–12 cm long, nerves indistinct, phyllodes on young plants not pubescent; pods 5–6 mm wide 10. *A. sparsiflora*
14. *A. rhodoxylon*
25. Pods flat, 0.4–1.1 cm wide; phyllodes tending to be widest above the middle, with many fine parallel nerves, none much more prominent than the rest
Pods terete or if flat then 0.2–0.3 cm wide; phyllodes usually broadest at or below the middle, with fine parallel nerves usually 2–3 more prominent than the rest 4. *A. aprepta* 26
26. Young plants densely pubescent; pods terete, obscurely longitudinally wrinkled when dry; phyllodes 0.5–2.5 cm wide, strongly falcate when narrow (on mature trees)
Young plants often with phyllodes different from those of older plants but not pubescent; pods narrow but flat; phyllodes only occasionally strongly falcate; calyx only sinuately lobed 13. *A. julifera* 27
27. Phyllodes 4–10 (–12) cm × 0.4–1 cm, 3.5–16 (–19) times as long as wide, leaves on young plants elliptic; calyx pubescent at base
Phyllodes 8–16 (–19) cm × 0.8–1.8 (–2.5) cm, 6–15 (–19) times as long as wide, broader on young plants; calyx glabrous or pubescent at the base 11. *A. burrowii*
12. *A. blakei*
28. Phyllodes large with very conspicuous reticulum, the nerve islands not elongate (less than 3 times as long as wide), the major nerves running together at the base near the lower margin; plants sometimes densely pubescent
Phyllodes with rather fine secondary nerves forming reticulum, the nerve islands elongate (more than about 3 times as long as wide), occasionally the anastomoses infrequent 32. *A. grandifolia* 29
29. Flowers predominantly 4-merous 30
Flowers 5-merous 35
30. Phyllodes coriaceous, 5–19 cm × 0.8–2.2 cm, 3–20 times as long as wide, with a prominent basal gland, 2, 3 or 5 nerves more prominent than the rest and with 3–7 longitudinal nerves between the major ones; flowers at anthesis 2.5 mm or more long; calyx glabrous
Phyllodes of thinner texture; gland not prominent; flowers at anthesis less than 2 mm long; calyx glabrous or pubescent 31
32
31. Phyllodes 5–10 cm long, 3–6 times as long as wide; spikes sessile, dense, up to 3 cm long
Phyllodes 8–19 cm long, 4–20 times as long as wide; spikes pedunculate, sparse, 4–6 cm long 24. *A. sophorae*
23. *A. obtusifolia*
32. Phyllodes linear to linear-ovate, 6–16 cm × 0.1–1.9 cm, 14–70 times as long as wide, with a distinct midrib and 6 or fewer conspicuously widely spaced secondary nerves; calyx ciliate, otherwise glabrous
Phyllodes 5–20 cm long, 5–35 times as long as wide; secondary nerves not widely spaced, more than 6 besides the midrib (if any) 22. *A. longissima* 33
33. Mature phyllodes more than 1 cm wide, 10–20 cm long, 5–16 times as long as wide; branchlets lenticellate, sometimes golden pubescent; calyx and rachis of spike golden pubescent
Phyllodes less than 1 cm wide, 8–35 times as long as wide; branchlets and rachis glabrous or with white appressed hairs 19. *A. maidenii* 34
34. Phyllodes 5–10 cm long, 8–18 times as long as wide; branchlets and some phyllodes with appressed hairs; rachis subglabrous; calyx more or less glabrous
Phyllodes 10–20 cm long, 15–35 times as long as wide, branchlets with few appressed hairs, not lenticellate; rachis glabrous, calyx hirsute 20. *A. floribunda*
21. *A. orites*

35. Young tips golden-yellow; branchlets with indumentum of yellow hairs; pods tightly coiled, with longitudinal seeds 25. *A. cincinnata*
 Tips not golden-yellow (except *A. cowleana*); indumentum of branchlets not yellow; pods not tightly coiled 36
36. Branchlets rather slender, angular, glabrous or occasionally pubescent, often with conspicuous lenticels; flowers 4-5-merous; corolla 4 times as long as the short (0.4-0.5 mm long) calyx 19. *A. maidenii*
 Branchlets, if with conspicuous lenticels, then stout and angular; flowers 5-merous, calyx 0.6 mm or more long, corolla 1.4-3 times as long as the calyx 37
37. Branchlets pubescent, hairs either short (0.1 mm) and appressed or long (0.2-0.4 mm) and spreading 38
 Branchlets glabrous or scurfy, not pubescent 39
38. Phyllodes with widely spaced longitudinal secondary nerves (16-24/cm), 1.3-4 cm wide, 4-8 (-12) times as long as wide; spikes dense; calyx pubescent 27. *A. longispicata* subsp. *velutina*
 Phyllodes with crowded secondary nerves (30-45/cm), 0.8-2.2 cm wide, 5.5-18 times as long as wide; spikes sparse; calyx glabrous or with a few hairs at the base 28. *A. crassa* subsp. *longicoma*
39. Secondary longitudinal nerves widely spaced (less than 25/cm) 26. *A. leptocarpa*
 Secondary nerves less widely spaced (more than 25/cm) 40
40. Pulvinus short, less than 5 mm long; calyx glabrous or some flowers of the inflorescence with a few hairs at the base 29. *A. leiocalyx*
 Pulvinus more than 5 mm long; calyx glabrous or with few or many hairs mainly at the base 41
41. Spikes dense; phyllodes 14-24 cm long, 9-20 times as long as wide; calyx glabrous or with a few basal hairs 28. *A. crassa* subsp. *crassa*
 Spikes only moderately dense; phyllodes 10-16 cm long, 3.5-9 times as long as wide; calyx always with some indumentum 30. *A. concurrens*
42. Phyllodes either \pm triangular, short (less than 1.5 cm long) the lower margin straight, the upper concave or broadest at the base and tapering gradually to a pungent point, or broadest in lower quarter and upper margin \pm abruptly contracted so that phyllode tapers into rather long pungent point 43
 Phyllodes often more than 1.5 cm long, not triangular or if so, then heads in racemes 49
43. Phyllodes plurinerved, lowest nerve \pm straight running into the apex, other nerves running on to the curved upper margin 44
 Phyllodes uninerved, the nerve running to the apex 45
44. Phyllodes 0.3-0.7 cm \times 0.3-0.7 cm about as long as wide; peduncle often as long as or longer than the phyllodes 52. *A. pravifolia*
 Phyllodes 0.4-1.1 cm \times 0.16-0.32 cm, 2-4.5 times as long as wide; peduncle usually shorter than the phyllodes 51. *A. amblygona*
45. Phyllodes 3-6 mm wide, sometimes oblong, not particularly pungent; heads in axils of reduced phyllodes often on short lateral branches 69. *A. hubbardiana*
 Phyllodes up to 3 mm wide at base and tapering to pungent point at apex 46
46. Flower heads with bracteoles with long points projecting beyond buds; peduncles stout; phyllodes up to 3 mm broad 55. *A. saxicola*
 Flower head without bracteoles projecting beyond buds; peduncles slender 47
47. Peduncles 0.1-0.2 cm long; pod 1-3-seeded; phyllodes up to 1.1 mm wide 53. *A. brachycarpa*
 Peduncles 0.8-1.5 cm long; pod with more than 3 seeds 48

48. Phyllodes 0.6–1.1 cm × 0.06–0.16 cm; calyx deeply lobed with oblong or spatulate lobes, 1.2–1.7 mm long 54. *A. ulicifolia*
 Phyllodes 0.4–0.65 cm × 0.2–0.25 cm; calyx ca 1 mm long, with broad sinuses and broad deltoid lobes 56. *A. gunnii*
49. Phyllodes terete, subterete or quadrangular in section, or flat and narrow without prominent nerves but sometimes with obscure translucent longitudinal nerves, or longitudinally folded 50
 Phyllodes terete or flat, with many longitudinal nerves when terete or with at least one longitudinal nerve when flat 56
50. Phyllodes quadrangular in cross-section (at least when dry), ribbed at angles and sometimes pungently pointed 58. *A. quadrilateralis*
 Phyllodes terete or flat (sometimes thick), without ribs or with obscure longitudinal folds, not pungently pointed 51
51. Some heads in axillary racemes, some (on same plant) on axillary peduncles 61. *A. ruppii*
 Heads only on axillary peduncles 52
52. Flowers small; calyx 0.6–0.8 mm long, corolla 1.4–1.6 mm long; phyllodes 1–1.4 mm wide with 1, 2, or rarely 3 obscure raised nerves, apical mucro oblique or sometimes perpendicular to the lamina 64. *A. johnsonii*
 Flowers larger; calyx 0.8–1 mm long, corolla 1.6–2 mm long; phyllodes less than 0.8 mm wide or without nerves or with 1(–2) obscure longitudinal folds and straight mucro 53
53. Phyllodes often in groups, subterete, 0.25–1 cm long 54
 Phyllodes scattered or occasionally in groups, flat or, if subterete, then more than 1.5 cm long 55
54. Pods rough with raised outgrowths 59. *A. handonis*
 Pods smooth, no outgrowths 60. *A. brunioides*
55. Phyllodes 0.5–1.5 cm × 0.1–0.16 cm 62. *A. conferta*
 Phyllodes 1.5–3.5 cm × 0.06–0.08 cm 63. *A. burbidgeae*
56. Phyllodes plurinerved, terete or flat 57
 Phyllodes flat, uninerved, sometimes with secondary longitudinal nerve developed 76
57. Nerves not at all reticulate, either fine and crowded with sometimes one more prominent than the rest, or nerves ± equally prominent and not crowded, or nerves obscure; often with appressed hairs, usually not with spreading hairs and not glutinous 58
 Phyllodes with 1, 2, 3, 5, or more prominent longitudinal nerves and anastomosing secondary nerves, sometimes not conspicuous; sometimes glutinous and sometimes with spreading hairs 63
58. Phyllodes terete, glabrous with ca 16 longitudinal nerves, 5–13 cm long; heads in axillary pairs 34. *A. rigens*
 Phyllodes flat, rarely terete and then pubescent and usually longer 59
59. Phyllodes stiff and pointed, less than 7 cm long and widely spaced equally prominent nerves; heads in axillary pairs 35. *A. oswaldii*
 Phyllodes usually not stiff though sometimes with an innocuous brown point, either with fine crowded equally prominent nerves or with 1–3 nerves more prominent than the rest, or if more widely spaced and ± equally prominent then more than 10 cm long 60
60. Phyllodes curved, tapering to each end from the middle, usually 10–23 cm × 0.7–2 cm 38. *A. harpophylla*
 Phyllodes straight and parallel-sided or somewhat falcate, less than 0.7 cm wide or if up to 1.2 cm wide then less than 12 cm long 61

61. Phyllodes more than 15 cm long, usually less than 0.5 cm broad; calyx more than 1 mm long Phyllodes less than 15 cm long, up to 1.2 cm wide; calyx less than 1 mm long or if 1 mm then phyllodes less than 12 cm long	41. <i>A. stenophylla</i>	62
62. Phyllodes 0.4–0.8 cm wide, densely appressed pubescent when young, sparsely to moderately pubescent when old; pods winged Phyllodes 0.7–1.2 cm wide, at most sparsely pubescent though often with greyish bloom; pods <i>ca</i> 1 cm wide, not winged	40. <i>A. pendula</i> 39. <i>A. melvillei</i>	
63. Branchlets and phyllodes glutinous, phyllodes short (often less than 5 cm long), narrow (often less than 10 mm wide), often less than 7 times as long as wide Branchlets and phyllodes not glutinous		64 66
64. Phyllodes with 2 prominent longitudinal nerves and more or less translucent reticulate nerves between them, 2–4 cm × 0.25–0.55 cm heads in pairs in the axils Phyllodes with at least 3 longitudinal nerves prominent or if only 2 then anastomosing nerves raised and very conspicuous	42. <i>A. montana</i>	65
65. Phyllodes 2–3 cm × 0.3–0.7 cm; heads in short axillary 2–3-branched racemes, sometimes elongating into leafy shoots Phyllodes 5–8 cm × 0.1–0.25 cm, heads single or in pairs in the axils	43. <i>A. ixiophylla</i> 44. <i>A. viscidula</i>	
66. Phyllodes 3.5 (sometimes 6) cm long with <i>ca</i> 10 parallel nerves, few anastomoses; heads of 4–6 flowers on peduncles <i>ca</i> 1 mm long in short axillary racemes Phyllodes usually longer or with more definitely anastomosing nerves; inflorescences different—heads with more flowers	45. <i>A. dawsonii</i>	67
67. Heads in pairs or in reduced racemes in the axils, the axis less than 1 cm long; phyllodes either glabrous with 3–6 or more conspicuously widely spaced nerves with few secondary nerves, or with scattered hairs at least at the base when young and 3 longitudinal nerves and 6–12 hardly less prominent secondary nerves Heads in axillary or terminal racemes or terminal panicles, the axis more than 3 cm long, or if shorter than branchlets, young phyllodes and inflorescences covered in white bloom; phyllodes with 2, 3, 5 or more longitudinal nerves, secondary nerves many, crowded		68 71
68. Branchlets densely pubescent; phyllodes with scattered hairs at least at the base when young and with 3 prominent longitudinal nerves and 6–12 slightly less prominent secondary nerves Branchlets glabrous; phyllodes glabrous with 3–6 or more conspicuous widely spaced nerves with few (only 1–2/mm in one species) secondary nerves between them		69 70
69. Phyllodes 6–9 times as long as wide; flowers yellow, the stamens up to 4 mm long Phyllodes 10–15 times as long as wide; flowers pale, stamens 6–7 mm long	36. <i>A. venulosa</i> 37. <i>A. baeuerlenii</i>	
70. Phyllodes 2–4.5 times as long as wide; branchlets sometimes flattened Phyllodes 4–15 times as long as wide; branchlets not flattened	47. <i>A. complanata</i> 46. <i>A. excelsa</i>	
71. Phyllodes with two prominent longitudinal nerves with finer secondary nerves forming a definite reticulum; racemes axillary, elongate Phyllodes with 3–6 prominent longitudinal nerves; racemes various sometimes terminal, sometimes reduced to groups of peduncles in the axils		72 73
72. Phyllodes about 8 cm × 2 cm, rather thin, gland <i>ca</i> 1 mm from base with prominent rim and small orifice, sometimes linked to upper nerve by connective nerve Phyllodes 11–16 cm × 2–3.5 cm, coarser, basal gland prominent, elongated, other projecting from marginal nerve (as in <i>A. bancroftii</i>)	86. <i>A. binervata</i> 80. <i>A. wardellii</i>	

73. Young tips golden, stellate hairs conspicuous on branchlets and base of phyllodes; phyllodes 9–24 cm × 2–4 cm, *ca* 3 times as long as wide
 Tips not golden and stellate hairs either lacking or a few on bracts and at apex of racemes 33. *A. flavescens* 74
74. Heads of 12–15 flowers on peduncles in about 4 pairs on axis 3–6 cm long; rainforest tree
 Heads of at least 20 flowers; if trees of rainforest then peduncles not in pairs on axis of raceme 48. *A. bakeri* 75
75. Branchlets angular, usually with some hairs; phyllodes with rather crowded secondary nerves, rather straight; funicle passing completely around the seed and folded back on itself
 Branchlets terete, glaucous; phyllodes with more widely spaced secondary nerves; prominently curved, markedly attenuate at the base; funicle once folded beneath seed 49. *A. melanoxylo*
 50. *A. implexa*
76. Heads single on axillary peduncles; phyllodes less than 15 cm long, or if longer then less than 4 mm wide
 Heads in axillary racemes, sometimes condensed so that they appear to be in axillary clusters; stipules not spinose or knob-like; sometimes heads both axillary and in racemes but then phyllodes more than 15 cm long and more than 5 mm wide 77 90
77. Phyllodes with only one longitudinal nerve prominent
 Phyllodes with one longitudinal nerve prominent with a well developed second (accessory) longitudinal nerve in the lower half 78 89
78. Stipules spinose; phyllodes oblong, undulate
 Stipules not spinose; phyllodes linear, stiff 57. *A. paradoxa* 79
79. Phyllodes less than 1.8 cm long, always more than twice as long as wide, or if up to 4 cm long then phyllodes pungent pointed and sometimes on short lateral shoots
 Phyllodes more than 1.8 cm long, or if shorter then less than twice as long as wide 80 82
80. Branchlets with prominent yellowish ribs sometimes broken up into bead-like particles; midrib markedly raised, close to the upper margin, and ± decurrent with it towards the apex; heads 4–6-flowered
 Branchlets sometimes definitely ribbed, but ribs not breaking up into bead-like particles; midribs translucent not raised; heads of more than 12 flowers 65. *A. flexifolia* 81
81. Branchlets glabrous with resinous somewhat tuberculate ribs; phyllodes broadest at the base, 0.55–1.1 cm × 0.08–0.16 cm; heads 20–30-flowered
 Branchlets definitely or slightly ribbed only below the insertion of the phyllodes; phyllodes broadest near the top 0.6–1.8 cm × 0.1–0.3 cm; heads 12–15-flowered 66. *A. resinicostata*
 67. *A. lineata*
82. Phyllodes uneven at the base, midrib excentric, less than twice as long as wide, a prominent gland at the base (see also *A. leichhardtii* which occasionally has heads on axillary peduncles)
 Phyllodes ± symmetrical at base, more than twice as long as wide 68. *A. uncinata* 83
83. Phyllodes more than 2 mm wide with an oblique mucro, sometimes on the dorsal side of it a small gland as well as a basal gland, a few small tubercles on the margins; obscurely penninerved when broad, with subparallel nerves, or with obscure longitudinal folds when narrow
 Phyllodes either without apical gland though sometimes mucronate or less than 1 mm wide; tubercles on margin very large or nil 70. *A. ixodes* 84
84. Phyllodes 2–3 cm × 0.15–0.25 cm, the midrib yellowish, translucent
 Phyllodes longer, or if only 2–3 cm long then more than 0.25 cm broad and the midrib not translucent 71. *A. lauta* 85

85. Phyllodes less than 3 cm long, up to 0.7 cm wide, or up to 5.5 cm long and 2 cm wide, rather coriaceous or fleshy and only indistinctly penninerved 86
 Phyllodes always more than 5 cm long, 0.5–2 cm wide and prominently penninerved, or narrower and sometimes apparently longitudinally folded; flowers sometimes in axillary clusters 87
86. Branchlets glabrous, neither hirsute nor tuberculate, phyllodes rather fleshy, 3–6.5 cm × 0.7–1.8 cm; pods curved, linear, up to 6 cm long, 0.3 cm wide 72. *A. myrtifolia*
 Branchlets tuberculate or hirsute; phyllodes less than 3 cm long, up to 0.7 cm wide; pods short 73. *A. hispidula*
87. Phyllodes long and narrow (always more than 30 times as long as wide) sometimes obscurely longitudinally folded, but not distinctly reticulately penninerved 74. *A. juncifolia*
 Phyllodes less than 30 times as long as wide, prominently penninerved 88
88. Phyllodes closely conspicuously reticulately penninerved, sometimes an accessory nerve in the lower half; heads in groups of 2–7 in the axils; pods linear, up to 7 cm × 0.25 cm 75. *A. stricta*
 Phyllodes penninerved and reticulate, but coarsely so, no accessory nerve; heads either single or in clusters; pods at least 0.5 cm wide 87. *A. fasciculifera*
89. Phyllodes with prominent glandular dots 76. *A. verniciflua*
 Phyllodes without prominent glandular dots 75. *A. stricta*
90. Racemes short (axis less than 1.5 cm long) or flowers apparently in clusters, never enclosed before development by imbricate scarious bracts 91
 Racemes elongate, if less than 1.5 cm long, then enclosed before development by imbricate bracts, occasionally heads on axillary peduncles 92
91. Phyllodes conspicuously closely reticulately penninerved, 7.5–10.5 cm long, 9–13 times as long as wide 75. *A. stricta*
 Phyllodes penninerved but not finely reticulate 87. *A. fasciculifera*
92. Phyllodes distinctly penninerved, more than 1 cm wide; glabrous and often glaucous 93
 Phyllodes less than 1 cm wide, glabrous or with some indumentum, sometimes penninerved or more than 1 cm wide and pubescent at least at base 102
93. Phyllodes 2.5–8.5 cm wide, 1.5–4.5 times as long as wide 81. *A. bancroftii*
 Phyllodes narrower or more than 4.5 times as long as wide 94
94. Phyllodes less than 9 cm long, gland basal or if some distance from the base then not with a nerve connecting it to the midrib 95
 Phyllodes more than 9 cm long, gland basal or if some distance from the base then a prominent nerve connecting it to the midrib 97
95. Gland basal; phyllodes variable in shape and size often on same plant, linear to elliptic, acute, 4.5–16.5 cm long 77. *A. salicina*
 Gland 0.7–3 cm from base; phyllodes not particularly variable in size and shape, usually broadest above the middle, ± obtuse, usually less than 10 cm long 96
96. Phyllodes 5.5–10 cm long, 0.6–1.2 (–1.5) cm wide, (5–) 7–14 times as long as wide; racemes 7–10-branched with axis 2.5–3 cm long 79. *A. hakeoides*
 Phyllodes 2.5–5 (–6) cm long, 1–2 cm wide, 2–4.5 times as long as wide; racemes 12–24-branched with axis 3–8 cm long 92. *A. everistii*
97. Phyllodes usually broadest above the middle, attenuate at the base, often more than 2.5 cm wide; stipules inconspicuous 98
 Phyllodes not markedly attenuate at the base, or if so then margins undulate and irregular 100

98. Prominent slit-like gland at the base 83. *A. falcata*
 Gland usually prominent, at some distance (at least 5mm, usually more)
 from the base, often with a connecting nerve and a distinct change
 in curvature at the margin 99
99. Axis and branches of inflorescence with moderate to usually dense
 appressed golden pubescence; corolla 2–2.5 mm long, usually
 pubescent 84. *A. falciformis*
 Axis and branches of inflorescence glabrous or moderately appressed
 pubescent (not golden); corolla up to 2 mm long, rarely with scat-
 tered appressed hairs 85. *A. penninervis*
100. Phyllodes with \pm parallel sides, 1–2.5 cm wide; stipules conspicuous,
 reflexed and hard 82. *A. macradenia*
 Phyllodes usually tapering to base and apex, 0.3–2.5 cm wide; stipules
 not becoming hard, inconspicuous 101
101. Pods 1 cm wide, constricted only where seeds aborted; aril red 77. *A. salicina*
 Pods up to 0.6 cm wide, slightly constricted between seeds; aril yellow;
 species naturalized on coastal sands 88. *A. saligna*
102. Phyllodes often with indumentum of spreading hairs; not more than 4
 times as long as wide; flowers not large (corolla up to 2.2 mm long) 103
 Phyllodes not with the above dimension, more elongate; flowers some-
 times large (corolla 2.5–3 mm long) 105
103. Phyllodes with complete covering of rather long (0.5 mm or more long)
 spreading hairs (hairs not appressed) 90. *A. podalyriifolia*
 Phyllodes glabrous or with short (0.1 mm long) spreading hairs on the
 margin at the base or with covering of short appressed hairs 104
104. Phyllodes 2–3.5 cm long, crowded along branchlets; lower margin
 straight or slightly curved, upper margin sharply curved with a
 gland at or below broadest part of phyllode 94. *A. cultriformis*
 Phyllodes 4–6 cm long, not crowded along branchlets, \pm symmetrical,
 with short hairs on the margin at base or rarely glabrous; gland
 close to base 91. *A. jucunda*
105. Phyllodes more than 20 times as long as wide, never with pustular
 glands, or if less elongate than hairs on margins 106
 Phyllodes less than 20 times as long as wide, or if more elongate than
 with pustular glands 110
106. Racemes enclosed in bracts before development; heads with less than 10
 flowers; pods 1.3–1.7 cm wide; seeds transverse 89. *A. suaveolens*
 Racemes not enclosed in bracts; heads of more than 10 flowers; seeds
 not transverse in rather wide pod 107
107. Phyllodes with rather long hairs on margins 100. *A. fimbriata*
 Phyllodes glabrous 108
108. Apex of phyllodes often hooked, 1 or 2 glands conspicuous on dorsal
 margin; calyx 0.9–1 mm long, golden pubescent at apex 97. *A. adunca*
 Apex of phyllode not hooked; calyx 0.5–0.7 mm long, less pubescent 109
109. Phyllodes 1–1.5 mm broad always with a well marked gland 0.7–1.5 cm
 from the base; heads of usually fewer than 10–12 flowers 101. *A. perangusta*
 Phyllodes 2–3 mm broad, rarely narrower, with a well-marked gland but
 this often absent; heads of 12–20 flowers 102. *A. betchei*
110. Gland pustulate; phyllodes more than 5 cm long; small trees or shrubs
 often retaining juvenile foliage for considerable period, e.g. up to
 2 m tall 111
 Glands not pustulate; phyllodes often shorter; juvenile foliage persistent
 only in *A. attenuata* (with phyllodes 10–14 cm \times 0.7–1.6 cm which
 is restricted to swampy coastal areas in northern part of Moreton
 and southern part of Wide Bay districts) 114

111. Phyllodes with indumentum of short appressed hairs when young, persistent at base and apex and along each side of midrib rarely glabrous, more than 5 cm long, 0.5–1.2 cm wide; ovary pubescent; branchlets and phyllodes not reddish 98. *A. nerifolia*
 Phyllodes glabrous or with some appressed hairs at base, less than 0.8 cm wide, or if wider then glabrous and with distinct reddish tinge; ovary glabrous 112
112. Phyllodes 6–9 cm × 0.8–1.5 cm, gland (somewhat less prominent than in *A. pustula*) 1–2 cm from base; branchlets and phyllodes usually reddish (confined to Granite Belt) 105. *A. rubida*
 Phyllodes less than 0.7 cm broad or plants not reddish 113
113. Phyllodes 4–7 cm × 0.4–0.7 cm, rather coriaceous with 1, 2 or 3 glands, the lowest usually 10 mm or more from base; bipinnate leaves not persistent 104. *A. semirigida*
 Phyllodes 5.5–13 cm × 0.2–0.7 cm, a pustular gland 0.25–0.5 way along margin; plant often retaining bipinnate leaves until 2–3 m tall 99. *A. pustula*
114. Phyllodes more than 7 times as long as wide or if slightly less elongate than branchlets and margins of phyllodes with long hairs and phyllodes reflexed 115
 Phyllodes less than 7 times as long as wide 121
115. Phyllodes less than 3 cm long, often reflexed; branchlets and margins of phyllodes with long hairs 103. *A. leichhardtii*
 Phyllodes more than 3 cm long, not reflexed 116
116. Phyllodes thick, wrinkled when dry, obscurely penninerved when wide; pods rather woody 77. *A. salicina*
 Phyllodes not thick or wrinkled when dry; pods not woody 117
117. Phyllodes less than 7 mm wide; juvenile leaves not persistent for long periods 118
 Phyllodes more than 7 mm wide; juvenile foliage often persistent till plants more than 1 m tall 120
118. Axis and branches of inflorescence moderately or densely appressed golden pubescent; phyllodes rather membranous, penninerved when wide, with a gland 5 mm from the base and a second gland sometimes present 96. *A. decora*
 Inflorescence glabrous or with spreading hairs; phyllodes rarely penninerved 119
119. Phyllode with 1, 2 or 3 glands on margin; peduncles 0.3–0.5 cm long; calyx shortly lobed; pods up to 0.8 cm wide with longitudinal seeds 104. *A. semirigida*
 Phyllode with only one gland; peduncles in pairs, 1–1.4 cm long; calyx lobed ± to base; pods 1.2–1.6 cm broad with transverse seeds 78. *A. victoriae*
120. Phyllodes 5–8 times as long as wide; branchlets and phyllodes with distinct reddish tinge; pods ca 0.6 cm wide 105. *A. rubida*
 Phyllodes 7–14 times as long as wide; branchlets and phyllodes not particularly reddish; pods 1–1.3 cm wide 106. *A. attenuata*
121. Phyllodes thick, not penninerved, wrinkled when dry, more than 6 mm wide, glaucous or green 72. *A. myrtifolia*
 Phyllodes not thick, penninerved when wide, not wrinkled, glaucous, sometimes less than 6 mm wide 122
122. Phyllodes slightly curved, tapered equally to each end; branchlets with spreading hairs 93. *A. semilunata*
 Phyllodes more or less straight, often broadest above the middle; branchlets glabrous or with sparse appressed hairs 123
123. Phyllodes less than 3 cm long 95. *A. buxifolia*
 Phyllodes more than 3 cm long 96. *A. decora*

124. Stipules inconspicuous, not spinose; flowers in heads arranged in racemes in the upper axils or forming terminal panicles 125
Plants with stipular spines (at least when young); flowers in heads on peduncles single or in groups in the axils 140
125. Leaflets large, 0.4–2 cm long and more than 0.2 cm wide or if slightly less than 0.2 cm wide then not more than 10 pairs of leaflets per pinna 126
Leaflets up to 0.75 cm long and less than 0.16 cm wide, or if 0.2 cm long then petiole winged 131
126. Branchlets with indumentum of dense crisped hairs; leaflets 15–25 pairs per pinna, \pm acute 121. *A. glaucocarpa*
Branchlets glabrous or with indumentum of spreading hairs; leaflets usually not more than 18 pairs, but up to 24 pairs per pinna, obtuse 127
127. Axis of pinnae up to 3 cm long; petiole less than 2 cm long; usually less than 8 pairs of leaflets per pinna (up to 10), each up to 1.1 cm long, rarely to 1.3 cm 128
Axis of pinnae 3–8 cm long; petiole 1.5–5 (–7.5) cm; 6–18 (–24) pairs of leaflets per pinna, each 0.9–2 cm long 129
128. Pinnae 2–3 (–4) pairs on rachis 0.4–1.5 cm long; leaflets 0.4–0.8 cm \times (0.15–) 0.2–0.3 cm 111. *A. polybotrya*
Pinnae 3–5 (–7) pairs on rachis 2–7 (–9.5) cm long; leaflets 0.6–1.1 (–1.3) cm \times 0.25–0.5 cm 110. *A. spectabilis*
129. Gland on petiole elongate with a slit-like aperture; 6–8 leaflets per pinna, each 4–7 mm wide 107. *A. latisepala*
Gland on petiole \pm depressed globular with a circular aperture; 8–18 (–24) leaflets per pinna, each 2.5–4 mm wide 130
130. Flower heads large, calyx 1.2–1.5 mm long divided to the middle into spatulate lobes 108. *A. pruinosa*
Flower heads smaller, calyx 0.6–0.8 mm long with short obtuse lobes 109. *A. debilis*
131. Petiole with a distinct dorsal wing; usually 1, rarely 2, pairs of pinnae; leaflets 1–2 cm long 115. *A. muellerana*
Petiole without wing; more than 2 pairs of pinnae; leaflets up to 7.5 mm long 132
132. Leaves only shortly petiolate, pinnae markedly unequal in size, the lowest shortest; species naturalized near Stanthorpe 114. *A. baileyana*
Leaves usually with petioles more than 2 cm long; all pinnae of about equal length 133
133. Branchlets and usually primary axis of leaves with indumentum of long spreading hairs up to 1 mm long 134
Branchlets glabrous or pubescent, hairs appressed and less than 0.5 mm long 135
134. Leaves discolorous; 9–16 pairs of pinnae each with 25–49 pairs of leaflets 3–4.5 mm \times 0.5–0.8 mm 122. *A. oshanesii*
Leaves not discolorous, 3–5 pairs of pinnae each with 6–14 pairs of leaflets 4–6 mm \times 0.6–0.9 mm 112. *A. chinchillensis*
135. Leaflets 5–7.5 mm \times 0.4–0.6 mm 136
Leaflets less than 5 mm long, often more than 0.6 mm wide 137
136. Branchlets pubescent, not strongly ribbed; 3–4 glands on axis between pinnae, none at base 116. *A. filicifolia*
Branchlets glabrous, strongly ribbed; gland on petiole as well as 1–2 between pinnae; species naturalized in cooler parts of Darling Downs district 117. *A. decurrens*
137. Leaflets 40–60 pairs, up to 4 mm long, 0.4–0.6 mm wide 119. *A. irrorata*
Leaflets up to 40 pairs, 0.4–1.2 mm wide 138

138. Glands on axis of leaf absent or small and inconspicuous; axis of pinna 2.5–5 cm long 113. *A. leucoclada* subsp. *argentifolia*
- Glands conspicuous; axis of pinna up to 3.5 cm long 139
139. Pinnae 6–12 pairs; leaflets 2.4–3 mm long 118. *A. deanei*
 Pinnae 11–18 pairs; leaflets 1–2 mm long 120. *A. loroloba*
140. Leaves with 4–15 (–25) pairs of pinnae; pods flat 123. *A. bidwillii*
 Leaves with (1–) 2–4 pairs of pinnae; pods round in cross-section 124. *A. farnesiana*

1. *Acacia baueri* Benth.

Erect shrub less than 0.5 m tall; branchlets terete, glabrous or with indumentum of sparse to moderately dense antrorse white hairs, sometimes tuberculate. Stipules up to 0.8 mm long, often absent; pulvinus 0.4–0.6 mm long; phyllodes 6–8 (–9) per whorl, very rarely scattered, straight or recurved in upper half, or only at apex, mucronate, slightly laterally compressed, 0.7–1.6 cm × 0.05–0.1 cm, glabrous or occasionally tuberculate, or with scattered white hairs similar to those of branchlets, obscure longitudinal nerve on each side of phyllode. Heads of 10–15 flowers, peduncles 0.2–1.5 cm long; receptacle pubescent; bracteoles *ca* 1 mm long with few hairs; flowers 5-merous. Pods linear, sessile, up to 2.5 cm × 0.2–0.3 cm; glabrous or with extremely sparse appressed hairs mainly at base; seeds longitudinal, ± cylindric, 4–5.5 mm × 2–2.5 mm.

On infertile, often seasonally waterlogged sands in coastal heath (wallum) of the Moreton and Wide Bay districts. It is not a common plant and is in danger of extinction in the extreme south-east of Queensland.

2. *Acacia curranii* Maiden

Shrub up to *ca* 3 m tall; inner bark reddish, outer bark grey, curling off in narrow strips (“mineritche bark”); branchlets somewhat angular, glabrous to silky pubescent. Pulvinus short; phyllodes flattened, linear, rather flexuose, thick, depressed along midline, 13–18 cm × 0.11–0.15 cm, glabrous or with appressed silky hairs, the hairs sometimes restricted to base and apex, *ca* 5 conspicuous longitudinal nerves or all nerves inconspicuous; gland basal, not prominent. Spikes 5–7 mm long on peduncles *ca* 1.5 mm long, peduncle and rachis densely pubescent; bracteoles longer than mature buds; flowers 5-merous. Pods flat, *ca* 6 cm × 3 mm; with rather coarse long hairs; seeds longitudinal, *ca* 3.5 mm × 1.2 mm.

Known only from around Gurulmundi in the Darling Downs district, forming groves on poorly drained soil overlying sandstone. Flowers late winter to spring.

3. *Acacia triptera* Benth.

Intricately branched shrub or small tree up to 4 m tall. Phyllodes broadly decurrent for some distance along stem at base, straight or curved, diverging from stem, pungent-pointed, longitudinally striate, 2–5 cm (from angle with stem) × 0.2–0.35 cm. Spikes axillary, on peduncles 2.5–3.5 mm long; spikes rather open *ca* 1.5 cm long; rachis glabrous; flowers 4-, rarely 5-merous. Pods linear, slightly moniliform, faintly longitudinally nerved, with slightly thickened margins, curved or coiled, 4 cm × 2.5 cm; seeds longitudinal, *ca* 4 mm × 1.5 mm. **Fig. 58G.**

Common in the Miles-Chinchilla area of the Darling Downs district where it forms dense thickets in eucalypt woodland on shallow hard-setting soils. Flowers spring.

4. *Acacia aprepta* Pedley

MILES MULGA

Tree up to 10 m tall with dark furrowed bark; branchlets initially angular, becoming terete, slightly scurfy. Pulvinus 1–1.5 mm long; phyllodes linear or linear-obovate, 3.5–8.5 cm × 0.2–0.8 cm, 9–20 (–35) times as long as broad, glabrous or slightly scurfy, 1–3 slightly prominent longitudinal nerves, remainder numerous fine parallel, not anastomosing; gland indistinct, basal. Spikes in pairs or single in upper axils; peduncles 4–5 mm long, glabrous; spikes dense or sparsiflorous (when old), 0.6–2.5 cm long; rachis glabrous; flowers 5-merous. Pods with membranous valves, convex over seeds, 2.5–6 cm × 0.7 cm; glabrous; seeds oblique, 3 mm × 1–1.5 mm. **Fig. 59L.**

Found in the western parts of the Darling Downs district and is common in some areas, forming dense pure stands on shallow loamy or sandy soils overlying weathered sandstone. Flowers mainly spring and summer, but also sporadically throughout the year.

5. *Acacia aneura* F. Muell. ex Benth.

MULGA

Trees up to *ca* 15 m tall; branchlets angular with appressed curved silvery hairs, some brown scales on young shoots, occasionally resinous. Pulvinus *ca* 1 mm long; phyllodes coriaceous, extremely variable in size and shape, varying from narrowly elliptic to linear, flat to terete when very narrow, margins yellowish, 2–17 (–24) cm \times 0.8–0.9 (–1.2) cm, 3–90 (–180) times as long as wide, indumentum of silvery scurf and \pm appressed hyaline hairs *ca* 0.1 mm long, surface sometimes hidden, many parallel non-anastomosing longitudinal nerves (up to 30 on broad phyllodes), half of them prominent; gland small, basal. Spikes single or rarely in pairs in upper axils or more rarely apparently lateral on short axillary shoots, peduncles 3–8 mm long, scurfy; spikes dense, (1–) 1.5–2 cm long, rachis puberulent; flowers 5-merous. Pods flat, obliquely reticulately nerved, 2.5–5 cm \times 0.7–1.3 cm, usually with prominent wing 1–1.5 mm wide along upper margin, glabrescent; seeds longitudinal or slightly oblique, flat, *ca* 5 mm \times 3 mm.

In south-eastern Queensland reported only from around Westmar and Inglewood in the Darling Downs district. Flowers throughout the year, probably in response to high soil moisture, but pods appear to mature only in the period September to December.

6. *Acacia catenulata* C. T. White

BENDEE

Tree up to 15 m tall; trunk deeply fluted, usually with many \pm horizontal branches; branchlets angular, scurfy with scattered curved hyaline hairs *ca* 0.1 mm long; young shoots dark. Pulvinus short, yellowish; phyllodes coriaceous, straight or curved, apex \pm acute, 3.5–8.5 (–9.5) cm \times (0.2–) 0.3–0.7 (–1.2) cm, (3.5–) 6–22 (–26) times as long as wide; glabrous or with scattered silvery hairs, up to *ca* 30 parallel nerves, not anastomosing, 1 sometimes more prominent than rest; gland basal, prominent swelling and small orifice. Spikes single or in pairs in upper axils or occasionally laterally placed on short axillary shoots, peduncles 2–4 mm long, slightly appressed pubescent; spikes dense, 1–3 cm long, flowers 5-, rarely 4-merous. Pods flat, thin, somewhat longitudinally wrinkled, contracted between the seeds, up to 8 cm \times 0.4–0.55 cm (0.15 cm at narrowest part); seeds longitudinal.

In south-eastern Queensland known from near Glenmorgan in the Darling Downs district. Flowers throughout year whenever soil moisture is high, but pods usually formed only September to November.

7. *Acacia leptostachya* Benth.*Acacia argentea* Maiden; *A. capillosa* Pedley

Shrub or rounded tree up to 5 m tall; branchlets angular with translucent ribs, appressed pubescent except on ribs; young plants with hirsute branchlets and foliage. Pulvinus *ca* 1 mm long; phyllodes coriaceous, straight or curved, lower margin \pm straight, upper curved, broadest above middle, (3.5–) 4.5–8.5 (–12) cm \times 0.3–1.1 (–1.5) cm, 6–20 (–25) times as long as wide; subglabrous or pubescent with silvery appressed hairs, numerous rather close parallel nerves not anastomosing, 2–3 more prominent than rest, yellowish, minor nerves translucent, major ones tending to run into lower margin at base; gland basal, inconspicuous. Spikes in pairs on rudimentary axillary axis (one specimen with 7 spikes), peduncles 1–2 (–4) mm long; spikes moderately dense, 2–4 cm long with glaucous rachis; flowers 5-merous. Pods flat, convex over seeds, glabrous, 6 cm \times 0.3 cm, with longitudinal seeds 2.7 mm \times 1.5 mm, or glaucous, 4 cm \times 0.9 cm with transverse seeds *ca* 4 mm \times 2 mm.

In south-eastern Queensland it is known only from Eidsvold, in the Burnett district. Flowers late winter to spring.

8. *Acacia granitica* Maiden

Flat-topped spreading shrub up to 3 m in diameter and 3 m tall; branchlets slender, angular, glabrous and somewhat resinous. Pulvinus 1–1.5 mm long; phyllodes \pm erect, coriaceous, linear, (8–) 10–22 cm \times 0.15–0.35 cm, (20–) 35–140 times as long as wide, 12–18 fine parallel non-anastomosing nerves, middle one slightly more prominent than rest; gland small or absent, \pm basal. Spikes in pairs on rudimentary axillary axis,

peduncles 0.5–3 mm long, glabrous; spikes dense, 3–8 mm long, rachis pubescent; flowers 5-merous. Pods linear, flat, slightly convex over seeds and sometimes slightly contracted between them, up to 6 cm \times 0.25–0.3 cm, glabrous; seeds longitudinal, *ca* 3 mm \times 1.5 mm. **Fig. 58F.**

In south-eastern Queensland found on shallow sandy soils in the vicinity of Crows Nest, Stanthorpe and Plunkett. Flowers late winter to spring.

9. *Acacia caroleae* Pedley

Acacia doratoxylon Cunn. var. *angustifolia* Maiden

Rounded shrub or slender tree up to *ca* 6 m tall; branchlets angular, glabrous, glutinous, sometimes mealy. Pulvinus *ca* 3.5 mm long; phyllodes linear, straight, 5–14 (–21) cm \times (0.15–) 0.2–0.5 (–0.65) cm, (10–) 15–60 (–90) times as long as wide, glabrous, striate with rather crowded parallel longitudinal non-anastomosing nerves, central one prominent; gland small, basal. Spikes on scurfy, rarely pubescent, axillary axis 0.5–2 cm long, sometimes growing out into a lateral shoot, peduncles 1.5–4 mm long; spikes dense (interrupted on one specimen), 1–3 cm long; flowers 5-merous. Pods flat, convex over seeds and somewhat contracted between them, longitudinally wrinkled, *ca* 8 cm \times 0.2–0.25 cm; seeds longitudinal, 4 mm \times 1.7 mm. **Fig. 58I.**

Known from the Darling Downs district, usually on sandy soil. Flowers late winter to spring.

10. *Acacia sparsiflora* Maiden

CURRAWONG

Tree to 15 m tall with rough bark; branchlets slender, angular, glabrous or with scattered hairs. Phyllodes rather thin, curved, \pm acute, elliptic on young plants, (8–) 9.5–16 (–19) cm \times (0.2–) 0.5–0.8 (–1.3) cm, 7–25 (–50) times as long as wide, sometimes 4 cm long and 4 times as long as wide on young plants, glabrous or with scattered hairs, or dense appressed hairs on young plants, many fine parallel nerves, 1 (–3) more prominent than others, not anastomosing. Spikes in pairs at base of rudimentary shoot which may grow out into leafy branch, peduncles 5–10 mm long, glabrous; spikes sparse, 2–4.5 cm long; flowers 5-merous. Pods flat, slightly constricted between seeds and slightly convex over them, with prominent margins, 9 cm \times 0.3 cm; glabrous; seeds longitudinal, 5 mm \times 2 mm.

Common in the western Darling Downs district, and has also been recorded from the Burnett District, usually forming dense stands on shallow soils, often overlying weathered sandstone. Flowers late autumn to winter.

11. *Acacia burrowii* Maiden

CURRAWONG

Tree up to 12 m tall; branchlets angular, somewhat glutinous and scurfy; young foliage dark. Pulvinus 1–2 mm long; phyllodes narrowly ovate, broadest on young plants, narrow and elongate on old trees, \pm acute, 4–10 (–11.5) cm \times 0.4–1 (–1.2) cm, 3.5–16 (–25) times as long as wide, striate with longitudinal nerves, not anastomosing, 1–3 slightly more prominent; gland small, basal. Spikes in pairs on axillary axis (1.5–) 4–8 mm long, sometimes growing into leafy shoot, peduncles scurfy, 2–5 mm long; spikes dense, 1.5–3 mm long, flowers 5-merous. Pods flat, convex over seeds and slightly contracted between them, up to 11 cm \times 0.2–0.3 cm; seeds longitudinal, 4–5 mm \times 2 mm.

Common on sandy or loamy soils in Darling Downs district. Flowers late winter to spring.

12. *Acacia blakei* Pedley

Tree up to 13 m tall with dark fissured bark; branchlets slender, somewhat angular becoming terete, glabrous or slightly scurfy or sometimes on young plants with sparse, short hairs. Pulvinus 3–5 mm long; phyllodes straight or slightly falcate, 5–17 cm \times 0.7–1.8 (–2.2) cm, 6–20 times as long as wide, up to 3 cm wide and 2–3 times as long as wide in young plants, glabrous or with sparse pubescence on young plants, parallel longitudinal nerves numerous, (2–) 3 more prominent than the rest, neither anastomosing nor concurrent with margin at the base; gland small, basal. Spikes usually arranged in pairs on axillary shoot up to 1.2 cm long, which sometimes grows out into leafy shoot, or sometimes spikes in terminal panicles due to reduction of phyllodes, peduncles 3–4

mm long; spikes dense 3–4.5 cm long, sometimes curved because of delay in opening of flowers on one side; flowers 5-merous. Pods linear, flat but convex over seeds, up to 10 cm \times 0.2–0.3 cm; seeds longitudinal, 3.5–4 mm \times 1.6–1.8 mm.

Found in the Moreton, Burnett and Darling Downs districts, and is particularly common around Miles where it forms dense stands with either *Acacia crassa* or *A. julifera*. Flowers late winter to spring.

13. *Acacia julifera* Benth.

Acacia holocarpa Benth.

Tree to about 10 m tall with dark fibrous bark; branchlets yellow, slender, angular, becoming \pm terete; branchlets and phyllodes of young plants pubescent, indumentum sometimes persisting on mature plants. Pulvinus 2–3 mm long; phyllodes falcate, obovate on young plants, narrowly ovate on mature plants, 7–25 cm \times 0.5–2.5 cm, 4–12 times as long as broad (in south-eastern Queensland), 4–20 times as long as broad elsewhere; many parallel non-anastomosing longitudinal nerves, 3 or rarely 5, more prominent than rest, neither decurrent with each other nor with margin at base; gland basal, inconspicuous. Spikes usually in pairs or rarely threes on short axillary axis which sometimes grows out into leafy shoot, on usually pubescent peduncles 2–5 mm long; spikes usually dense, 3–5 cm long; flowers 5-merous. Pods terete (in south-eastern Queensland) or slightly flattened, obscurely longitudinally striate when dry, 5–9 cm \times 0.2–0.5 cm; seeds longitudinal, 3–4 mm \times 1.5–3.5 mm.

Widespread in the region, usually occurring on well-drained sandy soils behind coastal dunes or on sandstone.

14. *Acacia rhodoxylon* Maiden

ROSEWOOD; RINGY ROSEWOOD

Tree up to 16 m, bark thin, black, peeling in small curved flakes; branchlets angular, glabrous, glutinous, sometimes scurfy; young tips dark. Pulvinus 4–5 mm long; phyllodes coriaceous, so thick as to make nervature indistinct, straight or somewhat curved, (6–) 7–9.5 (–13.5) cm \times 0.75–2 cm, 3.5–8 (–14) times as long as wide, glabrous, many parallel indistinct longitudinal nerves, 3–5 more prominent than the rest; gland basal, inconspicuous. Spikes in pairs, or single at base of rudimentary axillary shoot, one spike sometimes markedly more developed than other, peduncles 1–2 cm long, scurfy; spikes dense, 2–3 cm long; flowers 5-merous. Pods flat, slightly shining, 3.5–4.5 cm \times 0.5–6 cm; seeds longitudinal, *ca* 3.5 mm \times 2.5 mm; glabrous.

In south-eastern Queensland known only from around Eidsvold in the Burnett district. Flowers sporadically throughout the year.

15. *Acacia pubifolia* Pedley

Tree 8 m tall with dark fibrous bark; branchlets angular, pubescent, sometimes glaucous. Pulvinus often less than 2 mm long; phyllodes sessile, straight, elliptic or obovate, apex glandular, 2–10 cm \times 0.8–3 cm, 2.5–6.5 times as long as wide, pubescent becoming puberulent, many fine slightly prominent nerves, neither anastomosing, nor running together. Spikes axillary, sessile, dense, 2–5 cm long with puberulent peduncle and rachis; flowers 5-merous. Pods linear, slightly compressed, up to 8 cm \times 0.4 cm; seeds black, longitudinal, rectangular, 4 mm \times 2 mm, pubescent.

Restricted to the Wyberba region of the southern Darling Downs district. Flowers spring.

16. *Acacia striatifolia* Pedley

Tree up to 8 m tall; branchlets angular, minutely pubescent or mealy; young shoots reddish. Pulvinus 2–5 mm long, occasionally minutely pubescent; phyllodes straight, elliptic, apex obtuse-mucronulate, 5–8 cm \times (1.3–) 1.8–3 (–4) cm, 2–4.5 times as long as wide, glabrous, 3, rarely 5, longitudinal nerves more prominent than rest, with many fine crowded secondary nerves, not anastomosing; gland basal. Spikes usually single about 5 mm along short axillary axis which sometimes elongates into leafy shoot, then spike appears to be lateral, peduncles *ca* 2.5 mm long, usually scurfy; spikes dense, 3–5 cm long; flowers 5-merous. Mature fruits not seen.

North of Chinchilla, in the Darling Downs district, usually forming dense stands on roadsides or in eucalypt woodland on shallow gravelly soils. Flowers late winter to spring.

17. *Acacia tenuinervis* Pedley

Tree up to 9 m tall, often developing root suckers; branchlets slender, angular, soon becoming terete, orange-red, glaucous, particularly in axils; young shoots reddish, drying black. Young plants with velutinous branchlets and \pm straight tomentose phyllodes *ca* 7–9 cm \times *ca* 2 cm; mature plants with pulvinus 3–6 mm long; phyllodes straight, lower margin straight, upper curved, 9–12.5 cm \times 2–3 cm, 3.5–6 times as long as wide, glabrous or slightly scurfy, 3 or sometimes 5 longitudinal nerves more prominent than rest, secondary nerves fine, crowded, not anastomosing; gland basal, rather large. Spikes 1–2 (–5) along axis of axillary shoot (0.5–) 1–2.5 cm long, axis sometimes elongating into leafy shoot and then spikes lateral, peduncles 4–5 mm long, puberulent; spikes dense, 3–5 cm long; flowers (4–) 5-merous. Pods straight, raised over seeds, *ca* 2.5 cm \times 0.25 cm; scurfy.

Known from a few localities in the Burnett and Darling Downs districts. Flowers spring.

18. *Acacia shirleyi* Maiden

LANCEWOOD

Tree up to 15 m tall with rough fissured dark bark; branchlets angular, glabrous, yellowish, sometimes resinous or mealy, or with brown scurf; young tips dark. Phyllodes coriaceous, linear, straight or curved, (8.5–) 10–15 (–18) cm \times 0.2–0.7 (–0.9) cm, 16–45 (–65) times as long as wide, striate with many parallel, non-anastomosing nerves, central one usually more prominent. Spikes single or in pairs on a rudimentary axillary axis, sometimes growing out into a leafy shoot, peduncles 5–9 mm long sometimes appressed pubescent at the base; spikes moderately dense, 2–3.5 cm long; flowers 5-merous. Pods somewhat woody, longitudinally wrinkled, resinous, raised over the seeds and slightly contracted between them, *ca* 12 cm \times 0.45 cm; seeds longitudinal, 4 mm \times 2.5 mm.

Northern areas of the Darling Downs district, and from the Eidsvold area, in the Burnett district. It is confined to shallow, gravelly soils on scarps of weathered sandstone, or on shallow sandy soil overlying weathered sandstone, and can form dense pure stands. Flowers autumn and winter.

19. *Acacia maidenii* F. Muell.

MAIDEN'S WATTLE

Tree up to *ca* 15 m tall; branchlets angular, soon becoming terete, prominent lenticels always present; sometimes pubescent when young, pubescence extending to phyllodes. Phyllodes straight or falcate, 10–20 cm \times 1–2.5 cm, 5–16 times as long as wide, but phyllodes on young plants up to 25 cm \times 0.3 cm, 1–5 nerves with many (10–22) closely packed anastomosing nerves between major ones; gland obscure, depressed, about 5 mm from the base. Spikes sessile, single or in pairs in the upper axils, interrupted, up to 6 cm long, rachis sparsely to densely golden pubescent; flowers 4(–5)-merous. Pods turgid, subterete, twisted (sometimes in irregular loose spirals), longitudinally wrinkled, 10–12 cm \times 0.35–0.4 cm, hairs sparse, appressed, seeds longitudinal, 4.5–5 mm \times 2.5–3 mm.

Widespread in the region, usually on fertile well-drained soils. Flowers late summer to late autumn. Individual trees may flower for months. Fruits mature late in the year.

20. *Acacia floribunda* (Vent.) Willd.

Mimosa floribunda Vent.; *Acacia longifolia* (Andr.) Willd. var. *floribunda* (Vent.) F. Muell.

Tree up to *ca* 8 m; branchlets angular, with short white appressed hairs, lenticels sometimes present. Phyllodes straight, very narrowly ovate, apex acute, 5–10 cm \times (0.2–) 0.4–1 cm, 8–18 (–35) times as long as wide, appressed pubescent when young, 1–3 longitudinal nerves prominent, secondary nerves usually 6–9 on each side of midrib, anastomosing; gland not prominent, if present then 4–6 mm from base. Spikes \pm sessile, sparsiflorous, up to about 8 cm long, rachis glabrate; flowers 4-merous. Pods straight, linear, longitudinally wrinkled and somewhat moniliform, *ca* 13 cm \times 0.3 cm, with few appressed hairs; seeds longitudinal, 4–5 mm \times *ca* 1.5 mm.

In Queensland found only near Stanthorpe where it is best developed on sands along creeks, and at Tamborine Mt. and Mt. Barney. Flowers spring.

21. *Acacia orites* Pedley

Tree up to 30 m tall; branchlets glabrous or with sparse appressed hairs. Pulvinus short; phyllodes straight or slightly falcate, 10–20 cm \times 0.4–0.7 cm, 15–35 times as long as wide, glabrous, 6–9 widely spaced anastomosing secondary nerves on each side of midrib; gland *ca* 5 mm from base. Spikes usually in pairs in upper axils, peduncles *ca* 3 mm long; spikes rather open, 3–6 cm long; flowers 4-merous. Pods straight, linear, raised over seeds, 6–9 cm \times 0.25–0.35 cm, glabrous; seeds longitudinal, 3.5–4 mm \times 1.7–2 mm.

Restricted to rainforest margins in a small area of high rainfall in the southern Moreton district of Queensland. It is a large tree which sometimes provides millable logs. Flowers late winter to spring, and the fruits mature in November.

22. *Acacia longissima* H. Wendl.**NARROW-LEAF ACACIA**

Acacia linearis Sims; *A. longifolia* (Andr.) Willd. var. *linearis* (Sims) F. Muell.

Slender shrub or small tree up to 5 m tall, glabrous; branchlets angular, all but smallest with conspicuous lenticels. Pulvinus *ca* 1 mm long; phyllodes chartaceous, punctate, straight, linear or linear-ovate, 6–16 cm \times 0.1–0.9 cm, 14–70 times as long as wide, midnerve prominent, with 1–3 other, less conspicuous, anastomosing nerves on each side of it; gland absent. Peduncles 5–10 mm long; spikes interrupted, 5 cm long; flowers 4-merous. Pods \pm terete, longitudinally striate, raised over seeds, straight or curved, up to 12 cm \times 0.2 cm; seeds longitudinal, *ca* 4.5 mm \times 1.5 mm.

In areas of high rainfall south of about Gympie, often on fertile soils. Flowers late summer–autumn.

23. *Acacia obtusifolia* Cunn.

Acacia intertexta Sieber ex DC.

Tree up to 10 m tall, glabrous; branchlets terete. Pulvinus 2–3 mm long; phyllodes coriaceous, narrowly oblong-ovate, or oblong, 8–19 cm \times 0.8–2.2 cm, 4–20 times as long as wide, 1–5 or more prominent longitudinal veins, secondary veins between them reticulate; gland up to 1 mm from base. Spikes on peduncles *ca* 5 mm long; spikes interrupted, *ca* 5 cm long; flowers large, 4-merous. Pods linear; subterete with prominent margins, up to 15 cm \times 0.35–0.5 cm; seeds longitudinal, *ca* 5 mm \times 2.5 mm.

This species has been recorded from the southern Moreton district, on ranges and mountains close to the Qld.–N.S.W. border. Flowers mainly late spring–summer.

24. *Acacia sophorae* (Labill.) R.Br.**COASTAL WATTLE**

Mimosa sophorae Labill.; *Acacia longifolia* (Andr.) Willd. var. *sophorae* (Labill.) F. Muell.

Shrub, often prostrate especially in exposed situations, glabrous or with some scattered hairs; branchlets angular, soon becoming terete. Pulvinus 3 mm long; phyllodes elliptic or elliptic-oblong, apex obtuse, 5–10 cm \times 1–2 cm, 3–6 times as long as wide, 2, 3 or 5 prominent longitudinal nerves with secondary longitudinal, usually reticulate nerves between them, not very conspicuous; gland *ca* 2 mm from the base. Spikes subsessile, rather dense, 2–3 cm long, rachis glabrous; flowers 4-merous. Pods linear, curved and twisted, convex over seeds, *ca* 8 cm \times 0.4 cm; seeds longitudinal, *ca* 5 mm \times 3.5 mm, 2 mm thick. **Fig. 58H.**

In coastal areas of the Moreton district as far north as the mouth of the Maroochy R., confined to coastal dunes. Flowers late winter to spring.

25. *Acacia cincinnata* F. Muell.

Small tree; branchlets angular and ribbed with appressed golden pubescence, wearing off on ribs; young shoots golden pubescent. Pulvinus 6–8 mm long; phyllodes somewhat curved, 11–16 cm \times 1.6–3 cm, 4–8 times as long as wide, indumentum of scattered appressed hairs, becoming glabrous, 3 prominent longitudinal nerves running into each other on lower margin at base, secondary nerves rather widely spaced (2–4 per mm), anastomosing; gland basal, prominent swelling and rather large orifice. Spikes in pairs in upper axils, peduncles *ca* 5 mm long; spikes interrupted, *ca* 3.5 cm long, rachis and peduncles with golden hairs; flowers 5-merous. Pods linear, tightly coiled in about 5 coils, coils fused; seeds longitudinal, 3.6 mm \times *ca* 2 mm. **Fig. 59J.**

Known from the Moreton and Wide Bay districts to about as far north as Maryborough, in open eucalypt forest in areas of high rainfall close to the sea. Flowers late autumn to winter.

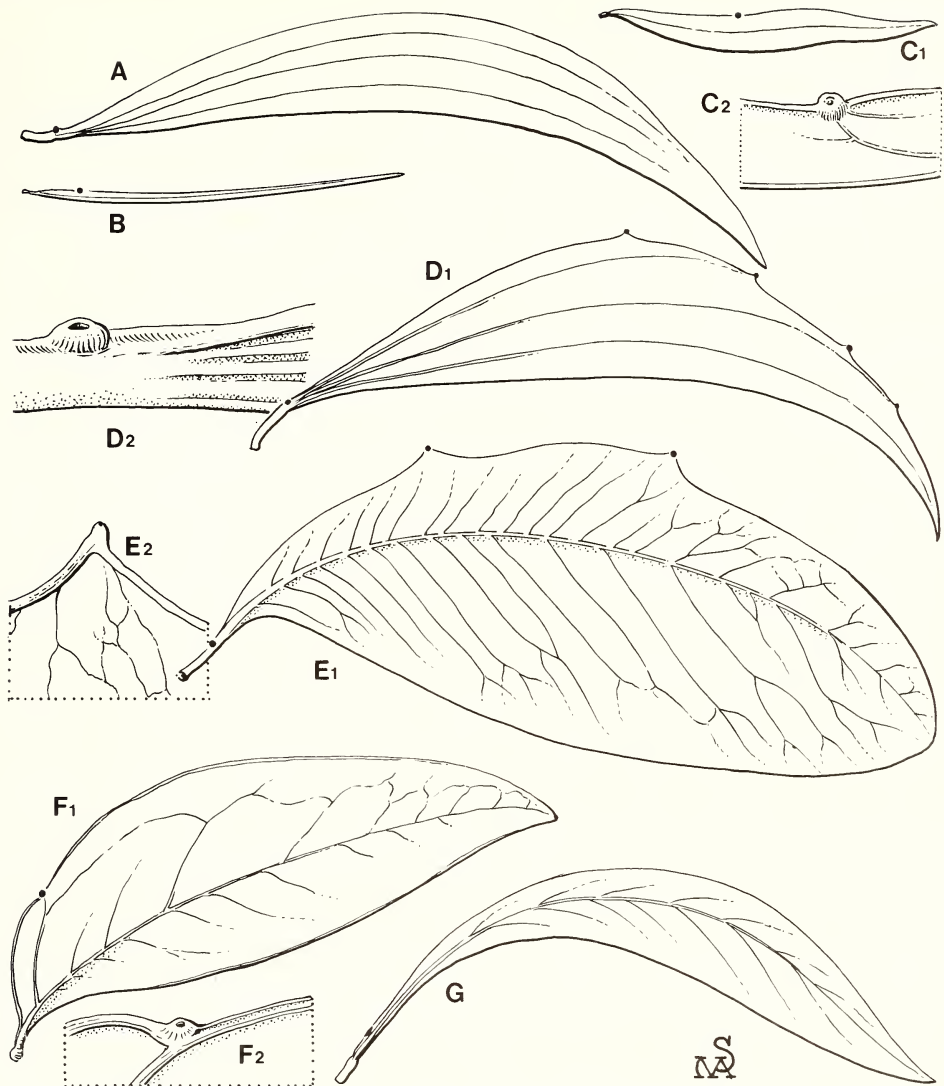


Fig. 57 MIMOSACEAE – A-G *Acacia* spp., phyllodes showing position of glands – A *A. concurrens* $\times \frac{2}{3}$; B *A. perangusta* $\times \frac{2}{3}$; C₁-C₂, *A. pustula*, C₁, phyllode $\times \frac{2}{3}$, C₂, enlargement of gland $\times 4$; D₁-D₂, *A. flavescens*, D₁, phyllode $\times \frac{2}{3}$, D₂, enlargement of gland $\times 4$; E₁-E₂, *A. bancroftii*, E₁, phyllode $\times \frac{2}{3}$, E₂, enlargement of gland $\times 4$; F₁-F₂, *A. penninervis*, F₁, phyllode $\times \frac{2}{3}$, F₂, enlargement of gland $\times 4$; G *A. falcata* $\times \frac{2}{3}$.

26. *Acacia leptocarpa* Cunn. ex Benth.

Tree up to *ca* 8 m tall; branchlets glabrous, angular, soon becoming terete. Pulvinus (3–) 5–10 mm long; phyllodes usually falcate, apex acute, attenuate at base, (10–) 12–21 (–26) cm \times 1–2.2 (–2.6) cm, 6–15 (–18) times as long as wide, glabrous. 3 longitudinal nerves prominent, yellowish, crowded into narrow basal part of phyllode, secondary nerves \pm parallel, widely spaced; gland basal, prominent swelling and small orifice, usually not rimmed. Spikes in pairs at base of rudimentary axillary shoot, peduncles 3–8 mm long, glabrous; spikes moderately dense, 5–7 cm long, rachis glabrous; flowers 5-merous. Pods linear, somewhat coiled, flat but raised over seeds, up to 12 cm \times 0.3 cm; seeds longitudinal, *ca* 4 mm \times 2.5 mm.

In coastal areas of the Wide Bay district from about Bundaberg and farther north. Flowers late autumn–winter.

27. *Acacia longispicata* Benth. subsp. *velutina* Pedley*Acacia cunninghamii* Hook. var. *longispicata* (Benth.) Benth.

Tree up to 10 m tall; branchlets stout angular with indumentum of dense appressed hyaline hairs or of dense spreading hairs, hairs usually extending to pulvinuses, phyllodes and peduncles. Pulvinus 6–10 mm long; phyllodes 9–18 cm \times 1.3–4 cm, 4–8 (–12) times as long as wide, phyllodes on young plants considerably larger, 3 longitudinal nerves more prominent than the rest, secondary ones anastomosing, rather widely spaced; gland basal, large. Spikes in pairs in the upper axils, peduncles 6–8 (–15) mm long; spikes sparse to dense, depending on length, 5–7 (–9) cm long; flowers 5-merous. **Fig. 59G.**

It is known from a single locality to the north-west of Kingaroy.

28. *Acacia crassa* Pedley

Tree up to 10 m tall; branchlets stout, angular, either glabrous and usually reddish with distinct lenticels or with indumentum of dense spreading hairs 0.2–0.4 mm long, extending to pulvinuses, peduncles and sometimes to bases of mature phyllodes. Pulvinus (3–) 5–10 mm long; phyllodes 10–25 (–30) cm \times 0.8–2.5 (–3) cm, (5.5–) 9–18 (–22) times as long as wide, phyllodes on young plants either longer and more falcate or wider than those of mature plants, 3 longitudinal nerves more prominent than the rest, often running together at the base of the phyllodes, secondary longitudinal nerves anastomosing; gland basal. Spikes in pairs in axils sometimes lateral on axillary shoots, peduncles (2–) 4–8 mm long; spikes sparse to dense, (3–) 4.5–9 cm long. Pods straight, flat, convex over seeds and slightly contracted between them, up to 7 cm \times 0.25–0.35 cm, glabrous; seeds longitudinal, 3–6 mm \times 1.5–2.5 mm.

Two subspecies occur in region:

- | | |
|---|--|
| 1. Phyllodes on young plants strongly falcate and up to 30 cm long; seeds
4.5–6 mm \times 2–2.5 mm | <i>A. crassa</i> subsp. <i>crassa</i> |
| Phyllodes on young plants straight, up to 20 cm long; seeds ca 3 mm
\times 1.5 mm | <i>A. crassa</i> subsp. <i>longicoma</i> |

A. crassa subsp. *crassa* is found in the Burnett and Darling Downs districts and is a common component of eucalypt woodland and often forms dense stands in disturbed situations. *A. crassa* subsp. *longicoma* Pedley is found in the Burnett, Darling Downs and Wide Bay districts and is particularly common in the Monto-Gin Gin area. Both subspecies flower midwinter to early spring.

29. *Acacia leiocalyx* (Domin) Pedley**BLACK WATTLE***Acacia glaucescens* Willd. var. *leiocalyx* Domin

Shrub or tree up to 6 m tall; branchlets sharply angled, sometimes almost winged, often red, glabrous or rarely slightly scurfy, young tips pinkish, drying dark. Pulvinus (2–) 3–4 mm long; phyllodes 8–16 cm \times 0.7–2.5 (–3.5) cm, 4–16 (–20) times as long as wide, phyllodes on young plants often much broader, glabrous, 3 longitudinal nerves more prominent than rest, running together or into lower margin near base, secondary longitudinal nerves anastomosing, 25–45 per cm in middle of leaf; gland basal. Spikes in axillary pairs, peduncles 3–8 mm long; spikes moderately dense to sparse, 3–7 (–10) cm long; flowers 5-merous. Pods linear, loosely and irregularly coiled, thick and succulent when immature, flat and dry when mature, ca 7 cm \times 0.3–0.4 cm; seeds longitudinal, black, shining, ca 3.5 mm \times 1.5 mm.

Two subspecies occur in the region:

- | | |
|--|---|
| 1. Phyllodes 8–12 (–16) cm \times 1.2–2.5 (–3.5) cm, 4–9 times as long as wide | <i>A. leiocalyx</i> subsp. <i>leiocalyx</i> |
| Phyllodes 9–16 cm \times 0.7–1.4 (–1.6) cm, 8–16 (–19) times as long as wide | <i>A. leiocalyx</i> subsp. <i>herveyensis</i> |

A. leiocalyx subsp. *leiocalyx* is widespread and common in the region. *A. leiocalyx* subsp. *herveyensis* Pedley is known from the Wide Bay district within about 25 km of the coast from Maryborough and northwards. Both subspecies flower midwinter to spring.

30. *Acacia concurrens* Pedley

BLACK WATTLE

Acacia cunninghamii Hook.

Tree up to 10 m tall with dark furrowed bark; branchlets angular, particularly on young plants, somewhat scurfy. Pulvinus 5–9 mm long; phyllodes obliquely obovate, lower margin \pm straight, upper curved, 10–16 (–18) cm \times (0.9–) 1.2–3 cm, 3.5–9 (–12) times as long as wide, somewhat scurfy when young, glabrous, 3 (–4) longitudinal nerves much more prominent than rest, lower 2 running together into margin up to several cm from base, secondary longitudinal nerves anastomosing, fairly widely spaced; gland small, basal. Spikes in pairs in upper axils on peduncles 0.5–0.8 (–1) cm long, moderately dense, 5–10 cm long, rachis slightly glaucous; flowers 5-merous. Pods linear, coiled, somewhat fleshy when young but when mature valves flat coriaceous, 6–8 cm \times 0.25–0.4 cm; glabrous; seeds longitudinal, 2.5–4 mm \times 1.8–2 mm. **Fig. 57A.**

Known from the Moreton and Wide Bay districts, north of about Pialba, and from the eastern Darling Downs and Burnett districts as an extremely common component of lower tree layers of open eucalypt forests, sometimes forming dense stands in country that has been cleared. Flowers midwinter to spring.

31. *Acacia aulacocarpa* Cunn. ex Benth.

HICKORY WATTLE

Acacia aulacocarpa Cunn. ex Benth. var. (?) *macrocarpa* Benth.

Shrub or tree up to 15 m tall; branchlets slender, angular, somewhat hoary and sometimes glutinous. Pulvinus 4–7 mm long; phyllodes straight or falcate, apex acute or subacute, 5–15 cm \times 0.6–2.5 (–3) cm, 3–12 times as long as wide, glabrous, 1–3 prominent longitudinal nerves, somewhat crowded towards lower margin at base, and numerous, \pm parallel secondary nerves, not anastomosing; gland basal, prominent swelling and small orifice. Spikes single or in pairs at base of rudimentary axillary shoots, on scurfy peduncles 2–7 mm long; spikes usually at least moderately dense, 2–5.5 cm long; flowers 5-merous. Pods somewhat woody, prominently obliquely transversely veined, straight or twisted when old, up to 10 cm \times 1–2 cm; glabrous; seeds transverse, *ca* 5.5 mm \times 2.5 mm. **Fig. 58J; Fig. 59F.**

Two varieties occur in the region:

1. Tree; phyllodes 4–12 times as long as wide; pods usually 1.5–2 cm wide *A. aulacocarpa* var. *aulacocarpa*
Shrubs up to *ca* 3 m tall; phyllodes 3–5 times as long as wide; pods usually 1–1.2 cm wide *A. aulacocarpa* var. *fruticosa*

A. aulacocarpa var. *aulacocarpa* is known from the Wide Bay, Burnett and Moreton districts. It reaches its greatest size and density on alluvial soils along streams and on edges of rainforest but can be common in eucalypt forest on less fertile soils. *A. aulacocarpa* var. *fruticosa* C. T. White is found on skeletal soils on mountain peaks of coastal areas of the Moreton and Wide Bay districts. Both varieties have their main flowering period in southern Queensland from late summer to midautumn.

32. *A. grandifolia* Pedley

Tree up to *ca* 8 m tall; branchlets stout angular with dense whitish indumentum of erect hairs, extending to pulvinuses and peduncles. Pulvinus 6–10 mm long; phyllodes \pm straight, asymmetrically elliptic, 9–15 cm \times 2.5–5 cm, *ca* 3–4 times as long as wide, up to 7.5 cm wide and twice as long as wide on young plants, indumentum of spreading hairs. 3 (–4) longitudinal nerves more prominent than rest, secondary nerves widely spaced, strongly anastomosing; gland basal, large. Spikes in pairs in upper axils, peduncles thick, 5–8 mm long, velvety; spikes dense, 5–10 cm long, rachis velvety; flowers 5-merous. Pods flat, 6 cm \times 0.6 cm; tomentose; seeds shining, longitudinal, *ca* 4 mm \times 2 mm, rather thick.

An uncommon species found in the Gayndah-Mundubbera area of the Burnett district. Flowers have been collected in September and mature pods in November.

33. *Acacia flavescens* Cunn. ex Benth.

Tree up to about 10 m tall with rough furrowed somewhat shaggy bark, branchlets angular with moderately dense stellate hairs, young tips golden. Pulvinus rather long; phyllodes ovate, falcate, apex acute (usually long tapering), 9–24 cm (1–) 2–4 (–5.5) cm, 3–6 (–9.5) times as long as wide, 11 cm wide and 1.5 times as long as wide on sterile

shoots, becoming glabrous but usually with some stellate hairs persisting near the base, 3 longitudinal nerves prominent, upper two ending at margin at an indentation, usually associated with a gland, lower ending at apex, finely transversely reticulate, vein islands rather large; basal gland prominent with distinct ribs and elongate orifice, 2 mm long, 3 or more smaller but conspicuous glands in indentations along upper margins, occasionally glands on small projections. Heads of (30-) 40-50 flowers in terminal, sometimes leafy panicles, sometimes compound, up to 30 cm broad, made up of *ca* 5-noded racemes *ca* 5 cm long with *ca* 4 peduncles, each 1-1.5 cm long, at each node; whole clothed with dense yellowish hairs; flowers 5-merous. Pods flat, slightly winged, shining with transverse veins and scattered hairs when young, 6-12 cm \times 1.5-2 cm; scattered hairs when young; seeds transverse, *ca* 6 mm \times 4 mm. **Fig. 57D.**

Known from about Coolool in the Moreton district northward along the coast in the Wide Bay district. It is a common understorey species of eucalypt forests on sandy soils near the sea. Flowers midautumn to early winter, pods mature in the latter third of the year.

34. *Acacia rigens* Cunn. ex G. Don

Shrub up to 2 m tall; branchlets with prominent yellowish ribs, somewhat resinous. Pulvinus *ca* 1.5 mm long; phyllodes straight, terete or slightly flattened, with an innocuous point at apex, 5-13 cm \times up to 0.1 cm, glabrous except perhaps at base, finely striate with *ca* 15 yellowish longitudinal nerves; gland basal. Heads of 20-30 flowers single or in pairs in upper axils on slightly hoary peduncles 2.5-5.5 mm long; flowers 5-merous. Pods linear, loosely coiled, valves rugose, constricted between seeds, 2-3 mm broad; seeds longitudinal, rather pale brown, 3-3.5 mm \times 1.8 mm, *ca* 1.8 mm thick.

Known from a few scattered localities in the Darling Downs district, forming a heathy shrub layer in eucalypt woodland, usually on rather loose sand. Flowers late winter to spring.

35. *Acacia oswaldii* F. Muell.

NELIA; MILJEE

Acacia amaliae Domin; *A. amaliae* Domin var. *orthophylla* Domin

Dense rounded shrub or small tree up to 5 m tall; branchlets terete or somewhat angular, scurfy and with sparse to moderately dense appressed pubescence. Stipules small, setaceous, deciduous; phyllodes sessile, stiff, coriaceous, apex obtuse with hard mucro, (3.5-) 4-6 (-7) cm \times 0.3-1 (-1.5) cm, 5-13 (-17) times as long as wide, glabrous, *ca* 10-15 prominent, equally and widely spaced, longitudinal nerves, as few as 6 when phyllodes are narrow; gland basal, prominent, up to 2.5 mm long, rimmed, darker inside. Heads of 5-15 flowers in pairs in axils, peduncles scurfy or appressed pubescent; flowers 5-6-merous. Pods woody, linear, 4-17 cm \times 0.6-1 cm, loosely coiled somewhat torulose, hard; seeds longitudinal, 7-8 mm \times 6-7 mm, *ca* 3.5 mm thick.

Known from the western Darling Downs district. Flowers mid to late spring. Pods mature about 2 months after flowering but the woody dehisced valves persist on the plant for a considerable period.

36. *Acacia venulosa* Benth.

Acacia lanigera Cunn. var. *venulosa* (Benth.) Moore & Betche

Erect little-branched shrub up to 2 m tall; branchlets ribbed, with soft curled hairs. Pulvinus 1-3 mm long; phyllodes coriaceous, narrowly elliptic or narrowly ovate, straight or curved, apex acute or obtuse, mucronulate, (3-) 5-9 cm \times 0.4-1.2 (-1.4) cm, (5-) 6-9 (-10) times as long as wide, scurfy and with scattered hairs particularly near the margin, 3 prominent longitudinal nerves with *ca* 6 other \pm parallel nerves forming elongated anastomoses; gland 1-5 mm from the base. Heads of 30-40 (-50) flowers in pairs in axils or in 2-8-branched racemes, axis 1-9 mm or rarely up to 2.5 cm long, peduncles densely pubescent, 3-8 mm long; flowers 5-merous. Pods flat, linear, thin, with nerve-like margins, slightly raised over seeds alternately on each surface, *ca* 7.5 cm \times 0.6 cm; densely pubescent; seeds longitudinal, 4.5 mm \times 3 mm.

In open eucalypt forest in the vicinity of Stanthorpe and Crows Nest. Flowers late winter to spring.

37. *Acacia bauerlenii* Maiden & R. T. Baker

Slender, often single-stemmed shrub up to 4 m tall; branchlets ribbed, furry with dense erect soft white or brown hairs. Phyllodes straight, broadest about middle, apex acute with small mucro, 8–10 (–15) cm \times (0.45–) 0.6–0.8 (–1.3) cm, 10–15 (–20) times as long as wide, with scattered hairs when young, hairs restricted to pulvinus and base when old, 3 slightly prominent longitudinal nerves with about 12 other \pm parallel ones, anastomosing; gland small, *ca* 1 mm from base, usually with a tuft of hairs obscuring orifice. Heads of *ca* 35 flowers in extremely reduced densely pubescent racemes, often appearing as single or paired peduncles, axis of raceme up to 2 mm long; peduncles 7–10 mm long; flowers 5-merous. Pods flat, raised over seeds alternately on each side, 7.5 cm \times 0.9 cm, furry except for glabrous marginal nerve; seeds longitudinal or slightly oblique, 5–5.5 mm \times 3–3.2 mm, 2.5 mm thick.

Known from only 2 localities, Helidon and Plunkett, on sandstone. It is an attractive shrub with large heads of white flowers in early to midwinter and is cultivated to a limited extent.

38. *Acacia harpophylla* F. Muell. ex Benth.

BRIGALOW

Tree up to 25 m tall, with hard, almost black, deeply longitudinally furrowed bark; branchlets ribbed. Phyllodes falcate, equally tapered to each end, (7–) 10–20 (–30) cm \times (0.5–) 0.7–1.6 (–2) cm, 5–16 (–20) times as long as wide, glabrous or covered by short appressed hairs, many crowded parallel nerves, not anastomosing, 3–5 somewhat more prominent than rest; basal gland prominent. Heads of 15–30 flowers in condensed 3–8-branched appressed pubescent axillary racemes, axis 2–10 mm long, peduncles (0.3–) 1–2 (–3) cm long; flowers 5-merous. Pods subterete, 7–20 cm \times 0.5–1 cm, glabrous; seeds longitudinal, 1.2–1.8 cm \times 0.5–0.8 cm, flat but thick, somewhat irregular in shape due to compression within pod. **Fig. 58D.**

Widespread in the Darling Downs and Burnett districts and in the Moreton district about as far east as Ipswich. It was once fairly common, forming extensive open forest communities, but now is usually seen as scattered trees or in small remnant areas of open forest. Brigalow lands are highly productive when cleared, but regrowth from roots, a characteristic of the plant, is a definite limiting factor in the utilization of such lands. The main flowering period is midwinter to spring. Mature fruit have been collected in November and December. The seeds have remarkably thin coats and unlike seed of most other species, are viable for a short period only.

39. *Acacia melvillei* Pedley

Trees up to *ca* 15 m tall; branchlets yellowish, angular, usually glabrous or sometimes appressed pubescent. Pulvinus 2 (–4) mm long; phyllodes coriaceous, oblong or narrowly elliptic, 5–8 (–10.5) cm \times (0.5–) 7–1.2 (–2.5) cm, (3.5–) 6.5–10.5 (–13.5) times as long as wide, glabrous or with a few appressed hairs, many fine inconspicuous parallel nerves, 3 somewhat more prominent; gland basal, merely a swelling. Heads of 30–50 flowers in condensed axillary racemes of 3–4 (–5) branches, axis 2–4 (–7) mm long, glabrous or sparsely pubescent; flowers 5-merous. Pods flat, membranous, transversely reticulately nerved, up to 9 cm \times *ca* 1 cm; seeds transverse, 3.5–4.5 mm \times 2.5–4 mm, rather thick.

Known from the north-western Darling Downs district and adjacent parts of the Burnett district. It occurs on fine-textured soils and often forms groves either in woodland of *Eucalyptus populnea* (POPLAR BOX) or in grassland. Flowers midwinter to midspring and fruits mature late in the year.

40. *Acacia pendula* Cunn. ex G. Don

MYALL

Tree up to 12 m tall with pendulous branches; branchlets brownish, slender, angular, at first with indumentum of dense appressed hairs, coming off leaving hair in patches. Pulvinus 1–2.5 mm long; phyllodes sometimes rather membranous, straight or curved, apex acute or apiculate, narrowed gradually to base, 5–10 (–14) cm \times 0.4–0.8 (–0.9) cm, (6–) 9–20 (–25) times as long as wide, densely to sparsely appressed pubescent, many parallel longitudinal nerves, 1–3 more prominent than the rest; gland \pm basal. Heads of 14–20 flowers in 2–4-branched appressed pubescent axillary racemes, axis 1–2.5 mm long, rarely up to 2 cm long with 10 branches, peduncles 1.5–4.5 mm long; flowers 5-merous. Pods flat, winged along upper margin, wing *ca* 3 mm broad, with reticulate transverse nerves, 4–8 cm \times 0.8–1.8 cm, sparsely appressed pubescent; seeds transverse, 5–7 mm long, *ca* 4.5 mm wide, rimmed. **Fig. 59A.**

Known from the western Darling Downs districts often forming groves in grassland on clay soils but also associated with *Eucalyptus populnea* (POPLAR BOX) or less commonly *Acacia harpophylla* (BRIGALOW). Flowers late spring to early winter. Mature fruits have been collected mid to late spring.

41. *Acacia stenophylla* Cunn. ex Benth.

BELALIE

Tree up to 6 m tall with hard black bark; branchlets angular, glabrous to densely appressed pubescent; phyllodes coriaceous, straight or sometimes curved, apex acute, gradually tapered to base which is as thick as broad, 15–24 (–27) cm \times (0.15–) 0.2–0.5 (–0.7) cm, 30–80 (–120) times as long as wide, with prominent, rather widely spaced longitudinal nerves, middle slightly more prominent; gland merely an orifice at base, not always evident. Heads of (20–) 30–40 flowers in 3–5-branched racemes, axis 3–5 (–9) mm long, moderately to densely appressed pubescent or rarely glabrous; peduncles 6–8 mm long with indumentum similar to that of axis; flowers 5-merous. Pods moniliform, obscurely longitudinally wrinkled, up to 14 cm \times ca 1 cm wide, 1.5–3 mm wide at the constrictions, glabrous; seeds longitudinal, ca 7 mm \times 5–6 mm, 2.5–3 mm thick. **Fig. 591.**

Known from the north-western Darling Downs district. Restricted to usually fine-textured alluvial soil. Main flowering period midautumn to midwinter with pods maturing in the last quarter of the year. The pods dehisce rather tardily and tend to break into 1-seeded loments.

42. *Acacia montana* Benth.*Acacia clavata* Schlechtendal

Shrub; branchlets with yellowish nerves and sparse short crisped hairs. Stipules short, linear, 0.5 mm long, deciduous; phyllodes subsessile, viscid, narrowly oblong, apex obtuse, 2–4 cm \times 0.25–0.55 cm, 5–13 times as long as wide, sometimes with scattered hairs, bent sharply near base along phyllodes near base and along margin, 2 equally prominent yellowish longitudinal nerves and \pm translucent lesser nerves reticulate between them. Heads of ca 25 flowers in pairs in axils; peduncles ca 3 mm long, hirsute, rather glutinous, with a basal ovate concave bract; flowers 5-merous. Pods ca 2.5 cm \times 0.2 cm, lanate; seeds longitudinal, ca 3 mm \times 1.5 mm.

In Queensland it has been collected only a few times, from the southern part of the Darling Downs district. Flowers spring and fruits mature towards the end of the year.

43. *Acacia ixiophylla* Cunn. ex Benth.*Acacia fuliginea* R. T. Baker

Dense, flat-topped shrub up to 3 m tall; branchlets yellowish, ribbed, very glutinous and densely pubescent. Stipules setaceous, ca 0.5 mm long; pulvinus very short; phyllodes coriaceous, glutinous, tapered equally to each end, apex apiculate, (1.7–) 2–3 (–4) cm \times 0.3–0.7 (–0.9) cm, (2–) 3–7 (–10) times as long as wide, usually with scattered soft hairs, 3–5 parallel longitudinal nerves prominent and others \pm translucent, loosely anastomosing; gland small, consisting of a rim with a small orifice, basal, usually hidden by hairs and resin. Heads of 30–35 flowers in 2–3-branched, glutinous, \pm densely pubescent racemes, axis 2–6 mm long; peduncle 2–4 mm long, occasionally axis growing out into leafy shoots, peduncles then extra-axillary; flowers 5-merous. Pods linear, raised over the seeds, curved or coiled, ca 5 cm \times 0.2–0.3 cm, glutinous, glabrous; seeds longitudinal, 4–5 mm \times ca 1.8 mm.

Widespread in the Darling Downs district and is known from Heifer Creek and Flagstone Creek in the Moreton district. It favours deep sandy soils with *Callitris columellaris* (CYPRESS PINE) and sand overlying alkaline clay subsoil with *Casuarina luehmannii* (BULL OAK). The flowering period is short, usually late August and September and pods mature late in the year. The species is often cultivated but is attacked by sooty mould.

44. *Acacia viscidula* Benth.*Acacia viscidula* Benth. var. *angustifolia* Benth.

Shrub up to ca 3 m tall; branchlets resinous with yellowish ribs and sparse short hairs, often infested with sooty mould. Stipules concave, fimbriate, ca 1 mm long; phyllodes linear, straight or curved, apiculate with a slightly oblique point, 4–8 cm \times 0.1–0.25 (–0.3) cm, 17–27 times as long as wide, glabrous or with a few marginal hairs, or sometimes moderately pubescent when young, hairs 0.1 mm long, 5–7 \pm parallel translucent longitudinal nerves, slightly anastomosing. Heads of 20–25 (–35) flowers in pairs in upper axils; peduncles (2–)3–5 (–8) mm long; sparsely to moderately pubescent, flowers 5-merous. Pods linear with nerve-like margins raised over seeds, viscid, ca 4.5 cm \times 0.25 cm; sparsely pubescent; seeds longitudinal, ca 4 mm \times 2 mm.

An uncommon species, occurring among rocks in elevated country around Stanthorpe in the Darling Downs district and on mountain peaks in the Moreton district. Flowers spring.

45. *Acacia dawsonii* R. T. Baker

Shrub; branchlets with translucent resinous ribs; densely pubescent between them with appressed hairs. Pulvinus *ca* 1 mm long; phyllodes coriaceous, linear, apex \pm acute, up to 6 cm \times 0.4 cm, but often 3.5 cm \times 2.35 cm, glabrous, up to 10 parallel longitudinal nerves, two of which are rather prominent, rather widely spaced with few anastomoses; gland near base. Heads of 4–6 flowers in 5-branched racemes up to 1 cm long, axis and peduncles with minute appressed hairs; peduncles *ca* 1 mm long; flowers 5-merous. Pods not seen.

Only 1 specimen has been collected in Queensland, from near Amiens near Stanthorpe. Flowers spring.

46. *Acacia excelsa* Benth.

IRONWOOD

Acacia daintreeana F. Muell.; *A. excelsa* var. *daintreeana* (F. Muell.) Domin; *A. excelsa* var. *polyphleba* Domin; *A. excelsa* var. *glaucescens* Domin

Tree up to 15 m tall; bark dark grey, hard, fissured; small branches sometimes pendulous; branchlets angular, glabrous. Pulvinus 1–2 mm long; phyllodes elliptic, apex obtuse or rarely acute, variable in size, (3–) 4–6.5 (–9) cm \times 0.3–1.6 (–2.6) cm, (3–) 4–12 (–18) times as long as wide, glabrous, with 3–6 parallel widely spaced longitudinal nerves, few or no secondary nerves and indistinct oblique nerves running off main ones; gland with a small orifice *ca* 2 mm from the base, often conspicuous because of indentation of the margin. Heads of 25–35 flowers in axillary groups of 3 or 4, or occasionally in 3–4-branched axillary racemes, axis up to 10 mm long; peduncles 0.5–1 (–1.5) cm long, glabrous; flowers 5-merous. Pods flat, narrowly winged, coarsely reticulately nerved, contracted between seeds and breaking at constrictions, 7–11 cm \times 0.6–0.9 (–1.2) cm; seeds longitudinal, *ca* 5 mm \times 4.5 mm.

Known from the north-western part of the Darling Downs district and also from Eisvold in the Burnett district. The main flowering period is midautumn and midwinter. Fruits remain on the trees for some time and have been collected most times of the year.

47. *Acacia complanata* Cunn. ex Benth.

FLAT-STEMMED WATTLE

Acacia anceps Hook.

Shrub up to 5 m tall; branches arching downwards, branchlets flattened, winged. Pulvinus 2–3 mm long; phyllodes elliptic, apex obtuse, 5–10 (–11.5) cm \times (1.2–) 1.6–3 (–4.5) cm, 2–4.5 (–7.5) times as long as wide; glabrous; *ca* 9 prominent longitudinal nerves with fainter oblique nerves forming elongate anastomoses, gland 0.2–0.8 (–1.2) cm from the base, prominent rim projecting from margin and small orifice. Heads of 40–45 flowers in axillary groups of 4–8 heads (reduced racemes), occasionally heads in racemes, axis up to 1.2 cm long, peduncles 0.8–1.2 cm long, glabrous; bracteoles peltate; flowers 5-merous. Pods flat, raised over seeds alternately on each side, 1–1.5 cm \times 0.75–1 cm, glabrous, reticulately nerved. Seeds longitudinal or slightly oblique, *ca* 5.5 mm \times 4.5 mm. **Fig. 59E.**

Widespread but not common in south-eastern Queensland, more or less restricted to rather shallow soils on sandstone as far north as about Bundaberg.

48. *Acacia bakeri* Maiden

MARBLEWOOD

Tree up to 35 m tall; branchlets \pm terete, glabrous. Pulvinus 1–2 mm long; phyllodes elliptic or ovate, slightly curved at base, apex acute or obtuse, base abruptly contracted into pulvinus, 5–8.5 (–12) cm \times 1.5–2.5 (–4.5) cm, 2.5–5 times as long as wide, larger on sterile shoots, 3–4 prominent longitudinal nerves with less definite secondary penninerves forming coarse reticulum (when phyllode is broad, secondary nerves are almost perpendicular to main nerves); gland prominent, a distinct swelling of margin with a small orifice, 6–10 (–15) mm from base, sometimes with a connective nerve to base. Heads of 10–15 flowers in glabrous racemes, axis 3–6 cm long; peduncles in up to 4 pairs (occasionally 3s or 4s), 5–10 mm long; flowers 4-merous. Pods flat, very slightly constricted between seeds, with broad margin, up to 12 cm \times *ca* 1.2 cm, coarsely reticulately nerved; seeds longitudinal, not seen mature.

In rainforests and on the margins of rainforest in the Moreton district and northward to about Maryborough. It is less common now than it was earlier this century as rainforests have been extensively cleared.

49. *Acacia melanoxyton* R.Br. ex Aiton

BLACKWOOD

Acacia arcuata Sieber ex Sprengel

Tree up to 15 m tall in Queensland, taller farther south, with somewhat scaly bark; branchlets angular, indumentum varying from densely pubescent to none, young tips dark. Stipules caducous, up to 1.5 mm long; pulvinus short or indefinite; phyllodes usually rather membranous, not coriaceous, apex acute, apiculate. (6.5-) 8-13 (-14) cm \times 0.7-2 cm, 4-12 (-16) times as long as wide, broadest at or above the middle, tapering to pulvinus, longitudinally nerved, 3-5 prominent with many secondary nerves, anastomosing, junctions prominent, particularly on more coriaceous phyllodes from plants from exposed situations; gland not large, 1-10 mm from the base. Heads of 30-50 flowers in glabrous, scurfy or sparsely to moderately pubescent, 3-5 (-8)-peduncled



Fig. 58

MIMOSACEAE — A-J *Acacia* spp., inflorescences all $\times 1$ — A *A. ulicifolia*; B *A. falcata*; C *A. fasciculifera*; D *A. harpophylla*; E *A. hubbardiana*; F *A. granitica*; G *A. triptera*; H *A. sophorae*; I *A. caroleae*; J *A. aulacocarpa*.

racemes, axis (0.2-) 0.6-1.8 (-4) cm long, peduncles (2-) 5-10 mm long; flowers 5-merous. Pods coiled, up to 10 cm \times 0.35-0.65 cm, valves rather thick and somewhat shiny; seeds longitudinal, 3-4 mm \times 1.7-3 mm. **Fig. 59B.**

Known from the Moreton and Wide Bay districts and eastern Darling Downs district. It occurs on rainforest margins or along creeks in areas of high rainfall where soils are fertile. Flowering and fruiting seems to occur throughout the year but most flowering specimens have been collected from late spring to early autumn.

50. *Acacia implexa* Benth.

LIGHTWOOD

Tree to ca 8 m tall, branches sometimes pendulous; branchlets glaucous, \pm terete or slightly angular. Pulvinus 2-7 mm long; phyllodes curved, apex rather obtuse, base long attenuate, (9-) 11-16 (-19) cm \times 0.6-1.6 (-2.5) cm, (5-) 9-18 (-22) times as long as wide, glabrous, 3 prominent longitudinal nerves with rather widely spaced anastomosing secondary nerves, junctions prominent; gland basal, sometimes inconspicuous. Heads of 30-50 flowers in 4-8-branched glabrous axillary racemes, sometimes in panicles, axis 1-3 (-4) cm long; peduncles 0.6-1.3 cm long; flowers 5-merous. Pods flat, raised over the seeds, coiled and twisted, up to 20 cm \times 0.4-0.7 cm; glabrous, somewhat glaucous; seeds longitudinal, ca 4.5 mm \times 2.5 mm.

Widespread in the region but commonest in the eastern part of the Darling Downs and southern part of the Moreton district. It occurs on various soil types in eucalypt communities.

51. *Acacia amblygona* Cunn. ex Benth.

Acacia nernstii F. Muell.

Low spreading shrub; branchlets terete with low ribs, with indumentum of dense or moderately dense stiff, erect white hairs. Stipules setaceous or linear, occasionally with a few hairs, 1-2 mm long; phyllodes sessile, triangular to narrowly ovate falcate, lower margin straight or somewhat curved, upper curved, 0.4-1.6 cm \times 0.16-0.32 (-0.42) cm, 2-4.5 (-6) times as long as wide, indumentum similar to that of branchlets, or occasionally glabrous, plurinerved, lowest nerve parallel to lower margin and excurrent as a pungent point up to 2 mm long, and 2 others curved \pm running into the dorsal margin; sometimes with an obscure gland at or below broadest part of phyllode. Heads of 20-30 flowers on glabrous peduncles usually shorter than phyllodes, with some brown bracts at base; flowers 5-merous. Pods linear, coiled, valves raised above seeds and slightly contracted between them, up to 7 cm \times 0.3-0.4 cm, glabrous; seeds longitudinal, oblong, ca 3 mm \times ca 2 mm.

Widespread but not common, usually occurring on shallow stony soils, but is sometimes associated with *Eucalyptus moluccana*. Flowers late winter to spring.

52. *Acacia pravifolia* F. Muell.

Shrub; branchlets terete, slightly ribbed, with indumentum of erect dense white hairs. Stipules linear or setaceous, 1.2-2.4 mm long; phyllodes sessile, broadly triangular, dorsal margin rounded, abruptly contracted into a point, the prolongation of main nerve, 3-7 mm \times 2.8-7 mm, about as long as wide, indumentum of moderately dense, long tubercle-based hairs, main nerve towards lower margin, with 2-3-branched nerves in upper part of phyllode. Heads slightly elongate, 9 (-20)-flowered on glabrous or slightly pubescent axillary peduncles as long as or slightly longer than phyllodes, with a pair of basal bracts; flowers 5-merous. Pods linear, spirally coiled, 3.5 cm \times 0.5 cm; seeds longitudinal, oblong, 3.2 mm long, about twice as long as wide.

Restricted to a few localities in the Darling Downs district where it occurs on shallow sandy soils.

53. *Acacia brachycarpa* Pedley

Much-branched shrub up to 2 m tall; branchlets covered with an indumentum of white rigid hairs. Stipules brown, scarious, linear, apex acute, 0.7-1 mm long; phyllodes straight, rigid, apex sharp-pointed, punctulate, 0.9-1.5 mm \times 0.08-0.11 cm, strongly uninerved on both sides; gland 1.5-2.5 mm above base. Heads 10-18-flowered on axillary glabrous peduncles 1.3-2 mm long (3-4 mm long in fruit); flowers 5-merous. Pods oblong, 0.6-2 cm \times 0.3 cm; seeds longitudinal, oblong, 3.5 mm \times 2 mm.

Known from around Helidon and Crows Nest in the Moreton district, usually on sandstone.

54. *Acacia ulicifolia* (Salisb.) Court**PRICKLY MOSES**

Mimosa ulicifolia Salisb.; *M. juniperina* Vent.; *Acacia juniperina* (Vent.) Willd.

Shrub up to 2 m tall; but occasionally decumbent and not more than 0.5 m tall; branchlets terete with an indumentum of sparse to moderately dense, rather stiff, erect hairs up to 0.2 mm long. Stipules setaceous, \pm persistent, 0.5–1.7 mm long, glabrous or with a few hairs at base; phyllodes sessile, vertically flattened, apex acicular, pungent-pointed, the point 0.6–1.2 mm long, (0.6–) 0.75–1.4 cm \times 0.06–0.15 (–0.16) cm, broadest at or a little above base, glabrous, with a prominent nerve on each side at least when dry; gland on dorsal surface up to 3 mm from base. Heads (15–) 20–30-flowered, on axillary, glabrous peduncles (0.5–) 0.8–1.5 cm long, bracteoles occasionally projecting beyond unopened flower; flowers 5-merous. Pods linear, up to 6 cm \times 0.5 cm, valves rugose with thick smooth nerve-like margins raised over the seeds; seeds longitudinal, rectangular, 4.5–5 mm \times 2.5–3 mm. **Fig. 58A.**

Two varieties occur in the region:

- | | |
|---|---|
| 1. Upright shrub, usually 1–2 m tall; phyllodes often less than 1 cm long;
flowers pale yellow | <i>A. ulicifolia</i> var. <i>ulicifolia</i> |
| Decumbent shrub up to 0.4 m tall; phyllodes up to 1.5 cm long; flowers
yellow | <i>A. ulicifolia</i> var. <i>brownei</i> |

A. ulicifolia var. *ulicifolia* is widespread and common on sand in heath or open eucalypt forest in coastal areas south from Fraser I. and in the Stanthorpe area and on shallow rocky soils of some mountain peaks. *A. ulicifolia* var. *brownei* (Poiret) Pedley (*Mimosa brownei* Poiret; *Acacia juniperina* (Vent.) Willd. var. *brownei* (Poiret) Benth.; *A. brownei* Steudel ex DC.; *A. pugioniformis* H. Wendl.) is known from the Darling Downs district. Both varieties flower spring.

55. *Acacia saxicola* Pedley

Exceedingly branched shrub up to 1.5 m high; branches terete, sparsely strigose becoming glabrous. Stipules persistent, setaceous, 2–3 mm long; phyllodes \pm sessile, flat, \pm narrowly triangular, apex gradually narrowed into reddish spine *ca* 1.5 mm long, 0.75–1.4 cm \times 0.17–0.3 cm, 2.7–6.7 times as long as wide, punctulate, glabrous, prominently uninerved with nerve similar to marginal nerves; inconspicuous gland on dorsal margin of broadest part of phyllode and little above base. Heads 40–50-flowered on axillary glabrous peduncles as long as the phyllodes; flowers 5-merous. Pods glabrous; seeds longitudinal, depressed, globular, 4 mm \times 3.2 mm.

Known only from Mt. Maroon (altitude *ca* 900 m) where it is a major constituent of heath on the summit of the mountain.

56. *Acacia gunnii* Benth.

A. vomeriformis Cunn. ex Benth.

Spreading shrub less than 1 m tall; branchlets terete, scurfy, hispid with erect hairs or glabrous. Stipules linear, apex acute, *ca* 1 mm long, persistent; phyllodes sessile, triangular, lower margin straight, produced into a point, sometimes oblique (sometimes long), upper margin bent below middle (sometimes angle conspicuously protruding), 4–6.5 mm \times 2–2.5 mm, 2–3 times as long as broad (or larger), pustulate, hispid, midrib prominent, nearer lower margin; gland small, at angle on upper margin. Flowers in heads of about 25 on hispid peduncles *ca* 1 cm long, bracteoles about as long as buds, produced into a subulate point; flowers 5-merous. Pods not seen from Queensland, flat, *ca* 4 mm broad, contracted between seeds, glabrous; seeds nearly orbicular with a short filiform funicle.

In Queensland known from a single collection from Amiens near Stanthorpe in the Darling Downs district.

57. *Acacia paradoxa* DC.*Acacia armata* R.Br.: *A. ornithophora* Sweet

Shrub 2.5 m tall; branchlets ribbed, either with moderately dense \pm erect hairs or occasionally glabrous. Stipules spinous, in pairs, spreading, *ca* 1 cm long, reddish; pulvinus short; phyllodes oblong, tapering towards apex, apex obtuse, mucronate, margins undulate and prominent, 1–2 (–2.5) cm \times (0.2–) 0.3–0.5 cm, 3–6 (–12) times as long as broad, glabrous or with a few hairs on margin or midrib, faintly penninerved, midrib prominent, closer to the dorsal margin. Flowers in heads of 30–40 on sparsely pubescent, glabrate or glabrous peduncles *ca* 1 cm long, occasionally with a small caducous bract at base; receptacle hairy between flowers; flowers 5-merous. Pods linear, on stipe *ca* 2 mm long, sparsely to densely pubescent, margins prominent, raised over seeds, up to *ca* 5 cm \times 0.35–0.4 cm; seeds longitudinal, oblong, 4–5 mm \times *ca* 2 mm.

Rare in Queensland. The only recent collections come from the Crows Nest-Cooyar area and from the Stanthorpe area where *A. paradoxa* is adventive in an exotic pine plantation. Flowers have been collected in late spring and fruits in November and February.

58. *Acacia quadrilateralis* DC.*Acacia pugioniformis* auct. non H. Wendl. (1819), H. Wendl. (1820)

Branched shrub up to *ca* 2 m tall; branchlets angular, reddish brown but soon becoming grey due to the formation of dead translucent epidermal layer. Stipules persistent, triangular, 0.6–1.2 mm long, occasionally setaceous; pulvinus 0.6–1 mm long; phyllodes (sometimes grouped on short lateral branches) filiform, quadrangular (at least when dry), apex abruptly or gradually contracted into point, (0.5–) 2.6–8 mm \times 0.5–1 mm, minutely papillose on angles. Heads of 15–30 on glabrous peduncles 6–10 mm long; flowers 5-merous. Pods flat, moniliform, valves somewhat rugose, 4–9 cm \times 0.3–0.4 cm; seeds longitudinal with an unfolded, not thickened funicle, *ca* 5 mm long but not seen mature.

In south-eastern Queensland on sandy soils in the Moreton and Wide Bay districts, south of Bundaberg. Flowers mid to late winter.

59. *Acacia handonis* Pedley

Small shrub; ribbed branchlets with scattered short glandular hairs and occasionally with denser simple hairs. Phyllodes crowded, spirally arranged, occasionally subverticillate, semiterete when fresh, subquadrangular when dry, without obvious nerves, apex recurved and mucronate, 0.6–1.2 cm \times 0.03–0.04 cm. Heads of about 30 flowers on axillary peduncles *ca* 1 cm long. Pods shortly stipitate, flattened, glabrous with cartilaginous outgrowths on the valves; seeds longitudinal *ca* 4 mm \times 2 mm.

An extremely rare species known only from north of Chinchilla. Flowers spring.

60. *Acacia brunioides* Cunn. ex G. Don

Shrub up to *ca* 2 m tall; branchlets glabrous or with rather sparse white retrorse hairs. Stipules 0.4–0.6 m long; pulvinus 0.3–0.6 mm long; phyllodes terete when fresh without any nerves discernable, obscurely longitudinally wrinkled when dry, spirally arranged or in oblique whorls, straight or decurved from base with short straight point, 0.25–0.8 (–1.1) cm long. Heads of 12–25 flowers on axillary peduncles about twice as long as phyllodes; flowers 5-merous; pods sessile, flat, up to 4 cm \times 0.8–0.9 cm, glabrous; seeds transverse or oblique, 3.5 mm \times 2 mm. **Fig. 59K.**

Two subspecies occur in the region:

- | | |
|--|---|
| 1. Phyllodes 0.25–0.5 (–0.65) cm long, gradually narrowed to a point;
flowers pale yellow or cream; shrub, never forming thickets | <i>A. brunioides</i> subsp. <i>brunioides</i> |
| Phyllodes 0.5–0.8 (–1.1) cm long, contracted into a mucro; flowers
golden yellow; shrub forming thickets | <i>A. brunioides</i> subsp. <i>granitica</i> |

A. brunioides subsp. *brunioides* is restricted to some mountain peaks in the southern Moreton district. *A. brunioides* subsp. *granitica* Pedley is found in elevated areas around Stanthorpe in the Darling Downs district.

61. *Acacia ruppilii* Maiden & Betche*Acacia torringtonensis* Tindale

Shrub up to *ca* 1 m tall; branchlets ribbed, tomentose between ribs. Stipules *ca* 0.5 mm long, sometimes persistent; pulvinus 0.5–1.2 mm long. Phyllodes spirally arranged and sometimes crowded, \pm straight, apiculate, 0.8–2 (–2.5) cm \times 0.09–0.15 cm, broadest slightly above middle, glabrous or with few long hairs on margins, at base obscurely wrinkled or with 1 longitudinal nerve faintly visible; gland small, on dorsal margin 3–7 mm from base or absent. Heads of 30–35 flowers on peduncles 4–8 (–10) mm long in 2–3 (–6) branched axillary racemes, the axis, peduncles and receptacle tomentose, lower branches sometimes subtended by reduced phyllode; flowers 5-merous. Pods flat, up to 4 cm \times 0.5 cm, subglabrous to tomentose; seeds longitudinal, seen only when very young.

Confined to a small area south-east of Stanthorpe where it occurs on sand derived from granite. Flowers spring. It is sometimes cultivated.

62. *Acacia conferta* Cunn. ex Benth.

Shrub up to 3 m tall; branchlets slender, ribbed by somewhat decurrent bases of petioles, covered with moderately dense, occasionally sparse \pm erect hairs. Stipules rather thick, linear, 0.4–0.7 mm long; pulvinus transversely wrinkled, *ca* 0.5 mm long; phyllodes scattered or spirally arranged or in oblique whorls, vertically flattened, straight or slightly curved, either obliquely narrowly obovate or oblong and then obtuse mucronulate, or linear-ovate, narrowly obovate or narrowly elliptic and then acute, 0.5–1 (–1.5) cm \times 0.1–0.16 (–0.18) cm, 4–10 (–13) times as long as broad, glabrous or with scattered spreading hairs particularly in lower half or dorsal half, without nerves when fresh but with 1 or occasionally more obscure folds (ridges) when dry; gland inconspicuous on dorsal edge up to 2 mm from base. Heads of 20–30 (–35) flowers on peduncles 1½–2½ times as long as the phyllodes, with indumentum similar to that of the branchlets, at length glabrous; flowers 5-merous. Pods oblong, 6 cm \times 1.5–2 cm on stipe 0.8 mm long, glabrous, glaucous; seeds black, transverse, depressed-oblong, 5–5.5 mm \times 2.5–3 mm. **Fig. 59D.**

Darling Downs and Burnett districts, extremely common on sandy soil in open eucalypt forests in the north-western part of the Darling Downs district. Its main flowering period is midautumn to midwinter.

63. *Acacia burbidgeae* Pedley

Shrub up to *ca* 2 m tall; branchlets ribbed, slightly glutinous, glabrous or with a few sparse white hairs. Stipules deciduous, linear, apex acute; phyllodes sometimes in whorls of 4, subterete, slightly flattened when dry with a longitudinal groove on each face, slightly outcurved at the top with slightly oblique mucro, 1.5–3.5 cm \times 0.06–0.08 cm, glabrous with an occasional tubercle; sometimes with an extremely small basal gland. Heads of 25–30 flowers on glabrous peduncles 6–9 mm long; flowers 5-merous. Pods slightly glutinous, up to 6.5 cm \times *ca* 0.35 cm, glabrous, with prominent thickened margins, raised over seeds and slightly constricted between them; seeds longitudinal, 4–4.5 mm \times *ca* 2.5 mm.

Known from the area around Chinchilla in the Darling Downs district. Flowers winter and early spring. Fruits November.

64. *Acacia johnsonii* Pedley

Shrub up to 3 m tall, with dark grey bark becoming rough; branchlets viscid, somewhat ribbed with an indumentum of moderately dense \pm erect white hairs. Stipules acute, 0.5–1 mm long; pulvinus 0.4–0.8 mm long; phyllodes vertically flattened with an apical mucro oblique or at right angles to the margin, 1–2.5 cm \times 0.1–0.15 (–0.2) cm, glabrous or with a few long hairs at the base, sometimes with scattered tubercles, with 1, 2 or rarely 3 obscure raised nerves on each face. Heads of 20–30 flowers on axillary glabrous or pubescent peduncles 4–8 mm long; flowers 5-merous. Pods flat, linear, tapered at each end, up to 6 cm \times 0.25–0.3 cm wide, glabrous, slightly glutinous; seeds longitudinal, 2.5–4.5 mm \times 1.5–2 mm.

In shrubby open forest of *Eucalyptus crebra* on sandy soil north and north-west of Chinchilla. Flowers mainly spring.

65. *Acacia flexifolia* Cunn. ex Benth.

Erect shrub up to *ca* 1.5 m tall; branchlets with prominent resinous yellowish ribs sometimes broken up into bead-like particles, white scurfy between them. Stipules early deciduous, linear-setaceous, 0.4 mm long; pulvinus usually *ca* 0.3 mm long; phyllodes stiff, \pm erect, linear, abruptly contracted into a short point, tapered to the base, lower margin nerve-like, upper margin not nerve-like, 1.1–1.8 cm \times 0.09–0.17 cm, 9–15 (–20) times as long as broad, broadest a little below top, glabrous, midrib markedly raised, close to upper margin and \pm decurrent with it towards apex; gland 1 mm or rarely up to 3 mm from base of phyllode where margin or whole phyllode is bent towards branchlet. Heads 4–6-flowered on scurfy peduncles 3–4 mm long in pairs in the axils, buds often covered in white waxy material. Pods flat, linear, curved with slightly resinous margins, slightly constricted between seeds, 5 cm \times *ca* 0.2 cm; seeds longitudinal, *ca* 4.5 mm \times 1.5–2 mm.

Found in the Stanthorpe and Inglewood areas of the Darling Downs district. Flowers midwinter to early spring.

66. *Acacia resinicostata* Pedley

Shrub up to 3 m tall; branchlets glabrous with resinous somewhat tuberculate ribs. Stipules linear, 0.5–1 mm long; pulvinus 0.2 mm long or phyllodes sessile; phyllodes somewhat crowded, linear, broad at base, thick, curved (outward at top) with an oblique apical mucro, with nerve-like (occasionally tuberculate) margins, (0.3–) 0.55–2 cm \times 0.08–0.16 (–0.2) cm, glabrous, uninerved (sometimes obscurely so); provided with an extremely small gland toward base. Heads of 20–25 flowers on glabrous peduncles single in the axils, 0.6–1.2 cm long; flowers 5-merous. Pods flat with nerve-like margin, up to 7 cm \times 0.5 cm, somewhat glutinous, stipe 3–5 mm long; seeds longitudinal, obovate, 4 mm \times 2.7 mm.

On shallow soil in dissected sandstone country in a few widely separated localities in the Moreton and Darling Downs districts. Flowers spring.

67. *Acacia lineata* Cunn. ex G. Don

Acacia runciformis Cunn. ex G. Don; *A. dasyphylla* Cunn. ex Benth.

An erect shrub up to 2 m tall; branchlets ribbed definitely or slightly, only below the insertion of the phyllodes, indumentum of moderately dense spreading hairs, or if short curled hairs, sometimes glabrescent, often glutinous. Pulvinus *ca* 0.5 mm long; phyllodes coriaceous, \pm linear, apex abruptly contracted into an oblique rarely straight mucro, margins prominent, nerve-like, 0.6–1.8 cm \times 0.1–0.3 cm, 5–10 times as long as broad, broadest near top, gradually tapered to base, glabrous or with sparse spreading hairs, sometimes mainly near dorsal margin; midrib well-defined, yellowish or translucent, close to dorsal margin, occasionally confluent with it near top of phyllode; gland on dorsal margin about 1 mm from base. Heads 12–15-flowered, slender glabrous peduncles 5–7 mm long in pairs in axils, bracts obtuse, concave, fimbriate, 0.5–0.8 mm \times 0.4 mm; flowers 5-merous.

Known only from Kogan, the Inglewood-Warwick area and Stanthorpe, on shallow stony soils. Flowers spring. No fruiting specimens have been collected in Queensland.

68. *Acacia uncinata* Lindl.

Acacia undulifolia Cunn. ex G. Don; *A. piligera* Cunn.; *A. sertiformis* Cunn.; *A. undulifolia* var. *sertiformis* Benth.

Shrub up to 3 m tall; branchlets \pm terete with moderately dense or scattered long hairs. Stipules triangular, *ca* 1.3 mm long, twice as long as broad, fimbriate; pulvinus *ca* 0.5 mm long; phyllodes coriaceous, broadly ovate or broadly elliptic, asymmetrical, margins prominent, 1–2 (–2.3) cm \times 0.8–1.2 cm, 1.1–1.4 times as long as broad, glaucous, glabrous or with few hairs, obscurely penninerved, midrib prominent, slightly upcurved, produced into slightly hooked point *ca* 1 mm long, upper margin usually coming away from the pulvinus slightly higher than lower margin with a prominent gland in angle, and sometimes \pm confluent with midrib *ca* $\frac{3}{4}$ way along phyllode; occasionally phyllode not abruptly contracted at base and then gland on margin. Heads 30–45-flowered on ped-

uncles sparsely hairy 1.2–1.6 cm long. Pods flat, oblong, slightly curved, undulate, up to 6 cm \times 1.5–2 cm on stipe *ca* 0.5 cm long; seeds transverse, 5–7 mm \times 4–5 mm, *ca* 2 mm thick.

On sandy soil at Barakula, Goombungee and in the Warwick-Stanthorpe areas of the Darling Downs district but not common. It has two flowering periods—August–September and December–January. Plants flowering in the later period usually have mature pods from the earlier one.

69. *Acacia hubbardiana* Pedley

Acacia plagiophylla auct. non Sprengel, F. Muell.

Open shrub with flexuose branches up to 2 m tall; branchlets ribbed below insertion of phyllodes, with stiff hairs *ca* 0.1 mm long, glabrate. Phyllodes coriaceous, lower margin straight or very slightly curved, produced into point about 1 mm long, upper margin \pm parallel to branchlet, then abruptly curved through more than 90° and then \pm straight to meet lower margin at the apex of phyllode, with prominent though small gland at abrupt bend, or curved gently with widest part of phyllode below middle with gland below widest part, or at first subparallel to branchlet then with about a 90° turn (with a gland) to be \pm parallel to lower margin and then abruptly curved to apex, 4.5–9.5 mm \times (2.5–) 3–6 (–8) mm, 1.2–1.8 times as long as wide, glabrous, midrib and marginal nerves prominent, midrib gently curved, running into upper margin (sometimes with an indentation) about 1 mm from apex. Heads pale, 15–20-flowered, either pedunculate in upper axils of somewhat reduced leaves towards end of branches or in axils of even more reduced leaves on short lateral branches or in up to 13 heads of leafless lateral racemes, peduncles or branches of raceme 0.5–1.2 cm long, sparsely pubescent or glabrate; flowers 5-merous. Pods stipitate, narrowly oblong, up to *ca* 4.5 cm \times 1.2–1.5 cm, glabrous, glaucous; seeds transverse, *ca* 4.5 mm \times 2.5 mm. **Fig. 58E.**

Confined to the coastal fringe between Bundaberg and Brisbane at low altitudes on often poorly drained sand in open forest of *Eucalyptus* spp. or *Melaleuca quinquenervia* or in heath, or on rocky slopes above 150 m altitude on peaks of the Glasshouse Mts.

The mountain plants have \pm oblong phyllodes abruptly narrowed into short points. They can be consistently distinguished but are not considered worthy of a formal name.

70. *Acacia ixodes* Pedley

Acacia gnidium Benth. var. *latifolia* Maiden & Betche

Tall shrub or small tree up to 5 m tall; branchlets slender, angular, glabrous, glutinous. Stipules deciduous, *ca* 0.4 mm long; phyllodes glutinous when young, linear obtuse or acute mucronulate with a small gland at apex on dorsal side of mucro, 2.5–5 cm \times 0.25–0.5 cm, (5–) 8–14 times as long as broad, glabrous, with prominent yellowish midrib and prominent margin very slightly tuberculate, sometimes obscurely penninerved, with nerves subparallel to margin; gland 3–4 mm from base. Heads *ca* 20-flowered on glabrous peduncles 1–1.2 cm long, single in axils; bracteoles about as long as calyx, spatulate acute, slightly concave; flowers 5-merous. Pods variable, glabrous, glutinous with membranous valves raised above seeds and nerve-like margins, either up to 4.5 cm \times 0.2–0.4 cm or 3.5 cm \times 0.6–0.65 cm; seeds longitudinal, 3.5–4 mm \times 1.9–2.2 mm, *ca* 1.2 mm thick.

Often with *Eucalyptus melanophloia* and *Callitris columellaris* in the western Darling Downs district. Flowers late winter–early spring and fruits late spring.

71. *Acacia lauta* Pedley

Sprawling shrub up to *ca* 2 m tall; branchlets yellowish, angular, somewhat resinous with moderately dense \pm erect hairs *ca* 0.2 mm long. Stipules persistent, scarious, linear, up to 0.7 mm long; pulvinus *ca* 1 mm long; phyllodes straight or somewhat incurved, abruptly contracted at apex with oblique mucro, narrowed at base, margins thickened, 2–4 cm \times 1.5–2.5 mm, with few hairs at base, glabrescent, with slightly raised translucent midrib and 1 or 2 other obscure longitudinal ribs when dry. Heads of 25–30 flowers on pubescent axillary peduncles 5–7 mm long; flowers 5-merous. Pods linear, convex over seeds, up to 6 cm \times *ca* 0.4 cm, glabrous; seeds longitudinal, 4.5–5 mm \times 2.5–2.7 mm.

Known only from an area to the east of Tara in the Darling Downs district where it occurs on rather deep sand. It is an extremely attractive shrub which deserves to be more widely cultivated. Flowers in early spring and fruits in December.

72. *Acacia myrtifolia* (Smith) Willd.

Mimosa myrtifolia Smith; *Acacia amoena* auct. non H. Wendl.

Shrub up to 3 m tall, sometimes flowering when only 50 cm tall; branchlets rather thick, glabrous, with somewhat pale ribs arising from base of pulvinus. Pulvinus 1–2 mm long; phyllodes thick (almost fleshy when fresh), oblong, elliptic or obovate, apex acute or obtuse, mucronulate, (2–) 3–5.5 (–6.5) cm × 0.7–1.8 (–2) cm, 2–4 (–5) times as long as broad, glabrous, sometimes obscurely penninerved, nerves widely diverging; gland rimmed with moderate orifice, not exerted nor swollen but conspicuous because of contrast in texture with marginal nerve, 5–7 (–10) mm from base. Heads of 3–6 (–8) flowers in glabrous 3–6 (–9) branched axillary racemes, occasionally single in axils, rarely growing out into leafy shoots, axis 2–4.5 cm long, peduncles 3–6 mm long; flowers 4-merous. Pods linear, flat, curved, up to 6 cm × 0.25–0.3 cm, with extremely thick undulate marginal nerve; seeds longitudinal, 4–4.5 mm × 1.5–2.2 mm.

Moreton and Darling Downs districts in various situations: in shrubby eucalypt forest in wetter areas such as Beerwah and Canungra, on skeletal soils on mountain peaks up to 1200 m and on sand south-east of Stanthorpe. Flowers winter–spring and fruits spring–summer.

73. *Acacia hispidula* (Smith) Willd.

Mimosa hispidula Smith

A rather open shrub up to 2 m tall; branchlets ± terete, hispid with sparse tubercular-based hairs or sometimes merely tuberculate. Stipules triangular, up to 1 mm long or absent; phyllodes subsessile, conspicuously tuberculate, oblong or obovate, apex acute, margins prominent, 1.8–3 cm × (0.3–) 0.4–0.7 cm, 3.5–6.5 times as long as broad; somewhat obscurely penninerved, midrib prominent; gland prominent, slightly raised, 1/3–1/4 way along dorsal margin. Heads pale, almost white, of about 15 flowers on axillary peduncles sparsely hairy at base or glabrate, 4–6 mm long, 10 mm long in fruit; flowers 5-merous. Pods dark, glabrous, flattened, slightly contracted between the seeds, margins thickened sometimes slightly tuberculate, up to 4.5 cm × ca 1 cm, 1–3-seeded; seeds longitudinal, oblong, ca 7.5 mm × ca 4.5 mm, 3 mm thick.

Not common, in open eucalypt forest on shallow soils in a few places in the Moreton District and south of Stanthorpe in the Darling Downs district. Flowering material has been collected at all times of the year except early summer.

74. *Acacia juncifolia* Benth.

Acacia pinifolia Benth.

Tall glabrous shrub with slender terete branches. Phyllodes erect or spreading, subterete, subquadrangular or flattened, linear-subulate, 7–20 cm long, up to 1 mm broad, with not very prominent midrib on each side; gland ca 2–10 mm from base and phyllode sometimes bent at the gland. Heads of ca 20 flowers on single or paired axillary peduncles 5–10 mm long. Pods straight or slightly curved, 10 cm × 0.4 cm, raised over seeds and slightly contracted between them; seeds longitudinal, almost subcylindrical, ca 4 mm × 2.5 mm.

Fig. 59H.

Widespread in south-eastern Queensland but nowhere common, often found on shallow sandy soils but also on deeper sands in heath in coastal areas south of Bundaberg. Flowers winter–spring, and fruits late spring.

75. *Acacia stricta* (Andr.) Willd.

Mimosa stricta Andr.; *Acacia emarginata* H. Wendl.

Shrub ca 5 m tall; branchlets angular with yellowish resinous ribs. Phyllodes linear-spathulate, abruptly contracted to obtuse apiculate apex, gradually tapered to base, margins prominent, 7.5–10.5 cm × 0.6–0.9 (–1.7) cm, (6–) 9–13 times as long as broad, resinous, midrib prominent sometimes a second faint longitudinal nerve for a short distance from base on dorsal side, closely conspicuously reticulately penninerved; gland prominent near base. Heads of ca 25 flowers in groups of 2–7 in the axils, bracteoles capitate, 1 mm long; flowers 5-merous. Pods linear, ± straight, slightly glutinous, with thickened margins, up to 7 cm × ca 0.25 cm; seeds longitudinal, 3.5 mm × 1.5 mm.

Known from McPherson Range, Inglewood and near Stanthorpe. Flowers spring.

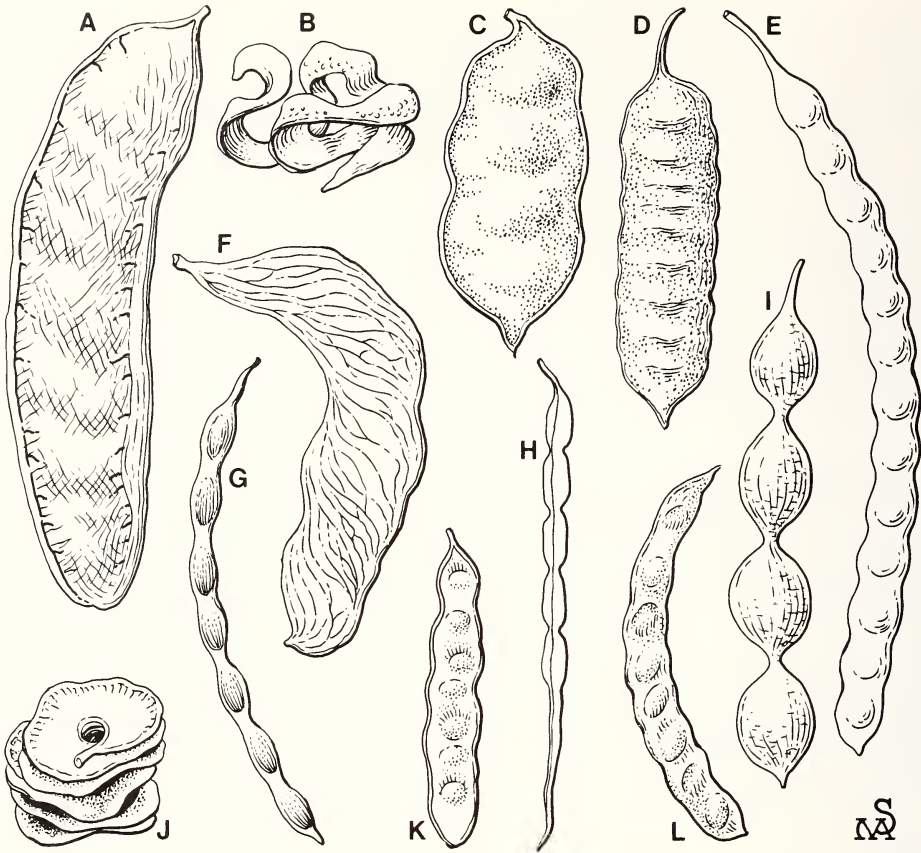


Fig. 59 MIMOSACEAE — A-L *Acacia* spp., fruits all $\times 1$ — A *A. pendula*; B *A. melanoxylon*; C *A. suaveolens*; D *A. conferta*; E *A. complanata*; F *A. aulacocarpa*; G *A. longispicata* subsp. *velutina*; H *A. juncifolia*; I *A. stenophylla*; J *A. cincinnata*; K *A. brunioides*; L *A. aprepta*.

76. *Acacia verniciflua* Cunn.

VARNISHED WATTLE

Shrub *ca* 2.5 m tall; branchlets with yellowish angles, glabrous, viscid. Stipules broadly triangular, 0.5 mm long, phyllodes often widely spread or reflexed, viscid with numerous small resinous pits, margins prominent, either linear, broadest above middle, tapering to base, 3.5–6.5 cm \times 0.35–0.65 cm, 5–15 times as long as broad or obovate or elliptic, 3.5–5 cm \times *ca* 1.5 cm, 2–4 times as long as broad, glabrous, midrib and second longitudinal nerve arising at base and running \pm parallel to dorsal margin but not usually reaching quite to apex; gland small, basal. Inflorescence an extremely reduced raceme, heads 35–40-flowered, peduncles *ca* 3 mm long, bracteoles *ca* 1 mm long; flowers 5-merous. Pods *ca* 7 cm \times 0.25–0.6 cm, valves glabrous, raised over seeds and somewhat narrowed between them; seeds longitudinal, rather thick, *ca* 3.5 mm long.

Found in elevated granite country near Stanthorpe. Flowers early spring.

77. *Acacia salicina* Lindl.

DOOLAN; SALLY WATTLE; COOBA

Acacia varians Benth.; *A. salicina* Lindl. var. *varians* (Benth.) Benth.

Tree up to 12 m tall, but usually considerably less; branchlets slightly angular, glabrous, sometimes glaucous. Phyllodes extremely variable in shape and size even on a single shoot, linear to elliptic, apex acute, 4.5–16.5 cm \times 0.3–2.5 (–3.2) cm, (2–) 4–25 (–32) times as long as broad, glabrous and sometimes glaucous; distinctly penninerved, midnerve prominent. Flowers in heads of 15–25 (–30) flowers arranged in axillary 3–8-branched

racemes, axis (1-) 2-5 (-6.5) cm long, glabrous or rarely scurfy or appressed pubescent, peduncles (occasionally in pairs) 0.5-1.5 cm long, bracteoles obtuse, glabrous, concave, *ca* 1.4 mm × 0.8 mm; flowers 5-merous. Pods glaucous, thick, oblong, constricted only where seed is aborted, 5-8 cm × 1 cm; seeds longitudinal, *ca* 6 mm × 4.5 mm.

Widespread in the region, often a component of eucalypt communities on soils of various textures, often not associated with alluvium. It has a long flowering period which varies somewhat from year to year. The peak of flowering appears to be from April to June and fruit are borne in the second half of the year.

78. *Acacia victoriae* Benth.

GUNDA BLUIE; PRICKLY WATTLE

Small tree up to 5 m tall with light green foliage, and smooth bark; branchlets with fine yellow ribs, lenticellular, glabrous and sometimes glaucous or with scattered straight hairs, or villous. Stipules spinose, up to 1 cm long, often reduced to blunt knobs; phyllodes sessile, coriaceous, wrinkled when dry, straight or curved, linear, abruptly contracted at top, with a straight or oblique mucro, (0.15-) 0.2-0.6 (-0.85) cm, (3.5-) 6-25 (-50) times as long as wide, glabrous or villous, midrib prominent, sometimes penninerved; gland prominent on margin a little distance from base. Heads of 15-25 flowers usually in axillary racemes of 25 or fewer heads, branches in pairs, lower ones subtended by reduced phyllodes 10 mm × 1.5 mm, upper ones subtended by short triangular bracts, racemes sometimes apparently terminal by suppression of apical shoot or rarely truly terminal, peduncles 1-1.4 cm long, bracteoles similar to calyx lobes; flowers 5-merous. Pods 3-8 cm × 1.2-1.6 cm, valves membrous, glabrous, raised over seeds, margins thickened; seeds transverse, ± globular, 4-6 mm × 2.3-4 mm, up to *ca* 4 mm thick.

In south-eastern Queensland known from a few localities in the north-western Darling Downs district. It is usually found on grey cracking soils or fine-textured alluvial soils.

79. *Acacia hakeoides* Cunn. ex Benth.

Small tree up to *ca* 5 m tall; branchlets angular, glabrous. Pulvinus 1-2 mm long; phyllodes coriaceous, straight, linear-spathulate, apex obtuse, mucronulate, base attenuate, 5.5-9 (-11.5) cm × 0.6-1.2 (-1.5) cm, (4.5-) 7.5-14 times as long as broad, broadest near top, prominent midnerve, penninerved, lateral nerves making an angle of *ca* 20° with midrib, somewhat reticulate; gland prominent on dorsal margin 1.2-3 cm from base, ($\frac{1}{12}$ -) $\frac{1}{6}$ - $\frac{1}{3}$ the length of the phyllode. Heads of *ca* 20 flowers in glabrous axillary 7-10-branched racemes, axis 2.5-3 cm long, peduncles 2-4 mm long, bracteoles about as long as calyx, peltate; flowers 5-merous. Pods linear, flat, 4 cm × 0.4 cm, glabrous, constricted between longitudinal seeds; seeds *ca* 7 mm × 4.5 mm.

Not common in Queensland. It occurs near Tara and in the Inglewood-Yelarbon area of the Darling Downs district usually on loamy soils. It flowers in late spring and fruits have been collected in late summer.

80. *Acacia wardellii* Tindale

Shrub up to *ca* 5 m tall with pale bark similar to that of *Acacia bancroftii*; branchlets ± terete, glabrous. Pulvinus 5-10 mm long; phyllodes ovate or oblong, obtuse or acute, tapering at base, usually curved, 11.5-15.5 cm × 2-2.5 (-3.5) cm, 4-7 times as long as wide, 2 prominent longitudinal nerves and less prominent oblique penninerves forming coarse reticulum; gland prominent, elongated, basal or up to 1 cm from base, 1-3 other smaller but prominent glands with thick rim and small orifice on the margin or at top of a projection from phyllode. Heads of *ca* 30 flowers in axillary racemes, axis scurfy, up to 4 cm long, peduncles *ca* 5 mm long, with minute appressed pubescence; flowers 5-merous. Pods flat, raised over seeds and slightly contracted between them, up to 8 cm × 0.6 cm; seeds longitudinal, 6 mm × 3.4 mm, rather thick.

On shallow weathered sandstone in eucalypt woodland in the Thomby Range south-east of Surat and south-west of Chinchilla. It is cultivated to some extent and may have become naturalized in places.

81. *Acacia bancroftii* Maiden

Tree up to 6 m tall; branchlets terete, glabrous and often glaucous. Pulvinus 0.5-1.2 cm long; phyllodes bent near base, obliquely obovate, obtuse, margins nerve-like, 11-21 cm × 2.8-8.5(-12) cm, 1.5-4.6(-6) times as long as broad; often glaucous, penninerved, midrib prominent, laterals reticulate making an angle of about 30°-45°; gland just above

base and often 1 or 2 glands $\frac{1}{3}$ to $\frac{1}{2}$ way along dorsal margin on projections up to 1 cm long, projecting glands present on only $\frac{1}{4}$ of phyllodes and entirely absent on all phyllodes of some plants. Heads of 25–40 flowers in axillary 15–30-branched racemes, axis up to 16 cm long, glabrous and glaucous or rarely appressed pubescent, peduncles 5(–8) mm long, glabrous and glaucous or appressed pubescent, inflorescences rarely compound, bracteoles about as long as the calyx, peltate; flowers 5-merous. Pods flat, with nerve-like margins and sometimes transversely veined, raised along the midline, up to 20 cm \times 1–1.5 cm, glabrous and often glaucous; seeds longitudinal, flattened, 6–9 mm \times 4–5 mm. **Fig. 57E.**

Common on shallow stony soils in the Burnett district and has also been recorded from near Barakula in the Darling Downs district and Blackbutt in the Moreton district. Near Kingaroy it occurs on deeper and richer soils than elsewhere and its foliage is then usually green rather than glaucous as it is elsewhere. Flowers late autumn to midwinter. Fruits midspring to early summer.

82. *Acacia macradenia* Benth.

ZIG-ZAG WATTLE

Spreading shrub up to 4 m tall; branchlets angular, glabrous, zig-zag. Stipules \pm oblong, uninerved, obtuse, up to 5 mm long, at first rather membranous, eventually hardened, reflexed, and \pm spiny, pulvinus transversely wrinkled; phyllodes spreading or sometimes reflexed, coriaceous, tapering at both ends, margins prominent, (8–)13–20 (–25) cm \times (0.8–)1–2.2 cm, 8–20 times as long as broad, penninerved, lateral nerves diverging, reticulate, midrib sometimes confluent with lower margin at base; prominent rimmed linear gland (up to 3.5 mm long) at base, occasionally with one or two small glands above middle. Heads of 35–50 flowers in 8–15 (in cultivated specimens, –25)-branched axillary racemes, axis 2–5 cm long (8.5 cm long in cultivated specimens), glabrous, peduncles 3–5 mm long, glabrous or rarely slightly appressed pubescent; flowers 5-merous. Pods linear, 8 cm \times 0.5 cm, glabrous, raised over seeds alternately on each side; seeds longitudinal, 4.2 mm \times 2.6 mm.

On stony and sandy soils, often near creeks in north-western Darling Downs district and possibly also in Burnett district. It flowers during August and though its flowering period is short it is such a striking plant that it is often cultivated. Mature fruits are found in October.

83. *Acacia falcata* Willd.

Mimosa obliqua H. Wendl.

Slender, usually single-stemmed tree up to *ca* 4 m tall; branchlets with not very prominent yellowish ribs. Pulvinus *ca* 5 mm long; phyllodes falcate, apex acute or obtuse, base attenuate, margins prominent, (9.5–)12–19 cm \times 1.2–4 cm, 4.5–12 times as long as broad, broadest above middle, glabrous, reticulately penninerved, midrib prominent; gland slit-like, basal. Heads of 15–20 flowers arranged in axillary 10–20 branched racemes, axis 4–6 cm long, appressed pubescent, peduncles 3–4 mm long, appressed pubescent; flowers 5-merous. Pods linear, \pm flat, with nerve-like margins and transverse reticulate nerves, up to *ca* 10 cm \times 0.55–0.7 cm; seeds longitudinally arranged near upper margin, 4–4.5 mm \times *ca* 2.5 mm. **Fig. 57G; Fig. 58B.**

A common element of the understorey of eucalypt communities, often on shallow stony soils, in coastal Queensland south of about Bundaberg, extending as far as the western part of the Burnett and Darling Downs districts but not common in inland districts. Flowers late autumn–midwinter; fruits spring.

84. *Acacia falciformis* DC.

Acacia penninervis Sieber ex DC. var *falciformis* (DC.) Benth. *A. astringens* Cunn. ex Don; *A. penninervis* var. *normalis* R. T. Baker; *A. penninervis* var. *glauc*a R. T. Baker Tree up to *ca* 10 m tall; branchlets angular, glabrous and occasionally glaucous. Pulvinus (2–)4–7(–10) mm long; phyllodes coriaceous, straight, oblong, apex obtuse or occasionally acute, margins prominent, 9–14(–17) cm \times (1.2–)1.5–3(–4) cm, (4–)5–7.5(–8.5) times as long as broad, or in a variant from the Glasshouse Mountains, (2.5–)2.8–5(–5.5) times as long as broad, glabrous, penninerved, midrib prominent; gland a rather large swelling with a moderately large distal orifice, (0.6–)1–2.5 mm from base, usually phyllode distinctly narrowed below gland. Heads of 15–25 flowers in 10–18-branched axillary racemes, axis 5–8 cm long, sparsely to densely appressed pubescent, peduncles 4–8 mm with

usually dense golden pubescence; flowers 5-merous. Pods flat, coriaceous, glabrous with nerve-like margins and obscure transverse nerves, *ca* 5 cm × 1.2–1.8 cm; seeds longitudinal, 5.5–6 mm × 3.5–4 mm.

Found in the south-eastern Darling Downs district especially on the western slopes of the Great Dividing Ra., above about 500 m altitude, south of Warwick.

A variant is found on Ngungu, one of the Glasshouse Mountains. The tree has coarsely nerved phyllodes varying from 2.5 to 5.5 times as long as broad.

85. *Acacia penninervis* Sieber ex DC.

MOUNTAIN HICKORY

Acacia impressa Cunn. ex Lindl.; *A. penninervis* var. *impressa* (Cunn. ex Lindl.) Domin
Small tree or shrub up to 8 m tall; branchlets glabrous, occasionally glaucous, ribbed by continuation of the petioles. Pulvinus 2–5 mm long; phyllodes variable in texture, shape and size, sometimes coriaceous, sometimes membranous, straight or curved, sometimes not conspicuously acute or obtuse, contracted into pulvinus (5.5–)7–12.5(–15) cm × (0.6–)0.9–3.5(–5) cm, 2.5–12(–20) times as long as broad, broadest above middle, glabrous, midrib prominent, penninerved; gland prominent or not, (0.3–)1–3(–4) cm from base with a small rim and orifice with nerve running to it from midrib, margin often indented at gland; sometimes the nervature more complex particularly when the phyllodes are broad, with connective nerve running from midrib to gland and then running ± parallel to margin from some distance, sometimes connective nerve inconspicuous; rarely a second gland present. Heads of 15–30 flowers in 10–30-branched axillary racemes, axis (3–)4–12.5 cm long, peduncles (2.5–)4–9 mm long, both axis and peduncles glabrous or with sparse to moderately dense appressed hairs. Pods sometimes slightly contracted between seeds, 10–20 cm × (1.2–)1.5–1.7 cm; seeds longitudinal, 6–7 mm × 3–4 mm. **Fig. 57F.**

Two varieties occur in the region:

1. Branchlets occasionally glaucous; phyllodes coriaceous, somewhat glaucous, apex obtuse or sometimes acute, (6.5–)8–11.5(–13) cm × (0.6–)0.9–1.6(–2) cm, 4–12(–20) times as long as broad, often inconspicuously penninerved.

A. penninervis var. *penninervis*

- Branchlets not glaucous; phyllodes sometimes rather membranous, not glaucous, apex acute or obtuse, (5.5–)7–12.5(–15) cm × (0.8–)1–3.5(–5) cm, 2.5–8(–13) times as long as broad, conspicuously penninerved

A. penninervis var.
longiracemosa

A. penninervis var. *penninervis* is found in the Burnett and Darling Downs districts. *A. penninervis* var. *longiracemosa* Domin is known from the Burnett, Wide Bay and Moreton districts and is common in the understorey of open eucalypt forest in coastal areas south of Bundaberg. The species has a prolonged flowering period, and can extend from spring to autumn or sometimes even midwinter. Fruits are borne from autumn to midsummer. Maximum production of flowers and fruits is a month or 2 later for *A. penninervis* var. *penninervis* than for *A. penninervis* var. *longiracemosa*.

86. *Acacia binervata* DC.

Acacia umbrosa Cunn. ex G. Don

Bushy tree up to 6 m tall; branchlets angular, glabrous. Phyllodes rather thin, ± straight, obovate or ovate, apex acute, 7–8 cm × 1.5–2 cm, 4–8 times as long as broad, 2 longitudinal nerves prominent and a number of finer oblique nerves anastomosing; gland a prominent swelling with a small orifice on margin *ca* 1 cm from base, often touching upper longitudinal nerve or with connecting nerve running to it from upper longitudinal nerve. Heads of 15–25 flowers in glabrous axillary racemes with up to 10 peduncles, sometimes growing out into leafy shoots, axis 4–5 cm long; peduncles 6 mm long; flowers 5-merous. Pods flat, not seen mature, up to 12 cm long, *ca* 1 cm broad, very similar to that of *A. penninervis*.

Collected from Mt. Tamborine and Springbrook in the Moreton district. Flowers spring.

87. *Acacia fasciculifera* F. Muell. ex Benth. SCRUB IRONBARK*Acacia penninervis* Sieber ex DC. var. *stenophylla* Domin

Tree 20 m or more tall, usually *ca* 10 m tall, with rough furrowed bark; branchlets stout, zig-zag, angular with yellowish ribs, glabrous rarely slightly scurfy or with a few appressed hairs; no stipules. Phyllodes articulate on a short spur on branchlet, straight or slightly curved, coriaceous, narrowly oblong or elliptic, apex \pm acute, margins prominent, 5–13 cm \times 0.7–1.9 cm (up to 3.3 m long in juveniles), 4–12 times as long as broad, glabrous or rarely with a few appressed hairs, coarsely penninerved and reticulate, midrib prominent; gland prominent, at or up to 2.5 cm above base. Inflorescences condensed racemes of heads appearing to be axillary clusters of flowers, rachis appressed pubescent, 0.3–0.8(–1.4) cm long, bearing 3–8 sparsely pubescent or glabrous peduncles 1–1.5 cm long, occasionally reduced to single axillary or extra-axillary pedunculate head; heads *ca* 25-flowered; bracteoles *ca* 1 mm long. Pods 10–12.5 cm \times (0.8)1–1.3 cm, valves glabrous, cartilaginous, prominently marginally nerved, transversely veined; seeds longitudinal, flattened, 6–7 mm \times 5.3–6.3 mm (5 mm \times 4 mm in small pods). **Fig. 58C.**

From the Moreton, Wide Bay and Burnett districts, in softwood scrubs or in association with *A. harpophylla*. It sometimes becomes large enough to be used for timber. Flowering usually occurs in the summer but pods may be found on some trees almost throughout the year.

In the central Moreton district this species is known as ROSEWOOD and it is from this that the town of Rosewood takes its name.

88. *Acacia saligna* (Labill.) H. Wendl. GOLDEN WREATH WATTLE*Mimosa saligna* Labill.; *Acacia cyanophylla* Lindl.

Shrub or tree up to 8 m tall; branchlets somewhat pendulous, terete. Pulvinus 1–2 mm long; phyllodes variable, 8–25 cm \times 4–20 cm, in Queensland plants usually *ca* 10 times as long as wide, penninerved; gland rather large, at base of phyllode. Heads of usually *ca* 40 flowers in (1–)5–12-branched axillary racemes, axis up to *ca* 5 cm long; flowers \pm glabrous, 5-merous. Pods flat, straight, slightly contracted between seeds, up to 12 cm \times 0.4–0.6 cm; seeds longitudinal, funicle yellowish, clavate, straight.

A Western Australian species planted in northern New South Wales to stabilize coastal sands after mining. It is now naturalized in places in New South Wales and in a few localities in southern Queensland. Flowers spring.

89. *Acacia suaveolens* (Smith) Willd. SWEET WATTLE*Mimosa suaveolens* Smith; *M. obliqua* Lam.; *M. angustifolia* Jacq.; *Acacia angustifolia* (Jacq.) H. Wendl.

Slender little-branched shrub up to 2.5 m tall; branchlets angular, glabrous and sometimes glaucous. Pulvinus 1–2 mm long; phyllodes coriaceous, straight or slightly curved, apex acute or obtuse, mucronate, (6–)7.5–12.5 cm \times (0.2–)0.3–0.7(–1) cm, (9–)13–27(–35) times as long as wide, glabrous; small gland at, or within 4 mm of base. Heads of 3–7 flowers in glabrous axillary 6–7-branched racemes, axis 1–2 cm long, peduncles 2–5 mm long, before development racemes enclosed by imbricate scarious fimbriate obtuse bracts up to 2.5 mm long, bracts crowded at base of axis and larger ones subtending each peduncle, all deciduous at anthesis; flowers (4–)5-merous. Pods a striking blue-black colour, oblong, obtuse, apiculate, flat but raised over the seeds, 2.5–4 cm \times 1.3–1.7 cm, glabrous and glaucous; seeds transverse, 6–7 mm \times 3–4.5 mm. **Fig. 59C.**

Fairly common in coastal districts south of Bundaberg in heath and shrubby eucalypt communities on sandy soils and on infertile soils in eucalypt open forest in the Lamington National Park (McPherson Range). It flowers from late autumn through winter though flowers are sometimes found earlier in the year, and fruits from midwinter to midspring.

90. *Acacia podalyriifolia* Cunn. ex G. Don QUEENSLAND SILVER WATTLE*Acacia fraseri* Hook.

Tree up to 5 m tall; branchlets glaucous, with dense rigid hairs 0.4–0.6 mm long or very rarely glabrous. Pulvinus 1–2 mm long; phyllodes elliptic or ovate, apex acute, obtuse or rarely retuse, mucronulate, margins sometimes slightly undulate, 2–5 cm \times 1–2(–2.7) cm, 1.4–2.5 times as long as broad, indumentum of dense straight hairs, sometimes absent on

older phyllodes, penninerved, midrib nearer dorsal margin; gland usually inconspicuous, no more than an elevated rim with an extremely small orifice, (0.5–)0.8–2 cm from base. Heads of 20–30 flowers in 10–20-branched racemes with indumentum similar to that of branchlets, axis 5–9 cm long, peduncles 4–7 mm long; flowers 5-merous. Pods up to 9 cm \times ca 2 cm, glaucous, softly hairy, flat with prominent margins; seeds longitudinal, 6.5–7.5 mm \times 3–4 mm.

In south-eastern Queensland at Crows Nest, Stanthorpe and near Brisbane on rocks of various types. It is so commonly cultivated in Brisbane, that many plants may have been derived from garden escapes. It is one of the most commonly cultivated *Acacia* species in Queensland gardens. It is an attractive species even when not in flower but it is often attacked by sooty mould.

The main period of flowering is early to midwinter, but it varies from year to year and flowers are sometimes found as late as September. Cultivated plants at Toowoomba and Stanthorpe flower about a month later than those in Brisbane. Fruit has been collected from midspring to early summer.

91. *Acacia jucunda* Maiden & Blakely

Tree up to 8 m tall; branchlets angular, glaucous, with moderately dense very short spreading hairs or rarely glabrous. Pulvinus 3.5 mm long; phyllodes straight, obovate, apex obtuse or retuse, mucronulate, (3.5–)4.5–5.5(–6.5) cm \times 1.1–2 cm, (2–)2.4–4(–5) times as long as broad, glaucous, with short hairs on margins at base and along midrib, rarely over whole lamina, sometimes glabrous, penninerved; gland prominent, up to 2 mm from base, margin often indented. Heads of 16–24 flowers in 10–20-branched racemes with hairs similar to those of branchlets or glaucous, axis 3–5 cm long, peduncles 2.5–5 mm long; flowers 5-merous. Pods flat, raised over seeds alternately on each side, up to 7.5 cm \times 0.8–1 cm, glaucous, glabrous; seeds longitudinal, 4–6 mm \times 2.3–3.3 mm.

In eucalypt communities often adjacent to open forest of *Acacia harpophylla* (BRIGALOW) in Darling Downs and Burnett districts. Flowers midwinter to early spring; fruits 2–3 months later.

92. *Acacia everistii* Pedley

Sparingly branched shrub up to 3 m tall; branchlets slender, angular, glabrous, often glaucous. Stipules small, triangular, caducous. Pulvinus 1–2 mm long; phyllodes elliptic or obovate, apex obtuse or sometimes slightly retuse, mucronulate, 2.5–5(–6) cm \times 1–2 cm, 2–4.5 times as long as wide, glabrous and often glaucous, penninerved; gland prominent, 0.7–2 cm from base. Heads of 12–18 flowers in 12–24-branched glabrous axillary racemes, axis 3–8 cm long, peduncles 3–4 mm long; flowers 5-merous. Pods flat with thickened margins, up to 9 cm \times 0.8–0.9 cm; seeds (not seen) probably longitudinal.

Not common, in south-eastern Queensland, collected from sandstone areas in the Burnett district. Flowers early spring; fruits ca 2 months later.

93. *Acacia semilunata* Maiden & Blakely

Small tree or shrub up to ca 5 m tall; branchlets terete, sometimes glaucous, usually with moderately dense straight hairs or glabrous. Pulvinus 0.5–1.1 mm long; phyllodes slightly falcate with the dorsal margin more curved, abruptly contracted at base, 1.5–3(–3.5) cm \times (0.35–)0.5–0.9(–1.8) cm, (2–)2.5–4(–6) times as long as wide, glaucous, glabrous except for a few hairs on margin at base, asymmetric with midrib nearer lower margin; gland 0.6–1.2(–1.7) cm from base, absent from about a quarter of phyllodes, but rarely from all phyllodes of 1 plant. Heads of 15–20 flowers in glabrous (or rarely subglabrous) 15–30-branched axillary racemes much longer than phyllodes, sometimes forming terminal panicle, axis 5–10 cm long, peduncles 3–5 mm long, bracteoles peltate; flowers 5-merous. Pods linear, flat, up to 8 cm \times ca 0.4 cm broad, glaucous; seeds longitudinal, 4–4.5 mm \times 2 mm.

Virtually restricted to the western part of the Darling Downs district from north of Miles and Chinchilla to about Inglewood, common on sandy soils in eucalypt communities. Flowers late winter.

94. *Acacia cultriformis* Cunn. ex G. Don

KNIFE-LEAF WATTLE

Spindly shrub ca 4 m tall; branchlets rather thick, glabrous, angular. Pulvinus ca 0.5 mm long; phyllodes crowded along branches, coriaceous, lower margin straight or slightly curved, upper margin sharply curved, 2–3 cm \times 1–1.4 cm, 2–2.5 times as long as broad, glabrous, midrib close to lower margin, reticulately penninerved; gland pustular, at or slightly below broadest part of phyllode. Heads of 25–35 heads in axillary glabrous

8–15-branched racemes, axis 2.5–5.5 cm long, peduncles 2.5–3.5 mm long; flowers 5-merous. Pods flat, raised over seeds, 5–7 cm \times ca 0.7 cm, glaucous; seeds longitudinal, 3.5 mm \times 2.3 mm.

Not common, found in the Inglewood-Stanthorpe area. Flowers early spring.

95. *Acacia buxifolia* Cunn.

BOX LEAF WATTLE

Acacia neglecta Maiden & R. T. Baker

Shrub; branchlets angular, reddish, glabrous. Pulvinus ca 1 mm long; phyllodes coriaceous, narrow oblong or sometimes broadest above middle and then obovate, apex obtuse mucronulate or acute, (1.2–)1.5–3.5 cm \times 0.35–0.8 cm, 2.5–4.5 times as long as broad, glabrous or with a few hairs on pulvinus, slightly penninerved when broad; gland 0.5–1 cm from the base. Heads of 12–20 flowers in glabrous axillary 4–10-branched racemes, axis 0.8–4.5 cm long, peduncles 3–6(–8) mm long; flowers 5-merous. Pods glaucous, ca 6.5 cm \times 0.9 cm; seeds longitudinal, not seen when mature.

Two subspecies occur in the region:

- | | |
|--|---|
| 1. Phyllodes \pm acute, 1.4–1.9(–2.5) cm \times 0.35–0.6 cm; gland 4–8 mm from base, sometimes absent; heads of ca 12 flowers | <i>A. buxifolia</i> subsp. <i>buxifolia</i> |
| Phyllodes obtuse mucronulate, (1.2–)1.6–3.5 cm \times 0.4–0.7(–0.8) cm; gland ca 5–10 mm from base, never absent; heads of ca 20 flowers | <i>A. buxifolia</i> subsp. <i>pubiflora</i> |

A. buxifolia subsp. *buxifolia* is known only from granitic soils near Stanthorpe in the Darling Downs district. *A. buxifolia* subsp. *pubiflora* Pedley is known from the Moreton, Darling Downs and Burnett districts, usually on sandstone. Both subspecies flower spring.

96. *Acacia decora* Reichenb.

PRETTY WATTLE

Acacia decora var. *biglandulosa* Domin

Shrub usually ca 2 m tall, but up to 4 m tall; branchlets reddish, angular, glabrous or with moderately dense appressed hairs, sometimes the hairs restricted to petioles. Pulvinus ca 1 mm long; phyllodes straight or rarely slightly falcate, usually broadest above middle and obtuse, mucronulate, sometimes when narrow and acute tapering \pm equally to each end, (2.2–)3.2–5.5(–6) cm \times (0.15–)0.35–0.6(–1) cm, (3.5–)5–15(–30) times as long as wide, glabrous or with few hairs at base, sometimes glaucous, fairly prominently penninerved especially when broad, midrib prominent; gland always present, (0.4–)0.6–1.6(–2) cm from base, margin often indented at gland, nerve sometimes running to it from midrib particularly when phyllode is broad, a second gland sometimes present. Heads of 15–30 flowers in axillary 5–15(–20)-branched racemes rarely growing out into leafy shoots, rarely single on axillary peduncles, axis 2–6 cm long, moderately or densely appressed pubescent, peduncles (2–)3–6 mm long with appressed golden hairs; flowers 5-merous. Pods flat but raised over seeds alternately on each side, occasionally slightly constricted between them, 7.5–10.5 cm \times 0.4–0.9 cm, glabrous and glaucous; seeds longitudinal, 5–6 mm \times 2.7–3.2 mm.

Known from the Darling Downs, Burnett and Moreton districts, in eucalypt communities. Flowers in winter and early spring and pods mature about 3 months after flowering.

97. *Acacia adunca* Cunn. ex G. Don

Acacia crassiuscula H. Wendl. var. *adunca* (Cunn. ex G. Don) Benth.; *A. linearifolia* auct. non Cunn. ex Maiden & Blakely

Shrub or small tree up to 5 m tall; branchlets slender, reddish, glabrous. Stipules triangular, deciduous; pulvinus 0.5–1 mm long; phyllodes linear, straight, apex acute, rarely hooked at tip, 9–13 cm \times (0.15–)0.2–0.4(–0.5) cm, (20–)25–50(–75) times as long as wide, glabrous, faintly penninerved when wide; gland prominent, 1–2 cm from base. Heads of 10–18 flowers in glabrous axillary 6–12-branched racemes, axis 2.5–3.5 cm long; peduncles 3–4 mm long; flowers 5-merous. Pods flat, up to ca 8 cm \times 1 cm, glabrous, seeds longitudinal, ca 5 mm \times 2.5 mm.

Confined to mountain peaks in the southern part of the Moreton district. Flowers from about midautumn to midwinter and fruits mature late winter–spring.

98. *Acacia neriifolia* Benth.

Tree up to 8 m tall, sometimes retaining its juvenile bipinnate leaves for a long period; branchlets usually with dense white appressed hairs or these wearing off leaving patches, sometimes almost glabrous. Pulvinus 1.5–4 mm long; phyllodes straight or slightly falcate, apex acute or obtuse, mucronulate, mucro sometimes 2 mm long, margins prominent, 5–15(–21) cm × (0.3–)0.5–1.2(–1.9) cm, 5–20(–35) times as long as wide, with short appressed hairs, sometimes dense and covering whole lamina or hairs confined to base and apex and along midrib or occasionally glabrate, obscurely penninerved when broad, midrib prominent; gland prominent, at base or within 10 mm of base or in plants from eastern Darling Downs and western Moreton districts up to 3 mm from base, occasionally 1 or 2 smaller more distal glands. Heads of 20–30 flowers in axillary (6–)10–20-branched racemes, axis (2–)3–6(–9) cm long, usually with dense appressed hairs, sometimes subglabrous, peduncles 3–5 mm long with similar hairs; flowers 5-merous. Pods flat but raised over seeds, up to 12 cm × 0.6–0.9 cm, glabrous; seeds longitudinal, rectangular, *ca* 5.5 mm × 3–4 mm.

Found in the Moreton, Darling Downs and Burnett districts, but most common in the Darling Downs district. The main flowering time is late winter–early spring; fruiting specimens have been collected 2–3 months later.

99. *Acacia pustula* Maiden & Blakely

Tree up to 12 m tall; branchlets angular, glabrous or rarely with very short (0.1 mm) rather sparse appressed hairs; juvenile foliage (bipinnate leaves) persisting for a considerable period (till plant is 2 m or more tall). Pulvinus 1–3 mm long; phyllodes rather thin, linear, apex acute or obtuse when wide, extremely variable in size, broad on young plants, narrow on old plants, 5.5–13(–14.5) cm × 0.2–0.7(–1.3) cm, (6–) 16–40 times as long as wide, glabrous, faintly penninerved, midrib prominent; gland prominent, with rather thick rim $\frac{1}{4}$ to $\frac{1}{2}$ way along dorsal margin, with an oblique nerve running to it from midrib when broad, rarely a second gland some distance above other. Heads of *ca* 20 flowers in 10–25-branched glabrous racemes, axis 2–9 cm long, peduncles 4–5 mm long; flowers 5-merous. Pods flat but raised along the midline, up to *ca* 8 cm × 0.6–0.65 cm, glaucous; seeds longitudinal, 6 mm × 3 mm. **Fig. 57C.**

Common and conspicuous in the south-western part of the Burnett district in the lower tree layer of eucalypt open forest; also found in adjacent parts of the Darling Downs district. Flowers mid to late winter.

100. *Acacia fimbriata* Cunn. ex G. Don

BRISBANE GOLDEN WATTLE; FRINGED WATTLE

Acacia prominens Cunn. ex G. Don var. *fimbriata* (Cunn. ex G. Don) Domin; *A. prominens* var. *whiteana* Domin; *A. fimbriata* var. *glabra* C. T. White.

A shrub or small tree up to 6 m tall; branchlets slender, angular, their indumentum extremely variable, ranging from very dense spreading greyish hairs to occasionally glabrous. Stipules deciduous, triangular, *ca* 0.4 mm long; pulvinus 0.5–1 mm long; phyllodes rather thin, straight or slightly curved, apex obtuse, mucronulate or acute, abruptly contracted at base, 2–5(–6.5) cm × (0.15–)0.2–0.45(–0.5) cm, (6–)7–25(–27) times as long as broad, usually with fimbriate margins and a few hairs scattered on surface at base, occasionally fimbriate only near base or rarely glabrous; sometimes obscurely penninerved, midrib fine but prominent; gland prominent, 1–6 mm from base. Heads of 10–20 flowers in axillary 8–25-branched racemes, axis 2.5–7.5 cm long; varying from densely pubescent to glabrous, peduncles 2–4.5 mm long, moderately pubescent to glabrous, bracteoles peltate; flowers 5-merous. Pods flat, slightly raised over seeds, up to 6 cm × 0.65–0.75 cm, glabrous and glaucous, faintly transversely veined; seeds longitudinal, 4–5 mm × *ca* 2.8 mm.

Widespread in the region, mainly in coastal districts but also in elevated country around Stanthorpe, often favouring moist sites near creeks and on margins of light rainforest but also on hillsides as an understorey species in open eucalypt forest; commonly cultivated. Flowers midwinter to early spring in coastal districts, later near Stanthorpe.

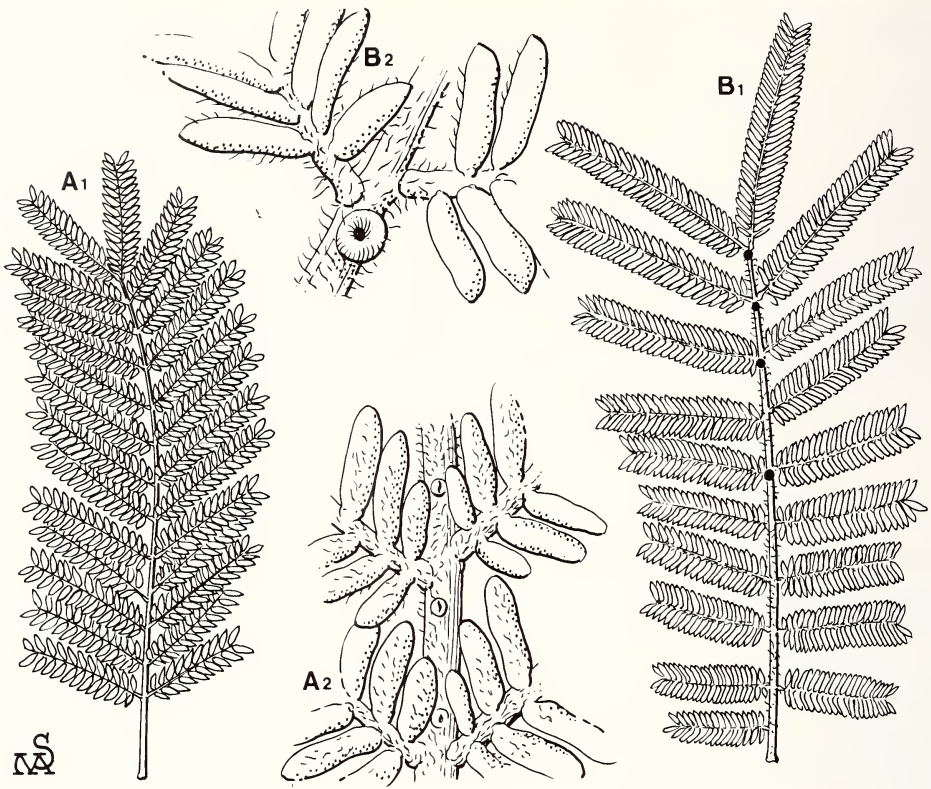


Fig. 60

MIMOSACEAE — A-B *Acacia* spp. — A₁-A₂, *A. leucoclada* subsp. *argentifolia*, A₁, leaf x1, A₂, enlargement of glands x6; B₁-B₂, *A. oshanesii*, B₁, leaf showing position of glands x1, B₂, enlargement of gland x6.

101. *Acacia perangusta* (C. T. White) Pedley

Acacia fimbriata Cunn. ex G. Don var. *perangusta* C. T. White

Shrub or small tree up to 6 m tall; branchlets reddish, slender, angular, glabrous. Pulvinus ca 0.5 mm long; phyllodes linear, apex acute or occasionally obtuse, 3–7.5 cm × 0.11–0.16 cm, 20–55 times as long as broad, glabrous, midnerve prominent; gland small but projecting from margin, 0.7–1.4 cm from base. Heads of 9–12 flowers in glabrous axillary 15–20-branched racemes, axis 2.5–3 cm long, peduncles 2–2.5 mm long; flowers (4–)5-merous, rather widely spreading. Pods slightly constricted between seeds and raised over them alternately on each side, 7.5 cm × 0.5 cm, glabrous and slightly glaucous; seeds longitudinal. **Fig. 57B.**

Restricted to the banks of small streams south and south-east of Brisbane, and on the Burrum River, north of Maryborough. Flowers late winter–early spring. It is common cultivated as an ornamental in south-eastern Queensland.

102. *Acacia betchei* Maiden & Blakely

Shrub up to 4 m tall, glabrous with slender slightly angular reddish branchlets. Pulvinus short; phyllodes linear, straight, apex somewhat obtuse, minutely punctate, (4–)6–10(–12) cm × (0.15–)0.2–0.3(–0.4) cm with a small usually projecting gland at about middle. Heads of 12–20 flowers on glabrous 6–7(–10)-branched axillary racemes, lower heads

opening first, sometimes forming terminal panicle by reduction of subtending phyllodes, axis 1.5–2.5(–4.5) cm long, peduncles 3–5 mm long; flowers 5-merous. Pods tardily dehiscent, *ca* 10 cm × 0.5–0.7 cm, glabrous and occasionally slightly glaucous; seeds longitudinal, *ca* 6 mm × 2.5 mm.

Restricted to sandy soils derived from granite in the vicinity of Stanthorpe. It flowers sporadically over a long period, from about early spring to late summer.

103. *Acacia leichhardtii* Benth.

Shrub up to *ca* 3 m tall; branchlets terete, hispid with rather dense spreading hairs *ca* 1 mm long. Pulvinus *ca* 1 mm long; phyllodes spreading or reflexed, coriaceous, straight or curved, abruptly contracted at base and apex when obtuse, apiculate or sometimes gradually tapered to acute apex, 1.5–3 cm × 0.3–0.4(–0.6) cm, 3–8(–10) times as long as wide, with moderately dense curved hairs, densest on midrib and margin and occasionally confined to them, midrib prominent, slightly closer to lower margin; gland absent or very small, 5–9 mm from base. Heads of (25–) 30–40 flowers in axillary 12–18-branched racemes, axis 3.5–6 cm long, moderately hispid, peduncles 3–8 mm long, sparsely hispid to occasionally glabrate; flowers 5-merous. Pods curved, flat, slightly raised over seeds alternately on each side, up to 8 cm × *ca* 0.9 cm, hispid; seeds longitudinal, *ca* 5 mm × 3–4.5 mm.

Restricted to shallow soils overlying sandstone from the north-western Darling Downs district to Helidon in the Moreton district. It flowers from midautumn to midwinter and fruits have been collected during spring.

104. *Acacia semirigida* Maiden & Blakely

Shrub or small tree *ca* 4 m tall; branchlets angular, reddish. Pulvinus *ca* 2 mm long; phyllodes rather coriaceous, straight with nerve-like margins, 4–7(–9.5) cm × 0.4–0.7(–0.85) cm, (8–)10–14 times as long as wide, glabrous, midrib distinct; 1 or 2 or 3 pustulate glands on dorsal margin, lowest at least 10 mm from base. Heads of 15–25 flowers in axillary glabrous 10-branched racemes, axis 3.5–5.5 cm long, peduncles 3–5 mm long. Pods linear, slightly raised over the seeds, up to 11 cm × 0.8 cm, glabrous, seeds longitudinal, oblong, 4.7–5.5 mm × 2.6–3 mm.

Sporadically from Goombungee and Kogan in the Darling Downs district through the western part of Burnett district, usually on shallow soils overlying sandstone. It seems to flower irregularly from late summer to midwinter; mature fruits have been collected late spring and early summer.

105. *Acacia rubida* Cunn.

Shrub up to 4 m tall often retaining bipinnate leaves until 2 m or more tall, phyllodes and branchlets often reddish; branchlets slightly ribbed, glabrous or with a few appressed white hairs. Stipules broadly triangular, *ca* 0.5 mm long, soon deciduous; pulvinus at times almost absent but usually 1–2 mm long; phyllodes coriaceous, straight or falcate, apex acute or obtuse mucronulate, base attenuate, 6–9(–10.5) cm × 0.85–1.5 cm, 5.5–8 times as long as wide, glabrous, inconspicuously penninerved, midrib prominent, gland pustular, (0.5–)1–2 cm from base, rarely absent. Small heads of 10–15 flowers in rather short 8–15-branched racemes, axis *ca* 2.5 cm long, glabrous or very sparsely pubescent, peduncles 1–1.5 mm long, glabrate; flowers 5-merous. Pods linear, 6.5 cm × 0.6 cm, not seen mature, glabrous, seeds longitudinal.

Restricted to Stanthorpe area. Flowers early to midspring, immature pods collected late spring.

106. *Acacia attenuata* Maiden & Blakely

Slender shrub up to *ca* 3 m tall, retaining juvenile foliage for long periods and even flowering and fruiting in juvenile state; branchlets somewhat angular, soon becoming terete, glabrous. Stipules very broadly triangular, *ca* 0.4 mm long, early deciduous; pulvinus 3–5 mm long; phyllode ± straight, apex obtuse mucronulate or occasionally acute, base attenuate, (9–)10–14(–17) cm × 0.7–1.6 cm, 7–14(–18) times as long as wide, glabrous; midrib prominent, curved and approximating ventral margin $\frac{1}{10}$ to $\frac{1}{4}$ the length of the phyllode from the base; gland inconspicuous, immediately above the pulvinus.

Heads of 20–35 flowers in glabrous axillary 6–14-branched racemes, axis 5–7.5 cm long, peduncles *ca* 7 mm long; flowers 5-merous. Pods flat, slightly narrowed between seeds and raised above them alternately on each side, 8–10 cm \times 1.3–1.4 cm, glabrous; seeds (not seen mature) longitudinal.

Restricted to heath or layered open eucalypt forest in high rainfall areas of Queensland from about Maryborough to Southport, never more than 30 km from the sea. In the southern part of its range it is now extremely rare due to the destruction of its habitat in the spread of urban areas. It flowers from late autumn through winter.

107. *Acacia latisejala* Pedley

Spreading shrub up to 3 m tall, glabrous except for the flowers; branchlets, leaf axes and leaflets red-brown or with a distinct reddish tinge. Phyllodes (rarely produced) with distinct midnerve sometimes approaching upper margin towards top, apex apiculate, broadest near top, gradually tapering into pulvinus, up to 9 cm \times 0.9 cm. Leaves usually bipinnate; petioles (2–)2.5–4 cm long with a small slightly raised gland 0.8–1.6 cm from base; rachis usually 3–4 cm long with 2–3 pairs of pinnae, gland sometimes between uppermost pairs of pinnae; axes of pinnae 3–4 cm long, with 6–10 pairs of leaflets; leaflet blades oblong, apex obtuse, 1.2–1.8 cm \times 0.4–0.8 cm. Heads of 12–20 flowers in 6–9-branched axillary racemes, axis 3–4 cm long, branches 6–7 mm long, bracteoles peltate; flowers (4–) 5-merous. Pods somewhat woody, narrowed towards base, flat but slightly raised over seeds, *ca* 7 cm \times 1 cm; seeds longitudinal, *ca* 7 mm \times 4 mm.

Restricted to the Stanthorpe area of Queensland and northern parts of the New England Tableland, on shallow sandy soil in rock crevices and among granite boulders. Flowers early spring.

108. *Acacia pruinosa* Cunn. ex Benth.

Scarcely branched shrub up to *ca* 2 m tall; branchlets reddish, glabrous. Leaves bipinnate with glabrous reddish axes; petioles 3–5(–7.5) cm long with a prominent elongated gland in upper half or rarely absent; rachis 2–7 cm long (depending on number of pinnae), bearing 2–3(–4) pairs of pinnae, with gland between each or only the lowest pair of pinnae; axes of pinnae 4–8 cm long, bearing 8–13(–15) pairs of leaflets; leaflet blades oblong, apex obtuse, 0.9–1.7 cm \times 0.25–0.4 cm, glabrous with usually a prominent midrib beneath. Heads of 20–30 flowers arranged in 6–12-branched glabrous racemes, axis 2–3(–7) cm long, branches 3–4(–7) mm long, racemes usually arranged in terminal panicles or arising from upper axils; flowers 5-merous. Pods flat, linear, slightly convex over seeds, *ca* 7 cm \times 0.7 cm, glabrous and glaucous; seeds longitudinal, *ca* 5 mm \times 3 mm.

Confined to sandy parts derived from granite from a small area near Stanthorpe and in parts of the New England district of New South Wales. Flowers spring.

109. *Acacia debilis* Tindale

Sparingly branched slender shrub up to about 5 m tall, branchlets reddish, glabrous. Leaves bipinnate, glabrous; petioles 1.5–4.5 cm long with prominent elongated gland with a slit-like orifice about middle; rachis up to 8 cm long (depending on number of pairs of pinnae), bearing 1–3(–4) pairs of pinnae, usually with small gland, axes of pinnae 5–8 cm long, bearing 12–18(–24) pairs of leaflets, sometimes with small circular glands at base of last 1–3 leaflets; leaflet blades oblong, apex obtuse, 1–2 cm \times 0.3–0.4 cm, midrib usually quite prominent. Heads of 25–30 flowers in 15–20-branched racemes, axis 5–9 cm long, branches *ca* 3 mm long, racemes usually forming panicles in upper axils; flowers 5-merous. Pods flat, slightly raised over seeds, *ca* 13 cm \times 1.2 cm, glabrous and somewhat glaucous; seeds longitudinal, *ca* 7 mm \times 3 mm.

Common on sandy soils in parts of the Darling Downs district. Its main flowering period is late winter-early spring.

110. *Acacia spectabilis* Cunn. ex Benth.

PILLIGA WATTLE; GLORY WATTLE; KOGAN WATTLE

Shrub up to about 4 m with glaucous stems and branchlets; branchlets glaucous with spreading hairs up to 0.2 mm long, dense at times, becoming glabrous. Leaves bipinnate; petioles 0.6–1.8 cm long with indumentum of branchlets with gland in upper part, just below lowest pair of pinnae when petiole is short; rachis 2–7(–9.5) cm long, usually without glands, bearing 3–5(–7) pairs of pinnae; axes of pinnae 1–3 cm long bearing 4–6(–8) pairs of leaflets; leaflet blades oblong, apex obtuse, 0.6–1.1(–1.3) cm × 0.25–0.5 cm, becoming progressively larger along pinnae and terminal ones sometimes broadest near apex, glabrous. Heads of 15–20 flowers in long racemes in upper axils or rarely in terminal panicles, axis 5–20 cm long with indumentum of branchlets, 10–26(–45) branches 5–8 mm long, usually glabrous; flowers 5-merous. Pods flat but convex over seeds, up to 11 cm × 1.2–1.5 cm, glabrous, glaucous; seeds longitudinal, *ca* 6 mm × 3.5 mm.

Common in parts of the Darling Downs and southern Burnett districts usually on sandy soils in association with *Callitris columellaris* (CYPRESS PINE). It is a most attractive species which flowers in early spring. It is commonly cultivated.

111. *Acacia polybotrya* Benth.

Spreading many-stemmed shrub up to 2.5 m tall; branchlets and primary and secondary axes of leaves glabrous or with indumentum of spreading hairs. Leaves bipinnate; petioles 3–7 mm long with gland at apex between lowest pair of pinnae; rachis 0.4–1.1 cm long; pinnae 2–3 pairs, axis 1–1.7 cm long, with 4–7(–10) pairs of leaflets; leaflet blades oblong, obtuse mucronulate, 4–8 mm × (1.5–)2–3 mm, 1.7–4 times as long as wide, glabrous or occasionally with sparse long spreading hairs on lower surface. Heads of 20–30 flowers in axillary racemes, axis 3–9 cm long, branches 10–25, 4 mm long; flowers 5-merous. Pods dark brown, linear, flat, *ca* 8 cm × 0.6 cm, with long spreading hairs; seeds longitudinal.

On infertile rocky or sandy soils in the southern parts of the Darling Downs district. Flowers early spring.

112. *Acacia chinchillensis* Tindale

Spreading glaucous shrub up to 1.5 m tall; branchlets and axes of leaves villous. Leaves bipinnate, without glands; petioles 3–5 mm long, rachis 0.9–1.2 cm long bearing 3–4(–5) pairs of pinnae; axes of pinnae 8–10 mm long, bearing 6–10(–14) pairs of narrowly oblong leaflets 4–6 mm × (0.6–)0.8–0.9 mm, glabrous. Heads of 15–20 flowers arranged in glabrous axillary racemes *ca* 3–6 cm long, usually 8–12-branched, peduncles 3–4 mm long; flowers 5-merous. Pods linear, flat but slightly raised over seeds and slightly contracted between them, 7 cm × 0.4 cm, villous; seeds longitudinal.

An attractive shrub confined to an area of sandy soils north of Chinchilla and near Tara. Flowers early spring.

113. *Acacia leuoclada* Tindale subsp. *argentifolia* Tindale

Tree up to 20 m tall with hard dark furrowed bark and silvery-grey crown; branchlets with rather short crisped hairs, hairs found on all parts of plant. Leaves bipinnate, pubescent; petioles up to *ca* 1.5 cm long; rachis 3.5–8.5 cm long, bearing 8–16 pairs of pinnae, with an inconspicuous gland sometimes below lowest pair of pinnae and smaller glands often almost obscured by hairs along rachis between pinnae; axes of pinnae 2.5–5 cm long with 25–40 pairs of leaflets; leaflet blades obtuse, 2–4 mm × *ca* 0.5 mm. Heads of *ca* 25 flowers in axillary 20–25-branched racemes, sometimes forming terminal panicles, axis up to 10 cm long, peduncles 3–4 mm long; flowers 5-merous. Pods flat, up to 12 cm × 0.6–1 cm, with scattered long hairs; seeds longitudinal (not seen mature). **Fig. 60A.**

A common tree in eucalypt woodland on sandy soils in the Warwick-Dalveen area, near Kingaroy and in a few other localities in the Moreton, Darling Downs and Burnett districts. The plant suckers from the roots and small clumps are often formed. Flowers midwinter to early spring.

114. *Acacia baileyana* F. Muell.

COOTAMUNDRA WATTLE

Tree up to 10 m tall; branchlets angular, glabrous or pubescent. Leaves bipinnate, glaucous; petioles *ca* 1.5 mm long, glabrous or tomentose; rachis 2–4 cm long, glabrous or tomentose, bearing 2–4(–6) pairs of pinnae; axes of pinnae 1–2.5 cm long, bearing (4–)12–24 pairs of leaflets 5–8 mm \times 1.2–1.6 mm, glabrous. Heads of 10–20 flowers in axillary racemes much longer than the leaves.

Native of southern New South Wales; naturalized on roadsides near Stanthorpe. Flowers spring.

115. *Acacia muellerana* Maiden & R. T. Baker

Rounded shrub up to 4 m tall, with glabrous branchlets. Leaves bipinnate; petioles 1.5–2.5 mm long with a prominent raised rib or wing on upper side, glabrous; rachis none or 0.9–1.2 cm long, gland at base of each pair of pinnae; pinnae 1 or less commonly 2 pairs, axes of pinnae 2–4 cm long with 4–8 pairs of leaflets, gland between all or only the lowest; leaflet blades 1–2 cm \times 0.1–0.13 cm, glabrous. Heads of 6–12 flowers on glabrous 5–10-branched racemes, usually arranged in terminal panicles, axis 1.2–1.8 cm long, branches 2–3 mm long; flowers 5-merous. Pods flat, sometimes somewhat constricted between seeds, *ca* 12 cm \times 0.5–0.8 cm, glabrous.

Not common, restricted to a few localities on shallow rocky soil on the Darling Downs, and near Kingaroy in the Burnett district. It flowers sporadically in the warmer months of the year.

116. *Acacia filicifolia* Cheel & Welch

Tree up to *ca* 10 m tall, young tips yellowish; branchlets ribbed, with dense white short curved hairs. Leaves bipinnate, hairs similar to those of branchlets on upper sides of primary and secondary axes; petioles 1–2.5 cm long, with large or more commonly 2–3 smaller glands with distinct brown rims; rachis 4–8 cm with 6–9 pairs of pinnae with 3–4 glands between each pair of pinnae along main axis but none at base of pinnae; axes of pinnae *ca* 4 cm long, each with 30–40 pairs of leaflets; leaflet blades with margins slightly inrolled, 5–6 mm \times 0.4–0.6 mm, glabrous above, usually with a few \pm appressed hairs beneath. Heads of 20–30 flowers in racemes in upper axils or forming terminal panicles, axis of raceme *ca* 6 cm long, branches *ca* 15, each *ca* 4 mm long; flowers 5-merous.

On sandy soil in the Stanthorpe-Wallangarra area. Flowers from late winter to midspring, but in Queensland has never been collected in fruit.

117. *Acacia decurrens* Willd.

Mimosa decurrens Wendl.; *Acacia decurrens* var. *normalis* Benth.

Glabrous spreading tree up to 12 m tall; branchlets angular. Leaves bipinnate, petioles up to *ca* 2 cm long with prominent glands towards top; rachis 5–10 cm long with 6–9(–12) pairs of pinnae, 1–2 glands between each pair of pinnae; axes of pinnae 4–6 cm long with 30–40 pairs of leaflets; leaflet blades 5–10 mm \times *ca* 0.5 mm. Flowers in heads of 25–30 in axillary racemes exceeding the leaves.

Native of southern Australia, naturalized near Toowoomba and possibly also in the vicinity of Stanthorpe where it occurs sporadically, possibly deliberately planted. Flowers spring.

118. *Acacia deanei* (R. T. Baker) Welch, Coombs & McGlynn

GREEN WATTLE

Acacia decurrens Willd. var. *deanei* R. T. Baker

Shrub or small tree up to *ca* 6 m tall; actively growing shoots yellowish; branchlets slightly ribbed with indumentum of dense appressed short hairs, usually white. Leaves bipinnate, primary and secondary axes with moderate to dense appressed hairs similar to those of branchlets; petioles 1–1.5 cm, without gland; rachis 3–5.5 cm long with 6–12 pairs of pinnae, with large thickly rimmed gland between (or slightly below) each pair of pinnae, occasionally with 1 or 2 small glands between pinnae; axes of pinnae 1.5–3 cm long bearing 18–30 pairs of leaflets; leaflet blades thick, oblong, apex obtuse, 2.4–3(–4) mm \times 0.6–1 mm, with usually dense appressed hairs on lower surface and sparser indumentum above. Heads of 20–25 flowers in appressed pubescent axillary inflorescences, indumentum sometimes yellowish, axis 4–14 cm long with up to 30 branches each 4–5 mm long, lowest heads of raceme opening first and often these heads have fallen or fruit have begun to develop before terminal ones have opened; flowers

5-merous. Pods linear, flat, slightly concave over seeds, *ca* 10 cm \times 0.5 cm with indumentum of short appressed white hairs, usually sparse but denser at proximal end; seeds longitudinal, 5.5 mm \times *ca* 4 mm.

Found in the Darling Downs district, usually on sandy soils. Because of the indefinite nature of the racemes the species has an extended flowering period. It flowers at almost any time of the year, probably in response to rain.

119. *Acacia irrorata* Sieber ex Sprengel

GREEN WATTLE

Acacia decurrens Willd. var. *pauciglandulosa* F. Muell. ex Benth.

Tree up to 10 m tall with greenish foliage and usually yellow tips; branchlets ribbed with rather dense, often yellowish ascending hairs. Leaves bipinnate, their axes with indumentum similar to that of branchlets, ribs of rachis sometimes tuberculate; petioles 1–1.5 cm long; rachis 4–6 cm long, bearing 9–12 pairs of pinnae, with spherical gland with small orifice between uppermost pair of pinnae (rarely between uppermost three pairs), axes of pinnae 2.5–3.5 cm long, with 40–50 pairs of leaflets; leaflet blades thick, apex obtuse, 2.5–4 mm \times 0.4–0.6 mm, with few hairs near margins on lower surface. Heads of *ca* 30 flowers in axillary appressed pubescent racemes, axis 4.5–6.5 cm long with 10–16 branches each 3–5 mm long, often racemes forming terminal panicle and racemes sometimes compound by the formation of racemose branches in lower part; flowers pubescent. Pods linear, flat, *ca* 7 cm \times 1 cm with moderately dense appressed hairs. **Fig. 61B.**

Found in coastal parts of the region and on the eastern edge of the Darling Downs south of Toowoomba as an understorey tree in open eucalypt forest in higher rainfall areas and along creeks in drier areas. Its main flowering period is summer but it sometimes flowers in early spring.

120. *Acacia loroloba* Tindale

Tree up to 9 m tall; branchlets with appressed hairs or subglabrous; young tips yellow. Leaves bipinnate; petioles up to *ca* 1.5 cm long, subglabrous, with prominent globular gland at top slightly below lowest pair of pinnae; rachis 2.5–6.5 cm long, subglabrous, with 9–18 pairs of pinnae and with gland between each pair of pinnae and 1–3 smaller glands between pinnae; axes of pinnae 1.2–2.5 cm long, bearing 20–35 pairs of leaflets; leaflet blades 1–2 mm \times 0.5–0.7 mm, glabrous or with indumentum of \pm appressed hairs particularly beneath. Heads of *ca* 20 flowers in 12–25-branched appressed-pubescent axillary racemes, axis 4.5–6.5 cm long, branches *ca* 3 mm long; flowers 5-merous. Pods stipitate, flat, slightly raised along middle, up to 15 cm \times 0.6–1 cm, glabrous or with scattered appressed hairs near margin; seeds longitudinal, 6–8 mm \times 3–3.5 mm. **Fig. 61C.**

Confined to the north-eastern part of the Darling Downs district (Jandowae-Haden area) and adjacent parts of the Moreton district, in various eucalypt communities. It appears to flower at any time of the year when soil moisture is high.

121. *Acacia glaucocarpa* Maiden & Blakely

Acacia polybotrya Benth. var. *foliolosa* Benth.

Tree up to *ca* 10 m tall; branchlets obscurely ribbed with rather dense, short, crisped, white hairs also found on axes of leaves and on axis and branches of inflorescence. Leaves bipinnate; petioles 1–3 cm long; rachis 1.5–7 cm long with 3–7 pairs of pinnae; axes of pinnae 5–7.5 cm long; leaflets 15–25 pairs; leaflet blades with proximal margin more definitely curved than distal, 0.8–1.2 cm \times 0.2–0.3(–0.4) cm, glabrous or with scattered long hairs on upper surface, moderately dense short hairs or subglabrous beneath, prominent midrib near distal margin; glands between each pair of pinnae or absent from middle pinnae or only between uppermost and lowest pairs of pinnae. Heads of *ca* 25 flowers in tomentose 15–30-branched inflorescences usually forming large terminal panicles, axis of raceme 6–11 cm long and branches 3–6 mm long; flowers 5-merous. Pods linear, up to *ca* 10 cm \times 1 cm; seeds longitudinal. **Fig. 61D.**

In south-eastern Queensland on sandstone in the Moreton, Darling Downs and Burnett districts, particularly common about Ipswich and Kingaroy. It flowers from as early as mid-February to as late as July, but in most years April and May are the main months of flowering.

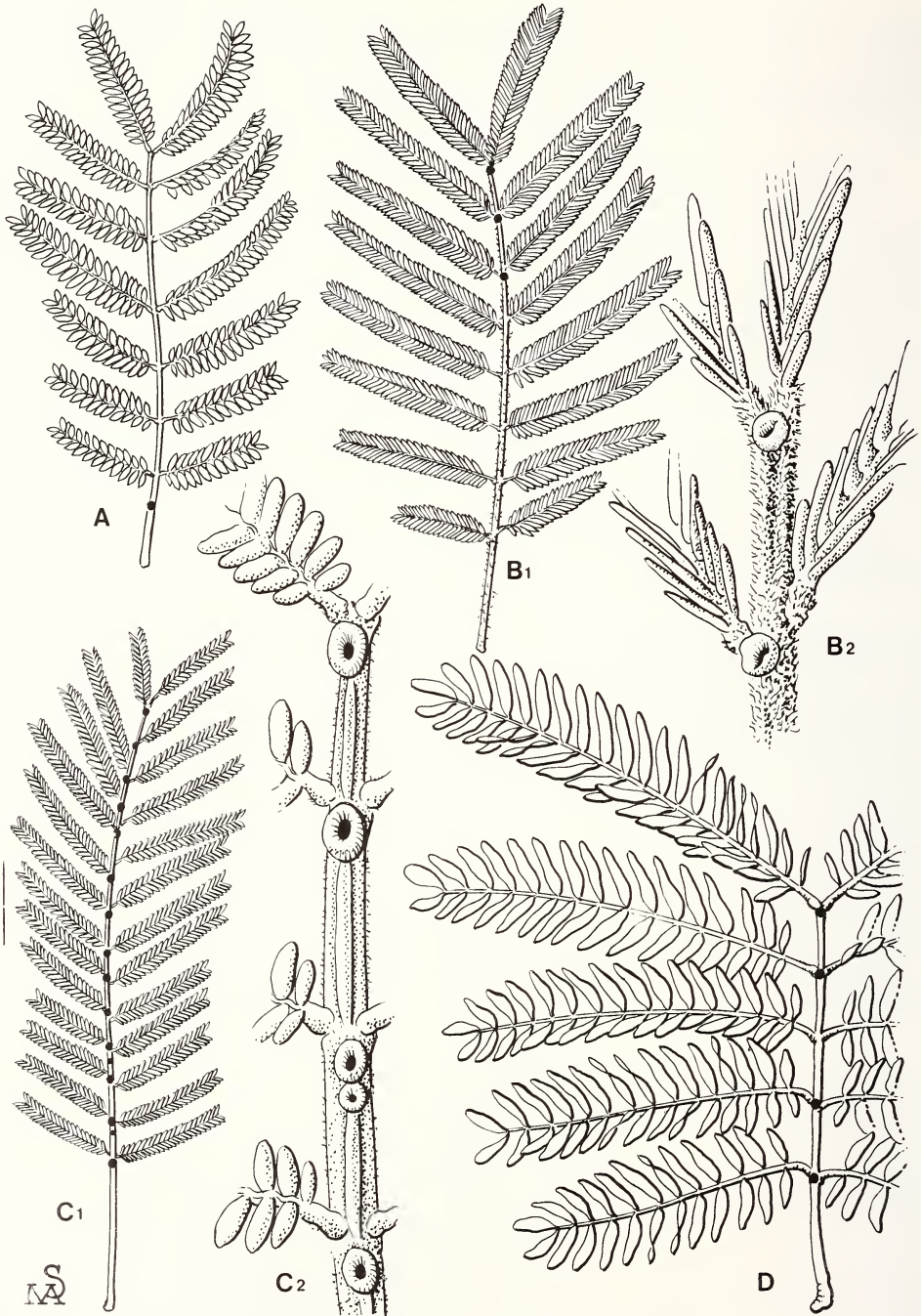


Fig. 61

MIMOSACEAE — A-D *Acacia* spp. — A *A. farnesiana*, leaf showing position of gland; B₁-B₂, *A. irrorata*, B₁ leaf showing position of glands, B₂ enlargement of glands x6; C₁-C₂, *A. loroloba*, C₁ leaf showing position of glands x1, C₂ enlargement of glands x6; D *A. glaucocarpa*, leaf showing position of glands x1.

122. *Acacia oshanesii* F. Muell & Maiden*Acacia decurrens* Willd. var. (?) *leichhardtii* Benth.; *A. arundelliana* F. M. Bailey

Tree up to 7 m tall; branchlets with long straight yellowish hairs, young tips yellowish; hairs extending to primary and secondary axes of leaves, axis of inflorescence and occasionally margin of leaflets and pods. Leaves bipinnate; petioles up to ca 1 cm long, with a conspicuous raised globular gland with a small orifice at top just below lowest pair of pinnae; rachis 7–11 cm long with 2–3 glands between uppermost two or three pairs of pinnae; pinnae usually 12–16 pairs; axis 1.5–3 cm long, bearing 15–40 pairs of leaflets; leaflet blades discolourous, apex obtuse, margin slightly recurved, (2.5–) 3–4 mm × 0.5–0.6(–0.8) mm. Heads of 15–25 flowers in 12–25-branched indefinite axillary racemes, axis (3–)6–12 cm long, branches at anthesis 4–5 mm long; flowers 5-merous. Pods flat, slightly raised along midline, up to 10 cm × 0.8–1 cm, with scattered long hairs particularly near margin; seeds longitudinal, ca 5 mm × 3 mm. **Fig. 60B.**

In layered open eucalypt forest in high rainfall areas from ca Gympie to a little north of Brisbane. Flowers found all times of the year.

123. *Acacia bidwillii* Benth.**CORKWOOD WATTLE***Acacia leptoclada* Cunn. ex Benth. var. (?) *polyphylla* Benth.

Tree up to 10 m tall with corky fissured grey bark; branchlets and leaf rachises with scattered long white hairs. Stipular spines not conspicuous on flowering branches but conspicuous on young plants; leaves bipinnate, petiole and rachis grooved above; petioles up to ca 1 cm long with prominent raised elongate flat gland at top immediately below lowest pair of pinnae; rachis 2–9 cm long with 4–15(–25) pairs of pinnae; axes of pinnae 1.7–3.5 mm long, grooved above, slightly pubescent, with 16–20(–25) pairs of leaflets; leaflet blades somewhat discolourous, apex obtuse, (1–)1.5–3.5 mm × (0.5–)0.7–1.1 mm, 2–4 times as long as wide, with few hairs on margin at base. Heads of 15–20 flowers on axillary peduncles 3–4 cm long, involucre ca 2 cm from base, sparsely pubescent in upper part; flowers 5-merous. Pods flat, attenuate at the base, 6–13(–20) cm × 1.2–1.5 cm, longitudinally nerved, woody; seeds longitudinal, ca 8 mm × 7 mm.

Usually a scattered understorey tree in grassy eucalypt woodland, common in the northern part of the Burnett district. Flowers usually midspring; fruits have been collected throughout summer.

124. **Acacia farnesiana* (L.) Willd.**MIMOSA BUSH***Mimosa farnesiana* L.; *Vachellia farnesiana* (L.) Wight & Arn.; *Acacia lenticulata* F. Muell.

Intricately branched rounded shrub up to 3 m tall; branchlets glabrous, shining brown with prominent lenticels. Stipules spiny, 1–2(–3) cm long; leaves bipinnate, petiole and rachis rather sparsely pubescent on upper side; petioles 0.7–2 cm long with gland at or above middle, usually round and conspicuous, sometimes elongated; rachis (0.5–)1–2.5 cm long with (1–)2–4 pairs of pinnae, at least on flowering branches sometimes with gland between uppermost pair of pinnae; axes of pinnae 1.5–3.5 cm long with 8–18 pairs of leaflets; leaflet blades obtuse, 4–7.5(–9) mm × 1–2 mm, glaucous. Flower in heads of 40–60 on pubescent peduncles 0.8–2.2 cm long in groups of 1–3 in axils, involucre of bracts at apex of peduncles hidden by flowers; flowers 5-merous. Pods terete, slightly curved, ca 6 cm × 1.2 cm, glabrous; seeds obliquely transverse, separated from each other by pith, 6–7 mm × 4.5 mm. **Fig. 61A.**

Widespread throughout the tropical parts of the world, probably native of tropical America; introduced to Australia prior to, or soon after, European occupation. Widespread in south-eastern Queensland. The main period of flowering appears to be through winter to early spring but some flowers occur throughout the year.

8. ALBIZIA Durazz.

Trees or shrubs, unarmed. Leaves bipinnate, glands ± conspicuous; stipules absent, setaceous or large and membranous. Flowers bisexual, or rarely unisexual, in heads or spikes, solitary in axils or paniculate, 5-merous; calyx dentate; corolla funnel-shaped,

connate below middle; stamens 10, connate at base or higher into a tube, ± long exerted. Pods broadly linear, straight, thin, indehiscent or 2-valved; seeds ovate orbicular.

About 150 species, tropics and subtropics, ca 10 species native and naturalized Australia; 2 species, 1 naturalized and 1 native, south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Leaves of (1-)2-4(-5) pairs of pinnae each with 3-11 pairs of leaflets | 1. <i>A. lebbeck</i> |
| Leaves of 1 pair of pinnae, each with 2-3(-4) pairs of leaflets | 2. <i>A. thozetiana</i> |

1. **Albizia lebbeck* (L.) Benth.
Mimosa lebbeck L.

SIRIS TREE; INDIAN SIRIS

Tree up to 15 m tall. Leaves with (1-)2-4(-5) pairs of pinnae, axes of pinnae 5-10 cm long with 3-11 pairs of leaflets, leaflets oblong or elliptic-oblong, 1.5-5 cm × 0.8-3 cm, somewhat asymmetric, glabrous or puberulous. Heads on peduncles 5-10 cm long, flowers on pedicels 1.5-4.5 (-7) mm long; calyx 3.5-5 mm long, ± puberulous; corolla 5.5-9 mm long; staminal tube not or scarcely exerted beyond corolla, filaments 1.5-3 cm long. Pods oblong, 12-35 cm × 2.5-6 cm, glabrous, coriaceous; seeds flat, 0.7-1.1 cm × 0.7-0.9 cm.

Native of tropical Asia and Africa cultivated and naturalized in coastal areas of the region. Flowers summer.

2. *Albizia thozetiana* (F. Muell.) F. Muell. ex Benth.
Acacia thozetiana F. Muell.

Tree up to 20 m tall. Leaves puberulous, with 1 pair of pinnae, petiole 5-10 mm long; axes of pinnae 1-2 cm long with 2-3(-4) pairs leaflets; leaflets oblong, apex obtuse, 1.2-2.4 cm × 0.3-0.9 cm, lower ones smaller than terminal ones. Heads of 20-30 flowers on peduncles 1-2.5 cm long; calyx ca 1.5 mm long, puberulous; corolla ca 2 mm long, somewhat pubescent; stamens 3.5 mm long. Pods flat with thickened margins, 15-20 cm × 1-2 cm; seeds flat, orbicular. **Fig. 62C.**

Uncommon, in depauperate rainforests in the Burnett district. Flowers summer.

9. PITHECELLOBIUM Mart.

Unarmed trees or shrubs. Leaves bipinnate, usually with glands on petioles or rachises. Flowers in heads, umbels, corymbs, or racemes, heads often in panicles; calyx campanulate, shortly lobed; corolla tubular with spreading lobes; stamens numerous, united into tube about as long as corolla, free parts exerted. Pods flat, falcate or circinnate, valves twisted after dehiscence; seeds without an aril.

About 120 species tropical America and Asia; 6 species Australia; 5 species south-eastern Queensland.

- | | | |
|--|---------------------------|---|
| 1. Leaves alternate or subopposite; a gland at base of each petiolule | 1. <i>P. pruinsum</i> | |
| Leaves opposite, occasionally sub-opposite, no gland at base of petiolule | | 2 |
| 2. Leaves with 2-3 pairs of pinnae | 2. <i>P. grandiflorum</i> | |
| Leaves with 1(-2) pairs of pinnae | | 3 |
| 3. Leaves velvety pubescent beneath | 3. <i>P. lovelliae</i> | |
| Leaves glabrous beneath | | 4 |
| 4. Stamens 3-4 cm long, projecting 1.2-2.5 cm beyond corolla: leaflets oblique at base | 4. <i>P. hendersonii</i> | |
| Stamens ca 2 cm long, projecting ca 1.2 cm from corolla: leaflets symmetrical or only slightly oblique at base | 5. <i>P. muelleranum</i> | |

1. *Pithecellobium pruinatum* Benth.

SNOWWOOD

Acacia spaindoides Cunn. ex Sweet; *Pithecellobium sapindoides* (Cunn. ex Sweet) Domin; *Abarema sapindoides* (Cunn. ex Sweet) Kosterm.

Tree up to 10 m tall; branchlets lenticellate, yellowish tomentose. Leaves with (1-) 3 pairs of pinnae, densely tomentose when young, becoming glabrous on axes and on midribs of leaflets, glands usually below lowest pair and between uppermost pair of pinnae; axes of pinnae 5-15 cm long; gland near base of petiolule; leaflets alternate, 7-10 per pinnae, elliptical or obovate, oblique, 3.5-7 cm × 1.5-3.5 cm, largest towards tip of axis. Flowers in condensed many-flowered umbel-like racemes in upper axils; peduncles up to 10 cm long; pedicels 1-3 mm long; calyx cupular, 1.5-2 mm long with small teeth; corolla tube ± cylindrical, 7-10 mm long, shortly lobed; staminal tube about as long as corolla, free part of filaments ca 10 mm long. Pods spirally twisted, 1.5-2 cm wide, pilose outside, glabrous and orange inside; seeds shining black.

Rainforest margins in coastal districts. Flowers early summer.

2. *Pithecellobium grandiflorum* Benth.

LACE FLOWER TREE

Abarema grandiflora (Benth.) Kosterm.; *Pithecellobium tozeri* F. Muell.; *Albizia tozeri* (F. Muell.) F. Muell.

Tree up to 10 m tall; branchlets slightly ribbed, glabrous. Leaves glabrous with 2-3 pairs of pinnae, prominent stipitate gland below lowest pair and often a small gland at base of each pair of pinnae and of each pair of leaflets; axes of pinnae 2-12 cm long with usually 4-6 pairs of opposite leaflets; leaflets oblique, ovate, apex acute or acuminate with extremely pointed tips, 10 cm × 4 cm to 1.5 cm × 1 cm decreasing in size from apex of pinnae downwards. Flowers subsessile in heads, forming terminal panicles; calyx campanulate, up to 0.7-1.8 cm long; corolla up to 2 cm long; stamens white at base, upper part red, up to about 5 cm long. Pods orange-coloured inside, up to 12.5 cm × 2.5 cm; seeds black, shining. **Fig. 62A.**

Rainforests of coastal districts. Flowers summer.

3. *Pithecellobium lovelliae* F. M. Bailey

BACON WOOD

Abarema lovelliae (F. M. Bailey) Kosterm.

Tree up to 20 m tall; branchlets brownish pubescent. Leaves with 2-3 pairs of pinnae, sparsely tomentose on axes and upper surface of leaflets, densely tomentose on lower surface of leaflets; gland sometimes on petiole and between uppermost pair of pinnae; petiole 2-7 cm long; axes of pinnae 3-12 cm long; leaflets 3-4 pairs per pinna, strongly discolourous, oblong or ovate, apex obtuse, 3.5-9 cm × 2-5 cm, varying greatly in size on single leaf, larger towards end of pinna. Inflorescences condensed spikes of ca 6 flowers, in upper axils, peduncles 2-3 cm long; calyx campanulate with short lobes ca 7 mm long, rusty hairy outside; corolla twice as long, rusty hairy; stamens projecting from corolla by 2-3 cm, reddish. Pods similar to those of **P. pruinatum**.

Rare, in rainforest on sand in coastal parts of Wide Bay district. Flowers summer.

4. *Pithecellobium hendersonii* F. Muell.

Albizia hendersonii (F. Muell.) F. Muell.; *Abarema hendersonii* (F. Muell.) Kosterm.

Shrub or small tree, glabrous in all its parts. Leaves with 1 pair of pinnae, 1 small gland on petiole; petiole 1-4 cm long; axes of pinnae (3-)5-10 cm long, leaflets 2-4 pairs per pinna, ovate or elliptic, apex shortly acuminate, base asymmetrical, (4-)5-10 cm × (2-)3-4 cm, strongly nerved on lower side. Flowers subsessile, in globular umbels of up to 10 flowers forming terminal panicle; calyx cylindrical, glabrous, 4-5 mm long, shortly toothed; corolla 1.4-2 cm long; stamens 3-4 cm long, tube shorter than corolla. Pods ca 5 cm long, twisting when ripe, valves orange inside; seeds black.

In rainforest remnants close to the sea in southern parts of region. Flowers spring.

5. *Pithecellobium muelleranum* (Maiden & R. T. Baker) Maiden & Betche
Albizia muellerana Maiden & R. T. Baker; *Abarema muellerana* (Maiden & R. T. Baker) Kosterm.

Tree up to 20 m tall; branchlets ribbed, lenticellate, glabrous. Leaves with 1(-2) pairs of pinnae, glabrous except for petiolules and midribs of leaflets; petioles 0.5-1.5 cm long, without glands; leaflets 2-4 per pinna, terminal ones paired, ovate or obovate, apex acuminate, 4.5-9 cm × 2.5-5 cm. Flowers sessile, in globular umbels arranged in loose racemes in upper axils; calyx cylindrical, glabrous, 4-6 mm long, shortly toothed; corolla as long as calyx; stamens *ca* 2 cm long, tube shorter than corolla. Pods bursting when ripe, valves hard, red outside, orange inside; seeds black. **Fig. 62B.**

Uncommon, in rainforest in extreme south-east of area. Flowers summer.



Fig. 62

MIMOSACEAE — A-B *Pithecellobium* spp. — A₁-A₃, *P. grandiflorum*, A₁, leaf with glands $\times \frac{1}{2}$, A₂, gland $\times 6$, A₃, inflorescence $\times 1$; B *P. muelleranum*, fruit $\times \frac{2}{3}$; C₁-C₂, *Albizia thozetiana*, C₁, part of fertile branch $\times 1$, C₂, fruit $\times \frac{2}{3}$.

62. CAESALPINIACEAE (LEGUMINOSAE in part)

Trees, shrubs or rarely herbs. Leaves nearly always alternate, stipulate, 1-pinnate or 2-pinnate; leaflets or pinnae 1-many-paired. Flowers in axillary, terminal or rarely leaf-opposed racemes or panicles, mostly bisexual, zygomorphic, rarely actinomorphic; calyx segments 5 or 4, free or partly united; petals 5 or fewer, adaxial inside others; stamens 10 or fewer, anthers usually dehiscent lengthwise, rarely by terminal pores; ovary superior, 1-locular, ovules 1-many. Fruits 2-valved or indehiscent and drupaceous or samaroid; seeds sometimes arillate.

About 150 genera with *ca* 2 800 species, tropics and subtropics throughout the world; *ca* 20 genera with *ca* 80 species Australia; 7 genera with 30 species south-eastern Queensland.

1. Leaves 1-pinnate, reduced to one leaflet or simple, sometimes deeply lobed		2
Leaves 2-pinnate		5
2. Leaves simple or appearing 1-foliolate	1. <i>Barklya</i>	
Leaves pinnate or reduced to phyllodes		3
3. Leaves paripinnate, rarely reduced to phyllodes	2. <i>Cassia</i>	
Leaves imparipinnate		4
4. Stamens 2, anthers opening in terminal pores; flowers in racemes	3. <i>Labichea</i>	
Stamens 3, anthers opening in longitudinal slits; flowers solitary in the axils	4. <i>Petalostylis</i>	
5. Flowers polygamous, corolla not much longer than calyx	5. <i>Gleditsia</i>	
Flowers not polygamous, corolla much longer than calyx		6
6. Leaflets small, deciduous; leaf rachis short, flat and leaflike, ending in sharp point	6. <i>Parkinsonia</i>	
Leaflets not deciduous; leaf rachis not ending in sharp point	7. <i>Caesalpinia</i>	

1. BARKLYA F. Muell.

Trees. Leaves simple or appearing 1-foliolate, petiolate; petioles swollen at top; blades 5-7-nerved at base. Flowers in dense racemes, racemes collected into a terminal panicle or sometimes solitary in upper axils, bracts small, bracteoles absent; calyx campanulate, toothed, teeth short and obtuse; petals alike, erect on long claws; stamens 10, free, longer than petals; ovary stipitate, tapering into short style with terminal stigma, ovules several. Pods stipitate, flat, valves thin and scarcely separating.

1 species endemic to tropical and subtropical areas of eastern Australia, occurring in south-eastern Queensland.

1. *Barklya syringifolia* F. Muell.

Tree 6-18 m tall, glabrous or young shoots and inflorescences rusty tomentose. Petioles 3-8 cm long; leaf blades broadly ovate, apex shortly acuminate, base cordate, 2.5-9 cm × 2.5-9 cm. Individual racemes mostly 3-10 cm long but sometimes longer; pedicels 1.5-3 mm long; calyx 1.5-3 mm long; petals orange-yellow on claws 2-4 mm long, each petal obovate, 2-2.5 mm long; filaments *ca* 1 cm long. Pods somewhat falcate, 3-4.5 cm × 1-1.5 cm; seeds 1-2, rarely 3, per pod. **Fig. 55E.**

Not common, found in rainforest of the Moreton and Wide Bay districts. Flowers summer. An attractive tree with spectacular inflorescences sometimes cultivated in warm parts of the state.

2. CASSIA L.

Trees, shrubs or herbs. Leaves paripinnate, rarely reduced to phyllodes; foliar glands often present. Flowers bisexual, usually yellow; calyx tube very short, segments 5, imbricate; petals 5, imbricate, spreading, subequal or the lowermost large; stamens 10, all perfect and subequal or the upper ones smaller or imperfect, or stamens 5, anthers opening by a pore or short slit; ovary sessile or stipitate, ovules numerous, style with terminal stigma. Pods various, often 2-valved, sometimes indehiscent.

500–600 species tropical and warm temperate, excluding Europe; ca 60 species Australia; 20 species south-eastern Queensland.

1. Foliar glands absent	2
Foliar glands present	7
2. Pods more than 15 cm long, round or elliptic in cross-section, indehiscent	3
Pods up to 12 cm long, flat, dehiscent	6
3. Leaflets sparsely to densely appressed pubescent on midrib beneath	4
Leaflets glabrous or with a few hairs on midrib beneath	5
4. Larger leaflets 4.5 cm × 1.5 cm, narrowly ovate to oblong-ovate; pods 20–45 cm × 1–2.5 cm, slightly or markedly compressed, transverse ribs ± distinct	1. <i>C. brewsteri</i>
Larger leaflets 4–6 cm × 2 cm, obovate; pods 15–30 cm × 1–1.5 cm, almost cylindrical, transverse ribs not prominent	2. <i>C. tomentella</i>
5. Inflorescences pendant racemes 20–40 cm long; pods 30–60 cm × 2–2.5 cm	3. <i>C. fistula</i>
Inflorescences racemes 7–8 cm long; pods 30 cm × 1–1.5 cm	4. <i>C. marksiana</i>
6. Plants glabrous, stems often slightly glaucous; stipules small, deciduous	5. <i>C. pleurocarpa</i>
Branches, peduncles and leaves pubescent, glabrescent; stipules 1–1.5 cm long, ovate, persistent	6. <i>C. didymobotrya</i>
7. Pods dehiscent, not elastically so, flat or turgid, 1–15 cm long; sepals rounded; leaves rarely with more than 20 pairs of leaflets	8
Pods elastically dehiscent, rarely more than 4 cm × 1 cm; sepals acute; leaves with up to 60 pairs of leaflets	18
8. Fertile stamens 7 or fewer, pods various, often turgid, or flat with lateral ridges, rarely simply flat	9
Fertile stamens 10, rarely fewer, pods flat or nearly so, without ridges or wings	12
9. Glands solitary towards base of petiole, none between leaflets	10
Glands between leaflets, not on petiole	11
10. Terminal racemes on peduncles usually less than 0.5 cm long	7. <i>C. occidentalis</i>
Axillary racemes on peduncles 1.5–3 cm long	8. <i>C. barclayana</i>
11. Glands between several pairs of leaflets	9. <i>C. floribunda</i>
Glands between lower pair of leaflets only	10. <i>C. coluteoides</i>
12. Leaves reduced to phyllodes	11. <i>C. circinnata</i>
Leaves pinnately compound, not reduced to phyllodes	13
13. Leaflets terete or narrowly linear, not markedly flattened, less than 1 mm wide	14
Leaflets usually flat or broadly channelled, 1.5 mm or more wide	15
14. Leaflets 1–2, rarely –3 pairs	12. <i>C. nemophila</i>
Leaflets 3–10 pairs	13. <i>C. artemisioides</i>

- | | |
|---|-----------------------------|
| 15. Leaflets usually more than 8 pairs, rarely as low as 5, up to 5 mm wide | 16 |
| Leaflets less than 7 pairs, usually more than 10 mm wide, rarely 7 mm wide | 17 |
| 16. Leaflets revolute, aristate, almost pungent | 14. <i>C. aciphylla</i> |
| Leaflets \pm flat, not pungent | 15. <i>C. coronilloides</i> |
| 17. Leaves glaucous beneath, glabrous except on midribs beneath | 16. <i>C. surattensis</i> |
| Leaves not glaucous; plants sparsely or densely golden pubescent | 17. <i>C. retusa</i> |
| 18. Leaflets usually in 2 pairs; plants viscid; stamens 5 | 18. <i>C. absus</i> |
| Leaflets 6-60 pairs; plants not viscid; stamens 5 or 10 | 19 |
| 19. Stamens 5; leaves 1-2 cm long with 10-15 pairs of leaflets | 19. <i>C. pumila</i> |
| Stamens 10; rarely fewer, leaves 4-10 cm long with 20-60 pairs of leaflets | 20. <i>C. mimosoides</i> |

1. *Cassia brewsteri* (F. Muell.) F. Muell. ex Benth.

LEICHHARDT BEAN

Cathartocarpus brewsteri F. Muell.

Tree up to 12 m tall. Leaves pinnate with 2-4, rarely 6 pairs of leaflets, without glands; petiolules 1-2 mm long; leaflet blades oblong-ovate, apex obtuse or slightly emarginate, 5-7(-10) cm \times 1.5-2.5(-3.5) cm, glabrous above, sparsely pubescent beneath. Inflorescences pendulous racemes up to 50 cm long with 50 flowers, pedicels 2-3 cm long; sepals broadly ovate, apex obtuse, *ca* 6 mm long, pubescent; petals yellow, orange or reddish, ovate, 1-2 cm long; stamens 10, variously modified, upper 3 reduced and sterile. Pods slightly compressed, straight, 20-50 cm \times 1.5-2.5 cm, with \pm distinct transverse ribs. **Fig. 63C.**

Represented in south-eastern Queensland by two forms. One is a semi-deciduous tree up to *ca* 10 m tall, found in open eucalypt communities in the Burnett district, the other a tree, reported to grow up to 30 m tall, of rainforests between Gympie and Maryborough. The latter has larger leaflets with broader sutures and is probably subspecifically distinct. Both forms flower in spring.

2. *Cassia tomentella* (Benth.) Domin

Cassia brewsteri (F. Muell.) F. Muell. ex Benth. var. *tomentella* Benth.; *C. brewsteri* var. *tomentosa* F. M. Bailey

Semi-deciduous tree up to 10 m tall, branchlets and petioles densely pubescent. Leaves pinnate with 4-6 pairs of leaflets; petiolules 1-2 mm long; terminal leaflet obovate, apex obtuse or emarginate, 3-6 cm \times 1.5-3 cm, lower ones almost orbicular, 1-2 cm \times 1-1.5 cm, glabrous and shining above, densely minutely pubescent below. Inflorescences pendulous racemes 7-18 cm long, up to 40 flowers, pedicels 2.5 cm long; sepals oblong, 5 mm long, pubescent; petals rounded, 5-10 mm long; stamens 10, variously modified, upper 3 reduced or sterile. Pods almost cylindrical, straight, 15-30 cm \times 1-1.5 cm, densely minutely pubescent, transverse ribs not prominent.

In light rainforest in southern part of Moreton district, now much reduced by clearing. Flowers spring.

3. **Cassia fistula* L.

INDIAN LABURNUM; GOLDEN SHOWER

Deciduous tree up to 10 m tall. Leaves pinnate with 3-8 pairs of leaflets; petiolules 0.5-1 cm long; leaflet blades oblong-elliptic, up to 15 cm \times 8 cm, glabrous. Inflorescences pendulous racemes 20-40 cm long, up to 50 flowers, pedicels *ca* 4 cm long; sepals obovate-oblong, 1 cm long, petals *ca* 2 cm long; stamens 10, 3 upper reduced or sterile. Pods cylindrical, 30-60 cm \times 2-2.5 cm, without marked transverse ribs.

Native of India; widely cultivated and possibly naturalized in south-eastern Queensland. Flowers late summer-early autumn.

4. *Cassia marksiana* (F. M. Bailey) Domin

Cassia brewsteri (F. Muell.) F. Muell. ex Benth. var. *marksiana* F. M. Bailey

Tree up to 20 m tall. Leaves with 7-8 pairs of leaflets; petiolules 3-4 mm long; leaflet blades ovate to oblong-ovate, 2.5-8.5 cm long, glabrous except for few hairs on midrib beneath. Inflorescences racemes 7-8 cm long with 15-20 flowers, pedicels 1.5-2 cm long;

sepals oblong, 5 mm long, pubescent; petals obtuse, 0.8–1.2 cm long; stamens 10, upper 3 much reduced and sterile. Pods nearly cylindrical, 30 cm \times 1–1.5 cm, smooth and shining, without transverse markings. **Fig. 63B.**

Rainforest remnants in Beenleigh-Beechmont area of the southern Moreton district, much reduced by clearing. Flowers early summer.

5. *Cassia pleurocarpa* F. Muell.

FIRE BUSH

Glabrous shrub up to 3 m tall, sometimes suckering from roots. Leaves pinnate, without glands, with 5–9 pairs of leaflets; petiolules 1–2 mm long; leaflet blades linear-oblong, apex retuse or obtuse, 2–5 cm \times 0.6–1.2 cm. Inflorescences racemes 7–15 cm long, terminal or in upper axils, pedicels 0.7–1 cm long; sepals narrowly obovate, *ca* 8 mm long; petals obovate-cuneate, 0.7–1 cm long, unequal; stamens 10, 3 smaller sterile. Pods 4–5.5 cm \times 1–1.6 cm, with raised longitudinal rib along middle of each side.

Sandy soil, often on roadsides in western part of the region. Flowers sporadically throughout the year.

6. **Cassia didymobotrya* Fresen.

Shrub up to 5 m tall, branchlets pubescent. Leaves pinnate, without glands, with 8–18 pairs of leaflets; stipules broadly ovate-cordate, 1–2.5 cm long; leaflet blades oblong-elliptic, apex obtuse, mucronate, 2–6.5 cm \times 0.6–2.5 cm, pubescent. Inflorescences erect spike-like racemes 20–40 cm long, peduncles 5–10 cm long, bracts dark purplish brown, ovate, concave, 1.5 cm \times 1 cm, pedicels 5 mm long; calyx lobes 1–1.5 cm long, unequal, minutely pubescent; petals obovate, 1.5–2.5 cm \times 1–1.5 cm; stamens 10, 3 upper ones reduced or sterile. Pods flat, pubescent along sutures, 8–12 cm \times 1.5–2.5 cm, transverse depressions between seeds.

Native of tropical Africa; cultivated and locally naturalized. Flowers late summer to winter.

7. **Cassia occidentalis* L.

COFFEE SENNA; ANT BUSH

Annual or short-lived perennial shrub 1–2 m tall, subglabrous when mature. Leaves pinnate with 3–5 pairs of leaflets; petioles 3–5 cm long with large sessile squat globose or conical gland slightly above base; petiolules 2 mm long; leaflet blades ovate to ovate-elliptic, apex acuminate, 3–10 cm \times 2–3 cm, glabrous except for ciliolate margins. Inflorescences short racemes of 2–4 flowers in terminal panicles, peduncles usually less than 5 mm long, pedicels *ca* 1 cm long; sepals unequal, outer 5 mm long, inner broader, 5–10 mm \times 3–5 mm, glabrous; petals almost equal, obovate, 1–1.5 cm \times 0.7 cm; stamens 10, upper 3 and lowest small and sterile. Pods straight or slightly curved upwards, 10–12.5 cm \times 0.1–1 cm, somewhat flattened with transverse partitions.

Pantropical weed probably native of tropical America; naturalized in urban areas in coastal districts. Flowers mainly summer.

8. **Cassia barclayana* Sweet

PEPPERLEAF SENNA

Cassia schinifolia A.DC.; *C. sophera* L. var. *schinifolia* (A.DC.) Benth.; *C. sophera* L. var. *barclayana* (Sweet) Domin; *C. occidentalis* L. var. *schinifolia* (A.DC.) de Wit; *C. sophera* L. var. *pubescens* Benth.; *C. barclayana* Sweet var. *pubescens* (Benth.) Symon

Shrub up to 2 m tall, branchlets subglabrous or pubescent. Leaves with 4–10 pairs of leaflets and sessile clavate or cylindrical often pointed gland just above base of petiole, no glands on rachis; leaflet blades ovate or narrowly ovate, apex acute, 2–6.5 cm \times 0.8–1.5 cm, sparsely pubescent or glabrous with ciliolate margins. Racemes almost umbellate, with 3–5 flowers in upper axils, peduncles 1.5–3 cm long, pedicels 1.5–2 cm long; sepals unequal, elliptic-ovate, 3–5 mm long; petals obovate-elliptic, 1–1.5 cm long; stamens 10, upper 3 and lowest small and sterile. Pods subcylindrical, straight or curved slightly upwards, 4–7 cm \times 0.6–1 cm, glabrous.

Pantropical weed, country of origin uncertain; naturalized in places throughout the region. Flowers mainly summer.

9. *Cassia floribunda Cav.

SMOOTH SENNA; ARSENIC BUSH

Cassia laevigata Willd.

Shrub up to 4 m tall, branchlets glabrous. Leaves pinnate with 3–5 pairs of leaflets; petiole without gland, conical gland between all or at least two lowest pairs of leaflets; petiolules 2–3 mm long; leaflet blades ovate-elliptic, apex acute or acuminate, 3–8 cm × 2–3 cm, glabrous. Inflorescences racemes with 5–10 flowers, terminal or in upper axils, peduncles 3–4 cm long, pedicels 1–1.5 cm long; sepals unequal, outer ovate, 5 mm × 3 mm, inner ovate or oblong, 1–1.2 cm × 0.5 cm; petals obovate-suborbicular, 1–1.5(–2) cm long; stamens 10, upper 3 much reduced and sterile. Pods subterete, straight or slightly curved, membranous, 5–8 cm × 1 cm.

Native of North America, now widespread in the tropics; naturalized in the region, usually in areas of cleared rainforest. Flowers late summer–autumn. Despite its common name, ARSENIC BUSH, there is no direct or strong evidence that the plant is toxic.

10. *Cassia coluteoides Colladon

EASTER CASSIA

Cassia bicapsularis auct. non L.

Sprawling shrub up to 4.5 m tall, branchlets sparsely pubescent, glabrescent. Leaves with 3–5 pairs of leaflets, conical gland between lowest pair of leaflets; petioles without glands; lowest leaflet blades elliptic, 1–1.5 cm × 0.5–1 cm, upper obovate, 2–5 cm × 1–2 cm, apex obtuse, leaf margins often prominent, yellowish, glabrous but for patch of hairs adjacent to midrib below. Inflorescences terminal leafy panicles, each branch with 3–10 flowers, peduncles 3–5 cm long, pedicels *ca* 2 cm long; sepals unequal, outer obovate, 0.8–1.5 cm long, glabrous; petals unequal, obovate, 2–2.5 cm long; stamens 10, 3 upper reduced to staminodes. Pods terete but somewhat constricted between seeds and sutures prominent, 10 cm × 0.6 cm, glabrous.

Native of tropical South America; commonly cultivated, naturalized in some urban areas. Flowers autumn.

11. Cassia circinnata Benth.

Shrub up to 2 m tall, branchlets pubescent. Leaves usually reduced to phyllodes, gland about 1/3 along upper edge, juvenile leaves with 1–3 pairs of leaflets; phyllodes subterete, linear, 1.5–5 cm × 0.1 cm, appressed pubescent when young, becoming glabrous. Racemes of few flowers in upper axils, peduncles 0.5–1.5 cm long, pedicels 0.5–1 cm long; sepals unequal, elliptic, 3–6 mm long; petals elliptic, 10 mm long; stamens 10, all fertile, upper 7–8 subsessile, lower 2–3 with filaments 2 mm long. Pods flat, 1 cm wide, forming 1–2 coils 3 cm in diameter.

Clay soils on western fringe of region. Flowers spring.

12. Cassia nemophila Cunn. ex Vogel

BUTTER BUSH; DESERT CASSIA

Cassia eremophila Benth.

Shrub up to 3 m tall. Leaves pinnate with 1–2, rarely 3 pairs of leaflets, with depressed globular gland between lowest or all pairs of leaflets; petioles terete or flattened; leaflet blades terete or linear, 2–5 cm × 0.1–0.5(–0.8) cm, appressed pubescent, glabrescent. Inflorescences short axillary racemes with 3–10 flowers, peduncles 0.5–1.5 cm long, pedicels 0.5–1 cm long; sepals unequal, ovate-elliptic, 1–5 mm × 1–4 mm, pubescent; petals unequal, ovate, 7–8 mm × 4–6 mm; stamens 10, unequal, all fertile. Pods brown and shining, flat, 2–8 cm × 0.7–1.2 cm.

Two varieties occur in the region:

- | | | |
|---|-----------|--|
| 1. Leaflets 1–1.5 mm wide; pods 0.7–0.9 cm wide | | <i>C. nemophila</i> var. <i>nemophila</i> |
| Leaflets 3–5(–8) mm wide; pods 1–1.2 cm wide | | <i>C. nemophila</i> var. <i>zygophylla</i> |

Both *C. nemophila* var. *nemophila* and *C. nemophila* var. *zygophylla* (Benth.) Benth. (*C. zygophylla* Benth.) occur on clay soils in eucalypt and brigalow communities in the western part of the region. Flowers mainly spring.

13. *Cassia artemisioides* Gaudich. ex DC.

SILVER CASSIA

Shrub up to 2 m tall. Leaves pinnate with 4–6, rarely 3 pairs of leaflets, with sessile or shortly stipitate glands between 1–3 lowest pairs of leaflets or glands absent; petioles without glands; leaflet blades terete or linear, 1–4 cm × 0.1 cm, pubescent. Inflorescences axillary racemes with 4–12 flowers, peduncles 0.5–2 cm long, pedicels 0.5–1 cm long; sepals unequal, elliptic, outer 2 mm long, inner 5 mm long, pubescent; petals obovate-elliptic, 0.7–1 cm × 0.5–0.7 cm; stamens 10, unequal, all fertile. Pods shining brown, flat, oblong, 4–8 cm × 0.6–1 cm. **Fig. 63D.**

In eucalypt communities in extreme west of region. Flowers winter-spring.

Intergrades with *C. nemophila* may be found.

14. *Cassia aciphylla* Benth.

AUSTRALIAN SENNA

Cassia revoluta F. Muell.; *C. australis* Sims var. *revoluta* (F. Muell.) Benth.

Shrub up to 1.5 m tall, stems pilose or almost glabrous. Leaves pinnate; petioles without glands, erect prominent gland between all or most pairs of leaflets; leaflets (5–)8–10(–12) pairs; leaflet blades linear, apex aristate and almost pungent, margin revolute particularly when dry, 1.5–3 cm long, usually pilose. Inflorescences axillary umbels with 2–4 flowers, peduncles 2–5 cm long, pedicels 1–1.5 cm long; sepals unequal, orbicular-elliptic, 3–5 mm × 3–4 mm, outer small, pubescent, inner larger, ciliate; petals unequal, oblong-elliptic to orbicular, 1–1.3 cm × 0.8–1 cm; anthers 10, all fertile. Pods flat, pilose, 4–8 cm × 0.5–0.6 cm, ± straight, dehiscent.

Shallow sandy soil in the western part of the region, uncommon. Flowers spring.

15. *Cassia coronilloides* Benth.

Shrub up to 2 m tall, branchlets, petioles and leaves appressed pubescent, glabrescent. Leaves pinnate, slender gland between lowest pair of leaflets; stipules setaceous, 2–3 mm long; leaflets (7–)9–12(–17) pairs; leaflet blades oblong, apex obtuse, rarely subacute, 0.8–2.2 cm × 0.2–0.7 cm. Inflorescences corymbose umbels with 2–4 flowers in upper axils, peduncles 1–1.5 cm long, pedicels 1 cm long; sepals unequal, oblong, 4–6 mm × 3–4 mm; petals unequal, elliptic-oblong, 1.3–1.4 cm × 0.6–0.8 cm; anthers 10, all fertile. Pods straight or slightly curved, 7–11 cm × 0.5–0.7 cm, glabrous, dehiscent.

On clay soils often in association with brigalow or in depauperate rainforest. Flowers throughout the year.

A variant from near Stanthorpe is a dwarf shrub with a gland between each of the 5–7 pairs of leaflets and with peduncles 5–7 cm long.

16. **Cassia surattensis* N. L. Burm.

Cassia glauca Lam.; *C. suffruticosa* Koenig ex Roth

Shrub up to ca 5 m tall. Leaves with up to 7 pairs of leaflets, with stipitate glands ca 3 mm long between lower 2–3 pairs of leaflets; leaflet blades discolourous, ovate to ovate-oblong, apex rounded or emarginate, 2–5 cm × 1–2 cm, glabrous above, glaucous and somewhat pubescent on veins beneath. Inflorescences condensed racemes in upper axils, peduncles 5 cm long, pedicels 2–3 cm long, sparsely pubescent; sepals unequal, ovate-orbicular, 5–8 mm long, ciliate; petals obovate, 1–1.5 cm × 0.8–1.1 cm; stamens 10, all fertile. Pods flat, nearly straight, 10–20 cm × 1 cm, glabrescent.

Native of tropical Asia; naturalized in region, usually in areas cleared of rainforest. Flowers usually summer.

17. *Cassia retusa* Vogel

Shrub, branchlets pubescent with golden or pale hairs, becoming glabrous. Leaves with 4–6, rarely 7 pairs of leaflets, with 1–3 stipitate glands 2–4 mm long between lowest pair of leaflets; leaflet blades elliptic-obovate, apex rounded, emarginate or slightly retuse, lowest 1 cm × 0.7 cm, upper 2–3 cm × 1–1.5 cm, appressed hairs usually on both surfaces. Inflorescences racemes 4–10 cm long with 4–10 flowers in upper axils, peduncles 3–5 cm long, pedicels 2–3 cm long; sepals unequal, outer elliptic, 5–6 mm long, pubescent, inner 6–8 mm long, almost glabrous. Pods flat, slightly curved, 10–15 cm × 1 cm, sparsely or densely pubescent with appressed hairs, partitions between seeds evident.

In coastal parts of the north of the region, not common. Flowers usually in late summer.

18. *Cassia absus* L.

HAIRY CASSIA

Herb or short-lived subshrub 10–50 cm tall, branchlets with viscid bristles. Leaves with 2 pairs of leaflets; leaflet blades obovate, apex rounded, 1–3 cm × 0.8–2 cm, viscid pubescent. Inflorescences racemes 2–8 cm long with several flowers, pedicels 3–4 mm long; sepals oblong-obovate, 5 mm × 1–1.8 mm; petals obovate, 5–7 mm long; stamens 5, all fertile. Pods flat, 2–5 cm × 0.6(–0.8) cm, viscid hispid.

Found only in the extreme north of the region, mainly on sandy soils. Flowers summer.

19. *Cassia pumila* Lam.*Cassia concinna* Benth.

Herbaceous perennial with numerous slender stems from woody base, branchlets tomentose. Leaves with 10–15 pairs of leaflets with truncate stipitate gland between lowest pair of leaflets; leaflet blades linear-oblong, base unequal, 4–7 mm × 1 mm, glabrous or with hispid margins. Inflorescences 1-flowered racemes in upper axils, peduncles 4–5 mm long, pedicels 3–5 mm long; sepals linear-ovate, 5–6 mm long, pubescent; petals ovate-orbicular, 8–9 mm × 8–9 mm; stamens 5, all fertile. Pods flat, 2.5–3 cm × 0.3–0.4 cm, sparsely appressed pubescent.

In eucalypt open forest in coastal areas of region. Flowers summer.

20. *Cassia mimosoides* L.

Herb or short-lived shrub rarely up to 1 m tall, branchlets appressed pubescent. Leaves with 20–60 pairs of leaflets, with sessile gland on petiole below lowest pair of leaflets; leaflet blades oblique at base and apex so as to be almost rhombic, 3–5 mm × 0.5–1 mm, almost glabrous but ciliolate on margins. Inflorescences 1-flowered racemes in groups of 1–3 in leaf axils; peduncles 0.5–1 cm long, pubescent; pedicels slender, 2–3 mm long; sepals 5–8 mm long, pubescent; petals obovate, 6–10 mm long; stamens 10 or fewer. Pods thin, flat, 3–4 cm × 0.4 cm, sparsely pubescent.

In eucalypt open forest in coastal districts, often on sandy soil. Flowers mainly summer.

3. LABICHEA Gaudich. ex DC.

Shrubs. Leaves imparipinnate or petiole short and leaflets subdigitate; leaflets rigid. Flowers in axillary racemes; calyx tube very short, lobes 4 or 5, imbricate, slightly unequal; petals 4 or 5, imbricate, spreading, unequal; stamens 2, anthers opening by terminal pores; ovary sessile or shortly stipitate, ovules 2–3, style short with small terminal stigma. Pods oblong, compressed, 2-valved; seeds with small fleshy aril.

About 8 species endemic to Australia; 1 species south-eastern Queensland.

1. *Labichea digitata* Benth.

Harsh shrub up to 1 m tall, branchlets puberulent. Leaves sessile, digitate; leaflets 5; leaflet blades discolourous, ovate, apex pungent-pointed, 1.5–2.5 cm long, slightly pubescent beneath, reticulate venation prominent. Racemes axillary, shorter than leaves; flowers yellow, 4-merous; sepals *ca* 5 mm long; petals slightly longer than sepals; ovary hirsute. Pods 1-seeded.

Sandy soils in eucalypt communities in extreme western part of the region. Flowers spring.

4. PETALOSTYLIS R.Br.

Shrubs. Stipules narrow, caducous, leaflets small. Flowers axillary, solitary; sepals 5, imbricate; petals 4, imbricate, spreading, subequal; perfect stamens 3; anthers opening by slits, staminodes 2; ovary sessile, many-ovuled, style dilated and petaloid, 3-lobed, middle lobe terminated by small stigma. Pods oblong-linear, compressed; seeds arillate.

4 species endemic to Australia; 1 species south-eastern Queensland.

1. *Petalostylis labicheoides* R.Br.**BUTTERFLY BUSH**

Erect somewhat glaucous shrub up to ca 3 m tall, branchlets somewhat pubescent. Leaves pinnate, with 7–15 leaflets usually alternate along rachis; leaflet blades narrowly oblong, apex mucronate, 1.2–2 cm × 0.5–0.7 cm, puberulous. Flowers yellow, single in axils on short peduncles; sepals ca 1.2 cm long, puberulous; petals obovate, ca 1.5 cm long. Pods 3 cm × 0.7 cm; seeds oblique. **Fig. 63A.**

On sandy soils in extreme western part of region. Flowers spring–summer.

5. GLEDITSIA L.

Trees, polygamous, trunk and branches with simple or branched spines. Leaves 2-pinnate and pinnate on same plant; stipules small. Flowers racemose, paniculate or in small cymes; calyx tube turbinate-campanulate, lobes 5–3, narrow, open or subimbricate in bud; petals 5–3, sessile; stamens 10–6, free; ovary in male flowers rudimentary or absent, in bisexual flowers subsessile, free, ovules numerous to 2. Pods ovate or elongate, straight, compressed, coriaceous or subfleshy, indehiscent, often pulpy inside with transverse seeds.

12 species North America, Asia, Africa; 1 species naturalized south-eastern Queensland.

1. **Gleditsia triacanthos* L.**HONEY LOCUST**

Deciduous tree up to 15 m tall, branchlets shiny brown, armed with rigid long-pointed simple or branched spines up to 12 cm long. Leaves pubescent, pinnate or 2-pinnate with 4–7 pairs of pinnae; pinnae 10–13 cm long with 9–15 pairs of leaflets; leaflet blades oblong-ovate, apex obtuse, margin remotely crenate-serrate, 1.2–3 cm × 0.4–1.2 cm. Male flowers in pubescent racemes 5–7 cm long, often clustered; female flowers in usually solitary few-flowered racemes 7–9 cm long; calyx campanulate, 3–4 mm long; petals acute, slightly longer; staminal filaments pilose towards base. Pods dark brown, slightly falcate, 30–45 cm × 2.5–3.5 cm on stalks 2.5–4 cm long; seeds ovoid, ca 1 cm long, separated in pod by succulent pulp.

Native of North America; naturalized in a few places and considered a pest. Flowers in early summer when leaves almost fully developed.

6. PARKINSONIA L.

Trees. Leaves at first pinnate and fasciculate, later 2-pinnate with a very short spine-like rachis; stipules short, spinescent; pinnae 1–3 pairs, long and flattened with numerous small leaflets. Racemes lax, axillary; calyx tube short, lobes 5, membranous, narrowly imbricate; petals 5, spreading, uppermost wider, inside others; stamens 10, free; ovary shortly stipitate. Pods linear, torulose; seeds oblong, longitudinal.

3–4 species America and southern Africa; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Parkinsonia aculeata* L.**JERUSALEM THORN; PARKINSONIA**

Tree up to 10 m tall with green branches armed with sharp recurved spines representing modified leaf-rachises. Leaves alternate, 2-pinnate, almost sessile; pinnae 1 or rarely 2 pairs, elongate, 10–30(–50) cm long, with flattened green rachis; leaflet blades 2–4 mm long. Flowers in short racemes, sometimes solitary; sepals 5, free; petals bright yellow, 5, subequal. Pods torulose, (3–)5–10 cm long, only slightly flattened. **Fig. 63E.**

Native of warmer parts of America; cultivated and reported naturalized in south-eastern Queensland. Flowers spring.

7. CAESALPINIA L.

Trees, shrubs or climbers, unarmed or with sharp prickles. Leaves 2-pinnate; stipules various. Inflorescences racemes, paniculate in upper leaf axils or at ends of shoots; calyx tube short, teeth 5, imbricate, lowest outside, concave or boat-shaped, often larger than rest; petals 5, orbicular or oblong, subequal or uppermost smaller; stamens 10, free, anthers uniform; ovary sessile or shortly stipitate, 2-many-ovuled, style subulate. Pods compressed, winged, or sutures nerve-like or thickened, sometimes turgid and 2-valved or indehiscent; seeds transverse.

About 300 species tropics and subtropics; ca 7 species Australia; 5 species south-eastern Queensland.

- | | |
|---|---------------------------|
| 1. Stamens scarlet with long-exserted filaments 6 cm or more long; calyx glandular pubescent | 1. <i>C. gilliesii</i> |
| Stamens not scarlet, slightly exserted, less than 2.5 cm long; calyx not glandular | 2 |
| 2. Leaflets 0.8–1.8 cm wide; pods prickly or 3–5 cm × 3 cm with a dorsal wing | 3 |
| Leaflets 0.5–0.8 cm wide; pods not prickly, or if winged then 3 cm × 1.5–2 cm | 4 |
| 3. Leaflets obtuse, 2–3.5 cm × 1–1.8 cm; pods not winged, prickly | 2. <i>C. bonduc</i> |
| Leaflets obtuse or retuse, 1.5–2.5 cm × 0.8–1.2 cm; pods winged, not prickly | 3. <i>C. scortechinii</i> |
| 4. Pods rather thick, oblong, 6–8-seeded, not winged; pinnae with 8–12 pairs of leaflets; stems not winged | 4. <i>C. decapetala</i> |
| Pods thin, ovate, 1–2-seeded, narrowly winged along upper suture; pinnae with 5–7 pairs of leaflets; stems with corky wings | 5. <i>C. subtropica</i> |

1. **Caesalpinia gilliesii* (Hook.) Diétr.

Poinciana gilliesii Hook.

Shrub up to 3 m tall, not prickly, branchlets glandular pubescent. Leaves 2-pinnate, ± glabrous with 12–15 pairs of pinnae each with 7–10 pairs of leaflets; leaflet blades oblong-obtuse, 3–6 mm × 1.5–2 mm. Racemes terminal, ca 15 cm long, glandular pubescent; pedicels up to 1.5 cm long; sepals 1.5–2 cm long, glandular pubescent and tomentose at base; petals yellow, slightly longer than sepals; stamens with red filaments, 8 cm or more long. Pods flat, oblong, upturned at tip, 8 cm × 1–1.5 cm, punctulate, dehiscent.

Native of South America; cultivated and naturalized in a few places. Flowers summer–autumn.

C. pulcherrima (L.) Swartz (*Poinciana pulcherrima* L.) which resembles *C. gilliesii* and has glabrous inflorescences and red and yellow flowers is cultivated and may also become naturalized.

2. *Caesalpinia bonduc* (L.) Roxb.

Guilandina bonduc L.; *G. bonducella* auct. non L., Benth.

Sprawling shrub up to ca 5 m tall, stems pubescent, prickly. Leaves 2-pinnate; stipules conspicuous, leafy, 2–3-lobed, deciduous; rachises pubescent, prickly; pinnae 4–10 pairs each with 5–10 pairs of leaflets; leaflet blades oblong or ovate, apex obtuse with a fine mucro, 2–3.5 cm × 1–1.8 cm, pubescent to glabrous except for midribs and margins. Racemes axillary, 10–15 cm long, pedicels 4–6 mm long, bracts longer than buds; sepals 6.5–8 mm × 2–3 mm; petals yellowish, 1.2–1.3 cm long. Pods oblong-elliptic, 6–6.5 cm × 4–4.5 cm, prickly, dehiscent, 1–2-seeded; seeds bluish grey.

Widespread along sea coasts throughout the tropics; uncommon in south-eastern Queensland and perhaps not persisting for long. The seeds float and are often seen on beaches. Flowers late summer–autumn.

3. *Caesalpinia scortechinii* (F. Muell.) Hattink

Mezoneuron scortechinii F. Muell.

Sprawling shrub or liane, branchlets pubescent, often prickly, occasionally glaucous. Leaves 2-pinnate, rachises pubescent, prickly; pinnae 4–8 pairs each with 5–10 leaflets; leaflet blades oblong or oblong-elliptic, apex obtuse or retuse, 1.5–2.5 cm × 0.8–1.2 cm.

usually pubescent on undersurface at least on midrib. Racemes *ca* 12 cm long, forming terminal panicles, rachis golden pubescent, pedicels *ca* 3 mm long, bracts longer than buds; sepals tomentose, ovate-orbicular, *ca* 5 mm long; petals yellow, only slightly longer than sepals. Pods rhomboid-ovate to orbicular, 3–5 cm × *ca* 1 cm, with narrow wing along upper suture; seeds blue-green, flat.

On margins of rainforest. Flowers early summer.

4. **Caesalpinia decapetala* (Roth) Alston

WAIT-A-WHILE

Reichardia decapetala Roth; *Caesalpinia sepiaria* Roxb.

Large sprawling shrub, branchlets densely brown pubescent, prickly. Leaves 2-pinnate; stipules ovate, apex acuminate, 0.4–2 cm long; rachises puberulent, prickly; pinnae 4–10 pairs each with 8–12 pairs of leaflets; leaflet blades discolourous, oblong or obovate, apex obtuse, 1–2 cm × 0.4–0.8 cm, pubescent, sometimes only sparsely so. Racemes terminal, simple, 15–30 cm long, pedicels 1.5–2.5 cm long, bracts deciduous; sepals oblong, *ca* 1 cm long, puberulent; petals white or pale yellow, ± orbicular, 1–1.5 cm long, upper one smaller and narrower. Pods oblong, straight, 6–10 cm × *ca* 2.5 cm excluding beak, pubescent, dehiscent; seeds globular.

Native of south-eastern Asia; naturalized in the region, forming dense stands along creeks in coastal districts. Flowers winter.

5. *Caesalpinia subtropica* Pedley

Mezoneuron brachycarpum Benth.; *Caesalpinia brachycarpa* auct. non (A. Gray) Fisher, (Benth.) Hattink

Large climbing shrub, stems with corky flanges, branchlets brown tomentose, usually with few scattered prickles. Leaves 2-pinnate; rachises tomentose, prickly; pinnae 3–6 pairs each with 5–7 pairs of leaflets; leaflet blades oblong or obovate-oblong, apex obtuse,

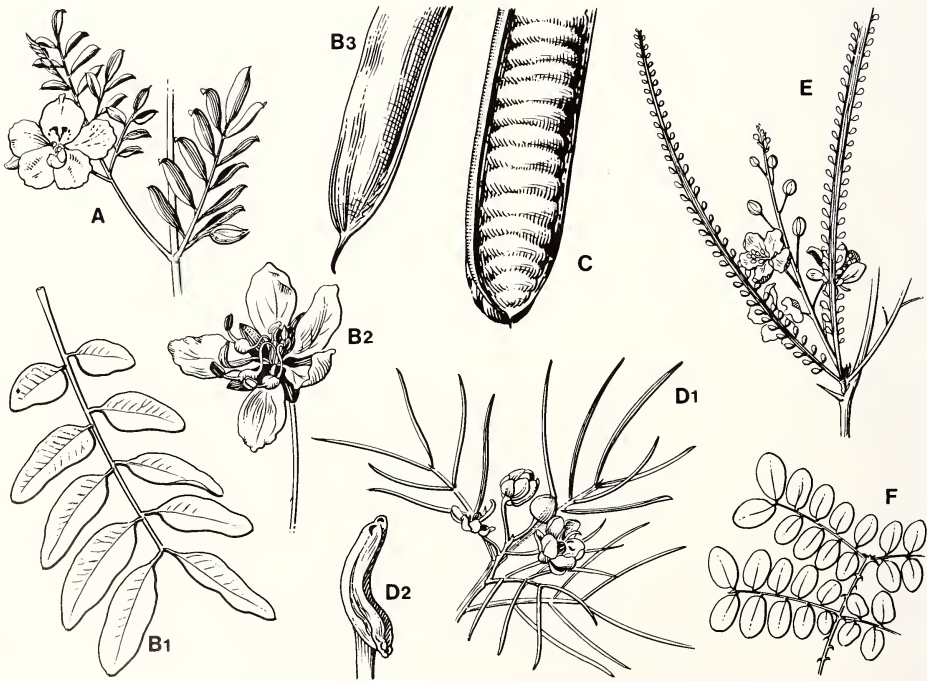


Fig. 63

CAESALPINIACEAE — A *Petalostylis labicheoides*, part of flowering stem $\times \frac{1}{2}$; B₁–B₃, *Cassia marksiana*, B₁ leaf $\times \frac{1}{3}$, B₂ flower $\times 1$, B₃ lower section of pod $\times \frac{2}{3}$; C *Cassia brewsteri*, lower section of pod $\times \frac{2}{3}$; D₁–D₂, *Cassia artemisioides*, D₁ part of flowering branch $\times \frac{2}{3}$, D₂ anther showing terminal pores $\times 6$; E *Parkinsonia aculeata*, part of flowering branch $\times \frac{1}{3}$; F *Caesalpinia subtropica*, part of leaf $\times \frac{2}{3}$.

0.8–1.2 cm × 0.5–0.6 cm, pubescent, occasionally subglabrous. Racemes up to 20 cm long, forming terminal golden pubescent panicles, pedicels *ca* 3 mm long; sepals *ca* 4 mm long, tomentose; petals *ca* same size. Pods ovate, apex acute, *ca* 3 cm × 1.5–2 cm, glabrous, with narrow wing along upper suture, valves cartilaginous; seeds flat. **Fig. 63F.**

Along creeks in rainforests in coastal parts of the region; not common. Flowers early summer.

63. OXALIDACEAE

Herbs or subshrubs. Leaves radical or alternate, exstipulate, digitately or pinnately compound, sometimes simple by suppression of leaflets; leaflets spirally coiled when young, usually folded at night. Flowers solitary or subumbellate, rarely racemose or cymose, bisexual, actinomorphic; calyx 5-fid or 5-partite, imbricate; petals 5, free or basally connate, contorted; stamens 10 (sometimes 5 abortive), hypogynous, basally connate, anthers 2-locular; ovary superior, 5-locular, styles 5, free, persistent, ovules 1–many, placentation axile. Fruits capsular; seeds often with elastic testa, endosperm copious, fleshy, embryo straight.

3 genera with 875 species mostly tropical and subtropical; 1 genus with 2 native and 6–7 naturalized species Australia; 1 genus with 6–7 species south-eastern Queensland.

1. OXALIS L.

Perennial herbs, often bulbous. Leaves 3-, rarely more-foliolate. Inflorescences axillary, cymose, sometimes a cymose umbel or solitary flower; sepals free; stamens 10, obdiplostemonous; ovules numerous, styles 5, free. Fruits loculicidal capsules; seeds projectile with elastic testa.

800 species, cosmopolitan, chiefly Central and South America and South Africa; *ca* 9 species Australia; 6–7 species south-eastern Queensland.

All species tested contain oxalates and are potentially toxic to stock. However under normal conditions they are not readily eaten.

- | | |
|---|--------------------------|
| 1. Plants with underground rhizomes 1–2 cm thick | 1. <i>O. articulata</i> |
| Plants with bulbs or fibrous roots | 2 |
| 2. Petals yellow | 3 |
| Petals white, red, violet or purple | 4 |
| 3. Aerial stems absent, bulbils present at base of plant | 2. <i>O. pes-caprae</i> |
| Aerial stems present, rooting at nodes, bulbils absent | 3. <i>O. corniculata</i> |
| 4. Leaflets not emarginate; petals 2.5–3.5 cm long | 4. <i>O. purpurea</i> |
| Leaflets emarginate; petals 1.5–2 cm long | 5 |
| 5. Leaflets widest at or below middle; pubescent and punctate beneath near margin | 5. <i>O. corymbosa</i> |
| Leaflets widest near apex, subglabrous, not punctate beneath | 6. <i>O. latifolia</i> |

1. **Oxalis articulata* Savigny

SHAMROCK OXALIS

Puberulent perennial with underground rhizomes 1–2 cm thick, bearing terminal rosettes of leaves. Leaves with petioles 5–30 cm long, leaflet blades broadly obovate, apex deeply emarginate, base cuneate, 1–4 cm × 1.5–5 cm. Inflorescences corymbose cymes; petals pinkish, 1–2 cm long. Capsule *ca* 1 cm long.

Native of temperate South America; Granite Belt area, cultivated, occasionally a garden escape. Flowers spring.

2. **Oxalis pes-caprae* L.

SOURSOB

Oxalis cernua Thunb.

Sparsely pubescent, caespitose perennial, with deep bulb emitting annual ascending underground stem bearing bulbils, and rosette of leaves at ground level. Leaves with petioles up to 20 cm long; leaflet blades broadly obovate, apex deeply emarginate, base cuneate, 0.8–2.5 cm × 1.2–3 cm. Inflorescences umbellate cymes; petals yellow, 2–2.5 cm long. Capsules short, rarely formed.

Native of South Africa; weed of cultivation or gardens, uncommon. Flowers mainly winter–spring. This is a declared noxious weed.

3. *Oxalis corniculata* L.CREEPING OXALIS; YELLOW
WOOD-SORREL*Oxalis repens* Thunb.

Creeping ± pubescent perennial. Leaves with small auriculate stipules; petioles 1–8 cm long; leaflet blades broadly obovate, apex deeply emarginate, base cuneate, 0.5–1.8 cm × 0.8–2.3 cm. Inflorescences umbellate, 1–7-flowered; petals 4–7(–10) mm long. Capsules cylindrical, 1–2.5 cm long, hoary, fruiting pedicels usually deflexed. **Fig. 64B.**

Two varieties occur in the region:

- | | |
|---|---|
| 1. Leaflets greenish, glabrous; capsule 1–2.5 cm long, pedicel deflexed | <i>O. corniculata</i> var. <i>corniculata</i> |
| Leaflets greyish, pubescent; capsule 2–2.5 cm long, pedicel erect | <i>O. corniculata</i> var. <i>preissiana</i> |

O. corniculata var. *corniculata* is a common weed throughout the region, especially of lawns and gardens; cosmopolitan. Flowers most of the year. *O. corniculata* var. *preissiana* (Steudel) R. Knuth (*O. preissiana* Steudel) is recorded from drier parts of the region.

O. exilis Cunn., treated as a separate species by some authors, is very similar to *O. corniculata*, but has leaflets 3–5 mm × 3–6 mm, solitary flowered inflorescence, and a fruiting capsule 3–7 mm long; occasionally found in the area.

4. **Oxalis purpurea* L.

LARGE FLOWER WOOD-SORREL

Oxalis variabilis Jacq.

Pubescent or villous perennial with bulb emitting ascending stem and rosette of leaves at ground level. Leaves with petioles 1–10 cm long; leaflet blades broadly obovate, apex obtuse, base cuneate, 0.8–2.3 cm × 0.9–3 cm, punctate and often purple beneath. Flowers solitary, pedunculate; petals pinkish-purple with white base, 2.5–3.5 cm long. Capsules ca 5 mm long.

Native of South Africa; uncommon, south-eastern Darling Downs district. Flowers spring.

5. **Oxalis corymbosa* DC.

LILAC OXALIS; PINK SHAMROCK

Oxalis martiana Zucc.

Pubescent, acaulescent perennial with subterranean bulb 1.5–3 cm long, soon developing into mass of sessile bulbils 3–6 mm long. Leaves with petioles 5–15(–30) cm long; leaflet blades broadly elliptic, apex emarginate, base cuneate, 2–4.5 cm × 2–5.5 cm, punctate beneath. Inflorescences corymbose cymes; petals purplish-pink, 1.5–2 cm long. Capsules rarely formed.

Native of South America; common weed of gardens in region. Flowers mainly spring–summer.

6. **Oxalis latifolia* Kunth

FISHTAIL OXALIS

Subglabrous, acaulescent perennial with subterranean bulb 1.5–3 cm long, emitting bulbils from base, bulbils usually on horizontal stolons 1–4 cm long. Leaves with petioles up to 20 cm long; leaflet blades broadly obtriangular, apex broadly emarginate, base cuneate, 1–6 cm × 2–10 cm. Inflorescences umbellate; petals pale to deep pink, ca 1 cm long. Capsules rarely formed. **Fig. 64C.**

Native of tropical South America; garden weed. Flowers mainly summer.

64. GERANIACEAE

Annual or short-lived perennial herbs or shrubs. Leaves alternate or opposite; stipules often paired; blades mostly lobate, dissected or compound. Flowers axillary, solitary to umbellate, bisexual, actinomorphic or slightly zygomorphic; sepals 4–5, persistent, free or partly connate, imbricate, rarely valvate, dorsal one sometimes spurred; petals 5, rarely 4–0, imbricate, rarely contorted; stamens 10, occasionally some sterile, filaments \pm basally connate, anthers 2-locular; ovary 3–5-locular, ovules 1–2 per loculus, superposed, pendulous. Fruits schizocarps, the carpels splitting off from a central beak (persistent style) each taking a strip of tissue off style, forming an awn which is usually hygroscopic; seeds often patterned, with thin or no endosperm.

5 genera with 750 species cosmopolitan, chiefly north temperate zone and South Africa; 3 genera with 20 species Australia; 3 genera with 9 species south-eastern Queensland.

- | | | |
|--|---|---|
| 1. Posterior (or dorsal) sepal with nectiferous spur adnate to the pedicel
Sepals not spurred | 1. <i>Pelargonium</i> | 2 |
| 2. Fertile stamens 10; awn of mericarp straight or curved in simple arc at maturity, glabrous on inner surface
Fertile stamens 5, alternating with 5 staminodes; awn of mericarp spirally twisted at maturity, pubescent on inner surface | 2. <i>Geranium</i>
3. <i>Erodium</i> | |

1. PELARGONIUM L'Herit. ex Aiton

Leaves often aromatic. Inflorescences terminal, umbellate; flowers zygomorphic; sepals 5, basally connate, posterior one with spur adnate to pedicel; petals 5, usually convolute, free, often clawed, posterior ones usually larger; stamens 10, 3–8 fertile; ovary 5-locular.

250 species mainly tropical and South Africa; 7 native and 3 naturalized species Australia; 2 species south-eastern Queensland.

- | | |
|---|-----------------------|
| 1. Nectary spur 0.5–1 mm long; fertile stamens 3–5; seeds striate | 1. <i>P. inodorum</i> |
| Nectary spur 1–8 mm long; fertile stamens 7–8; seeds smooth or pitted | 2. <i>P. australe</i> |

1. *Pelargonium inodorum* Willd.

Pelargonium clandestinum L'Herit. ex Hook. f.; *P. australe* Willd. var. *clandestinum* (L'Herit. ex Hook. f.) Hook. f.; *Erodium peristeroides* Turcz.

Herb, \pm odoriferous. Leaves opposite; petioles 1–20 cm long; blades broadly ovate, often 5–7-lobed, apex obtuse, base cordate, margin dentate, 0.8–5 cm \times 0.8–6 cm, puberulent. Inflorescences 3–14-flowered; sepals 2–4 mm long; petals usually deep pink, 2–4 mm long. Mericarps pilose, 2 mm \times 1 mm, awn 0.6–1.2 cm long; seeds black or grey, 1.5 mm \times 1 mm.

Rocky, mountainous areas e.g. Glasshouse Mts., Granite Belt, usually in woodland on acidic soils. Flowers summer.

2. *Pelargonium australe* Willd.

Geranium glomeratum Andr.; *Pelargonium glomeratum* (Andr.) Jacq.; *P. erodioides* Hook.; *G. australe* (Willd.) Poir.; *Geranospermum australe* (Willd.) Kuntze; *P. australe* var. *glabrata* Hook.; *P. australe* var. *major* Hook.

Scarcely odoriferous herb. Leaves opposite; petioles up to 15 cm long; blades broadly ovate, 5–7-lobed, apex obtuse, base cordate, margin crenate, 2–9 cm \times 2–8 cm, pubescent to \pm subglabrous. Inflorescences 4–12-flowered; sepals 4–7 mm long; petals pink to white, ca 8 mm long. Mericarps villous to pubescent, 2.5 mm \times 1 mm; seeds black or grey, oblong. **Fig. 64F.**

Granite Belt in the Darling Downs district, on rocky outcrops. Flowers usually spring.

2. GERANIUM L.

Herbs with 1 or more basal stems bearing large basal leaves, giving rise sympodially to 1 or more leafy flowering stems. Inflorescences cymose, ultimate peduncles 1-2-flowered, with 2-4 (respectively) bracteoles at junction of peduncle and pedicel; flowers actinomorphic; stamens all fertile, very rarely 3-5 staminodes; glands 5, alternating with petals; ovary 5-locular, style 5-fid. Mericarps dehiscent from base upwards, curved awn glabrous within; seeds often with distinctly patterned testa.

400 species, cosmopolitan, especially temperate; 10 native and 3 naturalized species Australia; 4 species south-eastern Queensland.

- | | | |
|--|------------------------|---|
| 1. Surface of mericarp glabrous, usually wrinkled; plant softly villous | 1. <i>G. molle</i> | |
| Surface of mericarp pilose or hirsute, smooth; plant coarsely pubescent to subglabrous | | 2 |
| 2. Flowers solitary | 2. <i>G. neglectum</i> | |
| Flowers paired | | 3 |
| 3. Sepals 4-5 mm long; petals 2-4 mm long; seeds brown with elongated alveolae; plant puberulent | 3. <i>G. homeanum</i> | |
| Sepals 5-9 mm long, petals 0.6-1.2 cm long; seeds black with \pm isolateral alveolae; plant coarsely pubescent | 4. <i>G. solanderi</i> | |

1. **Geranium molle* L.

CRANESBILL GERANIUM

Leaves with petioles up to 7 cm long; blades reniform in outline, very deeply 5-9-lobed, lobes narrow, apex obtusely 3-5-toothed, 1-3 cm \times 1-3 cm, cauline reducing. Peduncles 0.8-1.5 cm long, 2-flowered, pedicels up to 1.2 cm long; sepals *ca* 4 mm long; petals pink or purple, 4-6 mm long. Mericarps glabrous, transversely wrinkled or smooth; seeds ellipsoid, \pm smooth.

Native of Europe; recorded from Granite Belt. Flowers mainly spring.

2. *Geranium neglectum* Carolin

Flowering stems reddish, often rooting at nodes, \pm glabrescent. Leaves with petioles up to 7 cm long; blades reniform in outline, deeply, palmately 5-7-lobed, lobes narrow, apex 2-5-lobed, 1-3 cm \times 2.5-4 cm, basal sometimes larger. Peduncles plus pedicels up to 10 cm long, 2 linear bracts *ca* 3 mm long at \pm midpoint; sepals 6-9 mm long; petals pinkish, *ca* 1.4 cm long. Mericarps shortly pubescent; seeds brown, oblong, *ca* 3 mm long, with very small isolateral alveolae, raphe lateral.

Recorded from southern Granite Belt areas along creek banks or swampy or runoff areas. Flowers summer.

3. *Geranium homeanum* Turcz.

Geranium parviflorum Willd.; *G. potentilloides* L'Herit. var. *parviflorum* (Willd.) Hook.; *G. dissectum* L. var. *glabratum* Hook. f.; *G. glabratum* (Hook. f.) Small ex Hanks and Small. Retrorsely puberulent herb. Leaves with petioles up to 10 cm long; blades reniform in outline, palmately 3-5-lobed, lobes with apex divided into 3-5 mucronate lobes, 2-5 cm \times 3-7 cm, basal leaves sometimes larger. Peduncles 1.8-2.5 cm long, pedicels 1.5-2.2 cm long; sepals 4-5 mm long; petals pink or mauve, 2-4 mm long. Mericarps coarsely pubescent; seeds dark brown, \pm oblong, 2.5 mm long, alveolae shallow, elongated, raphe lateral. Fig. 64E.

Mainly coastal districts, generally in wetter areas. Flowers mainly summer.

4. *Geranium solanderi* Carolin

NATIVE GERANIUM

Geranium pilosum Solander ex Willd.; *G. dissectum* L. var. *pilosum* (Solander ex Willd.) Hook. f.; *G. dissectum* L. var. *australe* Benth.

Coarsely, retrorsely pubescent herb. Leaves with petioles up to 30 cm long; blades reniform in outline, deeply 5-7-lobed, apex of lobes divided into 3-5 mucronate lobes, 1-5 cm \times 1.5-7 cm. Peduncles 1-4 cm long, pedicels 2.5-5 cm long; sepals 5-9 mm long;

petals pink often with yellowish veins and pale base, 0.5–1.2 cm long. Mericarps coarsely pubescent; seeds black, ± oblong, 2–8 mm long, alveolae coarse, ± isolateral, raphe basal. **Fig. 64D.**

Two varieties occur in the region:

- | | | |
|--|-----------|---|
| 1. Petals <i>ca</i> 6 mm long; leaf blades 5–7-lobed | | <i>G. solanderi</i> var. <i>solanderi</i> |
| Petals <i>ca</i> 1.2 cm long; leaf blades 7–10-lobed | | <i>G. solanderi</i> var. <i>grande</i> |

Both widespread, usually in drier areas. *G. solanderi* var. *grande* Carolin appears more common. Flowers spring to summer.

3. *ERODIUM* L'Herit. ex Aiton

Flowering stems ± short-lived. Flowers solitary or arranged in terminal umbels, flowers actinomorphic or slightly zygomorphic; sepals 5; petals 5, free; fertile stamens 5, alternating with 5 staminodes; ovary 5-locular, style 5-fid. Mericarps indehiscent, separating completely from rostrum, surmounted by spiral awn with ± long stiff hairs on inner surface, fovea (pit) present on either side of base of awn.

90 species Europe, Mediterranean to Central Asia, temperate Australia, subtropical South America; 2 native and 8 naturalized species Australia; 3 species south-eastern Queensland.

- | | | |
|--|-----------|-------------------------|
| 1. Leaves deeply lobed to pinnatisect or ternate, but not pinnately compound | | 1. <i>E. crinitum</i> |
| Leaves pinnately compound | | 2 |
| 2. Foveae with stalked glands; margin of leaflets dentate | | 2. <i>E. moschatum</i> |
| Foveae without stalked glands; margin of leaflets deeply pinnatifid | | 3. <i>E. cicutarium</i> |

1. *Erodium crinitum* Carolin

CROWFOOT; BLUE CROWFOOT

Herb with scattered, long, white hairs. Basal leaves with petioles up to 20 cm long; blades ovate, deeply palmately 3-lobed, these mucronately lobed, 1.5–4 cm × 1.5–3 cm, cauline leaves reducing. Inflorescences 2–6-flowered, peduncle 2–7 cm long; sepals 6–10 mm long; petals blue to purple with yellow to white veins and base, *ca* 10 mm long. Mericarps 6.5 mm long, foveae shallow, usually with 2 folds beneath them.

Widespread weed, mainly of disturbed sites. Flowers mainly winter–spring. Reported to be good fodder.

E. cygnorum of “Qd Flora” probably refers to the above species as true *E. cygnorum* does not occur in Queensland.

2. **Erodium moschatum* (L.) L'Herit. ex Aiton

MUSKY CROWFOOT

Geranium moschatum L.

Herb with musk-like odour, densely pubescent with simple and glandular hairs. Basal leaves with petioles up to 10 cm long; blades pinnately compound, 2–20 cm long, leaflets sessile, ovate or elliptic, 0.9–3.5 cm × 0.5–3 cm, cauline reducing. Inflorescences 4–7-flowered, peduncle up to 20 cm long; sepals 7 mm long; petals pink, 7–8 mm long. Mericarps *ca* 8 mm long, foveae well defined with deep concentric groove, usually with stalked glands. **Fig. 64G.**

Native of Europe and North Africa; weed of disturbed sites or farmland in the area, not common. Flowers mostly spring.

3. **Erodium cicutarium* (L.) L'Herit. ex Aiton

COMMON CROWFOOT

Geranium cicutarium L.

Hirsute or glandular pubescent herb. Basal leaves with petioles up to 8 cm long; blades pinnately compound, each leaflet ± sessile, acutely lobed, up to 5.5 cm long, cauline leaves reducing. Inflorescences 2–5-flowered, peduncle 3–15 cm long; sepals 4–6 mm long; petals pink or white, 4–6 mm long. Mericarps *ca* 5 mm long, foveae shallow. **Fig. 64H.**

Native of Europe but now ± cosmopolitan; uncommon weed of irrigated pasture or wetter areas. Flowers mainly spring.

65. TROPAEOLACEAE

Succulent prostrate herbs with watery juice. Leaves alternate or the lower opposite; exstipulate; blades simple, peltate. Flowers solitary, axillary, bisexual, zygomorphic; calyx bilabiate, sepals 5, lateral ones slightly broader, dorsal produced into a spur; petals 5 or rarely fewer, unequal; stamens 8, unequal, in 2 whorls; ovary superior, sessile, 3-locular, each 1-ovulate, style single with 3 stigmas. Fruits 3-seeded schizocarps; seeds without endosperm.

1 genus with about 50 species, central and southern America; 1 species naturalized in Australia, occurring in south-eastern Queensland.

1. TROPAEOLUM L.

Characters of the family.

1. **Tropaeolum majus* L.

GARDEN NASTURTIUM

Glabrous, ± succulent sprawling annual up to 50 cm tall. Leaves with long petioles; blades peltate, orbicular, margins sinuate, 5-15 cm diameter, with *ca* 9 main nerves radiating from petiole. Flowers red, orange or yellow, 3-6 cm across, spur 3-4 cm long; petals rounded. **Fig. 64I.**

Native of South America; cultivated and naturalized in waste places around habitation. Flowers spring.

66. ZYGOPHYLLACEAE

Herbs or subshrubs, erect or prostrate; branches usually divaricate and articulate at nodes. Leaves usually opposite; stipulate; blades 2-foliolate or pinnate, rarely simple. Peduncles axillary, usually 1-flowered; flowers bisexual, actinomorphic; sepals 4-6; petals white or yellow, 4-6; stamens same number as or twice, rarely 3 times as many as petals, filaments usually with a scale or wing on inner side at or below middle; ovary superior, 3-5-locular, style simple, ovules 2 or more, rarely 1, in each loculus, superposed, pendulous, anatropous. Fruits capsular, often separating into indehiscent or 2-valved cocci; seeds solitary to several, pendulous, embryo straight.

10 genera with 265 species, tropical and subtropical regions of the world; 5 genera with 34 species Australia; 2 genera with 2 species south-eastern Queensland.

- | | |
|--|-----------------------|
| 1. Leaves pinnate but of two leaflets; capsules angular, thin textured | 1. <i>Zygophyllum</i> |
| Leaves pinnate of several leaflets; capsules woody, separating into usually five prickly indehiscent cocci | 2. <i>Tribulus</i> |

1. ZYGOPHYLLUM L.

Herbs, often prostrate, glabrous. Leaves opposite, fleshy, 2-foliolate or rarely only 2-lobed. Peduncles sometimes paired; petals white or yellow, flat, shortly clawed; floral disc fleshy, concave-angular or cupular; stamens twice number of petals, inserted at base of disc, filaments sometimes without an appendage; ovary sessile, angular, 4-5-locular with 2 or more ovules in each loculus, style angular. Fruits 3-5-angled or winged with exocarp fleshy, indehiscent, separating into cocci or opening loculicidally; seeds 1-6 per loculus, testa with spiral fibres which exude mucus when moistened.

100 species, widespread; 15 species Australia; 1 species south-eastern Queensland.

1. *Zygophyllum apiculatum* F. Muell.

GALL WEED; TWINLEAF

Diffuse herb up to *ca* 60 cm tall. Petioles short, \pm winged; leaflet blades obliquely obovate, 1–3(–4) cm long. Peduncles *ca* 1 cm long; petals yellow, 5, obovate, 1–1.5 cm long, greatly exceeding sepals; stamens 10, filaments narrowly winged in lower half, wing denticulate at summit. Capsules 5-angled, 7–10 mm long, erect, truncate at apex but shortly appendaged on upper outer angles, dehiscent loculicidally, with 1–2 flat seeds per loculus. **Fig. 68C.**

Mainly Darling Downs district but also in Moreton and Burnett districts. Suspected of poisoning stock but evidence inconclusive.

2. TRIBULUS L.

Herbs, usually prostrate or divaricate, hairy. Leaves opposite or alternate, paripinnate. Flowers solitary in axil of smaller leaf of each pair or leaf-opposed when leaves alternate; petals white or yellow, 5, rarely 6, flat, together with sepals caducous; floral disc thin, annular, 5- or 10-lobed or sinuate; stamens 10, rarely 12, filaments without appendages; ovary 5-locular with 1–5 superposed ovules in each loculus, style short, stigma 5-furrowed and 5-lobed at base. Fruits separating into hard, indehiscent, usually spiny cocci.

About 20 species tropical and warm regions of the world; *ca* 9 species Australia; 1 species south-eastern Queensland.

1. *Tribulus terrestris* L.

CALTROP; YELLOW VINE; PUNCTURE VINE

Prostrate, spreading, villous annual or biennial. Leaves of each pair unequal, with 4–6, rarely 8, pairs of obliquely oblong leaflets 0.2–1.2 cm long. Sepals *ca* 4–6 mm long; petals pale to bright yellow, up to *ca* 1 cm long; intrastaminal glands free. Fruits 0.6–1 cm long, from almost glabrous to tomentose; carpels spreading stellately, rugose-muricate on outer surface, with 2 divergent spines 3–8 mm long towards summit or rarely reduced to tubercles, and usually 2 smaller reflexed ones near base; seeds 2–4 in each coccus, horizontal, separated by transverse partitions. **Fig. 68D.**

Throughout the region, mainly as a weed of pasture or stock-holding yards. The common names BULL-HEAD and CATHEAD sometimes used for this plant, are also applied to unrelated plants with spiny fruits. Can be poisonous to stock under certain conditions.

Taxonomic revision of specimens identified as *T. terrestris* may reveal a number of distinct taxa.

67. LINACEAE

Trees, shrubs or herbs. Leaves alternate or opposite; stipules when present sometimes glandular. Flowers bisexual, actinomorphic; sepals 4–5, free or partly united, imbricate; petals 5, contorted, fugacious, free, often clawed; stamens 5 or 10, sometimes alternating with small staminodes, filaments basally connate, anthers 2-locular; ovary superior, 3–5-locular, often with extra partitions projecting from carpel midrib, but not reaching placenta, ovules 2 per loculus, styles 3–5, free or united, stigmas simple, subcapitate. Fruits septicidally dehiscent capsules or drupes; seeds compressed, shining, embryo straight with flat cotyledons.

12 genera with 290 species, cosmopolitan; 2 genera with 3 native and 4 naturalized species Australia; 1 genus with 2–3 species south-eastern Queensland.

1. LINUM L.

Herbs or small shrubs. Leaves alternate, exstipulate; blades sessile, usually narrow, entire, 1- or parallel-veined. Flowers in terminal cymes or corymbs, 5-merous; 5 stamens alternating with 5 staminodes. Fruits subglobose capsules, dehiscent by 10 valves.

230 species temperate and subtropical, especially Mediterranean; 1–2 native and 4 naturalized species Australia; 2–3 species south-eastern Queensland.

- | | | |
|---|----------------------------|---|
| 1. Petals yellow; capsule less than 3.5 mm diameter | 1. <i>L. trigynum</i> | 2 |
| Petals blue or white; capsule more than 3.5 mm diameter | | |
| 2. Styles free | 2. <i>L. usitatissimum</i> | |
| Styles united for ca ¾ of their length | 3. <i>L. marginale</i> | |

1. **Linum trigynum* L.

FRENCH FLAX

Linum gallicum L.

Glabrous multistemmed annual up to 30 cm tall. Leaves linear to linear-elliptic, apex acute, 0.5–1.8 cm × 0.1–0.2 cm. Sepals with margins glandular-ciliate, 3–4 mm long; petals 4–6 mm long; styles free. Capsules subglobose, 2–3 mm diameter.

Native of Europe; possibly garden escape, occasionally found near habitation. Flowers spring.

2. **Linum usitatissimum* L.

FLAX; LINSEED

Erect, glabrous annual up to ca 60 cm tall. Leaves linear to linear-elliptic, apex acute, 1–3 cm × 0.15–0.3 cm, 3-veined. Sepals with narrow membranous margin, 4–6 mm long; petals 0.9–1.2 cm long. Capsules 6–10 mm diameter, beak ca 1 mm long; seeds brown, ca 4 mm long. **Fig. 64J.**

Country of origin uncertain; escape from cultivation, naturalized in a number of areas. Flowers spring to summer. Flax is obtained from the stem fibres; the seeds are pressed to produce linseed oil, the residue being used as stock feed (oil-cake). Can contain potentially toxic amounts of cyanide.

3. *Linum marginale* Cunn. ex Planchon

NATIVE FLAX

Erect, glabrous perennial up to ca 30 cm tall. Leaves linear to linear-elliptic, apex acute, 0.5–2 cm × 0.1–0.2 cm, 1-veined. Sepals with white membranous margins, 4–6 mm long; petals 8–10 mm long. Capsule ca 5–6 mm diameter, beaked; seeds brown, ca 3 mm long.

Mainly southern areas of Darling Downs district. Flowers spring–summer.

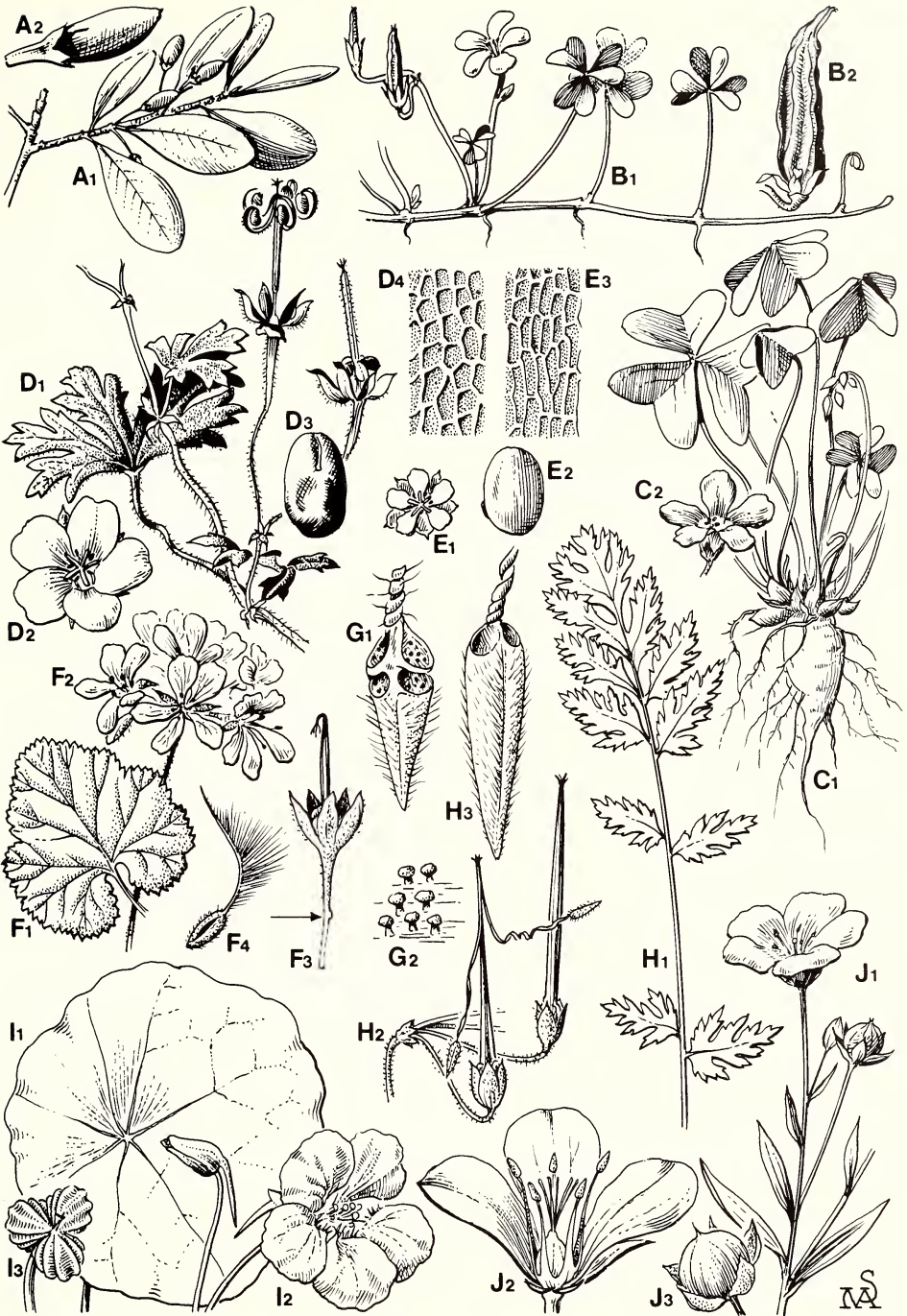
68. ERYTHROXYLACEAE

Trees or shrubs. Leaves generally alternate; stipules intrapetiolar, often caducous. Flowers fasciculate, bisexual, actinomorphic; calyx persistent, campanulate, lobes 5, imbricate; petals 5, free, deciduous, imbricate, mostly ligulate within; stamens 10, 2-seriate, ± basally connate, anthers 2-locular; ovary superior, of 3 carpels, 3-locular (often 2 sterile), 1–2 pendulous ovules per fertile loculus, styles 3. Fruits drupaceous; seeds with endosperm, embryo straight.

2 genera with ca 250 species, tropical; 1 genus with 3 species Australia; 1 genus with 1 species south-eastern Queensland.

Fig. 64

ERYTHROXYLACEAE – A₁–A₂, *Erythroxylum australe*, A₁, part of fruiting stem x½, A₂, fruit x2; **OXALIDACEAE** – B–C *Oxalis* spp. – B₁–B₂, *O. corniculata*, B₁, part of fertile stem x1, B₂, fruit x2; C₁–C₂, *O. latifolia*, C₁, whole plant x½, C₂, flower x1; **GERANIACEAE** – D–E *Geranium* spp. – D₁–D₄, *G. solanderi*, D₁, part of fruiting plant x1, D₂, flower x1½, D₃, seed x6, D₄, enlargement of seed surface showing isolateral alveolae x25; E₁–E₃, *G. homeanum*, E₁, flower x1½, E₂, seed x6, E₃, enlargement of seed surface showing elongated alveolae x25; F₁–F₄, *Pelargonium australe*, F₁, upper leaf x½, F₂, inflorescence x1, F₃, fruit (arrow indicates base of nectary spur) x2, F₄, seed x3; **ERODIACEAE** – G–H *Erodium* spp. – G₁–G₂, *E. moschatum*, G₁, fruit showing glandular foveae at apex x8, G₂, stalked glands of foveae x25; H₁–H₃, *E. cicutarium*, H₁, leaf x½, H₂, part of fruiting inflorescence x1, H₃, fruit (foveae without glands) x8; **TROPAEOLACEAE** – I₁–I₂, *Tropeolum majus*, I₁, leaf x½, I₂, flower and bud x½, I₃, fruit x½; **LINACEAE** – J₁–J₂, *Linum usitatissimum*, J₁, part of fertile stem x1, J₂, flower (2 petals removed) x2, J₃, fruit x1½.



1. ERYTHROXYLUM P. Browne

Leaves alternate. Flowers axillary; sepals slightly basally connate; petals with 2-lobed ligule within; staminal filaments connate into short tube; ovary with 1 fertile loculus, ovule 1, styles connate or nearly free. Seeds solitary.

About 250 species tropical and subtropical, chiefly America and Madagascar; 3 species Australia; 1 species south-eastern Queensland.

1. *Erythroxylum australe* F. Muell.

Glabrous shrub with slender, divaricate branches. Leaves with petioles 2–3 mm long; blades discolourous, elliptic to obovate, apex \pm obtuse, base cuneate, 1–5 cm \times 0.4–2 cm, paler beneath. Flowers white, solitary or paired, peduncles 3–6 mm long; sepals 1–1.5 mm long; petals *ca* 2 mm long. Fruits bright red, ellipsoid, *ca* 7 mm \times 3–4 mm. Fig. 64A.

Depauperate rainforests of the region. Flowers summer.

69. EUPHORBIACEAE

Herbs, shrubs or trees, sometimes with milky sap. Leaves alternate or opposite; usually stipulate; blades mostly simple. Flowers mostly unisexual; calyx usually present; corolla present or absent; stamens few to many; ovary superior, mostly 3-locular, ovules 1 or 2 per loculus, styles free or united. Fruits variable, dehiscent or indehiscent.

About 300 genera with 5000 species worldwide; *ca* 54 genera with *ca* 280 species Australia; 35 genera with 92 species south-eastern Queensland.

1. Male and female flowers arranged in heads resembling single flowers, surrounded by a cup-shaped, usually glandular, involucre	1. <i>Euphorbia</i>	
Male and female flowers distinct, not arranged in heads resembling single flowers		2
2. Leaves opposite		3
Leaves alternate and single, or in threes at each node, or leaves absent		11
3. Capsule 1-locular and 1-seeded by abortion		4
Capsule 2- or more-locular		5
4. Styler arms entire; ovary with 2 ovules per loculus	2. <i>Pseudanthus</i>	
Styler arms 2-lobed or 2-fid; ovary with 1 ovule per loculus	3. <i>Bertya</i>	
5. Capsule 2-locular; seeds with conspicuous caruncle	4. <i>Austrobuxus</i>	
Capsule 3- or more-locular or if 2-locular then seeds without caruncle		6
6. Styler arms entire		7
Styler arms 2-fid or 2-lobed		8
7. Capsule covered with minute glandular granules or with bristle-like processes; leaves usually with minute glandular granules on undersurface and often with stellate hairs when young	5. <i>Mallotus</i>	
Capsule hairy without glandular granules or processes; leaves without glandular granules or stellate hairs	6. <i>Dissiliaria</i>	
8. Styler arms long, densely covered or fringed with papillae (leaves 3- or 5-nerved at base)	7. <i>Adriana</i>	
Styler arms short, not papillose but sometimes stellate hairy		9
9. Leaves and stems with stellate hairs or scales, at least when young	9. <i>Croton</i>	
Leaves and stems glabrous		10
10. Leaves 2 cm or more broad	8. <i>Baloghia</i>	
Leaves 1 cm or less broad	20. <i>Poranthera</i>	
11. Plants climbing	10. <i>Tragia</i>	
Plants not climbing, herbs, shrubs or trees		12

12. Fruits with at least exocarp fleshy, dehiscent or indehiscent		13
Fruits dry, dehiscent		21
13. Flowers or inflorescence terminal		14
Flowers or inflorescence axillary		17
14. Styles long connate at base	11. <i>Sapium</i>	
Styles free or very shortly connate at base		15
15. Styles deeply 2-fid	12. <i>Aleurites</i>	
Styles undivided		16
16. Ovary 3-6-locular; seeds without caruncle	13. <i>Fontainea</i>	
Ovary 2-locular; seeds carunculate	14. <i>Omalanthus</i>	
17. Ovary 1-locular	15. <i>Drypetes</i>	
Ovary 2- or more-locular		18
18. Ovary 2-locular	16. <i>Bridelia</i>	
Ovary 3-4-locular		19
19. Fruits clothed outside with minute globular orange-yellow granules	5. <i>Mallotus</i>	
Fruits without globular granules		20
20. Fruits indehiscent berries; styles 3, very short	17. <i>Breynia</i>	
Fruits dehiscent; styles 3-4, expanded into large stigmatic lobes	18. <i>Petalostigma</i>	
21. Herbs or shrubs with narrow leaves or leaves absent		22
Shrubs or trees with broad leaves		31
22. Leaves in threes at each node	19. <i>Micrantheum</i>	
Leaves single at each node or absent		23
23. Stamens 12 or fewer		24
Stamens numerous		29
24. Ovules 2 per loculus		25
Ovules 1 per loculus		27
25. Capsules 1-locular and 1-seeded by abortion	2. <i>Pseudanthus</i>	
Capsules more than 1-locular		26
26. Petals present; anthers 4-locular, opening by terminal pores	20. <i>Poranthera</i>	
Petals absent; anthers 2-locular, opening longitudinally	21. <i>Phyllanthus</i>	
27. Large shrubs more than 1 m tall; leaves and stems with silvery stellate scales	9. <i>Croton</i>	
Small herbs or shrubs usually less than 60 cm tall; leaves and stems without stellate scales		28
28. Stiff, erect shrubs with angular usually leafless branches; petals absent	22. <i>Ampera</i>	
Weak, usually diffuse herbs or shrubs; petals present or rarely absent	23. <i>Monotaxis</i>	
29. Filaments free	24. <i>Beyeria</i>	
Filaments united in a central column		30
30. Petals present	25. <i>Ricinocarpus</i>	
Petals absent	3. <i>Bertya</i>	
31. Flowers solitary or in clusters, always axillary		32
Flowers in terminal or axillary racemes or spikes or in terminal cymes		36
32. Each female flower surrounded by a conspicuous, usually leafy bract	26. <i>Acalypha</i>	
Each flower not surrounded by a bract		33

33. Styles connate into a column	27. <i>Glochidion</i>	34
Styles free or shortly connate at base		
34. Stamens inserted on a central column	28. <i>Cleistanthus</i>	35
Stamens with filaments free or united only at base		
35. Petals present; male flowers with rudimentary ovary and styles present	29. <i>Actephila</i>	
Petals absent; male flowers without rudimentary ovary or styles	21. <i>Phyllanthus</i>	
36. Leaves with prickly points along margins	30. <i>Alchornea</i>	37
Leaves without prickly points		
37. Leaves deeply 3-12-lobed, almost to base		38
Leaves not lobed or sometimes 3-lobed, but not deeply		39
38. Stamens many; styles feathery or papillose	31. <i>Ricinus</i>	
Stamens 10; styles not feathery nor papillose	32. <i>Manihot</i>	
39. Styles undivided		40
Styles 2 or more times divided		43
40. Styles minutely fringed on inner surface		41
Styles not fringed		42
41. Anthers 4-lobed with narrow connective, stamens usually less than 10	33. <i>Macaranga</i>	
Anthers 2-lobed with broad connective, stamens numerous	5. <i>Mallotus</i>	
42. Stamens many; sap not milky	34. <i>Claoxylon</i>	
Stamens 3; sap milky	35. <i>Excoecaria</i>	
43. Each female flower surrounded by a conspicuous, usually leafy bract;		
stamens usually 8	26. <i>Acalypha</i>	
Each female flower not surrounded by a bract; stamens numerous		44
44. Leaves 3-5-nerved at base, often 3-lobed; stipules glandular	7. <i>Adriana</i>	
Leaves not 3-5-nerved at base, not lobed; stipules not glandular		45
45. Leaves glabrous	8. <i>Baloghia</i>	
Leaves with stellate scales or hairs, at least when young	9. <i>Croton</i>	

1. EUPHORBIA L.

Herbs or shrubs with milky sap; some species succulent leafless shrubs. Leaves when present opposite or alternate; stipules usually present and interpetiolar when leaves opposite. Flower heads (cyathia) resembling single flowers, consisting of a cup-shaped involucre with 4 or 5 teeth, alternating with and often concealed by as many horizontal glands, sometimes bordered by petal-like appendages; within the involucre are few to several male flowers consisting of a single stamen with an articulated filament, in the centre a single female flower consisting of a stipitate 3-locular ovary, style 3-fid, each branch 2-fid or entire. Fruits capsules, separating into 3, 2-valved segments.

Approximately 2 000 species, cosmopolitan but chiefly from subtropical and warm temperate areas; ca 45 species Australia; 17 species south-eastern Queensland.

1. Leaves absent, or alternate on stem below terminal fertile branches,		
except sometimes for lowermost 1 or 2 pairs		2
Leaves opposite throughout		6
2. Glands of cyathia with 2 filiform horns	1. <i>E. peplus</i>	3
Glands of cyathia without horns		

- | | | |
|---|--|----------|
| 3. Cyathia solitary in axils, leaves subtending cyathia not markedly different from stem leaves or sometimes leaves absent
Cyathia irregularly clustered at top of stems and branches or in pairs, often opposite leaves subtending cyathia of a different shape and size from alternate stem leaves | 2. <i>E. tannensis</i> | 4 |
| 4. Seeds reticulately pitted
Seeds tuberculate, with or without longitudinal ridges | 3. <i>E. helioscopia</i> | 5 |
| 5. Seeds with 3 longitudinal ridges as well as tubercules; upper leaves never reddish at base
Seeds without longitudinal ridges; upper leaves often reddish at base | 4. <i>E. heterophylla</i>
5. <i>E. cyathophora</i> | |
| 6. Seeds 1.8 mm or more long
Seeds less than 1.8 mm long | | 7
9 |
| 7. Fruits <i>ca</i> 1 cm × 1.2 cm; seeds <i>ca</i> 6 mm long
Fruits less than 5 mm × 6 mm; seeds less than 3.5 mm long | 6. <i>E. lathyris</i> | 8 |
| 8. Cyathia irregularly clustered at tops of stems
Cyathia solitary, terminal or axillary | 7. <i>E. dentata</i>
2. <i>E. tannensis</i> | |
| 9. Seed coats smooth
Seed coats with transverse wrinkles | 8. <i>E. atoto</i> | 10 |
| 10. Cyathia solitary in axils
Cyathia clustered into usually leafy inflorescence, terminal or in upper axils | | 11
14 |
| 11. Capsules hairy
Capsules glabrous | | 12
13 |
| 12. Capsule pedicellate, ripening outside cyathium; hairs confined to keels
Capsule not pedicellate, ripening within cyathium causing the involucre to split down one side, hairs spread over three faces of capsule | 9. <i>E. prostrata</i>
10. <i>E. thymifolia</i> | |
| 13. Capsules with fringed receptacle appendage at base; seed faces ± smooth
Capsules without fringed receptacle appendage at base; seed faces wrinkled | 11. <i>E. dallachyana</i>
12. <i>E. drummondii</i> | |
| 14. Prostrate plants forming a mat; found on coastal sands
Procumbent or erect plants | 13. <i>E. sparrmannii</i> | 15 |
| 15. Capsules with at least a few hairs; cyathia usually in leafless heads
Capsules glabrous; cyathia in leafy clusters | 14. <i>E. hirta</i> | 16 |
| 16. Leaves subtending each cyathium longer than cyathium and its peduncle
Leaves subtending each cyathium shorter than cyathium and its peduncle | 15. <i>E. hyssopifolia</i> | 17 |
| 17. Upper leaves usually 3.5 or more times as long as broad, glabrous or very sparsely hairy
Upper leaves usually less than 3.5 times as long as broad, usually pubescent | 16. <i>E. vachellii</i>
17. <i>E. macgillivrayi</i> | |

1. **Euphorbia peplus* L.**PETTY SPURGE; RADIUM PLANT**

Annual, erect or ascending, glabrous, up to *ca* 40 cm tall, often with a main central stem and 2 or more stems from the base. Fertile branches usually 3 at top of each stem and in upper axils, each fertile branch with 3–5 dichotomous branches. Leaves of main stems alternate; petioles 1–6 mm long; blades broadly obovate, apex obtuse, base cuneate, margin entire, 0.7–2.5 cm × 0.5–1.6 cm; leaves of fertile branches opposite; petioles up to *ca* 3 mm long; blades at base of fertile branches similar to main stem leaves, those at

top of fertile branches ovate or triangular-rhomboid, apex obtuse, 0.4–1.7 cm × 0.4–1.7 cm. Cyathia *ca* 1 mm diameter, glands with 2 filiform horns. Fruits *ca* 2 mm × 2 mm, ± smooth; seeds *ca* 1.2 mm long, inner surfaces smooth and concave with a longitudinal furrow between them, other surfaces with 3–4 dark pits. **Fig. 65K, 65S.**

Native of Europe; widely naturalized, common weed of home gardens and cultivation.

2. *Euphorbia tannensis* Sprengel

Two subspecies occur in the region:

- | | |
|---|--|
| 1. Leaves less than 6.5 times as long as broad; plants of coastal sands | (a) <i>E. tannensis</i> subsp. <i>tannensis</i> |
| Leaves more than 8 times as long as broad; plants of inland areas | (b) <i>E. tannensis</i> subsp. <i>eremophila</i> |

(a) *Euphorbia tannensis* subsp. *tannensis*

Euphorbia eremophila Cunn. var. *latifolia* Boiss.; *E. vieiardii* Baillon; *E. clutioides* (Forster f.) C. A. Gardner

Shrub up to *ca* 60 cm tall, usually remaining leafy in the upper branches. Leaves alternate at base of plant, opposite above; petioles up to *ca* 4 mm long; blades ovate to somewhat obovate-spathulate, apex obtuse, base tapering to petiole or rounded, margin ± entire to serrulate, 1–6 cm × 0.25–1.8 cm, glabrous or almost so. Cyathia solitary, terminal or axillary, peduncle 1–1.5 mm long; glands 4, ± ovate, appendages entire or crenate to palmatifid. Capsules globose-triangular, *ca* 4 mm × 4 mm; seeds grey or speckled with brown spots, up to *ca* 2.5 mm × 1.8 mm, ± smooth, caruncle light brown, conspicuous, hat-shaped, persistent. **Fig. 65O.**

Not common but known from coastal sands of the Moreton and Wide Bay districts.

(b) *Euphorbia tannensis* subsp. *eremophila* (Cunn.) D. C. Hassall DESERT SPURGE; BOTTLE TREE CAUSTIC

Euphorbia eremophila Cunn.; *E. eremophila* var. *genuina* Baillon; *E. eremophila* var. *microdendron* Baillon; *E. eremophila* var. *phyllanthina* Baillon; *E. eremophila* var. *filiformis* Baillon; *E. eremophila* var. *typica* Domin; *E. deserticola* F. Muell.; *E. eremocarpos* Pharm. ex Wehmer

Shrub up to *ca* 1 m, rarely up to 1.5 m tall, sparsely branched, at length leafless. Leaves with petioles up to *ca* 4 mm long; blades linear to very narrowly ovate, apex obtuse to acute, base tapering to petiole or cuneate, margin ± entire to serrulate, 1.5–7 cm × 0.15–0.7 cm, glabrous or almost so. Inflorescences as for subsp. *tannensis*. Fruits globose-triangular, up to *ca* 6 mm × 6 mm; seeds grey to brownish, up to *ca* 3 mm × 1.8 mm, smooth to undulate or occasionally somewhat rugose, caruncle yellow-brown, conspicuous, hat-shaped, persistent. **Fig. 65N.**

Not common, but known from western parts of the Darling Downs and Burnett districts.

3. **Euphorbia helioscopia* L. SUN SPURGE

Annual, erect or spreading, up to *ca* 50 cm tall; stems 1–many with at least a few long fine spreading hairs especially in upper part, each stem with 5 terminal fertile branches which are each 3-branched and again once to three times forked. Stem leaves alternate, leaves of fertile branches opposite; stem leaves with petioles *ca* 1 mm long; blades obovate, apex obtuse, base cuneate or tapering gradually to petiole, serrate towards apex, ± entire at base, 0.8–3 cm × 0.7–2 cm, usually with a few fine hairs above and below; lower leaves of fertile branches similar to stem leaves but usually somewhat larger, upper leaves of fertile branches orbicular or elliptic, margin serrulate, 0.5–1.5 cm × 0.5–1.5 cm. Cyathia usually in pairs, *ca* 2 mm long. Fruits 2–2.5 mm × 3–3.5 mm, smooth, glabrous; seeds brown, ovoid, flattened at apex, 1.5–2 mm long, reticulate-pitted. **Fig. 65I.**

Native of Europe and central and eastern Asia; naturalized in the Burnett and Darling Downs districts, often on heavy soils.

4. **Euphorbia heterophylla* L.

Annual, usually 20–80 cm tall; main stems erect, 3–8 mm thick, often with side branches from almost every node, upper part of plant usually dichotomously branched, branches usually with at least a few long spreading hairs. Leaves opposite at lowermost 1 or 2 nodes, alternate over most of stem, then opposite in fertile region; petioles 0.5–4 cm long; blades mostly ovate to ovate-elliptic or rhombic-ovate, apex acute, base rounded to cuneate, margin entire or shallowly toothed, 2–12 cm × 0.8–5 cm, glabrous or with sparse to dense crisped or spreading hairs above, below and on petiole. Cyathia irregularly clustered at summit of stem and branches, peduncles 1–3 mm long, each cyathium *ca* 2.5 mm long. Fruits 3–4 mm × 5–6 mm, glabrous; seeds dark brownish or dark grey mottled, ovoid with 3 longitudinal ridges, *ca* 2.5–3 mm long, with coarse blunt tubercles. **Fig. 65L.**

Native of tropical America; naturalized in the Wide Bay and Burnett districts.

5. **Euphorbia cyathophora* Murray DWARF POINSETTIA; PAINTED SPURGE

This has been mistakenly included under *Euphorbia heterophylla* L. in the past.

Annual up to *ca* 70 cm tall; main stems erect, mostly 3–5 mm thick, often with lateral branches, usually dichotomously branched at upper part of plant, branches glabrous or almost so. Leaves opposite at lowermost 1 or 2 nodes, alternate over most of stem then opposite in fertile region; petioles 0.4–1.2 cm long; blades elliptic to obovate or fiddle-shaped, apex acuminate, base cuneate, margin serrate or entire, 2–10 cm × 1–4 cm, upper surface glabrous, lower surface with at least a few appressed crisped hairs, uppermost leaves usually reddish-pink towards base. Cyathia irregularly clustered at summit of stems and branches, peduncle stout, 1.5–3 mm long, each cyathium *ca* 2–2.5 mm long. Fruits 3–4 mm × 5–6 mm, glabrous; seeds dark brown though sometimes tubercles light brown, ovoid without ridges, *ca* 3 mm long, tuberculate. **Fig. 65M.**

Native of tropical America; naturalized in the eastern half of the region.

6. **Euphorbia lathyris* L.

CAPER SPURGE

Annual, erect, 60–100 cm tall, glabrous, ± glaucous; stems solitary, usually 0.7–1.2 cm thick when mature, often with a few sterile branches at base and with a whorl of 4 terminal fertile branches, and also fertile branches from upper axils, each fertile branch itself 2–5-branched. Stem leaves opposite, decussate, ± sessile, linear to narrowly ovate, apex acute to obtuse, often mucronulate, base somewhat cordate, margin recurved, entire, mostly 3–12 cm × 0.5–2 cm, leaves on lower sterile branches smaller, dark green and shiny above, glaucous beneath with one prominent nerve; leaves of fertile branches subsessile, triangular-ovate, apex acute or acuminate, base oblique-cordate, up to 6 cm × 4 cm. Cyathia solitary, terminal and in upper axils of fertile branches, *ca* 3 mm × 3 mm; glands with 2 club-shaped horns. Fruits spongy on outside, *ca* 1 cm × 1.2 cm, smooth, rugose when dry, with a longitudinal furrow along each ridge; seeds brown, ovoid, *ca* 6 mm × *ca* 4 mm, netted-rugose. **Fig. 65P.**

Native of Europe; sometimes cultivated as an ornamental and apparently naturalized in a few places in the Moreton and Darling Downs districts.

7. **Euphorbia dentata* Michaux

Annual up to 50 cm tall, usually with a central erect stem up to *ca* 4 mm thick and few to many lateral branches, main stem and lateral branches giving rise to fertile branches in upper axils; stems and branches with dense short retrorse hairs and some relatively long hairs especially towards the top of stem. Leaves opposite, rarely alternate; petioles 5–10 mm long; blades narrowly ovate to ovate, apex acute or subacute, base attenuate or cuneate, margin dentate-serrate, 0.7–9 cm × 0.5–2 cm, leaves of fertile branches smallest, hispid above, with sparse ± crisped hairs below. Cyathia irregularly clustered at summits of stems, each cyathium *ca* 2 mm long. Fruits 2–3 mm × 4–5 mm, glabrous; seeds mottled brown or grey, *ca* 2.5 mm long, with 3 longitudinal ridges and a longitudinal furrow, caruncle minute, shortly stalked. **Fig. 65Q.**

Native of the southern United States of America and Mexico; naturalized, widespread but not common, usually found as a weed of cultivation.

8. *Euphorbia atoto* Forster f.*Chamaesyce atoto* (Forster f.) Croizat

Perennial, diffuse or procumbent, up to *ca* 40 cm tall, glabrous. Leaves opposite; petioles 1–2 mm long; blades broadly oblong, apex obtuse or mucronulate, base usually obliquely cordate, 0.8–3 cm × 0.5–1.8 cm. Cyathia in terminal leafy corymbs, glandular appendages indistinct. Fruits 2–2.3 mm × 2.5–3 mm, glabrous; seeds greyish, *ca* 1.5 mm long, smooth or with 3 indistinct longitudinal ridges furrowed along back. **Fig. 65A.**

Coastal sands, not common.

9. **Euphorbia prostrata* Aiton

RED CAUSTIC-CREEPER

Chamaesyce prostrata (Aiton) Small

Annual, prostrate, sparsely hairy, hairs usually crisped; stems several, up to *ca* 20 cm long. Leaves opposite; stipules narrowly deltoid, *ca* 0.8–1 mm long; petioles 0.5–1 mm long; blades oblong to ovate-oblong, apex rounded, base oblique and rounded, margin serrulate especially towards apex, 3–8 mm × 1–5 mm. Cyathia solitary in axils but occasionally appearing clustered by reduction of axillary branches, glandular appendages whitish, inconspicuous. Fruits on a decurved pedicel, *ca* 1.3 mm × 1.2 mm, smooth, strigose or crisply villous along angles; seeds pale brownish, often with a whitish bloom, sharply 4-angular, acute at apex, 0.9–1 mm long, each face with several transverse ridges. **Fig. 65F.**

Native of the Americas; naturalized throughout the region.

10. **Euphorbia thymifolia* L.

RED CAUSTIC-CREEPER

Annual, prostrate, sparsely hairy, hairs usually crisped; stems several, up to *ca* 20 cm long. Leaves opposite; stipules narrowly deltoid, up to *ca* 1.5 mm long; petioles 0.8–1.5 mm long; blades oblong to ovate-oblong, apex rounded, base oblique and rounded, margin serrulate especially towards apex, 3–8 mm × 1–4 mm. Cyathia solitary in axils but sometimes appearing clustered by reduction of axillary branches, glandular appendages whitish, inconspicuous. Capsule ± sessile, *ca* 1.3 mm × 1.2 mm, smooth, with crisped hairs spread over the 3 faces; seeds pale brownish, often with a whitish bloom, 4-angular, *ca* 1 mm long, each face with few transverse ridges.

Probably native of southern Asia. At the time of writing the species was known in south-eastern Queensland from the north-eastern Wide Bay district but is likely to spread throughout coastal parts of the region.

11. *Euphorbia dallachyana* Baillon

CAUSTIC WEED; MAT SPURGE

Chamaesyce dallachyana (Baillon) D. C. Hassall; in the past mistakenly included under *Euphorbia drummondii* Boiss.

Prostrate or diffuse, glabrous much-branched herb; stems mostly 10–20 cm long. Leaves opposite; stipules of opposite leaves touching, fringed; petioles up to *ca* 1 mm long; blades ovate or oblong, apex obtuse or notched, base oblique, margin entire or serrulate, 2–10 mm × 1.5–5 mm. Cyathia solitary or few together in axils, peduncle up to *ca* 1 mm long, involucre *ca* 0.5 mm long, glands ± ovate, appendages very narrow and somewhat lobed. Fruits green, globose-triangular, *ca* 1.5–1.8 mm long, with a fringed receptacle appendage at its base, glabrous; seeds brownish or greyish, *ca* 1 mm long, with 4 longitudinal ridges, otherwise ± smooth. **Fig. 65G, 65U.**

Moderately common, known from the Moreton and Wide Bay districts and from the eastern Darling Downs district.

12. *Euphorbia drummondii* Boiss.

CAUSTIC WEED; MAT SPURGE

Chamaesyce drummondii (Boiss.) D. C. Hassall

Prostrate or diffuse, glabrous, much-branched herb, with a perennial thick or woody rhizome; stems mostly 10–15 cm long. Leaves opposite; stipules of opposite leaves barely touching, lacerate; petioles up to *ca* 1 mm long; blades orbicular, ovate or oblong, apex obtuse or notched, base oblique, margin entire or serrulate, 2–10 mm × 2–5 mm. Cyathia solitary or few together in upper axils, involucre *ca* 0.5 mm long, glands red, ± ovate, with very narrow pink or white ± entire appendages. Fruits green, globose-triangular, *ca* 1.5–1.8 mm long, glabrous; seeds brownish, *ca* 1 mm long, rugose and with 4 longitudinal ridges. **Fig. 65H, 65T.**

Known from a few places in the Darling Downs district and probably also to be found in the Burnett district.

13. *Euphorbia sparmannii* Boiss.

Chamaesyce sparmannii (Boiss.) Hurusarva; previously often mistakenly included in *Euphorbia atoto* Forster f.

Perennial, prostrate, forming mats up to 1 m in diameter; stems often reddish, many from a woody rootstock, glabrous. Leaves opposite; petioles 1–2 mm long; blades ovate or ovate-oblong, apex obtuse, base rounded-oblique, margin entire, 0.7–2.5 cm × 0.5–1.5 cm, 3-nerved at base, glabrous, green above, whitish or sometimes reddish below. Cyathia in terminal leafy cymes, each cyathium *ca* 1.5 mm long, glandular appendages entire, white, *ca* 0.4 mm broad. Fruits *ca* 2 mm × 2.5 mm, smooth, glabrous, seeds brownish or whitish, ovoid-tetragonous, *ca* 1–1.5 mm long, rugose-tuberculate. **Fig. 65B.**

Found on coastal sands of the Moreton and Wide Bay districts.

14. **Euphorbia hirta* L.

ASTHMA PLANT

Euphorbia pilulifera L.; *Chamaesyce hirta* (L.) Millsp.

Annual, decumbent to ± erect; stems few, 2–40 cm long, with sparse to dense, short crisped appressed hairs, and long spreading yellowish hairs. Leaves opposite; petioles 1–2 mm long; blades usually rhombic-ovate, but sometimes narrowly ovate to ovate, apex acute, base oblique, margin sharply to bluntly serrate, 0.4–4.5 cm × 0.2–2 cm, strigose above, lower surface with appressed to spreading crisped hairs. Cyathia in dense, stalked, essentially leafless heads in upper axils, each cyathium *ca* 0.7 mm long, glandular appendages pink or white, minute or sometimes absent. Fruits 1–1.2 mm × *ca* 1.5 mm, with sparse to dense, appressed, short crisped hairs; seeds ovoid-tetragonous, truncate basally, *ca* 0.8 mm long, with ± regular transverse wrinkles. **Fig. 65J.**

Possibly of American origin but now widespread in tropical regions of the world; widespread and common in the region.

15. **Euphorbia hyssopifolia* L.

Chamaesyce hyssopifolia (L.) Small

Annual, erect or ascending, up to *ca* 45 cm tall; stems often reddish or yellowish, glabrous or with sparse to dense crisped hairs, especially on younger parts. Leaves opposite; petioles 1–1.5 mm long; blades ovate, oblong or rhombic-ovate, apex rounded to acute, base rounded and oblique, margin serrate, 0.5–3.5 cm × 0.2–1.5 cm, glabrous or often with a few long spreading hairs towards base, nerves usually several at base. Cyathia solitary in axils but usually appearing clustered by shortening of internodes, leaves subtending each cyathium longer than cyathium and its peduncle, glandular appendages white or pink, up to *ca* 0.5 mm wide. Fruits *ca* 1.5–2 mm × 1.5–2 mm, glabrous; seeds pale brownish to whitish, ovoid-tetragonous, *ca* 1 mm long, with 2 or 3 transverse wrinkles on each face. **Fig. 65C, 65R.**

Native of the southern United States of America and Mexico; first recorded as naturalized in 1960 from Rainworth, a suburb of Brisbane, and now rather common in the Brisbane area, usually found as a weed of disturbed areas or as a weed of garden beds and lawns.

16. *Euphorbia vachellii* Hook. & Arn.

Euphorbia serrulata Reinw. ex Blume; *E. macgillivrayi* Boiss. var. *pseudoserrulata* Domin; *Chamaesyce vachellii* (Hook. & Arn.) Hara

Annual or perennial, erect or procumbent, up to *ca* 30 cm tall; stems one to several from base, glabrous or with a few crisped hairs, especially on young parts. Leaves opposite; petioles 0.5–2 mm long; blades linear to linear-oblong to oblong or rarely elliptic to ovate, apex obtuse to acute, base oblique and sometimes subcordate, margin sparsely to densely serrate or serrulate, 0.5–6 cm × 0.2–1 cm, glabrous or with sparse crisped hairs. Cyathia in rather dense shortly pedunculate cymes in upper axils, floral leaves much reduced or only lower pair developed and leafy, glandular appendages ± entire, 0.5–1 mm broad. Fruits *ca* 1.5–1.8 mm × 1.8–2.0 mm, glabrous, smooth; seeds greyish or brownish, *ca* 1.2 mm long, transversely wrinkled, sometimes reticulately so. **Fig. 65D.**

Widespread in a variety of habitats, most common in the Moreton and Wide Bay districts.

The species as accepted here may consist of more than one taxon but further research is needed.

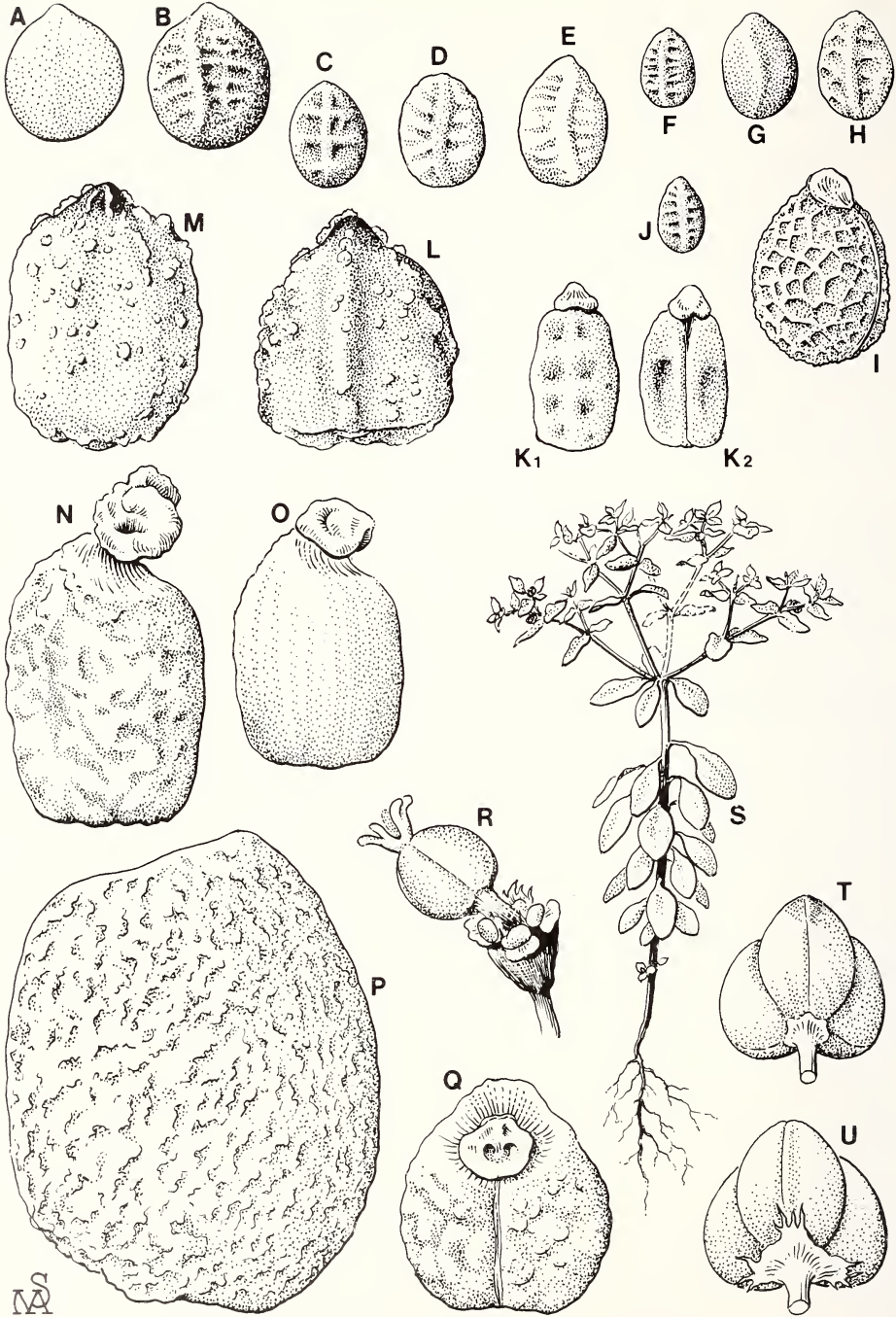


Fig. 65

EUPHORBIACEAE — A-U *Euphorbia* spp. — A-Q seeds of *Euphorbia* spp., all x12 — A *E. atoto*; B *E. sparmannii*; C *E. hyssopifolia*; D *E. vachellii*; E *E. macgillivrayi*; F *E. prostrata*; G *E. dallachyana*; H *E. drummondii*; I *E. helioscopia*; J *E. hirta*; K₁-K₂, *E. pepus*, K₁ dorsal view, K₂ ventral view; L *E. heterophylla*; M *E. cyathophora*; N *E. tannensis* subsp. *eremophila*; O *E. tannensis* subsp. *tannensis*; P *E. lathyris*; Q *E. dentata*; R *E. hyssopifolia*, cyathium showing glands, glandular appendages and young fruit x12; S *E. pepus*, habit x $\frac{1}{2}$; T *E. drummondii*, capsule without a fringed appendage x12; U *E. dallachyana*, capsule with a fringed appendage x12.

17. *Euphorbia macgillivrayi* Boiss.*Chamaesyce macgillivrayi* (Boiss.) D. C. Hassall

Perennial but often flowering the first year so as to appear annual; erect or procumbent, up to *ca* 30 cm but often less than 15 cm tall, \pm pubescent; stems at length arising from a woody rhizome. Leaves opposite; petioles 0.5–2 mm long; blades ovate-oblong to oblong, apex obtuse to acute, base oblique or subcordate, 0.6–4.4 cm \times 0.3–0.9 cm, lower leaves usually shorter and broader than upper leaves. Cyathia in dense shortly pedunculate axillary or terminal cymes, floral leaves reduced or only lower pair developed and leafy, each cyathium 1–1.8 mm long, glandular appendages entire, 0.8–2 mm broad. Capsules *ca* 1.8 mm long, glabrous, smooth; seeds greyish or brownish, *ca* 1.2–1.4 mm long, transversely wrinkled. **Fig. 65E.**

Not common, known mainly from sandy soils in the eastern part of the region.

Further research may show that **E. macgillivrayi** is merely a pubescent form of **E. vachellii**. Intermediates between the two taxa make identification difficult.

2. PSEUDANTHUS Sieber ex Sprengel

Low shrubs, monoecious. Leaves opposite or alternate; stipules small, subulate; blades small, coriaceous, apex obtuse, margins thick, midvein prominent beneath. Flowers in upper axils, males clustered, females solitary and alone or with one or more males; perianth of males and females usually of 6 segments, nearly equal; male flowers with 3, 6 or more stamens (6 in Queensland species); female flowers with 3-locular ovary, 2 ovules per loculus. Capsules 1-locular, 1-seeded.

7 species endemic to Australia; 2 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Male perianth segments linear, 0.8–1.2 cm long; leaves mostly 0.8–1.2 cm long | 1. <i>P. pimeleoides</i> |
| Male perianth segments ovate or oblong, <i>ca</i> 1 mm long; leaves mostly 4–8 mm long | 2. <i>P. orientalis</i> |

1. *Pseudanthus pimeleoides* Sieber ex Sprengel

Erect, up to *ca* 1 m tall, glabrous. Leaves alternate; petioles very short; blades linear or narrowly ovate, apex acute, 0.8–1.5 cm \times 0.1–0.2 cm. Male flowers conspicuous, clustered at ends of branches, perianth segments yellowish, 0.8–1.2 cm long, exceeding upper leaves; female flowers inconspicuous. Capsules 5–6 mm long, smooth.

Known only from the Glasshouse Mts. Flowers mostly spring.

2. *Pseudanthus orientalis* (Baillon) F. Muell.*Caletia orientalis* Baillon

Shrubs up to *ca* 30 cm tall, rarely taller. Leaves mostly alternate, often crowded, thick, concave, apex obtuse but often recurved at end, 4–8 mm \times 1–1.5 mm. Male flowers small, pedicels up to *ca* 2 mm long, often less, perianth yellow, *ca* 1 mm long; female perianth *ca* 2 mm long. Capsules *ca* 4 mm long.

Known from the Moreton and Wide Bay districts, on sandy wallum soils and also on rocky mountain slopes. Flowers mostly spring but found most of the year.

A third species, ***Pseudanthus ovalifolius*** F. Muell., was reported from Queensland by F. Mueller last century but as there are no specimens in the Queensland Herbarium the species is not included here.

3. **BERTYA** Planchon

Shrubs, monoecious. Leaves alternate or opposite; exstipulate; blades with margins recurved or revolute, rarely flat, glabrous above when mature, white tomentose underneath. Flowers axillary, solitary or few together, bracts small, 3-8 on peduncle, sometimes resembling perianth; perianth of male and female flowers deeply divided into 5 petal-like segments, sometimes enlarging around fruit, glands absent; male flowers with numerous stamens united in central column; female flowers with 3 styles, free or shortly united at base, each one deeply divided into 2 or more branches, ovary 3-locular with 1 ovule per loculus. Fruits capsules, usually 1-locular and 1-seeded by abortion.

23 species endemic to Australia; 4 species south-eastern Queensland.

- | | |
|--|-----------------------------|
| 1. Ovary and capsule glabrous | 2 |
| Ovary and capsule hairy | 4 |
| 2. Leaf margins revolute but showing underside of leaves, blades up to 7.5 cm long | 4. <i>B. oleifolia</i> |
| Leaf margins revolute to midrib, not showing underside of leaves, blades up to 4 cm long | 3 |
| 3. Flowers almost sessile; leaves 2-4 cm long; fruiting perianth enlarged, enclosing fruit | 1. <i>B. pinifolia</i> |
| Flowers on peduncles 1-2 mm long; leaves less than 2 cm long; fruiting perianth not enlarged | 2. <i>B. cunninghamii</i> |
| 4. Leaf margins revolute to midrib, blade 1-2 cm long; fruiting perianth scarcely enlarged, not enclosing fruit | 3. <i>B. rosmarinifolia</i> |
| Leaf margins revolute but showing underside of leaves; blade mostly greater than 2 cm long; fruiting perianth much enlarged, enclosing fruit | 4. <i>B. oleifolia</i> |

1. ***Bertya pinifolia*** Planchon

Shrub *ca* 1-2 tall. Leaves narrowly linear, margin much revolute, 2-4 cm × 0.1-0.15 cm, upper surface scabrid. Flowers almost sessile, bracts thick, unequal; ovary glabrous. Capsules ovoid, up to *ca* 8 mm long, enclosed in enlarged perianth.

Not common, known from the Wallangarra area on soils of granitic origin.

2. ***Bertya cunninghamii*** Planchon

Shrub up to *ca* 2 m tall, glabrous or almost so, ± viscid. Leaves narrowly linear with much revolute margin, 1-2 cm × 0.1-0.15 cm. Flowers small, solitary, peduncles 1-2 mm long; ovary glabrous. Capsules ovoid, *ca* 6 mm long, glabrous, perianth not enlarging.

One doubtful Queensland specimen only, from Cooyar.

3. ***Bertya rosmarinifolia*** (Cunn.) Planchon

Croton rosmarinifolium Cunn.

Shrub up to 2.5 m tall, young branches and foliage clothed with short close stellate tomentum, wearing off with age. Leaves linear, margin much revolute, 1-2 cm × 0.1-0.15 cm. Flowers small, usually solitary, peduncle 1-2 mm long; ovary densely pilose. Capsules ovoid-oblong, 6-8 mm long, stellate-pilose, perianth not enlarging.

Known from the vicinity of Wallangarra in the Darling Downs district. Flowers spring-summer.

4. ***Bertya oleifolia*** Planchon

Shrub up to *ca* 1.3 m tall, young branches and leaves densely stellate-tomentose. Leaves with petioles up to *ca* 3 mm long; blades linear to narrowly ovate, apex obtuse, base narrowing to petiole, margin revolute, 2-6(-7.5) cm × (0.2-)0.3-0.8 cm, lower surface densely white-tomentose. Flowers solitary, ± sessile. Capsules ovoid-oblong, 8-10 mm long, stellate-pilose, enclosed by enlarged perianth segments.

Two varieties occur in the region:

- 1. Leaves narrowly ovate, 2-6 cm × 0.3-0.8 cm, scabrous above; ovary densely pilose *B. oleifolia* var. *oleifolia*
- Leaves linear to narrowly ovate, 4-7.5 cm × 0.2-0.4 cm, glabrous above *B. oleifolia* var. *glabrescens*

B. oleifolia var. **oleifolia** is moderately common on sandy soils in the Darling Downs and probably also Burnett districts. **B. oleifolia** var. **glabrescens** C. T. White is known only from Eidsvold in the Burnett district.

4. AUSTROBUXUS Miq.

Trees or shrubs; branchlets usually pubescent at first, at length glabrous. Leaves opposite, exstipulate, shortly petiolate. Inflorescences racemose, rachis and pedicels pubescent; sepals 4; stamens few to many; ovary 2-3-locular, ± hairy. Fruits capsules; seeds dark brown, shining.

About 10 species south-eastern Asia to Fiji; 2 species Australia; 1 species south-eastern Queensland.

1. *Austrobuxus swainii* (Beuzev. & C. T. White) Airy Shaw PINK CHERRY

Longetia swainii Beuzev. & C. T. White

Tree up to 40 m tall, branchlets at first rusty pubescent, becoming glabrous. Leaves with petioles 5-10 mm long, ± pubescent; blades glossy, narrowly ovate, apex acute, base acute, margin undulate-crenate, 7-13 cm × 2-4 cm. Racemes 1-2 cm long, rachis and pedicels pubescent; stamens 8; ovary 2-locular, 2 ovules per loculus. Capsules oblong-ovoid, ca 1 cm long, 2-locular, each loculus 1-seeded by abortion; seeds ca 7 long, crowned by conspicuous caruncle.

Rare, known from the vicinity of Springbrook. Flowers apparently early winter.

5. MALLOTUS Lour.

Shrubs or trees, dioecious or rarely monoecious. Leaves alternate or opposite, petiolate, usually 3- or more-nerved at base, glands 2 or more on upper surface near base, sometimes ± obsolete, usually with many minute glands on undersurface. Inflorescences terminal panicles or axillary racemes or spikes, bracts small, entire; flowers without petals or glands; male flowers shortly pedicellate, clustered along rachis, perianth segments 3-4, stamens numerous, filaments free or very shortly united, anther cells distinctly separated by broad connectives, rudimentary ovary absent; female flowers solitary along rachis, pedicellate, perianth segments 3-5, styles free or very shortly united at base, undivided, fringed or papillose on upper surface. Fruits capsules.

About 140 species from tropical regions; ca 12 species Australia; 4 species south-eastern Queensland.

- 1. Capsule covered with long processes 2
- Capsule glandular, without processes 3
- 2. Leaves mostly alternate; inflorescence terminal; capsule processes long and soft 1. *M. mollissimus*
- Leaves opposite; inflorescence axillary; capsule processes bristle-like 2. *M. claoxyloides*
- 3. Capsule orange-yellow 3. *M. discolor*
- Capsule deep red 4. *M. philippensis*

1. *Mallotus mollissimus* (Geiseler) Airy Shaw*Croton mollissimus* Geiseler; *Mallotus ricinoides* (Pers.) Muell. Arg.

Large shrub or tree up to ca 8 m tall, young parts and underside of leaves covered with stellate often velvety hairs. Leaves alternate; petioles 2.5–20 cm long; blades broadly ovate to orbicular, apex acuminate, base peltate or if petiole attached at base then rounded or cordate, rarely somewhat acute, 7–30 cm × 6–21 cm, minute yellow glandular granules below. Inflorescences terminal, ± paniculate; peduncles 2–10 cm long; male inflorescences up to ca 20 cm long or longer, females up to ca 10 cm or rarely 15 cm long. Capsules covered with softly hairy processes up to ca 1 cm long.

Not common, known from rainforest from the Gympie area northwards.

2. *Mallotus claoxyloides* (F. Muell.) Muell. Arg.*Echinocroton claoxyloides* F. Muell.

Shrub or tree up to ca 4 m tall, young parts stellate pubescent or scaly. Leaves opposite, leaves of each pair unequal; petioles 1–3 cm long; blades ovate or obovate-oblong, apex acuminate, base rounded, margin ± entire to ± dentate, 5–12(–15) cm × 3–5(–10) cm, minute yellow glandular granules below and on upper surface of young leaves, scattered or occasionally dense stellate hairs or scales on both surfaces at least when young. Inflorescences axillary; male flowers in 2 or 3 clusters in heads or short spikes; female flowers 3–6 in umbel-like clusters on a common peduncle up to ca 3 cm long. Capsules ca 1 cm diameter, with bristle-like processes.

Moderately common, in or near rainforest.

A very variable species for which a number of varieties have been described. However further research is needed to ascertain the limits of these varieties and they are not included here.

3. *Mallotus discolor* (F. Muell) F. Muell. ex Benth.*Rottlera discolor* F. Muell.

Tree up to 17 m tall, stem diameter up to 30 cm, young branches and inflorescence stellate pubescent. Leaves alternate; petioles 1.5–5 cm long; blades ovate, apex acuminate, base rounded or ± acute, margin entire, 4–8 cm × 2.5–4 cm, glabrous above, minute yellow glandular granules below. Inflorescences axillary racemes up to ca 10 cm long. Capsules orange-yellow, ± succulent, 6–10 mm diameter.

Not common, in or near rainforest.

4. *Mallotus philippensis* (Lam.) Muell. Arg.*Croton philippensis* Lam.

Tree up to ca 17 m tall, stem diameter up to 30 cm but usually smaller, branchlets and inflorescences ± ferruginous stellate tomentose. Leaves alternate; petioles 1–8 cm long; blades ovate to oblong, apex obtuse to acuminate, base rounded, margin ± entire, 5–20 cm × 2–9 cm, stellate-tomentose when young, becoming glabrous above, minute red glandular granules below. Inflorescences racemes, terminal or in upper axils, mostly 2–10 cm long. Capsules deep red, 6–8 mm diameter.

Moderately common, mostly in or near rainforest.

6. DISSILIARIA F. Muell.

Trees or shrubs, monoecious. Leaves opposite, entire or crenate. Flowers in clusters or solitary, axillary or appearing terminal when terminal bud not developed; male flowers with perianth of 4–6 segments, inner ones petaloid, stamens few to many; female flowers with perianth of 6 segments, ovary tomentose, 3-locular, styles 3, linear, spreading, undivided, free or united at base. Fruits capsules.

3 species endemic to Australia; 2 species south-eastern Queensland.

1. Petioles less than 4 mm long; leaf blades mostly less than 6 cm long,
margins serrate
- Petioles more than 4 mm long; leaf blades mostly 6 cm long or longer,
margins entire or crenate

1. *D. muelleri*

2. *D. baloghoides*

1. *Dissiliaria muelleri* Baillon ex Benth.

Shrub or tree. Leaves with petioles 1–4 mm long; blades ovate or suborbicular, apex obtuse or acuminate, base rounded or obtuse, margin serrate, 1.5–6 cm × 1–3 cm. Flowers on peduncles up to *ca* 1 cm long; perianth lobes *ca* 2 mm long. Capsules *ca* 8 mm diameter, ± tomentose.

Known only from the Mt. Bauple district north of Gympie.

2. *Dissiliaria baloghioides* F. Muell. ex Benth.

HAUER; LANCEWOOD;
REDHEART; BLACKHEART

Tree up to *ca* 30 m tall, stem diameter up to 60 cm, young parts rusty tomentose. Leaves with petioles 0.6–1.2 cm long; blades elliptic or ovate, apex obtuse or acute, base acute, margin entire or crenate, 6–11 cm × 2–5.5 cm. Flowers on peduncles up to *ca* 1 cm long; perianth lobes rusty tomentose, 2–3 mm long; male flowers with stamens free and inserted on hairy receptacle; female flowers with rusty tomentose ovary. Fruits *ca* 1 cm diameter, rusty tomentose.

Found in coastal rainforest, once apparently plentiful, especially in the Wide Bay district, but now uncommon. Flowers mostly late summer to early winter.

The male flowers of both species are poorly collected and poorly described.

7. ADRIANA Gaudich.

Erect dioecious shrubs. Leaves alternate or opposite, 3- or 5-nerved, coarsely toothed and often 3-lobed. Inflorescences terminal spikes; male spikes usually long and interrupted, flowers sessile in clusters of 3–6 in axil of an ovate to narrowly ovate bract; female spikes usually short and dense, sessile or very shortly pedunculate within last leaves; flowers without petals or glands; male flowers with perianth of 4–5 segments, stamens numerous and crowded on a central receptacle; female perianth of 6–8 segments in 2 rows, styles 3, free or shortly united at base, 2-fid, densely covered or fringed with papillae. Fruits capsules.

5 species endemic to Australia; 1 species south-eastern Queensland.

1. *Adriana glabrata* Gaudich.

Shrub up to *ca* 2.5 m tall. Leaves with glandular stipules; petioles 1–7 cm long, varying on the one branch; blades narrowly ovate to ovate, usually 3-lobed, up to *ca* 16 cm × 9 cm. Male spikes up to *ca* 18 cm long; female spikes up to *ca* 2 cm long; styles conspicuous, often reddish, up to *ca* 1 cm long. Fruits *ca* 8 mm diameter.

Two varieties occur in the region:

- | | |
|--|--|
| 1. Leaves stellate tomentose below and with few to many stellate hairs | |
| above | <i>A. glabrata</i> var. <i>subglabra</i> |
| Leaves ± glabrous above and below | <i>A. glabrata</i> var. <i>glabrata</i> |

A. glabrata var. *glabrata* (*A. acerifolia* Hook. var. *glabrata* Benth.; *A. heterophylla* Hook.; *A. glabrata* var. *heterophylla* (Hook.) Pax) is known from the Darling Downs district, not common. *A. glabrata* var. *subglabra* (Baillon) Airy Shaw (*A. gaudichaudi* var. *subglabra* Baillon; *A. glabrata* var. *acerifolia* (Hook.) Pax; *A. acerifolia* Hook.) is widespread and moderately common, often along creek banks and disturbed ground near creeks and rivers.

Some specimens referred to *A. glabrata* var. *glabrata* have sessile leaves and may perhaps belong to a separate undescribed variety.

8. **BALOGHIA** Endl.

Trees or shrubs, mostly monoecious, rarely dioecious, glabrous except sometimes the flowers. Leaves opposite or alternate. Flowers few in terminal racemes, sometimes reduced to umbels or clusters, bracts deciduous, 1 flower within each; male flowers with 4-5 calyx segments, petals 4-5, stamens numerous, filaments shortly united or inserted on raised column without rudimentary ovary; female flowers with calyx and petals as in males, styles 3, free or shortly united at base, each deeply 2-fid. Fruits capsules.

About 13 species Australia, New Guinea and New Caledonia; 3 species Australia; 2 species south-eastern Queensland.

- 1. Inflorescences of reduced racemes, appearing as terminal clusters; petioles varying in length on the one plant, 0.5-5 cm long; rare, known only from the Gold Coast hinterland 1. *B. marmorata*
- Inflorescences of racemes up to ca 5 cm long; petiole not varying greatly on the one plant, 0.4-1 cm long; widespread 2. *B. lucida*

1. **Baloghia marmorata** C. T. White

Shrub or small tree; sympodial branches conspicuous, leafless part up to 15 cm long, young branchlets somewhat flattened. Leaves opposite; petioles 0.5-5 cm long; blades subcoriaceous, narrowly ovate or narrowly obovate, apex acute or subacute, base narrowed, 6-15 cm x 2-5.5 cm, margin with a gland on either side towards base. Racemes short, appearing as clusters, pedicels up to ca 1.5 cm long; petals white, ca 4 mm long. Capsules usually 3-4-lobed, ca 1.5 cm diameter.

Rare, known only from a small much-disturbed area of remnant rainforest at Mt. Tamborine, threatened by new housing development. In Queensland, at least, the species appears to be threatened with extinction. Flowers autumn and spring.

2. **Baloghia lucida** Endl. SCRUB BLOODWOOD; IVORY BIRCH

Tree up to ca 20 m tall, stem diameter 30 cm; sympodial branches leafless for up to 5 cm, young branches somewhat flattened. Leaves opposite; petioles 4-10 mm long; blades coriaceous, narrowly ovate or narrowly obovate to elliptic, apex obtuse or obtusely acuminate, base narrowed-obtuse, 5-14 cm x 2-6 cm, margin with a gland on either side towards base. Racemes up to ca 5 cm long, pedicels 6-9 mm long; petals white, 5-6 mm long. Capsules usually 3-lobed, ca 1.5 cm diameter. **Fig. 66F.**

Moderately common and widespread in or near rainforest. Flowers spring.

9. **CROTON** L.

Usually monoecious trees, shrubs or rarely herbs, usually clothed or sprinkled with stellate hairs or scales, rarely quite glabrous. Leaves alternate or rarely opposite, sometimes appearing verticillate below inflorescence; stipules minute; petiolate; blades penninerved or sometimes 3- or more-nerved at base; glands 2, sessile or stipitate at top of petiole or base of blade. Inflorescences terminal racemes with female flowers at base; calyx and corolla of (4-)5(-6) segments; male flowers with stamens inserted on central disc; female flowers often apetalous, styles divided into 2 or 4 branches. Fruits capsules.

About 750 species from tropical and subtropical regions of the world; ca 19 species Australia; 5 species south-eastern Queensland.

- 1. Leaves covered with silvery-white scales on the underside 2
- Leaves quite glabrous on both surfaces or with a few scattered scales 4
- 2. Styles divided into 2 branches; leaves with peltate scales 1. *C. insularis*
- Styles divided into 4 branches; leaves with stellate scales 3
- 3. Shrubs; leaves narrow, less than 2 cm wide, petiole less than 1 cm long 2. *C. phebaloides*
- Trees; leaves broad, usually more than 2 cm wide, petiole 1 cm long or longer 3. *C. stigmatosus*

4. Leaves coriaceous, usually shining above; fruit *ca* 10 mm diameter; stamens 5-8 per male flower 4. *C. acronychioides*
 Leaves not coriaceous, usually dull above; fruit *ca* 5 mm diameter; stamens 10-12 per male flower 5. *C. verreauxii*

1. *Croton insularis* Baillon**QUEENSLAND CASCARILLA BARK**

Tall shrub or small tree up to *ca* 3 m tall, branches inflorescences and underside of leaves silvery-white or slightly reddish with a close peltate scaly tomentum. Leaves with petioles up to *ca* 1.5 cm long, with conspicuous glands at top; blades ovate or narrowly ovate, apex obtuse or subacute, base rounded or tapered, 3-6(-9) cm × 1-3(-4) cm. Racemes up to *ca* 12 cm long; pedicels 2-4 mm long lengthening to 6-10 mm in fruit. Capsules ± globular, *ca* 6 mm diameter.

Widespread and moderately common, in eucalypt open forests and brigalow forests; found as far west as about Chinchilla.

2. *Croton phebaliooides* Muell. Arg.

Croton maidenii R. T. Baker; *C. phebaliooides* var. *acuminatus* Domin

Shrub up to *ca* 2.5 m tall, branches inflorescences and underside of leaves with silvery-white stellate scales. Leaves with petioles 4-8 mm long, with usually inconspicuous ± sessile glands at top; blades narrowly ovate to narrowly elliptic, apex acute to subacute, base rounded, 2-6(-8) cm × 0.5-1(-1.5) cm. Racemes 2-8 cm long, pedicels 1-4 mm long extending to *ca* 6 mm in fruit. Capsules ± globular, 6-8 mm diameter.

Widespread and moderately common, often in open forests.

3. *Croton stigmatosus* F. Muell.

Croton phebaliooides var. *hirsuta* F. M. Bailey; *C. phebaliooides* var. *stigmatosus* Domin; Included under *C. phebaliooides* F. Muell. by F. M. Bailey, "Qd Flora".

Tree, young shoots and leaves with silvery-white stellate scales, usually with long hairs among scales. Leaves with petioles 1-3 cm long, usually with conspicuous stipitate glands at top; blades ovate to narrowly ovate, apex acuminate, base rounded, 4-14 cm × 1.5-4.5 cm. Racemes *ca* 5-10 cm long, pedicels *ca* 2 mm long extending to *ca* 6 mm in fruit. Capsules ± globular, *ca* 6-8 mm diameter, ± covered with stellate scales.

Not common, found in rainforests of Moreton and Wide Bay Districts.

4. *Croton acronychioides* F. Muell.

Shrub or small tree, young shoots and leaves ± sprinkled with rusty white scales, becoming glabrous with age. Leaves with petioles 0.5-1.5 cm long, with ± conspicuous sessile glands at top; blades coriaceous, elliptic, sometimes ± obovate or ovate, apex obtuse, base obtuse, 5-12 cm × 2-4.5 cm, shining above. Racemes up to *ca* 5 cm long. Fruits often longer than wide, up to *ca* 10 mm × 8 mm.

Widespread, often in or near rainforest.

5. *Croton verreauxii* Baillon

Shrub or small tree, young shoots and leaves ± sprinkled with rusty white scales. Leaves with petioles 0.8-3 cm long, with conspicuous sessile glands at top; blades thin, elliptic-ovate, apex subacute, base obtuse or rounded, 4-11 cm × 1.5-3.5 cm, ± dull above. Racemes up to *ca* 5 cm long, pedicels *ca* 2 mm long, lengthening up to *ca* 4 mm in fruit. Fruits variable in size but usually *ca* 5 mm diameter, sprinkled with stellate hairs or at length glabrous.

Not common, found in or near rainforest.

10. TRAGIA L.

Twining or climbing perennials, monoecious. Leaves alternate, toothed, 3- or 5-nerved at base. Inflorescences terminal racemes but often appearing leaf-opposed or axillary; flowers usually solitary in axil of small bract; male flowers with perianth of 3-5 segments, stamens few to many; female flowers at base of raceme, perianth usually of 6 segments, styles 3, erect, connate at base. Fruits capsules.

About 100 species from tropical and subtropical regions of the world; 1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Tragia novae-hollandiae* Muell. Arg.

Twining herb, \pm covered with simple rigid appressed or spreading stinging hairs. Leaves with petioles 1–4 cm long; blades triangular-ovate, apex acute, base cordate, margin coarsely toothed, 3–10 cm \times 1.5–7 cm. Racemes 2–5 cm long, pedicels up to *ca* 3 mm long; flowers *ca* 4 mm diameter; stamens 3–5. Capsules deeply 3-lobed, 0.8–1.1 cm \times 0.4–0.5 cm, densely setose or almost glabrous. **Fig. 66G.**

Not common, found in rainforest throughout the region.

11. SAPIUM P. Browne

Trees or shrubs, monoecious, glabrous. Leaves alternate; petiolate, with glands at apex of petiole; blades sometimes glandular along margin underneath. Inflorescences terminal racemes, bearing few female flowers at base, each solitary within a bract, upward bearing many male flowers in clusters within bracts, bracts with 2 glands at base; flowers without glands or petals; male flowers with 2–3 stamens; female flowers with 3-locular ovary, styles 3, long connate. Fruits \pm fleshy, dehiscent, 3-lobed; seeds globular, without caruncle.

About 100 species, tropical and subtropical regions; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Sapium sebiferum* (L.) Roxb.**CHINESE TALLOW TREE**

Croton sebiferus L.

Tree up to *ca* 8.5 m tall. Leaves with petioles 3–4 cm long; blades rhomboid or rhomboid-ovate, apex acuminate, base obtuse, margin entire, 2–7 cm \times 2–4 cm, underside pale. Inflorescences up to *ca* 5 cm long or longer; styles united in a column up to *ca* 2 mm long. Capsules *ca* 1–1.2 cm long; seeds *ca* 7 mm long.

Native of China, Japan and south-eastern Asia; cultivated to a limited extent, naturalized along some creeks in the Brisbane district. The leaves turn gold to red in autumn.

12. ALEURITES J. R. & G. Forster

Trees, monoecious. Leaves alternate, petiolate, large, entire or lobed. Inflorescences terminal panicles; male flowers with calyx entire and closed in bud, splitting into 3, rarely 2, lobes, corolla segments 5, stamens numerous on a central disc; female flowers usually few, terminating main branches of panicle, calyx and petals as in males, ovary 2–5-locular, styles deeply 2-fid. Fruits large, somewhat fleshy, endocarp hard.

Few species mainly Asian; 1 species Australia, occurring in south-eastern Queensland.

1. *Aleurites moluccana* (L.) Willd.**CANDLE NUT**

Jatropha moluccana L.

Spreading tree up to *ca* 20 m or more tall. Leaves alternate but usually crowded at ends of branches; petioles up to *ca* 20 cm long, densely stellate pubescent when young; blades entire or 3-, 5- or 7-lobed, narrowly ovate to broadly ovate, apex obtuse or acuminate, base subacute or cordate, 10–30 cm \times 4–30 cm, stellate pubescent when young, glands 2, usually conspicuous at base of blade. Fruits often with 3–4 ridges, 5–6 cm diameter; seeds 1–4 per fruit.

Not native of the region, but native of northern Queensland. Sometimes cultivated as an ornamental tree, persisting in a few places in moist coastal areas.

13. FONTAINEA Heckel

Trees, dioecious or sometimes monoecious. Leaves alternate. Inflorescences racemes, axillary but appearing terminal; calyx 4–5-lobed (in female flowers unequally lobed); petals 3–6; stamens numerous on conical receptacle; ovary 3–6-locular; styles thick, undivided. Fruits drupaceous.

3 species Australia and New Caledonia; 2 species Australia; 1 species south-eastern Queensland.

1. *Fontainea* sp. 1.*Fontainea pancheri* auct. non Heckel

Tree up to *ca* 20 m tall. Leaves often clustered towards ends of branches; petioles 0.5–1.2 cm long; blades obovate, apex obtuse, base narrowed, 5–10 cm × 2–4.5 cm, glabrous or with a few hairs at base. Racemes with few flowers, pedicels sparsely hairy; petals white, velvety hairy. Fruits ovoid, *ca* 2 cm long.

Rare, apparently from coastal rainforest.

14. OMALANTHUS Adr. Juss.
(Sometimes misspelt *Homalanthus*)

Trees or shrubs, monoecious, glabrous. Leaves alternate, petioles bearing 2 glands at apex. Inflorescences terminal racemes, bearing at base 0–10 female flowers, each solitary within a bract, upwards bearing many male flowers in clusters within bracts, bracts mostly with 2 glands at base; flowers without glands or petals; male flowers with 6–10 stamens (in Australian species); female flowers with 2-locular ovary, styles 2 (in Australian species), undivided, shortly connate at base. Fruits ± fleshy, 2-lobed, indehiscent or tardily opening into 2 valves; seeds with fleshy arils or caruncles.

About 35 species Indomalaysian region; 3 species Australia; 2 species south-eastern Queensland.

- | | |
|--|-------------------------------|
| 1. Perianth lobes 2–3; bracts with 2 large glands; leaves mostly more than 4 cm long | 1. <i>O. populifolius</i> |
| Perianth lobe 1; bracts without any glands or glands very small; leaves mostly less than 4 cm long | 2. <i>O. stillingiifolius</i> |

1. *Omalanthus populifolius* Graham

NATIVE POPLAR;
NATIVE BLEEDING HEART

Shrub or small tree up to *ca* 4 m tall. Leaves with petioles 3–10(–15) cm long; blades ovate-triangular or rhomboid, apex acute, base truncate or abruptly contracted and acute, margin entire, 3–15 cm × 3–15 cm, undersurface often greyish or white, sometimes turning reddish. Racemes 6–10 cm long. Fruits glaucous, *ca* 8 mm wide on pedicels up to *ca* 2.5 cm long; seeds partly enveloped by arils.

Moderately common in rainforest. Flowers spring–summer.

2. *Omalanthus stillingiifolius* F. Muell.

Shrub up to *ca* 2 m tall. Leaves with petioles 1–4.5 cm long; blades ovate-triangular or rhomboid, apex acute or ± acuminate, base subtruncate or shortly contracted-acute, margin entire, 2–4.5(–6.5) cm × 1–3 cm. Fruits *ca* 5 mm wide on pedicels up to *ca* 10 mm long; seeds with short caruncles.

Not common, usually on edges of rainforest.

15. DRYPETES Vahl.

Trees or shrubs, dioecious. Leaves alternate, coriaceous when mature. Flowers axillary, solitary or in clusters, or males sometimes forming short racemes; perianth segments 4–5, inner ones petal-like; male flowers with stamens few to many, filaments free; female flowers with 1-locular ovary, style 1. Fruits indehiscent drupes with succulent mesocarp and bony endocarp; seeds furrowed on one side.

About 200 species from tropical Africa and Asia; 3 species Australia; 1 species south-eastern Queensland.

1. *Drypetes australasica* (Muell. Arg.) Pax & Hoffman

YELLOW TULIP

Hemicyclia australasica Muell. Arg.; *D. lasiogyne* (F. Muell.) Pax & Hoffman var. *australasica* (Muell. Arg.) Airy Shaw

Tree up to *ca* 25 m tall, stem diameter up to *ca* 60 cm, young shoots and flowers with few hairs. Leaves with petioles 2–10 mm long; blades broadly ovate to ovate or elliptic, apex obtuse, base ± acute, margin entire or somewhat crenate on mature plants, dentate on juvenile plants, 2–9 cm × 1–4 cm. Flowers on peduncles 2–4 mm long. Fruits red, ovoid-globular, 1–2 cm long; seeds *ca* 1 cm long.

Not common, in rainforests of the Moreton and Wide Bay districts. Flowers mainly summer.

16. BRIDELIA Willd.

Shrubs or trees, monoecious. Leaves alternate; stipules small; petiolate; blades entire, with fine parallel diverging primary veins and transverse veinlets prominent on both sides. Flowers small in axillary clusters or solitary, sessile or shortly pedunculate, males and females in same or separate clusters; calyx of 5 segments; corolla of 5 segments; male flowers with 5 stamens inserted on a central column terminated by an abortive style; female flowers with 2-locular ovary. Fruits small berries or drupes with succulent exocarp and hard endocarp.

About 60 species Africa, Asia and Australia; *ca* 4 species Australia; 2 species south-eastern Queensland.

- 1. Leaves ± glabrous below; fruit yellow becoming blackish 1. *B. exaltata*
- Leaves pubescent below; fruit red 2. *B. leichhardtii*

1. *Bridelia exaltata* F. Muell. SCRUB IRONBARK

Tree up to 20–30 m tall, stem diameter up to 60 cm. Leaves with petioles up to *ca* 8 mm long; blades narrowly ovate to ovate, apex acute or obtuse, 4–18 cm × 2–6 cm, often drying blackish. Flowers few together, almost sessile; male calyx segments *ca* 2 mm long. Fruits yellow becoming blackish or brown, globular, 7–8 mm diameter. **Fig. 66A.**

Not common, in or near rainforest of the Moreton and Wide Bay districts. In cleared areas it sometimes comes up as shrubby regrowth.

2. *Bridelia leichhardtii* Baillon ex Muell. Arg.

Bridelia faginea F. Muell.

Shrub up to *ca* 4 m or more tall. Leaves with petioles up to *ca* 5 mm long; blades elliptic to narrowly ovate, apex obtuse or sometimes attenuate, 4–7(–8) cm × 2–3.5(–4.5) cm, often drying greenish. Flowers 1–few together, sessile; male calyx segments *ca* 1 mm long. Fruits red, globular, *ca* 4–6 mm diameter.

Widespread but not common, usually in open woodlands.

17. BREYNIA J. R. & G. Forster

Shrubs or small trees, monoecious. Leaves alternate, petiolate, entire. Flowers axillary, solitary or few together, small, on short peduncles; perianth turbinate or campanulate with 6 short lobes; male flowers with 3 stamens united in a short column without rudimentary ovary; female flowers with 3-locular ovary, styles 3, very short. Fruits indehiscent berries.

About 25 species China, south-eastern Asia and Australia; 4 species Australia; 1 species south-eastern Queensland.

1. *Breynia oblongifolia* Muell. Arg. COFFEE BUSH

Glabrous shrub up to *ca* 3 m tall, but often less than 2 m. Leaves with petioles up to 2.5 mm long; blades elliptic-ovate or broadly oblong, 1–4 cm × 0.7–1.5 cm, glaucous beneath. Flowers small, greenish, pedicels up to *ca* 4 mm long, often less. Fruits red turning black with age, *ca* 6 mm diameter when mature. **Fig. 66D.**

Moderately common throughout the region.

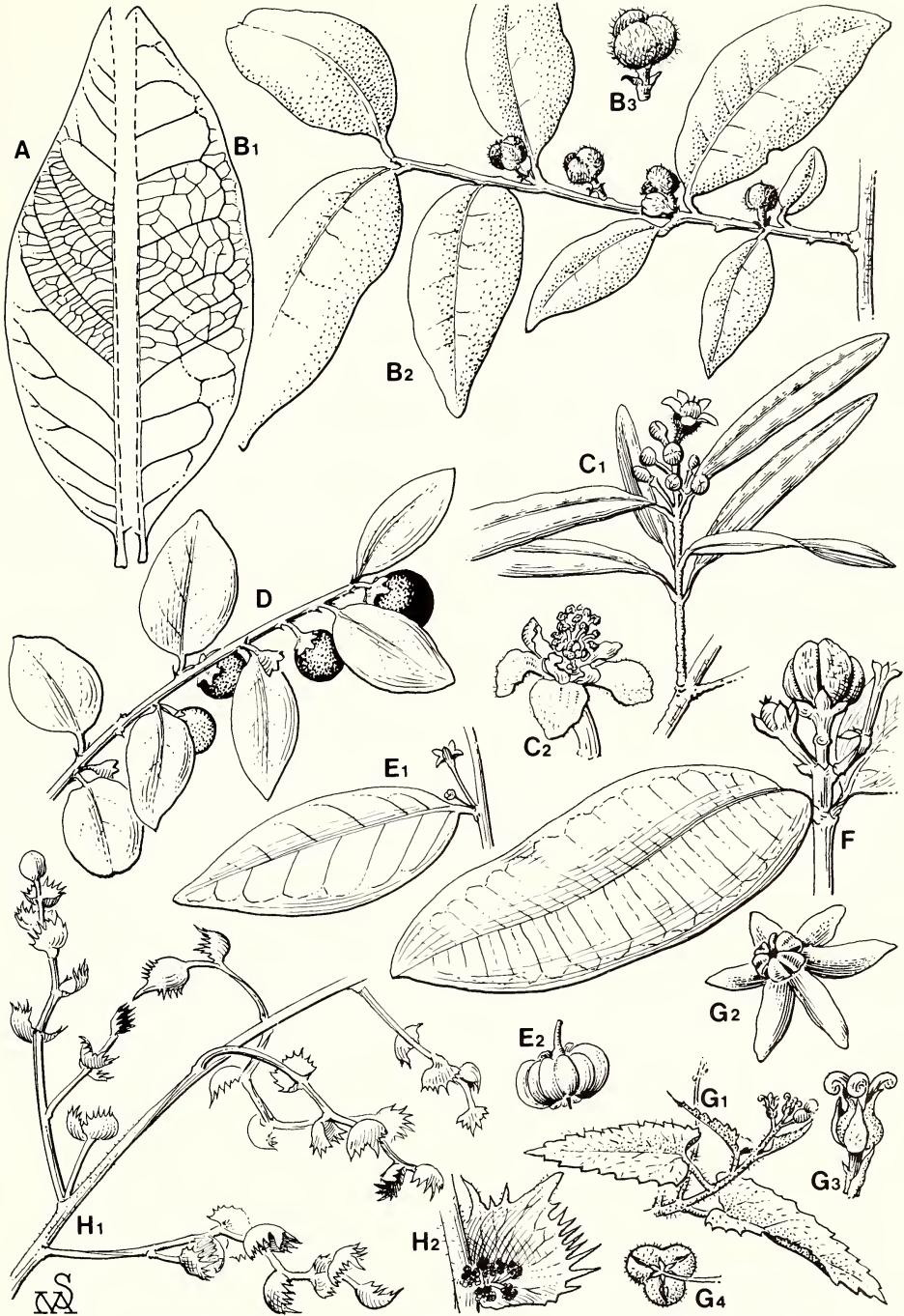


Fig. 66

EUPHORBIACEAE — A *Bridelia exaltata*, part of leaf showing venation $\times 1$; B₁-B₃, *Cleistanthus cunninghamii*, B₁ part of leaf showing venation $\times 1$, B₂ fruiting branch $\times 1\frac{1}{2}$, B₃ fruit $\times 3\frac{1}{2}$; C₁-C₂, *Ricinocarpos ledifolius*, C₁ flowering branch $\times 1$, C₂ male flower $\times 3$; D *Breynia oblongifolia*, flowering and fruiting branch $\times 1$; E₁-E₂, *Glochidion ferdinandi*, E₁ part of stem with leaf and flower $\times 1$, E₂ fruit $\times 1$; F *Baloghia lucida*, top of fertile branch showing fruit $\times 3\frac{1}{2}$; G₁-G₄, *Tragia novae-hollandiae*, G₁ part of fertile stem $\times 1$, G₂ male flower $\times 6$, G₃ female flower $\times 4$, G₄ fruit $\times 1$; H₁-H₂, *Macaranga tanarius*, H₁ part of inflorescence $\times 1$, H₂ bract with flowers at base $\times 3$.

18. PETALOSTIGMA F. Muell.

Shrubs or trees, dioecious. Leaves alternate; stipules minute or none; petiolate; blades entire. Flowers in axillary clusters or females solitary; perianth of 4-6 segments; male flowers with stamens indefinite, united in a central column, filaments shortly free, anthers adnate; female flowers with 3-4-locular ovary, styles 3-4 expanded into large flat stigmatic branches. Fruits dehiscent with fleshy exocarp and hard endocarp; seeds oblong, slightly compressed, with small caruncle.

About 7 species New Guinea and Australia; 6 species Australia; 2 species south-eastern Queensland.

- | | |
|---|--------------------------|
| 1. Leaves less than 2.4 times as long as broad, broadly elliptic to oblong, apex acute; two types of hairs on leaves, long and spreading, and short, curved and \pm appressed | 1. <i>P. pubescens</i> |
| Leaves greater than 2.4 times as long as broad, elliptic and apex acute or ovate and apex acuminate; one type of hair on leaves | 2. <i>P. triloculare</i> |

1. *Petalostigma pubescens* Domin

QUININE BERRY

Previously included under *Petalostigma quadriloculare* F. Muell., a species from the Northern Territory.

Shrub or small tree up to *ca* 6 m tall. Leaves with hairy petioles 5-9 mm long; blades broadly elliptic, apex acute, base acute or rounded, 2-5 cm \times 1-2.4 cm, hairs on undersurface of two types, long and spreading, and short, curved and \pm appressed. Fruits orange, \pm ovoid, *ca* 1 cm or more long.

Common, mainly in open forests, often on sandy soils. Flowers summer-autumn.

2. *Petalostigma triloculare* Muell. Arg.

Petalostigma quadriloculare F. Muell. var. *glabrescens* Benth.; *Petalostigma glabrescens* Domin.

Shrub or small tree up to *ca* 5 m tall. Leaves with hairy petioles 4-9 mm long; blades elliptic with acute apex or ovate with acuminate apex, 2.5-8.5 cm \times 1-3.5 cm, hairs on under surface of one type, either spreading or appressed. Fruits orange, \pm ovoid, *ca* 1 cm or more long.

Moderately common in the Moreton and Wide Bay districts, often on stony or sandy soils in open forests. Flowers mainly summer-autumn.

19. MICRANTHEUM Desf.

Monoecious shrubs. Leaves in alternate 3s on each side of stem, shortly petiolate; blades entire, coriaceous. Flowers small, solitary or few together in upper axils; male flowers with 3-6, rarely 9 stamens and rudimentary ovary; female flowers with styles 3. Fruits 3-locular capsules.

3 species endemic to Australia; 2 species in south-eastern Queensland.

- | | |
|---|------------------------|
| 1. Stamens usually 3; perianth segments <i>ca</i> 1 mm long; low erect or spreading shrub | 1. <i>M. ericoides</i> |
| Stamens 6, rarely 9; perianth segments <i>ca</i> 4 mm long; erect often tall shrub | 2. <i>M. hexandrum</i> |

1. *Micranthemum ericoides* Desf.

Micranthemum boroniaceum F. Muell.; *Phyllanthus lhotskyanus* Hochst.; *Caletia ericoides* (Desf.) Kuntze

Shrub up to *ca* 60 cm tall; branches hirsute. Leaves linear to linear-elliptic, apex subacute, 0.5-1.2 cm \times 0.1-0.2 cm, shortly hairy. Flowers *ca* 2 mm diameter, on filiform peduncles *ca* 2 mm long; male flowers with 3 stamens (3-6 in one specimen seen). Capsules 6-7 mm long.

Usually found in rocky places, widespread but not common. Flowers spring-summer.

2. *Micrantheum hexandrum* Hook. f.

Caletia micrantheoides Baillon; *C. hexandra* (Hook. f.) Muell. Arg.

Shrub up to *ca* 3 m tall; branches obscurely scabrous-pubescent. Leaves narrowly obovate, apex shortly mucronate, 1–1.5 cm × 0.2–0.3 cm, glabrous. Flowers on peduncles up to *ca* 8 mm long; perianth segments up to *ca* 4 mm long; male flowers with 6, rarely 9, anthers.

Known only from the Stanthorpe-Wallangarra area. Flowers mainly spring.

20. PORANTHERA Rudge

Monoecious herbs or small shrubs. Leaves alternate or subopposite; stipules present. Flowers small, white, in very short dense racemes almost contracted into heads, each one in axil of a floral leaf or bract, head-like racemes solitary or more frequently several in a terminal leafy corymb; sepals 5, petals 5; male flowers with 5 stamens; female flowers with 3, 2-fid styles. Fruits capsules, depressed globular, 3-locular.

10 species Australia and New Zealand; 8–9 species endemic to Australia; 2 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Annual herb mostly less than 15 cm tall; leaves linear-spathulate to obovate, margin ± flat, mostly less than 1.5 cm long; flowers mostly less than 2 mm diameter | 1. <i>P. microphylla</i> |
| Perennial subshrub 30–100 cm tall; leaves linear to narrowly ovate, margin ± revolute, 1.5–5 cm long; flowers 2–3 mm diameter | 2. <i>P. corymbosa</i> |

1. *Poranthera microphylla* Brongn.

Low diffuse slender annual, 8–15 cm tall. Leaves tapering to a petiole up to *ca* 8 mm long; blades linear-spathulate to obovate, apex obtuse, margin flat or slightly recurved, blade and petiole up to *ca* 1.5 cm long. Flowers mostly less than 2 mm diameter. Capsules 1.5–2 mm wide.

Throughout the region, often in sandy or stony soils. Flowers spring to autumn.

2. *Poranthera corymbosa* Brongn.

Erect, up to *ca* 1 m tall, sparsely branched. Leaves shortly petiolate; blades linear to narrowly ovate, margin ± revolute, 1.5–5 cm × 0.2–0.8 cm. Flowers 2–3 mm diameter. Capsules *ca* 3 mm wide.

Granite country in the southern Darling Downs district and Mt. Ernest. Flowers spring to autumn.

21. PHYLLANTHUS L.

Herbs, shrubs or trees, mostly monoecious. Leaves alternate, entire. Flowers axillary, in clusters or solitary, apetalous, disc various; perianth of 4–6 segments in 2 series; male flowers with 3–5 stamens, filaments free or connate, anthers 2-locular, rudimentary ovary absent; female flowers with ovary 3- or more-locular, ovules 2 per loculus, styles free or shortly connate, usually 2-fid. Fruits dehiscent, of 3 or more dry, rarely fleshy, 2-valved cocci; seeds usually 3-angled.

About 600 species from tropical and subtropical parts of the world; *ca* 60 native and naturalized species Australia; *ca* 11 species south-eastern Queensland.

The genus in Australia is in need of review.

1. Capsules globular	2
Capsules depressed globular	3
2. Seeds depressed in centre, 4-7 mm long	1. <i>P. thesioides</i>
Seeds not depressed in centre, 2-2.5 mm long	2. <i>P. subcrenulatus</i>
3. Plants hairy	4
Plants glabrous	5
4. Leaf margins recurved or revolute	3. <i>P. thymoides</i>
Leaf margins not recurved or revolute	4. <i>P. fuernrohrii</i>
5. Capsules 7-8 mm diameter	5. <i>P. albiflorus</i>
Capsules less than 5 mm diameter	6
6. Fruiting peduncles more than 1 cm long	6. <i>P. sp.1.</i>
Fruiting peduncles less than 1 cm long	7
7. Seeds smooth	7. <i>P. similis</i>
Seeds not smooth	8
8. Seeds longitudinally ribbed or striped	8. <i>P. gasstroemii</i>
Seeds tuberculate	9
9. Stamens 5	9. <i>P. tenellus</i>
Stamens 3	10
10. Perianth lobes obovate, apex obtuse	10. <i>P. maderaspatensis</i>
Perianth lobes narrow, apex acute	11. <i>P. virgatus</i> sens. lat.

1. *Phyllanthus thesioides* Benth.

Erect plant 15-45 cm tall, with a thick, possibly perennial taproot; much-branched usually from base. Leaves with petioles up to *ca* 1 mm long; blades oblong-obovate, apex obtuse or somewhat acute, margin flat or recurved, 0.4-2.5 cm × 0.1-1.3 cm. Flowers solitary, peduncle 2-3 mm long, lengthening under fruit to *ca* 1 cm long; male perianth tubular, somewhat dilated upwards, with 6 lobes, whole perianth 4-5 mm long; female perianth segments short and spreading, *ca* 1 mm long, enlarging under fruit to 1.5-2 mm long; stamens 3, anthers connate; ovary glabrous. Capsules globular, 5-9 mm diameter; seeds *ca* 4-7 mm long, depressed in centre, testa with many irregular lobes on back. **Fig. 67A, 67N.**

Not common, usually found in open country.

2. *Phyllanthus subcrenulatus* F. Muell.

Shrub up to *ca* 2 m tall but often less than 1 m tall; branchlets angular. Leaves with very short petioles; blades ovate or narrowly ovate, apex acute or acuminate, base acute, margin sometimes somewhat crenulate, 0.8-3(-6) cm × 0.4-1.2(-2) cm, midrib conspicuous. Flowers solitary or few together, peduncle *ca* 3 mm long, lengthening to *ca* 10 mm under fruit; perianth *ca* 1.5 mm long in flower, lengthening to *ca* 3 mm under fruit; stamens 3, filaments free. Capsules globular, *ca* 6 mm diameter; seeds 2-2.5 mm long, somewhat longitudinally striate. **Fig. 67B.**

Not common, mainly found in dry rainforest in rocky areas.

3. *Phyllanthus thymoides* Muell. Arg.

Shrub up to *ca* 1 m tall, ± pubescent; branches from central axis or sometimes in smaller plants many branches from near base. Leaves nearly sessile; blades obovate to narrowly cuneate, apex obtuse, mucronate, truncate or emarginate, margin recurved or revolute, 0.2-1.1 cm × 0.1-0.3 cm. Male flowers 2 or 3 together, female flowers solitary, peduncle up to *ca* 2 mm long; perianth usually with 6 segments, apex obtuse or mucronate, 1.5-2 mm long; stamens 3, filaments free; ovary ± pubescent. Capsules depressed globular, *ca* 4 mm diameter, ± pubescent; seeds *ca* 2 mm long, minutely net patterned. **Fig. 67C.**

Not common, usually found in sandstone areas.

4. *Phyllanthus fuernrohrii* F. Muell.

Perennial 10–40 cm tall, usually with many stems from base but sometimes with central axis, whole plant pubescent. Leaves elliptic-obovate, apex obtuse, 0.8–2.9 cm × 0.3–1 cm. Male flowers 1 or 2 together, female flowers solitary or with 1 or 2 male flowers, peduncles slender, *ca* 4–9 mm long; male perianth segments *ca* 1.5 mm long; female perianth segments 2 mm long extending to 3–4 mm under fruit; stamens 3, filaments free. Capsules depressed globular, 3–4 mm diameter, pubescent; seeds *ca* 1.5 mm long, smooth. **Fig. 67D.**

Moderately common, usually on sandy soils. The plant has been suspected of poisoning sheep and cattle.

5. *Phyllanthus albiflorus* Muell. Arg.

Shrub 0.5–1 m tall, sometimes taller, much-branched. Leaves with petioles up to *ca* 1 mm long; blades obovate-oblong to narrowly cuneate, apex obtuse and sometimes mucronate, base narrowing to petiole, 0.4–1.2 cm × 0.12–0.55 cm. Flowers solitary on peduncles 8–10 mm long or female flowers with even longer peduncles; perianth segments usually 6, apex obtuse, 2–2.5 mm long; ovary glabrous. Capsules depressed globular, 7–8 mm diameter, glabrous; seeds 4–5 mm long, depressed in centre with many irregular lobes on back. **Fig. 67F.**

Not common, found in or near rainforest.

6. *Phyllanthus* sp.1.

Stiff erect shrub up to *ca* 2.5 m tall. Lateral branches rigid, short. Leaves clustered on very small branchlets, almost sessile; blades obovate or elliptic, apex obtuse with very small mucro, base narrowed, 1.5–9 mm × 1–5 mm. Flowers solitary on peduncles up to *ca* 1.2 cm long; perianth segments usually 6, apex obtuse, *ca* 1 mm long; ovary glabrous. Capsules depressed globular, 2.5–3 mm diameter, glabrous; seeds *ca* 1.5 mm long, minutely transversely striate. **Fig. 67E, 67O.**

Not common, found in or near rainforest.

7. *Phyllanthus similis* Muell. Arg.

Subshrub up to *ca* 30 cm tall, glabrous; central axes with side branches with distichous leaves. Leaves with petioles up to *ca* 1 mm long; blades obovate-oblong, 1.3–5 cm × 0.5–1.6 cm. Male flowers described as in clusters of 3–6, females solitary; perianth segments acute, those of females described as enlarging somewhat under fruit; stamens 3, filaments free; ovary glabrous. Capsules depressed globular, *ca* 3.5 mm diameter; seeds smooth. **Fig. 67G, 67P.**

Rare, known only from rainforest margins of the Moreton District.

8. *Phyllanthus gasstroemii* Muell. Arg.

Glabrous shrub up to *ca* 2 m tall, but sometimes less than 1 m tall. Leaves distichous; petioles *ca* 1 mm long; blades obovate-oblong, apex obtuse with short mucro, base contracted, 0.5–2 cm × 0.4–1 cm. Male flowers 3 or 4 together, female flowers solitary, peduncles filiform, *ca* 3–5 mm long; perianth segments usually 6, 1–2 mm long, female segments enlarging slightly after flowering; stamens 3, filaments united. Capsules somewhat 3-lobed, *ca* 3–4 mm diameter, glabrous; seeds 1.2–1.5 mm long, longitudinally ribbed or striped with ribs a darker colour than remainder of testa. **Fig. 67H, 67L.**

Moderately common, often along creek banks or in other damp areas. The plant has been suspected of poisoning cattle.

9. *Phyllanthus tenellus* Roxb.

Phyllanthus brisbanicus F. M. Bailey

Annual up to *ca* 45 cm tall but often less than 30 cm tall, with a central stem and many deciduous ± horizontal lateral branchlets *ca* 3–15 cm long. Leaves very shortly petiolate; blades elliptic-obovate, apex acute or obtuse, base acute to rounded, 0.6–2.5 cm × 0.2–1.1 cm. Flowers solitary or 2 or 3 males and 1 or 2 females together, peduncles up to *ca* 5 mm long; perianth lobes 5–6, female lobes *ca* 1 mm long, not enlarging; stamens 5, filaments free. Capsules greenish, depressed globular, *ca* 1.8 mm diameter; seeds 0.8 mm long, covered with minute tubercles in 8–15 longitudinal rows on back. **Fig. 67I, 67M.**

Common weed of gardens and disturbed ground, usually in shady areas of near coastal cities and towns of the Moreton and Wide Bay districts.

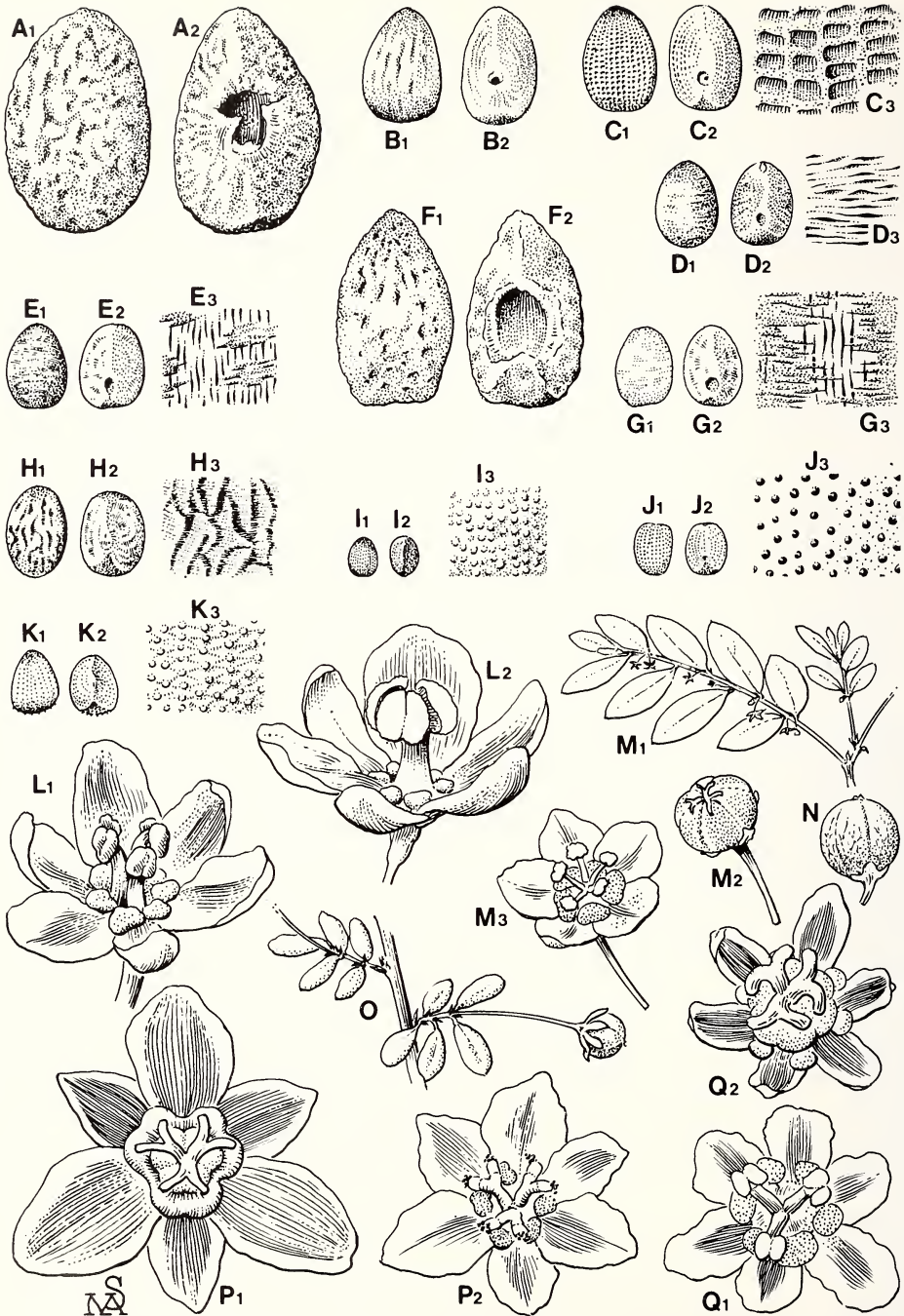


Fig. 67

EUPHORBIACEAE — A-Q *Phyllanthus* spp. — A-K seeds of *Phyllanthus* spp., dorsal (1) and ventral (2) views all x6; surface enlargements (3); H, x12; D, I, J, K, all x25; C, E, G, all x50; A *P. thesioides*; B *P. subcrenulatus*; C *P. thymoides*; D *P. fuernrohrii*; E *P. sp.1.*; F *P. albiflorus*; G *P. similis*; H *P. gasstroemii*; I *P. tenellus*; J *P. virgatus*; K *P. maderaspatensis*; L₁-L₂, *P. gasstroemii*, L₁ male flower with free filaments x12, L₂ male flower with filaments connate x12; M₁-M₃, *P. tenellus*, M₁ part of fertile branch x1, M₂ fruit x12, M₃ male flower x12; N *P. thesioides*, capsule x6; O *P. sp.1.*; part of fruiting stem x2; P₁-P₂, *P. similis*, P₁ female flower x12, P₂ male flower x12; Q₁-Q₂, *P. virgatus*, Q₁ male flower x25, Q₂ female flower x25.

10. *Phyllanthus maderaspatensis* L.

Erect herb up to *ca* 50 cm tall, glabrous, branching from a central stem or sometimes many stems from base but then each stem with many branches. Leaves distichous, \pm sessile; blades linear-obovate, apex obtuse, base narrowed, 0.8–3(–4) cm \times 0.15–0.4(–0.5) cm, somewhat glaucous underneath. Male flowers usually 2 or 3 together; female perianth lobes obovate, *ca* 1 mm long; stamens 3, filaments united. Capsules *ca* 3 mm diameter; seeds 1–1.2 mm long, with minute tubercles in 10–12 longitudinal rows on back. **Fig. 67K.**

Mainly on heavier soils; only one specimen from the region in the Queensland Herbarium, from near Gayndah in the Burnett district, but the species is probably to be found in the western Darling Downs and Burnett districts.

11. *Phyllanthus virgatus* Forster f. sens. lat.

Phyllanthus simplex Retz.; *P. filicaulis* Benth.; *P. minutiflorus* F. Muell.

Procumbent or erect herb 3–50 cm tall; many stemmed from near base, scarcely branched, flattened towards apex. Leaves very shortly petiolate; blades mostly discolorous, narrowly elliptic to ovate, apex obtuse to acute and minutely mucronate, 0.5–2 cm \times 0.15–0.5 cm, midrib conspicuous beneath. Flowers solitary or males few together, peduncles 1–2 mm long under flowers, extending to *ca* 8 mm long under fruit; perianth segments mostly 6, apex narrowly acute, *ca* 0.5–0.75 mm long in flower and attaining 1 mm in fruit; stamens 3, filaments free. Capsules depressed globular, *ca* 1.5–2.5 mm diameter, glabrous; seeds 0.8–1.5 mm long, tuberculate, tubercles in 5–7 rows on back. **Fig. 67J, 67Q.**

Common throughout the region.

The species as described here is a complex. There is probably more than one closely related taxon included under this name; however a full revision of the complex is needed to establish definite characters for these taxa.

22. AMPEREA Adr. Juss.

Monoecious or dioecious perennials; base often woody. Stems erect or procumbent, usually rigid, sometimes almost or quite leafless. Leaves when present alternate; stipules small; blades with flat or revolute margins, sometimes toothed. Flowers small in axillary sessile clusters, males usually numerous, females few or solitary; male perianth campanulate with 3–5 lobes; female perianth deeply divided into 5, rarely 4, lobes; stamens 10 or fewer; styles 3, 2-fid. Fruits capsules.

6 species endemic to Australia; 1 species south-eastern Queensland.

1. *Amperea xiphioclada* (Sieber ex Sprengel) Druce

Leptomeria xiphiocladus Sieber ex Sprengel; *Amperea cuneiformis* F. Muell.

Erect, 30–60 cm tall; stems flat or angled, up to *ca* 4 mm wide. Leaves often absent; blades on lower stems cuneate-oblong, margin often toothed, *ca* 1 cm or more long; blades on upper stems linear, margin entire, often less than 1 cm long. Flower clusters surrounded by small bracts. Capsules ovoid.

Not common but widespread, usually in damp rocky or sandy areas. Flowers found most of the year.

23. MONOTAXIS Brongn.

Herbs or undershrubs. Leaves alternate; stipules small; blades with flat or recurved margins. Inflorescences dense head-like cymes, sessile or shortly pedunculate, axillary or terminal; flowers small, \pm pedicellate; calyx of 4–5 segments; petals as many as calyx segments; male flowers usually numerous per cyme, anthers *ca* 8–10; female flowers one or few. Fruits capsules.

10 species endemic to Australia; 2 species south-eastern Queensland.

- | | | | | | |
|---|---|---|---|---|--------------------------|
| 1. Leaves with petioles 3 mm long or longer | . | . | . | . | 1. <i>M. macrophylla</i> |
| Leaves sessile or very shortly petiolate | . | . | . | . | 2. <i>M. linifolia</i> |

1. *Monotaxis macrophylla* Benth.*M. tenuis* auct. Qld, non Airy Shaw

Erect, up to *ca* 50 cm tall. Leaves alternate or subopposite; petioles 0.3–2 cm long; blades oblong or ovate-oblong, apex obtuse, margin entire or shortly toothed, 0.6–5 cm × 0.2–1.5 cm. Inflorescences of 1–*ca* 4 female flowers and many male flowers.

Not common, found mainly on stony or sandy soils east of the ranges.

2. *Montaxis linifolia* Brongn.

Erect, up to *ca* 50 cm tall. Leaves alternate, opposite or in whorls of 3, sessile or very shortly petiolate; blades of specimens seen linear, *ca* 5–8 mm × 1–1.5 mm. Inflorescences of 1 female flower and many male flowers (in specimens seen).

Known from Beerwah and Mt. Tinbeerwah; a third imperfect specimen from Bundaberg may also belong to this taxon.

24. BEYERIA Miq.

Shrubs, monoecious or rarely dioecious. Leaves alternate; exstipulate; blades usually with recurved or revolute margins, white underneath with a close stellate pubescence. Flowers small, axillary, peduncles bracteate, males solitary or in clusters of 2 or 3, rarely racemose, females solitary; male flowers with calyx of 5, rarely 4, broad segments, ± petal-like, corolla of 5 segments, sometimes fewer or none, glands as many as corolla segments and alternate with them, stamens numerous; female flowers with calyx segments thicker and narrower than males, often enlarging after flowering. Capsules 3-locular, 3-seeded, rarely 1-seeded by abortion.

12 species endemic to Australia; 2 species south-eastern Queensland.

- | | | |
|-------------------------------|-----------|-------------------------|
| 1. Capsule and ovary glabrous | | 1. <i>B. viscosa</i> |
| Capsule and ovary hairy | | 2. <i>B. lasiocarpa</i> |

1. *Beyeria viscosa* (Labill.) Miq.*Croton viscosum* Labill.; *Beyeria oblongifolia* Hook. f.

Viscid. Leaves with petioles up to *ca* 3 mm long; blades ovate-oblong to broadly linear, apex obtuse or emarginate, base tapered, 2–6 cm × 0.5–1.5 cm. Peduncles up to *ca* 1.2 cm long; male flowers often in clusters of 2 or 3; female flowers with globular ovary, stigma like a flat cap, sessile on ovary. Capsules ovoid-globular, hard and usually glutinous.

Not common, usually in stony country in open eucalypt forests. Flowers mainly summer.

2. *Beyeria lasiocarpa* Muell. Arg.

Viscid. Leaves with petioles *ca* 5 mm long; blades ovate-elliptic, 4–8 cm × 0.6–1.8 cm, viscid above, densely white-tomentose below. Peduncles up to *ca* 2 cm long; ovary hairy. Capsules densely hairy, stigma slightly raised on capsule.

Known only from the McPherson Ra. near Springbrook.

25. RICINOCARPOS Desf.

Monoecious shrubs. Leaves alternate or sometimes subopposite; exstipulate; blades with margin recurved or revolute, entire, usually white stellate tomentose beneath. Flowers solitary or clustered or males rarely racemose, terminal or rarely apparently axillary, peduncles usually subtended by bracts; calyx lobes 4–6; petals as many as calyx lobes; glands alternate with petals; stamens numerous, united in a central column; styles 3, shortly united at base, 2-fid. Fruits capsules.

16 species Australia and New Caledonia; 15 species Australia; 4–5 species south-eastern Queensland.

- | | | |
|--|-----------------------------------|---|
| 1. Branches and outside of calyx glabrous | 1. <i>R. pinifolius</i> | 2 |
| Branches and calyx pubescent | | |
| 2. Leaf margins revolute to midrib, underside of leaf scarcely visible; shrub less than 1 m tall | | 3 |
| Leaf margins revolute but not to midrib, underside of leaf clearly visible; shrub up to 3 m tall | | 4 |
| 3. Upper leaf surface stellate pubescent, becoming hispid with age; calyx and branches with long woolly pubescence | 2. <i>R. bowmanii</i> | |
| Upper leaf surface glabrous; calyx and branches with short pubescence | 3. <i>R. sp. aff. R. bowmanii</i> | |
| 4. Petals much exceeding calyx; fruit <i>ca</i> 10 mm long | 4. <i>R. speciosus</i> | |
| Petals scarcely exceeding calyx; fruit <i>ca</i> 4 mm long | 5. <i>R. ledifolius</i> | |

1. *Ricinocarpos pinifolius* Desf.

WEDDING BUSH

Roeparia pinifolia (Desf.) Sprengel; *Ricinocarpos sidaeformis* F. Muell.

Erect, up to *ca* 3 m tall; branches glabrous. Leaves with petioles up to *ca* 3 mm long; blades linear, margin revolute to midrib, 1–4 cm long. Flowers in clusters usually of 3–6 males and 1 female, peduncles 1–2 cm long; calyx 3–4 mm long, glabrous on outside of lobes; petals white, 1–1.5 cm long. Capsules globular, *ca* 1.2 cm diameter, densely muciculate.

A very showy species found in sandy soil near the coast, common. Flowers winter–spring.

2. *Ricinocarpos bowmanii* F. Muell.

WESTERN WEDDING BUSH

Ricinocarpos puberulus Baillon; *Roeparia bowmanii* (F. Muell.) Kuntze

Low shrub up to *ca* 1 m tall; branches and inflorescences with long woolly hairs. Leaves \pm sessile, linear, margin recurved to midrib, 1–4 cm long, upper surface sparsely stellate pubescent becoming scabrous with age. Flower clusters usually with 3–6 male flowers and 1 female flower, peduncles 1–1.5 cm long; calyx with long spreading hairs, lobes 4–5 mm long; petals pink or white, 8–10 mm long. Capsules *ca* 8–10 mm long, densely white tomentose.

Darling Downs district north of Bungunya, on sandy soils. Flowers winter to summer.

Closely related to *R. bowmanii* F. Muell. and possibly only a form of it.

3. *Ricinocarpos* sp. 1.

Low shrub up to *ca* 1 m tall. Branches and inflorescence with short often rusty coloured stellate hairs. Leaves \pm sessile, linear, margin recurved to midrib, 1–5 cm long, upper surface smooth, glabrous. Flower clusters usually with 1–3 male flowers and 1 female flower, peduncles 1–1.5 cm long; calyx-lobes *ca* 3 mm long, with pubescence of branches; petals 6–8 mm long. Capsules *ca* 1 cm long, white tomentose in lower part, rusty tomentose in upper part.

Known only from Biggenden Bluff in the Wide Bay district. Flowers winter to summer.

4. *Ricinocarpos speciosus* Muell. Arg.

Erect, up to *ca* 3 m tall; branches with long, stellate, usually rusty coloured hairs. Leaves with petioles up to *ca* 8 mm long; blades oblong-linear to narrowly ovate, margin recurved, 4–8 cm \times 0.5–1.2 cm, upper surface with stellate hairs when young, glabrous when old, lower surface densely white tomentose. Flowers in clusters of *ca* 5 males and 1 female, peduncles 1–2 cm long; calyx lobes *ca* 4 mm long; petals white, *ca* 1 cm long. Capsules *ca* 1 cm long, covered with long stellate hairs.

Not common but widespread in the region, often in damp areas in eucalypt open forests and near rainforest. Flowers mainly spring.

5. *Ricinocarpos ledifolius* F. Muell.

Erect shrub up to *ca* 4 m tall; branches with stellate, usually rusty coloured hairs. Leaves with petioles 5–6 mm long; blades oblong-linear, narrowly ovate or narrowly elliptic, margin recurved, 2.5–5.5(–9) cm \times 0.3–1.1 cm, upper surface often with sparse stellate hairs when young, becoming glabrous with age, lower surface densely white tomentose. Flowers in terminal clusters of 3–6 males and 1 female, or females solitary; peduncles of male flowers 0.6–1.2 cm long; calyx lobes *ca* 4 mm long; petals about as long as calyx. Capsules *ca* 4 mm long, densely stellate tomentose. **Fig. 66C.**

Darling Downs district, rarely collected.



Fig. 68

A-B EUPHORBIACEAE – A-B *Acalypha* spp. – A *A. australis*, part of flowering stem x1; B₁-B₂, *A. capillipes*, B₁ part of fertile stem x1, B₂ female flower x6; C-D ZYGOPHYLLACEAE – C *Zygophyllum apiculatum*, part of fertile stem x1; D *Tribulus terrestris*, part of fertile stem x1.

26. ACALYPHA L.

Herbs, shrubs or trees, monoecious or rarely dioecious. Leaves alternate, margins usually dentate or crenate. Flowers small, males and females in separate axillary spikes or females solitary in separate axils or one or more at or near base of male spikes; male flowers clustered in axillary spikes with small bract under each cluster, perianth of 4 segments, glands absent, stamens 8 or rarely 8-16 inserted on a raised central receptacle, filaments free; female flowers 1-4 together within a leafy bract, bracts solitary or in spikes, perianth of 3 segments, rarely 4, styles distinct, finely branched. Fruits capsules.

About 450 species from tropical and subtropical regions of the world: 5 species Australia; 4 species south-eastern Queensland.

- | | | |
|--|------------------------|---|
| 1. Herbs up to 30 cm tall; weeds of disturbed ground | 1. <i>A. australis</i> | 2 |
| Shrubs or small trees | | |
| 2. Leaves mostly 4 cm long or longer, villous; male spikes slender, up to 18 cm long | 2. <i>A. nemorum</i> | 3 |
| Leaves all less than 4 cm long, glabrous or with few hairs | | |

- 3. Female flowering bracts sessile at base of male spikes, or if pedunculate then with deeply divided fruits; male spikes dense, 0.5–2 cm long
 Female flowering bracts on filiform peduncles up to ca 3 cm long with fruits not deeply divided; male spikes filiform, not dense, 1–4 cm long
- 3. *A. eremorum*
- 4. *A. capillipes*

1. **Acalypha australis* L.

Herb up to 30 cm tall, stems and leaves often pink or red. Leaves with petioles 1–2 cm long; blades ovate or subrhomboid, apex acuminate, base acute or obtuse, margin serrulate-crenate, 2–6 cm × 1–3.5 cm. Spikes short, 1–3 per axil, peduncles ca 0.5–1 cm long or longer; bracts up to ca 1.5 cm long. **Fig. 68A.**

Native of China and Japan; naturalized and a weed in disturbed ground around Brisbane. Flowers summer–autumn.

2. *Acalypha nemorum* F. Muell.

Shrub up to ca 2.5 m tall. Leaves with petioles 0.3–4 cm long; blades narrowly ovate to ovate, apex acuminate, base obtuse, margin crenate, 2–10 cm × 1–4 cm, leaves smallest on flowering branches, villous. Male spikes 3–18 cm long; female flowers 1–3 at base of male spikes or in separate axils or sometimes several crowded on a short spike, each with an orbicular crenate bract ca 1 cm long, ovary hirsute.

Not common, found mainly in or near rainforests. Flowers mainly spring–summer.

3. *Acalypha eremorum* Muell. Arg.

Shrub up to ca 2.5 m tall, glabrous or young shoots pubescent. Branches occasionally spinescent at ends. Leaves with petioles ca 2 mm long; blades ovate, elliptic or obovate, apex obtuse, base obtuse or acute, margin crenate, 0.5–2 cm × 0.3–1 cm. Male spikes 0.5–2 cm long, dense; female flowers in bracts solitary and sessile at base of male spikes or in separate axils, occasionally pedunculate within bracts with deeply divided fruits, each bract ca 5 mm wide.

Widespread and moderately common, often on sandy soils. Flowers mainly summer.

4. *Acalypha capillipes* F. Muell.

Shrub or small tree up to ca 3 m tall, often spinescent, glabrous or with a few short hairs. Leaves with petioles up to ca 2 mm long; blades elliptic to obovate, apex obtuse, base acute, margin crenate, 0.5–2 cm × 0.4–0.8 cm. Male spikes filiform, 1–4 cm long, dense; female flowers solitary on filiform peduncles up to ca 3 cm long, within bracts ca 4 mm diameter. **Fig. 68B.**

Not common, found in or near rainforest of the Moreton and Wide Bay districts. Flowers mainly summer.

27. GLOCHIDION J. R. & G. Forster

Trees or shrubs, monoecious or dioecious. Leaves alternate, distichous; stipulate; shortly petiolate; blades entire. Flowers in axillary or supra-axillary clusters; perianth of 5–6 segments in 2 series; male flowers with 3–8 anthers connate into a column; female with 3–15-locular ovary, ovules 2 per loculus, styles connate into a column, usually lengthening during or after flowering. Fruits depressed capsules, crowned by enlarged styler-column.

About 300 species mainly from tropical areas of the southern hemisphere; 14 species Australia; 3 species south-eastern Queensland.

- 1. Flower clusters on peduncles arising above the leaf axils (supra-axillary) 1. *G. perakense* var. *supra-axillare*
- Flower clusters not pedunculate, strictly axillary 2
- 2. Leaves glaucous beneath; capsules deeply divided 2. *G. lobocarpum*
- Leaves not glaucous beneath; capsule shallowly lobed 3. *G. ferdinandi*

1. *Glochidion perakense* Hook. f. var. *supra-axillare* (Benth.) Airy Shaw

BUTTONWOOD

Phyllanthus ferdinandi Muell. Arg. var. *supra-axillare* Benth.; *Glochidion supra-axillare* (Benth.) Domin

Shrub or tree up to *ca* 20 m tall. Leaves with petioles 4–8 mm long; blades ovate-acuminate, base acute, often oblique, 4–15 cm × 2–6 cm. Flower clusters supra-axillary on peduncles up to *ca* 6 mm long, pedicels 3–5 mm long; ovary pubescent. Capsules flattened, 6–8 mm wide, pubescent, styler-column very short.

Common in or near rainforest throughout the region.

2. *Glochidion lobocarpum* (Benth.) F. M. Bailey

Phyllanthus lobocarpus Benth.

Shrub or small tree up to *ca* 8 m tall, young branches minutely pubescent. Leaves with petioles 3–4 mm long; blades ovate to elliptic, apex acute or shortly acuminate, base acute or obtuse, often oblique, 2–10 cm × 1.5–4 cm, glaucous beneath. Flower clusters not pedunculate, axillary, female flowers on pedicels up to *ca* 4 mm long, males on shorter recurved pedicels. Capsules depressed, deeply divided into 6 or fewer lobes, *ca* 8 mm diameter; seeds orange-red when ripe.

Known only from the Wide Bay district.

3. *Glochidion ferdinandi* (Muell. Arg.) F. M. Bailey CHEESE TREE; RAIN TREE

Phyllanthus ferdinandi Muell. Arg.

Shrub or tree up to 25 m tall, usually glabrous except for ovary. Leaves with petioles 2–5 mm long; blades elliptic or ovate, apex acute-acuminate, base acute, 3–10 cm × 1.5–4 cm. Flower clusters sessile in axils, pedicels 4–8 mm long; ovary pubescent. Capsules much depressed in centre, 0.9–2 cm wide, usually glabrous, styler-column up to *ca* 2 mm long. **Fig. 66E.**

Two varieties occur in the region:

- | | | |
|---------------------------------------|-----------|---|
| 1. Plants glabrous except for ovary | | <i>G. ferdinandi</i> |
| Plants pubescent in all or most parts | | <i>G. ferdinandi</i> var. <i>pubens</i> |

G. ferdinandi var. *ferdinandi* is moderately common in the Moreton and Wide Bay districts, usually near rainforest. *G. ferdinandi* var. *pubens* Maiden ex Airy Shaw has been recorded only from near Gympie in the Wide Bay district.

28. CLEISTANTHUS Hook. f. ex Planchon

Trees or shrubs, monoecious. Leaves alternate, shortly petiolate; blades coriaceous, entire, primary veins anastomosing far within margin, veinlets reticulate. Flowers in axillary clusters or in leafless spikes formed by the abortion of the floral leaves; calyx segments 5; petals 5; male flowers with 5 stamens inserted on a central column, column terminated by abortive style; female flowers with 3, 2-fid styles. Fruits capsules, separating into 3, 2-valved cocci.

140 species tropical regions of the world; *ca* 9 species Australia; 1 species south-eastern Queensland.

1. *Cleistanthus cunninghamii* (Muell. Arg.) Muell. Arg.

Lebidiera cunninghamii Muell. Arg.

Large shrub or small tree up to *ca* 10 m tall. Leaves with petioles *ca* 3–4 mm long; blades narrowly ovate to elliptic, apex obtuse to subacuminate, 4–9 cm × 2–4 cm, usually sparsely hairy beneath. Calyx glabrous; ovary hairy. Capsule depressed globular, 3-lobed, *ca* 6 mm × 8 mm, hairy becoming glabrous, stipe usually exceeding calyx but variable. **Fig. 66B.**

Not common, in or near rainforest of the Moreton and Wide Bay districts.

29. ACTEPHILA Blume

Trees or shrubs, monoecious. Leaves alternate; petiolate; blades entire. Flowers in axillary clusters or solitary, often several females as well as males in same cluster, all pedunculate; calyx segments 5; petals 5; male flowers with 3–6 stamens, rudimentary ovary and styles present; female flowers with 3-locular ovary, styles 3, free or united at base. Fruits capsules.

About 35 species from tropical eastern Asia and tropical Australia; 5 species Australia; 1 species south-eastern Queensland.

In Australia the genus is poorly understood. Further collections and field studies are required.

1. *Actephila lindleyi* (Steudel) Airy Shaw

Lithoxylon lindleyi Steudel; *Actephila grandiflora* (Muell. Arg.) Baillon; *A. latifolia* Benth.; *A. mooreana* Baillon

Shrub or small tree up to 5 m tall but often less than 2 m tall. Leaves with petioles 0.5–1 cm long; blades elliptic or ovate, apex obtuse or acute, base tapered, 5–15 cm × 2.5–4 cm. Capsules wide on peduncles 0.5–4 cm long.

Widespread, usually met with as a shrub in rainforest.

30. ALCHORNEA Swartz

Shrubs, dioecious. Leaves alternate; shortly petiolate; blades with spinulose-dentate margins, penninerved. Inflorescences spikes of clusters of flowers, axillary or terminal; male flowers with perianth segments 4, stamens 8, filaments free or very shortly united at base, rudimentary ovary absent; female flowers with perianth segments 5–6, stigmas 3, sessile. Fruits capsules.

3 species Australia; 2 species south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Leaves coriaceous; styles broad, usually spreading | 1. <i>A. ilicifolia</i> |
| Leaves thin; styles narrow, usually erect | 2. <i>A. thozetiana</i> |

1. *Alchornea ilicifolia* (John Smith) Muell. Arg.

NATIVE HOLLY

Caelebogyne ilicifolia John Smith

Shrub up to ca 4–5 m tall. Leaves with petioles 2–7 mm long; blades coriaceous, ovate or rhomboid, margin sinuate-toothed, teeth ending in spinose points 1–2 mm long, 2.5–10 cm × 2–7 cm. Spikes up to ca 3 cm long; styles short, broad, usually spreading. Capsules depressed-globular, 6–8 mm diameter.

Moderately common, mainly in or near rainforest or on creek banks.

2. *Alchornea thozetiana* (Baillon) Baillon ex Benth.

Cladodes thozetiana Baillon; *Caelebogyne thozetiana* (Baillon) Pax & Hoffman

Shrub up to ca 2 m tall. Leaves with petioles 2–10 mm long, blades thin, ovate or rhomboid, margins acute-dentate with teeth ending in short points, 2–10 cm × 2–8 cm. Spikes 5–10 cm long; styles narrow, usually erect. Capsules 8–9 mm diameter.

Rare, known only from Kolan in the Wide Bay district.

31. RICINUS L.

Tall, glabrous shrubs, monoecious. Leaves alternate. Flowers large in terminal racemes, upper flowers male, lower flowers female; perianth of 3–5 segments; male flowers with numerous stamens; female flowers with styles 3, entire or 2-fid, feathery or papillose. Fruits capsules.

1 species from Africa and India, naturalized in most tropical countries including Australia, occurring in south-eastern Queensland.

1. **Ricinus communis* L.CASTOR OIL PLANT; CASTOR BEAN;
PALMA CRISTI

Shrub up to *ca* 4 m tall. Leaves with petioles 10–30 cm long; blades deeply palmately divided into 7–10 serrate lobes, whole blade 10–70 cm in diameter. Flowers *ca* 1 cm diameter; styles red. Capsules green to red, ovoid, burr-like, *ca* 1.5–2.5 cm across; seeds mottled, *ca* 1 cm long.

Often abundant on creek banks, vacant suburban allotments and in other neglected situations. Flowers mainly summer. The seeds are extremely toxic.

32. MANIHOT Miller

Monoecious herbs or shrubs. Leaves alternate; petiolate; blades commonly 3–12-lobed, segments entire or lobed. Inflorescences either racemes or panicles, terminal or in uppermost leaf axils; male flowers with 5 perianth lobes, stamens 10; female flowers with perianth similar to males, ovary 3-locular, styles 3, shortly united at base. Fruits 3-locular capsules.

About 170 species from southern United States of America to tropical South America; 1 species widely cultivated throughout the world, naturalized Australia, occurring in south-eastern Queensland.

1. **Manihot esculenta* Crantz

CASSAVA; MANIOC; TAPIOCA

Manihot utilissima Pohl; *Manihot dulcis* Pax; *Manihot palmata* Muell. Arg.

Shrub 1–5 m tall with latex in all parts; roots tuberous. Leaves \pm glaucous beneath, sometimes variegated; blade \pm 3–12-lobed almost to base, base often subpeltate, 5–20 cm across, \pm glaucous beneath, lobes oblong, ovate, obovate or linear, apex acute-acuminate. Racemes 3–10 cm long, pedicels 0.5–2.5 cm long; perianth 0.8–1.2 cm long. Capsules globose, *ca* 1.5 cm diameter; seeds 3 per capsule, grey mottled, *ca* 1.2 cm long.

Commonly cultivated in frost free parts of the region and naturalized in a few places. Flowers mostly summer. The roots of this plant contain cyanogenetic glycosides in varying amounts and if eaten raw can be acutely poisonous.

33. MACARANGA Thouars

Shrubs or trees, dioecious or rarely monoecious. Leaves alternate; petiolate; blades often peltate or 3- or more-nerved at insertion of the petiole, sometimes penniveined, underside with small glandular granules. Inflorescences spikes, racemes or panicles, axillary; flowers in clusters along rachis, each cluster subtended by a usually toothed or fringed bract; perianth segments 3–4; male flowers with few to many stamens, filaments free or shortly united, anthers terminal, 2-locular, 4-lobed; female flowers with styles free or shortly united at base, undivided, minutely papillose or fringed on inner surface. Fruits capsules with long processes or tuberculate.

About 280 species, mainly from tropical regions; *ca* 6 species Australia; 1 species south-eastern Queensland.

1. *Macaranga tanarius* (L.) Muell. Arg.

Ricinus tanarius L.

Shrub or tree up to *ca* 6 m tall and 30 cm stem diameter, glabrous or young parts often hairy. Leaves peltate; stipules acute, *ca* 1 cm long; petioles 6–20 cm long, often hairy at apex; blades ovate or orbicular, apex acuminate, margin entire or somewhat denticulate, paler beneath. Flower clusters in panicles, 4–12 cm long, bracts papillose or fringed. Capsules yellow, *ca* 1 cm diameter, with processes 0.2–0.5 cm long, **Fig. 66H**.

Moderately common, in or near rainforest; often common in secondary regrowth on areas of cleared rainforest.

34. CLAOXYLON Adr. Juss.

Trees or shrubs, dioecious or rarely monoecious. Leaves alternate; petiolate; blades entire or toothed, penniveined. Inflorescences terminal racemes, solitary or 2 together; flowers small, males few together in clusters, females solitary; perianth of 3 or 4 valvate segments or lobes; male flowers with many stamens on a central disc intermixed with glands or lobes of disc; female flowers with styles short, entire, free or united at base. Fruits capsules.

About 80 species from tropical regions of the world; 3 species Australia; 1 species south-eastern Queensland.

1. *Claoxylon australe* Baillon

Tree up to 10 m tall, young shoots and inflorescences \pm pubescent. Leaves with petioles 0.5–2.5 cm long; blades narrowly ovate to narrowly elliptic, apex obtuse or shortly acuminate, base narrowed, margin dentate, 6–15 cm \times 2–5 cm; glabrous or pubescent, glands 2, minute, at base of blade or top of petiole. Male racemes 3–8 cm long, female racemes 2–3 cm long; male flowers \pm sessile; female flowers on pedicels 1–2 mm long. Capsules *ca* 5 mm diameter.

Moderately common, in or near rainforest or wet eucalypt forest. Flowers mainly summer.

35. EXCOECARIA L.

Monoecious or dioecious trees or shrubs with an acrid milky juice. Leaves alternate. Inflorescences terminal or axillary racemes or spikes; flowers small, males clustered 2 or 3 together along rachis of inflorescence, or sometimes solitary within each bract, females sometimes in shorter separate inflorescences; perianth segments 3, rarely 2; glands absent; male flowers with 3 stamens, filaments mostly free; female flowers with 3-locular ovary, styles 3, undivided, free or shortly united at base. Fruits capsules.

About 40 species mainly from Africa and Asia; 3 species Australia; 2 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Mangroves, mostly on the landward fringe of coastal swamps: leaves entire or crenate | 1. <i>E. agallocha</i> |
| Not mangroves, often found in or near depauperate rainforest or rainforest; leaves crenulate-serrate | 2. <i>E. dallachyana</i> |

1. *Excoecaria agallocha* L.**MILKY MANGROVE; BLIND-YOUR-EYE**

Small tree up to *ca* 5 m tall, with copious milky sap. Leaves with petioles 1–2.5 cm long; blades elliptic, ovate or obovate, apex obtuse or acute, sometimes somewhat emarginate, base obtuse, margin entire or crenate, 4–10 cm \times 2–5 cm, glands 2 at base of blade. Inflorescences axillary, 1–4 cm long. Capsules *ca* 4 mm \times *ca* 8 mm, smooth.

Moderately common, along the most landward fringe of mangrove communities, usually on small sandy ridges. Flowers mostly early summer. The sap can cause intense pain and temporary blindness if it gets into the eyes, and can blister skin. It is reputed to be poisonous to stock.

2. *Excoecaria dallachyana* (Baillon) Benth. **SCRUB POISON; BLIND-YOUR-EYE**

Excoecaria agallocha L. var. *dallachyana* Baillon

Spreading tree up to *ca* 15 m tall, with copious milky sap. Leaves with petioles 0.5–1.5 cm long; blades ovate, apex obtuse, acute or acuminate, base obtuse, margin crenulate-serrate, 2.5–7 cm \times 1–3.5 cm, glands 2, minute, at base of blade at apex of petiole. Inflorescences axillary, up to *ca* 3 cm long. Capsules 6–8 mm \times 8–10 mm, smooth; seeds globular, *ca* 4–5 mm diameter.

Fairly common in depauperate rainforest and rainforest throughout the area. It is reputed to be poisonous to cattle and can cause blindness and blistering in man as with *E. agallocha*.

70. RUTACEAE

Shrubs or trees, rarely herbs. Leaves exstipulate; blades simple or compound, mostly gland-dotted. Flowers bisexual, rarely unisexual, actinomorphic; sepals 4–5, imbricate, free or connate; petals imbricate, rarely valvate, mostly free; stamens same number as, or double the number of petals, rarely more, usually free, anthers 2-locular; disc usually present; ovary superior, syncarpous, or 4–5 partly free carpels, ovules 2–several, styles free or connate. Fruits baccate, drupaceous, or coriaceous, rarely capsular.

150 genera with 900 species, tropical and temperate, especially South Africa and Australia; 36 genera with 280–300 species Australia; 25 genera with 83 species south-eastern Queensland.

1. Leaves opposite or subopposite	2
Leaves alternate	12
2. Stamens the same number as petals	3
Stamens twice the number of petals	4
3. Usually shrubs; styles terminal on carpels	1. <i>Zieria</i>
Usually trees; style attached below middle of carpels, on central axis	2. <i>Euodia</i>
4. Flowers 5-merous; stamens 10	5
Flowers 4-merous; stamens 8	6
5. Leaves digitately 3-foliolate	3. <i>Acradenia</i>
Leaves pinnately 3-foliolate, or 1-foliolate	4. <i>Bosistoa</i>
6. Petals, at least in Queensland species, united into a 4-lobed tube; filaments glabrous	5. <i>Correa</i>
Petals free; filaments pubescent or ciliate	7
7. Shrubs of heaths or heathy understorey of eucalypt open forest; flowers single or few in upper axils; fruit of 4 dehiscent cocci	6. <i>Boronia</i>
Trees, rarely shrubs, of rainforest or coastal depauperate rainforest; flowers in terminal or axillary panicles, sometimes subracemose, or if only 1–2 flowers in axils then fruit a 4-locular drupe (Acronychia)	8
8. Fruits consisting of a number of 2-valved follicles	9
Fruits drupaceous	11
9. Flowers large, petals more than 1.5 cm long; leaves 1-foliolate	7. <i>Medicosma</i>
Flowers relatively small, petals less than 1 cm long; leaves 3-foliolate (except Melicope melanophloia 1-foliolate)	10
10. Leaflets without domatia in vein-axils on undersurface	8. <i>Melicope</i>
Leaflets with domatia in vein-axils on undersurface	9. <i>Bouchardatia</i>
11. Flowers functionally unisexual; petals persistent in fruit	10. <i>Bauerella</i>
Flowers bisexual; petals usually deciduous in fruit (if persistent, then leaves 3-foliolate)	11. <i>Acronychia</i>
12. Leaves simple or 1-foliolate	13
Leaves pinnate or imparipinnate	21
13. Stamens same number as petals	12. <i>Geijera</i>
Stamens at least twice the number of petals	14
14. Stamens more than twice the number of petals (usually 16–40)	15
Stamens twice the number of petals	17
15. Leaves simple; plants of brigalow or softwood closed forest	13. <i>Eremocitrus</i>
Leaves 1-foliolate; plants of light rainforest	16
16. Leaves dimorphic; flowers small; stamens <i>ca</i> 20; ovary 5–8-locular	14. <i>Microcitrus</i>
Leaves not dimorphic; flowers large; stamens 20–40; ovary 8–15-locular	15. <i>Citrus</i>

- | | | |
|--|---|----------|
| 17. Fruits drupaceous; trees of closed forests
Fruits 2-valved follicles; shrubs or small trees mainly of wallum, heaths,
rocky outcrops or heathy understorey | 16. <i>Halfordia</i> | 18 |
| 18. Staminal filaments united in a tube for part of their length
Staminal filaments free | 17. <i>Philotheca</i> | 19 |
| 19. Staminal filaments glabrous or anther without sterile white tip
Staminal filaments ciliate and anther with sterile white tip | 18. <i>Phebalium</i> | 20 |
| 20. Anthers pilose
Anthers glabrous | 19. <i>Crowea</i>
20. <i>Eriostemon</i> | |
| 21. Leaflets paired, \pm oppositely arranged along rachis
Leaflets alternately arranged along rachis | | 21
22 |
| 22. Trees with prickles; leaves variously compound; stamens \pm same number
as petals; fruits dehiscent cocci
Trees without prickles; leaves always imparipinnate; stamens twice the
number of petals; fruits samaras | 21. <i>Zanthoxylum</i>
22. <i>Pentaceras</i> | |
| 23. Inflorescences oblong pyramidal, or loose, axillary or terminal panicles;
staminal filaments dilated at or below middle
Inflorescences terminal, flat, dense corymbose panicles, staminal
filaments linear-subulate | 23. <i>Clausena</i> | 24 |
| 24. Petals \pm valvate in bud, less than 5 mm long in Queensland species
Petals imbricate in bud, more than 5 mm long in Queensland species | 24. <i>Micromelum</i>
25. <i>Murraya</i> | |

1. ZIERIA Smith

Shrubs or rarely small trees. Leaves opposite; blades 3-foliolate. Inflorescences axillary cymes, rarely flowers solitary; calyx 4-lobed; petals 4, imbricate in bud, spreading; disc with 4 gland-like lobes, alternating with petals; stamens 4, inserted on outside of disc lobes; carpels 4, distinct or almost so, ovules 2 per carpel, styles nearly terminal, short, united at top, stigma capitate, 4-furrowed, or shortly 4-lobed. Cocci 4, 2-valved, dehiscent, seeds usually solitary.

15 species endemic to Australia; 12 species south-eastern Queensland.

- | | | |
|---|--|--------|
| 1. Plants with prominent raised glandular tubercles on stems and leaves
Plants without raised tubercles, though oil dots may be present | | 2
4 |
| 2. Leaflets narrowly ovate to narrowly elliptic, often slightly falcate
Leaflets linear-oblong to linear-obovate, never falcate | 1. <i>Z. furfuracea</i> | 3 |
| 3. Leaflets linear-obovate, margin flat or recurved; plants of rocky areas of
McPherson Ra. | 2. <i>Z. granulata</i> var.
<i>adenodonta</i> | |
| Leaflets linear-oblong, margin revolute; plants of drier areas west of
Great Dividing Ra. | 3. <i>Z. sp.1.</i> | |
| 4. Stems glabrous, or at most with few scattered hairs at tips
At least young stems densely pubescent, coarsely or, in one species, very
finely so | | 5
7 |
| 5. Leaflets 3-7 times as long as broad
Leaflets 8-12 times as long as broad | 4. <i>Z. smithii</i> | 6 |
| 6. Petioles 0.35-0.6 cm long; petals 5-6 mm long; plants of the Granite
Belt
Petioles 0.5-1.3 cm long; petals 2.5-3.5 mm long; plants of coastal heath
regions | 5. <i>Z. laevigata</i>
6. <i>Z. laxiflora</i> | |

- | | | |
|---|----------------------------|----|
| 7. Young stems pubescent but with glabrous decurrent lines; leaves sessile or nearly so | 7. <i>Z. aspalathoides</i> | 8 |
| Young stems pubescent all over; leaves with petioles at least 1 mm long | | |
| 8. Inflorescences with large bracts; petals more than 3.5 mm long | | 9 |
| Inflorescences with small bracts; petals less than 3.5 mm long | | 11 |
| 9. Calyx densely pubescent | 8. <i>Z. cytisoides</i> | 10 |
| Calyx glabrous or at most with scattered hairs at base | | |
| 10. Leaflets narrowly elliptic to narrowly obovate, shortly stellate pubescent beneath; plants of the border ranges east of the Darling Downs | 9. <i>Z. fraseri</i> | |
| Leaflets elliptic to obovate, stellate pubescent beneath with scattered longer simple hairs; plants of the Granite Belt | 10. <i>Z. compacta</i> | |
| 11. Young stems and undersides of leaves with very fine stellate pubescence; petals 2.5–3 mm long | 11. <i>Z. collina</i> | |
| Young stems and leaves with coarse, long simple and stellate hairs; petals 1–1.5 mm long | 12. <i>Z. minutiflora</i> | |

1. *Zieria furfuracea* R.Br. ex Benth.

Included with *Z. smithii* in "Qd Flora"

Shrub, stems variously pubescent, glandular-tuberculate. Petioles 0.5–1.5 cm long; leaflet blades narrowly ovate to narrowly elliptic, sometimes slightly falcate, apex acute or subacute, base cuneate to attenuate, margin recurved, 1.5–8 cm × 0.4–1.3 cm, shortly stellate pubescent beneath. Floral bracts small; calyx lobes ovate, *ca* 1 mm long; petals white, 2.5–3 mm long. Cocci *ca* 2.5 mm long. **Fig. 69B.**

Recorded from rainforest fringes or wetter forest areas in coastal districts. Flowers spring.

Further study may reveal that this species can be divided into a number of subspecies.

2. *Zieria granulata* C. Moore var. *adenodonta* F. Muell.

Shrub, stems glandular-tuberculate, young ones pubescent. Petioles 2–7 mm long; leaflet blades linear-obovate to very narrowly obovate; apex obtuse, base attenuate, margin recurved, glandular tubercles along margin often making margin appear toothed, 0.5–2.1 cm × 0.1–0.2 cm, lower surface shortly stellate pubescent. Floral bracts small; calyx lobes triangular-ovate, 0.75–1 mm long; petals white, 2.5–3 mm long. Cocci 2.5–3 mm long.

Rocky mountain slopes of McPherson Ra. Flowers late winter to spring.

3. *Zieria* sp. 1.

Previously misidentified as *Z. granulata* C. Moore

Shrub, stems pubescent, glandular-tuberculate. Petioles 0.25–1.5 cm long; leaflet blades linear-oblong, apex obtuse, base cuneate to truncate, margin revolute, 0.8–5 cm × 0.1–0.5 cm, stellate pubescent beneath. Floral bracts large; calyx lobes ovate-triangular, 1–1.5 mm long, petals white, 2.5–3 mm long.

Inland regions, near Mundubbera. Monogoorilby. Flowers mainly spring.

4. *Zieria smithii* Benth. sens. lat.

Shrub, often tall, stems ± smooth, glabrous or sparsely pubescent at tips. Petioles 0.5–3 cm long; leaflet blades narrowly ovate, narrowly elliptic or narrowly obovate, apex acute or obtuse, base cuneate, 1.5–7 cm × 0.5–1.5 cm, glabrous or with scattered stellate hairs beneath. Floral bracts small; calyx lobes ovate-acuminate, *ca* 1 mm long; petals white, 3–4 mm long. Cocci 3.5–4 mm long.

Margins of light rainforest or in eucalypt forest mainly of coastal regions. Flowers mainly spring but often a second flush in autumn.

This species is extremely variable, and further study may show that it includes a number of taxa.

5. *Zieria laevigata* Bonpl.

Shrub, stems glabrous. Petioles 3.5–6 mm long; leaflet blades linear-elliptic, apex acute, base attenuate, margin revolute, 1.1–4.5 cm × 0.1–0.3 cm, densely pubescent beneath. Floral bracts small; calyx lobes triangular-ovate, 2–3 mm long; petals white, 5–6 mm long. Cocci *ca* 4 mm long.

Restricted to the Granite Belt on granite sands. Flowers spring.

6. *Zieria laxiflora* (Benth.) Domin

Zieria laevigata Bonpl. var. *laxiflora* Benth.

Shrub, stems glabrous. Petioles 0.5–1.3 cm long; leaflet blades linear-elliptic, apex acute, base attenuate, margin revolute, 1.3–6 cm × 0.15–0.5 cm, densely pubescent beneath. Floral bracts small; calyx lobes ovate-acuminate, 1.5–2.5 mm long; petals white, 2.5–3.5 mm long. Cocci *ca* 4 mm long.

Found in wallum heath along the coast and offshore islands, on sands, or in a few sandy swampy areas a little further inland. Flowers late winter to spring.

This is very similar to *Z. laevigata* and may be only a subspecies of it.

7. *Zieria aspalathoides* Cunn. ex Benth.

Slender shrub, stems pubescent, with glabrous decurrent lines. Petioles up to 1 mm long; leaflet blades linear to linear-elliptic, apex acute, base cuneate, margin revolute, 0.3–1.2 cm × 0.1–0.15 cm, glabrous or puberulent beneath. Floral bracts usually small; calyx lobes triangular-acuminate, *ca* 1.5–2 mm long; petals white, *ca* 3 mm long. Cocci 3–3.5 mm long. **Fig. 69D.**

Sandstone or granite areas in the Darling Downs district and in Mundubbera region. Flowers late winter to spring.

8. *Zieria cytisoides* Smith

Shrub, young stems densely pubescent. Petioles 0.2–1.5 cm long; leaflet blades ovate, elliptic or obovate, apex acute or mucronate, base cuneate, margin recurved, 0.9–4.5 cm × 0.3–1.5 cm, long stellate pubescent beneath. Floral bracts large; calyx lobes ovate-acute, 2–2.5 mm long; petals white, 4–4.5 mm long. Cocci 4–4.5 mm long, pubescent. **Fig. 69C.**

Inland sandy localities. Flowers autumn.

9. *Zieria fraseri* Hook.

Zieria laevigata Bonpl. var. *fraseri* (Hook.) Domin; *Z. compacta* C. T. White var. *robusta* C. T. White

Shrub, young stems pubescent. Petioles 2–8 mm long; leaflet blades narrowly elliptic to narrowly obovate, apex acute, mucronate, base attenuate, margin recurved, 1–3.5 cm × 0.15–0.5 cm, shortly stellate pubescent beneath. Floral bracts large; calyx lobes ovate-mucronate, 2–2.5 mm long; petals pinkish, 4–5 mm long. Cocci *ca* 4 mm long.

Recorded from Mt. Maroon and Mt. Ernest. Flowers spring.

10. *Zieria compacta* C. T. White

Zieria smithii Andr. var. *fraseri* F. Muell. ex Maiden & Betche

Shrub, young stems pubescent. Petioles 2–6 mm long; leaflet blades elliptic to obovate, apex acute to obtuse, mucronate, base cuneate to attenuate, margin recurved, 0.6–3 cm × 0.25–0.8 cm, stellate pubescent beneath with scattered simple longer hairs. Floral bracts large; calyx lobes ovate-triangular, 1–1.5 mm long; petals white to pale pink, 3.5–4.5 mm long. Cocci 4–4.5 mm long.

Sandstone and granite areas in the Darling Downs district, Crows Nest, Mt. Maroon. Flowers spring.

This species is very similar to *Z. fraseri* and may only be a subspecies of it.

11. *Zieria collina* C. T. White

Tall shrub, stems pubescent. Petioles 3–10 mm long; leaflet blades ovate, oblong-elliptic, or oblong-obovate, apex obtuse, base cuneate, margin flat or recurved, 0.75–2.8 cm × 0.25–0.55 cm, densely finely stellate pubescent beneath. Floral bracts small; calyx lobes ovate-triangular, 0.5–1 mm long; petals white, 2.5–3 mm long.

Recorded from Mt. Tamborine, forming thickets in light rainforest, and often a dominant shrub in regrowth. Flowers mainly spring, but also autumn.

12. *Zieria minutiflora* (F. Muell.) Domin*Boronia minutiflora* F. Muell.; *Zieria obcordata* auct. non. Cunn., F. M. Bailey

Small shrub, young parts villous. Petioles 1–3 mm long; leaflet blades obovate, apex retuse to emarginate, base attenuate to cuneate, margin flat or recurved, 0.25–1.5 cm × 0.2–0.9 cm, villous beneath, sparingly so above. Floral bracts small; calyx lobes broadly ovate to triangular, 0.5–0.75 mm long; petals white, 1–1.5 mm long. Cocci *ca* 2–2.5 mm long. **Fig. 69A.**

Sandy or rocky areas of the coastal districts, often in open forest or woodland. Flowers mainly summer and autumn.

2. EUODIA J. R. & G. Forster

Trees or shrubs. Leaves opposite; blades usually digitately 3-foliolate or pinnate, rarely 1-foliolate. Inflorescences axillary or rarely terminal cymes or panicles; flowers small; sepals 4, rarely 5, imbricate; petals 4, rarely 5, valvate or very slightly imbricate; stamens 4, rarely 5, subulate or very slightly dilated; carpels 4, rarely 5, basally connate, joined adaxially about the middle by single style, 1-locular, ovules 2 per loculus. Cocci ± separate, endocarp separating elastically; seeds with crustaceous testa, usually smooth and shining.

45 species tropical Africa, Asia, Australia and the Pacific Is.; 13 species Australia; 4 species south-eastern Queensland.

- | | | |
|--|-------------------------|---|
| 1. Inflorescences spreading panicle borne in uppermost leaf axils
Inflorescences usually borne on older wood, in axils of leaf scars below present growth, or if among leaves, then inflorescences dense compact cymose panicles | 1. <i>E. vitiflora</i> | 2 |
| 2. Flowers pink; inflorescences spreading panicles of several flowers; leaflets generally more than 11 cm long, glabrous; cocci brownish
Flowers white; inflorescences generally dense compact many-flowered cymose panicles; leaflets less than 11 cm long, glabrous or pubescent beneath; cocci grey to black | 2. <i>E. elleryana</i> | 3 |
| 3. Leaflets generally widest above middle; flowers with pubescent ovary, style and often filaments; endocarp of coccus yellow, sparsely pubescent
Leaflets generally widest about middle; flowers with glabrous ovary, style and filaments, except for hair tufts at junction of ovary and disc; endocarp of coccus whitish or cream, pubescent with short straight hairs | 3. <i>E. micrococca</i> | |
| | 4. <i>E. sp.1.</i> | |

1. *Euodia vitiflora* F. Muell.

Shrub or small tree. Petioles grooved, 2–9 cm long; blades 3-foliolate, petiolules 3–7 mm long, terminal one 0.8–2.5 cm long; leaflet blades oblong, ovate or elliptic, apex acuminate, base cuneate, 5–19 cm × 2–7 cm. Inflorescences up to 10 cm long, pedicels *ca* 2 mm long; sepals 1–1.5 mm long, minutely pubescent; petals creamy, *ca* 2–2.5 mm long; stamens shorter than petals; ovary densely pubescent. Cocci brown, obovoid, 5–7 mm long; seeds shining black, *ca* 3.5 mm long.

Riverine rainforest or rainforest of moist areas of the coastal plain. Flowers spring–summer.

2. *Euodia elleryana* F. Muell.*Euodia accedens* Blume

Small tree. Petioles 1.8–10 cm long, triangular, smooth; blades 3-foliolate, petiolules 1–8 mm long, terminal one 2–10 mm long; leaflet blades oblong-elliptic, ovate or obovate, apex obtuse or bluntly acuminate, base cuneate, occasionally obtuse or slightly oblique, 5.5–19 cm × 2.5–8 cm, glabrous. Inflorescences up to 5 cm long, pedicels *ca* 6 mm long; sepals 1.5–2 mm long, minutely pubescent; petals pink, *ca* 6 mm long; stamens and style *ca* 10 mm long; ovary densely pubescent. Cocci dark brown, obovoid, 1–1.3 cm long; seeds shining black or dark brown, ovate, *ca* 3 mm long.

Riverine rainforest or rainforest of very wet, mainly lowland areas. Flowers summer. Wood white, light, soft and free working.

3. *Euodia micrococca* F. Muell.

WHITE EUODIA

Tree up to 30 m tall. Petioles 1–9.5 cm long, slender; blades 3-foliolate, petiolules 0–1 cm long, terminal one 0.3–1.3 cm long; leaflet blades obovate or oblong-obovate, apex acuminate, often abruptly so, or obtuse, base cuneate to attenuate, 2–11 cm × 0.8–4.5 cm, glabrous, or pubescent beneath, particularly young growth. Inflorescences dense, up to 8 cm long, pedicels 2–4 mm long; sepals *ca* 1 mm long, minutely pubescent; petals white, 3–4 mm long; stamens *ca* 5–6 mm long. Cocci dark grey to black, obovoid, *ca* 5 mm long; seeds shining black, *ca* 2–3 mm diameter. **Fig. 70B.**

Rainforests of the region. Flowers summer. Wood whitish, close-grained, tough, moderately soft, not durable in weather.

4. *Euodia* sp.1.

Tree. Petioles 1–8 cm long, slender; blades 3-foliolate, petiolules 0–4 mm long, terminal one 1–8 mm long; blades elliptic, apex obtuse or bluntly acuminate, base cuneate, often narrowly so, 3–8 cm × 1–3.5 cm. Inflorescences dense, up to 8 cm long, pedicels 3–4 mm long; sepals *ca* 1 mm long; petals white, *ca* 3–4 mm long. Cocci greyish, ± obovoid, *ca* 5–6 mm long; seeds shining black.

Generally poorer rainforests of the coastal districts. Flower summer.

Has been confused with *E. micrococca*.

3. ACRADENIA Kippist

Shrubs or trees with simple indumentum, buds naked. Leaves opposite; blades digitately 3-foliolate. Inflorescences paniculate, subcorymbose, flowers bisexual; sepals 5, rarely 6, basally connate, valvate, persistent in fruit; petals 5, rarely 6, free, imbricate; stamens twice number of petals; carpels 5, rarely 4, basally connate and joined adaxially at about middle by single style, otherwise contiguous, each with prominent upper abaxial gland, 1-locular, 2 ovules per locule. Fruits of 1–5, 1-seeded cocci, cocci erect, obovate-truncate, transversely ribbed, endocarp cartilaginous, discharged with seed; seed narrowly to broadly and obliquely pyriform, testa polished brown, smooth, endosperm scant.

2 species endemic to Australia; 1 species south-eastern Queensland.

1. *Acradenia euodiiformis* (F. Muell.) T. Hartley

Bosistoa euodiiformis F. Muell.: *Luerssenidendron monostylis* Domin

Tree up to 30 m tall, branchlets glabrous with age. Petioles 1–7.5 cm long; blades 3-foliolate, rarely 5-foliolate, petiolules winged, 0.5–1.5 cm long; leaflet blades narrowly elliptic to narrowly obovate, apex retuse, obtuse or acute, occasionally acuminate, base cuneate to attenuate, margin entire or apically crenate, 4–23 cm × 1.2–6.5 cm. Inflorescences upper axillary, 6–21 cm long, pedicels 0.4–1.2 cm long; sepals 1–1.5 mm long; petals white-cream, 5–6 mm long. Cocci tomentose, 6–8 mm long; seeds *ca* 5 mm long. **Fig. 70A.**

Rainforest of McPherson Ra., Springbrook, possibly at other high altitude localities. Flowers spring-summer. Wood yellow, hard and close-grained.

4. BOSISTOA F. Muell. ex Benth.

Trees, indumentum simple, buds with scales completely enclosing leaf and floral primordia. Leaves opposite; blades imparipinnate, pinnately 3-foliolate or 1-foliolate. Inflorescences paniculate, many-flowered, terminal, or terminal and upper axillary; sepals 5; petals 5, valvate, not persistent; stamens 10; carpels 5, basally connate, 1-locular, 4–6 ovules per loculus, style 1, arising from about middle of, and uniting, the 5 carpels, stigma small. Fruits of 1 or 2, 1-seeded cocci, undeveloped carpels persistent, cocci somewhat laterally compressed, dehiscent, epicarp dry at maturity, subwoody; seeds ovoid, ellipsoid to reniform, testa polished brown, smooth.

7 species endemic to Australia; 4 species south-eastern Queensland.

- | | |
|---|-------------------------|
| 1. Scars of inner bud scales located directly above outer; bud scales glabrous; ovary sparsely villous towards apex, otherwise glabrous | 1. <i>B. monostylis</i> |
| Scars of inner bud scales remote from outer; bud scales, at least in young buds, pubescent; ovary woolly | 2 |
| 2. Leaves 1-foliolate; petals pubescent, 4–4.5 mm long | 2. <i>B. selwynii</i> |
| Leaves mainly compound, occasionally a few 1-foliolate; petals ± glabrous, or if pubescent then less than 3.5 mm long | 3 |
| 3. Petals ± glabrous; mature cocci 1.5–2.5 cm wide; leaflet margin usually crenate | 3. <i>B. pentacocca</i> |
| Petals pubescent; mature cocci 1–1.3 cm wide; leaflet margin entire | 4. <i>B. transversa</i> |

1. *Bosistoa monostylis* (F. M. Bailey) T. Hartley

Pagetia monostylis F. M. Bailey

Tree up to 18 m tall. Leaf blades pinnately 3-foliolate, or 1-foliolate, terminal leaflet on extension of rachis 1–1.7 cm long, lateral petiolules ± obsolete, 1-foliolate leaves with petioles 1–2 cm long; leaflet blades elliptic, elliptic-oblong to oblong-obovate, apex bluntly acuminate, base cuneate, occasionally obtuse, margin entire, 7–10(–13) cm × 2–4(–6.5) cm, 1-foliolate leaves largest. Inflorescences 10 cm long, upper branchlets puberulent to glabrous; sepals basally connate, triangular, margin ciliate, *ca* 1 mm long; petals white, *ca* 4 mm long, at most puberulent; style 1.5 mm long. Cocci obovoid, truncate, *ca* 1.2 cm wide, glabrous, transversely ribbed.

Eumundi area, rainforest. Flowers possibly summer.

2. *Bosistoa selwynii* T. Hartley

Confused with *Pagetia dietrichiae* Domin

Tree up to 22 m tall. Petioles 0.5 mm long; blades 1-foliolate, ovate, elliptic to broadly elliptic, apex acute, obtuse, or acuminate, base cordate to obtuse, margin entire, 5.5–13 cm × 2.5–9 cm. Inflorescences up to 10 cm long, pubescent; sepals basally connate, triangular, 1–1.5 mm long, pubescent, persistent; petals white, 4–4.5 mm long, ± pubescent; style 2.5–3 mm long. Cocci obovoid, truncate, *ca* 1 cm wide, exocarp pubescent, transversely ribbed; seeds subreniform, *ca* 1 cm long, **Fig. 70C**.

Mainly lowland rainforest. Flowers autumn.

3. *Bosistoa pentacocca* (F. Muell.) Baillon

Euodia pentacocca F. Muell.; *Bosistoa sapindiformis* F. Muell.; *Acradenia bosistoi* F. Muell.

Tree. Leaf blades imparipinnate or pinnately 3-foliolate, 9–45 cm long, lateral petiolules 0.1–0.8(–1.5) cm long, terminal leaflet on extension of rachis 0.5–3.5 cm long; leaflet blades elliptic-oblong, narrowly elliptic or narrowly ovate to obovate, apex acuminate, base cuneate or obtuse, often slightly oblique, margin crenate to coarsely serrate, occasionally entire, 4.5–27 cm × 1.5–9 cm. Inflorescences up to 35 cm long, ± pubescent; calyx 5-lobed, up to 1 mm long, persistent, glabrous; petals 3.5–4.5 mm long, glabrous; style 1–2.5 mm long. Cocci subglobose to ellipsoid, 1.5–2.5 cm wide, exocarp pubescent, wrinkled; seeds subellipsoid, 1.5–2 cm long, **Fig. 70D**.

Two varieties occur in the region:

- | | |
|--|---|
| 1. Leaflets (3–)4–5(–6) pairs; inflorescences up to 35 cm long; petals <i>ca</i> 4.5 mm long; styles 2–2.5 mm long | <i>B. pentacocca</i> var. <i>pentacocca</i> |
| Leaflets 1–2(–3) pairs; inflorescences up to 10 cm long; petals <i>ca</i> 3.5 mm long; styles <i>ca</i> 1 mm long | <i>B. pentacocca</i> var. <i>connaricarpa</i> |

B. pentacocca var. **pentacocca** occurs in rainforest mainly south of Brisbane, and east of Great Dividing Ra., often along streams. Flowers summer. Wood very tough, suitable for hard turnery and chisel handles. **B. pentacocca** var. **connaricarpa** (Domin) T. Hartley. (*B. connaricarpa* Domin) occurs in rainforest north of Gin Gin. Flowers possibly spring.

4. *Bosistoa transversa* J. F. Bailey & C. T. White

Tree up to 15 m tall. Leaf blades usually pinnately 3-foliolate, lateral petiolules 0–5 mm long, terminal leaflet on extension of rachis 0.8–2.5 cm long, petioles of 1-foliolate leaves 0.5–1.2 cm long; leaflet blades narrowly elliptic-oblong to occasionally narrowly ovate, apex bluntly acuminate, base cuneate to obtuse, margin entire, 4–12.5 cm × 1–6 cm. Inflorescences up to 16 cm long, puberulent; sepals basally connate, triangular, pubescent, 0.7–1 mm long, persistent; petals *ca* 3 mm long, ± pubescent; style 1.2 mm long. Cocci obovoid, 1–1.3 cm wide, exocarp pubescent, transversely ribbed; seeds reniform, *ca* 1 cm long.

Mainly lowland rainforest. Flowers summer.

5. CORREA Smith

Small shrubs or trees, at least young parts stellate pubescent. Leaves opposite, simple. Inflorescences cymose clusters of 1–7 flowers at ends of axillary branchlets, bracteate; calyx cupular, entire or 4-lobed; corolla sympetalous or polypetalous, lobes valvate; stamens 8(4+4); carpels 4, ± pubescent. Fruits splitting into 4 cocci, except at base, cocci axially and apically dehiscent to release 1–2 seeds.

11 species endemic Australia; 3 species south-eastern Queensland.

- | | |
|--|---|
| 1. Leaves with cordate bases, minutely scabrous above | 1. <i>C. reflexa</i> |
| Leaves with cuneate or rounded bases, smooth, glabrous above when mature | 2 |
| 2. Calyx prominently glandular-punctate; leaf apex acute | 2. <i>C. lawrenciana</i> var. <i>glandulifera</i> |
| Calyx not glandular-punctate; leaf apex rounded or obtuse | 3. <i>C. glabra</i> |

1. *Correa reflexa* (Labill.) Vent. var. **reflexa**

Mazeutoxeron reflexum Labill.; *Correa rubra* Smith ex Rees; *C. speciosa* Donn ex Andr.; *C. virens* Smith; *C. cordifolia* Lindl.

Shrub up to 1.5 m tall, loosely ferruginous floccose. Petioles 0.5 mm long; blades narrowly to broadly ovate, apex obtuse, base cordate, margin entire, irregularly crenate or recurved, 1.2–5 cm × 0.6–3 cm. Flowers pendulous, 1–5, terminal, foliaceous bracts usually appressed; calyx 3–6 mm long, ± 4-dentate; corolla green or red with green tips, 1.5–3.5 cm long, 4-lobed. Cocci *ca* 5 mm long, 2-valved.

Rocky outcrops in southern parts, e.g. Granite Belt, Crows Nest. Flowers spring.

2. *Correa lawrenciana* Hook. var. **glandulifera** P. G. Wilson

Shrub or small tree, branches ferruginous. Petioles up to 10 mm long; blades narrowly elliptic to elliptic or ovate, apex acute, base cuneate, 2.4–8 cm × 0.7–3.5 cm, minutely tomentose below. Flowers 1–5, terminal, bracts linear-oblong; calyx 2 mm long, 4-dentate, glandular-punctate; corolla greenish-yellow, up to 2.7 cm long, scaly-tomentose, 4-lobed. Cocci up to 9 mm long, prominently apiculate. **Fig. 69E.**

McPherson Ra., particularly Springbrook area. Flowers spring to autumn.

3. *Correa glabra* Lindl.

Shrub up to 3 m tall, young branches grey to ferruginous tomentose or subglabrous. Petioles 2–4 mm long; blades narrowly elliptic to elliptic, apex obtuse, base cuneate to rounded, 0.8–4 cm × 0.5–1.7 cm. Flowers solitary; calyx 3–6 mm long, ± truncate; corolla pale green, 1.5–3 cm long, 4-lobed, deciduous in fruit. Cocci white, up to 7.5 mm long.

Rare, Granite Belt area. Flowers spring.

6. **BORONIA** Smith

Subshrubs or shrubs. Leaves opposite; blades simple, imparipinnate or bipinnate, rachis often winged. Peduncles axillary or terminal, either 1-flowered and articulate, with a pair of bracts at articulation, or several-flowered cymes with bracts at base of pedicels; sepals 4; petals 4, imbricate or valvate; stamens 8, filaments ciliate, anthers all perfect, or 4 imperfect; disc thick; ovary 4-locular, \pm distinct, ovules 2 per loculus, styles terminal, united, stigma entire or 4-lobed. Fruits of 4, 2-valved, dehiscent cocci; seeds 1, rarely 2 per coccus, testa crustaceous.

70 species endemic Australia; 14 species south-eastern Queensland.

- | | |
|---|-----------------------------|
| 1. Leaves always simple | 2 |
| At least some leaves 3-foliolate, pinnate or bipinnate | 6 |
| 2. Leaves with revolute, glandular-verrucose margins, often appearing toothed | 1. <i>B. repanda</i> |
| Leaves with revolute or flat margins, but not glandular-verrucose nor appearing toothed | 3 |
| 3. Young branchlets stellate pubescent; leaf margins mostly revolute | 4 |
| Young branchlets glabrous; leaf margins flat | 5 |
| 4. Undersurface of leaves densely finely pubescent | 2. <i>B. rosmarinifolia</i> |
| Undersurface of leaves glabrous or with a few scattered stellate hairs along midrib | 3. <i>B. glabra</i> |
| 5. Sepals at least $\frac{1}{2}$ as long as petals; plants of swampy sandy coastal areas | 4. <i>B. parviflora</i> |
| Sepals less than $\frac{3}{8}$ as long as petals; plants of open forest with heathy understorey, or rocky outcrops | 5. <i>B. polygalifolia</i> |
| 6. Leaves with \pm terete or concave, thick leaflets, or leaves bipinnate | 7 |
| Leaves with flat leaflets, or with revolute margins, never bipinnate | 9 |
| 7. Plants pubescent all over, or at least with vertical lines of hairs along the branchlets | 6. <i>B. bipinnata</i> |
| Plants glabrous | 8 |
| 8. Leaves usually 1-3-foliolate, rarely pinnate with 5 leaflets; plants of coastal swampy wallum areas | 7. <i>B. falcifolia</i> |
| Leaves mostly bipinnate, rarely younger leaves pinnate; plants of Granite Belt and mountain tops of southern border areas | 8. <i>B. anethifolia</i> |
| 9. Plants with dense, short, velvety pubescence on underside of leaves | 9. <i>B. amabilis</i> |
| Plants with glabrous leaves or with a few scattered simple or stellate hairs | 10 |
| 10. Plants of coastal swampy wallum heath | 11 |
| Plants of inland areas, e.g. Granite Belt | 13 |
| 11. Branchlets stellate pubescent; leaflets narrowly ovate to elliptic | 10. <i>B. keysii</i> |
| Branchlets glabrous or with simple pubescence; leaflets linear-elliptic to very narrowly elliptic, often slightly falcate | 12 |
| 12. Branchlets glabrous; plants of Fraser I., Tin Can Bay and Cooloola areas | 11. <i>B. rivularis</i> |
| Branchlets \pm pubescent; plants of Moreton Bay Is. and adjacent mainland wallum areas | 12. <i>B. safrolifera</i> |
| 13. Rachis not winged; leaves usually simple or at most 3-foliolate; flowers solitary, axillary | 3. <i>B. glabra</i> |
| Rachis winged; leaves with 2-7 pairs of leaflets; inflorescences 1-5-flowered cymes | 14 |
| 14. Branchlets at most minutely pubescent at tips; leaflets narrowly obovate to obovate, glabrous | 13. <i>B. microphylla</i> |
| Branchlets villous; leaflets narrowly oblong, with a few weak stellate hairs above and below | 14. <i>B. granitica</i> |

1. *Boronia repanda* Maiden & Betche*Boronia repanda* var. *alba* C. T. White

Small shrub up to 1.5 m tall, branchlets pubescent. Petioles 0.5–1.5 mm long; blades oblong, sometimes oblong-ovate, apex obtuse, base cuneate to truncate, margin revolute, glandular-verrucose, 0.5–2.3 cm × 0.1–0.6 cm, puberulent. Flowers solitary, axillary, peduncles 2.5–4.5 mm long, bracts ± linear, 1.5–2 mm long, on lower half of peduncle; sepals 3–4.5 mm long; petals pink or occasionally white, 6–9 mm long. Cocci compressed, oblong, ca 5 mm long, petals persistent.

Granite Belt, on rocky outcrops. Flowers spring.

2. *Boronia rosmarinifolia* Cunn.

FOREST BORONIA

Boronia ledifolia (Vent.) J. Gay var. *rosmarinifolia* (Cunn.) Benth.; *B. rosmarinifolia* var. *albiflora* Cheel

Shrub up to 2.5 m tall, branchlets pubescent. Petioles up to 1 mm long; blades linear-oblong, linear-elliptic or very narrowly obovate, apex obtuse, often mucronate, base attenuate, margin mostly revolute, 0.4–4.6 cm × 0.1–0.7 cm, glabrous or very sparsely stellate pubescent above, densely stellate pubescent beneath. Flowers solitary, axillary, peduncles 4–10 mm long, bracts ± linear, ca 2 mm long, on lower half of peduncle; sepals ovate, 2–5 mm × 1.5–3 mm; petals pink or white, ovate, 0.6–1.1(–1.4) cm long. Fruits compressed, oblong, ca 6 mm long, petals persistent.

Common on wallum heath or in sandy soil in open forest, also further inland on sandy or rocky regions. Flowers mainly spring but sporadically throughout the year.

This taxon is part of a complex group of taxa, which was placed by Bentham and Bailey under the name ***Boronia ledifolia***, with a few of the more striking forms mentioned as varieties. Subsequently, a number of varietal names were reinstated to specific rank, and some new species described. However not all the taxa in this complex have been accounted for and there is at least one taxon from central inland Queensland with elliptic to obovate, obtuse, simple or 3-foliolate, or 5-foliolate leaves to be described. A variant of this taxon has been recorded from Mt. Walsh near Biggenden, having simple elliptic to obovate, obtuse leaves up to 5 cm × 1.5 cm and pink flowers with ovate sepals 3–4 mm long, and petals 1–1.1 cm long.

3. *Boronia glabra* (Maiden & Betche) Cheel*Boronia ledifolia* (Vent.) J. Gay var. *glabra* Maiden & Betche

Shrub up to 1.5 m tall, branchlets pubescent. Petioles up to 1 mm long; blades usually simple, occasionally 3-foliolate, linear-oblong, very narrowly elliptic or very narrowly obovate, apex obtuse, often mucronate, base attenuate, margin mostly revolute, 0.4–3.5 cm × 0.1–0.6 cm, glabrous or very sparsely stellate pubescent above and below. Flowers solitary, axillary, peduncles 2–6 mm long, bracts ± linear, ca 1–1.5 mm long, ± basal; sepals 2–3 mm long; petals pink, 5–7 mm long. Fruits compressed, oblong, ca 5 mm long, petals persistent.

Darling Downs and other inland areas of the region on sandy or stony soil. Flowers mainly spring, but sporadically throughout the year.

4. *Boronia parviflora* Smith

SWAMP BORONIA

Slender subshrub. Petioles up to 1 mm long; blades obovate, occasionally oblong-elliptic, apex acute or obtuse, usually mucronate, base cuneate, margin entire or minutely serrulate towards apex, 0.9–2.5 cm × 0.2–0.9 cm. Flowers usually terminal, 3 together on separate peduncles 0.3–1.2 cm long, bracts linear, 2–3 mm long, ± basal, sometimes also upper axillary; sepals 3.5–6 mm long; petals pink or white, 4–6 mm long. Fruits compressed, oblong, 3.5–4 mm long, petals not persistent.

Uncommon in swampy wallum heath areas along the coast. Flowers mainly spring, sometimes also autumn.

5. *Boronia polygalifolia* Smith**DWARF BORONIA**

Subshrub. Petioles 0.5–2 mm long; blades narrowly elliptic, rarely narrowly obovate, apex acute, occasionally obtuse, base attenuate, margin entire. 0.5–4 cm × 0.1–0.6 cm. Flowers solitary, axillary on peduncles 2.5–6 mm long, bracts triangular, 0.5–1 mm long, *ca* halfway along peduncle; sepals 1–2.5 mm long; petals pink or white, often tipped with red or purple, 4–7 mm long. Fruits compressed, oblong, 3.5–5 mm long, petals persistent. **Fig. 69G.**

Open eucalypt forest with heathy understorey, on sandy or granitic soil, or on rocky outcrops e.g. Glasshouse Mts., Granite Belt. Flowers mainly spring or summer.

6. *Boronia bipinnata* Lindl.**ROCK BORONIA**

Shrub up to 1 m tall, puberulent to pubescent. Leaf blades imparipinnate, pinnate or bipinnate, rachis 0.5–4 cm long; leaflets 1–4 pairs, blades terete to linear-elliptic, apex acute, mucronate, base cuneate, 0.2–1.4 cm × 0.1–0.2 cm, glabrous or puberulent. Flowers 1, rarely 3, axillary, peduncles 2–4 mm long, bracts triangular, 1.5–2 mm long; sepals 1–2 mm long; petals white, pale pink or purplish, 2.5–4 mm long. Fruits compressed, oblong, *ca* 3 mm long, petals persistent. **Fig. 69F.**

Granite or sandstone areas, or on drier sandy soils. Flowers mainly spring to summer, but sometimes also autumn.

A variant may be found on the Granite Belt with elongate acute sepals 1.5–3 mm long, and petals 4–7 mm long, and often 3-foliolate or pinnate leaves. The corolla is purple tinged, rather than pink. On further study this form may prove specifically distinct.

7. *Boronia falcifolia* Cunn. ex Lindl.**WALLUM BORONIA**

Boronia falcifolia var. *alba* F. M. Bailey

Slender, glabrous subshrub up to 1 m tall. Petioles 2–7 mm long; blades 1–3-, rarely 5-foliolate; leaflet blades ± terete to linear-elliptic, thick, usually falcate, apex aristate, base attenuate, 0.4–2 cm × 0.1–0.15 cm. Flowers 1–3, axillary, each on separate peduncle 4–7 mm long, bracts linear, 2–3.5 mm long on upper half of peduncle; sepals 3–4 mm long; petals pink, mauve or white, 5–7 mm long. Fruits compressed, oblong, *ca* 4 mm long, petals persistent. **Fig. 69H.**

Peaty swamps or seasonally flooded coastal wallum heaths. Flowers mainly spring and summer, but sometimes into late autumn.

8. *Boronia anethifolia* Cunn.**NARROW-LEAVED BORONIA**

Glabrous shrub up to 1 m tall. Leaf blades ± bipinnate, rachis thick, 1–4 cm long; leaflets 2–5 pairs, blades linear-terete to linear-elliptic, apex mucronate, base cuneate, 0.3–1.5 cm × 0.1–0.2 cm. Inflorescences 1–10-flowered cymes, shorter than leaves, bracts 1–2.5 mm long; sepals 1–1.5 mm long; petals white or pinkish-white, 2.5–4 mm long. Fruits compressed, oblong, 3–4 mm long, petals persistent.

Mountain tops of border areas and Granite Belt. Flowers mainly late winter to spring but sometimes also autumn.

9. *Boronia amabilis* S. T. Blake

Tomentose shrub up to *ca* 2 m tall. Leaf blades imparipinnate, rachis winged, 1–4 cm long; leaflets 3–7 pairs, blades narrowly oblong-obovate, apex obtuse, base cuneate, margin revolute, 0.3–1.6 cm × 0.1–0.5 cm, glabrous or nearly so above, densely pubescent beneath with simple hairs and scattered stellate ones. Inflorescences 1–2-flowered, shorter than leaves; sepals 4–6 mm long; petals pink, 0.8–1.4 cm long. Fruits compressed, oblong, *ca* 5 mm long, petals persistent.

Southern parts of Granite Belt. Flowers spring.



Fig. 69

RUTACEAE — A-D *Zieria* spp. — A₁-A₃, *Z. minutiflora*, A₁ part of flowering stem x1, A₂ inflorescence x6, A₃ flower x12; B *Z. furfuracea*, part of fertile stem x1; C *Z. cytisoides*, part of flowering stem x1; D *Z. aspalathoides*, part of flowering stem x1; E *Correa lawrenciana* var. *glandulifera*, part of flowering stem x1; F-J *Boronia* spp.— F *B. bipinnata*, part of flowering stem x1; G₁-G₃, *B. polygalifolia*, G₁ part of flowering stem x1, G₂ flower x6, G₃ fruit x3; H *B. falcifolia*, part of flowering stem x1; I *B. rivularis*, part of flowering stem x1; J *B. microphylla*, part of stem with pair of opposite leaves x1.

10. *Boronia keysii* Domin**KEY'S BORONIA**

Shrub up to *ca* 2 m tall, branchlets stellate puberulent. Leaf blades 1-foliolate or imparipinnate, rachis winged, 1-4.5 cm long; leaflets 1-9, blades narrowly ovate to elliptic, apex obtuse or emarginate, base cuneate, 0.5-4.5 cm × 0.15-1.3 cm, terminal leaflet much longer than laterals. Inflorescences 2-6-flowered umbels much shorter than leaves; sepals 2.5-3 mm long; petals pink or white, 6-9 mm long. Fruits compressed, oblong, *ca* 4-5 mm long, petals persistent.

Restricted to Noosa River Plain area, just north of Lake Cootharaba. Flowers mainly early spring.

11. *Boronia rivularis* C. T. White**WIDE BAY BORONIA**

Boronia pinnata of "Qd Flora", in part

Slender glabrous shrub *ca* 2 m, rarely more tall. Leaf blades imparipinnate, rachis slightly winged, 2.5-6 cm long; leaflets 3-6 pairs, blades very narrowly elliptic, very narrowly obovate or ovate, sometimes slightly falcate, apex acute, mucronate, base attenuate, 0.6-3 cm × 0.1-0.9 cm. Inflorescences 3-9-flowered cymes, often as long as leaves, bracts triangular, *ca* 1 mm long; sepals 1-1.5 mm long; petals pink, lilac or rarely white, 5-7 mm long. Fruits compressed, oblong, 5 mm long, petals caducous. **Fig. 69I.**

Moist or swampy areas of Fraser I., Tin Can Bay and the Cooloola sand mass. Flowers mainly spring to late summer but sometimes also autumn. The crushed leaves apparently have an odour similar to that of sarsaparilla.

12. *Boronia safrolifera* Cheel**SAFROLE BORONIA**

Boronia pinnata of "Qd. Flora", in part: *B. safrolifera* var. *alba* C. T. White

Slender shrub up to 2.5 m tall, branchlets ± pubescent. Leaf blades imparipinnate, rachis slightly winged, 2-4 cm long; leaflets 3-8 pairs, blades linear-elliptic to narrowly obovate or obovate, sometimes slightly falcate, apex acute or obtuse, mucronate, base attenuate to cuneate, 0.5-1.7 cm × 0.1-0.4 cm. Inflorescences 3-6-flowered cymes, up to as long as leaves, bracts triangular, *ca* 1 mm long; sepals 1-1.5 mm long; petals pink or white, 5-7 mm long. Fruits compressed, oblong, *ca* 4 mm long, petals semi-persistent.

Swampy or badly drained wallum areas from Bribie I. area southwards. Flowers mainly spring to late summer but sometimes also autumn. Odour of crushed leaves apparently resembling that of safrole.

13. *Boronia microphylla* Sieber ex Sprengel

Shrub up to 1 m tall, young branchlets minutely pubescent, glabrous with age. Leaf blades imparipinnate, rachis winged, 0.5-3 cm long; leaflets 2-7 pairs, blades narrowly obovate to obovate, apex obtuse, mucronate, base cuneate, margin flat, 1.5-8 mm × 0.75-4 mm. Inflorescences 1-5-flowered axillary cymes, shorter than leaves, bracts triangular, 1.5-2 mm long; sepals 1.5-2 mm long; petals pink, 5-9 mm long. Fruits compressed, oblong, 3.5-4.5 mm long, petals persistent. **Fig. 69J.**

Granite Belt. Flowers late spring to summer.

14. *Boronia granitica* Maiden & Betche

Villous subshrub up to 1.5 m tall. Leaf blades imparipinnate, rachis winged, 0.5-1.8 cm long; leaflets 1-6 pairs, blades narrowly oblong, apex obtuse, base cuneate, margin recurved, 0.25-1.1 cm × 0.1-0.25 cm, few long stellate hairs above and below. Inflorescences 1-2-flowered, shorter than leaves, bracts linear, 1-2 mm long; sepals 3.5-4.5 mm long; petals pink, 6-10 mm long. Fruits compressed, oblong, 4 mm long, petals persistent.

Granite Belt. Flowers mainly spring to summer.

7. MEDICOSMA Hook. f.

Trees. Leaves mostly opposite; blades 1-foliolate. Inflorescences axillary panicles, flowers large; sepals 4, broad, imbricate; petals 4, broad, very imbricate in bud; disc lobed; stamens 8, filaments dilated, margins woolly; ovary 4-locular, 2 ovules per loculus, style filiform, stigma small, 4-lobed. Fruits of 2-valved cocci, endocarp separating elastically.

1 species endemic Australia, occurring in south-eastern Queensland.

1. *Medicosma cunninghamii* (Hook.) Hook. f. BONEWOOD; PINKHEART
Acronychia cunninghamii Hook.; *Euodia cunninghamii* (Hook.) F. Muell.

Tree up to 10 m tall. Leaves opposite, obscurely articulated; petioles 0.5–3 cm long; blades narrowly oblong-elliptic or narrowly obovate, apex obtuse or bluntly acuminate, base cuneate, 4.5–20 cm × 1.5–7.5 cm. Flowers pubescent, pedicels 3–5 mm long; sepals 3–4 mm long; petals white, cream or pink-tinged, ovate, 1.5–2 cm long. Cocci 4, *ca* 5–6 mm long, pubescent. **Fig. 70E.**

Mainly lowland rainforest in coastal districts. Flowers summer to late autumn. Wood suitable for small, hard turnery.

8. MELICOPE J. R. & G. Forster

Trees or shrubs. Leaves opposite; blades 3-foliolate or 1-foliolate. Inflorescences terminal cymes or panicles; flowers small; sepals 4; petals 4, valvate or slightly imbricate, with inflexed tips; stamens 8, filaments usually ciliate; carpels 4, basally connate, joined adaxially above middle by single style, ovules 2 per carpel. Cocci distinct, spreading, 2-valved; seeds usually solitary, testa shining, crustaceous.

70 species Indomalaysia, warm parts of Australia, New Zealand, Pacific region; 10–12 species Australia; 3 species south-eastern Queensland.

- | | | |
|---|---------------------------|---|
| 1. Leaves 1-foliolate | 1. <i>M. melanophloia</i> | 2 |
| Leaves 3-foliolate | | |
| 2. Petioles broad, robust, with numerous raised dots; petals 7–8 mm long;
cocci brown, up to 4 mm long | 2. <i>M. octandra</i> | |
| Petioles slender, smooth; petals <i>ca</i> 3 mm long; cocci red, 4–6.5 mm long | 3. <i>M. erythrocca</i> | |

1. *Melicope melanophloia* C. T. White

Tree up to 30 m tall. Petioles 0.5–3 cm long; blades 1-foliolate, ovate, elliptic-oblong or elliptic, apex obtuse, base ± cuneate, tapering into short petiolule, 6.5–14 cm × 2–6.5 cm, glabrous, paler beneath. Inflorescences up to 15 cm long; sepals 1.5–2 mm long, tomentose; petals white or cream, *ca* 8 mm long, woolly tomentose outside. Cocci densely pubescent, transversely wrinkled, up to 4 mm long.

Rainforest areas in the Wide Bay district. Flowers spring-summer. Wood very hard, suitable for hard turnery.

A form of *M. sessiflora* has been collected from the Granite Creek area near the Dawes Ra., and may possibly be found further south. Although it has 1-foliolate leaves, it can be distinguished from *M. melanophloia* by its sessile, axillary clusters of 2–4 flowers, and transversely wrinkled, glabrous cocci 8–9 mm long.

2. *Melicope octandra* (F. Muell.) Druce

DOUGHWOOD; SOAPWOOD; SILVER BIRCH

Euodia octandra F. Muell.; *Melicope australasica* F. Muell.

Tree up to 30 m tall. Petioles 1.8–6.5 cm long; blades 3-foliolate; petiolules 0–3 mm long, terminal one 1–10 mm long; leaflet blades narrowly elliptic, oblong-elliptic or narrowly obovate, apex obtuse to acuminate, base cuneate, 5–22 cm × 1.5–8 cm, venation prominent when dry. Inflorescences terminal or in uppermost axils, up to 10 cm long; sepals *ca* 2.5 mm long, pubescent; petals whitish, 7–8 mm long, ± pubescent outside. Cocci brown, angular, up to 4 mm long, transversely wrinkled; seeds shiny brown. **Fig. 70F.**

Rainforest on rich soils, mainly on Gold Coast hinterland and McPherson Ra. Flowers spring-summer. Timber suitable for cabinet work.

3. *Melicope erythrococca* (F. Muell.) Benth. TINGLETONGUE; CLUBWOOD
Euodia erythrococca F. Muell.

Tree up to 30 m tall. Petioles slender, 1–2.5 cm long; blades 3-foliolate; petiolules 1–4 mm long, terminal one 0.1–1.3 cm long; leaflet blades narrowly ovate to narrowly oblong-ovate, apex obtuse, base cuneate, often oblique on lateral leaflets, 2.3–9 cm × 0.8–3 cm. Inflorescences up to 8 cm long; sepals *ca* 1 mm long, glabrous or minutely pubescent; petals *ca* 3 mm long, minutely pubescent outside. Cocci red, 4–6 mm long, glabrous, transversely wrinkled.

Depauperate rainforest. Flowers probably spring–summer. Wood close-grained and tough.

9. BOUCHARDATIA Baillon

Small trees. Leaves opposite; blades 3-foliolate; leaflet blades with domatia. Inflorescences trichotomous, terminal, or terminal and upper axillary panicles; flowers small; sepals 4; petals 4, ± valvate; stamens 8, glabrous, dilated to middle; carpels 4, basally connate, joined adaxially about middle by style, otherwise divergent, ovules 6–8 per carpel. Cocci nearly truncate, transversely wrinkled.

2 species New Guinea and eastern Australia; 1 species endemic Australia, occurring in south-eastern Queensland.

1. *Bouchardatia neurococca* (F. Muell.) Baillon UNION NUT
Euodia neurococca F. Muell.; *Melicope neurococca* (F. Muell.) Benth.

Tree up to *ca* 7 m tall. Leaf blades imparipinnate or pinnately 3-foliolate, rachis 9–30 cm long, pubescent; petiolules 1–4 mm long, terminal leaflet on extension of rachis 0.5–2.5 cm long; leaflet blades narrowly elliptic to narrowly oblong-ovate, apex acute to acuminate, occasionally obtuse, base cuneate to attenuate, often oblique, 2.5–15 cm × 1–5 cm, domatia present in axils of veins beneath. Inflorescences up to 10 cm long; sepals 0.7–1 mm long; petals white, 3.5–4.5 mm long; ovary densely pubescent. Cocci 6–8 mm long, truncate, transversely ribbed. **Fig. 70G.**

Mainly lowland rainforest. Flowers summer to autumn. Timber light yellow, very hard and close-grained.

10. BAUERELLA Borzi

Shrubs or trees, apparently always dioecious, hairs simple. Leaves opposite, rarely in whorls of 3; blades simple, pellucid-dotted. Inflorescences axillary, pedunculate, narrowly paniculate to subracemose; flowers functionally unisexual, small; sepals 4, usually valvate, persistent; petals 4, imbricate, persistent; stamens 8, filaments ciliate, anthers 2-locular; ovary 4-carpellate, 4-locular, ovules 2 per locule, ± side by side or superposed, stigmas peltate, broadly 4-lobed. Fruits 4-carpellate drupes, mesocarp drying spongy crustaceous to subwoody; seeds carunculate.

2 species Australasia; 1 species Australia, occurring in south-eastern Queensland.

1. *Bauerella simplicifolia* (Endl.) T. Hartley
Vepris simplicifolia Endl. (in part); *Acronychia simplicifolia* (Endl.) McGillivray & Green; *A. endlicheri* Schott; *A. baueri* Schott; *A. hillii* F. Muell.; *Bauerella australiana* Borzi; *B. baueri* (Schott) Daniker

Tree up to 10 m tall. Petioles 1.2–5.5 cm long; blades elliptic, apex obtuse or bluntly acuminate, base cuneate, 4.5–16 cm × 2–8 cm. Female inflorescences very few flowered, males better developed; sepals *ca* 1.5 mm long, pubescent; petals cream, 3–4 mm long, pubescent. Fruits ± woody, ovoid or subglobose, *ca* 1–1.4 cm diameter, becoming glabrous, style often persistent. **Fig. 70H.**

Rainforests of region, mainly on coastal plain. Flowers autumn–winter.

11. ACRONYCHIA J. R. & G. Forster

Trees, shrubs, rarely climbers, hairs simple. Leaves opposite; blades 3-foliolate or 1-foliolate; leaflet blades basally articulated, entire, pellucid-dotted. Inflorescences axillary, paniculate, subcorymbose, or reduced to 1 or few flowers; flowers bisexual; sepals 4, persistent; petals 4, valvate, usually deciduous; stamens 8, filaments pubescent; ovary 4-, rarely 8-carpellate, 4-, rarely 8-locular, stigma shallowly 4-lobed. Fruits 4-, rarely 8-locular drupes, exocarp and mesocarp semifleshy, spongy-crustaceous or \pm woody when dry.

42 species, India, southern Asia, Malesia, Australia and Pacific Is.; 16 species Australia; 8 species south-eastern Queensland.

- | | | |
|---|---------------------------|---|
| 1. Leaflets usually pubescent below at least on midrib and veins, glabrous to sparsely pubescent above; sepals 1.5–2.5 mm wide | 1. <i>A. pubescens</i> | |
| Leaflets glabrous, or if sparsely shortly pubescent below then sepals 0.9–1.1 mm wide | | 2 |
| 2. Sepals less than 1.5 mm wide | | 3 |
| Sepals more than 1.5 mm wide | | 5 |
| 3. Inflorescences 0.8–1.2 cm long, axes and branches finely pubescent | 2. <i>A. pauciflora</i> | |
| Inflorescences 1.5–7 cm long, axes and branches glabrous | | 4 |
| 4. Ovary densely ascending pubescent at apex, otherwise glabrous, with septicidal fissures extending $\frac{1}{3}$ – $\frac{1}{2}$ the length | 3. <i>A. oblongifolia</i> | |
| Ovary glabrous, without septicidal fissures | 4. <i>A. laevis</i> | |
| 5. Leaves 3-foliolate, occasionally a few 1-foliolate | 5. <i>A. suberosa</i> | |
| Leaves 1-foliolate | | 6 |
| 6. Flowers 0.9–1.3 cm long, pedicel 4–9 mm long, glabrous; sepals 0.6–1 mm \times 1.4–2 mm | 6. <i>A. baeuerlenii</i> | |
| Flowers 0.6–1 cm long, pedicels 0.5–4.5 mm long, glabrous to puberulent; sepals 1–2.7 mm \times 1.5–3 mm | | 7 |
| 7. 11–14 main nerves on each side of midrib; ovary 4–8-carpellate with septicidal fissures extending for at least $\frac{1}{2}$ the length | 7. <i>A. wilcoxiana</i> | |
| 6–10 main nerves on each side of midrib; ovary 4-carpellate, without septicidal fissures | 8. <i>A. imperforata</i> | |

1. *Acronychia pubescens* (F. M. Bailey) C. T. White

Melicope pubescens F. M. Bailey; *Acronychia melicopoides* F. Muell. var. *lasiantha* F. Muell.; *M. pubescens* F. M. Bailey var. *superba* Domin

Tree up to 15 m tall, young parts and inflorescence pubescent. Petioles 1–8.5 cm long; blades 3-foliolate or sometimes 1-foliolate; leaflet blades elliptic-oblong to narrowly obovate, apex usually acuminate, base cuneate, 5.5–22 cm \times 1.8–7.7 cm. Inflorescences few- to many-flowered; sepals 1–2.5 mm long, tomentose; petals creamy, 6.5–10 mm long, tomentose, semipersistent in fruit. Fruits yellowish, ellipsoid to subglobose, 1.2–2 cm diameter, pubescent overall or only toward apex, fleshy; seeds reddish-brown, 4–4.5 mm long.

Rainforests of the region, as far north as Eumundi. Flowers most of the year.

2. *Acronychia pauciflora* C. T. White

Small tree. Petioles 0.4–1.8 cm long; blades 1-foliolate, narrowly obovate to obovate, rarely elliptic, apex obtuse to bluntly acuminate, base cuneate or obtuse, 2–9.5 cm \times 1–4.5 cm. Inflorescences very few-flowered; sepals ca 0.8 mm long; petals greenish-white, 5–6.5 mm long, \pm glabrous. **Fig. 70J.**

Depauperate and low altitude rainforests of the region. Flowers summer–autumn.

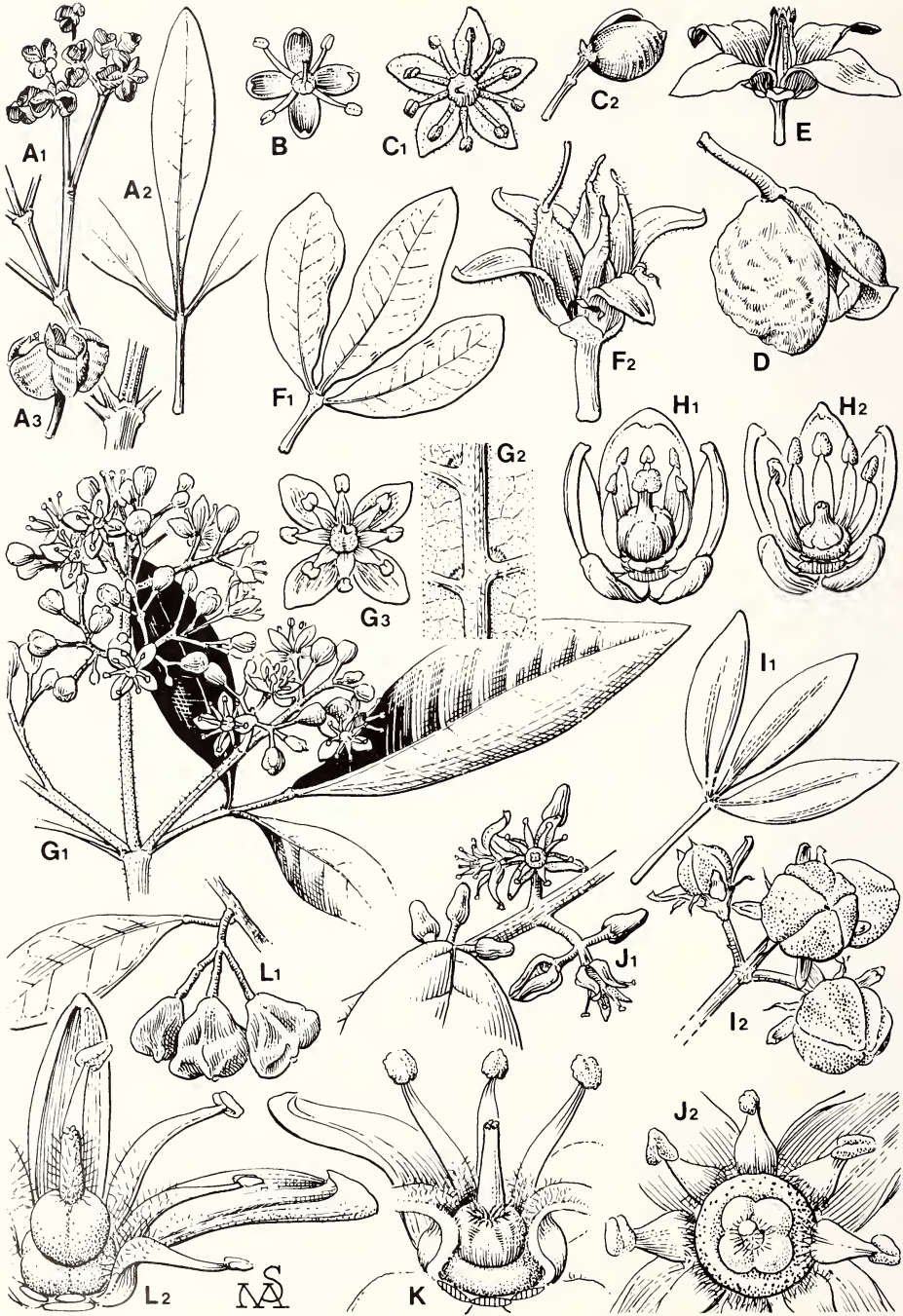


Fig. 70

RUTACEAE — A₁-A₃, *Acradenia euodiiformis* — A₁, part of fruiting stem x $\frac{1}{2}$; A₂, leaf x $\frac{1}{4}$; A₃, fruit x1; B *Euodia micrococca*, flower x2; C₁-D *Bosistoa* spp. — C₁-C₂, *B. selwynii*, C₁, flower x2, C₂, fruit x1; D *B. pentacocca*, fruit x1; E *Medicosma cunninghamii*, flower x1; F₁-F₂, *Melicope octandra*, F₁, leaf x $\frac{1}{4}$; F₂, flower showing development of young fruit into separate cocci x3; G₁-G₂, *Bouchardatia neurococca*, G₁, part of flowering stem x1, G₂, underside of leaf with domatia x3, G₃, flower x2; H₁-H₂, *Bauerella simplicifolia*, showing functionally unisexual flower x6 (1 petal and 3 stamens removed from each), H₁, female, H₂, male; I-L *Acronychia* spp. — I₁-I₂, *A. suberosa*, I₁, leaf x $\frac{1}{2}$, I₂, fruit x1; J₁-J₂, *A. pauciflora*, J₁, part of flowering stem x1, J₂, flower showing septical fissures on glabrous ± ovary x6; K *A. oblongifolia*, flower showing pubescent apex on ovary x6; L₁-L₂, *A. laevis*, L₁, part of fruiting stem x1, L₂, flower showing glabrous ovary without septical fissures x6.

3. *Acronychia oblongifolia* (Cunn. ex Hook.) Endl. ex Heynh.

Cymnosma oblongifolia Cunn. ex Hook.; *Jambolifera oblongifolia* (Cunn. ex Hook.) Steudel; *Acronychia laurina* F. Muell.; *A. laevis* J. R. & G. Forster var. *leucocarpa* F. M. Bailey; *A. laevis* var. *dictyophleba* Domin

Tree up to 27 m tall. Petioles 0.7–3.2 cm long; blades 1-foliolate, rarely 3-foliolate, narrowly obovate to elliptic-oblong, apex rounded, base obtuse to attenuate, 4–12 cm × 1.4–4.5 cm. Inflorescences few-flowered; sepals 0.5–1 mm long; petals creamy-white, 5–7 mm long, glabrous. Fruits white, subglobose to mitre-shaped, 6–8 mm diameter, ring of dense pubescence at apex, semifleshy; seeds blackish, *ca* 3.5 mm long. **Fig. 70K.**

Rainforests. Flowers mainly autumn.

4. *Acronychia laevis* J. R. & G. Forster

Lawsonia acronychia L.; *Huonia laevis* (J. R. & G. Forster) Montrouz.; *Jambolifera laevis* (J. R. & G. Forster) Kuntze; *Acronychia laevis* var. *purpurea* F. M. Bailey; *A. laevis* var. *longiflora* Domin

Tree up to 12 m tall. Petioles 0.3–3 cm long; blades 1-foliolate, elliptic to narrowly obovate or obovate, apex obtuse, occasionally bluntly acuminate, base cuneate, 2.5–9.5 cm × 1–5 cm. Inflorescences few- to many-flowered; sepals 0.7–2 mm long; petals creamy-white, 6–10 mm long. Fruits white to purplish, mitre-shaped to subglobose, apex usually deeply depressed, 0.6–1.2 cm diameter, semifleshy; seeds dark reddish-brown, 4–4.5 mm long. **Fig. 70L.**

Rainforests and depauperate closed forests of the region. Flowers mainly summer–autumn.

5. *Acronychia suberosa* C. T. White

Small tree. Petioles 1–4.5 cm long; blades 3-foliolate; leaflet blades narrowly obovate to elliptic-oblong, apex obtuse to acuminate, base cuneate, 3.5–8.5 cm × 0.9–3 cm. Inflorescences few-flowered; sepals *ca* 3 mm long; petals creamy, 8–10 mm long, pubescent outside, semipersistent in fruit. Fruits creamy-yellow or whitish, subglobose to ellipsoid, 1–1.2 cm diameter, apex sparsely pubescent, semifleshy; seeds *ca* 4 mm long. **Fig. 70I.**

Rainforest of McPherson Ra., Springbrook. Flowers summer.

6. *Acronychia baeuerlenii* T. Hartley

Tree up to 9 m tall. Petioles 0.8–1.8 cm long; blades 1-foliolate, elliptic or elliptic-oblong, apex obtuse or bluntly acuminate, base cuneate, 6–11 cm × 2–4 cm. Inflorescences few-flowered; sepals 0.6–1 mm long; petals 0.9–1.3 cm long, glabrous. Fruits subglobose, *ca* 9 mm diameter, glabrous, semifleshy; seeds *ca* 4 mm long, irregularly rugose.

Rainforest of McPherson Ra.

7. *Acronychia wilcoxiana* (F. Muell) T. Hartley

Pleiococca wilcoxiana F. Muell.; *Errerana wilcoxiana* (F. Muell.) Kuntze

Tree up to 9 m tall. Petioles 0.6–3.2 cm long; blades 1-foliolate, elliptic to elliptic-oblong, occasionally obovate, apex rounded or bluntly acuminate, base narrowly cordate, obtuse or cuneate, 7–21 cm × 2.5–9 cm. Inflorescences many-flowered; sepals 1.2–3 mm long; petals whitish, 7–10 mm long, glabrous. Fruits white, broadly ovoid to subglobose, 0.8–1.5 cm diameter, 4–8-lobed, glabrous or with tuft of hairs at apex, semifleshy; seeds reddish-brown, *ca* 4.5 mm long.

Coastal closed forests. Flowers summer–autumn.

8. *Acronychia imperforata* F. Muell.

Jambolifera imperforata (F. Muell.) Kuntze; *Acronychia scortechinii* F. M. Bailey

Tree up to 9 m tall. Petioles 0.3–2.5 cm long; blades 1-foliolate, elliptic, elliptic-oblong or obovate, apex obtuse or bluntly acuminate, base cuneate or obtuse, 3.3–12.5 cm × 1.6–5.5 cm. Inflorescences usually few-flowered; sepals 1–1.5 mm long; petals yellowish or creamy-white, 6–9.5 mm long, rarely semipersistent. Fruits orange-yellow, obovoid to subglobose, 0.7–1.2 cm diameter, mesocarp woody; seeds reddish-black, 4–6 mm long.

Mainly coastal closed forest. Flowers mainly autumn.

12. GEIJERA Schott

Trees or shrubs. Leaves alternate, simple. Inflorescences terminal or upper axillary panicles; flowers small, bisexual; sepals 4-5; petals 4-5, valvate or imbricate; stamens 4-5, filaments subulate; ovary depressed, partly immersed in thick, fleshy disc, 4-5-lobed, styles terminal, immediately united into single short style with a capitate, 4-5-lobed stigma. Fruits of 4-5, or fewer by abortion, distinct, 2-valved cocci; seeds with hard or crustaceous shining testa.

7 species eastern New Guinea, eastern Australia, New Caledonia, Loyalty Is.; 4-5 species Australia; 4 species south-eastern Queensland.

- 1. Leaves linear, less than 1 cm broad, pendulous 1. *G. parviflora*
- Leaves narrowly oblong to ovate, more than 1 cm broad, not pendulous 2
- 2. Primary lateral veins in dried leaves ± parallel, close together, distinct, meeting midrib at angle of 60° or more; petals valvate 2. *G. salicifolia*
- Primary lateral veins in dried leaves not parallel, distant, indistinct, meeting midrib at angle of ca 45°; petals imbricate 3
- 3. Inflorescences very compact; cocci tuberculate, seeds glossy black 3. *G. paniculata*
- Inflorescences large, spreading; cocci deeply corrugated; seeds ± dull brown 4. *G. helmsiae*

1. *Geijera parviflora* Lindl.

WILGA

Shrub or tree up to 10 m tall. Leaves pendulous; petioles 0.3-1.2 cm long; blades linear or linear-ovate, apex acute, base attenuate or cuneate, 3.5-17 cm × 0.25-1.2 cm, lateral venation obscure. Inflorescences several-flowered; calyx 0.75-1 mm long; petals white, 1.5-2 mm long, valvate. Fruits ± globose, slightly compressed, 4-5 mm diameter; seeds glossy black. Fig. 71A.

Common and widespread in more inland regions, in brigalow forests, eucalypt woodland, etc. Flowers mainly spring.

2. *Geijera salicifolia* Schott

SCRUB WILGA; GREENHEART; GREEN SATINHEART

Tree up to 25 m tall. Petioles 0.3-2.2 cm long; blades very narrowly oblong-ovate to ovate, apex acute to obtuse, base attenuate to rounded, 3-19 cm × 1-7.5 cm. Inflorescences panicles shorter than leaves; calyx lobes 0.75-1 mm long; petals white, ca 2-2.5 mm long. Fruits ± globose, slightly compressed, ca 5-6 mm diameter; seeds glossy black. Fig. 71B.

Two varieties occur in the region:

- 1. Leaves very narrowly oblong-elliptic, less than 2 cm broad *G. salicifolia* var. *salicifolia*
- Leaves ovate, more than 2 cm broad *G. salicifolia* var. *latifolia*

G. salicifolia var. *salicifolia* is usually found in depauperate rainforests of the region, while *G. salicifolia* var. *latifolia* (Lindl.) Domin (*G. latifolia* Lindl.) is common in light rainforest. Both species flower mainly spring. Timber suitable for fishing rods, flooring, bows, mallets, engraving, etc.

3. *Geijera paniculata* (F. Muell.) Druce

Coatesia paniculata F. Muell.; *Geijera muelleri* Benth.

Small tree. Petioles 0.5-1.5 cm long; blades ovate or elliptic, apex acute, obtuse or emarginate, base cuneate to rounded, 3-8 cm × 1.5-4.5 cm. Inflorescences compact, small; calyx lobes ca 1 mm long; petals white, 2.5 mm long. Fruits ± ovoid, compressed, 9 mm × 6 mm, beaked, valves smooth; seeds glossy black.

Uncommon in light rainforest areas of the coastal districts. Flowers spring.

4. *Geijera helmsiae* F. M. Bailey

Tree up to 15 m tall. Petioles 0.4–1.2 cm long; blades ovate-elliptic or obovate, apex acute, obtuse or emarginate, base cuneate, 3–10 cm × 1.2–6 cm. Inflorescences spreading, usually longer than leaves, forming well-developed panicles; calyx lobes 0.75–1 mm long; petals white, 2–2.5 mm long. Fruits ± ovoid, compressed, *ca* 9 mm × 6 mm, beaked, valves deeply furrowed when mature; seeds ± dull brown.

Light rainforest of drier areas mainly in the northern districts of the region. Flowers late winter to spring.

13. EREMOCITRUS Swingle

Shrubs or small trees. Leaves alternate; blades simple, thick, glandular-punctate. Flowers 1–3, axillary on slender peduncles; calyx 3–5-lobed; petals 4–5, rarely 3; stamens 16 or 20, rarely 12, filaments free; ovary 4–5-locular, 2 ovules per loculus, styles thick, caducous. Fruits usually subglobose or ovoid; seeds small, testa yellowish-grey, hard, irregularly verrucose.

1 species endemic Australia, occurring in south-eastern Queensland.

1. *Eremocitrus glauca* (Lindl.) Swingle

LIMEBUSH

Triphasia glauca Lindl; *Atalantia glauca* (Lindl.) Hook.

Juvenile branches thorny, often flattened. Petioles indistinct, 2–6 mm long; blades very narrowly oblong-obovate, apex obtuse or emarginate, base attenuate, 0.8–5.5 cm × 0.3–0.9(–1.5) cm. Flowers fragrant, peduncles 2–6 mm long; sepals 1–1.5 mm long; petals greenish-white, *ca* 4–5.5 mm long. Fruits greenish-yellow, *ca* 1.5 cm diameter. **Fig. 71C.**

Darling Downs district, in brigalow or low closed forests. Flowers spring. Fruit edible, used for jams, preserves and cool drinks.

14. MICROCITRUS Swingle

Small trees or shrubs, young branches angular, minutely puberulent, becoming terete and glabrous with age, spines single in axils. Leaves alternate; blades 1-foliolate, thick, dimorphic, veins nearly parallel. Flowers small, solitary or rarely 2, axillary on very short peduncles, normally 5-merous; petals often concave; stamens free, divergent, 12–20, rarely 30, filaments slender, anthers small; ovary subglobose, 5–6-, rarely 8-locular, ovules biseriate, 8–20 per loculus, style short, stigma slightly furrowed. Fruits cylindrical, ovoid or ± globose, segments 5–7, rarely 8, pulp vesicles subglobose, stalked, small, containing sharply acid juice; seeds ovate, compressed, 6–7 mm long.

4 species endemic Australia; 2 species south-eastern Queensland.

- | | |
|---|---------------------------|
| 1. Fruits cylindrical-fusiform, smooth-skinned; juvenile leaves oblong to ovate, on stiff branchlets; mature leaves ± obovate | 1. <i>M. australasica</i> |
| Fruits ± globose, rough-skinned; juvenile leaves linear on flexuose branchlets; mature leaves elliptic to ovate | 2. <i>M. australis</i> |

1. *Microcitrus australasica* (F. Muell.) Swingle

FINGER LIME

Citrus australasica F. Muell.

Small tree up to 6 m tall. Petioles 1–3 mm long; blades subrhombic or obovate, apex obtuse to emarginate, base cuneate, margin often irregularly crenate towards apex, 0.7–2.5 cm × 0.3–1.5 cm. Sepals 1.5 mm long; petals white, *ca* 7 mm long; stamens 20–25. Fruits up to 10 cm × 3 cm, often slightly curved. **Fig. 71D.**

Two varieties occur in the region:

- | | |
|--|---|
| 1. Fruits greenish with yellowish pulp | <i>M. australasica</i> var. <i>australasica</i> |
| Fruits blood-red with pink pulp | <i>M. australasica</i> var. <i>sanguinea</i> |

M. australasica var. *australasica* occurs in generally higher altitude rainforest of the McPherson Ra. and adjacent areas. *M. australasica* var. *sanguinea* (F. M. Bailey) Swingle (*Citrus australasica* var. *sanguinea* F. M. Bailey) has been collected from Mt. Tamborine. Both flower autumn.

2. *Microcitrus australis* (Planchon) Swingle

NATIVE LIME

Citrus australis Planchon; *Limonia australis* Cunn.; *C. planchonii* F. Muell.

Tree up to 20 m tall. Petioles 1–6 mm long; blades elliptic to obovate, apex obtuse to emarginate, base cuneate, margin usually irregularly crenate or undulate towards apex, 0.4–5.5 cm × 0.1–3 cm. Sepals *ca* 1–1.5 mm long; petals white, 5–7 mm long; stamens *ca* 17. Fruits up to 6.5 cm diameter.

Mainly light rainforest of the lowland regions along creeks and rivers. Flowers spring.

15. CITRUS L.

Shrubs or trees. Leaves alternate; petioles usually ± winged; spines usually present, particularly on older branchlets, borne singly at side of axillary bud; blades 1-foliolate. Flowers in axillary clusters, rarely solitary, or in lateral or terminal cymes or panicles, bisexual; sepals 4–8; petals 4–8, imbricate; stamens 16–60, cohering towards base into a few bundles; ovary 8–15-locular, ovules several per loculus, style prominent, deciduous. Fruits berries, epicarp leathery, segments filled with flesh consisting of stalked pulp vesicles; seeds 1–8 per loculus, testa pergamentaceous.

12 species southern China, south-eastern Asia, Indomalesia; 1 species naturalized Australia, occurring in south-eastern Queensland.

1. **Citrus limon* (L.) N. L. Burm.

BUSH LEMON

Citrus medica L. var. *limon* L.; *C. limonia* auct. Qld.

Small tree up to 6 m tall, with stiff, stout thorns 0.5–2 cm long. Petioles 0.5–1.2 cm long, margined but not winged; blades ovate to elliptic, apex acute or bluntly acuminate, base cuneate, margin crenate, 5–10 cm × 2.5–6 cm. Flowers solitary or in axillary clusters; sepals *ca* 1–1.5 mm long, petals white, *ca* 1 cm long; stamens 20–40; ovary 8–10-locular. Fruits ellipsoid, with an apical nipple, 5–8 cm long, epidermis very rough, thick, glandular-dotted.

Native of tropical Asia; naturalized in wetter areas or fringing rainforest, usually near habitation.

16. HALFORDIA F. Muell.

Small trees. Leaves alternate or subopposite; blades simple. Inflorescences terminal panicles; flowers 5-merous; calyx 5-lobed; petals valvate in bud; stamens 10, free, filaments linear-subulate, ciliate, anthers minutely apiculate; ovary 5-, rarely 3-locular, style simple, stigma minute. Fruits drupaceous, 3–5-locular, 1 seed per loculus.

4 species New Guinea, Australia, New Caledonia; 2 species Australia; 1 species south-eastern Queensland.

1. *Halfordia kendack* (Montrouz.) Guillaumin

SOUTHERN GHITTOE; SAFFRON HEART

Eriostemon kendack Montrouz.; *Halfordia drupifera* F. Muell.

Tree up to 30 m tall. Leaves alternate; petioles 0.4–1.5 cm long; blades elliptic or narrowly obovate, apex bluntly acuminate or obtuse, base attenuate, 3.5–14 cm × 0.9–5.5 cm. Flowers on pedicels 2–3 mm long; calyx lobes *ca* 0.5 mm long; petals white, 4–5 mm long. Fruits purple, ± ellipsoid, *ca* 1.2–1.5 cm × 0.7–1 cm. **Fig. 72A.**

Coastal closed forests and rainforests. Flowers summer. Wood pale or yellowish, fine-grained, hard and heavy, tough and flexible.

1. *Phebalium nottii* (F. Muell.) Maiden & Betche*Eriostemon nottii* F. Muell.; *Crowea nottii* (F. Muell.) Baillon

Shrub up to 3 m tall. Petioles 2–4 mm long; blades narrowly oblong, narrowly elliptic to narrowly obovate, apex rounded, base cuneate or obtuse, margin erose in wider leaves, or \pm recurved, 0.8–6 cm \times 0.3–1.2 cm, midrib impressed above, undersurface lepidote. Inflorescences terminal sessile 1–6-flowered umbels, pedicels 2–8 mm long; calyx lobes 5–8, deltoid or narrowly triangular, 1.5–3 mm long; petals pink, 5–8, 0.8–1.2 cm long. Cocci *ca* 5 mm long, enclosed in enlarged calyx.

Recorded from Edenvale near Kingaroy. Flowers spring.

See note under **P. woombye**.

2. *Phebalium woombye* (F. M. Bailey) Domin*Asterolasia woombye* F. M. Bailey

Shrub up to 2 m tall. Petioles 1–4 mm long; blades narrowly oblong-elliptic to broadly elliptic, apex acute, obtuse-mucronate or emarginate, base cuneate, margin entire or irregularly crenulate, 1–6 cm \times 0.4–1.2 cm, midrib impressed above, undersurface lepidote. Inflorescences terminal 4–13-flowered umbels, pedicels 0.5–1.5 cm long; calyx lobes narrowly deltoid, 1–2 mm long; petals white, 4–6 mm long. Cocci *ca* 4 mm long, calyx somewhat enlarged. **Fig. 71F.**

Wallum and heath areas mainly along the coast. Flowers spring. A pink-flowered variant has been recorded from more inland localities e.g. Biggenden Bluff (Mt. Walsh), Gundiah, Canungra on acidic soils, and also near the coast at Woodgate.

There is a form intermediate between **P. nottii** and **P. woombye** with leaves of the southern form of **P. nottii** but flower characters of **P. woombye**. It may be worthy of formal taxonomic rank. It can be described as follows:

Shrub up to 1.5 m tall. Petioles 1–3 mm long; blades very narrowly oblong, apex rounded to truncate, base cuneate, margin revolute in dried specimens, 0.5–3 cm \times 0.15–0.3 cm, midrib impressed above, undersurface lepidote. Inflorescences sessile terminal 2–8-flowered umbels, pedicels 4–9 mm long; calyx obturbinate, lobes narrowly deltoid, 1–2 mm long; petals pink, *ca* 4 mm long.

Miles area, west of Millmerran, near Roma and a population near Bundaberg, on gravelly or sandy soils. Flowers winter–spring.

3. *Phebalium whitei* P. G. Wilson*Phebalium squamulosum* Vent. subsp. *grandiflorum* C. T. White

Shrub. Petioles 3–7 mm long; blades narrowly oblong, apex rounded, often mucronate, base cuneate, margin recurved or erose in upper half, 1–6 cm \times 0.4–1.2 cm, midrib impressed above, undersurface lepidote. Inflorescences terminal sessile 1–4-, rarely 6-flowered umbels, pedicels 2–5 mm long; calyx truncate, 2–3 mm long; petals bright yellow, *ca* 8 mm long.

Recorded from Bald Rock Ck. Girraween National Park near Wallangarra. Flowers spring.

4. *Phebalium glandulosum* Hook. subsp. *eglandulosum* (Blakely) P. G. Wilson*Phebalium glandulosum* Hook. var. *eglandulosum* Blakely

Small upright shrub. Petioles 0.5–0.75 mm long; blades very narrowly oblong-cuneate, apex truncate or retuse, base cuneate, margin revolute, 3–6 mm \times 0.75–1.5 mm, midrib not impressed above, sparingly glandular-tuberculate above, lepidote below. Inflorescences terminal \pm sessile 4–6-flowered umbels, pedicels 3–5 mm long; calyx truncate or undulate, *ca* 0.8 mm long; petals deep yellow, 3–4 mm long.

Recorded from near Stanthorpe. Flowers spring.

P. glandulosum subsp. **glandulosum** occurs generally further west but may be found in the region. It differs by having shortly acuminate calyx lobes, longer leaves generally more glandular-tuberculate above and the midrib either impressed or not.

5. *Phebalium squamulosum* Vent.

Shrub up to 3 m tall. Petioles 0.5–4 mm long; blades linear to narrowly elliptic or linear-obovate, apex acute, truncate or emarginate, base cuneate, margin recurved or minutely crenulate, 0.7–7 cm × 0.15–0.8 cm, midrib impressed above, undersurface lepidote. Inflorescences terminal 4–8-flowered umbels, pedicels 3–8 mm long; calyx truncate or undulate, *ca* 1 mm long; petals yellow to cream, 2–4.5 mm long. Cocci *ca* 3.5 mm long.

Two subspecies occur in the region:

1. Leaves narrowly elliptic, apex acute to obtuse, 1.5–7 cm long. **Fig. 71G** *P. squamulosum* subsp. *squamulosum*
 Leaves linear or linear-obovate, apex truncate or emarginate, 0.7–1.5 cm long. **Fig. 71H** *P. squamulosum* subsp. *gracile*

P. squamulosum subsp. *squamulosum* occurs on southern mountain peaks e.g. Mt. Ballow, and higher areas in the Darling Downs and Burnett districts, while *P. squamulosum* subsp. *gracile* P. G. Wilson occurs on drier south-western areas in the Darling Downs district. Flowers mainly spring.

6. *Phebalium squameum* (Labill.) Engl.

Eriostemon squameus Labill.; *Phebalium billardieri* Adr. Juss.; *P. elaeagnoides* Sieber ex Adr. Juss.; *P. elatum* Cunn.

Tree up to 12 m tall. Petioles 3–9 mm long; blades narrowly elliptic, apex acuminate to obtuse, base cuneate, margin entire or minutely crenulate, 2–12 cm × 0.5–2.5 cm, midrib impressed above, undersurface silvery-lepidote. Inflorescences of compact or loose axillary cymes, 3–20-flowered, peduncles 0.5–1.5 cm long, pedicels 1.5–5 mm long; calyx lobes deltoid, *ca* 1 mm long; petals white, 4–5 mm long; staminal filaments ciliate. Cocci 2–3 mm long.

Gold Coast hinterland and McPherson Ra. Flowers spring.

7. *Phebalium ambiens* (F. Muell.) Maiden & Betche

Eriostemon ambiens F. Muell.

Shrub up to 2.5 m tall. Leaves sessile, amplexicaule; blades oblong-elliptic, apex obtuse or acute, basal lobes rounded, margin serrulate, 2.5–12 cm × 1–4 cm, glabrous. Inflorescences terminal compound cymes. 20–200-flowered, pedicels *ca* 2 mm long; calyx lobes broadly deltoid, *ca* 0.5 mm long; petals white, *ca* 4.5 mm long. Cocci 2–4 mm long, shortly rostrate on outer angle.

Rocky mountainous areas near Wallangarra on Granite Belt. Flowers spring.

A shrub which could be a hybrid between *P. ambiens* and *P. rotundifolium* has been recorded from Mt. Norman near Wallangarra on the Granite Belt. The upper young leaves are petiolate; blades oblong-elliptic, apex obtuse, base cuneate, margin entire; lower leaves appear sessile, through the petioles becoming erect and adpressed to the branchlets and slightly amplexicaule. They measure 1–2 cm × 0.7–1.3 cm. The inflorescence is a terminal cyme of *ca* 10–20 flowers with yellow petals.

8. *Phebalium obtusifolium* P. G. Wilson

Shrub up to 1 m tall, branchlets prominently angular. Leaves sessile; blades very narrowly elliptic to very narrowly obovate, apex obtuse, often mucronate, base attenuate, margin minutely crenulate towards apex, 1.5–5.5 cm × 0.3–0.6 cm, glabrous. Inflorescences terminal 10–20-flowered corymbs, peduncles 0.5–1.5 cm long, pedicels 4–8 mm long; calyx lobes broadly deltoid, *ca* 0.25 mm long; petals white, 4–4.5 mm long. **Fig. 71I.**

Restricted to Helidon and Ravensbourne areas, on sandstone hills. Flowers spring.

9. *Phebalium elatius* (F. Muell.) Benth. subsp. ***beckleri*** (F. Muell.) P. G. Wilson*Eriostemon beckleri* F. Muell.; *Phebalium beckleri* (F. Muell.) Engl.

Shrub up to 5 m tall. Petioles 1–3 mm long; blades narrowly obovate to broadly obovate, apex rounded, emarginate, base cuneate to attenuate, 0.7–4.5 cm × 0.4–1.4 cm, glabrous. Inflorescences terminal cymes, 5–30-flowered, peduncles 0.3–1.2 cm long, pedicels 2–6 mm long; calyx lobes broadly deltoid, *ca* 0.5 mm long; petals white to pale yellow, 3–4.5 mm long. Cocci 3–4 mm long, shortly rostrate.

Border ranges and peaks east of Great Dividing Ra., better developed in wetter areas. Flowers spring.

10. *Phebalium gracile* C. T. White

Slender shrub up to 1.5 m tall, branchlets ± pilose, leaf bases decurrent. Petioles erect, *ca* 1 mm long; blades narrowly oblong-elliptic to ovate or broadly ovate, apex acute to obtuse, mucronate, base rounded to truncate, 3–10 mm × 1.5–4 mm, glabrous. Inflorescences clusters of flowers in upper axils, pedicels *ca* 4 mm long; calyx lobes deltoid, *ca* 0.5 mm long; petals white, *ca* 5 mm long. Cocci *ca* 4 mm long, rostrate.

Restricted to summit of Mt. Greville. Flowers autumn to spring.

11. *Phebalium rotundifolium* (Cunn. ex Endl.) Benth.*Eriostemon rotundifolius* Cunn. ex Endl.

Dense shrub up to 2 m tall. Petioles 1–2.5 mm long; blades broadly obovate, apex rounded or very shortly bluntly acuminate, base cuneate, margin entire or minutely erose towards apex, 4–10 mm × 4–7 mm, glabrous. Inflorescences compact clusters of flowers in upper axils, pedicels up to *ca* 1.5 mm long; calyx lobes broadly deltoid, *ca* 0.5 mm long; petals yellow, 4.5–6 mm long. Cocci 4–6 mm long, shortly rostrate. **Fig. 71E.**

Granite Belt, usually on shallow soil or rocky outcrops. Flowers spring.

19. CROWEA Smith

Shrubs, branchlets angular, sometimes with decurrent leaf bases. Leaves alternate; blades simple, flat, glandular-punctate. Flowers ± axillary, bracteoles persistent, sepals 5, free, imbricate, suborbicular; petals 5, free, imbricate, elliptic or ovate, glabrous, persistent; stamens 10, free, filament margins ciliate, anthers pilose, sterile appendage 2–3 mm long; carpels 5, slightly basally united, ovules 2 per carpel, style short, stigma globose. Fruits of up to 5 erect cocci; seeds brown, ± reniform, arillate.

3 species endemic to Australia; possibly 1 species south-eastern Queensland.

1. *Crowea saligna* Andr.*Eriostemon crowei* F. Muell.; *E. salignus* (Andr.) Baillon; *Crowea latifolia* Lodd. ex G. Don; *C. macrantha* hort.

Slender shrub up to 1.5 m tall, branchlets smooth, glabrous, with narrow wing decurrent from each leaf base. Leaves ± sessile; blades narrowly elliptic, apex acute to obtuse, mucronate, base attenuate, 2–6 cm × 0.35–1.3 cm, midrib prominent below, undersurface paler. Flowers solitary, peduncles 0.5–1.3 cm long; sepals 3–3.5 mm long; petals pink to purple, 1.2–2 cm long. Cocci *ca* 7 mm long; seeds 3.8–4.5 mm long, irregularly rugulose.

Recorded once from Byron Ck., near Esk, in eucalypt forest on south facing rhyolitic slopes, otherwise restricted to small region around Sydney. Flowers spring.

20. ERIOSTEMON Smith

Shrubs or small trees, glandular-punctate, often with glandular verrucosities containing aromatic oil. Leaves alternate, exstipulate; blades simple. Inflorescences axillary or terminal, bracteolate; flowers 5-merous, rarely 4-merous; sepals free, ± imbricate, persistent; petals free, usually imbricate; stamens 10, rarely 8, filaments ± flattened, ciliate or pilose, anthers glabrous; carpels 5, rarely 3 or 4, free or basally united, 2-ovulate, style solitary, stigma capitate or 5-lobed. Fruits of up to 5 cocci splitting along adaxial and apical edges, usually beaked, usually 1-seeded; seeds sometimes arillate.

32 species endemic to Australia; 4 species south-eastern Queensland.

These species are commonly called WAX FLOWERS.

- | | | |
|--|----------------------------|---|
| 1. Petals <i>ca</i> 1.8 cm long, closely stellate lepidote outside | 1. <i>E. australasius</i> | 2 |
| Petals up to 1 cm long, glabrous, or with simple hairs outside | | |
| 2. Petals pubescent outside | 2. <i>E. difformis</i> | 3 |
| Petals glabrous outside | | |
| 3. Flowers terminal | 3. <i>E. angustifolius</i> | |
| Flowers axillary | 4. <i>E. myoporoides</i> | |

1. *Eriostemon australasius* Pers.

Eriostemon lanceolatus K. F. Gaertn.; *E. salicifolius* Smith

Bushy shrub up to 2 m tall, branchlets minutely stellate pubescent. Leaves with ill-defined petioles; blades very narrowly elliptic or very narrowly obovate, apex acute or mucronate, base long attenuate, 1.5–6.5 cm × 0.25–0.7 cm. Flowers in upper axils, on stellate pubescent pedicels 0.4–1.2 cm long; sepals *ca* 2 mm long; petals pink to red, rarely mauve to white, 1.8 cm long. Cocci *ca* 9 mm long.

Granite Belt in sandy areas, also on deep sands such as Fraser I., Cooloola, wallum near Caloundra. Flowers spring.

2. *Eriostemon difformis* Cunn. ex Endl.

Eriostemon rhombeus Lindl.

Subshrub, branchlets sparsely glandular-verrucose, ± puberulous. Petioles up to 1 mm long; blades linear-obovate to narrowly obovate, apex obtuse, base attenuate, margin with 1–4 irregular glandular verrucosities each side, 0.4–1.3 cm × 0.2–0.4 cm. Flowers 1–4 in terminal sessile clusters, or sometimes appearing axillary where shoot has grown out, pedicels 2–4 mm long; sepals *ca* 1 mm long; petals white, 4–5 mm long. Cocci *ca* 5 mm long.

Two subspecies occur in the region:

- | | |
|---|--|
| 1. Leaves fleshy, convex above, <i>ca</i> 0.4 cm long Fig. 71K | <i>E. difformis</i> subsp. <i>difformis</i> |
| Leaves coriaceous, flat, <i>ca</i> 0.7–1.3 cm long. Fig. 71L | <i>E. difformis</i> subsp. <i>smithianus</i> |

E. difformis subsp. *difformis* is found in the western Darling Downs district while *E. difformis* subsp. *smithianus* (Benth.) P. G. Wilson (*E. difformis* var. *smithianus* Benth., *E. parvifolius* R.Br. ex Benth.) is found mainly on sandy coastal, or rocky mountainous areas in coastal districts and the eastern Darling Downs district. The latter appear to be intermediate between the two subspecies. Flowers sporadically throughout the year.

3. *Eriostemon angustifolius* P. G. Wilson

Subshrub, branchlets glandular-verrucose, pilose. Leaves ± sessile; blades terete to clavate, apex obtuse, base attenuate, 2–5 mm × 1–1.5 mm, glandular-verrucose. Flowers 1–4 in terminal sessile umbels, pedicels 0.5–4 mm long; sepals *ca* 1 mm long; petals white, 6–8 mm long. Cocci *ca* 3 mm long.

Drier areas in Darling Downs district. Flowers spring.

4. *Eriostemon myoporoides* DC.

Eriostemon cuspidatus Cunn.; *E. neriifolius* Sieber ex Sprengel; *E. lancifolius* F. Muell.; *E. amplifolius* F. Muell.; *Phebalium amplifolium* (F. Muell.) Maiden & Betche

Shrub up to 2 m tall, branchlets glandular-verrucose to ± smooth. Leaves sessile; blades oblong to broadly elliptic or obovate, apex acute to rounded, mucronate, base cuneate, 1.5–11 cm × 0.2–3 cm. Flowers in axillary pedunculate clusters of 1–6 flowers, peduncles 0.1–2 cm long, pedicels 2–10 mm long; sepals *ca* 1 mm long; petals white or pinkish, *ca* 8 mm long. Cocci *ca* 7 mm long.



Fig. 71

RUTACEAE A-B *Geijera* spp. — A, -A, *G. parviflora*, A, part of fruiting stem x1, A, flower x6; B *G. salicifolia*, flower showing valvate petals x6; C, -C, *Eremocitrus glauca*, C, part of fruiting branchlet x $\frac{2}{3}$, C, flower x1; D *Microcitrus australasica*, part of fruiting stem x $\frac{2}{3}$; E-I *Phebalium* spp. — E, -E, *P. rotundifolium*, E, part of flowering stem x1, E₂, flower x2, E₃, anther without glandular tip x6; F, -F, *P. woomye*, F₁, part of flowering stem x1, F₂, flower x2, F₃, anther showing glandular tip x12; G, -G, *P. squamulosum* subsp. *squamulosum*, G₁, leaf x2, G₂, flower x6; H *P. squamulosum* subsp. *gracile*, leaf x2; I *P. obtusifolium*, part of angular stem x1; J-L *Eriostemon* spp. — J, -J, *E. myoporoides* subsp. *epilosus*, J₁, part of flowering stem x1, J₂, flower showing nearly glabrous stamens x6; K, -K, *E. diffiformis* subsp. *diffiformis*, K₁, part of stem showing convex leaves and verrucose stem x6, K₂, flower showing pubescent petal x6; L *E. diffiformis* subsp. *smithianus*, flat leaf x6.

Five subspecies occur in the region:

- | | |
|--|--|
| 1. Stems \pm densely verrucose | 2 |
| Stems almost smooth | 4 |
| 2. Inflorescences 2-6-flowered; leaves obovate, occasionally elliptic, 5-8 cm \times 1.5-2.5 cm | <i>E. myoporoides</i> subsp. <i>myoporoides</i> |
| Inflorescences 1-flowered; leaves less than 5 cm long | 3 |
| 3. Leaves \pm obovate, less than 3 cm long; staminal filaments very shortly ciliate, sparsely pilose or glabrous towards apex. Fig. 71J | <i>E. myoporoides</i> subsp. <i>epilosus</i> |
| Leaves \pm obovate, 2.5-4 cm long; staminal filaments woolly ciliate, conspicuously pilose towards apex | <i>E. myoporoides</i> subsp. <i>leichhardtii</i> |
| 4. Leaves conduplicate and falcate when dry, narrowly elliptic, thin, 5-8 cm long; peduncles thick, short, 1-4-flowered | <i>E. myoporoides</i> subsp. <i>conduplicatus</i> |
| Leaves narrowly elliptic or narrowly obovate, deeply concave above, thick, 1-3 cm long; peduncles slender, short, 1-flowered | <i>E. myoporoides</i> subsp. <i>queenslandicus</i> |

E. myoporoides subsp. *myoporoides* occurs on southern mountain peaks in the Moreton district, e.g. Mt. Lindsay, Mt. Barney. *E. myoporoides* subsp. *epilosus* P. G. Wilson occurs on the Granite Belt in the southern Darling Downs district. *E. myoporoides* subsp. *leichhardtii* (Benth.) P. G. Wilson (*E. trachyphyllus* F. Muell. var. *leichhardtii* Benth.; *E. glasshousiensis* Domin; *E. scaber* of "Qd. Flora") occurs in the Glasshouse Mts in the Moreton district. *E. myoporoides* subsp. *conduplicatus* P. G. Wilson occurs on the Granite Belt. *E. myoporoides* subsp. *queenslandicus* (C. T. White) P. G. Wilson (*E. queenslandicus* C. T. White) occurs in coastal heaths and wallum areas. All flower mainly spring and autumn, but sporadically throughout the year.

21. ZANTHOXYLUM L.

Scandent or erect shrubs or trees, aromatic, armed, evergreen or deciduous. Leaves alternate, compound; leaflets up to 15 pairs, \pm opposite; blades sometimes with scattered and/or marginal glandular dots. Inflorescences racemose, paniculate or cymose; flowers small, usually unisexual; perianth of 6-8 undifferentiated segments, or of 4-5 sepals and 4-5 petals; stamens 4-6; ovary 1-5-carpellate, each 1-locular, 2-ovulate, pendulous, styles coherent to divergent, stigmas capitate, coherent or free. Fruits of 1-5 distinct or partly connate, red to black 1-seeded, 2-valved cocci; seeds black or reddish, ovoid to globose, shining and crustaceous.

20-30 species temperate and subtropical eastern Asia, Malaysia, Philippines, North America; 5 species Australia; 1 species south-eastern Queensland.

1. *Zanthoxylum brachyacanthum* F. Muell.

THORNY YELLOW-WOOD; SATINWOOD

Tree up to 10 m tall, trunk, branchlets and leaf rachis with scattered conical prickles. Rachis 5-40 cm long, leaflets subopposite, 9-13, rarely as few as 5 per rachis; petiolules 0.2-1.2 cm long; leaflet blades narrowly ovate to elliptic, apex bluntly acuminate, base cuneate, sometimes slightly oblique, margin often \pm shallowly crenate, with glandular dots in indentations, 2-13 cm \times 1-5 cm. Inflorescences terminal panicles; sepals 4, 1-1.5 mm long; petals 4, 4-5 mm long. Fruits of a single, bright red, \pm obovoid coccus ca 6 mm diameter; seeds black, ovoid, 5 mm \times 4 mm. **Fig. 72B.**

Rainforests. Flowers mainly spring.

22. PENTACERAS Hook. f.

Trees. Leaves alternate, imparipinnate; leaflets \pm opposite. Inflorescences paniculate, terminal; flowers numerous, small, 5-merous; petals valvate; stamens 10, filaments subulate, glabrous; ovary of $5 \pm$ distinct carpels, each with glandular terminal appendage, ovules 2 per loculus, superposed, style inserted below middle, united, stigma small. Fruiting carpels 5 or fewer by abortion, indehiscent, expanded all round into membranous wing, forming an oval-oblong samara, centre almost drupaceous, endocarp cartilaginous.

1 species endemic to Australia, occurring in south-eastern Queensland.

1. *Pentaceras australe* (F. Muell.) Hook. f. ex Benth. **BASTARD CROW'S ASH**
Cookia australis F. Muell.

Tree up to 25 m tall. Rachis 8–30 cm long; leaflets 7–15; petiolules 2–10 mm long; leaflet blades narrowly ovate, apex bluntly acuminate, base very oblique, margin irregularly crenate, 2–15 cm \times 0.7–6.5 cm. Flowers fragrant; calyx *ca* 0.5 mm long; petals white, 2.5–3 mm long. Fruiting carpels usually 1, yellowish, central part \pm ovoid or globose, surrounded by broad elliptic or ovate wing, *ca* 2–4 cm \times 1.2–1.8 cm. **Fig. 72C.**

Rainforests of the coastal districts. Flowers spring. Wood suitable for flooring, scantling, chisel handles, etc. Sapwood subject to attack by borers.

23. CLAUSENA Burm.

Trees or shrubs. Leaves alternate, pinnate; leaflets alternate, usually oblique. Inflorescences terminal or axillary panicles or racemes; flowers small; calyx 4–5-lobed; petals 4–5, imbricate in bud, broad; stamens 8–10, filaments dilated basally or in middle; ovary 4–5-locular, rarely 2–3-locular, ovules 2 per loculus. Fruits small, baccate.

30 species paleotropical; 1 species endemic Australia, occurring in south-eastern Queensland.

1. *Clausena brevistyla* Oliver

Small tree. Rachis up to *ca* 30 cm long; leaflets 9–15; petiolules 2–5 mm long; leaflet blades elliptic or ovate, apex bluntly acuminate, base oblique, margin crenate, 2.5–15 cm \times 1.2–6.5 cm, glabrous. Inflorescences terminal panicles; flowers usually 4-merous; sepals *ca* 1 mm long; petals white, *ca* 4 mm long; filaments thick, basally dilated; style very short. Fruits ovoid to subglobose, 5–8 mm diameter. **Fig. 72F.**

Rainforests mainly in the coastal districts. Flowers spring.

24. MICROMELUM Blume

Trees. Leaves alternate, pinnate; leaflets alternate, oblique. Inflorescences terminal corymbose panicles; flowers small; calyx entire or 5-lobed; petals \pm valvate in bud; stamens 10, linear-subulate; ovary 2–6-, mostly 5-locular, dissepiments spirally twisted after flowering, ovules 2 per loculus, style deciduous, stigma capitate, small. Fruits baccate, dry, usually 1–2-seeded.

10 species Indomalaysia and Pacific region; 1 species Australia, occurring in south-eastern Queensland.

1. *Micromelum minutum* (Forster f.) Wight & Arn.

Limonia minuta Forster f.; *Micromelum pubescens* Blume

Small tree. Rachis 6–40 cm long; leaflets 7–15; petiolules 2–7 mm long; leaflet blades ovate or narrowly ovate, apex obtuse or bluntly acuminate, base cuneate or rounded, oblique, margin irregularly crenate, 2–12 cm \times 1.2–7 cm, glabrous or finely pubescent, small domatia beneath in primary vein axils. Flowers numerous, pedicels 2–4 mm long; calyx 5-lobed, 0.5–1 mm long; petals whitish, 2.5–3 mm long. Fruits red, ovoid, 8–10 mm \times 5–7 mm. **Fig. 72E.**

Mainly coastal closed forests and low altitude rainforests. Flowers mainly spring and autumn.



Fig. 72

RUTACEAE A.-A, *Halfordia kendack*, A₁ leaf x1, A₂ flower, 1 petal, 1 stamen removed x3, A₃ fruit x1; B.-B, *Zanthoxylum brachyacanthum*, B₁ part leaf x $\frac{2}{3}$, B₂ flower, 1 stamen removed x3, B₃ part of fruiting inflorescence x1; C.-C, *Pentaceras australe*, C₁ leaflet showing attachment to rachis x $\frac{2}{3}$, C₂ flower x3, C₃ fruit x1; D.-D, *Murraya ovatifoliolata*, D₁ leaf x1, D₂ flower, 2 petals, 1 stamen removed x2, D₃ anther x12, D₄ fruit x1; E.-E, *Micromelum minutum*, E₁ part leaf x $\frac{1}{2}$, E₂ dense corymbose inflorescence x $\frac{1}{2}$, E₃ flower x4, E₄ part of fruiting inflorescence x1; F.-F, *Clausena brevistyla*, F₁ part leaf x $\frac{1}{2}$, F₂ pyramidal inflorescence x $\frac{1}{3}$, F₃ flower, 1 petal, 1 stamen removed x3.

25. MURRAYA L.

Trees or shrubs. Leaves alternate, pinnate; leaflets alternate, usually basally oblique. Inflorescences terminal corymbs or few flowers in upper axils; flowers usually large; calyx 5-lobed; petals 5, imbricate in bud; stamens 10, free, filaments subulate, anthers small; ovary 2-5-locular, ovules 1-2 per loculus. Fruits 1-2-seeded drupes.

12 species eastern Asia, Indomalaysia, Pacific region; 2 species Australia; 1 species south-eastern Queensland.

1. *Murraya ovatifoliolata* (Engl.) Domin

Murraya exotica L. var. *ovatifoliolata* Engl.

Shrub or small tree. Rachis 2.5-10.5 cm long; leaflets 5-10, upper larger than lower; petiolules 2-3 mm long; leaflet blades ovate to broadly ovate, apex bluntly acuminate or obtuse, base rounded, usually oblique, margin irregularly crenulate, 1.2-4.5 cm × 0.9-3 cm, conspicuously glandular-punctate. Inflorescences few-flowered; sepals *ca* 1 mm long; petals white, 0.7-1.2 cm long. Fruits red, ellipsoid, *ca* 10 mm long. **Fig. 72D.**

Northern areas of region, in depauperate rainforest. Flowers spring.

71. FLINDERSIACEAE

Trees or shrubs, often with hard, bright yellow wood. Leaves alternate or opposite, exstipulate; blades pinnate, rarely 3-foliolate or simple, glandular-dotted. Inflorescences terminal or axillary panicles; flowers small, bisexual, actinomorphic; sepals 5, free or connate, imbricate or valvate; petals 5, imbricate, sometimes pubescent inside; stamens 10, usually in 2 rows of 5, inner sometimes staminodes, anthers basifixed to dorsifixed, connective produced; disc large, cupular, crenate, enclosing ovary; ovary 5- or 3-locular, 2-8, 2-seriate ovules per loculus, placentation axile, style simple, stigma peltate, 5-lobed. Capsules woody, smooth, spiny or verrucose, septicidal or loculicidal; seeds 2-8 per loculus, compressed, winged.

2 genera with 17 species southern India and Ceylon, Malaysia, eastern Australia, New Caledonia; 1 genus with 14 species Australia; 1 genus with 5 species south-eastern Queensland.

1. FLINDERSIA R.Br.

Trees, glabrous or with simple, stellate or lepidote indumentum. Leaves alternate or opposite; leaflets opposite or subopposite. Sepals imbricate; petals imbricate; stamens 5, staminodes 5; ovary 5-locular, ovules 4-6 per loculus, style short, thick. Capsules coarsely muricate, dehiscing septicidally without a persistent axis into 5 valves; seeds flat, oblong to elliptic, winged.

16 species Moluccas, New Guinea, eastern Australia, New Caledonia; 14 species Australia; 5 species south-eastern Queensland.

- | | | |
|---|------------------------|---|
| 1. Leaf rachis generally winged between pairs of leaflets, often broadly so; leaflet blade apex obtuse to emarginate; tubercles on fruit 1-2 mm long | 1. <i>F. collina</i> | |
| Leaf rachis not winged or only very narrowly so at base; leaflet blade apex obtuse to acute; tubercles on fruit 2-10 mm long | | 2 |
| 2. Leaves usually alternate, crowded at tip of branchlets, or alternate and opposite on same branch; sepals 2-2.5 mm long; fruiting valves dehiscent for only <i>ca</i> half their length, rough on sides | 2. <i>F. australis</i> | |
| Leaves opposite or subopposite; sepals 1-1.5 mm long; fruiting valves dehiscent or easily separable for entire length, smooth on sides | | 3 |

4. *Flindersia schottiana* F. Muell.

BUMPY ASH; CUDGERIE; SOUTHERN SILVER ASH

Flindersia schottiana F. Muell. var. *pubescens* F. Muell.; *F. pubescens* F. M. Bailey
 Tree up to 50 m tall. Leaves opposite, up to 54 cm long, on juvenile trees all parts larger; leaflets 9–17, ± sessile, terminal leaflet absent or on petiolule 1–2.7 cm long; leaflet blades narrowly elliptic, narrowly ovate or oblong, usually falcate, apex ± acute, base cuneate to cordate, oblique, 4–22 cm × 1–6.5 cm. Inflorescences spreading, up to 40 cm long; sepals 1–1.5 mm long; petals white, 4–6 mm long. Capsules ellipsoid to cylindrical-ellipsoid, 8–13 cm long, separable into 5 distinct valves, subglabrous to pubescent, tubercles thick conical, up to 5 mm long; seeds 3 on each side of dissepiment, winged on both ends, 5–6 cm long. **Fig. 73C.**

Rainforest and depauperate rainforests, mainly of the coastal districts. Flowers mainly late spring to early summer. Timber moderately hard, light yellow, fairly durable, suitable for oars, cabinet work and general indoor fittings.

5. *Flindersia xanthoxyla* (Cunn. ex Hook.) Domin*Oxleya xanthoxyla* Cunn. ex Hook.; *Flindersia oxleyana* F. Muell.

Tree up to 40 m tall. Leaves opposite, up to 32 cm long; leaflets 3–11; petiolules 0–6 mm long, terminal one 0.8–2.8 cm long; leaflet blades narrowly ovate or narrowly elliptic, usually falcate, apex tapered, ± obtuse or mucronate, base cuneate, oblique, 2.2–13 cm × 0.6–3.5 cm, glabrous or ± appressed or softly pubescent. Inflorescences spreading, up to 25 cm long; sepals *ca* 1 mm long; petals pale yellow, 4–4.5 mm long. Capsules cylindrical-ellipsoid, 6.5–11 cm long, separable into 5 distinct valves, tubercles narrowly conical, up to 4 mm long; seeds 3, rarely 2, on each side of dissepiment, winged at both ends, 3–3.5 cm long.

Rainforests and depauperate rainforests, mainly of the coastal districts, but also recorded from the Kingaroy area. Flowers summer. Wood pale yellow, strong, flexible, used for cabinet making, joinery, flooring, etc.

72. SIMAROUBACEAE

Trees or shrubs. Leaves alternate or rarely opposite, stipules rarely present; blades pinnate, rarely simple or glandular. Flowers small, unisexual, rarely bisexual, actinomorphic; calyx lobes 3–5; petals 3–5, imbricate or valvate, rarely united in a tube or absent; stamens inserted at base of disc, equal to or double the number of petals, rarely more, free, sometimes with basal scale, anthers 2-locular, opening lengthwise; ovary 1–5-locular, or carpels separate, styles 1–5, ovules usually solitary, rarely more, placentation axile. Fruits mostly indehiscent, sometimes samaroid.

20 genera with 120 species, tropical and subtropical, most abundant tropical America; 6 genera with *ca* 9 species Australia; 4 genera with 5 species south-eastern Queensland.

- | | | |
|--|----------------------|---|
| 1. Leaves pinnate | 1. <i>Ailanthus</i> | 2 |
| Leaves in Australian species simple | | |
| 2. Ovary solitary, flowers bisexual; fruit solitary, ± globose | 2. <i>Guilfoylia</i> | 3 |
| Ovary of 4–6 separate carpels, or flowers unisexual; fruits 1–6 per flower, ± compressed | | |
| 3. Calyx <i>ca</i> 3 mm long in flower, enlarging to <i>ca</i> 1 cm long and persistent after fruiting | 3. <i>Cadellia</i> | |
| Calyx in Australian species less than 1.5 mm long, not persistent after fruiting | 4. <i>Quassia</i> | |

1. AILANTHUS Desf.

Trees. Leaves alternate, pinnate; leaflets oblique. Inflorescences terminal panicles; flowers small, unisexual and bisexual; calyx 5-lobed; petals 5, valvate in bud; stamens 10, fewer or absent in female flowers; ovary 2-5-lobed, styles connate, stigmas plumose. Fruits of 1-5 oblong, membranous samarae, thickened in centre around seed; seeds flattened, testa membranous.

10 species Asia, Australia; 2-3 species Australia; 2 species south-eastern Queensland.

- | | |
|--|------------------------|
| 1. Leaflet blades ovate-triangular, lobed or toothed at base, lobes glandular; inflorescences spreading panicles | 1. <i>A. altissima</i> |
| Leaflet blades narrow, falcate, neither lobed nor glandular, inflorescences slender panicles | 2. <i>A. triphysa</i> |

1. **Ailanthus altissima* Swingle

TREE-OF-HEAVEN

Ailanthus glandulosa Desf.

Tall deciduous tree. Leaves up to 70 cm long; leaflets 9-25; leaflet blades narrowly ovate, ovate or ovate-triangular, apex acuminate, base truncate or rounded, oblique, margin lobed at least at base, with prominent gland near lobe apex on underside, 4-13 cm × 1.5-6 cm, glabrous or puberulent, paler beneath. Inflorescences spreading panicles; calyx lobes 0.75-1 mm long; petals greenish-white, 2-3 mm long. Samarae yellow-reddish, 4-5 cm × 1 cm. **Fig. 73D.**

Native of China and Japan; escaped from cultivation, naturalized particularly in the Darling Downs district. Flowers late spring. Suckers freely.

2. *Ailanthus triphysa* (Dennst.) Alston

WHITE BEAN; WHITE SIRIS

Adenantha triphysa Dennst.; *Ailanthus malabarica* A. DC.; *A. imberbiflora* F. Muell. Tall tree. Leaves up to 70 cm long; leaflets 15-60; leaflet blades very narrowly elliptic to very narrowly ovate, falcate, apex bluntly acuminate, base broadly cuneate, oblique, margin entire, 2.5-14 cm × 0.5-2.8 cm, ± glabrous, paler beneath. Inflorescences slender panicles; calyx lobes 0.75 mm long; petals 2.5-3 mm long. Samarae 4.5 cm × 1.5-2 cm.

Mainly coastal rainforests, but occasionally depauperate rainforests as far inland as Mt. Perry in the Burnett district. Flowers summer.

2. GUILFOYLIA F. Muell.

Trees. Leaves scattered, stipules minute, persistent. Inflorescences axillary or terminal bracteate panicles; flowers bisexual; calyx 5-lobed, basally connate, slightly imbricate, long persistent; petals 5, imbricate, longer than calyx; stamens 10, free, unequal, anthers dorsifixed, versatile; ovary solitary, ovules 2, collateral, style arising from inner angle of ovary, fairly long, lateral, deciduous, stigma slightly dilated. Fruits almost globose, 1-seeded.

1 species endemic Australia, occurring in south-eastern Queensland.

1. *Guilfoylia monostylis* (Benth.) F. Muell.

Cadellia monostylis Benth.

Small tree. Leaves simple; petioles 4-9 mm long; blades elliptic, oblong-elliptic or narrowly-ovate, apex bluntly acuminate, sometimes abruptly so, base cuneate, 3-13 cm × 1.4-4.4 cm, glabrous, paler beneath. Calyx 5-6 mm long, lobes 3-4 mm long; petals yellow, 7-8 mm long. Fruits shining black, 1-1.4 cm diameter, smooth. **Fig. 73F.**

Rainforests. Flowers spring-summer.

3. CADELLIA F. Muell.

Trees. Leaves alternate, stipules minute, caducous. Inflorescences axillary 1–few-flowered panicles; flowers bisexual; sepals 5, rarely 6–7, quincuncial, long persistent; petals 5, imbricate, a little longer than sepals, deciduous; stamens 10, free, unequal, anthers basifixed; carpels 5, 1-ovulate, styles 5, free, continuous with central angle of carpels, short, bristle-like, stigmas ovate, flat, introrse, oblique, terminal. Fruiting carpels 5, globose-trigonal, indehiscent, 1-seeded.

1 species endemic Australia, occurring in south-eastern Queensland.

1. *Cadellia pentastylis* F. Muell.

OOLINE

Tree. Leaves simple; petioles 2–7 mm long, pubescent; blades oblong-obovate, obovate or broadly ovate, apex obtuse or emarginate, base cuneate, often broadly so, 1.9–6.5 cm × 1–4 cm, glabrous, paler beneath, venation prominent when dry. Sepals 3–3.5 mm long; petals 5–6 mm long. Fruits surrounded by enlarged persistent spreading calyx, each carpel brownish, slightly compressed, obovoid or obtriangular, *ca* 4 mm long, rugose.

Darling Downs district and other inland parts. Flowers summer–autumn.

4. QUASSIA L.

Trees or shrubs. Leaves simple in Australian species, or pinnate, leaflets usually with glands on upper or rarely lower surface along margin, especially near apex. Inflorescences racemose, paniculate or umbellate, bracteate; flowers 4–6-merous, unisexual or bisexual; calyx ± lobed; petals imbricate or contorted in bud, longer than calyx; stamens obdiplostemonous, with basal adaxial scale; disc ± cylindrical or subglobose; carpels 4–6, somewhat coherent, ± immersed in but free from top of disc, style 1, stigmas ± stellately spreading, or 1 slightly lobed or capitate stigma. Fruits 1–6 per flower, drupaceous or woody, often ± compressed.

About 40 species pantropical, chiefly America; 2 species Australia; 1 species south-eastern Queensland.

1. *Quassia bidwillii* (Hook. f.) Nootboom

Hypsiandra bidwillii Hook. f.; *Samadera bidwillii* (Hook. f.) Oliver

Shrub or small tree. Petioles 3–7 mm long; blades narrowly elliptic or narrowly ovate, apex obtuse, base cuneate to attenuate, 4.5–18.5 cm × 1–3.5 cm, glabrous or subglabrous, lateral venation ± parallel, prominent beneath when dry. Flowers few in axillary clusters; sepals 0.75–1 mm long; petals *ca* 2.5 mm long; stamens 8–10, filaments pubescent. Fruits ± compressed, ovoid or ellipsoid, *ca* 1 cm long, 1-seeded.

Recorded mainly from lowland rainforest of Gympie and Maryborough areas. Flowers mainly summer.

73. BURSERACEAE

Trees or shrubs, secreting resin or oil. Leaves alternate, rarely opposite, usually exstipulate; blades compound or rarely 1-foliolate. Flowers unisexual or bisexual, small; sepals 3–5, imbricate or valvate; petals 3–5, rarely absent, free or variously connate, imbricate or valvate; disc present; stamens equal to, or twice the number of petals, filaments free, anthers 2-locular; ovary superior, 2–5-locular, ovules 2, rarely 1, per loculus, placentation axile. Fruits drupaceous, or tardily dehiscent.

16 genera with 500 species, tropical; 2 genera with 5 species Australia; 1 genus with 1 species south-eastern Queensland.

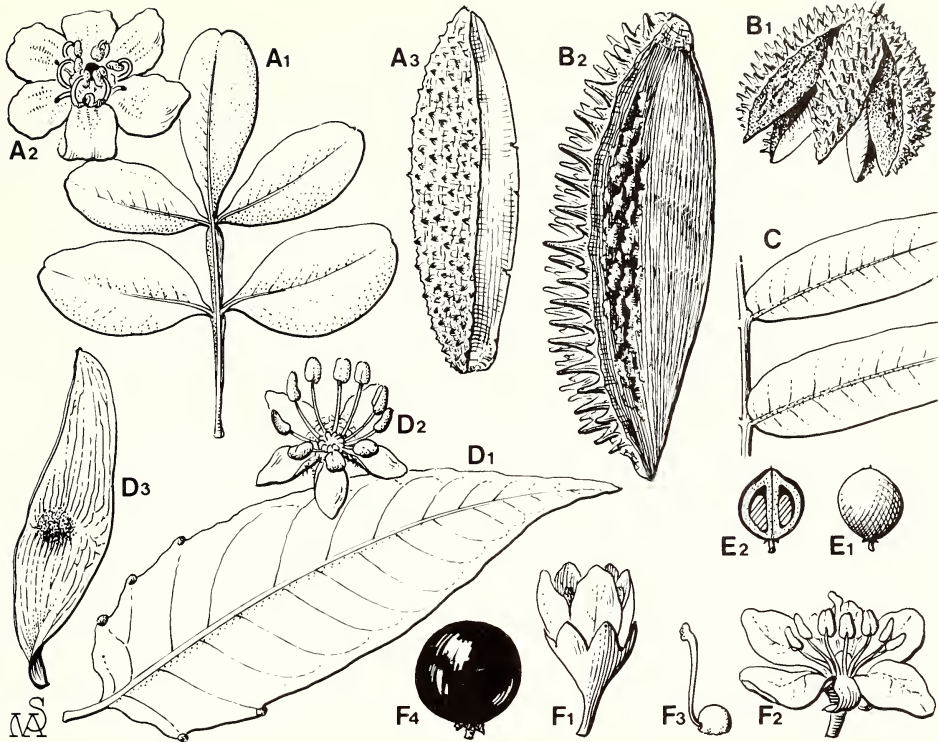


Fig. 73 A-C FLINDERSIACEAE – A-C *Flindersia* spp. – A₁–A₃, *F. collina*, A₁ leaf $\times \frac{1}{2}$, A₂ flower $\times 3$, A₃ valve of fruit with rough back, smooth sides $\times 1$; B₁–B₂, *F. australis*, B₁ whole fruit $\times \frac{1}{3}$, B₂ valve of fruit with rough back, rough sides $\times 1$; C *F. schottiana*, part leaf showing oblique leaflet bases $\times \frac{1}{4}$; D, F SIMAROUBACEAE – D₁–D₃, *Ailanthus altissima*, D₁ one leaflet showing basal glands $\times 1$, D₂ flower $\times 3$, D₃ fruit $\times 1$; F₁–F₃, *Guilfoylia monostylis*, F₁ flower bud $\times 2$, F₂ flower $\times 2$, F₃ ovary and style $\times 3$; F₄ fruit $\times 1$; E BURSERACEAE – E₁–E₂, *Canarium australasicum*, E₁ fruit $\times 1$, E₂ L.S. $\times 1$.

1. CANARIUM L.

Usually trees, dioecious. Leaves spirally arranged, or rarely in whorls of 3, stipules often present; blades imparipinnate or rarely 1-foliolate. Inflorescences axillary or terminal, thyrsoid, sometimes reduced to racemes or spikes, bracteate; flowers 3-merous, unisexual; calyx cupular; petals free, usually imbricate in bud, induplicate-valvate near apex; stamens 6, sometimes 3 abortive, in female flowers all sterile, free or connate; ovary in female flowers 3-locular, ovules 2 per loculus, style 1, stigma capitate, 3-lobed. Fruits drupaceous, 3-locular or fewer by abortion; seeds 1 per fertile loculus.

75 species tropical Africa, Madagascar, Mauritius, Ceylon, south-eastern Asia, Malaysia, north-eastern Australia and Melanesia; 3 species Australia; 1 species south-eastern Queensland.

1. *Canarium australasicum* (F. M. Bailey) Leen.

MANGO-BARK;

CARROT-WOOD; BROWN CUDGERIE

Bursera australasica F. M. Bailey; *Protium australasicum* (F. M. Bailey) Sprague; *Canarium baileyianum* Leen.

Tree up to 40 m tall. Leaves up to 30 cm long; leaflets 1–7; leaflet blades obovate, elliptic, oblong or narrowly ovate, apex obtuse or bluntly acuminate, base broadly cuneate, 4–18 cm \times 1.5–8.5 cm. Inflorescences few-flowered, tomentose; calyx 0.75–1 mm long; petals deep red, ca 2.5 mm long. Fruits \pm globose or somewhat angular, ca 8–9 mm diameter, glabrous, 1-seeded. Fig. 73E.

Rainforest of coastal districts. Flowers mainly spring.

74. MELIACEAE

Trees or shrubs; bark frequently odoriferous, sometimes with milky exudate. Leaves spirally arranged; blades usually pinnate, rarely simple, 3-foliolate or 1-foliolate, indumentum simple or stellate. Inflorescences usually axillary panicles, rarely racemose, spicate or fasciated; flowers bisexual or unisexual; sepals 3-5, free or connate, usually imbricate; petals 3-6, rarely -14, imbricate or contorted, connate at base or coherent with each other and with staminal tube; stamens 4-10, usually variously united to form a staminal tube, anthers usually 5-10, introrse, inserted apically on filaments or on margin or within the throat of staminal tube; disc present or absent; ovary usually 2-6-locular, ovules 1-many, collateral, 2-seriate, stigma capitate, discoid or fusiform. Fruits capsules, berries or drupes, rarely nuts; seeds winged or if unwinged usually fleshy.

51 genera with ca 550 species, ± tropical; 11 genera with 33 species Australia; 9 genera with 14 species south-eastern Queensland.

- | | | |
|---|------------------------|---|
| 1. Leaves simple; petals 2.5 cm long or longer | 1. <i>Turraea</i> | 2 |
| Leaves compound, including 1-foliolate; petals less than 2 cm long | | |
| 2. Leaves imperfectly 2-3-pinnate | 2. <i>Melia</i> | 3 |
| Leaves 1-pinnate, 3-foliolate or 1-foliolate | | |
| 3. Plants stellate hairy or with peltate stellate scales; flowers up to 0.2 cm long | 3. <i>Aglaia</i> | 4 |
| Plants glabrous or if hairy, indumentum simple; flowers 0.5-1.3 cm long | | |
| 4. Leaflets with serrate, dentate or rarely entire margins; stamens with filaments free; seeds winged | 4. <i>Toona</i> | 5 |
| Leaflets with entire margins; stamens with filaments fused into a tube; seeds not winged | | |
| 5. Fruits drupes with woody endocarp; staminal tube with frilly lobes and terminated by appendages | 5. <i>Owenia</i> | 6 |
| Fruit capsules; staminal tube not as above | | |
| 6. Leaflets 5-11, rarely 3 pairs, opposite or alternate; staminal tube attached about half-way to petals | 6. <i>Dysoxylum</i> | 7 |
| Leaflets 2-5 pairs, opposite; staminal tube not fused to petals | | |
| 7. Leaves imparipinnate, leaflets 5-11; capsules depressed-subglobose | 7. <i>Synoum</i> | 8 |
| Leaves paripinnate, leaflets 2 or 4, rarely 6; capsules obovoid or spherical | | |
| 8. Upper pair of leaflets usually larger; capsules 1.2-3.6 cm diameter; usually at edge of rainforests | 8. <i>Pseudocarapa</i> | |
| Upper pair of leaflets not larger; capsules 10-20 cm diameter; usually in mangrove swamps and coastal closed forest | 9. <i>Xylocarpus</i> | |

1. TURRAEA L.

Small trees or shrubs, hairs simple. Leaves simple, rarely compound. Flowers bisexual, solitary or fasciculate or in short axillary subumbelliform few-flowered racemes; calyx 3-5-toothed or lobed; petals 3-5, elongate, free, imbricate; filaments connate into a long tube, tube cylindrical, inflated distally, terminated by 2-lobed free or fused often reflexed appendages, anthers 7-10, rarely -20, inserted at top of tube, basifixed; ovary 3-5-, rarely -20-locular, ovules 2 per loculus, style exerted. Capsules 3-5-locular, loculicidally 3-5-valved, valves leathery, thin or woody, central column winged, loculi 1-2-seeded; seeds shiny with fleshy aril.

About 90 species subtropical and southern Africa, Madagascar, Mauritius, tropical Asia to Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Turraea brownii* C. DC.*Turraea pubescens* auct. non Hellen, Benth.

Shrubs or small trees 1.5–5 m tall, young parts ± pubescent, branchlets lenticellate. Leaves immature or absent at time of flowering; petioles flexuose, 8–10 mm long; blades ovate or ovate-elliptic, apex abruptly and shortly acuminate, acute or obtuse, base obtuse, margin subentire, 3–10.5 cm × 2–5.8 cm, usually glabrous above, pubescent or ± glabrous below, lateral nerves often with hairy tufts in axils. Inflorescences 3–5-flowered clusters or racemes, pedicels 0.8–1.3 cm long; calyx 5-toothed, 2.5–3 mm long, puberulent; petals white, 5, 2.5–3.5 cm long, glabrous; staminal tube narrowly cylindrical, with 1–10, 2-lobed teeth at summit, 1.2–2.5 cm long, anthers 10–12; ovary 5–10-locular. Capsules subglobose-ovoid, 1.4–1.6 cm long, ribbed, 5–7-valved, valves woody, glabrous; seeds oblong, sometimes narrowly winged. **Fig. 74A.**

Depauperate rainforests and in coastal low closed forests. Flowers fragrant, mainly spring.

2. MELIA L.

Trees or shrubs, young parts softly stellate hairy intermingled with simple hairs. Leaves imperfectly 2–3-pinnate; leaflet blades crenate or pinnatifid. Flowers bisexual or unisexual in axillary panicles, male flowers flanking bisexual ones; calyx 5-lobed; petals 5, expanded, much exceeding calyx; stamens 10, filaments inserted around disc, connate into a ribbed, shortly 10-fid tube, tube cylindrical, terminated by slender, filiform, truncate or 2–4-lobed appendages as many as twice as many as anthers, anthers on inside of tube between segments, sessile, basifixed, apiculate; ovary 5-locular, glabrous, ovules 2 per loculus, style long, stigma capitate. Drupes globose-ellipsoid, up to 5-locular, endocarp thick, bony, hollowed out at base and apex, loculi 1-seeded; seeds oblong, laterally compressed, aril absent.

2–15 species, tropical and subtropical, mainly Asia and Africa; 1 species Australia, occurring in south-eastern Queensland.

1. *Melia azedarach* L. var. *australasica* (Adr. Juss.) C. DC. WHITE CEDAR; CAPE LILAC; CHINA BERRY; TULIP CEDAR; KARABIL*Melia australasica* Adr. Juss.; *M. composita* auct. non Willd., Benth.; *M. dubia* Cav.

Spreading tree up to 8 m tall; bark smooth, grey, furrowed. Leaves 12.5–42.5 cm long, secondary axes in 3–5 opposite pairs, 2.8–9 cm long; leaflets in 1–6 opposite pairs plus terminal one; petiolules 1–7 mm long; leaflet blades ovate, elliptic-ovate or subobovate, apex acuminate or acute, base truncate or obtuse, usually oblique, margin crenate-serrulate or serrate, or subentire, 1.7–7.2 cm × 0.8–3.8 cm, terminal one usually largest, glabrous or with scattered tufted stellate hairs, especially on midrib below. Panicles divaricate, 11–21 cm long, cymules 3–7-flowered, pedicels 3–6 mm long; sepals 2–3.5 mm long; petals mauve, 1–1.3 cm long, pubescent outside; staminal tube 7–8 mm long, ribbed with 8–10, 2-lobed appendages at summit, tube pubescent inside, anthers 8–10, glabrous; ovary 4–5-grooved, stigmas 4–5-lobed. Drupes bright yellow, ovoid or globose, 1–1.5 cm long; seeds black. **Fig. 74B.**

Rainforest of the coastal districts. Flowers spring. Highly figured timber useful as cabinet wood. Bark said to have been used by Aborigines as a fish poison. Trees planted for ornament and shade. Fruits poisonous.

3. AGLAIA Lour.

Dioecious trees or shrubs, stellate hairy or with peltate stellate scales, sap milky in some species. Leaves imparipinnate, 3-foliolate or 1-foliolate; leaflets entire, often pellucid-dotted. Flowers unisexual in axillary, rarely terminal panicles, male inflorescences usually larger; calyx 3–5-lobed, lobes imbricate; petals 3–6, free or shortly connate; filaments connate into a cupular, urceolate or globose, entire or dentate tube; anthers 3–19, usually 5–10, inserted in a single whorl on margin or in lower or upper half of staminal tube; ovary 1–3-, rarely 4-locular, ovules 1 or 2, stigma often large. Fruits 1–4-, rarely 6-seeded soft berries or nuts, rarely 2–3-valved capsules, fleshy or dry; seeds with fleshy aril.

About 100 species Indonalesia, Melanesia, Polynesia and Australia; 3 species Australia; 1 species south-eastern Queensland.

1. *Aglai* *sapindina* (F. Muell.) Harms*Hearnia sapindina* F. Muell.

Tree 7–25 m tall, young parts dark brown hairy, branchlets pale, lenticellate. Leaves 10–32 cm long; leaflets 7, rarely 5, opposite; petiolules 2–10 mm long, terminal one longest; leaflet blades oblong, elliptic- or obovate-oblong or ovate, apex obtuse, abruptly acuminate, base broad, obtuse or oblique, cuneate in terminal leaflets, margin entire, 5.5–19.5 cm × 2.5–9 cm, lower surface with scattered stellate scaly hairs, minutely glandular-punctate, midrib raised below, glossy. Inflorescences lax, 10–15 cm long, peduncles brown stellate scaly, flowers 1.5–2 mm long, on pedicels 1.5–2 mm long; calyx up to 2 mm long, 5-toothed, stellate scaly; petals cream, 2–4 mm long; staminal tube broadly urceolate, 2.5 mm long, anthers 5, protruding from top of truncate summit; ovary hairy, stigma orbicular, flat, peltate. Fruits bright orange-yellow, usually in large clusters, obovoid-oblongoid, 1.6–2 cm × 1.3–2 cm, fleshy, covered with brown minute scurfy stellate scales. **Fig. 74C.**

Rainforests from Bundaberg north. Flowers mainly spring, into summer.

4. TOONA (Endl.) M. Roemer

Deciduous or semi-evergreen trees; bark when crushed smells of garlic. Leaves paripinnate, sometimes imparipinnate. Flowers in terminal pendulous, widely branched thyrsiform panicles, unisexual, calyx free or 4–5-lobed; petals 5, free, longer than calyx in bud, imbricate, adnate at base to a short disc-like stipe; stamens 5, free, inserted on disc, anthers medifixed, staminodes usually filiform clavate; ovary 5-locular, 8–12-ovuled, stigma peltate, orbicular with glandular papillae. Capsules erect, ellipsoid or fusiform, membranous or thinly woody, 5-locular, 5-valved, central column thick, 5-angled; seeds up to 8 per loculus, winged at one or both ends.

About 15 species tropical Asia to Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Toona australis* (F. Muell.) Harms

RED CEDAR

Cedrela australis F. Muell.; *C. toona* Roxb.; *C. toona* var. *australis* (F. Muell.) C. DC. Deciduous tree up to 30 m tall, buttressed; bark brown, flaky; branchlets and peduncles lenticellate. Leaves 15–50 cm long; blades paripinnate; leaflets 10–14, rarely 18, opposite or subopposite; petiolules 0.5–1.3 cm long; leaflet blades elliptic-ovate or obliquely oblong-ovate, falcate, apex abruptly acuminate, base very oblique, usually broad, margin entire, 4.5–14.5 cm × 1.8–5.7 cm, sometimes hairy domatia in nerve axils below. Inflorescences 24–40 cm long, pedicels 2 mm long, articulate; calyx lobes 1 mm long; petals 5–6 mm long, basally keeled; filaments subulate, 3 mm long; stigma orbicular, glandular. Capsules 1.3–1.8 cm × 0.8 cm, 4–5-, rarely 6-valved, valves thin, dry, lenticellate; seeds flat, ellipsoid, 1.3–2 mm long, winged at both ends. **Fig. 74D.**

Rainforests on creek and river banks of chiefly coastal areas. Flowers fragrant, spring to early summer. Wood red, often highly figured when cut, durable and seasons well, popular as furniture wood when trees were plentiful. Trees sometimes cultivated for shade and ornament.

A form of this species which has hairy leaves, petioles, peduncles and flowers has been collected from the Warwick area. It was formerly known as var. *vestita* C. T. White when the species was known as *Cedrela toona*, but no combination has been made for it under *Toona australis*.

5. OWENIA F. Muell.

Dioecious trees with pinnate leaves, hairs simple. Flowers unisexual in axillary panicles; sepals 5, free, imbricate; petals 5, free, imbricate; staminal tube short with irregularly lobed margins, lobes forming a frill, or filaments free in upper half and terminated by 2 narrowly ovate-oblong appendages, anthers 8–10, inserted inside margin apically between filament appendages, staminodes slender; ovary 2–3-, rarely 4-locular, ovules solitary, styles abruptly expanded at apex to form a shallow disc bearing large conical 2–3-lobed stigma. Fruits 2–3-locular drupes, mesocarp thin, fleshy or leathery, endocarp very thick, hard and woody; seeds not arillate.

About 6 species endemic to Australia; 3 species south-eastern Queensland.

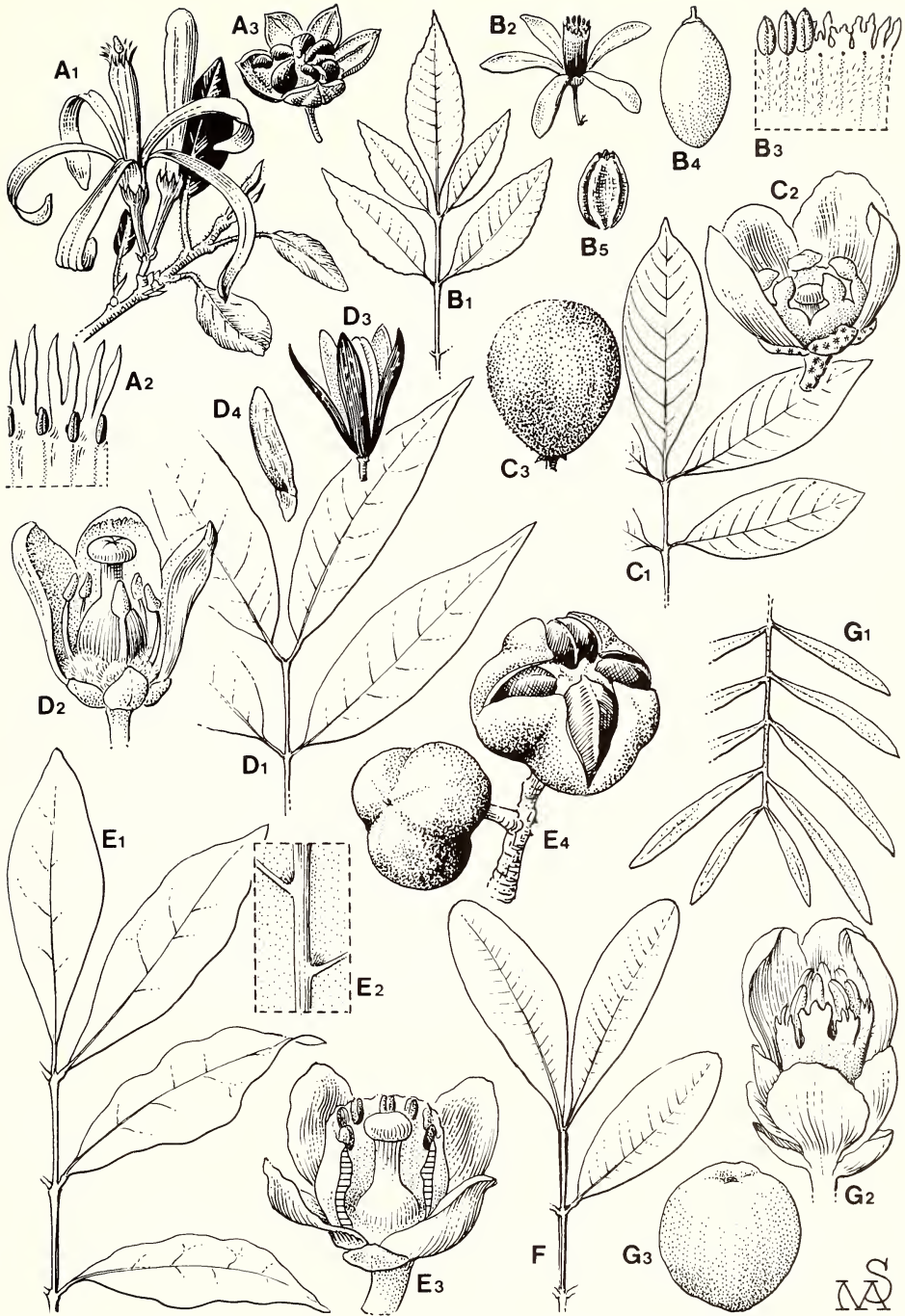


Fig. 74

MELIACEAE — A₁-A₃, *Turraea brownii*, A₁, part of flowering stem x1, A₂, part of staminal tube opened out x6, A₃, dehiscent fruit x1; B₁-B₅, *Melia azedarach* var. *australasica*, B₁, part leaf x $\frac{1}{2}$, B₂, flower x1, B₃, part of staminal tube opened out x6, B₄, fruit x1, B₅, seed x1; C₁-C₂, *Aglaia sapindina*, C₁, part leaf x $\frac{1}{6}$, C₂, flower, 1 petal removed to show staminal tube x8, C₁, fruit x1; D₁-D₄, *Toona australis*, D₁, part leaf x $\frac{1}{2}$, D₂, flower, 2 petals removed to show free stamens x6, D₃, dehiscent fruit x $\frac{3}{8}$, D₄, seed x1; E₁-E₄, *Synoum glandulosum*, E₁, part leaf x $\frac{1}{2}$, E₂, underside of leaflet showing hair tufts in vein axils x3, E₃, flower, part staminal tube removed x4, E₄, fruit x1; F-G *Owenia* spp. — F *O. venosa*, part leaf x $\frac{1}{2}$; G₁-G₃, *O. acidula*, G₁, part leaf x $\frac{1}{2}$, G₂, flower, 2 petals removed to show staminal tube x8, G₃, fruit x $\frac{3}{8}$.

- | | | |
|---|------------------------|---|
| 1. Leaves with usually 3 or 4 pairs of leaflets | 1. <i>O. venosa</i> | |
| Leaves with 7 or more pairs of leaflets | | 2 |
| 2. Leaflets 1-5 cm long | 2. <i>O. acidula</i> | |
| Leaflets 7-12 cm long | 3. <i>O. cepiodora</i> | |

1. *Owenia venosa* F. Muell.

CROW'S APPLE; ROSE ALMOND

Tree 3-18 m tall, with greyish scaly bark, young shoots resinous, branchlets glabrous, lenticellate. Leaves 6-17.5 cm long; blades paripinnate, rachis and upper portion of petiole usually winged in juvenile leaves; leaflets in 3-4 opposite or subopposite pairs; petiolules 2-5 mm long; leaflet blades coriaceous, elliptic-oblong or obovate-oblong, usually falcate, apex obtuse-emarginate, base cuneate, oblique, margin entire, slightly recurved, 2.5-9(-11) cm × 1.2-3(-3.5) cm, glabrous, glossy above, pale and dull below. Thyriform panicles many-flowered, 6.5-16.5 cm long; flowers subsessile; sepals up to 2.5 mm long; petals spreading, 5 mm long; staminal tube 3 mm long, irregularly lobed at apex, with fimbriate or toothed margin, anthers 8-10. Fruits reddish, globose, 2-3.2 cm diameter. **Fig. 74F.**

Common in depauperate rainforests of the coastal areas. Flowers spring-summer. Timber suitable for handles of axes, picks, flooring and scantlings.

2. *Owenia acidula* F. Muell.

EMU APPLE; GRUIE

Tree 3-8 m tall, branchlets scurfy with resin dots, shoots glutinous, glabrous. Leaves 8-18.5 cm long; blades paripinnate, rachis often narrowly winged; leaflets in 7-20, usually 10-17 opposite or subopposite pairs, usually sessile; leaflet blades elongate, narrowly linear-elliptic or linear-ovate, apex obtuse or acute mucronate, base oblique, cuneate, margin ± entire, 1-5 cm × 0.3-0.9 cm, usually larger towards top, glabrous with scattered resin dots, midrib prominent. Panicles usually simple, narrow, 4.5-12 cm long, many-flowered, pedicels up to 1 mm long; sepals 2 mm long; petals creamy, 4 mm long; staminal tube 3.5 mm long, usually irregularly toothed and frilled at apex, anthers 8. Fruits reddish-purple, globose-ovoid, 2.2-3.8 cm × 1.8-3 cm, resin-dotted. **Fig. 74G.**

Red sandy soil in Darling Downs and Burnett districts. Flowers spring-summer.

3. *Owenia cepiodora* F. Muell.

ONIONWOOD

Tree up to 30 m tall. Leaves 40-60 cm long; blades imparipinnate; leaflets 17-25, subopposite or alternate; petiolules 3-10 mm long; leaflet blades narrowly elliptic or narrowly ovate, apex acuminate, base oblique or cuneate, margin ± entire, 7-13.5 cm × 1.5-3.6, glabrous, glossy above, pale below. Panicle ca 10-20 cm long; sepals 1-2 mm long; petals deciduous, 3-4 mm long; staminal tube ca 2 mm long, irregularly lobed at apex, anthers 10. Fruits pinkish-red, up to 2 cm diameter.

Southern border areas. Flowers spring.

6. *DYSOXYLUM* Blume

Dioecious trees, bark when crushed smells of onions in some species, hairs simple. Leaves pinnate, without pellucid dots and lines, usually dark green; leaflets entire. Flowers bisexual or unisexual in axillary, often narrow, racemose, thyriform or spiked panicles; sepals 3-5, rarely 6, free or connate; petals 3-6, free or fused to lower or upper half of staminal tube; stamens 8-10, staminal tube cylindrical, margin entire, crenate, irregularly toothed or with 6-10, rarely 13 short obtuse truncate emarginate appendages, anthers alternating with appendages, inserted within throat; disc usually tubular with crenate margin; ovary 2-5-locular, with 1 or 2 ovules; stigma discoid, peltate. Fruits 2-5-valved loculicidal capsules; seeds usually with incomplete fleshy aril.

About 60 species, Indomalaysia, Australia, New Guinea, Polynesia and New Zealand; 13 species Australia; 4 species south-eastern Queensland.

- | | |
|--|------------------------------|
| 1. Leaflets usually without domatia; capsules densely rusty hairy | 2 |
| Leaflets usually with prominent domatia; capsules glabrous | 3 |
| 2. Leaves and petioles glabrous; capsules velvety tomentose | 1. <i>D. gaudichaudianum</i> |
| Leaves and petioles rusty hairy; capsules with straight stiff golden rusty hairs | 2. <i>D. rufum</i> |
| 3. Petiolules 5–8 mm long; capsules smooth | 3. <i>D. fraseranum</i> |
| Petiolules 1–3 mm long; capsules rough | 4. <i>D. muelleri</i> |

1. *Dysoxylum gaudichaudianum* (Adr. Juss.) Miq.

Didymocheton gaudichaudianum Adr. Juss.; *Dysoxylum decandrum* (Blanco) Merr.; *Dysoxylum amooroides* Miq.

Tree 10–13 m tall, bark greyish-brown, lenticellate, young parts appressed pubescent. Leaves drooping, up to 1.2 m long, mostly less than 0.7 m long; blades imparipinnate or paripinnate; leaflets 11–19, opposite or alternate; petiolules 3–5 mm long; leaflet blades oblong-ovate, apex abruptly obtusely acuminate, base subcordate, obtuse, to very oblique, 7–21.5 cm × 2.9–6(–8.5) cm, glabrous or rarely puberulent. Panicles 12–26(–52) cm long; flowers sessile; sepals 4–5, 3 mm long; petals creamy-white, 5, apex reflexed, 1.2 cm long, appressed tomentose, fused to staminal tube; staminal tube 8–9 mm long, apex 10-lobed, anthers 10. Capsules broadly obovoid or depressed globose, apiculate, 0.8–2.4 cm long, drying deeply wrinkled, rusty velvety tomentose. **Fig. 75B.**

Common in riverine rainforests from Mary R. northwards. Flowers autumn.

2. *Dysoxylum rufum* (A. Rich.) Benth.

RUSTY BEAN

Hartighsea rufa A. Rich.

Tree 7–10 m tall, young parts, petioles, inflorescences densely rusty villous, branchlets lenticellate. Leaves 20–60 cm long; blades usually imparipinnate; leaflets 9–22, opposite or alternate, somewhat pendulous; petiolules 2–5 mm long; leaflet blades elliptic-oblong to narrowly oblong-ovate, subfalcate, apex abruptly acuminate or acute-acuminate, base oblique, obtuse or subacute, 4.5–17 cm × 2–4.5 cm, usually glabrous above, puberulent below, domatia small or absent, olive green above. Panicles 18–23 cm long, pedicels up to 1 mm long; sepals 5, nearly free, 2 mm long, tomentose outside; petals pale cream tinged pink, 5, 1.4 cm long, velvety tomentose, fused to staminal tube; staminal tube 1.2 cm long, apex 10-lobed, pilose, anthers 10. Capsules pyriform or depressed obovoid-globose, ± 5-lobed, 2–3.2 cm × 2–2.8 cm, stiff golden rusty hairy. **Fig. 75A.**

Rainforest at high altitudes, usually along creek banks. Flowers spring to autumn.

3. *Dysoxylum fraseranum* (Adr. Juss.) Benth. ROSEWOOD; ROSE MAHOGANY

Hartighsea fraserana Adr. Juss.; *Dysoxylum beckleranum* C. DC.; *D. lessertianum* (Adr. Juss.) Benth.

Tree up to 30 m tall, bark grey or yellowish, scaly, young parts tomentose, branchlets ± pubescent, lenticellate. Leaves 6.5–26 cm long; blades paripinnate; leaflets 6–12, opposite; petiolules 5–8 mm long; leaflet blades elliptic-oblong, or subobovate-oblong, apex obtuse, abruptly acuminate, base cuneate, obtuse or acute, oblique, decurrent, 4–11.5 cm × 1.4–3.2(–4.5) cm, glabrous except midrib, usually with hairy domatia, glossy green. Inflorescences 6.5–12.5 cm long, pedicels 3–5 mm long; calyx 3 mm long, lobes toothed, puberulent; petals white, 7 mm long, puberulent, fused to staminal tube; staminal tube 5.5 mm long, apex irregularly lobed, anthers 9–10. Capsules cream, tinged pink, pyriform, 1.4–2.3 cm long; seeds red. **Fig. 75D.**

Common in rainforest in McPherson Ra., Great Dividing Ra. near Killarney and Cunninghams Gap, Mt. Glorious, Blackall Ra. and near Imbil. Flowers scented, spring and autumn. Fragrant red timber very durable and ornamental, used for cabinet work.

4. *Dysoxylum muelleri* Benth.ONIONWOOD; MIVA MAHOGANY;
RED BEAN; PENCIL CEDAR; TURNIPWOOD

Tree 8–25 m tall, bark pale flaky, smelling of onions or turnips when cut, young parts rusty villous tomentose, branchlets lenticellate. Leaves 16–45 cm long; blades usually paripinnate; leaflets 6–22, usually 15–19, opposite or subopposite; petiolules 1–3 mm long, hairy; leaflet blades oblong-ovate or oblong-elliptic, apex abruptly acuminate or obtuse, base obtuse, oblique, or very unequal, 3–10.5(–17.5) cm × 1.8–3.2(–6) cm, puberulent or ± glabrous, usually with hairy domatia, olive green. Panicles 5.5–36 cm long, pedicels up to 1 mm long; calyx 2 mm long, pubescent, 4-toothed; petals whitish, apex reflexed, hairy, 8–10 mm long, fused to staminal tube; staminal tube 8–10 mm long, apex subentire or crisped, pilose, anthers 8. Capsules golden brown, ± globose, 1.5–1.8 cm long, rough; seeds red. **Fig. 75C.**

Gallery rainforest and riverine forests of chiefly coastal areas of the region. Flowers autumn. Sapwood almost white, heartwood rich red colour, used for cabinet making. Also useful for ornament and shade.

7. *SYNOUM* Adr. Juss.

Small trees, hairs simple. Leaves imparipinnate; leaflets without pellucid dots or lines. Flowers in short axillary panicles; calyx deeply 4-, rarely 5-lobed; petals 4, rarely 5, free, imbricate; stamens 8–10, staminal tube cyathiform, apex irregularly and shallowly lobed, anthers 8, rarely 10, glabrous, inserted just inside staminal tube throat and partly exerted; ovary 2–3-locular, ovules 2 per loculus, style with discoid stigma. Fruits 2–3-valved loculicidal capsules, with 2, rarely 1 seed per loculus; seeds partly surrounded by a common thick fleshy aril fused abaxially to each seed.

2 species endemic Australia; 1 species south-eastern Queensland.

1. *Synoum glandulosum* (Smith) Adr. Juss.SCENTLESS ROSEWOOD;
BASTARD ROSEWOOD*Trichilia glandulosa* Smith

Tree 5–7 m tall, bark brown, scaly, young parts pubescent, branchlets lenticellate. Leaves 5–30 cm long; blades usually imparipinnate; leaflets 2–11, mostly 5–11, opposite; petiolules 0.5–1.5 cm long, terminal one largest, flexuose; leaflet blades oblong-ovate or elliptic or obliquely subobovate, apex obtuse or bluntly acuminate, base acute, decurrent, oblique in lateral leaflets, margin entire, slightly recurved, 2.4–10.5(–15.5) cm × 1.2–4.5 cm, glabrous, hairy domatia usually present, glossy above. Panicles axillary or pseudoterminal, 1.5–5.5 cm long, 9–20-flowered, peduncles puberulent, pedicels 2–3 mm long; calyx 1 mm long; petals white flushed pink, up to 6 mm long; staminal tube 5 mm long, glabrous, apex crenulate or truncate, anthers 10; style stout, up to 3 mm long, stigma orbicular, flat, peltate. Fruits reddish, depressed-subglobose, 0.8–1.5 cm long, usually 3-furrowed; seeds bright red. **Fig. 74E.**

Common in margins of rainforests or as secondary growth, in coastal rainforests, usually on creek banks or in gullies as far north as Bundaberg. Flowers perfumed, summer to autumn. Timber suitable for brush stocks, flooring, cases.

8. *PSEUDOCARAPA* Hemsley

Trees, hairs simple. Leaves paripinnate; leaflets without pellucid lines or dots. Flowers in axillary panicles, bisexual; calyx 4–5-lobed; petals 3–5, free, usually valvate; stamens 8–12, staminal tube cylindrical, apex with short emarginate appendages, anthers glabrous, alternate with appendages, inserted within throat of staminal tube, partly exerted; ovary 2–4-locular, 2 ovules per loculus, stigma narrowly discoid with central depression. Fruits 3–4-valved loculicidal capsules, 2, rarely 1 seed per loculus; seeds arillate.

5–6 species, Ceylon, New Guinea, eastern Australia and New Caledonia; 1 species Australia, occurring in south-eastern Queensland.

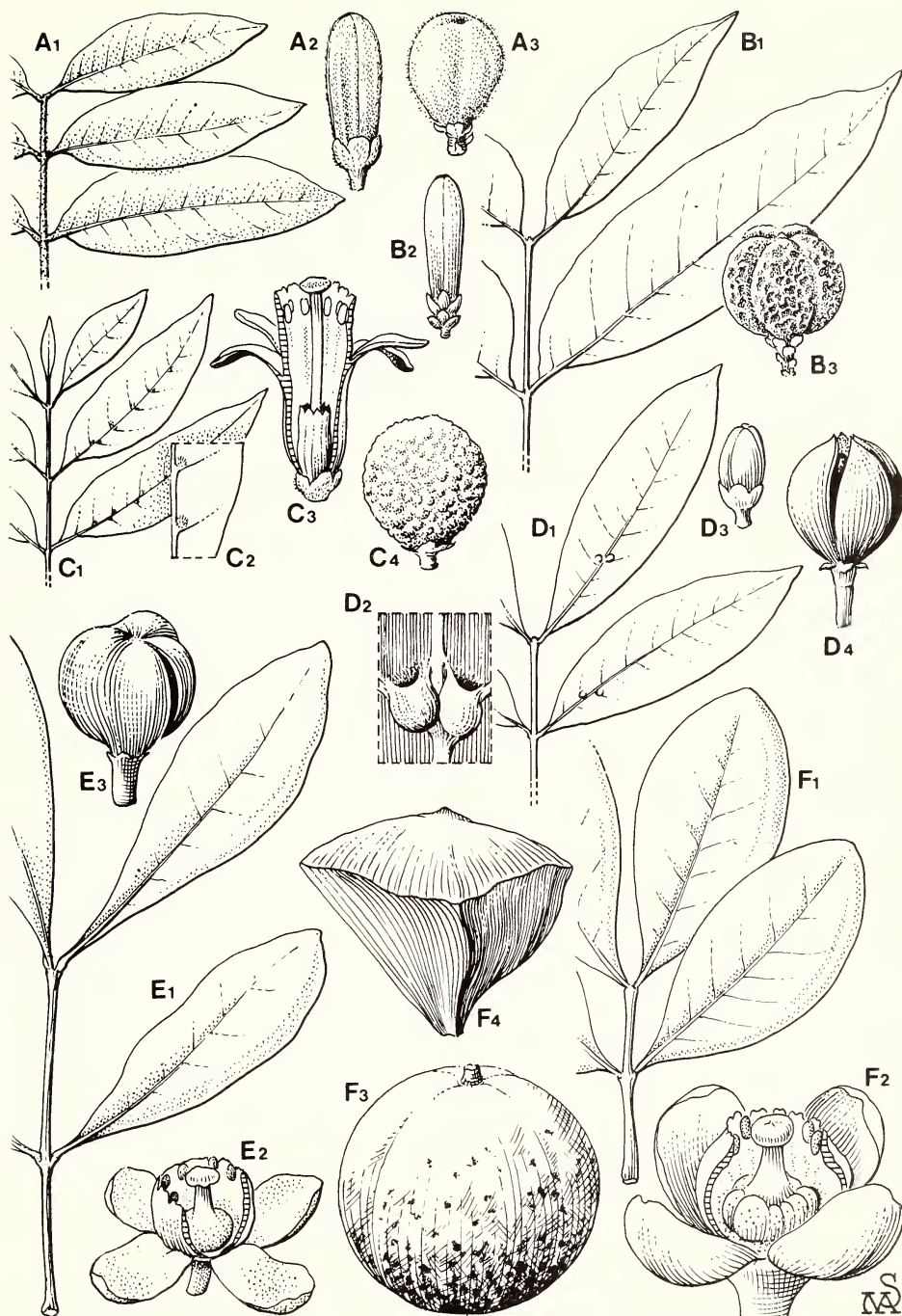


Fig. 75

MELIACEAE — A-D *Dysoxylum* spp. — A₁-A₃, *D. rufum*, A₁, part leaf $\times \frac{1}{2}$, A₂, flower bud $\times 2$, A₃, fruit $\times 1$; B₁-B₃, *D. gaudichaudianum*, B₁, part leaf $\times \frac{1}{2}$, B₂, flower bud $\times 2$, B₃, fruit $\times \frac{3}{2}$; C₁-C₄, *D. muelleri*, C₁, part leaf $\times \frac{1}{2}$, C₂, domatia on leaflet undersurface $\times 1$, C₃, flower showing tubular disc $\times 3$, C₄, fruit $\times 1$; D₁-D₄, *D. fraserianum*, D₁, part leaf $\times \frac{1}{2}$, D₂, domatia on leaflet undersurface $\times 3$, D₃, flower bud $\times 2$, D₄, fruit $\times 1$; E₁-E₃, *Pseudocarapa nitidula*, E₁, part leaf $\times 1$, E₂, flower, part staminal tube removed $\times 4$, E₃, fruit $\times 1$; F₁-F₄, *Xylocarpus granatum*, F₁, part leaf $\times \frac{1}{2}$, F₂, flower, part staminal tube removed $\times 4$, F₃, fruit $\times \frac{1}{2}$, F₄, seed $\times \frac{1}{2}$.

1. *Pseudocarapa nitidula* (Benth.) Merr. & Perry INCENSEWOOD; BOG ONION
Amoora nitidula Benth.

Tree up to 30 m tall, bark strong-smelling, young parts pubescent, branchlets pale, lenticellate, glabrous. Leaves alternate, up to 15 cm long; blades paripinnate; leaflets 2-4, rarely 6, opposite erect; petiolules 0-1.4 cm long; leaflet blades elliptic, elliptic-oblong or obovate-oblong, apex obtuse or abruptly and shortly acuminate, base acute, decurrent, margin entire, slightly recurved, 4.5-14.5 cm × 1.6-5.5 cm, glabrous, midrib keeled below, slightly channelled above, shiny above. Inflorescences thyriform panicles, 3.5-9.5 cm long, usually below leaves, peduncles puberulent, pedicels 0.5-1 cm long; calyx 1.5 mm long; petals white, 5, 5-6 mm long, glabrous; staminal tube 5 mm long, apex crenulate, anthers 12, slightly protruding; ovary 2-3-locular, ovule 1 per loculus, style 2.5 mm long, stigma flat, circular, peltate. Fruits brownish-yellow, pyriform or obovoid, narrowing into thick stipe, 1-2.2(-3.6) cm long, rugose, 3-, rarely 2-valved; seeds scarlet, ovoid. **Fig. 75E.**

In or near rainforests. Flowers mainly autumn. Wood pale often with fragrance like red cedar, suitable for flooring, cases, scantling, brush stocks.

9. XYLOCARPUS Koenig

Semi-evergreen trees or shrubs, often in mangrove swamps. Leaves paripinnate; leaflets usually in 2 or 3 pairs; leaflet blades entire, glabrous. Flowers in lax axillary thyriform panicles, unisexual; calyx deeply 4-lobed, valvate; petals 4, free; stamens 8, filaments connate into shortly 8-fid tube, anthers alternating with segments, included; ovary basally enveloped by and adnate to fleshy disc, 4-locular, 3 or 4, rarely 6 ovules per loculus, stigma peltate, orbicular. Capsules pendulous, almost spherical, leathery, fleshy, 4-valved, valves thick, woody; seeds 8-20, tetrahedral or pyramidal with angular margins.

3 species eastern Africa, Australia, New Guinea, Pacific Is.; 3 species Australia; 1 species south-eastern Queensland.

1. *Xylocarpus granatum* Koenig

CEDAR MANGROVE;
CANNONBALL MANGROVE

Carapa obovata Blume

Shrub or small tree, buttressed, with horizontal plate-like pneumatophores raised above mud, bark pale brownish-yellow, mottled with grey patches, smooth, branchlets lenticellate, glabrous. Leaves up to 20 cm long; leaflets 2-4, rarely 6, opposite or subopposite; petiolules 0.4-0.7(-1.2) cm long; leaflet blades bright green, obovate-oblong to elliptic-oblong, apex obtuse, rarely ± acuminate, base acute, rarely obtuse, decurrent, 5-11.5(-17) cm × 3.5-4.5(-7.2) cm, midrib channelled above, keeled below, shining above. Inflorescences 4-8.5 cm long, 9-34-flowered, pedicels 6-10 mm long; calyx 2 mm long, glabrous; petals whitish, concave, 7 mm long, glabrous; staminal tube 6 mm long, glabrous, apex with 8 irregularly dentate lobes; style stout, up to 2 mm long. Fruits globose, 10-20 cm diameter. **Fig. 75F.**

Shoreward side of mangrove swamps north of Fraser I. Flowers spring-summer. The wood resembles *Toona australis*, said to be good cabinet timber.

75. AKANIACEAE

Trees. Leaves alternate, exstipulate, imparipinnate. Panicles axillary or supra-axillary; flowers bisexual, actinomorphic; calyx campanulate, 5-lobed, lobes imbricate, unequal; petals 5, clawed, contorted; stamens 8 or 9, biseriate, filaments free; ovary 3-locular with 2 ovules per loculus, style simple. Fruits loculicidal capsules, 3-valved, valves coriaceous-woody; seeds globose-ovoid, testa crustaceous, endosperm coriaceous.

1 genus with 1 species endemic to eastern Australia, occurring in south-eastern Queensland.

1. **AKANIA** Hook. f.

Characters of the family.

1. **Akania lucens** (F. Muell.) Airy Shaw

TURNIPWOOD

Cupania lucens F. Muell.; *Akania hillii* Hook. f.

Slender trees 9–13 m tall, glabrous except inflorescences; bark and young wood with odour of turnips; branchlets lenticellate. Leaves with petioles 12–16 cm long; rachis 40–60(–80) cm long; leaflets 11–19, rarely up to 31, usually opposite, petiolules 0.5–1.5 cm long; blades light green, very shiny, narrowly oblong to elliptic-ovate, apex acute-acuminate, base rounded or subcordate, oblique, margin irregularly spinose serrate, rarely subentire, 13–29 cm × 2.2–5 cm, lower surface subglaucous with ovate or reniform whitish dots inside final reticulations. Panicles 9–13(–30) cm × 10–15 cm; pedicels up to 8 mm long; flowers white or pale pink, scented; calyx pubescent, lobes *ca* 2 mm long; petals 10 mm long; filaments glabrous; ovary tomentose, stigma obscurely 3-lobed. Capsules ovoid to pyriform, 2–2.5 cm long; seeds 10 mm × 8 mm. **Fig. 77F.**

Fairly common in coastal rainforest as far north as Blackall Ra. Flowers spring.

76. **TREMANDRACEAE**

Slender, heath-like shrublets. Leaves alternate, opposite or verticillate, simple. Flowers solitary, axillary, bisexual, actinomorphic; sepals 4–5, rarely 3, free, valvate; petals 4–5, rarely 3, hypogynous, induplicate-valvate; stamens twice number of petals, hypogynous, free, anthers 2–4-locular, opening by a single apical pore; ovary 2-locular, ovules 1–2, rarely 3 per loculus, style slender. Fruits compressed capsules, dehiscent.

3 genera with 25 species endemic Australia; 1 genus with 1 species south-eastern Queensland.

1. **TETRATHECA** Smith

Leaves alternate or verticillate, glabrous or glandular-pubescent. Anthers continuous with filaments, 2-locular, or if 4-locular then 2 in front of the others. Seeds with appendage to the chalaza, usually contorted.

20 species Australia; 1 species south-eastern Queensland.

1. **Tetratheca thymifolia** Smith

Glabrous to pubescent subshrub. Leaves in whorls of 3–5, mostly 4, ± sessile; blades linear, elliptic or obovate, apex acute, base attenuate, margin recurved, 0.3–2 cm × 0.1–0.8 cm, glabrous or tuberculate pubescent above, simply pubescent beneath. Flowers on slender peduncles 1–2 cm long; sepals 2.5–3 mm long; petals pink to deep reddish-purple, 0.5–1.2 cm long. Fruits compressed, obovate to broadly obovate, 6–7 mm long, often pubescent, style persistent. **Fig. 76D.**

Sandy wallum heath areas or on granite or sandstone hills. Flowers mainly spring and autumn, but sporadically throughout the year.

77. **POLYGALACEAE**

Shrubs, climbers or herbs. Leaves alternate or opposite, exstipulate; blades simple. Flowers bisexual, ± zygomorphic; sepals 4–5, free, inner 2 larger and often petaloid; petals 3–5, outer 2 free, or united with lowermost to form keel, upper 2 free or minute or absent, sometimes all connivent; stamens 8, rarely 4 or 5, united into a sheath beyond middle, sheath split along upper side, anthers opening by an apical pore, rarely 2-valved; ovary superior, 2-, rarely 3–5-locular, ovules 1 per loculus, pendulous. Fruits capsules or drupes.

17 genera with more than 1000 species temperate and tropical; 3 genera with *ca* 40 species Australia; 3 genera with 15 species south-eastern Queensland.

- | | | |
|--|----------------------|---|
| 1. Stamens 4-5 | 1. <i>Salomonina</i> | 2 |
| Stamens 8 | | |
| 2. Keel 3-lobed at apex or with a lobate crest | 2. <i>Polygala</i> | |
| Keel entire or emarginate, not crested | 3. <i>Comesperma</i> | |

1. SALOMONIA Lour.

Small annual herbs, sometimes parasitic on roots. Leaves small. Flowers crowded in terminal racemes or spikes; sepals unequal, inner 2 larger; petals 3; stamens united into a sheath adnate to base of corolla, anthers 4-5, with a terminal pore; ovary 2-locular. Capsules membranous, loculicidally dehiscent; seeds orbicular, strophiole very small or absent.

About 12 species south-eastern Asia to Pacific Is., North America; 1 species Australia, occurring in south-eastern Queensland.

1. *Salomonina ciliata* (L.) DC.

Polygala ciliata L.; *Salomonina oblongifolia* auct. non DC., F. M. Bailey

Erect, up to ca 15 cm tall. Leaves sessile; blades ovate-oblong, apex obtuse, mucronate, 3-10 mm × 2-4 mm, ciliate or glabrous. Racemes 2-3 cm long; flowers pink, ca 3 mm long; anthers 4. Capsules flat, obreniform, apex ± notched, ca 2 mm wide, bordered with a fringe of hairs or fine teeth. **Fig. 76C.**

Sandy soil in coastal heath in northern parts of the region. Flowers summer.

2. POLYGALA L.

Herbs or shrubs. Inflorescences racemes or spikes, rarely panicles, terminal or lateral; sepals unequal, inner 2 large, petaloid; petals 3, united, split above, keel either apically 3-lobed or with a lobed crest; stamens 8, united into a sheath split above, basally adnate to corolla. Capsules usually membranous, compressed, emarginate or didymous, loculicidally dehiscent; seeds mostly strophiolate.

More than 500 species, widely distributed; ca 16 species Australia; 5 species south-eastern Queensland.

- | | |
|---|--------------------------|
| 1. Flowers 5 mm long or longer | 2 |
| Flowers up to 3.5 mm long | 3 |
| 2. Herb up to 20 cm tall; inner calyx lobes 0.5-0.6 cm long | 1. <i>P. japonica</i> |
| Shrub, ca 2 m tall; inner calyx lobes 1-1.5 cm long | 2. <i>P. virgata</i> |
| 3. Inner calyx lobes green, not petaloid | 3. <i>P. linarifolia</i> |
| Inner calyx lobes white or cream, petaloid | 4 |
| 4. Racemes terminal; flowers 2.5-3.5 mm long | 4. <i>P. duartena</i> |
| Racemes leaf-opposed; flowers up to 2.5 mm long | 5. <i>P. paniculata</i> |

1. *Polygala japonica* Houtt.

Polygala veronicea F. Muell.

Prostrate or ascending perennial, 10-20 cm tall; stems pubescent. Leaves subsessile; blades usually ovate to elliptic, 0.3-2.2 cm × 0.3-0.8 cm, puberulous at least on midrib and margin, prominently reticulately veined. Racemes lateral, 1-3 cm long; corolla purplish, 5-6 mm long. Capsules orbicular, emarginate, ca 4 mm diameter, fairly widely winged all round; caruncle small with 3 membranous appendages half as long as seed. **Fig. 76B.**

Sandy soil in grassy eucalypt open forest. Flowers spring-summer.

2. **Polygala virgata* Thunb.

Perennial shrub 1–2 m tall, rarely up to 5 m tall; stems sparsely puberulent. Petioles 2–4 mm long; blades very narrowly obovate, occasionally narrowly elliptic, apex acute to obtuse, apiculate, base tapered, 1–4.5(–7) cm × 0.1–0.5 cm, sparsely puberulent beneath. Racemes terminal, 4–10 cm long, pedicels 4–8 mm long; corolla purplish, 1–1.5 cm long, keel with conspicuous crest. Capsules obovate in outline, apically notched, 6–7 mm long, winged all round, 0.5 mm wide; caruncle small.

Native of southern Africa; naturalized in a few areas around Brisbane and Toowoomba. Flowers summer–autumn.

3. *Polygala linariifolia* Willd.

Polygala arvensis Willd. var. *stenosepala* Benth.: *P. chinensis* L. var. *stenosepala* (Benth.) Domin; *P. stenoclada* Benth. var. *stenosepala* Benth.; *P. gabrielae* Domin

Annual or perennial herb, showing wide variation in habit, shape of leaves and size of inflorescence; stems puberulous. Leaf blades linear-oblong, narrowly elliptic or obovate, 0.3–3.5 cm × 0.1–0.8 cm, ± glabrous. Racemes axillary or supra-axillary, 1–9 cm long; corolla bluish-purple; rarely white, ca 3 mm long. Capsules obovate in outline, apex emarginate, 3–4 mm long; seeds black with long white hairs, caruncle with 3 short membranous appendages up to half as long as seed.

Sandy soils in eucalypt open forest and woodland. Flowers summer.

4. **Polygala duartena* St.-Hil.

Erect little-branched perennial, 15–30 cm tall; stems sparsely puberulent. Leaf blades linear to narrowly ovate, apex 0.4–3.5 cm × 0.1–0.6 cm, glabrous. Racemes terminal, rather densely flowered, 1–5 cm long, pedicels short; corolla cream, 2.5–3.5 mm long. Capsules ± elliptic, ca 3.5 mm long, often winged on one side; seeds tomentose, caruncle small with membranous appendages as long as seed.

Native of South America; naturalized in the Beaudesert area in pasture and on roadsides. Flowers spring–summer.

5. **Polygala paniculata* L.

Erect much-branched annual, 10–50 cm tall; stems puberulous, with minute stalked glands. Petioles short; blades narrowly elliptic to linear-ovate, 0.5–2 cm × 0.1–0.25 cm. Racemes leaf-opposed, 2–15 cm long, pedicels 0.7–1 mm long; corolla white, 2–2.5 mm long. Capsules oblong, apically notched, ca 2 mm long, glabrous, almost wingless; seeds black with short white hairs, caruncle with 2 membranous appendages up to half as long as seed.

Native of tropical America; naturalized in eucalypt open forest usually near the sea. Flowers spring–summer.

3. COMESPERMA Labill.

Herbs or subshrubs, erect or climbing. Leaves alternate. Racemes terminal, often short and corymb-like; sepals unequal, inner 2 large and petaloid; petals 3, keel longer than subconnivent lateral ones, entire or emarginate, not crested; stamens 8; ovary 2-locular. Capsules narrowly cuneate, base attenuate, substipitate, or suborbicular without a stipe, loculicidally dehiscent; seeds with a small linear strophiole, testa usually with a comb of long hairs (coma).

About 30 species Australia, New Guinea; 23 species Australia; 9 species south-eastern Queensland.

- | | |
|--|----------------------------|
| 1. Leaves absent or scale-like, stems not twining | 2 |
| Leaves not scale-like, at least 5 mm long, or if absent then stems twining | 3 |
| 2. Capsules 3.5–4 mm long; seeds without a coma; pedicels 2.5–3 mm long | 1. <i>C. sphaerocarpum</i> |
| Capsules 8.5–9 mm long; seeds with a coma; pedicels 1–2 mm long | 2. <i>C. defoliatum</i> |

- | | | |
|---|---|---|
| 3. Leaves distinctly broadest at base
Leaves often oblong, not distinctly broadest near base | 3. <i>C. patentifolium</i> | 4 |
| 4. Branchlets hispidulous, hairs 0.3-0.5 mm long
Branchlets glabrous or puberulous, hairs up to <i>ca</i> 0.1 mm long | 4. <i>C. hispidulum</i> | 5 |
| 5. Stems twining; leaves 2-6.5 cm long, sometimes absent
Stems erect, not twining; leaves rarely more than 2.5 cm long | 5. <i>C. volubile</i> | 6 |
| 6. Leaves less than 2 mm wide; flowers less than 4 mm long
Leaves 1.5-4 mm wide; flowers 4-7.5 mm long | 6. <i>C. breviflorum</i> | 7 |
| 7. Branchlets glabrous or sparsely puberulous; leaves 2-5(-7) times as long
as wide
Branchlets puberulous, rarely glabrous, and then leaves 6-10, rarely -15
times as long as wide | 7. <i>C. retusum</i> | 8 |
| 8. Leaves 0.5-1.1 cm \times 0.15-0.25 cm, less than 6.5 times as long as wide;
capsule 10 mm long
Leaves 1-1.5(-4) cm \times 0.15-0.4 cm, 6-10(-15) times as long as wide;
capsule 7-9 mm long | 8. <i>C. ericinum</i>
9. <i>C. esulifolium</i> | |

1. *Comesperma sphaerocarpum* Steetz

Bredemeyera sphaerocarpa (Steetz) van Steenis

Perennial, stout rootstock with erect or ascending glabrous or puberulent stems, up to 40 cm tall. Scale leaves up to *ca* 2.5 mm long at base of plant. Racemes terminal, up to 9 cm long, pedicels 2.5-3 mm long; flowers violet or blue, 5-7 mm long; inner sepals largest and most conspicuous floral segments. Capsules orbicular, 3.5-4 mm diameter; seeds lenticulate, basal hairs cohering into a short appendage, not forming a definite coma.

Eucalypt open forest in coastal areas and near Stanthorpe. Flowers summer.

2. *Comesperma defoliatum* F. Muell.

Bredemeyera defoliata (F. Muell.) Chodat

Perennial, stout rootstock with erect glabrous stems, up to 60 cm tall. Scale leaves up to 3.5 mm long, or absent. Racemes terminal, up to 10 cm long, pedicels 1-2 mm long; flowers blue, 5-5.5 mm long; inner sepals largest and most conspicuous floral segments. Capsules rounded at end, narrowed to base, 8.5-9 mm \times *ca* 3 mm. **Fig. 76A.**

Seasonally waterlogged sand in coastal heath and in a few inland localities. Flowers summer.

3. *Comesperma patentifolium* F. Muell.

Comesperma ericinum DC. var. *patentifolium* (F. Muell.) Benth.

Shrub up to *ca* 1 m tall, branchlets hispidulous. Leaf blades narrowly ovate, base truncate or slightly cordate, margin inflexed, 0.8-1(-1.3) cm \times 0.15-0.3 cm, 4-5, rarely 3 times as long as wide, glabrous. Racemes rather loose, up to 3 cm long; flowers purplish, occasionally white, 5-5.5 mm long. Capsules slightly emarginate, narrowed to base, 1-1.1 cm \times 0.4-0.45 cm.

Known only from sandy soil in eucalypt communities in the western part of the region. Flowers spring.

4. *Comesperma hispidulum* Pedley

Shrub up to 2.5 m tall, branchlets hispidulous. Leaf blades narrowly oblong, concave, (1-)1.5-2(-2.3) cm \times 0.2-0.35 cm, 4-8 times as long as wide, glabrous. Inflorescences loose terminal corymbose racemes, up to 4 cm long, pedicels 4-6 mm long; flowers purplish, 4.5-5.5 mm long. Capsules emarginate, narrowed to base, 0.9-1 cm \times 0.3-0.4 cm.

Eucalypt communities on sandy soil in coastal districts south from Fraser I. Flowers spring to early summer.

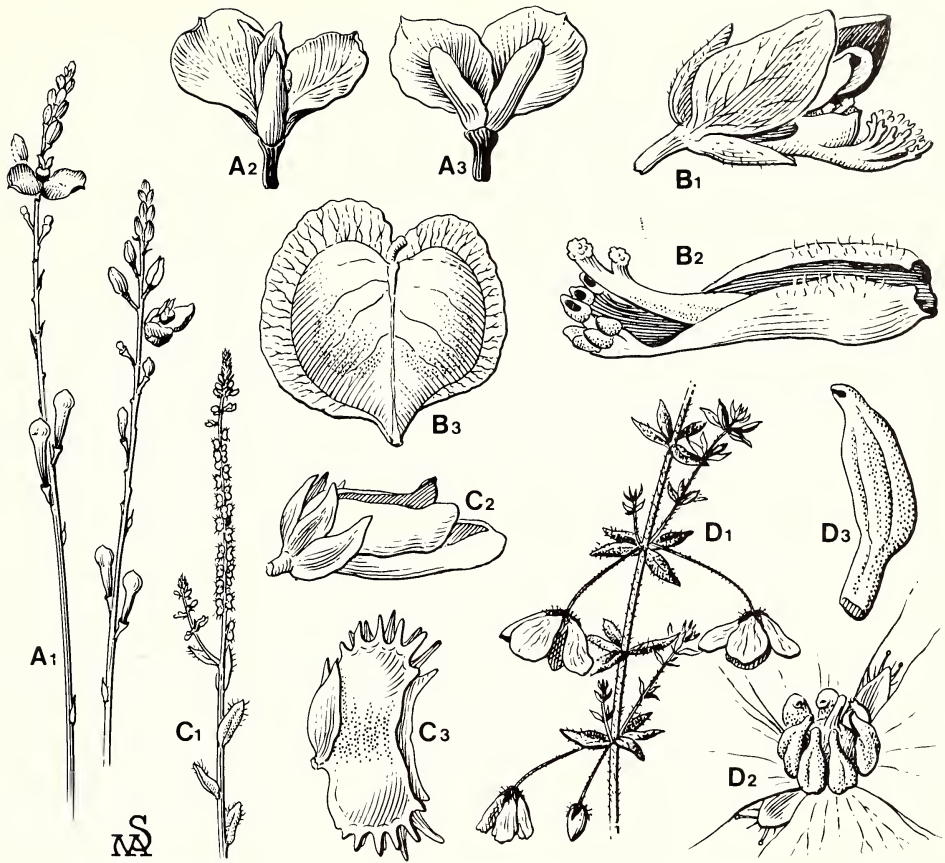


Fig. 76

A-C POLYGALACEAE – A₁-A₃, *Comesperma defoliatum*, A₁ inflorescence x1, A₂ flower from below x3, A₃ flower from above x3; B₁-B₃, *Polygala japonica*, B₁ flower x6, B₂ staminal tube with stigma and style x12, B₃ fruit x6; C₁-C₃, *Salomonina ciliata*, C₁ inflorescence x1, C₂ flower x12, C₃ fruit x12; D TREMANDRACEAE – D₁-D₃, *Tetraheca thymifolia*, D₁ part of flowering stem x1, D₂ flower showing stamens and pistil x6, D₃ anther with terminal pore x12.

5. *Comesperma volubile* Labill.

Bredemeyera volubilis (Labill.) Chodat

Twining shrub, branchlets ribbed, glabrous. Leaves sparse, apparently absent from some plants, variable in size and shape on same plant; blades linear to narrowly ovate or narrowly obovate, 2–6.5 cm × 0.2–0.5 cm, 5–15, rarely –20 times as long as wide, glabrous. Racemes terminal on short branches towards ends of stems, 2–5 cm long, pedicels 3–5 mm long; flowers bluish or purplish-pink, 5.5–7.5 mm long. Capsules narrowed to base, 1.2 cm × 0.25 cm.

Eucalypt communities on infertile soils in coastal areas and on richer soils near rainforest in mountainous areas. Flowers spring.

6. *Comesperma breviflorum* Pedley

Subshrub ca 50 cm tall, branchlets glabrous. Leaf blades linear, apex acute, 0.7–1.5 cm × 0.1–0.12 cm, 9–15 times as long as wide, glabrous. Racemes terminal, 6–8 cm long, longer in fruit, pedicels 2–3 mm long; flowers 3–3.5 mm long. Capsules unknown.

Rare, known only to occur on Mt. Greville and Mt. Ernest. Flowers early summer.

7. *Comesperma retusum* Labill.

Bredemeyera retusa (Labill.) Chodat

Shrub, branchlets glabrous or sparsely puberulent, glabrous. Leaf blades elliptic or oblong, flat, apex mucronulate or acuminate, somewhat hyaline, 0.7–1.2(–1.5) cm × 0.15–0.3(–0.4) cm, 2–5(–7) times as long as wide, glabrous. Inflorescences rather short, pedicels 3–5.5 mm long; flowers purple, 5–6.5 mm long. Capsules retuse, umbonate, narrowed to base, ca 10 mm × 2.5 mm.

Sandy soils near Stanthorpe, and less common on Fraser I. and Bribie I. Flowers early summer.

8. *Comesperma ericinum* DC.

Bredemeyera ericina (DC.) Chodat

Slender shrubs up to 1 m tall, branchlets minutely puberulous. Leaf blades 0.5–1.1 cm × 0.15–0.25 cm, 3.7–6.5 times as long as wide, glabrous. Inflorescences rather open, 2–3 cm long, pedicels 4–5 mm long; flowers purplish, 5–6.5 mm long. Capsules truncate umbonate, abruptly contracted in lower half, 10 mm × 3 mm.

Coastal heaths south of Brisbane and probably endangered because of urban development. Flowers spring to early summer.

9. *Comesperma esulifolium* (Gandoger) Pedley

Comesperma ericinum DC. forma *esulifolium* Gandoger

Shrub ca 1 m tall, branchlets puberulous, rarely glabrous. Petioles 1 mm long; blades narrowly oblong, margin recurved, 1–2.5(–4) cm × 0.2–0.4 cm, 6–10(–15) times as long as wide, glabrous. Inflorescences rather loose, 2–3 cm long, glabrous, pedicels 4–7 mm long; flowers purple or rarely white, 6–7.5 mm long. Capsules truncate, umbonate, abruptly narrowed in lower part, 7–9 mm × 3–3.5 mm.

Confined to the McPherson Ra. on the edges of cliffs and in eucalypt communities. Flowers mainly spring to early summer.

78. ANACARDIACEAE

Trees or shrubs, often with resinous bark. Leaves alternate, rarely opposite, exstipulate, simple or compound. Flowers bisexual or unisexual, actinomorphic; calyx 3–5-lobed or 3–5-parted; petals 3–5; stamens 10 or 15, rarely numerous, alternate with petals, inserted round disc; ovary superior, 1–5-locular, ovules solitary, styles 1–5. Fruits usually drupes.

60 genera with 600 species, chiefly tropical, also Mediterranean, eastern Asia and America; 8 genera with 11 species Australia; 4 genera with 5 species south-eastern Queensland.

- | | | |
|--|------------------------|---|
| 1. Fruits broadly subturbinate, 2–4 cm diameter, 10–12-locular; leaflets usually with prominent domatia | 1. <i>Pleiogynium</i> | |
| Fruits globose or ovoid, less than 1 cm diameter, 1-locular; leaflets without domatia, sometimes with tufts of hairs in the axils of the veins | | 2 |
| 2. Leaflets subsessile or sessile; lateral nerves numerous, straight and parallel; fruits globose, reddish | 2. <i>Schinus</i> | |
| Leaflets petiolulate; lateral nerves not as above; fruits globose or ovoid, not reddish | | 3 |
| 3. Terminal leaflet not reduced; leaflets narrowly elliptic, subequal; flowers red; drupe globose, brown | 3. <i>Rhodosphaera</i> | |
| Terminal leaflet absent; leaflets ovate-elliptic, falcate, asymmetrical; flowers greenish-white; drupe obliquely ovoid | 4. <i>Euroschinus</i> | |

1. PLEIOGYNIUM Engl.

Trees. Leaves imparipinnate, terminal leaflet on long stalk. Inflorescences in upper leaf axils; calyx 5-partite, lobes imbricate; petals imbricate; stamens 10, rudimentary in females; ovary subglobose, depressed, 5-12-locular, styles 10-12, divergent. Drupes broadly turbinate with fleshy exocarp and thick woody endocarp.

2 species Philippines, New Guinea and Australia; 1, possibly 2 species Australia; 1 species south-eastern Queensland.

1. *Pleiogynium timorens* (DC.) Leenh. BURDEKIN PLUM; TULIP PLUM
Pleiogynium cerasiferum (F. Muell.) Domin; *P. solandri* (Benth.) Engl.; *Spondias acida* Soland.; *S. pleiogyna* F. Muell.; *S. solandri* Benth.

Tree up to 15 m tall; branchlets lenticellate, younger parts pubescent, others glabrous. Petioles 4-8.5 cm long; leaflets 7-11 in opposite pairs, lateral petiolules 2-5 mm long, terminal 1.5-2.5 cm long; leaflet blades elliptic or ovate, apex obtuse, 3.5-10.5 cm × 2.5-4 cm, glabrous, usually with prominent domatia. Male flowers in thyriform panicles 9-22 cm long; flowers 2-4 mm across, pedicels 2-3 mm long; filaments subulate; disc fleshy, crenulate; female flowers in slender racemes 3-4 cm long; flowers up to 5.5 mm across, pedicels 1 mm long; ovaries 10-12-lobed. Drupes purplish when ripe, 2-4 cm diameter, fleshy. **Fig. 77D.**

Usually in mixed forests along coast on sandy soil, from northern parts of the region. Fruits edible, usually used in preserves.

2. SCHINUS L.

Resinous trees or shrubs, young branchlets usually zigzag at tips. Leaves pinnate, rachis usually narrowly winged; leaflets sessile or subsessile. Flowers in terminal or axillary thyrses or contracted racemes, pedicels obconically thickened, articulate; calyx 5-partite, lobes imbricate; petals 5, imbricate, erect; stamens 10, inserted outside crenulate disc; ovary globose, styles 3, divergent, stigmas capitate. Drupes small, globose, spicy aromatic, oily, with thin fragile skin.

30 species Mexico to Argentina; 2 species introduced and naturalized Australia, occurring in south-eastern Queensland.

- | | |
|--|------------------------------|
| 1. Branchlets drooping; leaflets 9-19, terminal one very reduced | 1. <i>S. molle</i> |
| Branchlets rigid; leaflets 5-9, terminal one not reduced | 2. <i>S. terebinthifolia</i> |

1. **Schinus molle* L.

PEPPERINA

Tree up to 8 m tall; branchlets pendulous, puberulent or glabrous. Petioles 3.5-5.5 cm long; leaflets 9-19, opposite or subopposite, sessile; leaflet blades falcate, narrowly ovate, apex tapered, apiculate, base acute or obtuse, oblique, margin entire (juveniles serrulate), 2-4.5 cm × 0.3-0.6 cm, glabrous, lateral nerves numerous, prominent, oblique, parallel. Male panicles 7-10 cm long, female smaller; pedicels 1.5-2 mm long; calyx lobes ca 1 mm long; petals white, 2.5 mm long. Drupes shining, reddish-pink, globose, ca 5 mm diameter. **Fig. 77B.**

Native of tropical America; naturalized in Moreton and Darling Downs districts. Flowers and fruits late spring to early autumn.

S. molle can be confused with *Owenia acidula* (Meliaceae) when sterile, the latter differs in having brownish dots on both surfaces of leaflets, lateral nerves also not visible.

2. **Schinus terebinthifolia* Raddi

BROAD-LEAF PEPPER TREE

Spreading tree up to 16 m tall; branchlets rigid, with small lenticels, younger parts and peduncles pubescent or puberulent. Petioles 2-3 cm long, swollen at base; leaflets 5-9, opposite, subsessile; leaflet blades dark green, elliptic or ovate-oblong, apex obtuse or subacute, base obtuse, cuneate and decurrent in terminal leaflet, margin serrulate or entire, 3-8 cm × 1.5-3.5 cm, glabrous, lateral nerves few, straight. Male and female flowers in terminal thyriform panicles 8-12.5 cm long, pedicels 2 mm long; calyx lobes ca 1 mm long; petals 2 mm long. Drupes glossy, bright red, globose, 6 mm diameter. **Fig. 77A.**

Native of Brazil; naturalized in Darling Downs, Moreton and Wide Bay districts.



Fig. 77

A-E ANACARDIACEAE - A-B *Schinus* spp. - A *S. terebinthifolia*, part of fruiting stem x1; B *S. molle*, part leaf x1; C₁-C₂, *Eucoschinus falcata*, C₁ part leaf x½, C₂ fruits x1; D₁-D₃, *Pleio gynium timorense*, D₁ part leaf x½, D₂ domatia on leaflet undersurface x1, D₃ fruit x½; E₁-E₂, *Rhodosphaera rhodanthema*, E₁ part leaf x½, E₂ part fruiting inflorescence x1; F AKANIACEAE - F₁-F₂, *Akania lucens*, F₁ part leaf x½, F₂ part leaflet showing venation x1.

3. RHODOSPHAERA Engl.

Trees with very scaly bark. Leaves imparipinnate; leaflets petiolulate. Panicles terminal or in upper axils; calyx 5-partite, lobes imbricate; petals imbricate; stamens 10, disc cupular, crenate; ovary sessile, style patent, stigma capitate. Drupes with chartaceous epicarp and thick woody endocarp.

1 species endemic to eastern Australia, occurring in south-eastern Queensland.

1. *Rhodosphaera rhodanthema* (F. Muell. ex Benth.) Engl.

TULIP SATINWOOD; DEEP YELLOW-WOOD; YELLOW CEDAR

Rhus rhodanthema F. Muell. ex Benth.

Tree up to 20 m tall, sap milky; younger parts rusty pubescent; branchlets with numerous red lenticels. Petioles 3–9 cm long; leaflets 7–11 in opposite pairs, blades narrowly elliptic, apex acute or shortly bluntly acuminate, base obtuse or truncate, oblique, margin entire (sinuate lobed in juvenile leaves), 3.5–10.5 cm × 1.3–3 cm, glabrous or puberulent, with tufts of rusty hairs in nerve axils; lateral nerves 8–14 pairs. Male and female panicles 9–19 cm × 4–12 cm, peduncles puberulent, pedicels 3 mm long; flowers red; petals recurved, 7 mm long. Drupes brown and shining, ± globose, 10 mm × 8 mm. **Fig. 77E.**

Common in fringing rainforests along creeks of the Moreton and Wide Bay districts and inland to Bunya Mts. Flowers and fruits spring to autumn. Timber is said to be used for cabinet work and fancy inlays, and panicles of dry fruits are used for ornamental purposes.

4. EUROSCHINUS Hook. f.

Trees. Leaves paripinnate; leaflets petiolulate, usually falcate, terminal leaflet if present greatly reduced. Panicles terminal or in upper axils, thyrsiform; calyx 5-lobed, lobes valvate; petals imbricate; stamens 10; ovary ovoid, ovule solitary, pendulous, styles 3, stigmas simple. Drupes obliquely ovoid, fleshy.

10 species New Guinea, New Caledonia and Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Euroschinus falcata* Hook. f.

RIBBON WOOD; MAIDEN'S BLUSH;
CUDGERIE; BLUSH CUDGERIE

Trees up to 20 m tall; branchlets glabrous, with rusty lenticels, younger parts puberulous. Petioles 3–9.5 cm long; leaflets 6–10, petiolules 5–10 mm long; leaflet blades narrowly ovate-elliptic to ovate-elliptic, oblique, falcate, apex acuminate, base obtuse, unequal, 4–9 cm × 1.5–3.5 cm, glabrous, rarely with hair tufts in vein axils. Panicles shorter than leaves, peduncles and bracts puberulent; calyx lobes *ca* 1 mm long; petals recurved, 3 mm long; filaments subulate, 1.5–2 mm long; ovary obscurely 3-lobed, styles thick. Drupes obliquely ovoid or ellipsoid, 7 mm × 6 mm. **Fig. 77C.**

Two varieties occur in the region:

1. Leaflets usually alternate on rachis; blades ovate-elliptic, apex
acuminate

E. falcata var. *falcata*

Leaflets usually regularly opposite on rachis; blades narrowly ovate-
elliptic, apex attenuate

E. falcata var. *angustifolia*

E. falcata var. *falcata* is common in light rainforest, usually coastal and extending inland as far as Bunya Mts., while *E. falcata* var. *angustifolia* Benth. is usually coastal. Flowers and fruits spring-summer.

79. SAPINDACEAE

Trees or shrubs, rarely climbers, monoecious or dioecious. Leaves alternate; usually exstipulate; blades simple or compound, 3-foliolate or pinnate. Inflorescences axillary or terminal, usually thyrsoid, racemiform or paniculate, bracteate; flowers usually unisexual, male and female usually on same inflorescence, regular or asymmetrical, usually pedicellate; sepals or calyx lobes 4 or 5, rarely more; petals as many as sepals, rarely less or absent, mostly clawed, usually provided with scales and crests; stamens usually 8, rarely less, sometimes up to 50, usually inserted within disc, rudimentary in females; disc complete or incomplete; ovary superior, generally 3-locular, often lobed, rudimentary in males, ovules 1-2 per loculus, style 1, simple. Fruits either drupes, capsules or cells splitting irregularly or separating into component carpels; seeds frequently arillate, not endospermic.

150 genera with 2,000 species, tropical and subtropical; 29 genera with *ca* 170 species Australia; 19 genera with 66 species south-eastern Queensland.

- | | | |
|--|-------------------------|----|
| 1. Climbers; leaves biternate; inflorescence with recurved tendrils; capsules membranous, inflated | 1. <i>Cardiospermum</i> | 2 |
| Trees or shrubs; leaves simple or pinnate; tendrils absent; fruits various | | |
| 2. Leaves simple; petals absent | | 3 |
| Leaves pinnate; petals present, rarely absent | | 4 |
| 3. Shrubs, usually low growing, rarely small trees, mostly resin-dotted and viscid; fruits fragile, inflated, septically 2-4-valved, valves usually winged | 2. <i>Dodonaea</i> | |
| Tall shrubs or small trees, not resin-dotted; fruits 1- or 2-lobed with indehiscent sub-globose lobes | 3. <i>Heterodendrum</i> | |
| 4. Leaflets up to 1.4 cm × 0.5 cm, rarely up to 4 cm × 0.8 cm; fruits fragile, septically 2-4-valved, valves winged | 2. <i>Dodonaea</i> | |
| Leaflets large, rarely as small as 4 cm × 0.8 cm then plants without above set of characters; fruits various | | 5 |
| 5. Indumentum of stellate hairs; ovules 2 per loculus | | 6 |
| Indumentum if present of simple hairs; ovules 1 per loculus | | 7 |
| 6. Plants with 2 types of stellate hairs, larger, coarser, stipitate ones scattered over the surface and dense fine sessile ones; capsules obovoid, 3-grooved, septifragal; seeds without aril | 4. <i>Cossinia</i> | |
| Plants with only 1 type of stellate hairs; capsules showy, transversely ellipsoid or obovate, either 2-grooved or 2-lobed, not septifragal; seeds usually with aril | 5. <i>Harpullia</i> | |
| 7. Fruits separating into samaras with laterally elongate wings; leaves in most species with long narrow leaflets | 6. <i>Atalaya</i> | |
| Fruits not samaras, either indehiscent or cells of fruit breaking up irregularly, or capsular; leaves not as above | | 8 |
| 8. Fruits indehiscent or cells breaking up irregularly | | 9 |
| Fruits capsules, loculicidally dehiscent | | 10 |
| 9. Fruits large and drupaceous, 2.5-3 cm × 3-5.8 cm, usually indistinctly 3- or 4-lobed; seeds without aril | 7. <i>Castanospora</i> | |
| Fruits not as above, 1-3-knob-lobed or 1-3-furrowed, or not lobed, loculi splitting irregularly; seeds usually enclosed at base in cupular lobed or granular aril | 8. <i>Alectryon</i> | |
| 10. Capsules setose hairy with irritant rusty hairs; leaflets usually serrulate on margins, pellucid punctate on lower surfaces | 9. <i>Jagera</i> | |
| Capsules not as above, often glabrous; leaflets not with above characters | | 11 |
| 11. Calyx lobes 2-seriate, elliptic to suborbicular, concave, outer pair smaller | | 12 |
| Calyx lobes not as above, lobes toothed or partite, usually ovate, not concave | | 15 |

- | | | |
|--|--|----|
| 12. Capsules with 3 slightly compressed wing-like lobes; leaves mostly glaucous below
Capsules without flat, wing-like lobes, either subglobose, obovoid or obcordate; leaves not glaucous | 10. <i>Guioa</i> | 13 |
| 13. Sepals not petaloid on margins, usually sericeous hairy on outside; capsules with valves densely villous pubescent inside
Sepals petaloid or only petaloid on margins, usually glabrous; capsules with valves glabrous inside | 11. <i>Cupaniopsis</i> | 14 |
| 14. Sepals petaloid on margins; capsules usually large, obovoid or obcordate, 2- or 3-locular; valves coriaceous; seeds on thick fleshy basal aril
Sepals wholly petaloid; capsules usually small, globose or obovoid, 3-locular; valves usually \pm woody; seeds mostly enclosed in aril | 12. <i>Rhysotoechia</i>
13. <i>Lepiderema</i> | |
| 15. Petals with crested scales | | 16 |
| Petals with crestless scales | | 18 |
| 16. Capsules large and showy, usually 1-3-lobed with aborted lobes near its base; seeds covered by thick, fleshy, 2-lobed aril; most species with leaves longer than 25 cm and rusty fluted branchlets
Capsules subglobose or obovoid, not lobed; seeds with small basal aril or covered by papery aril; leaves mostly less than 20 cm long, branchlets not as above | 14. <i>Diploglottis</i> | 17 |
| 17. Valves glabrous inside; aril thin and papery, nearly enclosing seed; leaflets with prominent arched lateral nerves forming domatia-like pockets at junction with midrib
Valves densely villous inside; aril basal, small, thick; leaflets with domatia and hairy tufts in axils of lateral nerves | 15. <i>Sarcopteryx</i>
16. <i>Toechima</i> | |
| 18. Inflorescences slender, usually racemiform; leaflets serrate, dentate or entire, usually with hairy domatia in axils of lateral nerves
Inflorescences usually many-branched; leaflets not as above, margins usually entire | 17. <i>Elattostachys</i> | 19 |
| 19. Fruits stipitate or sessile, divaricately 2- or 3-lobed, lobes mostly ellipsoid, 2-valved or fruits transversely ellipsoid or subglobose and irregularly dehiscent; leaflets often with raised lateral nerves and prominent cross nerves
Fruits long stipitate, pyriform, globose, clavate, triquetrous, 3-valved; leaflets not as above, reticulation often very dense | 18. <i>Arytera</i>
19. <i>Mischocarpus</i> | |

1. CARDIOSPERMUM L.

Climbing herbaceous annuals, stems and petioles ribbed. Leaves alternate; blades biternate; leaflets lobed. Inflorescences axillary, thyrsoid, long peduncled, ultimate branches with racemes with successive flowers on alternate sides of pseudaxis or contracted cymes; primary peduncles with 1-2 pairs of circinnate tendrils at their tips; bracts subulate; sepals 4, free, paired, outer pairs smaller; petals 4, paired; stamens 6-8; disc unilateral, 4-lobed; ovary 3-locular, ovule 1 per loculus, style short, stigma 3-lobed, linear. Capsules globose or 3-angled, membranous, inflated, veined; seeds globose with small basal aril.

14 species tropical, especially America; 2 species naturalized Australia, occurring in south-eastern Queensland.

- | | | |
|--|----|------------------------|
| 1. Plants densely hairy; flowers 8-10 mm long; capsules more than 5 cm long, pointed at both ends; leaves up to 16 cm long | 1. | <i>C. grandiflorum</i> |
| Plants puberulous or subglabrous; flowers up to 4 mm long; capsules and leaves smaller | 2. | <i>C. halicacabum</i> |

1. *Cardiospermum grandiflorum Sweet

HEART SEED VINE

Vine with stem, petioles, rachises and peduncles hispid pubescent to puberulent. Petioles 1–3.5 cm long; lateral leaflets sessile, terminals with petiolules 4–6 mm long; leaflet blades ovate-cuneate or ovate-elliptic, apex acuminate, base of terminals decurrent on petiolules, margin coarsely serrate, 2.5–8 cm × 1.3–5 cm, pubescent especially on lower surfaces. Panicles corymbiform, 3.5 cm long; peduncles 5.5–14.5 cm long, with a pair of recurved tendrils at apex, pedicels 5 mm long; flowers white; outer sepals *ca* 2 mm long, inner 8.5 mm long; petals 9 mm long, all with scales and crests; disc with 2 erect lobes. Capsules ellipsoid to ovoid, apiculate, ribbed, 5–6.5 cm × 3–4.5 cm, puberulent; seeds 7 mm long, aril suborbicular. **Fig. 78A.**

Native of tropical Asia, Africa and America; river banks in the Moreton and Wide Bay districts as far north as Gympie, also recorded from the Burnett district. Flowers and fruits summer to winter.

2. Cardiospermum halicacabum L.

BALLOON VINE

Two varieties occur in the region:

- | | |
|---|--|
| 1. Capsules subglobose, 2.5–3 cm × 2.5–3 cm | (a) <i>C. halicacabum</i> var. |
| | <i>halicacabum</i> |
| Capsules obtriangular, 1 cm × 2 cm | (b) <i>C. halicacabum</i> var. |
| | <i>microcarpum</i> |

(a) *Cardiospermum halicacabum L. var. *halicacabum*

Slender vine with stems, petioles, rachises and peduncles usually puberulent. Leaves up to 12 cm long; petioles 2.5–5.5 cm long; terminal leaflets with petiolules 5–7 mm long, laterals with petiolules 2–4 mm long; leaflet blades ovate, apex acute, margin coarsely serrate, 1.8–3.5 cm × 1–1.8 cm, puberulent or glabrous. Inflorescences with 3 or 4 ultimate branches on a short stalk, branches 1–2.5 cm long; peduncles 2.5–6 cm long, with 1–2 pairs of recurved tendrils at apex, pedicels 2 mm long; outer sepals 1 mm long, inner 4 mm long, puberulent; petals 3 mm long, only 1 pair with scales and crests; disc small. Capsules subglobose, margins slightly winged, not apiculate, 2.5–3 cm × 2.5–3 cm, pubescent or puberulent; seeds black, 3.5–5 mm diameter, aril 2-lobed.

Native of tropical Asia, Africa and America; widespread in the Moreton, Wide Bay and Burnett districts, usually in depauperate rainforest, also a garden weed. Flowers and fruits winter-spring.

(b) Cardiospermum halicacabum L. var. *microcarpum* (Kunth) Blume*Cardiospermum microcarpum* Kunth

Erect twiner. Leaves including petiole up to 7 cm long; petioles 2–2.5 cm long; leaflet blades 1.5–2.5 cm × 0.7–1.5 cm, puberulent above, hairy on veins below. Inflorescences subumbellate, peduncles 3.5–6 cm long, pedicels 3 mm long; outer sepals 1.5 mm long, inner 3 mm long; petals 3 mm long; stamens 8. Capsules green, obtriangular, flat on top, 1 cm × 2 cm; seeds globose, 3–4 mm diameter.

Only once collected from Barambah Creek near Gayndah in the Burnett district. Flowers and fruits summer.

2. DODONAEA Miller

Shrubs, usually viscid and resin dotted. Leaves simple or pinnate with small, sessile leaflets. Flowers in lax racemose panicles or clusters, axillary or terminal, unisexual; calyx 4- or 5-lobed, lobes valvate; petals absent; stamens 6–10, filaments very short, anthers large; disc inconspicuous; ovary 2-locular with 2 ovules per loculus, style usually long. Capsules orbicular, cordate or 3-gonous, inflated or compressed, septically 2–4-valved, each valve usually produced into a membranous wing, rarely wingless.

60 species, tropical and subtropical, especially Australia; 56 species Australia; 19 species south-eastern Queensland.

Species of *Dodonaea* are commonly referred to as HOP BUSHES.

- | | | |
|---|-----------------------------|----|
| 1. Leaves simple | | 2 |
| Leaves pinnate | | 13 |
| 2. Leaves 3–14.5 cm long, ovate-elliptic, obovate-oblong or linear, apex acute, acuminate or obtuse; rarely coarsely denticulate | | 3 |
| Leaves usually small and clustered, 0.4–3 cm long, rarely up to 8 cm long, cuneate, rarely obovate-oblong, apex 3-dentate, lobed or obtuse | | 8 |
| 3. Leaves 0.1–0.3 cm wide, linear and long or subterete, margins thick | | 4 |
| Leaves 0.3–4 cm wide, not as above | | 5 |
| 4. Branchlets angular; capsules with oblique wings not reaching the apex or base of fruit; leaves linear-oblong with thickened margins, 2–3 mm wide | 1. <i>D. stenophylla</i> | |
| Branchlets rounded; capsules with equally rounded wings reaching both apex and base of fruit; leaves subterete or filiform, up to 1 mm wide | 2. <i>D. filifolia</i> | |
| 5. Leaves usually more than 10 times as long as wide, 0.3–0.7 cm wide, margin recurved, petioles 0.2–0.5 cm long | 3. <i>D. truncatiales</i> | |
| Leaves usually 3–7 times as long as wide (0.5–) 0.7–4 cm wide, margin entire, rarely subentire; petioles up to 2 cm long | | 6 |
| 6. Plants very viscid; leaves narrowing into usually long petioles, lateral nerves usually prominent, numerous, parallel; capsules usually suborbicular | 4. <i>D. viscosa</i> | |
| Plants rarely viscid; leaves sessile, lateral nerves usually indistinct, if visible few and fine; capsules oblongoid | | 7 |
| 7. Inflorescences usually terminal, up to 8-flowered; sepals as long as anthers, persistent in fruit; leaf apex usually obtuse or subacute | 5. <i>D. lanceolata</i> | |
| Inflorescences axillary, up to 16-flowered; sepals less than $\frac{1}{5}$ as long as anthers, not persistent in fruit; leaf apex acuminate or acute | 6. <i>D. triquetra</i> | |
| 8. Plants very hirsute; leaves 0.4–0.6 cm long; flowers solitary on long filiform pedicels | 7. <i>D. hirsuta</i> | |
| Plants not hirsute, usually glabrous, leaves 1–8.5 cm long; flowers usually in clusters, racemes, corymbs or panicles | | 9 |
| 9. Capsules 3-gonous, angles rarely dilated into a narrow wing towards top | 8. <i>D. triangularis</i> | |
| Capsules with wings equally rounded, reaching style and base | | 10 |
| 10. Leaves erect, rigid, thick, coriaceous, usually clustered, 0.5–3.6 cm \times 0.3–0.7 cm; sessile or subsessile | | 11 |
| Leaves chartaceous, not clustered, 1.5–8.5 cm \times 0.3–1 cm; petioles up to 2 mm long | | 12 |
| 11. Leaves 1.1–3.6 cm \times 0.3–0.5 cm; capsules 4-valved, 0.8–1.5 cm \times 0.8–1.7 cm, delicate, pedicels 1–2 cm long | 9. <i>D. peduncularis</i> | |
| Leaves 0.5–1 cm \times 0.4–0.7 cm; capsules usually 3-valved, up to 0.7 cm \times 0.5 cm, turgid, pedicels 0.3–0.5 cm long | 10. <i>D. sp.1.</i> | |
| 12. Branchlets very angular; capsules 4-valved, oblongoid, 1.6–2 cm \times 1.8–2.7 cm | 11. <i>D. aspleniifolia</i> | |
| Branchlets terete or slightly angular; capsules 3-valved, suborbicular, 0.7–1.2 cm \times 1–1.6 cm | 12. <i>D. cuneata</i> | |
| 13. Leaves including petioles <i>ca</i> 0.5 cm long; capsules 2.5 mm \times 4 mm, globose-triangular, sometimes sharply angled but not winged; flowers solitary | 13. <i>D. macrossanii</i> | |
| Leaves including petiole 1–20 cm long; capsules larger, winged; flowers in clusters, racemes, corymbs or panicles | | 14 |
| 14. Leaves including petiole 11–20 cm long | 14. <i>D. megazyga</i> | |
| Leaves including petiole 1–6.5 cm long | | 15 |
| 15. Wings broader than long, divergent, not extending to apex and base of capsule | 3. <i>D. truncatiales</i> | |
| Wings rounded, reaching both apex and base of capsule | | 16 |

- | | | |
|---|----------------------------|----|
| 16. Branchlets glandular tuberculate, hairs minute and straight | 15. <i>D. tenuifolia</i> | |
| Branchlets not glandular tuberculate, hairs either long and straight or short and bent | | 17 |
| 17. Capsules 3-valved, 2 cm long, on pedicels 1–1.5 cm long | 16. <i>D. multijuga</i> | |
| Capsules 4-valved, less than 1.5 cm long, on pedicels either less than 1 cm long, or filiform, pendulous, up to 2 cm long | | 18 |
| 18. Pedicels filiform, pendulous, up to 2 cm long; petioles less than 5 mm long | 17. <i>D. vestita</i> | |
| Pedicels not filiform or pendulous, up to 1 cm long; petioles 5–10 mm long | | 19 |
| 19. Leaves with 8–12 ± opposite pairs of leaflets | 18. <i>D. rupicola</i> | |
| Leaves with 3–6 opposite pairs of leaflets | 19. <i>D. boroniifolia</i> | |

1. *Dodonaea stenophylla* F. Muell.

Slender viscid shrub up to 3 m tall, branchlets angular. Petioles up to 2 mm long; blades linear, quite rigid, attenuate at both ends, margin inrolled, 5.5–10.5 × 0.3 cm, glabrous, midrib prominent. Thyrses small, axillary; male flowers on pedicels 8 mm long; females on filiform pedicels 1.5–2 cm long. Capsules 0.4 cm × 1.4 cm, 4-valved, wings transversely ovate, wider at apex, divaricate, falcate, erect, rigid, not reaching base or apex of fruit, 5–8 mm wide. **Fig. 78H.**

Darling Downs district on rocky brown clay soils and sandstone rocks, in depauperate rainforest. Flowers and fruits winter to spring.

2. *Dodonaea filifolia* Hook.

Straggly shrub up to 2 m tall, branchlets rounded, resin dotted. Leaves sessile or petioles only 1 mm long; blades erect, thick, narrowly linear, subterete or slightly flattened, margin thick, 2.5–10.5 cm × 0.1 cm, glabrous, glandular punctate, grooved above. Male flowers in axillary clusters on pedicels 4 mm long; females in racemes at apex of branchlets, pedicels 1 cm long. Capsules pinkish-brown, oblongoid, 1.3 cm × 1.3 cm, 4-valved, wings rounded, fragile, reaching both apex and base of fruit, up to 3 mm wide, apical sinus as deep as basal one. **Fig. 78G.**

Darling Downs and Burnett districts, common in open forests on sandy soil amongst rocks on sandstone hills and ridges. Flowers and fruits autumn to spring.

3. *Dodonaea truncatiales* F. Muell.

Shrub up to 2 m tall, rarely viscid; younger branchlets acutely angular. Leaves simple or pinnately lobed or pinnate; petioles up to 2 mm long; blades dull, chartaceous, narrowly elliptic to narrowly obovate, apex obtuse or subacute, base attenuate, margin recurved, 3–6 cm × 0.3–0.7 cm, glabrous, scurfy, midrib raised below, lateral nerves rarely visible, resin dotted; leaflets when present articulate on broadly winged rachis, leaflet blades narrowly elliptic to narrowly obovate, 1.5–2.7 cm × 0.2–4 cm. Inflorescences axillary, few-flowered, pedicels filiform, up to 3 cm long. Fruits reddish, apex flat, 0.4 cm × 2 cm, 4-valved, wings horizontal, divergent, narrowly oblong-ovate, broader than long, rigid, not extending to apex and base of capsule, ca 0.4 cm × 2 cm. **Fig. 78J.**

Darling Downs district on rocky outcrops and stony ridges. Flowers and fruits spring.

4. *Dodonaea viscosa* (L.) Jacq.

STICKY HOP BUSH

Ptelea viscosa L.

Usually shrub, very viscid. Petioles 0.5–2.2 cm long; blades narrowly oblong-elliptic to obovate, apex obtuse, acute, acuminate or apiculate, base attenuate and decurrent on petiole, margin subentire to serrulate, (1.5–)4–12 cm × 0.5–3 cm, lateral nerves numerous, suboblique, parallel, usually prominent. Inflorescences axillary or subterminal, up to 5.5 cm long. Capsules suborbicular or subobcordate, 0.7–1.5 cm × 1–2 cm, glabrous, viscid, veined, fragile, 3–4-valved, wings rounded with apical and basal sinuses, 3–7 mm wide, pedicels 1–1.5 cm long.

Three varieties occur in the region:

1. Petioles 1.5–2.2 cm long; blades obovate, spatulate, or obovate-oblong, apex obtuse, apiculate or rarely denticulate, margin subentire or coarsely serrulate, 1.5–4.5 cm × 0.5–1.5 cm; capsules suborbicular, 4-valved, wings 3–5 mm wide **Fig. 78D**

D. viscosa var. *arborescens*

Petioles 0.5–2 cm long; blades usually narrowing at both ends, narrowly oblong-ovate, oblong-elliptic or subobovate-oblong, apex acuminate or subacute, margin entire or subentire, 3–12 cm × 0.5–3 cm; capsules suborbicular or subobcordate, 3–4-valved, wings 4–7 mm wide

2

2. Petioles 0.5–2 cm long; blades (0.8–)1–3 cm wide, elliptic-ovate or elliptic-oblong, rarely subobovate-oblong; capsules suborbicular, 3–4-valved, wings 4–7 mm wide, apical and basal sinuses equal **Fig. 78E**

D. viscosa var. *viscosa* forma *burmanniana*

Petioles 0.5–1 cm long; blades 0.5–1 cm wide, narrowly elliptic-oblong; capsules subobcordate, 3-valved, wings up to 5 mm wide, apical sinuses wider and deeper than basal

D. viscosa var. *angustifolia*

D. viscosa var. *arborescens* (Cunn. ex Hook. f.) Sherff (*D. arborescens* Cunn. ex Hook. f.; *D. aspleniifolia* Rudge var. *arborescens* (Cunn. ex Hook. f.) Hook. f. ex Hook.) is common in depauperate rainforest and open forest on red sandy soils or rocky hillsides in the Darling Downs and Burnett districts. **D. viscosa** var. *viscosa* forma *burmanniana* (DC.) Radlk. (*D. burmanniana* DC.) is widespread and common in open forests and is the most common form found along the coast on rocky hillsides. Flowers and fruits spring to summer. **D. viscosa** var. *angustifolia* (L.f.) Benth. (*D. angustifolia* L.f.) usually grows in open forests on hillsides in stony country in the Darling Downs, Burnett and western Moreton districts. Flowers and fruits spring to summer.

5. *Dodonaea lanceolata* F. Muell.

Shrub up to 2 m tall. Leaves sessile, or with petioles 1–3 mm long; blades opaque or dull, semicoriaceous, narrowly elliptic, elliptic-oblong or subobovate, apex obtuse, subacute or obtusely and shortly acuminate, base acute, margin entire, 3.5–7.5 cm × 0.7–2 cm, lateral nerves rarely visible. Thyrses terminal or subterminal, 6–10-flowered, pedicels 0.1–1 cm long; calyx lobes 2 mm long, persistent; anthers 2–4 mm long. Capsules usually in clusters of 3–5, rarely 7, usually purple in centre and paler at wings, oblongoid, 1.8–2 cm × 1.6–1.8 cm, not fragile, 3-valved, wings rounded, *ca* 6 mm wide, apical and basal sinuses the same, pedicels up to 1.5 cm long.

Widespread in northern parts of the region, usually coastal on rocky hillsides or on sandy soil on creek banks in open eucalypt forest. Flowers and fruits winter to summer.

6. *Dodonaea triquetra* Andr.

Tall shrub or small tree up to 6 m tall, branchlets reddish-brown, angular or flattened. Leaf blades dull, semicoriaceous to chartaceous, elliptic, attenuate at both ends, or elliptic-ovate to elliptic-obovate, apex acuminate or caudate, base acute and decurrent, 3.5–14.5 cm × 1–4 cm, glabrous, lateral nerves 10–12 pairs, indistinct. Male and female inflorescences subracemose, many-flowered, pedicels 1–1.5 cm long, filiform; calyx lobes *ca* 1.5 mm long, deciduous; stamens 7 or 8, anthers linear, 5–8 mm long, apiculate, glabrous, very prominent. Capsules in clusters of *ca* 12 or more, purple, usually deeper in colour towards wings, oblongoid, 1.2–1.5 cm × 1.5 cm, fragile, 3-valved, wings rounded, broader at apex, wavy, reaching both apex and base, up to 4 mm wide, apical and basal sinuses the same. **Fig. 78B.**

Widespread and common in eucalypt forest and margins of rainforest, on sandy soil amongst boulders. Flowers and fruits winter to early spring.

The mountain form has smaller, narrower, thicker and rigid leaves.

7. *Dodonaea hirsuta* (Maiden & Betche) Maiden & Betche

Dodonaea peduncularis Lindl. var. *hirsuta* Maiden & Betche

Small shrub up to 1 m tall, branchlets hirsute with spreading hairs. Leaves usually crowded in clusters of 3 or 4; petioles *ca* 1 mm long; blades broadly cuneate, apex 3-lobed, middle lobe reflexed, margin recurved, 4–6 mm long, hirsute. Flowers axillary, solitary, on filiform pedicels longer than leaves; calyx lobes oblong-ovate, subulate.

Capsules reddish, suborbicular, 1.5–2.1 cm × 1.5–2.1 cm, fragile, pubescent, 4-valved, wings equally rounded, reaching from apex to base, up to 4 mm wide, apical sinus deeper than basal, pedicels 1 cm long, filiform, drooping. **Fig. 78L.**

Mountain peaks and hillsides among boulders, restricted to Mt. Norman and Stanthorpe areas in the Darling Downs district. Fruits spring–summer.

8. *Dodonaea triangularis* Lindl.

Shrub up to 3 m tall, branchlets pubescent with spreading hairs. Petioles up to 3 mm long; blades coriaceous, broadly obovate-cuneate or obovate-elliptic, apex broadly 3-dentate, or variously lobed or truncate or obtuse, base cuneate, margin entire, 1–2.5 cm × 0.6–1.4 cm, puberulent or glabrous, lateral nerves indistinct. Flowers in clusters of 3 or 5, axillary or at tips of branchlets, males on pedicels 1–1.5 cm long, females on pedicels 0.7–1 cm long; anthers 5 mm long, twice length of calyx lobes. Capsules pale green, 3-gonous, rarely 4-gonous, 0.8–1.2 cm × 0.8–1.2 cm, hard and rigid, glabrous or puberulent, angles of fruits rarely dilated into a narrow rigid wing towards apex, wings triangular, broader than long, 2–5 mm wide. **Fig. 78M.**

Burnett, Darling Downs and Moreton districts, common in open eucalypt forests on sandstone hillsides, stony ridges and summits of mountains. Flowers and fruits late winter to spring.

The ovate-leaved forms with obtuse apices are usually glabrous and approach some forms of *D. lanceolata*, but the fruits are quite different.

9. *Dodonaea peduncularis* Lindl.

Shrub up to 2 m tall, usually multi-stemmed and sometimes prostrate, viscid, branchlets pubescent with spreading hairs. Leaves subsessile; blades rigid, coriaceous, linear-cuneate with 3-dentate apex or narrowly oblong-obovate with acute apex, apex usually dilated and reflexed, base cuneate, margin thick, 1.1–3.6 cm × 0.3–0.5 cm, glabrous or puberulent, lateral nerves inconspicuous. Flowers in axillary clusters of 3–7, males on pedicels 0.6–1 cm long, females on pedicels up to 1.2 cm long; calyx lobes ovate and abruptly acuminate; anthers shorter than calyx lobes. Capsules reddish or purple, suborbicular, 1.2–1.5 cm × 1.2–1.7 cm, fragile, 4-valved, wings rounded, reaching both apex and base of fruit, up to 6 mm wide, pedicels 1–2 cm long. **Fig. 78I.**

Darling Downs and Burnett districts, common in open forests on sandy stony soils of jumpups and stony ridges. Flowers and fruits winter to summer.

10. *Dodonaea* sp.1.

Rigid, prostrate shrub 0.5–1.5 m in diameter, 25–50 cm tall, branchlets scurfy, puberulent, often glandular tuberculate, viscid. Leaves in clusters of 4–6, sessile; blades cuneate, apex dilated and 3-dentate, base attenuate, 5–10 mm × 4–7 mm, resin dotted, puberulent or glabrous, viscid above. Inflorescences axillary, subracemose or flowers solitary; pedicels 2–4 mm long; flowers 3–5 mm across; calyx ca 2 mm long; anthers longer than filaments. Capsules pinkish-red, 7 mm × 5 mm, usually with 3 divaricate valves, wings wider towards apex, narrowing to base, up to 3 mm wide, pedicels 3–5 mm long. **Fig. 78C.**

Sandy ridges in the Barakula area north of Chinchilla in the Darling Downs district.

11. *Dodonaea aspleniifolia* Rudge

Viscid shrub up to 2 m tall, branchlets angular. Petioles 1–2 mm long; blades narrowly obovate-cuneate or obovate-oblong, apex usually 3-dentate, triangular or blunt and mucronate, base attenuate, margin slightly recurved, 1.5–8.5 cm × 0.3–1 cm, glabrous, resin dotted and viscid especially on upper surfaces, pale below, lateral nerves indistinct above. Inflorescences in upper axils or at tips of branchlets, erect. Capsules oblongoid, 1.6–2 cm × 1.8–2.5 cm, viscid, 4-valved, wings rounded, reaching both apex and base, up to 5 mm wide, apical and basal sinus broad, pedicels up to 1.5 cm long.

On mountain peaks, rocky slabs and slopes, in moist crevices and among granite boulders in open forest around Wallangarra in the Darling Downs district to Mt. Maroon and Mt. Ernest in the Moreton district. Flowers and fruits summer.

12. *Dodonaea cuneata* Rudge

Viscid shrub, branchlets with short straight spreading hairs. Petioles up to 2 mm long; blades obovate-cuneate, rarely narrowly obovate-elliptic, apex truncate, mucronate or 2-lobed, base cuneate, margin entire, 0.8–2.5 cm × 0.5–1.3 cm, puberulent or glabrous, resin dotted. Inflorescences in upper axils or terminal, racemose, up to 8-flowered, pedicels filiform, drooping, 1.2–2.2 cm long; anthers as long as calyx lobes. Capsules suborbicular or subcordate, *ca* 1 cm × 1.3 cm, 3-valved, wings rounded, reaching both apex and base, usually broader at apex, up to 5 mm wide at broadest part, apical sinus deeper.

Moreton and Wide Bay districts. Flowers and fruits autumn to spring.

13. *Dodonaea macrossanii* Scortech. & F. Muell.

Low shrub, sometimes prostrate, branchlets and leaves pubescent with straight spreading hairs. Leaves *ca* 5 mm long including petiole; petioles 2–3 mm long, rachis dilated, broadly winged; leaflets in 1–2 opposite pairs, sessile, leaflet blades obovate-cuneate or linear, apex 2–4-lobed and recurved, 3–4 mm × 3–4 mm. Flowers solitary, axillary, pedicels *ca* 1.5 mm long. Capsules globose-triangular, *ca* 2.5 mm × 4 mm, inflated, not winged, puberulent, peduncles 1.5 mm long. **Fig. 78F.**

Western parts of the Darling Downs and Burnett districts. Flowers and fruits late winter–spring.

14. *Dodonaea megazyga* F. Muell.

Tall shrub or small tree up to 7 m tall, glabrous and slightly viscid, younger branchlets angled. Leaves 11–20 cm long including petiole; petioles 1.5–3.5 cm long, narrowly winged, rachis winged; leaflets 11–16 in opposite pairs, sessile, reducing in size towards top, narrowly elliptic or oblong-ovate, falcate, apex acute or acuminate, base acute, oblique, margin entire, 2–4 cm × 0.4–0.8 cm, glabrous, lateral nerves faint. Thyrsiform panicles up to 5.5 mm long, pedicels filiform, 1–1.5 cm long. Capsules *ca* 1 cm × 2 cm, 3-valved, wings suborbicular and somewhat falcate, broader towards the middle, up to 8 mm wide, apical and basal sinuses broad, pedicels filiform, 1–1.5 cm long. **Fig. 78O.**

Edge of rainforests around Lamington National Park and Burleigh Heads in the Moreton District. Flowers and fruits from late spring to autumn.

15. *Dodonaea tenuifolia* Lindl.

Spreading shrub up to 2 m tall, branchlets slightly angular, glandular tuberculate, hairs minute, straight, slightly viscid. Leaves 1.8–6 cm long including petiole; petioles 0.5–1.2(–2) cm, leaf-like, rachis leaf-like; leaflets in 5–11 pairs, semicoriaceous, linear or narrowly elliptic-ovate or oblong, falcate, apex subacute, base truncate, margin subentire or sinuate, flat, 0.4–1.4 cm × 0.1–0.2(–0.4) cm, midrib grooved above, resin dotted. Racemes 3–6-flowered, pedicels 0.5–1.2 cm long; calyx 3 mm long, caducous; anthers 2.5 mm long. Capsules purplish, ± oblongoid, 1–1.2 cm × 0.8–1.4 cm, resin dotted, fragile, 4-, rarely 3-valved, wings equally rounded, reaching style and base, dissepiment persistent, pedicels 1–1.2 cm long. **Fig. 78N.**

Around Killarney in the Darling Downs district to around Helidon in the Moreton district, usually at foothills of ranges on rather heavy soils.

16. *Dodonaea multijuga* G. Don

Shrub, branchlets viscid, scabrous pubescent with short bent hairs. Leaves 3.5–6.5 cm long including petiole; petioles 3–5 mm long, rachis winged; leaflets sessile, 9–14 in opposite pairs; leaflet blades obovate, apex 3-dentate and recurved, base obtuse, margin recurved, 3–5 mm × 2–3 mm, pubescent, glandular dotted. Inflorescences axillary. Capsules suborbicular, 2 cm × 2.2 cm, 3-valved, wings rounded, reaching apex and base, up to 4 mm wide, viscid, puberulent, pedicels 1–1.5 cm long.

Collected once from Perseverance Dam district near Toowoomba, on sandstone areas on hillsides. Fruits spring.



Fig. 78

SAPINDACEAE — A₁-A₄ *Cardiospermum grandiflorum*, A₁, leaf x1, A₂, flower x1, A₃, immature fruit x½, A₄, mature fruit x½; B-O *Dodonaea* spp. — B₁-B₂, *D. triquetra*, B₁, part of fruiting stem x1, B₂, male flower x6; C-C, *D. sp. l.*, C, part of fruiting stem x1, C, leaves x1; D₁-D₃, *D. viscosa* var. *arborescens*, D₁, leaf x1, D₂, male flower x6, D₃, fruit x1; E *D. viscosa* var. *viscosa* forma *burmanniana*, leaf x1; F-F, *D. macrosanii*, F, leaf x1, F₂, fruit x1; G₁-G₂, *D. filifolia*, G₁, leaf x1, G₂, fruit x1; H₁-H₂, *D. stenophylla*, H₁, leaf x1, H₂, fruit x1; I₁-I₂, *D. peduncularis*, I₁, leaf x1, I₂, leaflet x1; J₁-J₂, *D. truncatiales*, J₁, leaflet x1, J₂, fruit x1; K₁-K₂, *D. vestita*, K₁, leaf x1, K₂, fruit x1; L₁-L₂, *D. hirsuta*, L₁, leaflet x1, L₂, fruit x1; M₁-M₂, *D. triangularis*, M₁, leaflet x1, M₂, fruit x1; N *D. tenuifolia*, leaf x1; O₁-O₂, *D. megazyga*, O₁, leaflet x1, O₂, fruit x1.

17. *Dodonaea vestita* Hook.

Shrub up to 1.5 m tall, branchlets densely yellowish villous pubescent. Leaves pale green, 2.2–3.2 cm long including petiole; petioles up to 4 mm long, rachis broadly winged; leaflets sessile in 3–8 opposite or subopposite pairs; leaflet blades obovate-cuneate or oblong-cuneate, apex 3-dentate, reflexed, base subacute and oblique, margin recurved, 3–10 mm × 2–5 mm, pilose. Inflorescences terminal, subracemose; 2–4-flowered, pedicels filiform, drooping, up to 2 cm long; calyx lobes 5–7 mm long, pilose; anthers 5–7 mm long, pilose. Capsules brownish-purple, pendulous, obcordate, 0.9–1.2 cm × 1.2–2.5 cm, very fragile, pubescent with long and short hairs, 4-valved, wings rounded, reaching both apex and base, broadly orbicular, subfalcate, margin with tubercular based stellate hairs, up to 8 mm wide, apical sinus deeper than basal. **Fig. 78K.**

Burnett and Darling Downs districts, on sandstone mountain sides, ridges and cliffs, usually growing on shallow sandy soil. Fruits autumn to spring.

18. *Dodonaea rupicola* C. T. White

Shrub up to 1 m tall, branchlets villous with soft white spreading hairs. Leaves 1.5–4 cm long including petiole; petioles narrowly winged towards apex, 0.6–1 cm long, rachis broadly winged, wings leaf-like; leaflets sessile, in 8–12 opposite or subopposite pairs; leaflet blades obovate-cuneate, apex 3-dentate or obtuse, reflexed, base obtuse, oblique, margin recurved usually with a row of glands, 7–10 mm × 3–5 mm, villous. Flowers in upper axillary clusters of 3 or 4, or forming a clustered terminal raceme; pedicels 5 mm long; calyx lobes up to 4 mm long. Capsules subcordate, *ca* 1 cm × 1.4 cm, very fragile, pilose, 4-valved, wings rounded, reaching both apex and base, margin crisped with tubercular based stellate hairs, up to 4 mm wide, sinus deep and broad; pedicels 2–4 mm long.

Restricted to Saddleback Mt. in Glasshouse Mts. area of the Moreton District. Fruits late winter to early spring.

19. *Dodonaea boroniifolia* G. Don

Shrub up to 5 m tall, branchlets and leaves pubescent with bent hairs, rarely glabrous. Leaves 1–2 cm long including petiole; petioles channelled above, 5–8 mm long, winged and glandular dotted, rachis winged and glandular dotted; leaflets sessile in 3–6 opposite pairs, uppermost pairs larger; leaflet blades obovate-cuneate, falcate, apex usually 3-dentate, margin recurved, 4–7 mm × 2–3 mm, glandular dotted especially along margin and apex, also on lower surfaces, dots sometimes conspicuous. Inflorescences axillary, subumbellate, usually 5-flowered, pedicels *ca* 6 mm long. Capsules suborbicular, 1.2–1.5 cm × 1.4 cm, 4-valved, wings rounded, reaching both apex and base of fruit, up to 4 mm wide, pedicels up to 1 cm long.

Western Darling Downs district. Flowers and fruits winter–spring.

3. HETERODENDRUM Desf.

Small trees. Leaves simple, linear-oblong, obovate-oblong or cuneate, margin entire or repand dentate with pungent points. Flowers in axillary short racemes, panicles or in clusters, usually bisexual, pedicellate; calyx cupular, lobes toothed; petals absent; stamens 6–12, exserted, glabrous; disc small; ovary 3-locular, style short. Fruits 1- or 2-lobed, lobes subglobose or ovoid, indehiscent; seeds globose, half embedded in cupular granular aril.

4 species endemic to Australia; 3 species south-eastern Queensland.

- | | |
|--|--|
| 1. Branchlets with appressed hairs; fruits stipitate | 1. <i>H. oleifolium</i> var. <i>microcalyx</i> |
| Branchlets with short spreading hairs; fruits sessile | 2 |
| 2. Branchlets, petioles and fruits puberulent to glabrous; leaves narrowly obovate, obovate-elliptic to narrowly angular-obovate, 1.5–5.5(–6.5) cm × 0.4–1.5(–2) cm, apex usually obtuse | 2. <i>H. diversifolium</i> |
| Branchlets, petioles and fruits tomentose or pubescent; leaves broad, cuneate, obovate or angular-obovate, 2.5–8.5 cm × 1.2–4.5 cm, apex usually truncate or broadly obtuse | 3. <i>H. pubescens</i> |

1. *Heterodendrum oleifolium* Desf. var. *microcalyx* (Radlk.) Domin BOONAREE
Nephelium oleifolium (Desf.) F. Muell.; *Heterodendron microcalyx* Radlk.

Bushy tree up to 6 m tall, branches weeping, younger parts puberulent. Petioles 0.5–1 cm long, puberulent; blades dull greyish-green, linear or narrowly elliptic-oblong, apex acute, acuminate or obtuse, 7–16.5 cm × 0.5–1 cm, appressed puberulent or pubescent, midrib raised below. Inflorescences 2.5–4.5 cm long, peduncles pubescent, pedicels 2–5 mm long; flowers yellowish; calyx 2.5–3.5 mm diameter; stamens 8–12. Fruits ca 1 cm diameter, usually 2-lobed, lobes subglobose, glabrous; aril red. **Fig. 79B.**

Darling Downs district. Flowers and fruits spring to autumn.

2. *Heterodendrum diversifolium* F. Muell. SCRUB BOONAREE; HOLLY BUSH
Nephelium diversifolium (F. Muell.) F. Muell.

Sparse shrubs up to 4 m tall; bark grey and mottled, younger parts puberulent, reddish. Leaves often clustered on short branchlets; petioles 2–4 mm long or ± absent; blades very variable, obovate-elliptic to cuneate or obovate-oblong, apex obtuse, pungent pointed, base cuneate, margin repand dentate with pungent pointed deltoid teeth or laciniately lobed, subtire or rarely entire, 1.5–5.5 cm × 0.5–1.5 cm, glabrous, lateral nerves prominent. Flowers solitary or in small axillary clusters, pedicels 3 mm long; calyx 2.5 mm long; stamens 6. Fruits 1.4 cm × 0.5 cm, 2-lobed, transversely ellipsoid, lobes subovoid, divaricate, glabrous, smooth; seeds black with red aril. **Fig. 79A.**

Common in brigalow closed forests in dark clay. Flowers and fruits spring to autumn.

3. *Heterodendrum pubescens* S. Reynolds

Tree up to 6 m tall; young parts, branchlets, petioles and fruits densely hairy. Petioles 3–10 mm long; blades obovate, cuneate or broadly angular-obovate, apex usually truncate or obtuse, base cuneate, margin coarsely serrate to entire, 3.5–9 cm × 1.5–4.5 cm, puberulent or subglabrous. Flowers solitary or in small racemes, pedicels 5–10 mm long; calyx 2 mm long. Fruits usually 1-lobed, obliquely subglobose, 1.2–1.4 cm × 1.2–1.4 cm, velvety hairy outside.

Burnett District, on rocky outcrops.

4. COSSINIA Commerson ex Lam.

Shrubs or small trees with saponin in bark and fruits; indumentum of 2 types of stellate hairs, denser fine pale ± sessile ones with few scattered darker coarser, stipitate ones. Leaves pari- or imparipinnate; leaflets 3–7 with apiculate callous tips, entire. Inflorescences terminal or axillary, thyrsoid, ultimate cymules with successive flowers on alternate side of pseudaxis; flowers unisexual; calyx lobes 5, imbricate; petals 4–6, imbricate, shortly clawed, scales and crests absent; stamens 5–8, all on anterior side of disc, glabrous; disc unilateral or regular; ovary stipitate, anterior to disc, 3-locular with 2 ovules per loculus. Capsules 3-grooved or 3-lobed, lobes inflated, loculicidally 2-valved, septifragal; seeds compressed, exarillate.

4 species, Mascarene Is., New Caledonia, Fiji and eastern Australia; 1 species Australia, occurring in south-eastern Queensland.

1. *Cossinia australiana* S. Reynolds

Small tree up to 7 m tall; young parts, branchlets, lower surface of leaflets, inflorescences and fruits densely hairy with white appressed fine ± sessile stellate hairs and scattered stipitate larger coarse tufted hairs. Petioles 1.2–4.3 cm long; leaflets 3–5, rarely –7, opposite; petiolules up to 2 mm long; leaflet blades narrowly elliptic-oblong or subobovate, apex acute, obtuse or acuminate; base acute, usually oblique, margin slightly recurved, 2–7.5 cm × 0.9–2.8 cm, puberulent or glabrous above, tomentose below, midrib hairy on both surfaces. Panicles corymbiform, densely flowered, up to 5 cm long; pedicels 2–4 mm long, up to 7 mm long in fruit; calyx lobes ovate or oblong, 3–4.5 mm long, tomentose outside, puberulent inside; petals broadly ovate-oblong, 4.5–5.5 mm long; filaments up to 7 mm long, 4 mm long in staminodes; ovary pubescent. Capsules stipitate, obovoid to obcordate, apiculate (residual style), 1.5–1.8 cm × 1.2–1.6 cm, lobes ellipsoid-oblongoid, slightly ridged at sutures; seeds suborbicular.

Depauperate rainforest relicts, usually on volcanic soil, in Wide Bay district. Flowers and fruits around spring.

5. **HARPULLIA** Roxb.

Trees; young parts, peduncles and flowers stellate hairy. Leaves paripinnate; rachis sometimes winged. Panicles thyriform, axillary; flowers unisexual, long pedicellate, bracts usually as long as pedicels; sepals 5, almost free, subequal, erect, imbricate; petals 5, usually much longer than sepals and reflexed; stamens 5–8, glabrous; disc small, lobed; ovary 2-lobed, hairy, laterally compressed, ovules 1–2 per loculus. Capsules 2-lobed, broadly obcordate or transversely ellipsoid, lobes compressed or inflated; seeds 1 or 2 per loculus, ellipsoid, aril usually cupular.

37 species Indomalaysia, tropical Australia and the Pacific region; 5 species Australia; 3 species south-eastern Queensland.

- | | |
|--|--|
| <p>1. Petiole and rachis broadly winged, wing and margin of leaflet broadly dentate, sinuate or subentire; capsules broadly obovoid, lobes slightly compressed with 2 seeds per loculus
 Petiole and rachis not winged, margin of leaflet entire; capsules with inflated subglobose lobes, seeds 1 per loculus</p> | <p>1. <i>H. alata</i> 2</p> |
| <p>2. Branchlets and peduncles puberulent with pale hairs; capsules with thin divaricate lobes; calyx lobes not persistent in fruit; petals auriculate
 Branchlets and peduncles densely dark brown rusty tomentose; capsules obcordate, valves coriaceous, drying ± woody; calyx lobes persistent in fruit; petals not auriculate</p> | <p>2. <i>H. pendula</i>
 3. <i>H. hillii</i></p> |

1. *Harpullia alata* F. Muell.

Straggly shrub up to 4 m tall, young parts ferruginous tomentose, branches lenticellate. Petioles 6–10.5 cm long, terete, usually winged towards swollen base when young, solitary gland present near its base, rachis with denticulate or subentire wings; leaflets 7–10, opposite or subopposite; petiolules up to ca 3 mm long; leaflet blades elliptic or elliptic-obovate, apex abruptly acuminate, base obtuse, subacute or decurrent, margin with few serrulations or subentire, 6–18 cm × 2.5–7 cm, lowest pair smallest, glabrous, reticulate venation compact, prominent below, upper surface green, shining. Female inflorescences few-flowered axillary racemes, 5–11 cm long, peduncles lenticellate, puberulent, pedicels up to 1.3 cm long; flowers white; calyx lobes 7 mm long, puberulent outside, persistent in fruit; petals 1.2 cm long, glabrous; stamens 8. Capsules broadly obovoid, slightly compressed at margins, up to 2.4 cm × 3.8 cm, valves coriaceous, puberulent outside with scattered stellate hairs; seeds subglobose, nearly enveloped by yellow to red aril. **Fig. 79H.**

Eucalypt forests in gullies of the McPherson Ra. in the Moreton district. Flowers and fruits autumn.

2. *Harpullia pendula* Planchon ex F. Muell. TULIPWOOD; TULIP LANCEWOOD

Tree up to 12 m tall. Petioles 2.2–5.5(–10) cm long; leaflets 4–6, rarely –13; petiolules 3–6 mm long; leaflet blades pale green, semicoriaceous, elliptic- or obovate-oblong, apex acuminate or obtuse, base obtuse, margin entire, 6.5–10.5(–15) cm × 2.4–4(–6) cm, glabrous. Panicles thyriform, axillary, up to 22 cm long, peduncles puberulent; pedicels 0.5–1 cm long, pubescent; flowers greenish-yellow; sepals 4–5 mm long, puberulent outside; petals 7–8 mm long, auriculate at base; stamens 7–8, capsules yellow-orange, transversely ellipsoid, 1.3–2 cm × 2.6–3.5 cm, lobes subglobose, inflated, ± chartaceous and veined; seeds exarillate. **Fig. 79I.**

Depauperate rainforests of the Moreton and Wide Bay districts usually along creek banks, also known from the Burnett district. Flowers and fruits autumn–winter. Timber used for cabinet-making, walking sticks; also cultivated as an ornamental tree.

3. *Harpullia hillii* F. Muell.

Tree up to 8 m tall, twigs pale with red lenticels, young parts peduncles and flowers dark brown tomentose. Petioles 4–8 cm long; leaflets 4–12; petiolules 4–6 mm long; leaflet blades discolorous, rigid, elliptic-oblong to subobovate, apex rounded, base subacute or obtuse, sometimes oblique and subequal, margin entire, 4.5–16 cm × 1.7–6 cm, glabrous, lateral nerves curved and parallel, upper surface shining. Panicles upper axillary, 14–30

cm long, pedicels 4 mm long; sepals 6–8 mm long, persistent in fruit; petals with reflexed apex, 1.2 cm long; stamens 5. Capsules yellowish, subobcordate, 1.4 cm × 3.2 cm, puberulent outside, pilose inside, pericarp drying subwoody; seeds enclosed in red aril. **Fig. 79J.**

Moreton and Wide Bay districts, usually in depauperate rainforests. Flowers and fruits spring to early summer.

6. ATALAYA Blume

Trees. Leaves paripinnate; rachis sometimes winged; leaflets sessile, usually in opposite pairs. Thyrsiform panicles terminal or upper axillary; flowers unisexual, pedicellate; calyx lobes 5, imbricate, suborbicular, concave, outer pair smaller; petals clawed, scales sometimes crested; stamens 8, filaments hairy; disc usually complete; ovary 3-lobed, lobes divergent. Fruits divaricately 2- or 3-lobed, separating into distinct, 1-seeded, indehiscent, dorsally winged samaras; wings laterally elongate; seeds not arillate.

11 species South Africa, Indochina, eastern Malaysia, Australia; 9 species Australia; 3 species south-eastern Queensland.

- | | |
|---|--------------------------|
| 1. Leaflets usually 2, obovate or obovate-elliptic, <i>ca</i> twice as long as wide, apex truncate and emarginate; petals 4; disc incomplete | 1. <i>A. multiflora</i> |
| Leaflets 2–6(–10), linear, usually narrowly oblong-ovate, or oblong-elliptic, <i>ca</i> 4 times as long as wide, apex obtuse; petals 5; disc complete | 2 |
| 2. Leaflets glaucous and usually puberulent, falcate; peduncles, calyces and samaras finely pubescent | 2. <i>A. semiglauca</i> |
| Leaflets usually green and glabrous, not falcate; peduncles, calyces and samaras glabrous | 3. <i>A. salicifolia</i> |

1. *Atalaya multiflora* Benth.

Small tree, branches lenticellate. Petioles 1–1.5 cm long, rachis not winged; leaflets 2, rarely 4; petiolules 2 mm long; leaflet blades obovate or obovate-elliptic, apex broad, truncate or retuse, base oblique, acute, decurrent, 4–9.5 cm × 1.5–4.5 cm, glabrous, lateral nerves oblique, crowded, reticulate venation compact, glossy above, pale below. Panicles 4.5–17 cm long, pedicels 6 mm long; calyx lobes 2–3.5 mm long; petals 6 mm long. Samaras 3.5 cm long including wing, subglabrous, wing up to 1.4 cm wide. **Fig. 79M.**

Eastern parts of region. Fruits summer.

2. *Atalaya hemiglauca* (F. Muell.) F. Muell. ex Benth.

WHITEWOOD

Thouinia hemiglauca F. Muell.

Tree up to 6 m tall. Petioles 0.8–4.5 cm long, rachis slightly winged when young, 1.5–5 cm long; leaflets 2–6, rarely 10, opposite; petiolules 1–5 mm long, leaflet blades very variable, linear, narrowly oblong-ovate to narrowly oblong-elliptic, falcate, apex obtuse, base acute, 6–11(–20) cm × (0.3–)0.8–1.5(–2) cm, glaucous and puberulent below, glabrous or puberulent especially on nerves above. Panicles 6–18 cm long, pedicels 2 mm long, puberulent; flowers white, scented, 1.4 cm diameter; calyx pubescent or puberulent, lobes 2.5–5 mm long; petals 8 mm long, villous tomentose especially towards base. Samaras *ca* 3.8 cm long including wing, tomentose, wing not falcate, margin crisped, up to 1.3 cm wide. **Fig. 79N.**

Widespread in the Darling Downs and Burnett Districts. Flowers and fruits spring–summer. Regarded in most inland areas as very good fodder. Its toxicity has been the subject of considerable argument and investigation. Field evidence suggests that the plant, particularly young shoots, causes staggers under some conditions in sheep, cattle and horses.

3. *Atalaya salicifolia* (A.DC.) Blume*Sapindus salicifolius* A.DC.; *Atalaya virens* C. T. White

Tree up to 10 m tall, young parts puberulent. Petioles 1.5–3 cm long, rachis usually winged only in juveniles; leaflets 2–4, rarely –6, opposite; petiolules *ca* 1 mm long; leaflet blades green, narrowly elliptic-oblong or obovate-oblong, apex obtuse, base acute, 4.5–12.5 cm × 1–2.8 cm, glabrous, shining above, not glaucous below. Panicles up to 16 cm long, pedicels 2 mm long; flowers 1 cm diameter; calyx lobes 2.5–3 mm long, glabrous; petals 7 mm long. Samaras 2.5–3.5 cm long including wing, glabrous, wings divaricate, falcate, *ca* 1 cm wide. **Fig. 79L.**

Widespread except in the Darling Downs district. Flowers and fruits spring-summer.

7. CASTANOSPORA F. Muell.

Trees with hairy branchlets. Leaves paripinnate with long, terete, broad-based petioles; leaflets alternate; petiolules channelled above; leaflet blades prominently and closely nerved, subglaucous and papillose below. Flowers in usually axillary, large thyriform panicles; calyx lobes 5, subvalvate; petals 5, shortly clawed, scales small, crestless; stamens 8, filaments exerted, hairy; disc regular; ovary 2-locular, ovule solitary per locus. Fruits depressed-globose, pericarp fleshy; seeds large, subglobose, aril absent.

1 species endemic to warmer parts of eastern Australia, occurring in south-eastern Queensland.

1. *Castanospora alphanthii* (F. Muell.) F. Muell.**BROWN TAMARIND***Ratonia alphanthii* F. Muell.; *Nephelium callarrie* F. M. Bailey

Tree up to 35 m tall, young parts tomentose, branchlets with rusty lenticels. Petioles 8–19 cm long, lenticellate, pubescent; leaflets 6–13; petiolules flexuose, 0.8–1.2 cm long; leaflet blades narrowly elliptic-oblong, apex acute to acuminate, base subacute, margin entire, 9–17.5 cm × 3–6 cm, glabrous above, subglaucous and papillose below, pubescent or puberulent, lateral nerves numerous, slender, reticulations fine, dense. Panicles up to 27 cm long, peduncles divaricate, pubescent, pedicels 1.5–3 mm long, shorter in females; calyx cupular, 2.5 mm long, lobes *ca* 1 mm long, pubescent; petals narrow, *ca* 2 mm long. Fruits reddish, depressed-globose, shortly beaked when young, 2.8 cm × 3.8 cm, finely tomentose outside, usually obscurely 3- or 4-grooved, pericarp crustaceous, indehiscent, stipe short; seeds large, chestnut-like, brown. **Fig. 79O.**

Remnant rainforests along creeks in the Moreton, Burnett and Wide Bay districts. Flowers and fruits autumn to spring. Useful as an ornamental and shade tree.

8. ALECTRYON Gaertn.

Trees. Leaves paripinnate; leaflets opposite or alternate, usually increasing in size towards the tip, margin entire, serrate or dentate. Inflorescences racemiform or paniculiform in upper axils; flowers mostly unisexual, small, regular; calyx 5-toothed, lobes ovate, valvate; petals 5, very small, or absent, scales 2, hairy, crests absent; stamens 6–8, filaments pubescent; disc small, annular; ovary 2–4-lobed, ovule solitary. Fruits usually sessile and 3-lobed, sometimes 1- or 2-lobed by abortion, lobes usually knob-like, globose or ellipsoid, or fruits with grooves; pericarp usually thick and splitting irregularly; seeds partly embedded in fleshy aril.

15 species from Malaysia to Polynesia, tropical Australia and New Zealand; 9 species Australia; 6 species south-eastern Queensland.

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|--|-----------------------|
| 1. Petals present; aril not granular; leaflets entire, rarely serrulate towards apex | 2 |
| Petals absent; aril granular; leaflets entire, serrate or denticulate | 4 |
| 2. Branchlets with crisped hairs | 1. <i>A. connatus</i> |
| Branchlets with appressed straight hairs or glabrous | 3 |

- | | |
|--|--------------------------|
| 3. Leaflets glaucous, pubescent or puberulent below; fruits finely pubescent, depressed obovoid, \pm retuse on top, 3- or 4-lobed | 2. <i>A. coriaceus</i> |
| Leaflets not glaucous, puberulent or glabrous below; fruits glabrous, usually didymous, obovate or transversely ellipsoid, rarely 1- or 3-lobed | 3. <i>A. subcinereus</i> |
| 4. Leaflets entire, not in pairs increasing in size towards tip; fruits 1-lobed, obliquely ellipsoid or subglobose, subglabrous | 4. <i>A. unilobatus</i> |
| Leaflets serrate, denticulate or subentire, in opposite pairs increasing in size towards tip; fruits with (1-)2-4 knob-like lobes or indistinctly 2-lobed, densely rusty villous or velvety hairy, rarely puberulent | 5 |
| 5. Branchlets, leaves, peduncles and fruits densely rusty villous tomentose; margins of leaflets usually serrate; fruits 3-lobed, lobes knob-like, divaricate | 5. <i>A. tomentosus</i> |
| Branchlets, peduncles and leaves puberulent or subglabrous; margins irregularly denticulate or serrulate or subentire; fruits usually transversely ellipsoid with 2 indistinct lobes, or subglobose and 1-lobed, velvety hairy to puberulous | 6. <i>A. subdentatus</i> |

1. *Alectryon connatus* (F. Muell.) Radlk.

Nepheium connatum F. Muell.

Tree up to 20 m tall, young parts, peduncles, pedicels, calyces pubescent with yellow crinkly hairs. Petioles 2-3 cm long, flexuose, flat above; leaflets 2-6, alternate or opposite; petiolules 1-3 mm long; leaflet blades elliptic-oblong or narrowly obovate, apex obtuse, emarginate, base acute or subacute, oblique, 4.5-11.5 cm \times 1.5-5.5 cm, upper surface shining, glabrous, lower surface pale, pubescent or glabrescent. Panicles in upper axils 4.5-12 cm long, pedicels up to 3 mm long; female flowers 2-4 mm diameter, males smaller; calyx lobes *ca* 0.5 mm long; petals white, 2-3 mm long, absent in males. Fruits subglobose or subovoid, 3-, rarely 4-grooved, mucronate or depressed, *ca* 1 cm \times 1.2 cm, \pm inflated, subchartaceous, pubescent; seeds black, embedded in red thinly fleshy aril. **Fig. 79G.**

Common in light rainforests in the Moreton, Burnett and Wide Bay districts. Flowers and fruits late winter to autumn.

2. *Alectryon coriaceus* (Benth.) Radlk.

Nepheium coriaceum Benth.

Small tree, young branches with short white appressed hairs. Petioles 1.5-4 cm long; leaflets usually 2, opposite, rarely 4 or 6; petiolules 5-6 mm long, stout, swollen basally; leaflet blades obovate-oblong or elliptic, apex obtuse, base obtuse-oblique, margin entire, 5.5-13.5 cm \times 2.5-7.5 cm, glabrous above, glaucous and pubescent below, lateral nerves oblique. Thyrsiform panicles 5-16 cm long, peduncles pubescent, pedicels 1-3 mm long; male flowers 2.5 mm diameter, females 5.5 mm diameter; calyx lobes *ca* 1 mm long; petals 1-1.8 mm long; stamens 8-10. Fruits depressed obovoid, up to 1.2 cm \times 0.7 cm, usually 3-lobed, lobes knob-like, densely pale rusty pubescent; aril red, fleshy, cupular with lobed margins. **Fig. 79F.**

Usually on sandy soil in coastal closed forests of the Moreton and Wide Bay districts. Flowers and fruits late spring to winter.

3. *Alectryon subcinereus* (A. Gray) Radlk.

NATIVE QUINCE

Cupania subcinerea A. Gray; *Nepheium leiocarpum* F. Muell.; *Alectryon laevis* Radlk.

Tree up to 10 m tall, young parts and inflorescences puberulent; branchlets greyish. Petioles 1.5-3.5 cm long, broad and swollen at base; leaflets 2-7, alternate; petiolules 2 mm long; leaflet blades narrowly elliptic-oblong and attenuate at both ends or elliptic or subovate, apex acute, obtuse or shortly acuminate, base subacute, margin entire or coarsely serrulate, especially towards apex (serrate when juvenile), 8-16.5 cm \times 2-5.5 cm, glabrous above, puberulent below, lateral nerves oblique. Panicles 10-15 cm long, peduncles white hairy, pedicels up to 2.5 mm long; male and female flowers 2-3 mm diameter; calyx lobes *ca* 0.5 mm long, pubescent; petals *ca* 1.5 mm long; stamens 6-8. Fruits divaricately 2-lobed, rarely 1- or 3-lobed, lobes globose, glabrous; seeds glossy, enveloped in red fleshy aril. **Fig. 79E.**

Common in light rainforests along creek banks and gullies in the Darling Downs, Moreton and Wide Bay districts. Flowers and fruits late spring to early winter.

4. *Alectryon unilobatus* S. Reynolds

Tree, young parts pubescent. Petioles 2.5–6 cm long; leaflets 4–6; petiolules 2 mm long, flexuose, pulvinate; leaflet blades coriaceous, elliptic, apex obtuse or abruptly acuminate, base narrow and decurrent on petiolule, margin entire, 6–8 cm × 2–3.5 cm, glabrous above, puberulent below, lateral nerves and reticulations prominent. Panicles 3.5–11 cm long; flowers 3.5 mm diameter; calyx lobes 0.5 mm long; petals absent. Fruits obliquely ellipsoid, 1-lobed, up to 1.6 cm × 1.2 cm, glabrescent; aril red, granular.

Known only from around Gympie and Imbil in the Wide Bay district. Fruits summer.

5. *Alectryon tomentosus* (F. Muell.) Radlk.

Nephelium tomentosum F. Muell.

Tree up to 8 m tall, young parts, peduncles, fruits rusty villous tomentose. Petioles 2–3.5 cm long; leaflets 4–8, usually opposite; petiolules 2 mm long; leaflet blades of uppermost pair longest with oblique base, lowermost pair smallest, ovate, others narrowly ovate or elliptic, apex obtuse, rarely acute, base obtuse, margin serrate, 4–14.5 cm × 2–4.5 cm, upper surface puberulent, lower rusty tomentose, lateral nerves patent. Male flowers in spike-like panicles 2–4 cm long, females in wider panicles 4.5–8.5 cm long, pedicels up to 1.5 mm long; flowers 2–4 mm diameter, males smaller than females; calyx lobes ca 1 mm long, pubescent; petals absent; stamens 6–8. Fruits 3-, sometimes 1-knob-lobed, rusty tomentose; seeds half enveloped in red granular aril. **Fig. 79C.**

Coastal closed forest in the Moreton and Wide Bay districts, extending inland ca 60 km. Flowers and fruits from late winter to autumn. Planted for ornamental purposes.

6. *Alectryon subdentatus* (F. Muell. ex Benth.) Radlk.

Nephelium subdentatum F. Muell. ex Benth.

Tree up to 10 m tall, young parts pubescent. Petioles 0.5–2 cm long; leaflets 2 or 4, rarely 6, opposite; petiolules 1–2 mm long; leaflet blades of upper pair largest, elliptic or obovate, apex obtuse, base acute or subacute, margin serrulate, denticulate or subentire, 2.5–9.5 cm × 1.4–5.5 cm, upper surface shiny, puberulent or glabrous, lower pubescent to puberulent, lateral nerves suboblique. Panicles up to 6 cm long; flowers pink, 1.5–3.5 mm diameter; calyx lobes ovate; petals absent. Fruits transversely ellipsoid with 2 indistinct lobes, rarely 1-lobed, 1.2 cm × 1.7 cm, velvety rusty hairy; seeds in granular red aril. **Fig. 79D.**

Rainforest of the Burnett, Darling Downs and Moreton districts. Fruits late winter to autumn.

9. JAGERA Blume

Trees with saponin in bark, twigs, leaves and pericarp. Leaves paripinnate; leaflets subopposite; margin serrulate to entire; surfaces pellucid punctate. Inflorescences axillary thyriform panicles clustered at tips of branchlets; flowers mostly unisexual; calyx 5-lobed, lobes ovate, imbricate; petals 5, ovate, clawed, scales 2, crested; stamens 7–9, exserted; disc complete; ovary subglobose, sessile, style filiform. Capsules subglobose or obovoid, obscurely 3- or 4-grooved, setose hairy; seeds obovoid with small basal cupular aril.

4 species eastern Malaysia, New Guinea and Australia; 3 species Australia; 1 species south-eastern Queensland.

1. *Jagera pseudorhus* (A. Rich.) Radlk.

FOAM BARK TREE; FERN TREE

Cupania pseudorhus A. Rich.

Tree up to 9 m tall. Leaves clustered at tip of branchlets; petioles 1.5–10 cm long; leaflets in 4–13 pairs; leaflet blades elliptic-ovate or oblong-ovate, often falcate, apex acute or acuminate, base unequal and obtuse or acute, margin serrate or subentire and recurved, 2.5–11.5 cm × 1–3.2 cm, glabrous or puberulent on nerves above, puberulent below, pellucid punctate. Panicles 6.5–25 cm long, pedicels 3 mm long; flowers 2 mm diameter; calyx lobes ± pubescent outside; petals pink or reddish; filaments 3 mm long, anthers 2 mm long. Capsules obovoid, 1.6–1.8 cm × 1.5 cm, rusty villous tomentose with irritant hairs, 3- or 4-valved, valves thick.

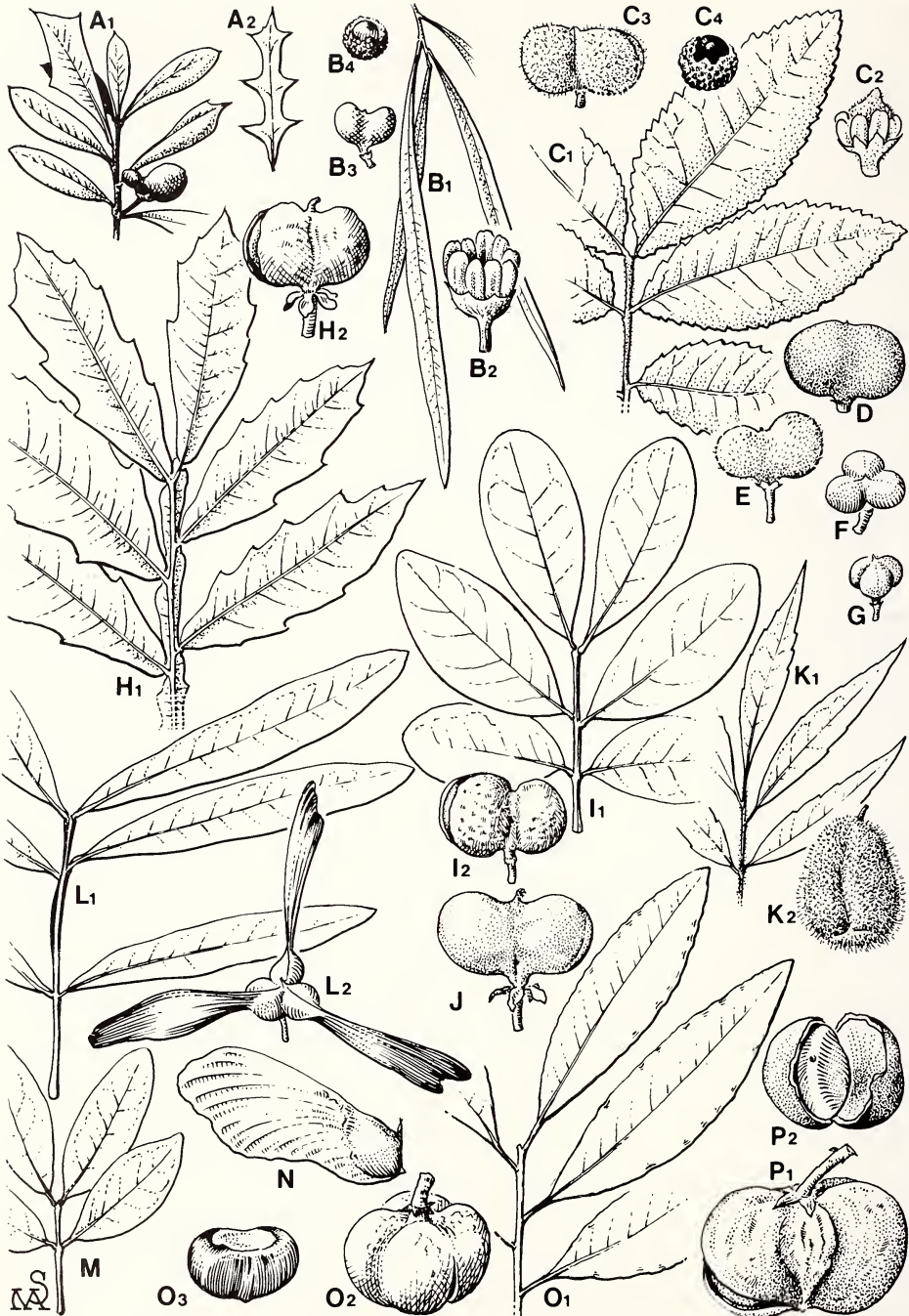


Fig. 79

SAPINDACEAE — A-B *Heterodendrum* spp. — A₁-A₃, *H. diversifolium*, A₁, part of fruiting stem with adult foliage x $\frac{2}{3}$, A₂, juvenile leaf x $\frac{2}{3}$; B₁-B₄, *H. oleifolium* var. *microcalyx*, B₁, leaves x $\frac{2}{3}$, B₂, flower x3, B₃, fruit x $\frac{2}{3}$, B₄, seed x $\frac{2}{3}$; C-G *Alectryon* spp. — C₁-C₄, *A. tomentosus*, C₁, part leaf x $\frac{2}{3}$, C₂, flower x3, C₃, fruit x1, C₄, seed x1; D *A. subdentatus*, fruit x1; E *A. subcinereus*, fruit x1; F *A. coriaceus*, fruit x1; G *A. connatus*, fruit x1; H-J *Harpullia* spp. — H₁-H₂, *H. alata*, H₁, leaf x $\frac{1}{3}$, H₂, fruit x $\frac{2}{3}$; I₁-I₂, *H. pendula*, I₁, leaf x $\frac{1}{3}$, I₂, fruit x $\frac{2}{3}$; J *H. hillii*, fruit x $\frac{2}{3}$; K₁-K₂, *Jagera pseudorhus* forma *pseudorhus*, K₁, part leaf x $\frac{1}{2}$, K₂, fruit x1; L-N *Atalaya* spp. — L₁-L₂, *A. salicifolia*, L₁, leaf x $\frac{2}{3}$, L₂, fruit x1; M *A. multiflora*, leaf x $\frac{2}{3}$; N *A. hemiglauca*, fruit x1; O₁-O₃, *Castanospora alphandii*, O₁, part leaf x $\frac{1}{3}$, O₂, fruit x $\frac{2}{3}$, O₃, seed x $\frac{2}{3}$; P₁-P₂, *Diploglottis cunninghamii*, P₁, fruit x1, P₂, dehisced fruit showing seed x1.

Two forms occur in the region:

1. Branchlets, petioles and peduncles densely rusty hairy; leaflets 7-9-paired, blades elliptic-ovate, apex acute, 2.5-6(-8) cm × 1-2.2(-2.8) cm; panicles much branched **Fig. 79K**

J. pseudorhus forma
pseudorhus

Branchlets, petioles and peduncles puberulent to glabrous; leaflets 4-9-paired, blades usually narrowly ovate-oblong, falcate, apex attenuate and acuminate, 5-11.5 cm × 1.5-3.2 cm; panicles usually with few short branches

J. pseudorhus forma
pilosiuscula

J. pseudorhus forma **pseudorhus** is known from the Burnett, Wide Bay and Moreton districts, while **J. pseudorhus** forma **pilosiuscula** Radlk. is found north of Fraser I. Both occur on edges of rainforests on creek banks. Flowers and fruits autumn to spring. Tree ornamental and is said to be used for honey production. Timber is light pinkish brown and close grained and has been suggested for use as tool handles. The bark was used by Aborigines as a fish poison.

10. GUIOA Cav.

Leaves paripinnate; leaflets 2-8, opposite or alternate, margins usually entire, mostly glaucous below. Inflorescences axillary or ramiflorous, slender panicles, racemes or thyrses; flowers unisexual; calyx lobes 2-seriate, unequal, imbricate, suborbicular, gland dotted; petals small, shortly clawed, scales 2, usually crested; stamens 8, exserted, filaments pilose; disc fleshy, usually incomplete; ovary triquetrous. Capsules obcordate with 3 thin wing-like lobes, lobes usually compressed with thickened margins; valves thick, glabrous, spreading after dehiscence; seeds ellipsoid, covered by thin, tailed aril.

70 species Indomalaysia, Australia and Pacific region; 6 species Australia; 2 species south-eastern Queensland.

1. Leaflet blades elliptic-ovate, apex acuminate, lower surfaces glaucous only when dry, glabrous, solitary prominent domatia present towards base

1. *G. acutifolia*

Leaflet blades obovate-elliptic or elliptic, apex obtuse, lower surfaces very glaucous, puberulent, domatia absent

2. *G. semiglauc*

1. *Guioa acutifolia* (F. Muell.) Radlk.

Cupania semiglauca F. Muell. var. *acutifolia* F. Muell.

Tree up to 13 m tall. Petioles 1.2-3 cm long; leaflets 2-6, rarely -8, subopposite; petiolules stout, 3-5 mm long; leaflet blades elliptic or elliptic-ovate, acute or acuminate both ends, 5.5-17.5 cm × 1.8-6.5 cm, glabrous, lateral nerves suboblique with solitary prominent domatia towards base. Panicles usually in clusters, upper axillary in axil of fallen leaves or ramiflorous, slender, 6.5-8.5 cm long; flowers cream, perfumed, 3-4 mm diameter. Capsules 1 cm × 2.2 cm, 2-3-lobed, lobes suborbicular, divaricate.

Disturbed rainforests as far south as Gympie and Fraser I. in the Wide Bay district. Flowers and fruits late spring to autumn.

2. *Guioa semiglauca* (F. Muell.) Radlk.

Nephelium semiglaucum F. Muell.; *Cupania semiglauca* (F. Muell.) F. Muell. ex Benth.; *Arytera semiglauca* (F. Muell.) F. Muell.

Tree up to 6 m tall, young parts, petioles, petiolules and peduncles pubescent. Petioles 1-3 cm long; leaflets 2-6; petiolules up to 4 mm long; leaflet blades obovate-elliptic to narrowly elliptic, apex obtuse, mucronate, base cuneate, decurrent, 4.5-8.5 cm × 1.5-3 cm, glabrous above, puberulent, glaucous and densely gland dotted below. Panicles solitary in each axil, 3-6(-15) cm long, pedicels 2 mm long; flowers 4 mm diameter. Capsules sessile, obcordate, attenuate at base, up to 0.6 cm × 1.3 cm, lobes divaricate, united to about half-way, slightly compressed. **Fig. 80A.**

Usually along creek banks in rainforests in the Burnett, Moreton and Wide Bay districts. Flowers and fruits spring to autumn. The trees are quite ornamental and when in flower much visited by bees.

11. CUPANIOPSIS Radlk.

Trees. Leaves paripinnate; leaflets 5–24, alternate, margin entire or serrate, usually foveolate. Panicles axillary; calyx lobes 2-seriate, elliptic or suborbicular, concave, outer ones smaller; petals broadly ovate, sessile, with 2 hairy crestless scales; stamens 6–8, filaments filiform, pubescent towards base; disc complete; ovary subglobose, 3-, rarely 4-locular, styles stout, short. Capsules globose or obovoid, 3-locular, sessile or stipitate, valves thick, rugose, wrinkled outside when dry, densely hairy inside; seeds ellipsoid, nearly covered by aril.

60 species Australia, Polynesia; 7 species Australia; 6 species south-eastern Queensland.

- | | | |
|--|-----------------------------|---|
| 1. Leaflets cuneate, margin usually serrate from above middle | 1. <i>C. shirleyana</i> | 2 |
| Leaflets not as above | | |
| 2. Leaflet margins entire; leaflet base cuneate | | 3 |
| Leaflet margins crenate, serrulate, dentate or subentire; leaflet base oblique | | 4 |
| 3. Petioles 3–7 cm long; leaf blades 2.5–6 cm broad; panicles 8–25 cm long | 2. <i>C. anacardioides</i> | |
| Petioles 1–2.5 cm long; leaf blades 1–2.5 cm broad; panicles 4–8 cm long | 3. <i>C. parvifolia</i> | |
| 4. Leaflets with foveoles at most of the nerve axils below | 4. <i>C. foveolata</i> | |
| Leaflets without foveoles | | 5 |
| 5. Petioles less than 7 cm long | 5. <i>C. serrata</i> | |
| Petioles more than 14 cm long | 6. <i>C. flagelliformis</i> | |

1. *Cupaniopsis shirleyana* (F. M. Bailey) Radlk.

Cupania shirleyana F. M. Bailey

Tree up to 10 m tall, young parts rusty tomentose. Petioles up to 1.2 cm long; leaflets 7–15, opposite or alternate; petiolules up to ca 1 mm long; leaflet blades cuneate, apex very broadly truncate or coarsely toothed, margin serrate from middle upwards, 0.8–8.5 cm × 0.8–4 cm, upper pair usually largest, lowermost pair small, falcate, auriculate and clasping petiole, glabrous or puberulent above, pale, pubescent or puberulent below. Racemes slender, 5–18 cm long, peduncles pubescent, pedicels up to 1 mm long; calyx lobes 4–5 mm long; petals 2 mm long; stamens 7. Capsules globose to obovoid, obscurely 3-lobed, finely pubescent outside, pilose puberulent inside; seeds nearly covered by orange-red aril. **Fig. 80H.**

Depauperate rainforests from Brisbane to Bundaberg. Flowers and fruits summer to winter.

2. *Cupaniopsis anacardioides* (A. Rich.) Radlk.

Cupania anacardioides A. Rich.

Small tree, young parts, petioles, petiolules, peduncles pubescent. Petioles 3–7 cm long; leaflets 5–11; petiolules 2–7 mm long; leaflet blades elliptic, obovate or oblong, apex broad, retuse, base cuneate, margin entire, 5.5–19 cm × 2.5–6.5 cm, shining, glabrous above, pale, glabrous or puberulent below, lateral nerves spreading, parallel. Panicles 8–25 cm long, pedicels up to 2.5 mm long; outer calyx lobes 2.5 mm long, inner 3–4 mm long, puberulent; petals 1.5–3 mm long; stamens 8. Capsules yellow, subglobose, 3-furrowed and 3-ribbed, apiculate, 1.5 cm × 1.5 cm, shortly stipitate, valves thick, wrinkled and puberulent outside, densely rusty tomentose inside; seeds almost enclosed by red-orange aril. **Fig. 80G.**

Widespread in depauperate rainforests, on creek banks and on coastal dunes in the Moreton and Wide Bay districts. Flowers and fruits summer to winter. Cultivated in parks and along streets.

3. *Cupaniopsis parvifolia* (F. M. Bailey) L. A. S. Johnson

Cupania anacardioides A. Rich. var. *parvifolia* F. M. Bailey; *Cupaniopsis anacardioides* (A. Rich.) Radlk. var. *parvifolia* (F. M. Bailey) Domin

Small tree. Petioles 1–2.5 cm long; leaflets 6–8; petiolules ca 2 mm long; leaflet blades narrowly obovate or elliptic, apex retuse, base cuneate, 2.5–7.5 cm × 1–2.5 cm, usually shiny above, lateral nerves 8–14 pairs, straight, parallel. Panicles 4–8 cm long, pedicels 3–5 mm long; flowers 5 mm diameter. Capsules 1 cm × 1 cm.

Depauperate rainforests throughout the region, usually found on hillsides. Flowers and fruits spring–summer.

4. *Cupaniopsis foveolata* (F. Muell.) Radlk.*Cupania foveolata* F. Muell.

Tree up to 25 m tall, branchlets lenticellate, young parts puberulent. Petioles 3–5.5 cm long; leaflets 8–15, up to 20 in juveniles; petiolules 2–5 mm long, puberulent; leaflet blades chartaceous, narrowly oblong-elliptic or oblong-ovate, apex obtuse or acute, base acute, decurrent and oblique, margin remotely crenate-serrulate, repand, 4.5–9(–14) cm × 1.5–2.5 cm, glabrous, lateral nerves curved, parallel, slender, foveolate at most axils below. Panicles divaricately branched, 6.5–10.5 cm long, pedicels 1–2 mm long; calyx lobes 2.5–4 mm long; petals 2 mm long. Capsules subglobose, ca 1 cm × 1 cm, valves puberulent outside; seeds almost covered by orange aril.

Rainforests at high altitudes. Flowers and fruits spring–summer.

5. *Cupaniopsis serrata* (F. Muell.) Radlk.*Cupania serrata* F. Muell.

Tree, branchlets dark brown tomentose. Petioles 4–6.5 cm long; leaflets (6–)9–13(–16); petiolules 2–5(–10) mm long, pubescent; leaflet blades semicoriaceous, oblong-elliptic, oblong-ovate or obovate-oblong, apex obtuse or abruptly acuminate, base obtuse or subacute, oblique, margin coarsely dentate to subentire, 4–12.5 cm × 2–5 cm, glabrous above, pubescent or puberulent on nerves below. Panicles 2.5–5.5(–8) cm long, pedicels 1 mm long; calyx lobes 5 mm long, tomentose outside; petals 2.2 mm long; stamens 8. Capsule subglobose or obtriangular, tomentose outside.

Two varieties occur in the region:

1. Petiolules 2–5 mm long; leaflet blades oblong-elliptic with abruptly acuminate apex and coarsely serrate or dentate margin; capsules trigono-globose, ca 1.2 cm × 1.5 cm, rusty brown tomentose outside

C. serrata var. *serrata*

- Petiolules 7–10 mm long; leaflet blades obovate-oblong with obtuse apex and remotely denticulate, subentire or entire margin; capsules obtriangular, ca 2.5 cm × 2.5 cm, densely rusty villous tomentose outside **Fig. 80I**

C. serrata var. *tomentella*

Both *C. serrata* var. *serrata* and *C. serrata* var. *tomentella* (F. Muell. ex Benth.) Radlk. (*Cupania tomentella* F. Muell. ex Benth.) occur in the Moreton and Wide Bay districts. Flowers and fruits spring–summer.

6. *Cupaniopsis flagelliformis* (F. M. Bailey) Radlk.*Cupania flagelliformis* F. M. Bailey

Small tree or shrub up to 4 m tall, young parts dark rusty tomentose. Petioles 14.5–16 cm long, pubescent; leaflets 10–24, subopposite; petiolules 0.8–3 cm long, puberulent; leaflet blades coriaceous, discolourous, oblong-elliptic, oblong-obovate or oblong-ovate, apex acute or shortly acuminate, base obtuse, subacute and oblique, margin remotely serrulate, wavy, 6.5–17 cm × 2.5–4 cm, glabrous or puberulent on nerves below, lateral nerves suboblique, raised below. Panicles 17–20 cm long, branches divaricate, racemiform, peduncles pubescent, pedicels ca 1 mm long; sepals dull red, 5 mm long; petals white, 3 mm long; capsules rusty red brown, obovoid, 3-grooved, 1.2–2.4 cm × 1.4–2.7 cm, pale rusty tomentose; aril cream.

Springbrook area. Flowers and fruits spring.

12. RHYSOTOECHIA Radlk.

Trees, mostly glabrous, mostly monoecious. Leaves paripinnate; leaflets 2–8, petiolulate; leaflet blades coriaceous and usually subrigid with prominent reticulations, usually drying yellowish-green, surfaces glossy, with sunken glands. Inflorescences thyrsoïd, paniculate, axillary or terminal; flowers mostly unisexual; calyx 5-lobed, lobes 2-seriate, imbricate, outer pair smaller, elliptic, concave, margin petaloid; petals 5, broadly obovate, rarely with thickened basal margin, scales usually absent; stamens 7–8, filaments hairy; disc annular; ovary obovoid, attenuate at base, 3-, rarely 2-locular. Capsules subobcordate or

subglobose, usually turgid, exocarp fleshy, 3- or 2-locular, loculicidally dehiscent, valves glabrous, coriaceous, drying wrinkled and reflexed; seeds ellipsoid, aril basal, small, fleshy.

13–14 species Philippines, Borneo, Australia; 4 species Australia; 1 species south-eastern Queensland.

1. *Rhysotoechia bifoliolata* Radlk.

Cupania dunnii Maiden & Betche; *Cupaniopsis dunnii* (Maiden & Betche) Maiden & Betche

Small tree, young parts puberulent. Petioles 1.5–4 cm long, terete; leaflets 2, rarely 4, opposite; petiolules 5–7 mm long, leaflet blades yellowish-green, coriaceous, obovate-elliptic or elliptic, apex obtuse or acute, base acute, decurrent, margin entire, sometimes recurved, 5.5–8.5 cm × 2.5–4 cm, glabrous, lateral nerves few, looping away from margin, glossy above. Panicles axillary, solitary, 4–9.5 cm long, peduncles puberulent, pedicels 5 mm long; flowers 5–7 mm diameter; calyx lobes 3 mm long, gibbous at base; petals 2 mm long; stamens 7, exerted. Capsules orange, sessile, 1.5–2.6 cm × 1–3.2 cm, 3-lobed, lobes divaricate, turgid or compressed; seeds shining, black, ellipsoid, base enclosed in thick aril. **Fig. 80B.**

Rainforest margins on ranges from McPherson Ra. to near Maryborough. Flowers and fruits late winter to spring.

13. LEPIDEREMA Radlk.

Shrubs or trees, usually glabrous. Leaves paripinnate; leaflets opposite or alternate; margins usually entire, upper surfaces with appressed often lepidote glands. Inflorescences axillary or ramiflorous, mostly paniculate, thyrsoid; flowers regular, unisexual; calyx lobes 2-seriate, imbricate, outer ones smaller, broadly elliptic, concave, petaloid; petals 5, obovate or elliptic, scales, crests or thickenings absent; stamens 6–8, filaments usually hairy; disc regular; ovary 3-locular with 1 ovule per loculus; style slender. Capsules small, subglobose, obovoid or obcordate, glabrous; 3-valved, valves thick, ± woody; seeds ellipsoid or oblongoid, aril fleshy or thin, oily, mostly covering seed.

8 species Australia and New Guinea; 6 species Australia; 1 species south-eastern Queensland.

1. *Lepiderema pulchella* Radlk.

Small tree up to 15 m tall; branchlets glabrous. Leaves with (1–)2–4 pairs of leaflets; petioles 1.4–2.5 cm long, pulvinate; petiolules up to 3 mm long; leaflet blades narrowly oblong-ovate, oblong-subobovate to elliptic, usually tapering towards apex, bluntly acuminate, base oblique, acute or shortly attenuate, margin entire, 4–8 cm × 1.2–2 cm, surfaces rarely minutely dotted. Panicles axillary, 5.5–12 cm long, pedicels 2–3.5 mm long; flowers yellow-orange, 5–6 mm diameter; calyx lobes pale yellow, 1.5–3.5 mm long; petals 3 mm long; filaments 2–3.5 mm long. Capsules brownish, subglobose, apiculate, up to 1 cm × 1 cm; aril yellow.

On creek and river banks at edge of rainforests. Flowers and fruits spring.

14. DIPLOGLOTTIS Hook. f.

Trees, usually with large leaves and fluted hairy branchlets. Leaves paripinnate, leaflets opposite or alternate, usually large, entire. Flowers mostly unisexual, in axillary panicles; calyx 5-lobed, lobes usually ovate, narrowly imbricate; petals 5, 5th one often reduced, clawed, with 2-lobed crested hairy scales; stamens 6–9, filaments hairy towards base; disc complete or incomplete; ovary 3-gonous, sessile, ovules 1 per loculus, usually 1 or 2 loculi only developing. Capsules large, subglobose to transversely ellipsoid, usually with 2–3 distinct lobes or not lobed, aborted lobes usually present near its base; 2–3-valved, valves thick or thin, usually hairy; seeds large, subglobose, slightly compressed, enclosed in fleshy, 2-lobed aril.

About 8 species Australia and probably also in New Guinea; 8 species Australia; 2 species south-eastern Queensland.

1. Branchlets and often leaves densely rusty hairy; leaves including petiole 45–130 cm long; capsules up to 2.5 cm diameter, usually 2–3-lobed, rusty hairy
 Branchlets and leaves puberulous or glabrous; leaves including petiole 24–33 cm long; capsules up to 7 cm diameter, usually not lobed, puberulent or glabrous
1. *D. cunninghamii*
 2. *D. campbellii*

1. *Diploglottis cunninghamii* (Hook.) Hook. f. NATIVE TAMARIND

Cupania cunninghamii Hook.; *Diploglottis australis* (G. Don ex Cunn.) Radlk.

Slender tree up to 6 m tall, branchlets rusty velvety tomentose. Leaves including petioles 45.5–130 cm long; petioles 8–11 cm long, rusty tomentose; leaflets 6–10(–12), alternate or subopposite; petiolules 2–5 mm long, rusty tomentose; leaflet blades thinly coriaceous, elliptic-oblong or oblong, apex broad, obtuse, rarely abruptly acuminate, base truncate, oblique, margin entire, 9–31 cm × 5–12 cm, glabrous above, puberulent below, lateral nerves 19–26 pairs, parallel, bullate below. Panicles upper axillary, 12–28 cm long, pedicels 6 mm long, pubescent; calyx lobes 2.5 mm long; petals with short claw, 2.5 mm long; stamens 8. Capsules yellow, 1.5 cm × 2.5 cm, usually 2-lobed and transversely ellipsoid or subglobose and 1-lobed, rusty tomentose, valves veined; seeds enclosed in orange-red aril. **Fig. 79P.**

Common in depauperate rainforests as far west as Bunya Mts. The acid fruits have been used for jam making and for acid drinks. Timber is suitable for general indoor work.

2. *Diploglottis campbellii* Cheel

Tree up to 20 m tall, branchlets pubescent. Leaves including petiole 24–33 cm long; petioles 3.5–7.5 cm long; leaflets 4–8, opposite; petiolules 2–4 mm long; leaflet blades elliptic or elliptic-ovate, apex acute or shortly acuminate, base subacute, oblique, margin entire, 7–15 cm × 2.5–7 cm, glabrous, lateral nerves 10–14 pairs, arched. Panicles axillary, 12–16 cm long, pedicels 3.5 cm long, pilose; calyx lobes 2.5–3 mm long; petals with long claw, ca 2 mm long; stamens 9; disc with erect lateral lobe enclosing stamens on one side. Capsules subglobose, usually not lobed, 3.5–7 cm × 3.5–7 cm; seeds enclosed by red acidic aril.

Recorded from Tallebudgera Ck. area in Gold Coast Hinterland. Fruits late summer.

15. SARCOPTERYX Radlk.

Trees with saponin in bark, twigs and leaves. Leaves paripinnate; leaflets 1–5 pairs, alternate; leaflet blades with entire margins, lower surfaces with clavate glands, lateral nerves raised below forming domatia-like pockets at junction with midrib. Panicles axillary, thyrsoid; flowers unisexual; calyx 5-lobed, lobes narrowly ovate; petals broadly obovate, clawed, slightly papillose, scales hairy, crested, crests small, usually hidden by hairs on scales; stamens 7 or 8, filaments exerted, subulate, hairy, anthers papillose; disc cupular, fleshy; ovary obovoid, 3-locular, ovules 1 per loculus. Capsules subdrupaceous, obovoid or broadly oblongoid, usually sharply angular, angles fleshy or wing-like, valves thickly coriaceous, glabrous inside; seeds with thin aril.

8 species eastern Malaysia to Australia; 2 species Australia; 1 species south-eastern Queensland.

1. *Sarcopteryx stipata* (F. Muell.) Radlk.

CORDUROY

Cupania stipata F. Muell.; *Ratonia stipitata* (F. Muell.) Benth.

Tree up to 25 m tall, young parts dark brown to rusty tomentose. Petioles 1.5–3 cm long, pubescent; leaflets pinkish-red when young, 4–8, rarely 2; petiolules slender, 5–7 mm long, rusty hairy, leaflet blades usually narrowly elliptic-ovate or ovate, apex attenuate, acute or acuminate, base obtuse or acute, subequal, margin entire, 3.5–9.5 cm × 1.2–4 cm, shining and glabrous above, puberulent or glabrous below, lateral nerves few, suboblique and arched, raised below, domatia very small. Panicles 3–12 cm long, peduncles tomentose, usually bearing 2–3-flowered cymes, pedicels 3 mm long; calyx 2 mm

long, lobes puberulent outside; petals 2 mm long. Capsules pinkish-red, obovoid, angular at sutures, 1.3–2 cm × 1–2 cm, slightly triquetrous and keeled towards base; valves very coriaceous, glabrous, stipe in young fruits 2–4 mm long; seeds brown, ellipsoid, nearly covered by thin yellow aril. **Fig. 80J.**

Edge of rainforests on mountain ranges in the Moreton and Wide Bay districts. Flowers and fruits spring–summer.

16. TOECHIMA Radlk.

Trees without saponin. Leaves paripinnate; leaflets 4–11, alternate; leaflet blades semicoriaceous; margins usually entire, hairy tufts or domatia usually present in axils of primary nerves. Thyrsiform panicles axillary; calyx cupular, 5-toothed, narrowly imbricate at base; petals suborbicular, shortly clawed, scales 2, densely hairy, crests fleshy, stipitate, usually hidden by hairs of scales; stamens 8, filaments exserted, pilose, anthers papillose; disc annular; ovary ovoid or obovoid, 2–3-, rarely 4-locular, ovule 1 per loculus, style filiform. Capsules subglobose or obovoid, 2–3-, rarely 4-locular, shortly stipitate, 2–3-valved, valves thick, fleshy, rind-like, densely villous inside; seeds ellipsoid, aril small, basal.

8 species Australia and New Guinea; 5 species Australia; 2 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Petioles and rachises glabrous; domatia present, prominent; capsules clavate: ± compressed at sutures | 1. <i>T. tenax</i> |
| Petioles and rachises rusty villous pubescent; domatia absent, often with small axillary tuft of hairs; capsules broadly obovoid, turgid | 2. <i>T. dasyrrhache</i> |

1. *Toechima tenax* (Benth.) Radlk.

Ratonia tenax Benth.

Tree up to 18 m tall, glabrous. Petioles 1–2.5 cm long; leaflets 2–6; petiolules 2–6 mm long; leaflet blades semicoriaceous, obovate, elliptic or subobovate, apex obtuse, rarely retuse, base cuneate and decurrent on petiolules, margin repand, 3–7 cm × 1.2–2.5 cm, glabrous, minutely punctate, lateral nerves with usually 2–4 prominent domatia below. Panicles slender, racemiform, 5–7 cm long, peduncles puberulent, pedicels 4–5 mm long; calyx lobes *ca* 1 mm long; petals 1 mm long. Capsules orange-yellow tinged with red, clavate or subobovoid usually slightly compressed and keeled at sutures, 1.5–3.3 cm × 2–2.5 cm, 2-, rarely 3-locular, valves thick, fleshy, villous inside; seeds shiny black with creamy basal aril. **Fig. 80K.**

Common along river banks in remnant rainforest in the Moreton and Wide Bay districts. Flowers and fruits winter to late spring.

2. *Toechima dasyrrhache* Radlk.

Tree up to 15 m tall, young parts, branchlets, petioles, rachises and peduncles pubescent with golden rusty hairs. Petioles 2–4 cm long, pubescent; leaflets 4–8; petiolules 3–7 mm long; leaflet blades semicoriaceous, narrowly elliptic, apex acute or shortly acuminate, base acute, unequal, 3–8(–10) cm × 1.2–3(–4) cm, puberulent especially on nerves below, lateral nerves few, arched, prominent below, usually with small tufts of hairs in all their axils. Inflorescences racemiform, 3–8 cm long, pedicels 3–5 mm long; calyx lobes 1.5 mm long, hirsute; petals 2 mm long. Capsules pale yellow with red flush, broadly obovoid, 1.2–2.2 cm × 1–1.8 cm, 3-, rarely 2-locular, valves sericeous inside; seeds black with yellow basal aril. **Fig. 80L.**

Dry rainforests along creek banks from the southern Moreton district. Flowers and fruits late spring to winter.

17. ELATTOSTACHYS (Blume) Radlk.

Trees, usually small. Leaves paripinnate; leaflets 2–6; leaflet blades usually drying dark brown or black, margins usually serrate or dentate, lateral nerves prominent below and usually with domatia. Panicles axillary, usually short, dense, racemose; male flowers often sessile, females pedicellate; calyx 5-lobed, lobes ovate-oblong, imbricate, tomentose outside, puberulent inside; petals clawed, with 2 hairy crestless scales; stamens 8, rarely 6, filaments filiform, anthers large, obovoid-oblongoid; disc annular, glabrous; ovary 3-gonous, obovoid, sessile, 3-locular, ovules solitary per loculus. Capsules obovoid to subglobose, sessile, valves 3, rarely 4, woody, granular; seeds ± ellipsoid, shining, with small 2-lobed cupular basal aril.

12 species Malaysia, Australia, Polynesia; 3 species Australia, all occurring in south-eastern Queensland.

- | | |
|---|------------------------|
| 1. Domatia absent; leaflets narrowly ovate-oblong, 3–4 times as long as wide; capsules ± glabrous outside | 1. <i>E. nervosa</i> |
| Domatia present, usually hairy; leaflets elliptic or obovate, 2–3 times as long as wide; capsules hairy outside | 2 |
| 2. Leaflets hairy at least below; margins serrate to serrulate | 2. <i>E. xylocarpa</i> |
| Leaflets glabrous or rarely midrib below hairy; margins subtentire to entire | 3. <i>E. bidwillii</i> |

1. *Elattostachys nervosa* (F. Muell.) Radlk.

Cupania nervosa F. Muell.

Spreading tree up to 12 m tall, young parts pubescent. Petioles 4–5 cm long; leaflets 4–6, alternate; petiolules 3–5 mm long, flexuose; leaflet blades usually narrowly oblong-ovate with attenuate apex, or elliptic-oblong, falcate with acute or obtuse apex, base acute and slightly decurrent, margin entire or subtentire with a few distant serrations, 6.5–15 cm × 1.8–3.2(–6.5) cm, glabrous and shining on both surfaces, lateral nerves 14–18 pairs, suboblique, raised and prominent below, domatia absent. Panicles 2.5–6.5 cm long, peduncles rusty pubescent, pedicels 4 mm long, pubescent; calyx lobes 2.5 mm long, pubescent; petals 1.5 mm long. Capsules usually drying blackish, subglobose, 1.2–1.5 cm × 1.2–1.5 cm, ± glabrous outside, valves tomentose inside.

Chiefly in wetter rainforest at altitudes over 160 m in the Moreton, Wide Bay and Burnett districts. Flowers and fruits spring to autumn.

2. *Elattostachys xylocarpa* (Cunn. ex F. Muell.) Radlk.

Cupania xylocarpa Cunn. ex F. Muell.

Tree up to 7 m tall, young parts rusty tomentose. Petioles 2.5–3.5 cm long, rusty pubescent; leaflets 2–6, alternate, rarely opposite; petiolules 2–5 mm long, pubescent; leaflet blades obovate-oblong, elliptic-oblong or elliptic, apex obtuse or subacute, base obtuse or acute, unequal, margin usually irregularly sinuate-serrulate (serrate when juvenile) or subtentire, 3–9.5(–13) cm × 2–3.5(–5) cm, shining, puberulent or glabrous above, pubescent or puberulent below, lateral nerves 8–12 pairs, prominent below, with hairy domatia. Racemes 1.5–6.5 cm long, peduncles tomentose, pedicels up to 4 mm long, pubescent; calyx lobes 2.2 mm long, pubescent; petals up to 3 mm long. Capsules obovoid, 1.4–1.6 cm × 1.2–1.5 cm, yellow pubescent outside, valves dark pink, tomentose inside with long crisped hairs; seeds glossy dark brown, aril white. **Fig. 80F.**

Depauperate rainforests in the Darling Downs, Burnett and Moreton districts. Flowers and fruits most of the year.

3. *Elattostachys bidwillii* (Benth.) Radlk.

Cupania bidwillii Benth.

Tree 4–10 m tall, young parts pubescent. Petioles 2.5–4 cm long; leaflets 2–5, opposite or alternate; petiolules 2–4 mm long; leaflet blades semicoriaceous, narrowly elliptic-oblong or obovate-elliptic, sometimes subfalcate, apex acute or obtuse, base subacute or obtuse, margin subtentire or with distant dentations or entire, 6.5–13 cm × 2.5–5 cm, glabrous or rarely puberulent on midrib below, lateral nerves 8–12 pairs, usually with hairy domatia. Panicles 3–8 cm long; flowers and capsules as in *E. xylocarpa*.

Depauperate rainforests in the Burnett and Wide Bay districts. Flowers and fruits summer to winter.

This taxon is probably a glabrous form of *E. xylocarpa*.

18. ARYTERA Blume

Trees, branchlets usually glabrous. Leaves paripinnate, leaflets 2–20, opposite or alternate, usually petiolulate; leaflet blades usually coriaceous, lateral nerves arched, prominent below, often foveolate, cross veins parallel. Inflorescences axillary, usually paniculate; flowers unisexual, small; calyx shortly 5-lobed; petals 5, sometimes absent or often rudimentary in males, usually as long as calyx, shortly clawed, with 2 broad hairy crestless scales; stamens 6–8, anthers and filaments usually hairy; disc annular; ovary obovoid, 2–3-locular, style stout. Capsules various, usually obcordate with 3 or 2 divaricate ellipsoid lobes, sometimes 1-lobed or capsules subglobose, irregularly lobed and irregularly dehiscent, usually 2-valved with coriaceous, hairy or glabrous valves, stipitate or sessile; seeds ellipsoid with small saccate fleshy aril.

25 species China, Indomalaysia, Pacific region and Australia; 8 species Australia; 5 species south-eastern Queensland.

- | | |
|--|--------------------------|
| 1. Leaflets 10–24 | 1. <i>A. lautererana</i> |
| Leaflets 2–7 | 2 |
| 2. Leaflets usually 2, opposite; fruits mostly with 2 divaricate lobes and persistent recurved styles, valves villous inside | 3 |
| Leaflets usually 4–6, alternate; fruits 1–3-lobed, styles not as above, valves glabrous inside or hairy at sutures | 4 |
| 3. Domatia absent; leaflets subsessile; leaflet blades obovate, 2.5–4.2 cm long, entire or serrulate towards tip, lateral nerves crowded | 2. <i>A. microphylla</i> |
| Domatia present; petiolules 2–5 mm long; leaflet blades elliptic, 3.5–10.5 cm long, entire, lateral nerves not crowded | 3. <i>A. distylis</i> |
| 4. Branchlets, peduncles and young fruits with dense rusty crisped tomentum; fruits hairy outside, glabrous inside | 4. <i>A. foveolata</i> |
| Branchlets and peduncles with pale straight appressed pubescence; fruits glabrous outside, villous tomentose especially at junction of valves within | 5. <i>A. divaricata</i> |

1. *Arytera lautererana* (F. M. Bailey) Radlk.

CORDUROY TAMARIND

Nephelium lautererianum F. M. Bailey

Tree 13–25 m tall, all parts glabrous. Petioles 2.5–9 cm long; leaflets 10–20, rarely 24, alternate or opposite; petiolules 0.5–1 cm long; leaflet blades semicoriaceous, narrowly elliptic-oblong, apex shortly acuminate, base acute, margin entire or serrulate, wavy, 6.5–15 cm × 1.5–3 cm, lateral nerves usually with minute foveoles in axils. Panicles 6–24 cm long, pedicels 1–2 mm long; calyx lobes ca 1 mm long; petals 1.5 mm long. Fruits subglobose or transversely oblongoid, irregularly 3-lobed, rarely 1–2-lobed, 1–1.5 cm × 1–2.5 cm, stipe 5–8 mm long; seeds embedded in amber coloured aril. **Fig. 80N.**

Rainforest from Mt. Glorious, Beerwah, Maryborough and Fraser I., usually at high altitudes. Flowers and fruits late spring to late autumn. Tamarind flavoured pulp of the fruits may be used for jams. Wood said to be suitable for flooring.

2. *Arytera microphylla* (Benth.) Radlk.

Nephelium microphyllum Benth.

Tree up to 3 m tall, young parts pubescent. Petioles 0.5–2 cm long, pubescent; leaflets 2, opposite; petiolules ca 1 mm long; leaflet blades thinly coriaceous, elliptic or obovate, apex obtuse, base obtuse or subacute, margin entire or with a few irregular serrulations towards apex, 2.5–4.2(–7.2) cm × 1–1.5(–4) cm, glabrous, lateral nerves numerous, oblique, looping near margins. Inflorescences racemose, axillary, solitary or paired, 2.5–8 cm long, pedicels 1 mm long; calyx lobes ca 1 mm long, puberulent; petals absent. Fruits 2-, rarely 1-lobed, lobes divaricate, ellipsoid, 10 mm × 6 mm, hirsute inside. **Fig. 80O.**

Rainforest in Wide Bay and Burnett districts. Flowers and fruits late winter–spring.

3. *Arytera distylis* (F. Muell. ex Benth.) Radlk.

Ratonia distylis F. Muell. ex Benth.; *Nephegium distylis* (F. Muell. ex Benth.) F. Muell. Tree up to 7 m tall, branchlets lenticellate, young parts and peduncles pubescent. Petioles 0.5–2 cm long; leaflets 2, opposite; petiolules 2–5 mm long; leaflet blades coriaceous, elliptic-obovate or elliptic, apex shortly acuminate or obtuse, base acute, subequal, 3.5–10.5 cm × 1.5–4 cm, glabrous, lateral nerves few, arched, with prominent domatia. Inflorescences racemose, 4–8 cm long, pedicels 5 mm long; petals *ca* 1.2 mm long. Capsules 2-lobed, lobes ± compressed, ellipsoid, up to 7 mm × 4 mm, divaricate, usually with persistent recurved styles, glabrous outside, villous hairy inside, stipe 2 mm long.

Remnant rainforests in the Moreton and Wide Bay districts, usually at high altitudes. Flowers and fruits summer to winter.

4. *Arytera foveolata* F. Muell.

Nephegium foveolatum (F. Muell.) F. Muell. ex Benth.

Tree up to 20 m tall, young parts, peduncles and flowers with crisped, rusty red tomentum. Petioles 1.5–4.5 cm long; leaflets 4–6, alternate; petiolules 0.5–1 cm long; leaflet blades elliptic, apex acute or acuminate, base acute, margin entire or coarsely serrulate, 7–12 cm × 2.5–3.5 cm, glabrous above, puberulent, especially on midrib below, lateral nerves raised below, often bullate between nerves, reticulate venation prominent, foveoles present in axils, small, hairy. Panicles thyriform, 6–19 cm long, cymules subsessile, pedicels up to 1.5 mm long; calyx lobes 1–1.5 mm long; petals 2.5–3 mm long. Fruits 2-lobed, rarely 1- or 3-lobed, subsessile, lobes divaricate, subobovoid or obovoid with broad apex, grooved prominently at junction of valves, 1.2–1.4 cm × 0.6–0.8 cm, rusty pubescent outside, glabrous inside.

Moreton and Wide Bay districts as far inland as Bunya Mts. Flowers and fruits spring.

5. *Arytera divaricata* F. Muell.

Nephegium divaricatum (F. Muell.) F. Muell. ex Benth.; *Nephegium beckleri* Benth.

Tree up to 7 m tall, young parts, peduncles and calyces with appressed pale pubescence. Petioles 1.5–5.5 cm long; leaflets 2–7, alternate, young ones pinkish; petiolules 0.3–1 cm long; leaflet blades semicoriaceous, elliptic or obovate, apex obtuse or shortly and abruptly bluntly acuminate, base acute or obtuse, rarely truncate, margin entire, repand, 7–14 cm × 3–6 cm, glabrous above, puberulent below, lateral nerves raised below, curved, cross veins parallel, reticulate venation fine, foveoles if present small. Panicles 9–18 cm long, pedicels up to 2.5 mm long; petals 1.5 mm long. Fruits 1–3-lobed, shortly stipitate, lobes divaricate, ellipsoid, rarely ovoid with narrow apex, 1–1.7 cm × 0.8 cm, glabrous outside, villous tomentose at junction of valves inside. **Fig. 80M.**

Widespread and common in light rainforests. Flowers and fruit spring to autumn. Timber pale yellow with white sapwood, hard and close grained. The tree is quite ornamental.

19. MISCHOCARPUS Blume

Trees. Leaves paripinnate; leaflets usually alternate, petiolulate; leaflet blades coriaceous or semicoriaceous, margin entire, lower surfaces not papillose; domatia often present in axils of nerves. Thyriform panicles axillary; flowers unisexual, small; calyx shortly cupular, subcoriaceous, 5-lobed; petals 5 or absent; usually clawed, scales if present minute, not crested; stamens 7 or 8, exerted, filaments filiform; disc regular; ovary usually stipitate, 3-locular, ovule 1 per loculus, stigmas 3, recurved. Capsules subdrupaceous, pyriform, triquetrous or clavate, apiculate, not lobed, usually long stipitate, 3-valved, valves thin or almost woody, mostly shrivelled after dehiscence; seeds usually only 1 developing, subglobose, covered by thin aril.

25 species China, south-eastern Asia, Indomalaysia, Australia; 7 species Australia; 4 species south-eastern Queensland.

- | | |
|---|---------------------------|
| 1. Young parts, branchlets, petioles, petiolules and peduncles rusty red villous pubescent to puberulent; capsules hirsute on outside | 1. <i>M. lachnocarpus</i> |
| Young parts, branchlets petioles, petiolules and peduncles puberulent or glabrous, hairs not rusty; capsules glabrous on outside | 2 |
| 2. Leaflets usually with a solitary prominent domatia towards base, midribs keeled above; capsules woody, densely hairy inside | 2. <i>M. anodontus</i> |
| Domatia absent or if present usually small, midribs not keeled above; capsules coriaceous, glabrous inside or only septa villous | 3 |
| 3. Petiolules 0.4–1 cm long; leaflets with undulate margin, midribs angular, raised on both surfaces; capsules subglobose or triquetrous, 1.5–2.5 cm × 1.2–1.8 cm; petals absent; filaments glabrous | 3. <i>M. sundaicus</i> |
| Petiolules 0.8–2.2 cm long; leaflets with flat margin, midribs a slender flat line or channelled above, raised below; capsules pyriform depressed above, or subglobose, 0.8–1.8 cm × 0.6–1 cm; petals present; filaments pilose | 4. <i>M. pyriformis</i> |

1. *Mischocarpus lachnocarpus* (F. Muell.) Radlk.

Ratonia lachnocarpa F. Muell.

Slender trees up to 15 m tall, branchlets, petioles, petiolules and peduncles densely rusty red pubescent to puberulent. Petioles 1.3–6.5 cm long; leaflets usually 2, or up to 6; petiolules 2–4 mm long; leaflet blades elliptic to ovate-elliptic, apex abruptly and shortly acuminate, acute, obtuse or retuse, base acute or obtuse, margin entire, 5–14.5(–19) cm × 2.3–7.5(–8.3) cm, glabrous except nerves or puberulent below, lateral nerves usually impressed above. Panicles 1 or 2 per axil, slender, 3.5–16 cm long; pedicels 1–2 mm long; calyx lobes 1.5 mm long; petals absent. Capsules rusty gold, triquetrous, obovoid, 0.8–2 cm × 0.6–0.8 cm, hirsute outside, subglabrous inside; seeds covered by purple aril. **Fig. 80E.**

Rainforests on McPherson Ra. in Moreton Districts. Flowers and fruits winter to summer.

2. *Mischocarpus anodontus* (F. Muell.) Radlk.

Schmidelia anodonta F. Muell.; *Ratonia anodonta* (F. Muell.) Benth.

Tree up to 8 m tall, branchlets glabrous. Petioles 1–4 cm long; leaflets 2, rarely 4, opposite or subopposite; petiolules 0.5–1 cm long, flexuose; leaflet blades elliptic-ovate, acute at both ends or base blunt, margin entire, 4.5–10.5 cm × 2.5–5.5 cm, shining above, midrib keeled, lateral nerves as distinct as fine reticulation, 1 or 2 prominent domatia present towards base of midrib. Panicles 5–8 cm long, peduncles glabrescent, pedicels 3 mm long, puberulous; calyx 1 mm long; petals absent. Capsules orange, subglobose or obovoid, depressed or truncate on top, ca 1.2 cm × 1.5 cm, glabrous outside, densely rusty tomentose inside, stipe thick, 1–1.5 cm long; aril red, nearly enveloping seed. **Fig. 80C.**

Rainforests usually on hillsides near creek banks, in Moreton and Wide Bay districts. Flowers and fruits winter to summer.

3. *Mischocarpus sundaicus* Blume

Trees up to 8 m tall. Petioles 5–13.5 cm long; leaflets 2–5, rarely –7; petiolules 0.4–1 cm long; leaflet blades ovate-elliptic or elliptic-oblong, apex acute-acuminate or acuminate, base acute or obtuse, margin entire, undulate, 6–22.5 cm × 2–7.8 cm, glabrous, midrib raised both surfaces, lateral nerves rarely with minute domatia in their axils; veinlets densely reticulate. Panicles thyriform, axillary or pseudoterminal, 6–17 cm long, peduncles puberulent, pedicels 4 mm long; calyx lobes 1.5–2 mm long; petals absent. Capsules orange-red, subglobose or triquetrous, apiculate, 0.7–2.5 cm × 0.8–1.8 cm, usually glabrous, rarely pilose inside but septa remaining glabrous, abruptly narrowed into angular stipe 1–1.8 cm long.

Light rainforests usually on ranges in the Moreton and Wide Bay districts.

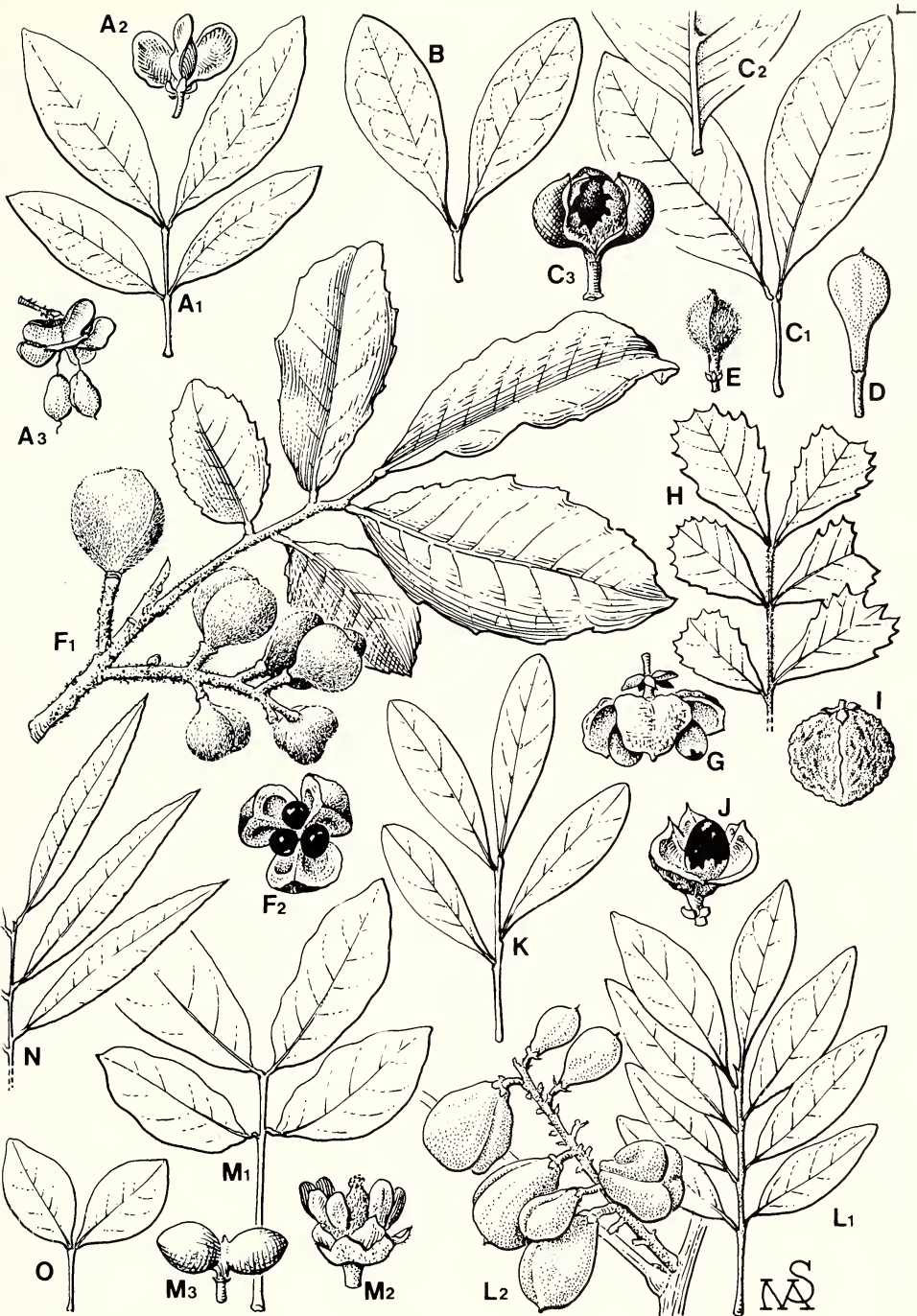


Fig. 80

SAPINDACEAE — A₁-A₃, *Guioa semiglauca*, A₁, leaf $\times \frac{1}{3}$, A₂, fruit $\times 1$, A₃, dehiscent fruit with seeds $\times 1$; B *Rhysotoechia bifoliolata*, leaf $\times \frac{1}{2}$; C-E *Mischocarpus* spp. — C₁-C₃, *M. anodontus*, C₁, leaf $\times \frac{1}{2}$, C₂, domatia on leaf undersurface $\times 1$, C₃, dehiscent fruit $\times 1$; D *M. pyriformis*, fruit $\times 1$; E *M. lachnocarpus*, fruit $\times 1$; F₁-F₂, *Elattostachys xylocarpa*, F₁, part of fruiting stem $\times 1$, F₂, dehiscent fruit with seeds $\times 1$; G-I *Cupaniopsis* spp. — G *C. anacardioides*, dehiscent fruit with seeds $\times \frac{2}{3}$; H *C. shirleyana*, leaf $\times \frac{1}{2}$; I *C. serrata* var. *tomentella*, fruit $\times \frac{2}{3}$; J *Sarcopteryx stipata*, fruit $\times 1$; K-L *Toechima* spp. — K *T. tenax*, leaf $\times \frac{2}{3}$; L₁-L₂, *T. dasyrrhache*, L₁, leaf $\times 1$, L₂, fruiting inflorescence $\times 1$; M-O *Arytera* spp. — M₁-M₃, *A. divaricata*, M₁, leaf $\times \frac{1}{4}$, M₂, flower $\times 4$, M₃, fruit $\times \frac{2}{3}$; N *A. lautererana*, part leaf $\times \frac{1}{4}$; O *A. microphylla*, leaf $\times \frac{2}{3}$.

4. *Mischocarpus pyriformis* (F. Muell.) Radlk.

Schmidelia pyriformis F. Muell.; *Ratonia pyriformis* (F. Muell.) Benth.

Small tree up to 2 m tall, young parts puberulent. Petioles 2.5–8 cm long; leaflets 4–8, alternate; petiolules 0.8–2.2 cm long, flexuose; leaflet blades elliptic or elliptic-oblong, apex acuminate or acute, base acute or obtuse, margin entire, 7–16 cm × 3–6.5 cm, glabrous, or puberulent below, lateral nerves curved, veinlets densely reticulate, prominent both surfaces. Thyrsiform panicles upper axillary or terminal, 9–16 cm long, peduncles pubescent, pedicels up to 3 mm long, tomentose; calyx 1 mm long; petals *ca* 1.5 mm long. Capsule ± pyriform, usually with 3 prominent ribs, 0.8–1 cm × 0.8–1 cm, glabrous, stipe 4–6 mm long. **Fig. 80D.**

Rainforests in the Moreton and Wide Bay districts. Flowers and fruits autumn to spring.

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