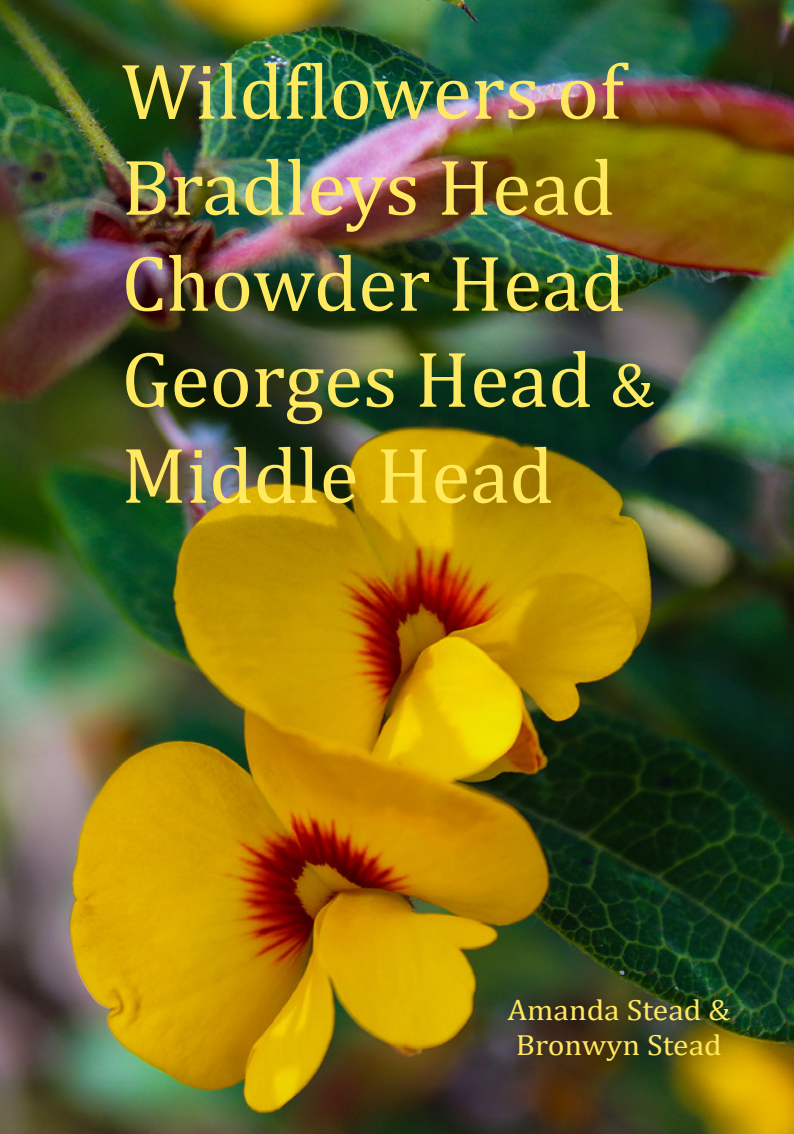

Wildflowers of Bradleys Head Chowder Head Georges Head & Middle Head

Amanda Stead &
Bronwyn Stead

Wildflowers of Bradleys Head, Chowder Head, Georges Head & Middle Head

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Assistance from the National Herbarium of New South Wales Identification Service with identifying *Dipodium variegatum* is gratefully acknowledged.

Commonwealth and State laws protect native flora and fauna.

Cover: *Platylobium formosum,* Handsome Flat Pea.

Actinotus helianthi, Flannel Flower

Contents

Introduction

The natural bushland fringing the inner Harbour headlands of Middle, Georges and Bradleys Heads is part of Sydney Harbour National Park, and the traditional lands of the Borogega-Yuruey Clan of the Eora Nation.

Vegetation types range across sandstone heath to Sydney sandstone gully forest and sandstone ridgetop woodland on a Hawkesbury sandstone base.

Soils are mostly shallow, infertile and sandy or sandy-loam. They are highly permeable, retain little water and are low in nutrients, especially nitrogen and phosphorus which are essential for plant growth.

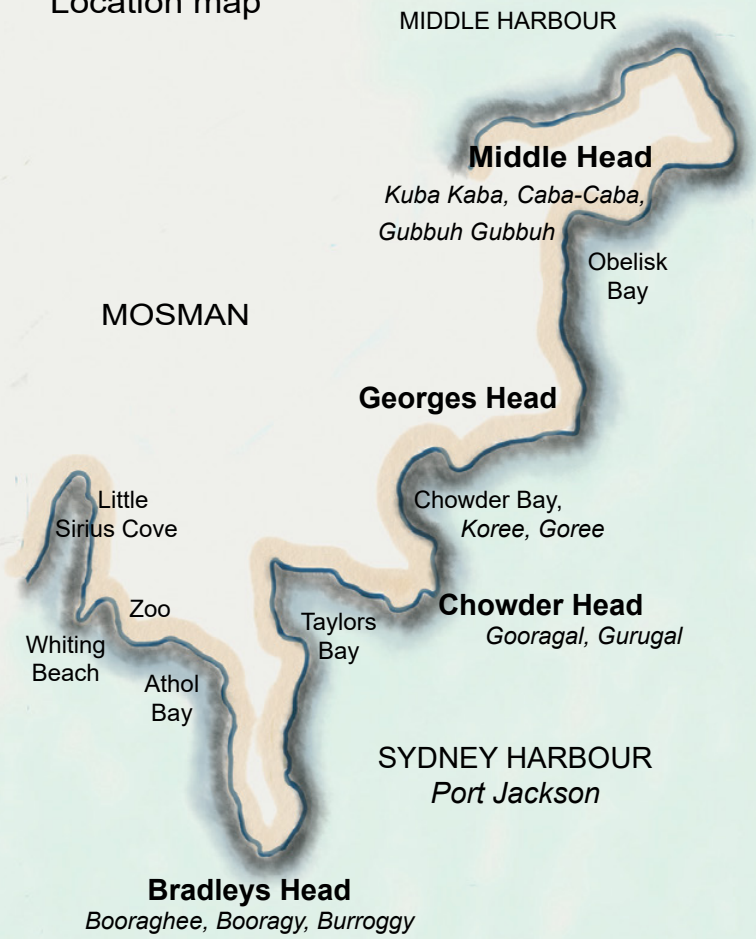
Between Bradleys and Georges Heads there is a layer of Wianamatta shale over the sandstone base. Shale consists of clay minerals and silt, not surprising as geologically Sydney Harbour is a drowned river valley. Shale generates soils of higher water and nutrient retention and so is able to support other plant types.

Among the first records of floral diversity on this foreshore bushland were those made by Lt. William Bradley (1757-1833) of the First Fleet - and after whom Bradleys Head was named. Following arrival in 1788 he undertook surveys around the Headlands in Port Jackson. How much of that diversity still exists?

Two centuries later the National Herbarium of New South Wales conducted field surveys to find out, and over 400 native species were identified (Benson 2011). When compared to historical lists, including the 1788 journals of Lt. W. Bradley and Surgeon Worgan, these plants were found to be representatives of those recorded in 1788, and could be regarded as being indigenous to these areas. Several other early recorded species were not found.

All the species featured here are represented on that list, except *Solanum*

Location map



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aviculare, Kangaroo Apple - and of course introduced plants which have "escaped" from gardens and are now classified as weeds. Four of these are described at the end.

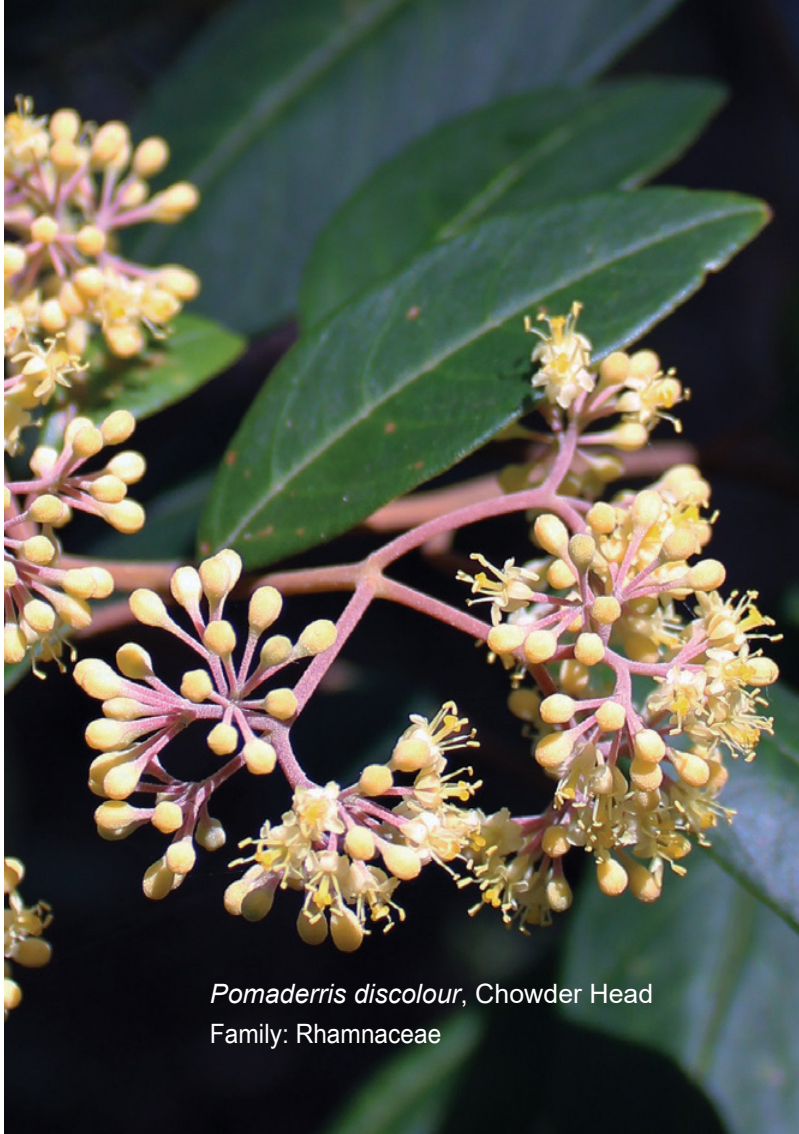
Australia is an ancient land with low-nutrient soils, irregular rainfall, wide variations in temperature and long dry periods. To survive and grow indigenous plants have developed a range of unique adaptations over a long period of time.

For example sandstone soils lack phosphorus in bio-available forms yet many native species thrive. This is due to their ability to form mutual symbiotic relationships with mycorrhizal soil fungi and rhizobia which facilitate phosphorus uptake by the roots. Such mutual relationships are common in the Pea Family (Fabaceae) commonly found on shallow, nutrient-poor sandstone-based soils.

Other adaptations include hairy coverings, scleromorphic features such as thickened leaves, xeromorphic mechanisms (leaf orientation, sunken stomata), lignotubers, seed dormancy, specialised flower and seed morphology to attract insects and birds for pollination and seed dispersal services. These are present to varying degrees among these species.

Contemporary threats continue to impact the growth and survival of indigenous plants in this remnant bushland. These include invasive exotic weeds, storm water, introduced rabbits and foxes, garden waste dumping, proximity to urban areas, development, soil disturbances, lack of fire (for some species), pathogens such as *Phytophthora cinnamomi* disease (particularly on Bradleys Head) and introduced myrtle rust (*Puccinia psidii*).

We photographed these native flowers as observed alongside walking tracks in the area at different times of the year. Flowering times are a guide only.



Pomaderris discolour, Chowder Head
Family: Rhamnaceae

Billardiera scandens var. *scandens* Sm.

Appleberry, Apple Dumplings, Bomula, Snotberry Family: Pittosporaceae

Description: Weak perennial climber, rambler or low sprawling bush. Brown wiry stems to 3 metres. Leaves linear with tips curving over, margins often wavy (undulate), leaf surface lightly hairy beneath. Younger leaves paler and covered with long silky hairs.

Solitary flowers lime green to 2cm long, bell-shaped and pendulous, hanging from slender pedicels covered with white, silky hairs. Long yellow sepals, triangular, also hairy.

Flowering: October - November, occasionally at other times.

Fruit: Soft fleshy cylindrical berry (drupe) to 2cm long, hairy, containing brown seeds in a mucilaginous pulp, green initially, turning purple. Edible, but gives an acrid and acidic taste unless perfectly ripe.

Ecology: Seasonal food plant of the fungi-eating long-nosed Potoroo, *Potorous tridactylus* and other small mammals.

Bowerbirds have been found to use the flowers as decorations in constructing their bower, or 'avenue' to attract a mate. Flowers are food for Eastern Spinebills. The berries are also eaten by rabbits.

Flowers and fruits may exist on the plant simultaneously. Physiological dormancy exists requiring particular conditions to exist before the seed will germinate. The seed is highly viable.

Notes: *Billardiera* in honour of James J. H. de Billardiere (1755-1834), French naturalist. Labillardière collected and named numerous Australian plants while on the French expedition sent to look for La Pérouse in 1791.

Sm. for J.E. Smith, first author 1793 in *A Specimen of the Botany of New Holland. Scandens* from Latin *scandere*, to climb or sprawl.

The berries were a food source for Aboriginals.

Commelina cyanea R. Br.

Scurvy Weed, Scurvy Grass, Creeping Christian

Family: Commelinaceae

Description: Perennial herbaceous ground cover. Stems glabrous, fleshy, and tending to grow upwards on older plants. Leaves ovate to 6cm long with wavy margins tapering to a point, semi-stranslucent at the base and enclosing the stem in a sheath-like manner. This anatomical feature helps to distinguish it from the look-alike weed *Trandescantia fluminensis* (Trad) which has white flowers and 6 stamens.

Cerulean-blue flowers with 3 petals to 15mm wide. Flowers growg from a green sheathing bract (spathe), with two flower stalks, one single flowered, the other with 2-3 flowers. Three transparent sepals and stamens. Flowers are short-lived, opening and closing daily.

Flowering: October - May.

Fruit: Small capsule containing up to 5 seeds.

Ecology: Pollinated by insects, flies and bees attracted to the blue flowers. Flowers without nectar. Food plant for several butterflies and moth larvae. Rapidly colonises bare ground, dying back in winter. Spreads vegetatively by rooting from leaf nodes along the stems. Roots are fleshy and thick.

Notes: The common name Scurvy Weed arose from early settlers eating the foliage to prevent scurvy.

Cyanea from the colour cyan and Greek *kyanos* “dark blue”, describing the flowers. *Commelina* after Dutch-Flemish botanists J. Commelin (1629-1692), pharmacist, and his nephew C. Commelin (1667-1734).

R. Br. for Robert Brown (1773-1858), Scottish botanist who accompanied Matthew Flinders on the *Investigator.* Brown named hundreds of Australian species and genera including *Pterostylis, Grevillea, Telopea, Leucopogon, Ptilotus, Conostylis, Patersonia, Caladenia* and *Isolepsis,* all of which are represented throughout these Headland areas.

Clematis glycinoides D.C. *glycinoides*

Headache Vine, Old Man's Beard, Guwalyari (D'harawal)

Family: Ranunculaceae, Buttercups

Description: Perennial climber with thin reddish stems, the older stems becoming woody. Leaves divided into 3 leaflets on long stalks, upper surface glossy. Leaflet margins curling over when young, maybe toothed at the base.

Abundant white flowers to 3cm across, in multi-branched terminal inflorescences. The star-like flowers have 4 white sepals, the tips reflexing backwards. Anthers with a tiny apical extension, around 1mm long, see inset. Flower stalks greenish-cream. Male and female flowers are on separate plants.

Flowering: August - December.

Fruit: A dry indehiscent fruit, one-seeded, with a feathery style to 6cm long. The style remaining on the developing ovary until maturity.

Seeds dispersed by wind, assisted by the fine feather-like hairs along the style. Mature fruits remaining on the plant form a spectacular feather-like appearance, like an "old man's beard", hence the common name.

Ecology: Flowers attract insects, butterflies, native bees and introduced honey bees (*Apis*). A colonising species. Poisonous to cattle.

Notes: Similar species: *C. glycinoides var. submutica*, *C. microphylla* and *C. aristata*, (Traveller's Joy). *Clematis* from Greek *klematis*, a tendril or shoot, and *klema*, twig or vine branch. *Glycinoides* meaning like the pea climber *Glycine* in habit.

D.C. for A. P. de Candolle (1778-1841), Swiss botanist and first author in 1817 describing it based on a specimen in Sir Joseph Banks' herbarium.

Leaves emit a strong odour when crushed. Early settlers used the Aboriginal remedy of inhaling the aroma from crushed leaves to make the eyes water, believing it to relieve headaches. The fibrous tap root of *Clematis* species sourced by Aboriginals for food and fibre.

Glycine clandestina J.C. Wendl.

Love Creeper, Twining Glycine Family: Fabaceae, Pea Flowers

Description: Weak twining, herbaceous creeper or climber, with thin stems to 5mm in diameter, maybe covered with small reverse-pointing hairs or hairless. Leaves comprising three leaflets on small stalks, the terminal leaflet longer. Leaflets linear-elliptic, the upper leaves to 8cm long.

Small pale pink to mauve pea flowers of varying shades in clusters of 4-6 flowers branching out from the upper leaf axils. The keel petal dark mauve, the standard petal pale to almost-white.

Flowering: Spring - Autumn, occasionally other times.

Fruit: Straight, narrow hairless pod, to 5cm long. Twists on ripening to release hard-coated seeds.

Ecology: Flowers attract insects, including butterflies. Food plant for the Grass Blue Butterfly (*Zizena labradus*). Pollination insect-mediated or self-pollinated. Develops a long, fibrous tap root enabling the plant to obtain moisture deeper in the soil. Several species growing on sandy soils have tap roots.

Notes: Leaf shape and the extent of hair covering (pubescence) varies among individual plants. Similar species *G.tabacina* and *G. microphylla*.

Glycine from Greek *glykys* meaning sweet, as some species have sweet leaves. *Clandestina* Latin for 'secret, underground, undercover' since the tiny pale flowers tend to be obscured among other plants.

The edible soy bean *G. maxi* is an agricultural crop, introduced into Australia from Asia.

Johann C. Wendland (1755-1828), German botanist, horticulturalist and botanical artist who described several Australian native plants in his *Collectio Plantarum* (1805-1819).

Hardenbergia violacea (Schneev.) Stearn

Purple Coral Pea, False Sarsaparilla, Native Sarsaparilla
Purple Twining Pea

Family: Fabaceae, Pea Family

Description: Climber or scrambler vine with twining stems. Leaves narrow ovate to 9cm long, margins entire with marked reticulated venation, upper surface glossy dark green. The leaves are reduced compound leaves consisting of a single leaflet on a jointed petiole and a pair of stipels (leaf-like appendages) attached at the joint.

Several violet pea flowers loosely grouped at the ends of stems. Flowers on long rust-coloured stalks. The standard petal has a bright lime-yellow centre.

Flowering: July - October.

Fruit: A legume. Flat, oblong pod to 4cm long. Seeds have a fleshy, lipid-rich appendage (elaiosome) attractive to ants.

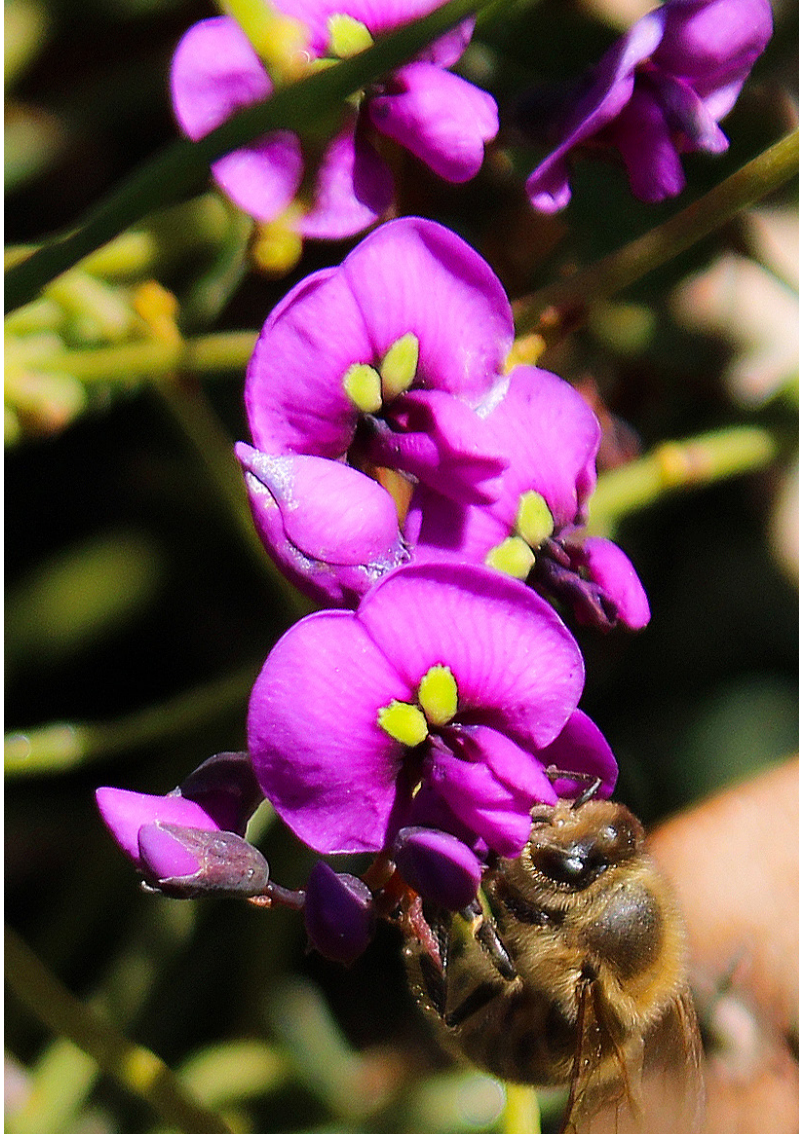
Ecology: A colonising species. The elaiosome entices ants as a food reward for them dispersing and burying the seed, (myrmecochory). Pollinated by insects and introduced honey bees. A food plant of the Painted Apple Moth, *Teia anartoides*.

Plant-microbial symbiotic relationships with soil rhizobia bacteria are important for deriving nutrition from infertile sandy soils. Many in the Pea Family develop symbiotic associations to induce nitrogen-fixing nodules on their roots. Nodules may contain several strains, but rhizobia bacteria are the most commonly found.

Notes: *Hardenbergia* after Countess von Hardenberg, a 19th century Austrian patron of botany. Her brother Baron von Hügel (1795-1870), lawyer, botanist and explorer, collected seeds in WA and NSW to introduce Australian plants into European gardens.

Violacea referring to the violet coloured flowers. G.V. Schneevoogt (1775-1850), Dutch botanist. W.T. Stearn (1911-2001), British botanist.

The appearance of flowers was a calendar indicator for Aboriginals that it was the season for large bream fish. Roots reported to have tonic properties similar to Sarsaparilla (*Smilax ornata*). Early settlers used the leaves as a tea subtitute. Cultivated.



Kennedia rubicunda Vent.

Dusky Coral Pea, Red Kennedy Pea Family: Fabaceae

Description: Vigorous prostrate twining creeper or rambler, with wiry reddish-brown stems up to 4 metres long. Leaves divided into 3 leaflets, ovate, lighter underneath with marked venation.

Large deep red pea flowers, darker at the centre, pendulous and on long stalks (peduncles) in groups of 3 or so. Calyx greenish red, finely hairy (pubescent), with red striations, the sepals partly fused.

Flowering: August – October, and occasionally during summer.

Fruit: Pod to 9cm long, densely covered with fine hairs (inset). Pods twist spirally to split open when dry and release hard-coated seeds.

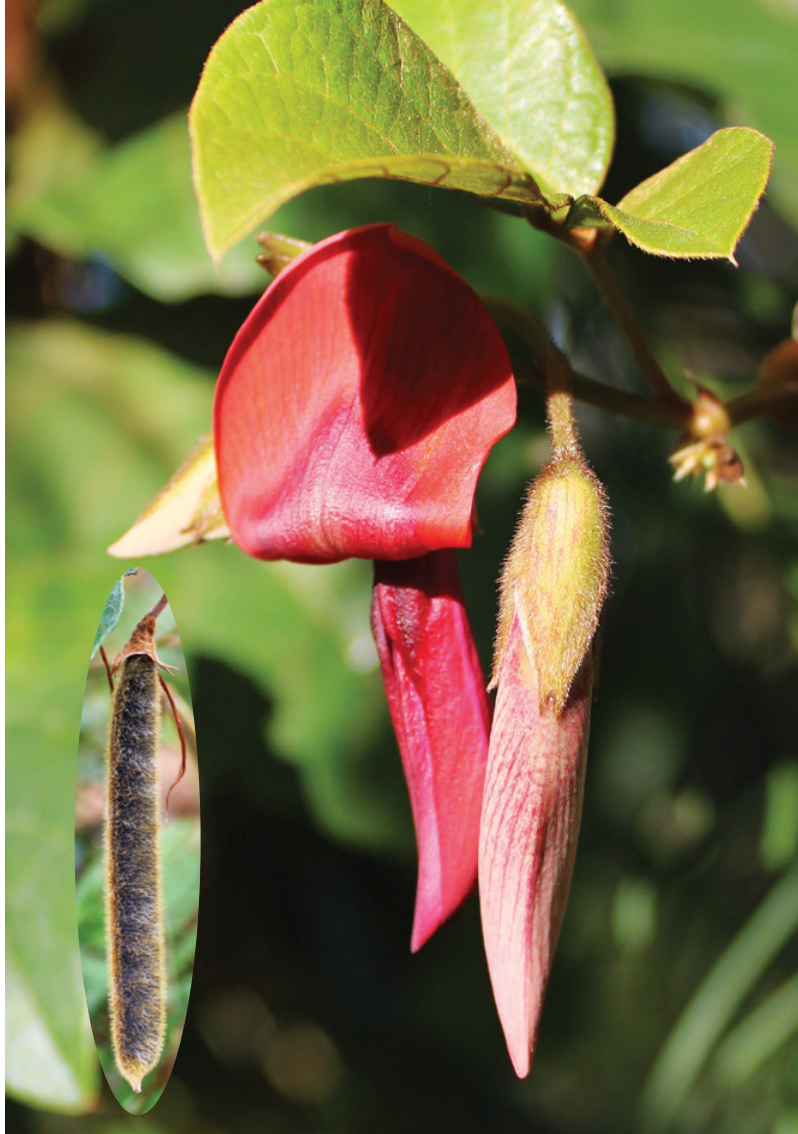
Ecology: Seeds adapted for ant dispersal (myrmecochory) and stored in the soil. A fast growing, colonising species, often among the first to sprout following fire. Older plants may form dense thickets in ideal conditions.

Capable of fixing nitrogen by forming root nodules in symbiotic relationships with rhizobial soil bacteria. Mainly occurs on the east coast of Australia in higher rainfall environments, mostly on light well-drained sandy soils.

Plants from the Pea family have been found to dominate the understorey vegetation on Hawkesbury sandstone soils yet display wide variation in flower morphology.

Notes: *Kennedia* in honour of John Kennedy (1759-1842), English nurseryman of Lee and Kennedy, Hammersmith, considered the first plant nursery in the world and among the first to cultivate Australian plants. Renamed in 1804 by E. P. Ventenat (1757-1808), French botanist. *Rubicunda,* Latin meaning coloured red or ruddy.

Aboriginals derived nectar from the flowers and used the twining stems as a source of string.



Lobelia andrewsii Lammer

Creeping Lobelia, Trailing Lobelia Family: Campanulaceae

Description: Prostrate ground-trailing weak herb with thin, hairless stems, of delicate appearance, less than 20cm high, often branching, some branches may extend upwards. Few leaves, oblanceolate, to 4cm long, and on stalks, margins irregularly toothed (dentate) or markedly lobed.

Irregularly shaped blue to mauve flowers on long, thin stalks. Tubular corolla around 1cm long with irregular lobes, 3 lobes at the front (anterior) with white centres, the middle lobe slightly wider than the lateral lobes. Upper lobes are smaller, curved inwards and with a few long soft hairs. Flowers uncurl in the morning then fold upon evening.

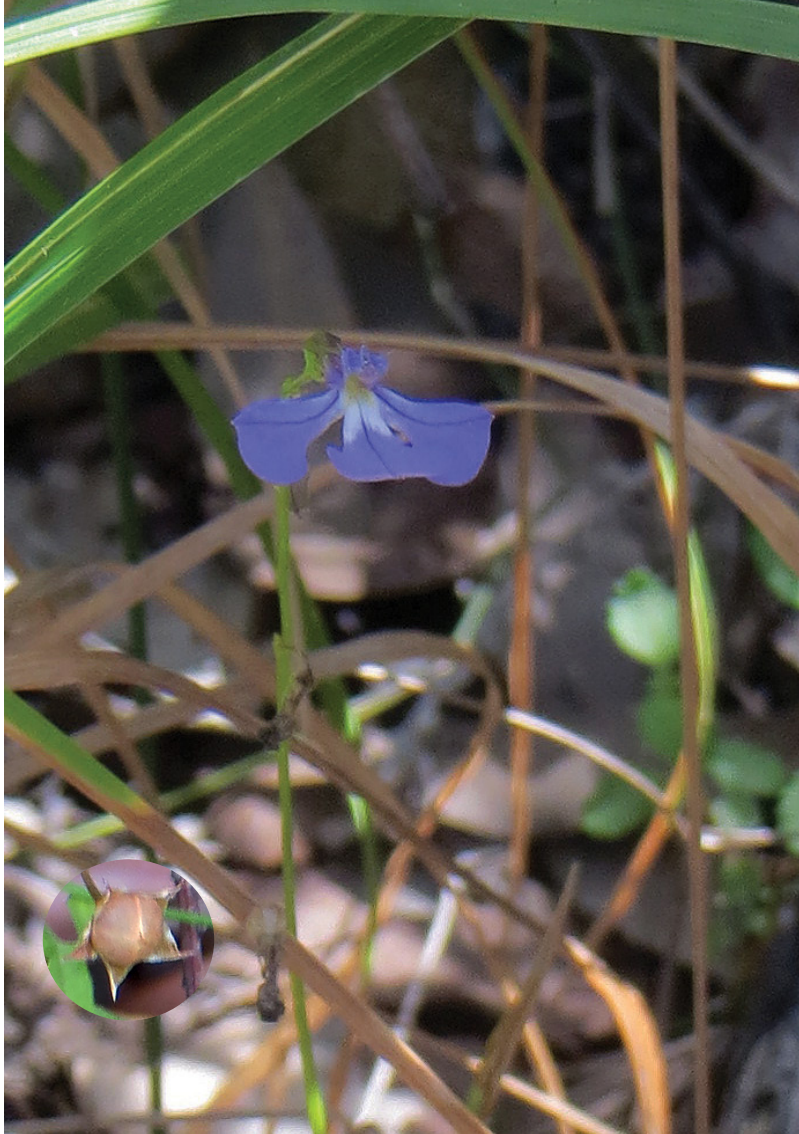
Flowering: November - May.

Fruit: Egg-shaped capsule 3-4mm long containing many seeds.

Ecology: An annual, sometimes perennial, dying back after flowering. Pollination likely by native bees including Blue banded bees (*Amegilla*) attracted to the blue flowers. Found in sheltered open forest and swampy heath. Grazed heavily by introduced feral rabbits (Benson and McDougall).

Notes: Re-named from *Lobelia gracilis* Andrews. One of 18 species only found in Australia.

The genus *Lobelia* named after Matthias de L'Obel (1538-1616), French physician and botanist. *Andrewsii* after Henry C. Andrews (1794-1830), English botanist, botanical artist and author of *The Botanist's Repository for New, and Rare Plants* (1804).



Pandorea pandorana (Andrews) Steenis

Wonga Wonga Vine

Family: Bignoniaceae

Description: Vigorous twining climber, often metres long, reaching into and over shrubs. Older stems becoming woody. Leaves opposite, with ovate shaped leaflets, 3 or more, in two forms. Young leaflets smaller with sligtly toothed margins, older leaves with entire margins.

Numerous cream, pendulous flowers in terminal clusters making a spectacular showy display. Flowers tubular, bell-shaped to 2cm long, divided into 5 broad lobes, covered inside with soft white hairs, bearded, the inner surface partly marked with maroon striations. Flowers lightly perfumed.

Flowering: August - November.

Fruit: Oblong pod-like capsule. At maturity it splits open longitudinally to release many seeds. Seeds flattened, each surrounded with a membranous, papery wing facilitating wind dispersal.

Ecology: Pollinated by birds. Flowers attract various insects and their predators. Relatively long lived. Found on shallow sandy soils in moist forest habitats.

Notes: Synonym *Bignonia pandorana* Andrews. Once known as *Tecoma australis* R.Br. An early common name was “Supple Jack” because of its resilient, straggling stems (1899).

Pandorea from the Greek mythological legend of Pandora’s Box of “gifts”. *Pandorana* relating to Pandora. Seen in several London nurseries in the late 1800s.

C. van Steenis (1901-1986), a distinguished Dutch botanist and plant geographer who travelled extensively in Australia visiting herbaria. Also influenced revisions of many Australian species.

Cultivated and readily propagated. Flowers featured widely in decorative arts and in the poem *Wonga Vine*, by Australian poet Judith Wright (1915-2000).

Patersonia glabrata R.Br.

Native Iris, Leafy Purple-Flag, Bugulbi (Cadigal)

Family: Iridaceae, Iris Family

Description: Tufted grassy herb to 40cm high or more. Narrow linear leaves on stems, slightly rigid and straight, glabrous, margins entire, with fine silky hairs further down.

Prominent pale mauve to purple flowers to 2cm across, 3 purple petal-like sepals, broadly ovate, 3 stamens. Flowers open in succession one after the other and are short lived, lasting a day in sunny weather. Brown smooth bracts (modified leaves) to 5cm long enclose the long flower stalks.

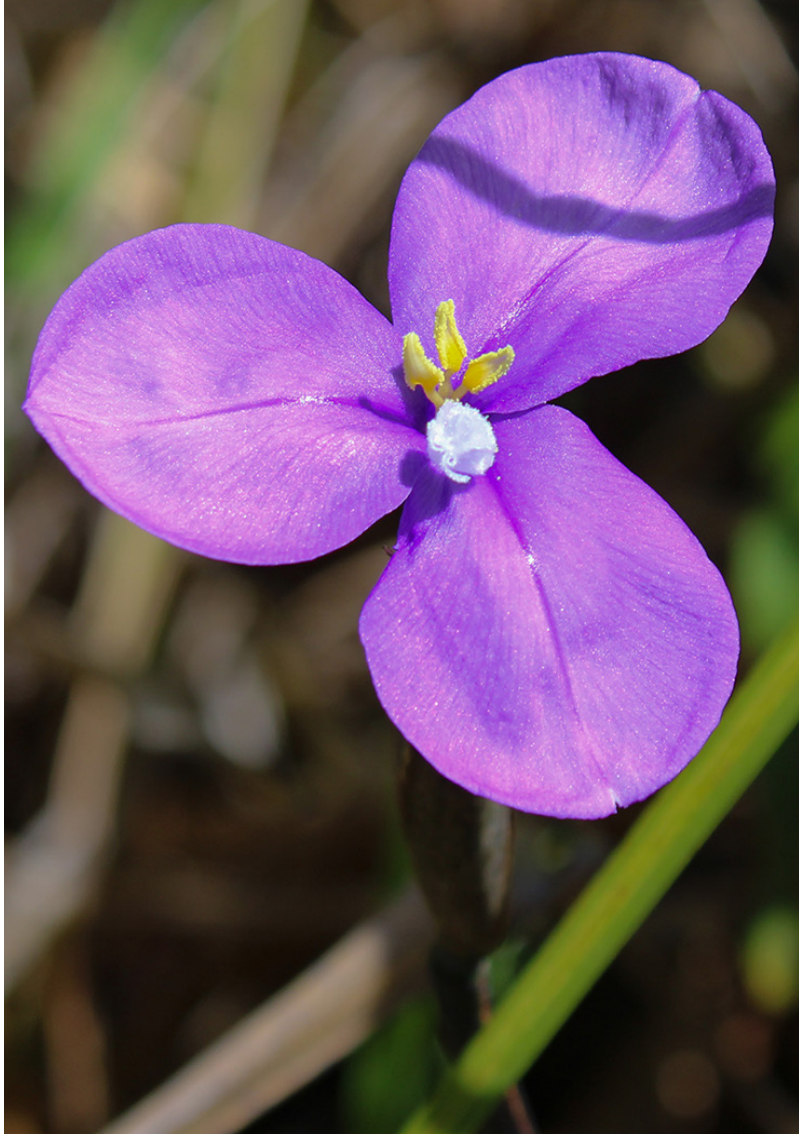
Flowering: September - November.

Fruit: Elongated capsule containing several seeds. Seeds have a white aril.

Ecology: Found in sandy and shale soils. Flowers attract a range of insects: native bees, ants, beetles, flies and wasps. Seeds likely dispersed by ants, enticed by the seed-bearing aril. Food plant of the caterpillar larvae of the indigenous Eastern Iris Skipper butterfly (*Mesodina halyzia*) which feeds on the leaves in the morning and evening leaving triangular-shaped holes. Develops a woody rhizome.

Notes: R.Br. for Robert Brown (1773-1858) Scottish botanist who first described it in 1810.

Patersonia in honour of Lt. Colonel William Paterson (1755-1810), English explorer, naturalist, appointed Lt. Governor of the Colony of New South Wales in 1800. Forwarded specimens of native plants to Joseph Banks in England. He worked with Robert Brown when Brown was in Australia during 1801-1805 and who named the genus after him. *Glabrata*, Latin for glabrous, meaning hairless.



Schelhammera undulata R. Br.

Lilac Lily

Family: Uvulariaceae, Colchicaceae

Description: Small soft, fleshy herb, mostly prostrate, glabrous. Leaves broadly elliptical with prominent parallel and longitudinal veins. Leaf margins wavy or undulating,hence the species name *undulata.* Leaves alternate and not sheathing around the stem.

Delicate bright pink flowers, few in number, 1.0-1.5cm diameter with free tepals (when sepals and petals are indistinguishable) of equal shape. Single, solitary flowers on long maroon stalks to 3cm long arising at the ends of stems or occasionally in leaf axils. Style divided into 3 branches. Dark pink anthers, 6 stamens.

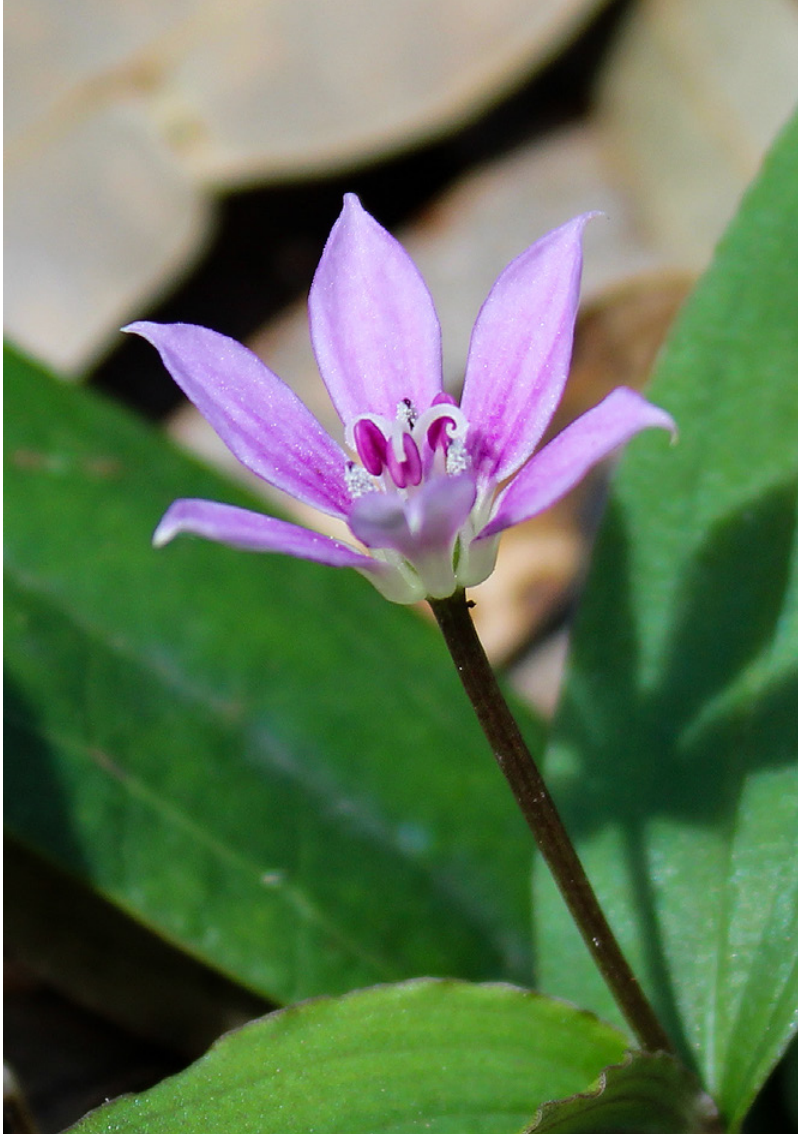
Flowering: September - October

Fruit: A wrinkled, egg-shaped capsule.

Ecology: Found in moist shady places in woodland and sandstone based soils. Seeds dispersed by ants, as the seeds have an attached food body attractive to ants (Westoby *et al* in Benson & McDougall). A perennial herb with thin rhizomes and fibrous roots. Traces of alkaloids have been isolated from *S. undulata* plants (CSIRO).

Notes: First described in 1810 by Robert Brown (1773-1858), Scottish, English botanist, in his *Prodromus Florae Novae Hollandiae*. Only one species of *Schelhammera* found in New South Wales.

Schelhammera after Günther C. Schelhammer, (1649-1716), German physician and professor of surgery, botany and anatomy at Kiel, Germany. Noted for his dissertation on palms.



Viola hederacea Labill.

Native Violet, Ivy-leaved Violet — Family: Violaceae

Description: Ground-creeping perennial herb without hairs. Leaves reniform to orbicular in shape on long slender stems and with a deep gap (sinus) to the stem. Leaf shapes vary even within a single colony. Leaf venation anastomosing, the margins entire to slightly crenate (with slightly rounded teeth). Plants in moist shady protected sites have larger leaves than those in part-sun and exposed sites.

Dainty white and mauve to blue flowers borne singly and upright above the foliage on long slender stalks. Petals have darker coloured markings, more so on the central (anterior) obovate petal, upper petals with a coating of white hairs in part. Generally no perfume except on warm, humid days a light scent may be emitted.

Flowering: Mainly September - May, and at other times.

Fruit: A capsule with 3 valves, splitting open when mature to release many different coloured seeds. Seeds have an attached appendage, an elaiosome, which is a food body attractive to ants.

Ecology: Spreads along the ground by lateral stolons or runners rooting at nodes. Develops a taproot and capable of forming dense mats of foliage under ideal conditions. Runners can be a metre or more long. Hover flies (*Syrphidae species*) are attracted to and feed on the flowers.

Notes: A highly variable species with different forms based on leaf shape ecologically and botanically. Several similar species.

Viola Latin for violet. *Hederacea* from Latin *hedera,* for ivy. Look-alike native species by leaves: *Dichondra repens* and *Centella asiatica*, (Pennywort). Labill. for J.J.H. Labillardiere (1755-1834), French biologist, first author in 1805. Flowers may be eaten fresh, but whether they were sourced by Aboriginals for food is unclear. Cultivated.

Cryptostylis erecta F.Muell. ex Benth.

Tartan Tongue Orchid, Bonnet Orchid

Family: Orchidaceae Class: Liliopsida

Description: Terrestrial herbaceous orchid, to 30cm high. Basal leaves narrow-elliptical to 15cm long, the underside purple from anthocynanin pigments.

Two or more flowers per stalk, to 2.5cm long in terminal groups. The labellum or "lip" is conspicuous, broadly concave, margins curved over and inward, with light green and maroon striped colourings, shaped like a hood (bonnet-like) over the column. In orchids the column is an upright morphological structure formed by the fusion of the reproductive parts. In this orchid the hood is an identifying feature.

Flowering: October - February.

Fruit: Tiny, fine seeds which are highly buoyant. The seed coat has an irregular, dented surface covered with a lipid layer which repells water, (Weston et al 2005).

Ecology: Pollinated by small, male ichneumon, parasitic native wasps, *Lissopimpla excelsa. T*he orchid flower produces a chemical compound which is attractice to wasps. The wasps pseudo-copulate with the flowers mistaking the flower morphology as being a female wasp.

Terrestrial orchids are seasonally deciduous, growing mostly during autumn, and winter then dying back to dormant underground rhizome root tubers over summer. They rely on symbiotic relationships with mycrorrhizal soil fungi for nutrition, reproduction and energy for germination.

Browsed and eaten by rabbits and introduced snails.

Notes: *Kryptos*, Greek, for hidden, concealed. *Stylos*, a pillar or column with a pointed end. The genus *Cryptostylus* was first described in 1810 by R. Brown (1773-1858), Scottish botanist. Later revised by F. von Mueller (1825-96) German-Australian botanist in 1882.

Tubers of terrestrial orchids, and leaves, a food source for Aboriginals.

Dipodium variegatum M.A. Clem. & D.L. Jones

Hyacinth Orchid, Christmas Orchid, Blotched Hyacinth Orchid

Family: Orchidaceae, Class: Liliopsida

Description: Terrestrial tuberous herb, leafless, to 50cm high. Short scales or bracts on the stem are a form of reduced leaves.

White flowers with maroon to dark pink blotches on long stalks (pedicels) are grouped in terminal arrangements (racemes). The perianth parts reflex backwards towards the tips. The protruding labellum (lip) has a dense, hairy upper surface with dark pink striations centrally.

Flowering: October - February.

Fruit: Ellipsoid capsules containing numerous tiny, dust-like seeds.

Ecology: A saprophyte and lacking chlorophyll. To obtain energy and nutrients the orchid relies on its ability to form symbiotic relationships with mycorrhizal soil fungi associated with decaying plant matter of a nearby host, (often *Eucalyptus* species).

Pollinated mainly by native bees, including *Megachilid* bees (*Megachile heriadiformis*) and other insects: hoverflies, butterflies, beetles by landing on the hairy tip of the labellum (a lip-like modified petal).

Different bee species have been found to vary across sites and with the seasons at the same site (Kuiter et al, 2018). Also the number and type of pollinating insects may fluctuate wildly according to environmental factors, for example in 2017 insects were few, so pollination of many orchids decreased, (Kuiter 2018).

Notes: Similar species: *D. punctatum*, and *D. roseum*. *D. roseum* last recorded on Bradley's Head in 1903 (Benson 2011). *Dipodium:* Greek, di or double, *podion*; little foot, for 2 short stalks on the anthers. D. L. Jones and M. A. Clements are Australian botanists and orchidologists.

Over 1400 Australian species of terrestrial orchids have been described. Of these 80% are endemic. (Australian National Herbarium). Orchids are considered an indicator of ecosystem health, partly because of their symbiotic relationship with fungi, (CSIRO).

Actinotus helianthi Labill.

Flannel Flower, Native Edelweiss Family: Apiaceae

Description: Perennial or annual herbaceous shrub to 80cm high, more in favourable conditions. The whole plant is densely covered with soft, woolly-like hairs and tufts of hairs giving a flannel-like appearance. Leaves grey-green divided in three's, arranged alternately around the stems.

Many creamy white flowers branch off from the tops of long stems. Each daisy-like 'flower' consists of a collection of many individual flowers or florets, the whole inflorescence to 8cm across. The outer florets are male, the inner florets bisexual. All are enclosed by 10-18 white-creamy bracts which look like petals which are covered with a dense network of hairs and maybe green-tipped.

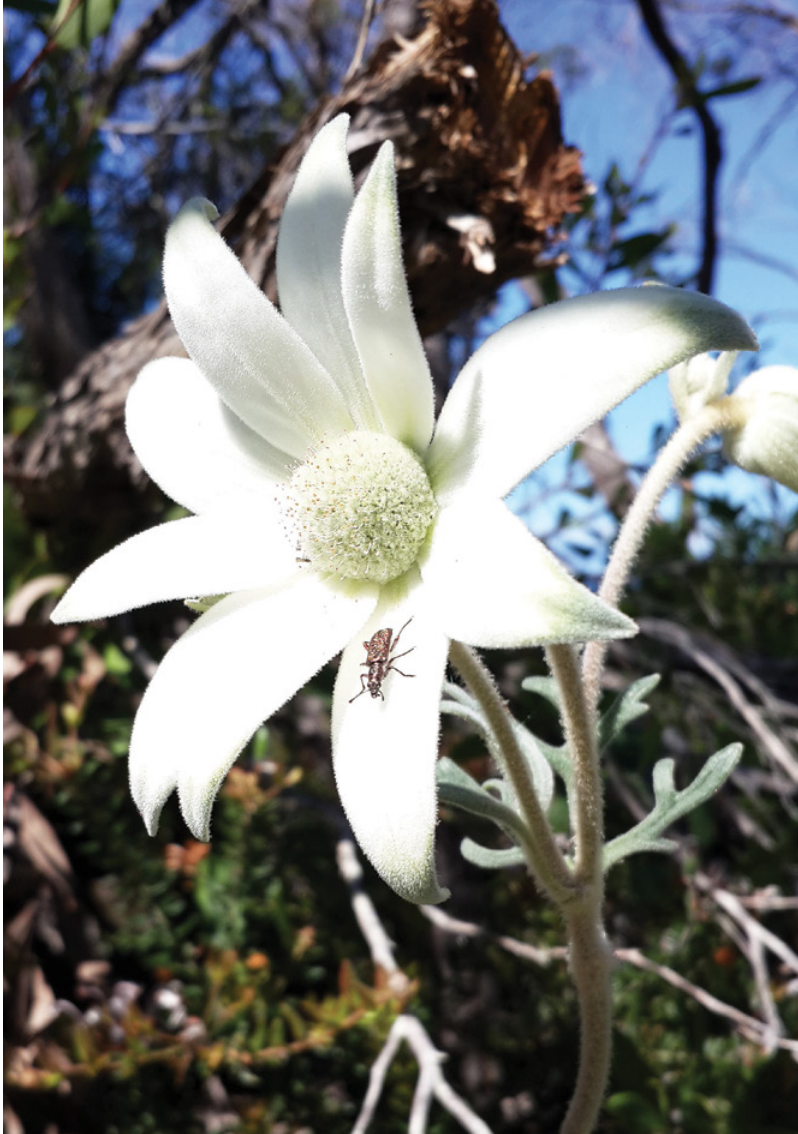
Flowering: October - April, occasionally other times.

Fruit: A capsule, ribbed, ovate and flattened, to 4mm long, covered with long silky-white hairs. Contains one seed.

Ecology: Short lived with shallow root systems. Seeds in the soil may remain viable for many years. However seed viability and dormancy is highly variable in wild populations.

Germination is influenced by a range of factors including fire. Specific compounds in bushfire smoke have been found as a stimulant to break seed dormancy. Smoke permeating the seed coat triggers the germination mechanisms. The response rate varies among populations, (Emery 2011). Flowers attract a range of insects. One of 19 *Actinotus* species endemic to Australia.

Notes: *Actinotus,* Greek , "with rays". *Helianthi* from *Helianthus* referring to it being sunflower-like as in the genus *Helianthus* of the daisy family (Compositae). *Helios,* Greek meaning sun, a*nthos*, flower. A favourite decorative motif in designs, arts and crafts in the 19th and early 20th centuries.



Baeckea imbricata (Gaertn.) Druce

Heath Myrtle

Family: Myrtaceae

Description: Open shrub to 80cm high. Numerous small leaves, obovate and wide to 4mm long with sides curving inwards. Leaves crowded and overlap each other, imbricate lying close to the stem.

Small white flowers without stalks or nearly so, in leaf axils with 5-7 free stamens. Flowers cluster together in small groups along the stems.

Flowering: November - December.

Fruit: Small capsule to 2mm with angular seeds, not retained on the plant. The seeds do not have an aril.

Ecology: A heath plant found on coastal sandstone, often on moist sandy soils with poor drainage or in low eucalypt woodland. The cues for germination are not clear, but fire and smoke appear to be involved.

Like many other native flowers its floral structures permit pollination by insects, birds and small mammals. A diversity of insects of visit the flowers, including native bees and introduced Honeybees (*Apis mellifera*). Bees have been found to be the most frequent pollinators of *B. imbricata*, more so than birds (Celebrezze, 2002). Honeybees foraged mostly for nectar rather than pollen. The small size of the flowers mean that pollinators brush up against the pollen while foraging for nectar.

Notes: Similar species *B. diosmifolia* with variations on leaves inbetween. Various synonyms. *Baeckia* from Abraham Baeck (1713-95), Swedish naturalist and physician and close friend of Linnaeus. *Imbricata* from imbricate, referring to the leaves overlapping each other like tiles.
Gaertn for J. Gaertner (1732-91) German botanist. Revised by G.C. Druce in 1917.

Bauera rubioides Andrews

Dog Rose, River Rose Family: Cunoniaceae (formerly Baueraceae)

Description: Irregular scrambling shrub to 1m high. Leaves oblong-lanceolate, sessile, appear to be in whorls of 6 around the stem but in fact are opposite pairs of three leaflets. Upper surface mostly glabrous, margins entire or slightly notched with teeth pointing towards the tip. Branches thin, maroon and sometimes sparsely hairy.

Pink flowers with dark pink hairy stalks hang face downwards in a pendulous manner. Flowers around 1cm across with 8 free petals, many free stamens around an ovary with 2 free styles that reflex backwards.

Flowering: July - December, occasionally at other times.

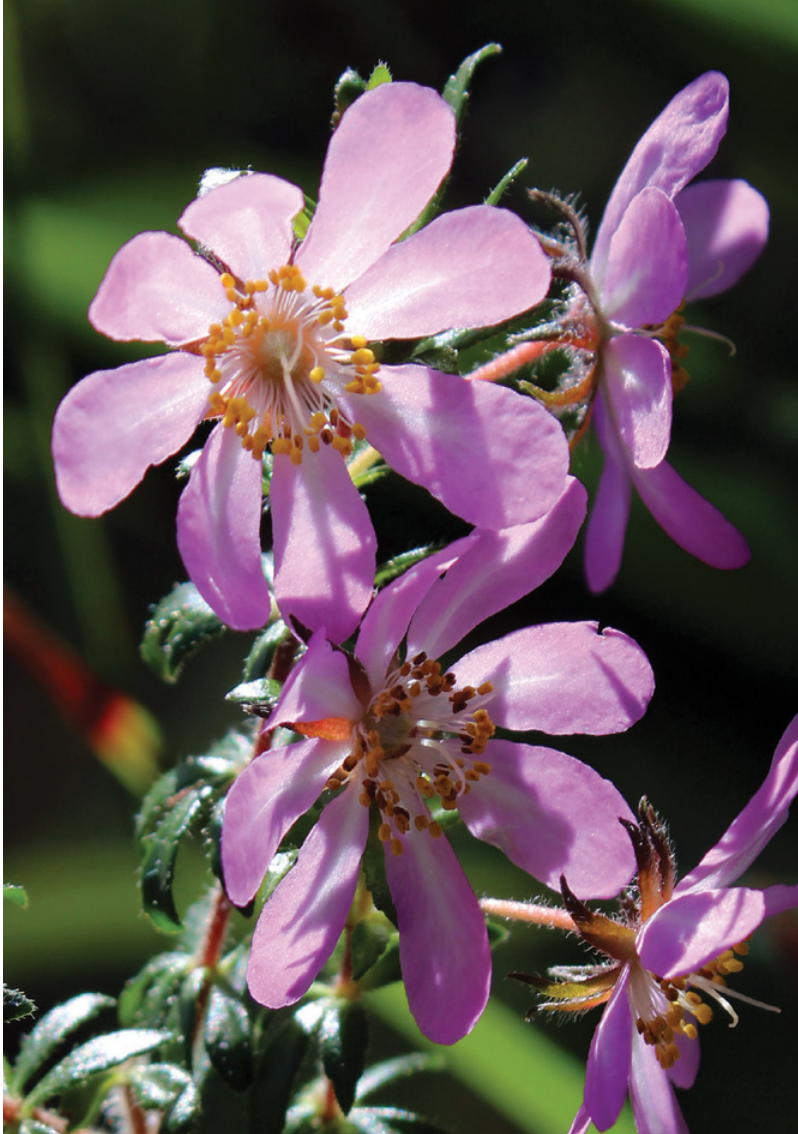
Fruit: Capsule with 2 valves, splitting longitudinally at maturity.

Ecology: Flowers attract various insects including native bees and small beetles, also honey-eating birds. Seeds have a fleshy ant-adapted food body (elaiosome) to attract ants for dispersal.

Elaiosome is derived from Greek *elaion* meaning oil and *soma,* cell body. Elaiosomes are rich in lipid proteins, attractive to ants as food. Ants move the seed to their underground nests as food for their larvae, the seed buried in the soil and left intact. This method of seed dispersal and soil storage is labelled a **myrmecochorous process**. There are over 1500 Australian species where seed dispersal and storage is by myrmecochory.

Notes: *Bauera* after Ferdinand Bauer (1760-1826), Austrian botanical illustrator chosen by Sir Joseph Banks to accompany Captain Matthew Flinders in his 1801-05 circumnavigation voyage and supervised by R. Brown, botanist.

Flinders was the first to map the Australian continent and gave it the name 'Australia'. Henry C Andrews (1794–1830), English botanist and botanical artist, first named the species in *The Botanist's Repository for New, and Rare Plants,* 1801. Cultivated.



Coronidium elatum (A.Cunn. ex DC.) Paul G.Wilson

White Paper Daisy, Tall Everlasting Family: Asteraceae, the Daisies

Description: Herbaceous shrub to 1.2m high, more in moist, shaded areas, mostly an upright habit. Older plants become woody. Leaves and stems covered with fine white, woolly hairs, see inset. Leaves elliptical, light olive green above, white and densely hairy underneath.

Large white flowers with yellow centres, appearing daisy-like, to 3cm diameter. Flowers are grouped at the tops of stems. Flower heads are really an assemblage of numerous tiny individual flowers or florets grouped tightly together to form a central yellow disc which is surrounded by layers of thin, papery white bracts.

Flowering: September - October.

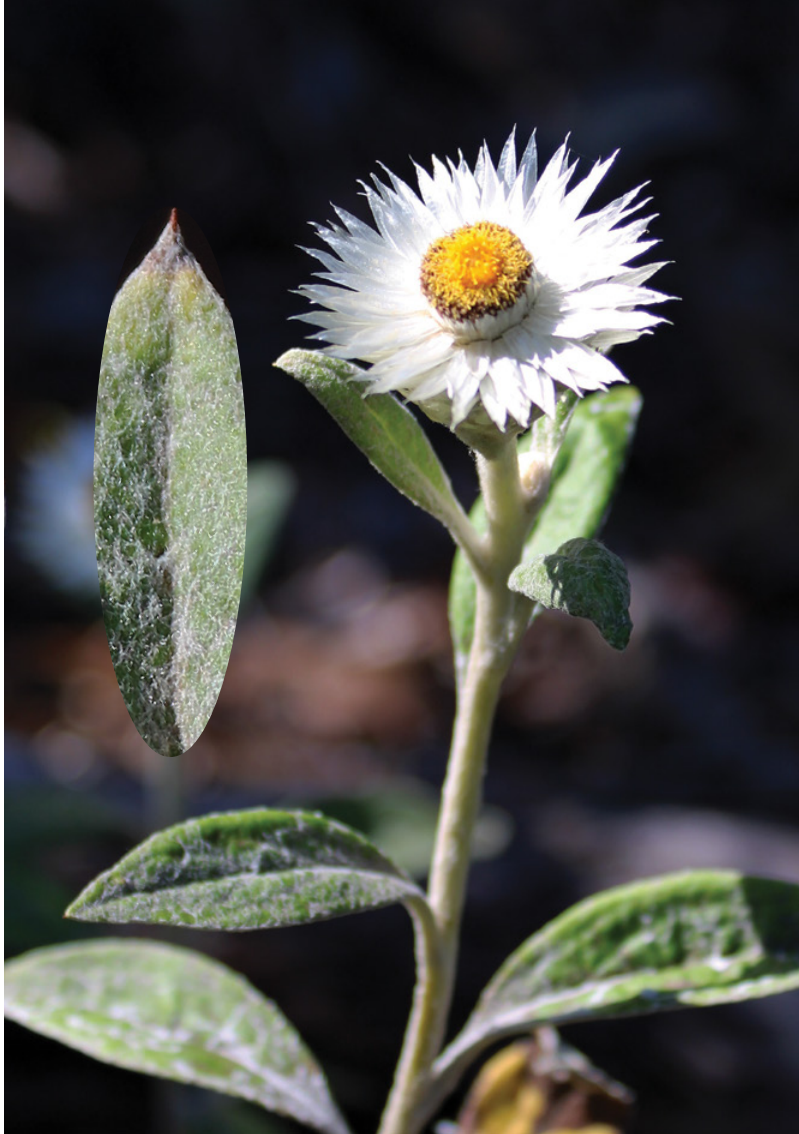
Fruit: A small dry single-seeded fruit, indehiscent. The seed is not joined to the fruit wall. Attached to the seed are straight, slightly barbed stiff hairs or bristles (a pappus). The hairs form on the ovary remaining through to development of the fruit and assist in dispersal by wind.

Ecology: Flowers attract various insects such as ants, flies and bees. Listed as being at risk from the invasive weeds Ground Asparagus and Bridal Creeper, (Downey, 2006).

Notes: Formerly *Helichrysum elatum.* A new Australian genus *Coronidium* was named in 2008 by botanist Paul Wilson to group uniquely Australian species separately from the *Helichrysum* genus. Plant DNA data are increasingly being used in plant taxonomy.

Coronidium, Greek for 'little crown'. *Elatum*, Latin meaning tall, proud, exalted.

A.Cunn. for Allan Cunningham (1791-1839), English botanist and explorer chosen by Joseph Banks. He accompanied John Oxley and Phillip King collecting plant specimens along the Australian coast and inland New South Wales. D.C. for A. de Candolle (1778-1841), Swiss botanist.



Correa reflexa (Labill.) Vent. var. *reflexa*

Common Correa, Native Fuschia — Family: Rutaceae

Description: Irregular shrub to 1m high. Short tufts of fine woolly, white or rust-coloured hairs (floccose) sparsely cover the stems and leaves. Branchlets green to rusty-brown. Leaves broadly ovate to 5cm long, older leaves dark green above and lighter and hairy underneath, the venation lightly reticulate, margins sometimes rolled under.

Red tubular flowers to 2cm long, pendulous and dividing into 4 light green lobes at the end curving backwards. Leaf-like bracts at the base of the flower reflexing backwards. In hot weather the bracts may fold downwards to protect the flower. Stamens free and extending beyond the tube. Sepals fused into a cup-shape. Buds acorn-like. Numerous oil glands are scattered over the floral tube.

Flowering: June - September.

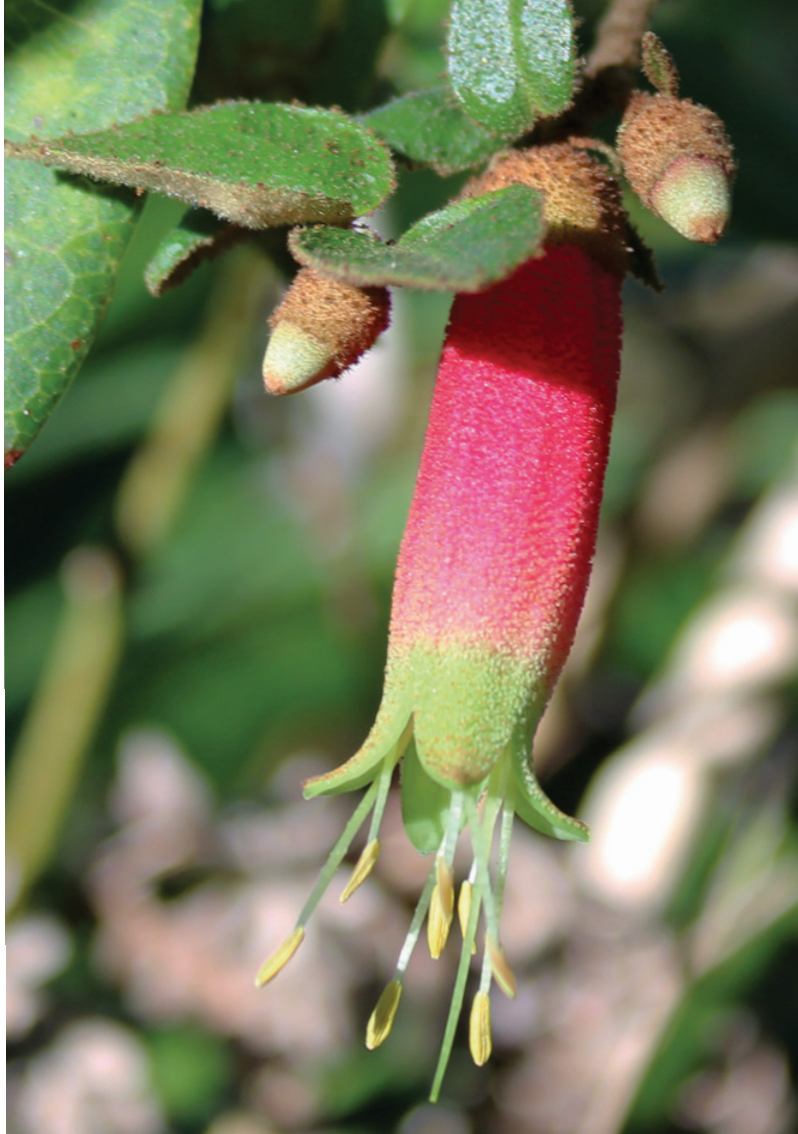
Fruit: Capsule to 9mm long, splitting open when dry. The seeds have an attached fleshy appendage, an elaiosome, which attracts ants for food. Ants carry the seed to their nests, dispersing and burying it in the process.

Ecology: Honey-eating birds are attracted to the nectar produced by the flowers for food and pollination, also insects, including the introduced honey bees (*Apis*). Only those birds with down-curved beaks of suitable length can access the tubular flowers.

Pollen sourced by the Crescent, New Holland and Tawny-crowned Honeyeater Birds, the Red Wattlebird and the Eastern Spinebill (Benson & McDougall). *Correa* is solely an Australian genus.

Notes: A highly variable species in habit, leaf morphology and flower colour. Synonym: *C. reflexa subsp. reflexa. Correa,* after Jose F. Correia da Serra (1750-1823), Portuguese botanist, philosopher, admitted to holy orders and held a degree in law.

Reflexa from Latin '*reflectere'*, to turn or bend backwards, referring to the bracts and flower tips. Cultivated. Featured in early decorative arts.



Crowea saligna Andrews

Lance-Leaf Crowea

Family: Rutaceae

Description: Slender shrub to 70cm high with angular branches. Simple dark green leaves, narrow elliptic to 5cm long with a prominent recessed midvein, no leaf stalk. Oil glands present as small dots scattered over the leaf surface, a common feature of Rutaceae.

Bright pink, solitary flowers in leaf axils, about one centimetre long. Flowers on stalks with 5 green sepals and 5 broadly elliptic overlapping petals, all free. The free stamens have broadly-based hairy filaments uniting at their margins to enclose the ovary, opening out when the pollen is shed. Anthers bear long bearded appendages at their ends.

Flowering: February - May, intermittently at other times.

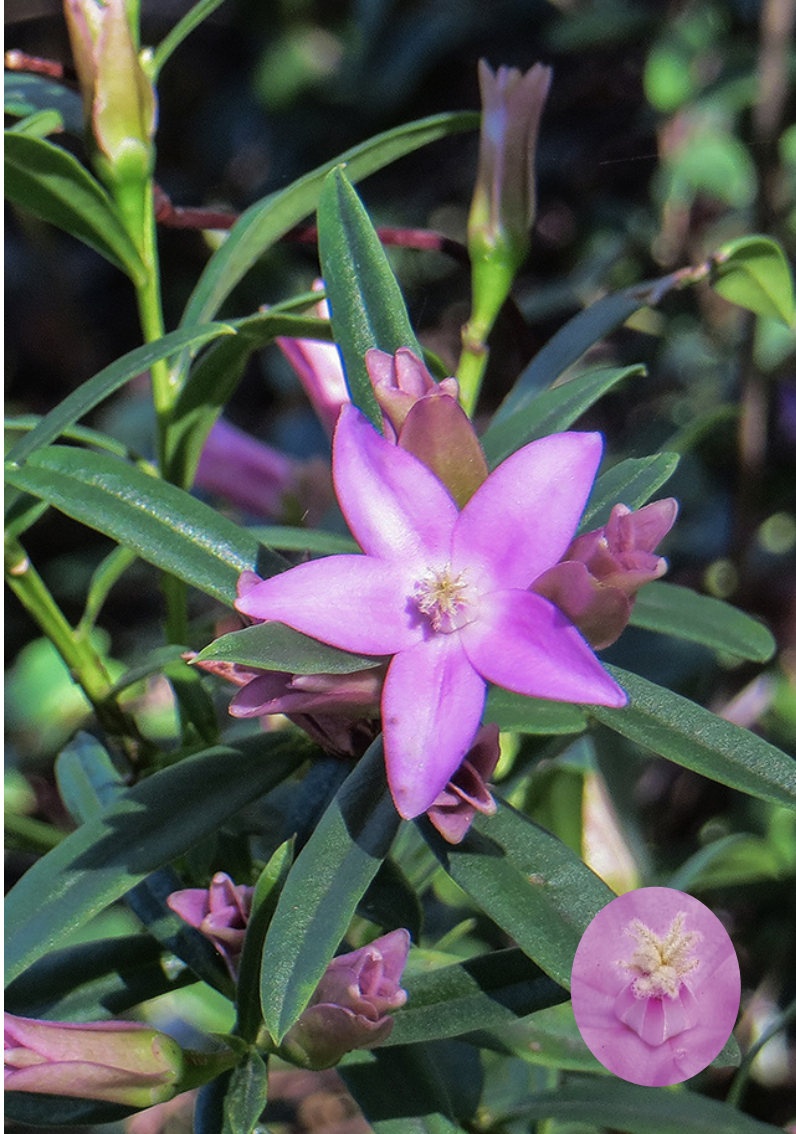
Fruit: A shizocarp, becoming dry at maturity. When dry the compartments split open forcing separation of individual carpels and release of the seeds.

Ecology: The flowers are visited by a diverse range of insect pollinators including native bees and butterflies.

Seed dispersal is likely by ballistic dehiscence, followed by myrmecocherous behaviour by ants attracted to seed appendages. Ants move the seed using the fleshy appendage to their nests. Once there, larvae consume the appendage as a food reward, but not the seed itself. The ant-attractant for *Crowea* is a flap of white tissue over an inner brown coat enclosing the seed.

Notes: Similar species *C. exalata,* with smaller leaves and flowers. The similar genus *Boronia* has 4 petals.

Crowea after James Crowe (1750-1807), English surgeon and botanist of Norwich, England and a great collector of willow plants. *Saligna* meaning 'willow-like', from Latin *Salix*, the name of the willow genus. Cultivated.



Dillwynia retorta (J.C. Wendl) Druce

Eggs and Bacon, Heathy Parrot Pea Family: Fabaceae, Pea Family

Description: Irregular shrub to 1m high. Short rounded leaves to 12mm long or so with sharp pointed tips twisted alternately around the stems.

Bright yellow pea flowers. The standard petal has dark red markings. Petal wings yellow, the keel dark red and overlapped by the yellow wings above. Flowers clustered closely together in groups towards the ends of stems on the upper branches.

Flowering: May - November.

Fruit: Small rounded inflated pod. Seeds have a smooth, hard coat with an aril (food body) adapted for ant-dispersal (myrmechochory).

Ecology: A legume with the capacity to form nitrogen-fixing root nodules. Colonies of mycorrhizal fungi have been found associated symbiotically with *D. retorta* roots. The degree of colonisation appears affected by fire intervals.

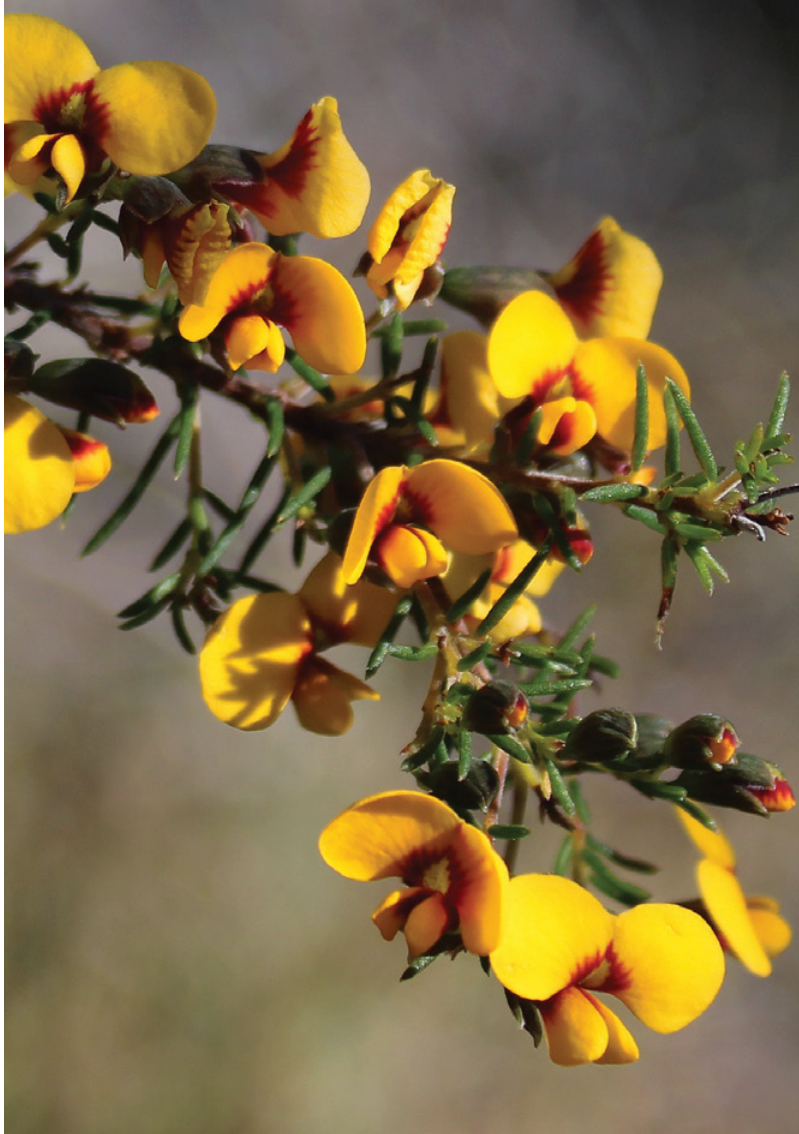
Pollinated by native bees. Bees land on the wing petals, their weight pushing the keel petals apart to expose the pollen-bearing anthers.

Host plant to seed predator beetles *Araecerus* species, *Bruchidius* and *Eurytoma* species. Larval host plant for beetles *Ethon jessicae* and *E. fissiceps*, usually in the woody stems. Flowers are food for adults beetles of *Ethon affine* and *E. leai,* (Benson & McDougall).

The small rounded leaves compared to other leaf shapes means less leaf surface area and fewer pores through which water maybe lost.

Notes: Several similar forms collectively referred to as the *D. retorta* Species Complex. Prostrate forms exist on exposed coastal windy headlands.

Dillwynia after Lewis W Dillwyn (1778-1855), an English botanist. *Retorta*, Latin, to “turn back, twist back” describing the leaves. George C.Druce, (1850-1932) English botanist and pharmacist.



Epacris longiflora Cav.

Fuschia Heath, Native Fuschia — Family: Ericaceae, the Heaths

Description: Irregular prickly shrub to 1m high. Small, dark green deltoid leaves to 15 mm long tapering to a sharp point. Leaves crowded alternately around rigid stems which are covered with short white hairs.

Red and white tubular flowers to 2cm long with five spreading white lobes enclosing the anthers; stamens are fused to the wall. Flowers lightly perfumed, pendulous and crowded along the branches.

Flowering: April - November, occasionally at other times.

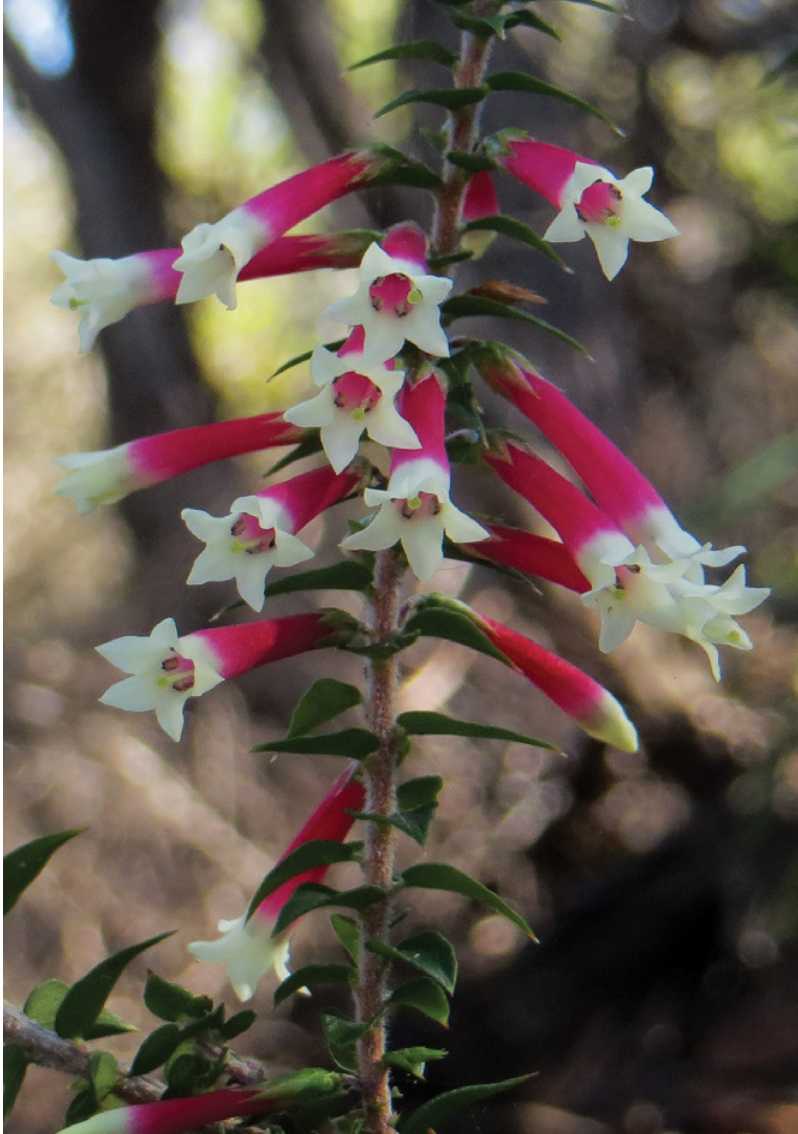
Fruit: Capsule, less than 5mm long.

Ecology: Common on rocky sandstone, poor soils, in shade, moist understorey woodland, on seepage lines and at the base of sandstone rocks and heath.

Flowers attract various insects, ants and native bees. Morphology of the long tubular flowers restricting access to some. The native solitary leaf-cutter bee has a long tongue permitting it to visit flowers with long floral tubes such as *E. longiflora*, *Correa* and *Westringia*. As the bee forages pollen is scraped onto its body or hairy legs and transported to the next flower. Introduced honey bees outcompete native bees by perforating the base of the floral tube directly to reach the nectar.

Notes: *Epacris,* Greek; a pointed end, *epi*; upon and *'akris*', hill. *Longiflora* Latin; *longus*; long and *flora* - flowers, referring to the long pendulous flowers and extended flowering period.
Cav. for Antonio J. Cavanilles (1745-1804), Spanish taxonomic botanist and artist. He described many Australian plants based on specimens collected from Botany Bay and Port Jackson by L. Née, French botanist, while on the Spanish-funded *Malaspina* scientific expedition in 1793.

Epacris featured in the poem 'Botany Bay Flowers': '*When first I landed on Australia's Shore,…A flower gladden'd me above the rest,'* by Barron Field (1786-1846), judge of the Supreme Court of Civil Judicature, Colony of New South Wales, 1817-24, in *First Fruits of Australian Poetry*, 1819, the first published verse in Australia.



Grevillea speciosa (Knight) McGill.

Red Spider Flower — Family: Proteaceae

Description: Shrub to 1.2m high or more. Leaves stiff, ovate to almost round, older leaves narrow elliptic with a short brown sharp point at the tip, margins entire and rolling under. Upper surface glabrous, undersurface covered with fine, silvery-white hairs lying close together and aligned in the same direction.

Bright red flowers cluster together at the ends of branches in a suspended, pendulous manner from their stalks (pedicels). Flower perianth, buds and stalks lightly covered with silky white hairs. The round disc at the end of the style is the "pollen presenter", so named because it presents pollen deposited on it to potential pollinators, likely honey-eater birds. Pollen is transferred from the anthers before the flowers open.

Flowering: July - September, occasionally other times.

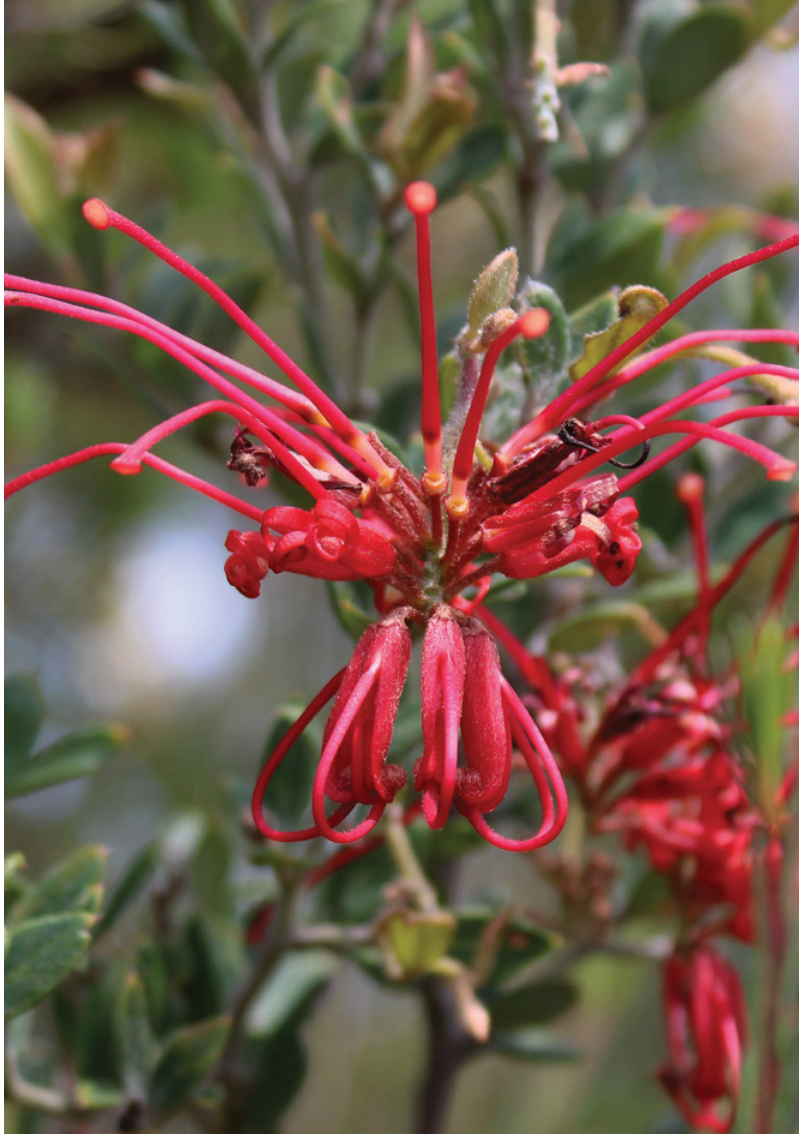
Fruit: A dry ellipsoid, thin-walled fruit opening along one side to release wingless seeds. Seeds have an attached food body for ant dispersal. Small ants in groups may move the seed centimetres before dismantling the food body. Larger ants tend to carry it directly to their nests.

Ecology: Flowering through the colder months when flowers are few, it is a valuable food source for insects, including the larvae of some moths and butterflies. Found on sandstone based soils and restricted to the Sydney district.

Pollinated by honey-eater birds with long curved beaks such as the White-Cheeked and New Holland Honeyeaters seeking nectar for food. Seeds a food source for weevils and small mammals. Endemic to New South Wales.

Notes: Synonym *Grevillea punicea*. Similar species: *Grevillea oleoides*. *Speciosa*, Latin, beautiful, handsome. *Grevillea* honouring Charles F. Greville (1749-1809), a Lord of the Admiralty, close friend of Joseph Banks.

Almost all of the world's *Grevillea* species are endemic to Australia.



Hibbertia dentata R.Br. ex DC.

Trailing Guinea Flower, Twining Guinea Flower Family: Dilleniaceae

Description: Twining or trailing creeper with dark red narrow and wiry stems to 2m long. Long dark green leaves elliptical to ovate with irregular dark red blotches, hairless, underside lighter. Leaf margins sparingly toothed.

Bright yellow flowers to 3cm across, 5 sepals and 5 petals. Numerous yellow stamens centrally clustered around the hairless carpels. No nectar produced.

Flowering: September - November.

Fruit: Dry, dehiscent follicle. The seed has an aril, a fleshy, high-fat structure often used by ants to manouvre the seed into their nests, where the aril is used for food but not the seed itself.

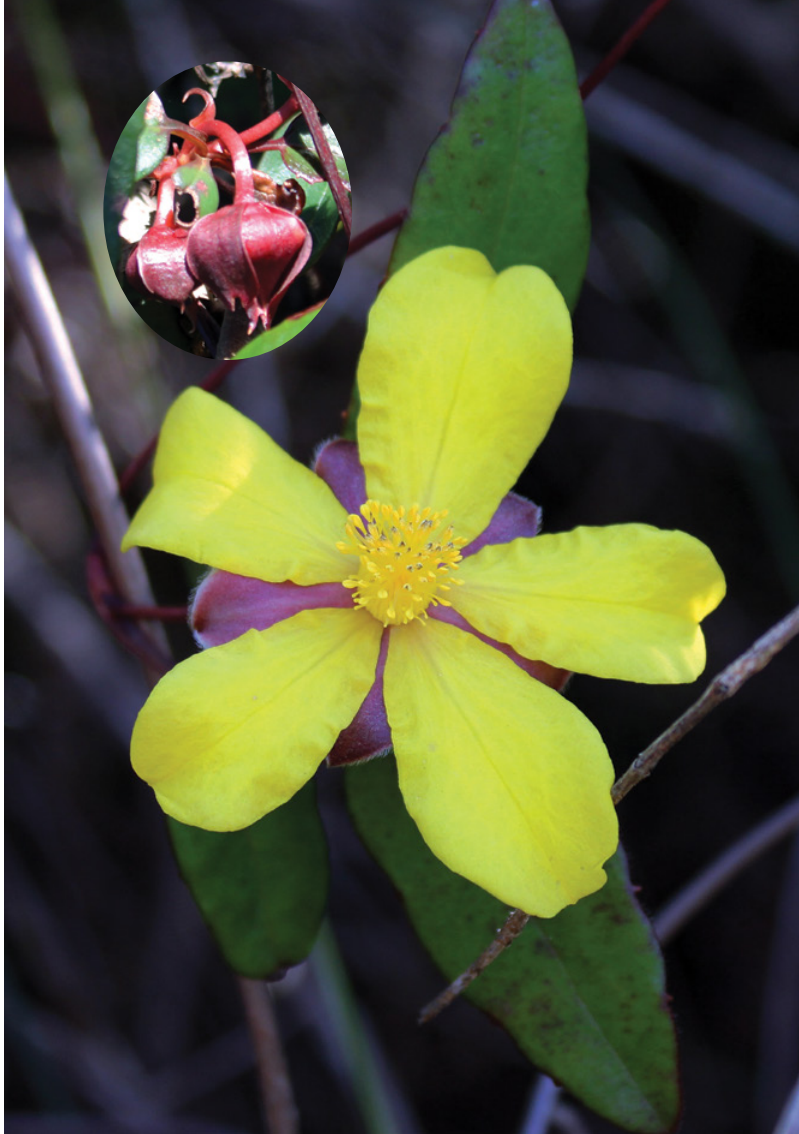
Ecology: Flowers attract various insects; native bees, introduced honey bees (*Apis mellifera*) and flies such as hoverflies. With many vertical pollen-bearing anthers crowded together, smaller insects can't help but brush off pollen off onto their bodies in their quest to find the receptive stigmas.
Grows rapidly. Used in land management for erosion control.

Plants in the *Hibbertia* genus are considered to be prone to root fungus disease caused by *Phytophthora cinnamomi.*

Notes: *Hibbertia*, after George Hibbert (1757-1837), English amateur botanist from a wealthy merchant family and a patron of botanical expeditions. *Dentata,* Latin meaning toothed, because of the toothed edges of the leaves.

First described in 1817 by Robert Brown (1773–1858), Scottish botanist, in *Regni Vegetabilis Systema Naturale*. Robert Brown noted for his discovery in 1831 that plant cells contain a nucleus.

Augustin de Candolle (1788-1841) Swiss botanist. De Candolle introduced a system of classifying vascular plants and credited as the first to label it as a "taxonomy".



Isopogon anethifolius (Salisb.) Knight

Drumsticks, Narrow-leaf Drumsticks, Cone Flowers, Conesticks

Family: Proteaceae

Description: Upright shrub to 1m high, sometimes more with rigid stems and fine, pine-like hairless foliage. Leaves linear-cylindrical to 16cm long, needle-like with red, sharp pointed tips, divided and subdivided many times.

Yellow flowers grouped at the ends of branches into rounded, globular inflorescences. Flowers opening sequentially from the base of the inflorescence upwards.

Flowering: August - December, occasionally at other times.

Fruit: A nut, covered with fine hairs, in a globular woody cone. Cones remain on the plant for long periods. Cone scales fall away before or at the same time the nuts fall to the ground.

Ecology: Pollinated by bees. Attracts nectar-feeding birds, butterflies and various other insects.

Develops a lignotuber, but it must be of a certain size to survive low intensity fire. Reportedly lives more than 60 years (Benson and McDougall).

Notes: Synonym *Isopogon virgulatus*. Similar species *I. anemonifolius*, distinguished by broader, flatter leaves.

Isopogon from Greek *isos* for equal and *pogon* meaning a beard referencing the hairs covering the woody fruit. *Anemoni,* Latin meaning anemone, and *folius* leaf, the foliage resembling anemones. The common name Drumsticks from the round hard cone fruits, borne at the ends of branches. Cultivated.

Robert Brown (1773-1858) Scottish botanist named the genus *Isopogon* in 1810. *Isopogon* species were among the first Australian plants cultivated in Europe in the 1800s. *Isopogon* species found only in Australia.

The Proteaceae are morphologically very diverse. Named by Linnaeus from *Proteus*, the Greek sea-god capable of changing form, because he was impressed by the variation among the first species he saw.

Isopogon anethifolius - bud

Isopogon anethifolius - flower

Isopogon anethifolius - fruit or “drumstick”

Lambertia formosa Sm.

Mountain Devil, Honey Flower Family: Proteaceae

Description: Woody shrub to 2m high. Leaves narrow, rigid, to 8cm long, margins entire with a short sharp point, with a glossy upper surface and pale, lightly hairy beneath, arranged in whorls up to 6.

Red flowers tightly grouped together at the ends of stems in an erect inflorescence of up to 7 flowers all enclosed by a whorl of bracts. The style protrudes well beyond the tubular perianth.

Flowering: Mainly May - Spring, and at other times.

Fruit: Woody bi-valved seed capsule, with a protruding horn or short beak on each valve, hence the name "Mountain Devil".

Ecology: Rich in nectar and pollen. Sourced by Honeyeater birds, the White-eared New Holland and White-cheeked Honeyeaters, Noisy Miner, small mammals, and insects. Larvae of the Timber Moth (*Xylorycta strigata)* feed on the leaves and tunnel into branches. Food plant for the Cup Moth larvae, *Mecytha fasciata*.

Long-lived, over 60 years (Benson & McDougall). Develops a lignotuber, which is a root adaptation for storing nutrients to permit regeneration after fire or mechanical damage.

Endemic to NSW. The only species of *Lambertia* occurring in eastern Australia.

Notes: *Lambertia* honouring Aylmer Lambert (1761-1842), a wealthy, well-connected Englishman. Lambert's collection of Australian drawings now held by the Mitchell Library, Sydney. *Formosus,* Latin, *beautiful*.

Sm. for James E Smith (1759-1858), Scottish, English botanist, first author who named the genus and the species in 1798. Smith was a friend of Sir Joseph Banks, and described many Australian plants in his work *A Specimen of the Botany of New Holland,* 1793, the first published book on Australian flora. Plant specimens were collected by Sir Joseph Banks (1743-1820), English botanist, and D. Solander (1733-82), Swedish naturalist, at Botany Bay, April-May 1770.

Platylobium formosum Sm.

Handsome Flat Pea — Family: Fabaceae

Description: Straggling irregular shrub to 1m with thin stems. Leaves to 5cm long, varying from narrow to broadly ovate, heart-shaped (cordate), prominent reticulate venation and glabrous (hairless). Leaves opposite on thin round and wiry stems.

Conspicuous yellow pea flowers, the standard petal marked with a central semi-circle burst of red. Wing petals yellow, stamens fused, calyx hairy (pubescent) to 10mm long.

Flowering: August - November.

Fruit: Flat, oblong leguminous pod, 2-4cm long, occasionally hairy along the longitudinal lines of dehiscence. The seeds bear a fleshy food body rich in lipids and nutrients (elaiosome) to entice ants for dispersal. Ants transport the seed to their nests for food, leaving the seed untouched.

Ecology: An understorey species found in sheltered open forest, in part-shade. Endemic to the eastern coast of Australia. A nitrogen-fixing legume which forms symbioses with mycorrhizal fungi in the soil.

Flowers pollinated by various insects including native bees, butterflies and wasps. Seeds are food for native finches and parrots such as the Red-rumped Parrot and the Turquoise Parrot.

Notes: Diverse forms of leaf shape, size, petiole and pod exist.
Platylobium derived from *platys* meaning 'broad, flat' and *lobus* Latin for lobe, referring to the large flat seed pod. *Formosum* from Latin, beautiful.

Sm. for James E. Smith (1759-1858), English botanist who first described it in *A Specimen of the Botany of New Holland,* 1793, the first book published on Australian flora.

Woollsia pungens (Cav.) F. Muell.

Snow Wreath

Family: Ericaceae

Description: Prickly straggly shrub to 1m high. Numerous short, stiff leaves crowded around the stem, ovate, tapering to a sharp point, 1cm long. White flowers, 8-12mm diameter with a narrow tube to 11mm long cluster together along the stem. The corolla tube opens to 5 spreading lobes, broadly rhomboid which extend beyond the sepals.

Flowering: May-September, and at other times. Flowers are long-lasting.

Fruit: Capsule, less than 3mm diameter.

Ecology: Forms mutual symbiotic relationships with ericoid mycorrhizal soil fungi. To stimulate growth the fungi form coils in the epidermal cells of root hairs (Ashford 2007). Enzymes released by the fungi hydrolyse bound nitrogen and phosphorous rendering into useable forms for uptake by the plant's roots. In this way nutrient uptake by the plant from acidic, nutrient-poor sandy soil is increased. Over 100 different fungal endophytes have been isolated from *W. pungens* roots.

Mycorrhizal symbioses for plant growth and survival are a common adaptation found among plant families on poor sandstone-based soils. "Ericoid" as many Ericaceae live on poor sandstone-based soils and form mycorrhizal symbioses to gain nutrients.

Notes: A single-species genus. Endemic to NSW and Queensland. *Pungens* from Latin *pungo*, to puncture, from the pointed leaf tip.

Woollsia after William Woolls (1814-1893) botanist, clergyman and schoolmaster at King's School, Parramatta. Authored *Woolls's Plants of New South Wales* 1885, and *Plants Indigenous and Naturalized in the Neighbourhood of Sydney,* 1891. Occassionally assisted F. von Mueller.

F. Muell for Sir Ferdinand von Mueller (1825-1896), German botanist and taxonomist who migrated to Adelaide, then appointed Government Botanist to the Colony of Victoria in 1853.

Cav. for A.J.Cavanilles, (1745-1804) Spanish taxonomic botanist and artist who described many Australian plants from specimens collected at Botany Bay and Port Jackson in 1793.

Acacia linifolia (Vent.) Willd.

Flax-leaved Wattle, White Wattle

Family: Fabaceae, subfamily Mimosoideae

Description: Slender shrub to 2m high with graceful, swaying branches. Stems and phyllodes hairless. Phyllodes narrow-linear and leathery to 5cm long, tipped with a short brown point. Phyllodes are not true leaves but are flattened leaf stalks or petioles. A single small nectary gland exists on the phyllode near the stem.

Numerous pale yellow to creamy white flowers clustered into globular heads on short stalks and grouped towards the ends of branches.

Flowering: December - April, may flower again in winter.

Fruit: Flat leguminous pod, hairless, 3-8cm long, 1cm wide, thin walls outlining the enclosed seeds constricted slightly inbetween. Hard-coated seeds have an attached aril, a nutrient-rich outgrowth attractive to ants who carry the seeds to their nests, feeding on the food body, (elaiosome). This plant-ant relationship known as myrmecochory, or ant distribution, is common among native plants. Seeds are stored in the soil.

Ecology: Acacia flowers don't produce nectar. Instead nectary glands on phyllode stems produce a sweet substance which attracts insects. Pollinated by bees, insects, wasps and beetles. Visited by introduced honey bees (*Apis mellifera*). Host plant to the native Longhorn Beetles. Seeds are food for seed-eating weevils, *Melanterius*. Birds prey on the foraging insects.

Phyllodes are an adaptation to reduce water loss from leaves by transpiration. They have a swelling (pulvinus) at the base which is capable of changing its form to cause leaf movement, an advantage during hot days to deflect heat from the sun. A rapid grower, used in erosion control in land management.

Notes: Several synonyms. Geographically confined to the Sydney area. Vent. for É.P. Ventenat (1757-1808), French botanist. *Linifolia* Latin, referring to the straight leaves, like leaves of plants in the flax genus *Linum*. Wattle, specifically *A. pycnantha,* is the national floral emblem of Australia.

Acacia longifolia var longifolia (Andrews) Willd. *subsp. longifolia*

Sydney Golden Wattle Family: Fabaceae, subfamily: Mimosoideae

Description: Shrub to 4m high. Phyllodes narrow elliptic, to 15cm long with a pointed tip, hairless, venation prominent with a nectary gland at the base of the phyllode.

Bright yellow flowers with numerous free stamens. Flowers grouped together forming cylindrical spikes, to 5cm long, the whole spike on a short stalk. Flowers strongly scented.

Flowering: June – November.

Fruit: A narrow pendulous pod to 5cm long, turning brown and twisting open when dry at maturity to release the seeds.

Ecology: Flowers and pollen attract insects, native bees and exotic honey bees. Parrots feed on the seeds. Host species for wood-boring insects, the *Acacia* seed predator weevil *Melanterius* species. Adults of the native Botany Bay Diamond Weevil feed on young leaves. Host plant of *Cerambycid* species beetles (Longhorn beetles).

Seeds dispersed by ants and birds. Phyllodes developed for survival in a dry climate. A rapid grower it has some capacity for nitrogen fixation. Can be highly invasive, modifying ecological habitats and reducing biodiversity in other states and some countries. Maybe used for dune stabilisation. Cultivated.

Notes: Variable forms. "Willd." for Carl L Willdenow (1765-1812), German botanist and pharmacist who revised the *Acacia* genus based on vegetation type. *Acacia* from Greek *akakia. Longifolia* from Latin *longus*-long and *folia*-leaves.

A medicinal and food plant for coastal Aborigines. The seeds, larvae (grubs) collected from the roots, galls and trunk for food. Leaves were crushed to place in water to stun fish. *Acacia* species were an important source of materials for fibre, tools, fire and weapons. The appearance of flowers signalled to some Aboriginals the arrival of migratory southern whales and other migratory fish. Has a high tannin content.

Acacia suaveolens (Sm.) Willd.

Sweet-scented Wattle Family: Fabaceae, subfamily Mimosoideae

Description: Slender open shrub with acute-angled branches to 2m high. Phyllodes grey-blue, narrow linear to 15cm, acutely angled to the stem, tips with a sharp, short point. Phyllodes thick and leathery with 2 nectary glands.

Numerous pale creamy flowers in globular heads, the whole inflorescence grouped in axils. Yellow-reddish bracts (inset) enclose the flowers then fall away opon the flower opening.

Flowering: May - September.

Fruit: Pod to 10cm long with a white covering of tiny, waxy hairs. Seeds black with a hard coat.

Ecology: Seeds dispersed by ants and stored in the soil. Seed is food for seed-predator beetles. Host plant for the tiny *Megastigmus (Coeloptera)* gall wasps. Galls are irregular lumps of tissue on part of a plant caused by an insect. Produces a sweet-swelling perfume. Lives around 10-15 years, (Benson & McDougall).

Phyllodes are modified leaves for dry climates. Often having equal numbers of sunken stomata (pores permitting gas, water vapour exchange), on both surfaces.

The grey-green appearance of phyllodes is from a thin, white, waxy coating of tiny hairs; an xeromorphic adaptation to protect stomatal pore openings and reduce moisture loss. The angled phyllodes on upright branches assists directing rain and dew towards the root zone.

Notes: *Suaveolens,* Latin, referring to the sweet smelling flowers. Different forms exist according to location. Similar species: *A. linifolia.*

A food source for Aboriginals: seeds are edible after treatment and larvae (grubs) from under the bark, in galls and roots. The leaves and bark sourced for medical uses and to add to water to stun fish.

Acacia terminalis ssp. angustifolia Tindale & Kodela

Sunshine Wattle, Port Jackson Wattle

Family: Fabaceae, subfamily Mimosoideae

Description: Spreading shrub to 1.5m high with hairless angular grey branches, upper branchlets longitudinally ridged often tinged red. Leaves bipinnate (fern-like) and hairless, leaflets in pairs, dark glossy green above, lighter underneath. The leaf stalk has an elongated nectary gland (jugary).

Small creamy white to pale yellow sessile flowers 4-13, grouped tightly in showy globular heads, inflorescence 10cm long.

Flowering: February – June.

Fruit: Leguminous pod to 11cm long. Seeds hard-coated and adapted for ant-dispersal, stored in the soil.

Ecology: Flowers don't produce nectar. Instead small nectary glands located on the leaf stalks or on the phyllodes, release a nectar rich in sugars and amino acids (glutamine and phenylalanine). Secretions tend to be greatest during flowering. *Acacia* pollen is high in protein. Seeds are food for weevil beetles *Melanterius* species and their larvae.

Pollinators are native bees, exotic honey bees and flies. Also small perching birds such as the Silvereye and Eastern Spinebill attracted to the nectaries, collect pollen as they brush against the flowers.

The *Acacia* genus forms the largest Australian plant group from the ancient Gondwana vegetation. Seedlings begin with pinnate leaves which either develop into bipinnate leaves as in *A. terminalis,* or into phyllodes (flattened leaf stalks), as for most *Acacias*. Bipinnate leaves are true 'leaves', often held horizontally to capture light, suggested by some botanists to be left over from Gondwana.

Notes: A confusing species of synonyms and subspecies in the Sydney region. Similar sub-species the rare and endangered *A. terminalis subsp terminalis* is present in the area, distinguished by a dense covering of short white hairs, small petiolar gland and broader seed pods. *Terminalis,* Latin to describe the flowers being at the ends of branchlets.

Acacia ulicifolia (Salisb.) Court

Prickly Moses, Juniper Wattle

Family: Fabaceae
Sub-family: Mimosoideae

Description: Prickly straggly shrub to 1.5m high, the branches tend to droop. Phyllodes narrow, rigid and sharply pointed, reduced to spines, to 2cm long, less than 1mm wide, cylindrical but broader at the base with one small gland. Phyllodes at right angles to the stems, maybe lightly covered with hairs.

Numerous creamy yellow to white flowers grouped tightly together in globular balls, each on a long, slender, hairless stalk to 15mm long, one per axil, the inflorescence protruding outwards.

Flowering: April – September.

Fruit: Flat hairless pod, maybe straight or curved, turning brittle at maturity with some constriction between the seeds. See inset.

Ecology: Flowers visited by hoverflies, ants and bees. Phyllode glands of *Acacia* plants produce a nectar, not the flowers. Seeds a food source for beetles and weevils, including the *Acacia* seed pod attacking beetles *Melanterius* species.

Acacias may form symbiotic relationships with various strains of root-nodule bacteria (rhizobia) to fix atmospheric nitrogen - an advantage in nitrogen-poor sandy soils. The capacity to do this varies considerably between species. Reported to live 25 years or so, (Benson & McDougall).

Notes: Similar species: *A. trinervata* and *A. brownii,* distinguished by dark yellow flower heads. *Acacia* from Greek *akis*, "a thorn".

Ulicifolia from *Ulex* (Gorse) a genus of thorny shrubs from Europe and Africa containing *Ulex europaeus. U. europaeus* classified as a Weed of National Significance (WONS) and regarded as one of the worst invasive weeds in Australia. "Prickly Moses" derived from the name *Mimosa,* a genus related to but distinguished botanically from *Acacia.*

Astrotricha floccosa

Woolly Star-hair, Flannel Leaf Family: Araliaceae, the Ginseng Family

Description: Upright shrub with tall stems to 2 or 3m high. Stems and undersides of leaves densely covered with tufts of white stellate woolly hairs, a 'starry down' giving a flannel, felt-like appearance.

Leaves lanceolate or narrow elliptic with a long stalk, margins entire, upperside light olive green and shiny, to 25cm long. Leaf venation visible above and below through the hairy covering.

Small creamy white flowers with 5 petals covered in white soft hairs, around 5mm across, clustered in extensively branched terminal groups forming a prominent inflorescence.

Flowering: September - December.

Fruit: Small flattened dry fruit of two parts, each splitting off individually at maturity.

Ecology: Found on sandstone based soils, partly exposed east-facing hillside in the Wianamatta shale area. Flowers visited by various beetles, ants and flies. Spiders prey on the visiting insects. Food plant for the caterpillar larvae of the moth *Imbophorus aptalis.*

With a short life span it has a higher capacity for photosynthesis than more sclerophyllous native species (Evans *et al* 2009). Sclerophyll plants have features such as many thick, tough leaves able to orientate away from direct sunlight.

Notes: *Astrotricha* from Greek *astron* star, and *trikhinos*, like hair. *Floccosa* Latin, woolly. Can be mistaken for the similar-looking introduced toxic weed plant, Wild Tobacco Bush, *Solanum mauritianum*, of blue flowers and orange fleshy fruits. D.C. for Augustin P. De Candolle (1778-1841) Swiss botanist and first author, 1829.

The Araliaceae includes ginseng from the roots of *Panax ginseng*, English ivy *Hedera* species, indoor umbrella plant Schefflera, the rice-paper plant (*Tetrapanax papyrifer*) used in Chinese medicine and Wild Sarsaparilla, (*Aralia nudicaulis)* a substitute for sarsaparilla.

Banksia ericifolia L.f. *ssp. ericifolia*

Heath Banksia, Heath-leaved Banksia — Family: Proteaceae

Description: Dense bushy shrub or tree to 4m high. Narrow, cylindrical and stalkless leaves with margins curled under, many leaves crowded alternately along the stems.

Numerous pairs of orange-red flowers in cylindrical spikes to 20cm long. Spikes at the ends of branches. Individual flowers open sequentially. The orange style breaks free of the perianth, extending outwards in a stiff hook-shape with the pollen presenter at the tip.

Flowering: April - August.

Fruit: Woody, curved follicles or capsules are partly embedded in the dense cones surrounded by shrivelled, sterile flowers. Capsules remain closed on the plant for a long time forming a canopy-stored seed bank. Follicles open to release winged seeds following fire or plant death.

Ecology: No lignotuber. The nectar-rich flowers attract insects such as wasps, moths, weevils, native bees and Honey bees. Honey-eating birds visit the flowers for nectar and pollination, also mammals and marsupials such as the Brown Marsupial Mouse (*Antichinus*), Bush Rat and possums. An important food source during winter when little else is flowering.

Notes: *Banksia* after Sir Joseph Banks. *Ericifolia* from *Erica*, referring to the European, African Heath genus, *Folia* Latin for leaf. Described as Honeysuckles in the early days.

"L.f." for Linnaeus filius, (1741-83), naturalist and son of the famous Swedish botanical taxonomist Carl Linnaeus (von Linné, 1707-1778). L.f. named the *Banksia* genus after Sir Joseph Banks (1743-1820), English botanist, who provided the plant specimens collected during his time on board the *Endeavour* in 1770. Considered to be the first plant species he collected at Botany Bay. Cultivated.

Aboriginals sourced flower spikes for making a sweet drink by soaking the flower spikes in water. Or sucked the nectar directly from the cones.

Banksia ericifolia - matured cone

Banksia ericifolia - downward view of flower cone

Callistemon citrinus (Curtis) Skeels

Red or Crimson Bottlebrush, Lemon Bottlebrush Family: Myrtaceae

Description: Dense rigid shrub to 3m. Leaves thick and leathery, flat, broadly lanceolate to 7cm long with a short, sharp rigid point. Leaf surface scattered with aromatic oil glands.

Bright red stalkless flowers grouped closely together appear as cylindrical spikes along the stem. Several stamens with long straight filaments and the anthers are all bright red. Flower spikes to 12cm long and 4-7cm wide.

Flowering: October - December, sometimes longer.

Fruit: Cup-shaped woody capsules. Unopened capsules remain on older wood stems for many years forming a stored canopy seed bank. Seeds are shed on the death of the plant and following fire.

Ecology: Pollinated by nectar-eating birds such as Noisy Miners, Silvereyes, Eastern Spinebills, Red Wattlebirds and New Holland Honeyeaters. Crimson Rosellas feed on the seeds and the flowers by the Grey-headed Flying Fox. The nectar attracts several insects including the European Honey Bee. Food plant of the Bottlebrush Sawfly. Prefers damp soil, swampy areas. Long lived, to 60 years (Benson & McDougall).

Notes: Various synonyms, the genus is similar to *Melaleuca*. Similar species: *C. subulatus, C. linearifolius* and *C. rigidus,* the latter two distinguished by narrower leaves.

Callistemon from Greek *kallistos* meaning "beautiful" and *stemon* thread. *Citrinus* referencing the aromatic, lemon-scented, aroma from the crushed leaves. Cultivated. Reported to possess antibacterial, antifungal and other properties.

William Curtis (1746-99), English botanist and entomologist who first described it in 1794 based on a plant struck from a root sent from Botany Bay. Homer C Skeels (1873–1934), American botanist and agriculturalist.

A medicinal plant for Aborigines. Crushed leaves and flowers used as a poultice.

Dodonaea triquetra J.C. Wendl.

Hop Bush, Common Hop Bush, Forest Hop Bush

Family: Sapindaceae, Soapberry Family

Description: Shrub 1-3m high. Leaves ovate to narrow elliptic to 10cm long with pointed tips and long, slender stalks.

Flowers small and inconspicuous without petals; the small triangular sepals deciduous. Styles are around 1cm long. Numerous male and female flowers are on separate plants in grouped closely together in terminal inflorescences.

Flowering: January - March.

Fruit: 3-winged segmented capsule with membranous, rounded wings to 5mm wide, drying to brown when dry and dehiscing to release black seeds.

Ecology: No nectar produced. The pollen is likely wind dispersed. A colonising species of rapid growth. Found on coastal sites, dry and wet sclerophyll forests in sandy soils.

Seeds are eaten by the Eastern Rosella Parrot and the Australian King Parrot. Larvae of the Fiery Jewel Butterfly (*Hypochrysops ignitus ignites*) feed on the leaves.

A host and food plant for various beetles, scale insects, cicadas, ladybirds and for jewel and metallic shield bugs (the *Scutelleridae family),* (Benson & McDougall). Rabbits browse seedlings. Predominantly an Australian genus.

Notes: "Hop Bush" from the fruits resembling those of the beer brewing hops species; *Humulus lupulus,* but botanically unrelated. Flowers of *Dodonaea* species from arid areas were used for leavening bread and to produce a beer in the early days.

Dodonaea honouring Rembert Dodoens (1517-1585), Dutch-Flemish physician and botanist. Named in 1798 by J.C. Wendland (1755-1828), German botanist. Sapindacaea from *sapo* meaning soap.

A medicinal plant sourced by Aboriginals for pain relief and wound healing (the foliage).

Grevillea linearifolia (Cav.) Druce

White Spider Flower

Family: Proteaceae

Description: Shrub to 2m high with slender pendulous branchlets. Simple narrow-linear leaves to 9cm long with a recessed midvein, margins entire and tapering to a point, glabrous upper surface but clothed with long white silky hairs on the underside.

Numerous irregular flowers, mostly white sometimes tinged maroon-pink, crowded together in short terminal clusters protruding beyond the foliage to attract pollinators. After a flower opens it exposes a hairy surface on the perianth.

Flowering: July – November, and sporadically at other times.

Fruit: A dry, two-seeded dehiscent fruit, becoming brittle at maturity.

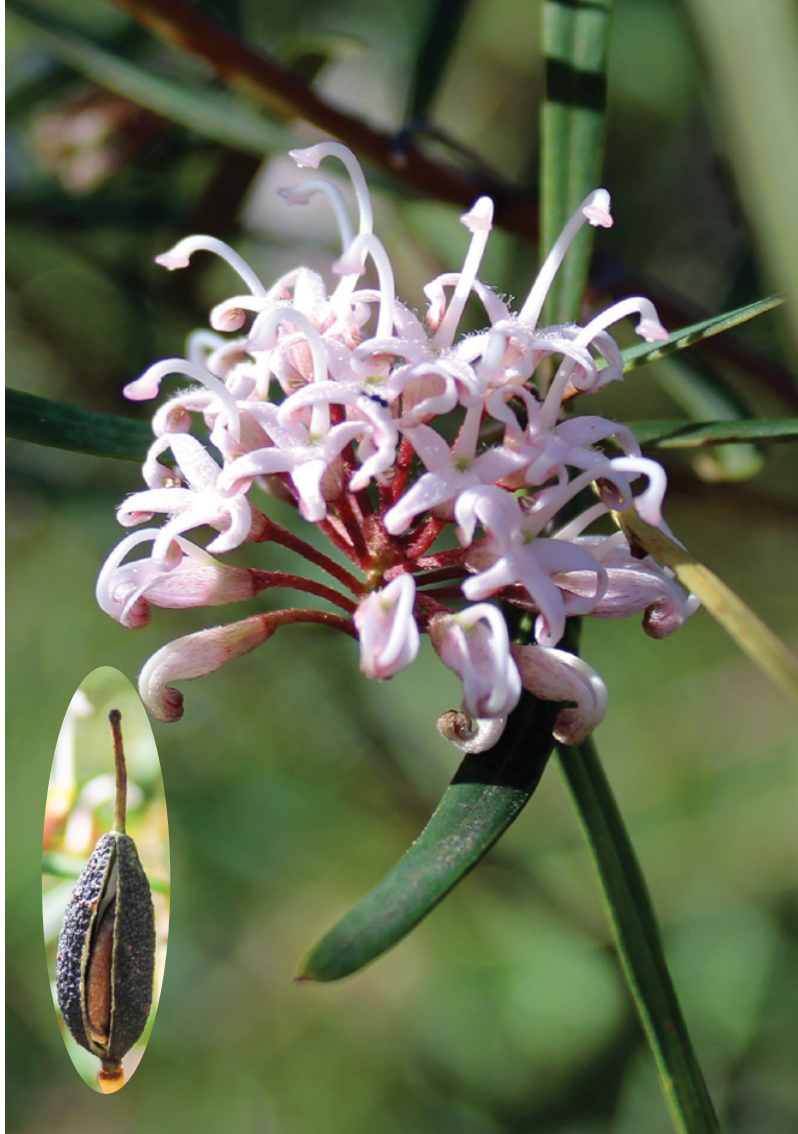
Ecology: Insect pollinated by native bees and introduced honey bees.

The seed has an attached fleshy body (an elaiosome), rich in protein and lipids which is attractive to ants. The ants carry the seed away to their nests so dispersing it. Groups of ants have been observed moving a seed together, then dismantling the food body. Larger ants individually move seeds to their nests.

In this species the multi-layered seed coat has been found to control dormancy. It does so by a number of different mechanisms, (Ashford *et a*l 2005).

Seeds are a likely food source for Bush Rats *Rattus fuscipes* (Auld 1995, in Benson and McDougall). Seeds in the soil seed bank germinate after fire. Smoke and heat shock cues have been found to break seed coat dormancy, (Briggs & Morris 2008).

Notes: Different forms exist. *Grevillea* after the Hon. Charles F. Grenville (1749-1809), a founder of the Royal Horticultural Society with Sir Joseph Banks and others. *Linearifolia* from Latin, *linearis* meaning “linear”, *folia*: a leaf.



Hakea sericea Schrad. & J.C.Wendl

Needle Bush, Silky Hakea — Family: Proteaceae

Description: Irregular prickly shrub to 2m high, branchlets covered with a sparse layer of white reticulated, silky hairs. Rigid needle-like cylindrical leaves, narrow-linear, to 5-6cm long and terminating in a sharp point. New leaves covered with small fine hairs.

Several white flowers clustered together in leaf axils. Flower stalks with white, reticulated silky hairs, perianth a short tube, hairless, the style and disc protruding beyond the perianth.

Flowering: July - October.

Fruit: Woody, knobby follicle to 4cm across, ovoid-globular, maybe marked with blotches, with a short smooth-pointed projection, (beak). Fruits remain on the branches as a canopy seed bank, splitting open when the branch or plant dies, or after fire. Two winged black seeds.

Ecology: A proteiod root-forming species with shallow, spreading roots which facilitate efficient absorption of phosphate from poor soils. No lignotuber.

Hakea is a sclerophyllous genus having adaptations enabling survival in extended dry conditions such as small leaves and thickened cell walls to reduce water loss.

Pollinated by nectar-feeding insects, native bees, hoverflies and birds. Food plant for the Banksia Moth (*Psalidostetha banksiae*). Host plant of various Longicorn, Long-horned (*Cerambycid)* beetles who also feed on any dead foliage and branches recycling that material. *H. sericea* has proved to be invasive and weedy elsewhere: eg in Victoria, South Africa and New Zealand.

Notes: Similar species *H. propinqua and H. teretifolia,* distinguished by their fruit size and shape. *Hakea*, after Baron von Hake (1745-1818), German horticulturalist and a patron of botany. *Sericea*, Latin, *sericeus* meaning silky referring to the hairs on new growth. H.A. Schrader and J.C. Wendland, German botanists and first authors, 1796.

Hakea teretifolia (Salisb.) Britten

Needlebush , Dagger Hakea, Family: Proteaceae

Description: Spiky open shrub to 2m high. Stems reddish-brown. Rigid cylindrical terete leaves, needle-like with sharp points to 6cm long and around 2mm wide. New growth light green and covered with silky hairs.

Clusters of white flowers in leaf axils, the perianth parts and short flower stalks silky hairy. Each flower has two basal nectar glands.

Flowering: November - January

Fruit: Elongated dry woody fruit with a long smooth beak, no horns, opening along one side. Fruit remains on the tree as a canopy-stored seed bank for many months, splitting open to release broadly winged seeds when the branch or plant dies, or following fire.

The exterior layer of *Hakea* fruit camouflages the fruit from predators in various ways. In this species by being the same colour of the stems as well as having a band of "teeth" or spines to distort the fruit's shape.

Ecology: Found on low-nutrient sandstone-derived soils especially heath, on damp sites. Generally killed by fire but some Sydney populations may produce a lignotuber, (Auld & Morrison). Layers in the woody fruits provide insulation around the seeds. Generally the woody fruits of Hakea ruits
Rabbits browse or damage young seedlings. The dagger-like leaves deter grazing by large fauna, an evolutionary development to protect against mega-fauna, now extinct (*Flora of Australia*). Flowers visited by diverse insects including flies and beetles.
The woody fruits of *Hakea* spp generally attract the larvae of wood-boring insects and cockatoos such as the black cockatoos. The cockatoos feed off the larvae and prise apart the fruits to feed on the seeds (*Flora of Australia*).

Notes: Two sub-species: *ssp teretifolia* - perianth with shiny hairs pressed closely together; *ssp hirsuta* - more densely hairy and intertwined. Similar species *H. sericea.*

Hakea, after Baron von Hake (1745-1818), German horticulturalist and a patron of botany. *Teretifolia* from Latin *tereti*, circular, and *folia,* leaf. *Hakea* is an endemic Australian genus of 150 known species.

Kunzea ambigua (Sm.) Druce

Tick Bush, Poverty Bush, White Kunzea — Family: Myrtaceae

Description: Spreading shrub 2-4m high. Small narrow to broad-linear leaves on short stalks, densely crowded alternately along the branches. Upper stems maybe hairy.

Abundant white flowers clustered tightly together in the upper branches produce a conspicuous fluffy appearance. Numerous stamens, free and longer than the sepals, petals and the cup-shaped floral structure (hypanthium) which may be covered with hairs. Flowers are strongly fragrant.

Flowering: October - November.

Fruit: Thin walled capsule, cup-shaped with numerous seeds. Seeds are not retained on the plant unlike other closely related genera.

Ecology: Pollinated by insects: native bees, flies, beetles, butterflies. Flowers contain small stores of nectar. Likely a nectar food source for insects, pollen for native bees. Highly attractive to insects, bees, butterflies, flies, wasps, various beetles including Soldier Beetles (family *Cantharidae*), Scarab Beetles, variegated Jewel Beetles, the Web Moth and its webbing caterpillars. Visited by birds, also feeding on the foraging insects.

Habitat for small birds; its dense foliage providing refuge for nest-building. A colonising species and rapid grower, maybe used by land managers in land restoration and erosion control. Bark furrowed and fibrous.

Notes: Similar to *Leptospermum, Melaleuca* and *Callistemon* but distinguished by longer stamens. *Kunzea* after Gustave Kunze (1793-1851), German botanist. *Ambigua* from Latin, doubtful, uncertain.

Origin of the name 'Tick Bush' is unclear. Some early settlers thought the shrub harboured bush ticks. Others believed its crushed aromatic foliage rubbed over the skin was a tick deterrent. The foliage indeed contains aromatic oils, claimed to have anti-fungal and anti-bacterial properties (J. Thomas 2012).

A medicinal plant for Aboriginals. Cultivated.

Leptospermum trinervium (Sm.) Joy Thomps.

Flaky-barked Tea-tree, Slender Tea-tree

Family: Myrtaceae
Sub-family: Leptospermoideae

Description: Shrub or tree to 4m or so. Young stems rust-coloured and lightly hairy. Leaves light green, obovate, ov variable width, flat, with three veins, sometimes obscured. Leaves have glands containing aromatic, volatile oils, similar to other *Leptospermum* species and the Eucalypts.

White flowers to 15mm diameter with 5 white petals. Numerous free stamens around a red ring, the sepals (calyx) covered with fine, silky hairs. Papery layered bark, the thn layers peeling away and becoming rough on older plants.

Flowering: September - October.

Fruit: Woody capsule to 6mm diameter with a dense covering of short hairs, not retained on the plant.

Ecology: Found on low-nutrient sandstone soils. Estimated to live 60 years or more (Benson & McDougall). Pollinators include beetles, flies, native bees and introduced honey bees. Wasps, butterflies and moths are also attracted to the flowers. It is an important food source (the nectar) following fire and dry periods. The papery layers of bark insulate the stem and retain moisture. Bark used by birds for building nests.

Notes: Formerly *L. attenuatum*. Common around Sydney. *Leptospermum* from Greek *leptos*, fine, thin, slender and *sperma* seed, for the long, small seeds. *Trinervium* Latin, alluding to the three veins in the leaves.

Captain Cook used the name “tea-tree” in his Journal after finding his men making infusions of the leaves as a “tea” or antiscorbutic to prevent scurvy.

Aboriginals used the papery flaky bark off *Leptospermum* species for bandaging wounds, constructing shelter, sleeping on and wrapping babies. A medicine plant sourced for the volatile oils which provided remedies for headaches, colds, skin lesions, relieving congestion and inflammation. Aromatic vapours and oils from crushed leaves, now known to possess antiseptic and bacterial properties, were sniffed, mixed in water to be drunk, rinsing the mouth or used as a wash for eyes or teeth, chewed or applied as a poultice.

Leptospermum squarrosum Gaertn.

Pink Tea-tree, Peach Blossom Tea-tree — Family: Myrtaceae

Description: Rigid shrub varying from open to densely branched with woody stems. Glossy dark-green leathery leaves, lanceolate to 1cm long, rigid, with sharp points, often positioned outwards directly from the stem, margins tending to roll inwards, a useful adaptation to harvest and channel overnight dew or rain to the root zone below.

Pale pink flowers to 1.5cm across borne on old wood scattered along the branch. Petals orbicular and free, sepals a darker pink. Stamens free, shorter than the petals arranged around the red-rimmed edge of a greenish disc.

Flowering: April - August.

Fruit: Woody cup-shaped capsule of 5 valves, about 1cm diameter.

Ecology: Mature fruits are retained on the shrub, forming an aerial or canopy-stored seedbank. Flowers produce nectar-attracting insects, native bees, flies, beetles and exotic honey bees (*Apis*).

A heath species, found on coastal plateaus, on infertile, shallow sandy soils over sandstone to which it is well adapted with a dense, shrubby and woody habit providing stability against coastal winds. Plants in the *Leptospermum* genus are characteristically hardy and drought-tolerant with small, leathery leaves.

Notes: *Leptospermum,* from Greek, *lepto,* slender and *sperma,* seed. *Squarrosum,* Latin, spiky or rigid. Joseph Gaertner (1732-1792), German botanist, first described it in *De Fructibus et Seminibus Plantarum* Vol. 1, 1788 based on specimens collected by Sir Joseph Banks and Captain Solander in 1770.

Melaleuca armillaris (Sol. Ex Gaertn.) Sm.

Bracelet Honey Myrtle, Tea-tree, Paper-bark Family: Myrtaceae

Description: Dense shrub to 4m high or more. Leaves dark green, hairless, narrow-linear to 2.5cm long, tips pointed and reflexed downwards. Leaves crowded alternately around white to pale grey stems. Bark rough, hard, and cork-like.

Numerous creamy white flowers with prominent stamen filaments. Flowers are clustered tightly together forming cylindrical spikes to 7cm long. Spikes are some distance back on the stem from new leaf growth. Stamens are bundled together in groups, fused at their base to form a "claw", a characteristic of the *Melaleuca* genus.

Flowering: September - November

Fruit: Woody globular capsules to 5mm diameter. Capsules remain closed on the branch for months forming an aerial seed bank before splitting open to shed several small seeds.

Ecology: Food plant of insects including wasps and sawflies such as the Long-tailed Sawfly (*Pterygophorus facielongus*). The Paperbark and Tea-tree Sawflies feed on leaves while their larvae burrow and pupate in the bark.

A rapidly growing, colonising species forming dense thickets in ideal conditions. In some locations it has become an environmental weed, the dense thickets increasing fuel load for fire.

Extracted oils possess some antifungal and antibacterial properties. May live to 30 years (Benson & McDougall).

Bark from other Tea-tree species was used by Aboriginals as a covering over a basic framework of branches to make a gunyah for shelter.

Notes: Similar species: *M. ericifolia. Melaleuca* from Greek *melas*, black and *leukos*, white. *Armillaris*, from Latin *armilla*, a bracelet. Named in 1788 by J. Gaertner, a German botanist, from a specimen collected by Sir Joseph Banks. Renamed in 1797 by J.E. Smith (1759-1828), English Botanist.

Ozothamnus diosmifolius (Vent.) D.C.

Rice Flower, Sago Bush, White Dogwood, Pill Flower, Ball Everlasting

Family: Asteraceae, Daisy Family

Description: An upright, multi-branched shrub to 1.5m. Leaves narrow linear, to 2cm long, upper surface dark-green, with the margins rolled over, the under-surface coated with fine, woolly hairs. Leaves and stems sticky, producing a strong smell when crushed. Stems and branchlets, covered with short, rough white hairs (tomentose).

Numerous small, white to pale apricot tinged florets (small flowers) around 3mm in diameter are grouped closely together in large, compact globular heads to 7cm in diameter on the ends of stems.

Flowering: September - January.

Fruit: A dry fruit containing one seed with an appendage of fine hairs (a pappus) developed as part of the ovary but outside the petals and remaining attached through to maturity of the fruit. The pappus assists in wind dispersal of the seed, a common feature in the Asteraceae.

Ecology: Florets lengthen sequentially so that the stigma is exposed at a different time of the day to the maturing anthers and pollen release, a mechanism considered to foster cross-pollination.

A food plant for adult beetles of the Longicorn Borer Beetle (*Acalolepta sp*). The larvae burrowing into the stems. Caterpillar larvae of various moth species bore into the growing stem tips and night-feed on the leaves.

Notes: Synonym *Helichrysum diosmifolium*. Similar species: *Cassinia trinerva*. *Diosmi* as the leaves are similar to the native South African Diosma.

Ozo from Greek, “to smell” and *thamnos*, a shrub. “Vent.”: E.P Ventenat (1765-94), French botanist. “D.C.” for A.P. de Candolle (1778-1841), Swiss botanist who proposed the concept of “Nature’s War” which influenced Charles Darwin.

“Rice Flower” from the buds resembling rice grains. Foliage may cause contact allergy in humans. Cultivated. Cut flowers are long-lasting.

Pomaderris lanigera (Andrews) Sims

Woolly Pomaderris

Family: Rhamnaceae, the Buckthorns

Description: Shrub to 80cm high, or more. Stems rusty-coloured with short rusty coloured hairs. Leaves elliptical, variable length with a marked venation, matte green upper surface, lighter beneath and covered with hairs. Margins appearing light brown with short hairs.

Numerous small, golden yellow flowers densely crowded together in terminal, multi-branched inflorescences, often at the same level. The floral tube is densely covered with long, fine hairs. Five petals, sepals and stamens.

Flowering: August - September.

Fruit: Hairy capsule segmented into 3 compartments.

Ecology: Found on skeletal sandy, sandstone and shale based soils in open woodland. A colonising species. Flowers attract a variety of insects, weevil beetles and larvae, observed in and on the flowers.

Food plant of the larvae of the Pomaderris Moth (*Casbia rectaria*), and larvae of the Yellow Spot Jewel Butterfly *(Hypochrysops byzos*). Other indigenous moth and butterfly larvae have been observed feeding on *Pomaderris* flowers such as *Casbia melanops,* also referred to as Pomaderris Moth and the Arched Casbia (*Casbia tetramera)*.

Notes: Difficult to distinguish from other *Pomaderris* species. *Pomaderris* from Greek *poma* - a covering, or lid and *derrris*, skin. *Lanigera*, from Latin *laniger*, fleecy or woolly.

J. Sims (1749-1831), English physician and botanist, first author, 1816, based on a specimen collected by Robert Brown (1773-1858), botanist, from Port Jackson in 1801-5 during the voyage with Matthew Flinders. H.C. Andrews (1784-1830), English botanist, botanical artist and engraver.

The genus *Pomaderris* was first described in 1805 by J.J.H. de Labilliardière (1755–1834) French naturalist and doctor of medicine. The genus is mostly confined to Australia with some species in New Zealand.

Pultenaea daphnoides J.C. Wendl.

Large-leaf Bush-pea

Family: Fabaceae, subfamily: Faboideae

Description: Open erect shrub to 2m high. Dark green flat leaves narrow to obovate, to 3cm long, rounded at the tip, with a short, sharp brown needle-like point. Leaf lamina dark and glossy above, lighter underneath. Leaves alternate around the branchlets, margins entire tending to flex upwards and inwards.

Bright yellow pea flowers to 2cm across, tightly clustered together in groups at the end of stems. The standard petal with red central markings, the keel petal dark red. Sepals are covered with feathery white hairs. Overlapping brown papery-like bracts cover the flower bud falling off when the flower opens.

Flowering: September - November.

Fruit: Flattened leguminous pod covered with hairs, to 7cm long. Brown - black reniform seeds have an attached aril; a white fleshy appendage attached to the seed to attract ants for disperal, (myrmecochery).

Ecology: Flowers attract various nectar feeding insects and birds including native bees, introduced Honey Bees and butterflies. The larvae of Mathew's Blue Butterfly (*Neolucia mathewi)* feed on the flowers.

Seeds a food source for the seed-predator beetles, *Bruchidius* species, also seed-eating birds. Seeds have a long dormancy period. The plant has an ability to resprout from its basal, epicormic buds under the bark (also a feature of some Eucalypts) and stems following fire. Identified as likely to be adversely affected by the soil borne pathogen *Phytophthora cinnamomi*.

Notes: *Pultenaea*, the genus of the common name 'eggs and bacon'. All 100 species endemic to Australia. *Pultenaea* honouring Dr William Pulteney (1790-1859), English physician, botanist and biographer of Carl Linnaeus.

Daphnoides having leaves like *Dafni*, an old Greek name for the Bay Laurel, *Laurus nobilis.* In Greek mythology Daphne the Nymph was transformed into the Bay Laurel tree so as to avoid Apollo's advances.

Seed capsules of *Dodonaea triquetra*, Hop Bush

Seed pods of *Pultenaea daphnoides*

Solanum aviculare G. Forst.

Kangaroo Apple, Nightshade

Family: Solanaceae

Description: Bushy shrub to 3m high. Stems green to light purplish, hairless. Leaves entire or broadly and deeply lobed to 20cm long, the pattern of venation well articulated.

Star-shaped mauve flowers to 3.5cm diameter in terminal groups, 5 broad-based petals with pointed tips, stamens orange. Flowers on long thin stalks.

Flowering: September - December

Fruit: Egg-shaped fleshy berry to 1.5cm long, initially green, maturing to yellow then dark orange. Fruits edible when fully ripe, but poisonous to humans when green.

Ecology: Flowers and fruits attract insects and birds. A rapidly growing and colonising species. Pollinated by native bees visiting the flowers, also other insects and birds. Birds feed on the fruits and spread the seeds.

Notes: *Solanum* from Latin *solamen*, to provide solace or comfort, possibly referring to its medicinal properties. *Aviculare* from Latin meaning "Little bird". "Kangaroo" refers to the lobed leaves resembling a kangaroo's foot.

Named by G. Forster (1754-94), a German naturalist who accompanied his naturalist father J.R. Forster on James Cook's second Pacific voyage.

Also native to New Zealand where Captain Cook observed birds feeding on the ripe fruits.

Poisonous solasodine glycosides and steroidal alkaloids have been identified in the leaves, roots and the green, unripe fruit. Used in the manufacture of steroid drugs including contraceptives in some countries.

A medicinal and food plant for some Aboriginals, the fruit used as a poultice for swollen joints. Many species of *Solanum* a food source for Aboriginals, especially in more arid areas.

Viminaria juncea (Schrader) Hoffmanns

Golden Spray, Native Broom Family: Fabaceae, Pea Family

Description: Upright, willowy, graceful shrub to 4m high with long pendulous twiggy-like branches. Branches hairless, cylindrical, wiry, pliant and wave around in the wind.

Appears leafless but botanically the leaves are modified pinnate leaves into a cylindrical phyllode type form. Phyllodes a feature of Acacia. Young leaves consist of small leaflets which then mature into reduced slender leaf stalks, up to 25cm long.

Yellow pea flowers on short stalks in groups along the branches, the inflorescence up to 30cm long. The standard petal has a central splash of semi-circle red markings.

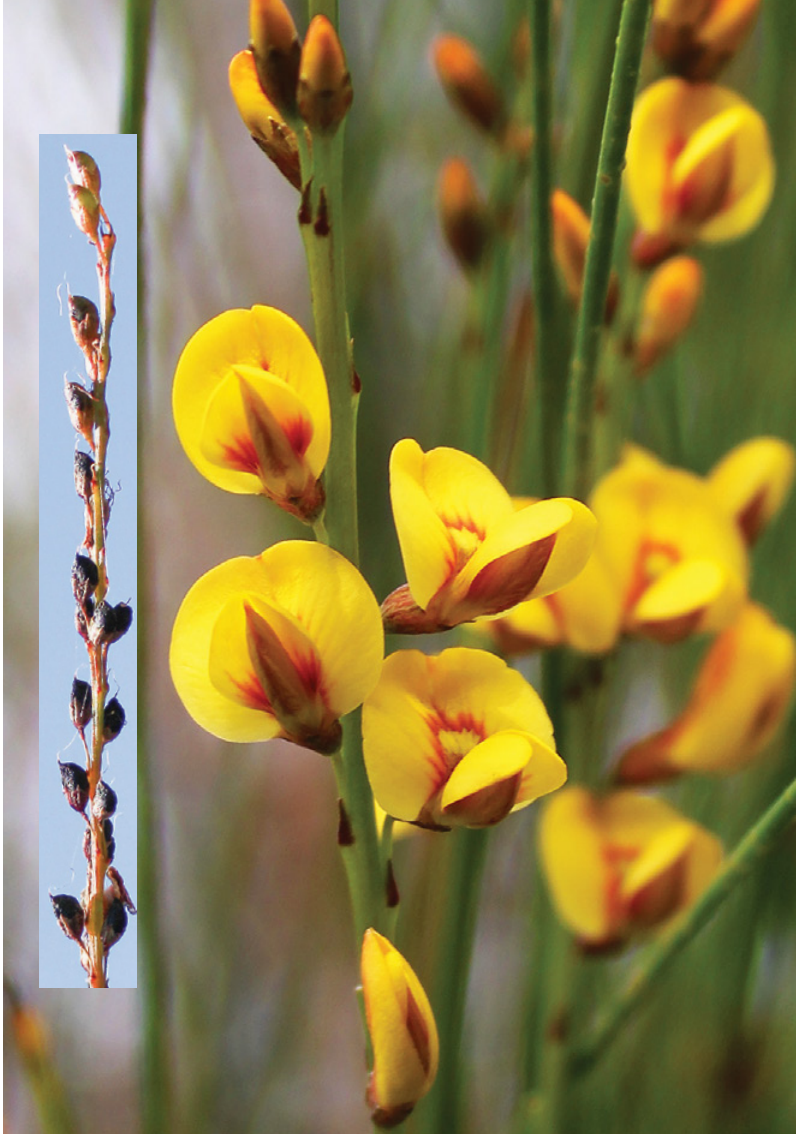
Flowering: October - December.
Fruit: Small black ovoid pod containing one seed, see inset.

Ecology: A legume. Reported to be long-lived, destroyed by fire (Benson & McDougall). Found in moist poorly-drained sites, in heath, on sandy soils over sandstone and low nutrient soils. Eastern Rosella (*Platycercus eximius*) birds feed on the seeds, and likely other seed-eating birds. Flowers visited by bees, flies and other insects.

Notes: The genus *Viminaria* contains one species and only grows in Australia. *Viminaria* from Latin *vimen, inis,* a pliant, easily bent twig, and *osier,* refering to the long stems suitably pliable for basket making like those of the willow, *Salix viminalis*. *Juncea* from Latin *jungere, junceus,* to tie or bind like rushes and willows.

Resembles the introduced English or Scottish Broom (*Cytisus scoparius subsp. scoparius*) which is toxic to humans and damaging to the environment. Now declared an invasive weed in NSW and nationally a Weed of National Significance (WONS).

H.A. Schrader (1767-1836) and J.C. von Hoffmannsegg (1766–1849), German botanists. Schrader named the Australian *Hakea* genus.



Westringia fruticosa (Willd.) Druce

Coastal Rosemary, Native Rosemary Family: Lamiaceae, Mint Family

Description: Dense shrub to 1.5m high. Foliage covered with white hairs. Dark green, narrowly pointed leaves in whorls around the stem, upper surface covered with white flattened hairs, underneath paler from a denser hair covering. Leaf margins entire curving downwards.

Irregularly shaped white flowers which may have a bluish or pinkish tinge, covered with fine white hairs. The petals form a short tube which has long white hairs extending towards the centre. The upper petal erect and divided into two lobes, a feature of the Mint Family. The lower three lobes spreading outwards with central maroon, purple to brown spots.

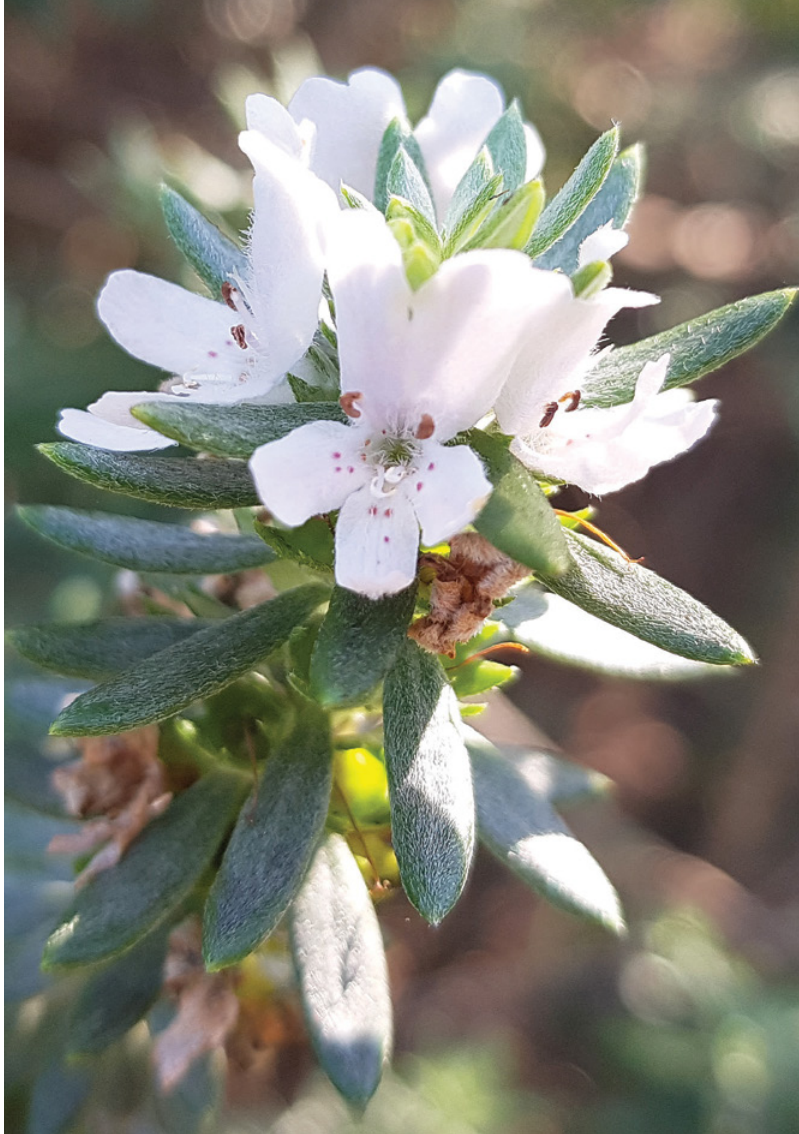
Flowering: Mostly October - January, sporadically at other times.

Fruit: Dehiscent, dry fruit splitting into 4 at maturity to release the seeds.

Ecology: The only endemic *Westringia* species found along the coast. Flowers attract insects including native bees and butterflies such as the rare Rayed Blue Butterfly, also birds. Only native bees with long tongues, such as the solitary leaf-cutter bees are able to access the narrow floral tube. Pollen is scraped onto their bodies during feeding and then transported onto the next flower. Food source for the larvae of the brown Australian moth, *(Osiriaca ptousalis*).

The dense shrubby foliage provides shelter for small birds. Found on shallow and poor soils and is able to tolerate strong winds on coastal plateaus. The smoothly hairy and recurved leaf margins assist in directing rainfall off the leaf's surface onto the root zone below.

Notes: Synonym: *Westringia rosmariniformis* Sm. *Fruticosa, Latin* meaning bushy. "Rosemary", as the plant resembles the culinary herb *Rosemarinus*. *Westringia* after Dr J.P. Westring (1753-1833), Swedish physician and botanist (lichenologist), a student of C. Linnaeus.
Cultivated. Used in land regeneration and for dune stabilisation.



Banksia integrifolia L.f. *subsp integrifolia*

White Honey Suckle, Coastal Banksia, White Banksia Family: Proteaceae

Description: Tall shrub or tree of variable height. Thick leathery leaves broadly lanceolate to 10cm long borne in whorls around the stem, margins entire and slightly recurved. Upper side of leaves dark green, underside pale silvery-grey and hairy with a prominent midvein and a short pointed tip. Bark rough, grey, deeply fissured and tessellated.

Numerous individual flowers grouped in pairs are densely and spirally packed around the floral axis forming a cylindrical spike or cone. Upright flower spikes at the ends of branches to 14cm long, Young flowers yellow to lime green maturing to pale yellow. Flowers open sequentially.

Flowering: January - July.

Fruit: Cone with hard, woody pods. Cones can remain on the plant for some years. Pods mature up to 10 months and contain 1-2 winged seeds.

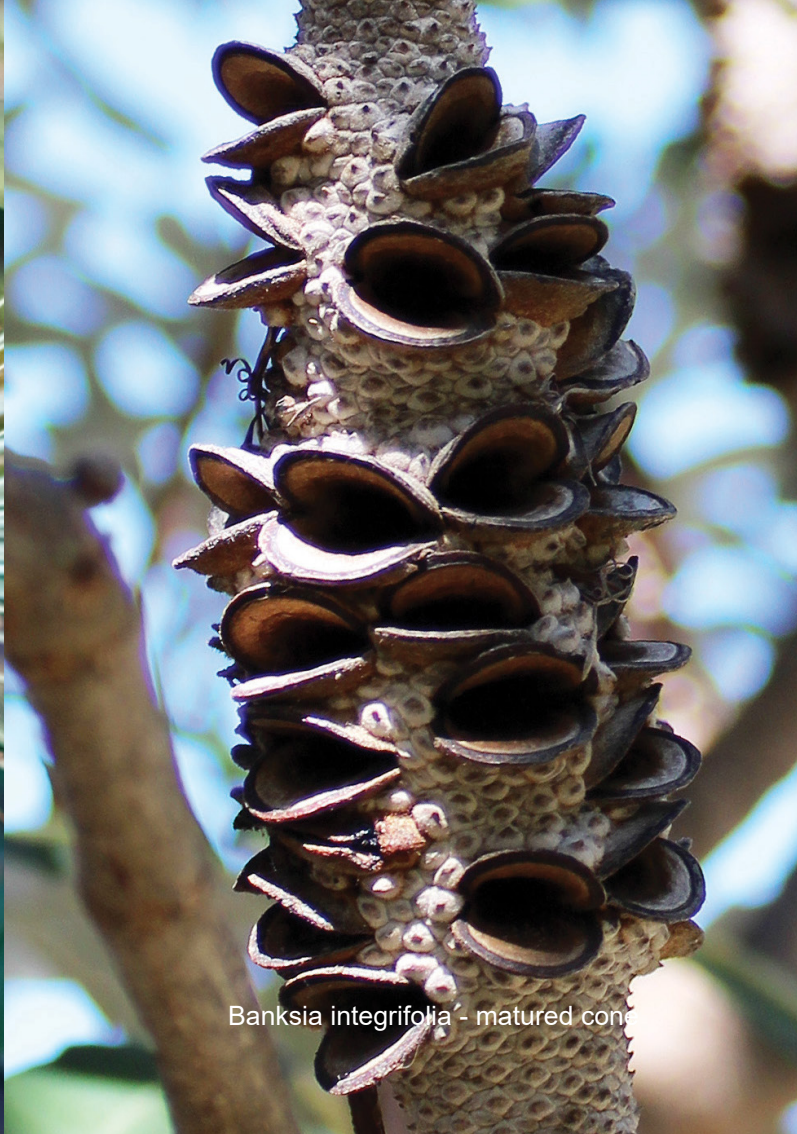
Ecology: Attracts exotic honey bees, native bees, various insects, wasps, butterflies, and honey-eater birds. Pollinators are nectarivorous birds and non-flying mammals such as the Eastern Pygmy Possum, each using different foraging habits and cues.

Food plant of the honeyeater bird *Lichenostomus fuscus* and flying-fox (fruit bat). Larvae of Banksia Borer moth (*Xylorycta strigata)* inhabit the stems, eat the leaves for food. Native Longicorn Beetle larvae reside in bark crevices. Blossoms are food for the Grey-headed and Little Red Flying Foxes and the Common Blossum Bat. No lignotuber. Long lived, over 100 years.

Notes: *Integrifolia*, Latin, *integer*; whole, entire and *folia*; leaf. "L.f." for Linnaeus Filius, (1741-83), naturalist and son of the famous Swedish botanist, taxonomist Carl Linnaeus (1707-78) who named the *Banksia* genus after Sir Joseph Banks (1743-1820), English botanist. Linnaeus' student, Daniel Solander (1733-82), collected plants with Banks at Botany Bay, 1770.

Aboriginals sourced the Banksia for food and other uses. The flowering spikes were soaked in water for a sweet drink, seeds and larval grubs under the bark collected for food. The hard timber fashioned into tools and the woody cones for fire.

Banksia integrifolia - downward view of the flower cone



Banksia integrifolia - matured cone

Callicoma serratifolia Andrews

Black Wattle, Silver-leaf Butterwood, Coachwood Family: Cunoniaceae

Description: Open shrub to 5m high or tree. Leaves elliptical to 13cm long, dark green and shiny, the under surface lighter with rusty-coloured hairs, margins regularly serrated. Juvenile foliage and stems reddish-bronze, hairy and attractive to possums for food. Bark dark brown and rough.

Pale cream to yellow flowers without petals. Numerous long stamens are tightly grouped into balls around 2cm diameter held on slender hairy stalks.

Flowering: October-December.

Fruit: Small, light brown papery capsule 10-15mm diameter.

Ecology: Develops a lignotuber. Likely insect pollinated. Food plant for the larvae of the Eastern Bronze Flat Butterfly (*Netrocoryne repanda*) and native moths, including the Emperor Gum Moth. Larvae of the Tree Borer Moth (*Cryptophasa albacosta*) feed on the leaves. Seeds eaten by birds.

The leaves contain saponins which are compounds capable of producing a soap-like foam in water (a surfactant). The presence of saponins is thought to be a type of natural pest control making the vegetation less palatable to birds and small mammals. A rapidly growing colonising species found by creeks and in moist rocky gullies. Long lived, estimated to 50 years or so.

Notes: A single-species genus. *Callicoma* from Greek *kalos:* beautiful and *kome* - hair, referring to the fine stamens. *Serratifolia* Latin, from *serratus*, meaning jagged, saw-edged and *folius* - leaf, describing the saw-toothed leaves. Once lined the banks of the Tank Stream at Circular Quay.

'Black Wattle' from the wattle *Acacia*-like appearance of the globular flowers. Early settlers cut the long slender flexible stems to construct huts for basic shelter known as 'wattle and daub' huts. Stems were woven into a frame onto which mud was applied. Also used in basket-making. The close-grained timber was occasionally used by wheelwrights for carts but was prone to splitting.

Aboriginals also constructed sheltering structures (gunyahs) with the pliable branches, filling in the gaps with sheets of paperbark and bunches or branches of leaves.

For some Aboriginals the appearance of *Callicoma* flowers indicated it was time to undertake certain journeys on periodical business.

Elaeocarpus reticulatus Sm.

Blueberry Ash, Blue Olive Berry, Scrub Ash, Koda, Fairy Petticoats, Koda, Lily of the valley Tree, Scrub Ash

Family: Elaeocarpaceae

Description: Upright, columnar or conical tree to 6 metres high or more. Leaves broadly elliptical with a conspicuous network of veins, margins slightly toothed. Older leaves turn dark red then fall off.

Numerous white pendulous bell-shaped flowers with finely fringed petals. Flowers on stalks (petioles) grouped in short branches off leaf axils. Produces a dark brown timber.

Flowering: November - December.

Fruit: Shiny dark blue to black firm but fleshy ovoid berry (drupe) to 1cm diameter, see inset. Fruits remain on the tree up to a year before falling off or being eaten by birds, so dispersing the seed.

Ecology: A rainforest tree of ancient tropical lineage found on sandstone open woodland. Flowers attract a variety of insects and likely the pollinators. Seedlings browsed by stock and native fauna especially wallabies.

The dark blue berries attract various birds such as the Regent Bowerbird drawn by the blue colour, Crimson Rosellas, Figbirds, Olive-backed Orioles, White Headed Pigeons and ground-foraging Wonga Pigeons. Some birds also feed on the insects.

May live to 50 years or so. Develops an elongated lignotuber producing adventitious roots, different to that in *Eucalyptus.* This allows it to resprout after fire. Salt tolerant. A whitish, salt-like crust often forms on the surface of the leaves.

Notes: *Elaeocarpus,* from Greek *elaia* meaning 'olive' and *karpos* meaning 'fruit', Linnaeus. *Reticulatus,* Latin referring to the reticulating patterning network of the leaf veins. Aboriginals sourced ripe berries for food. The crushed leaves were infused to make a tea by early settlers.

Sm. for J. E. Smith (1759-1828), English botanist. First described in 1809 from a specimen gathered near Port Jackson by Dr. J. White, Surgeon-General of the First Fleet. One of many collected in his search for edible plants to combat disease and dysentery rife among the new arrivals.

Glochidion ferdinandi (Müll.Arg.) F.M.Bailey

Cheese Tree, Pumpkin Tree, Chinese Cedar Family: Phyllanthaceae

Description: Tall shrub or bushy tree to 8m or more. Leaves dark green to 10cm long, broadly lanceolate on a short stalk. Leaf surface hairless with entire margins and marked venation.

Small and inconspicuous unisexual yellow flowers. The male and female flowers are borne in separate leaf axils. Female flowers are solitary on short stalks while the male flowers are clustered together with longer stalks. Petals and sepals are less than 5mm long.

Flowering: July - December.

Fruit: Capsule to 1.5cm diameter, segmented into several lobes. Pale yellow-green turning red. When mature the lobes split apart to release the bright red seeds, see inset. Fruits are not edible.

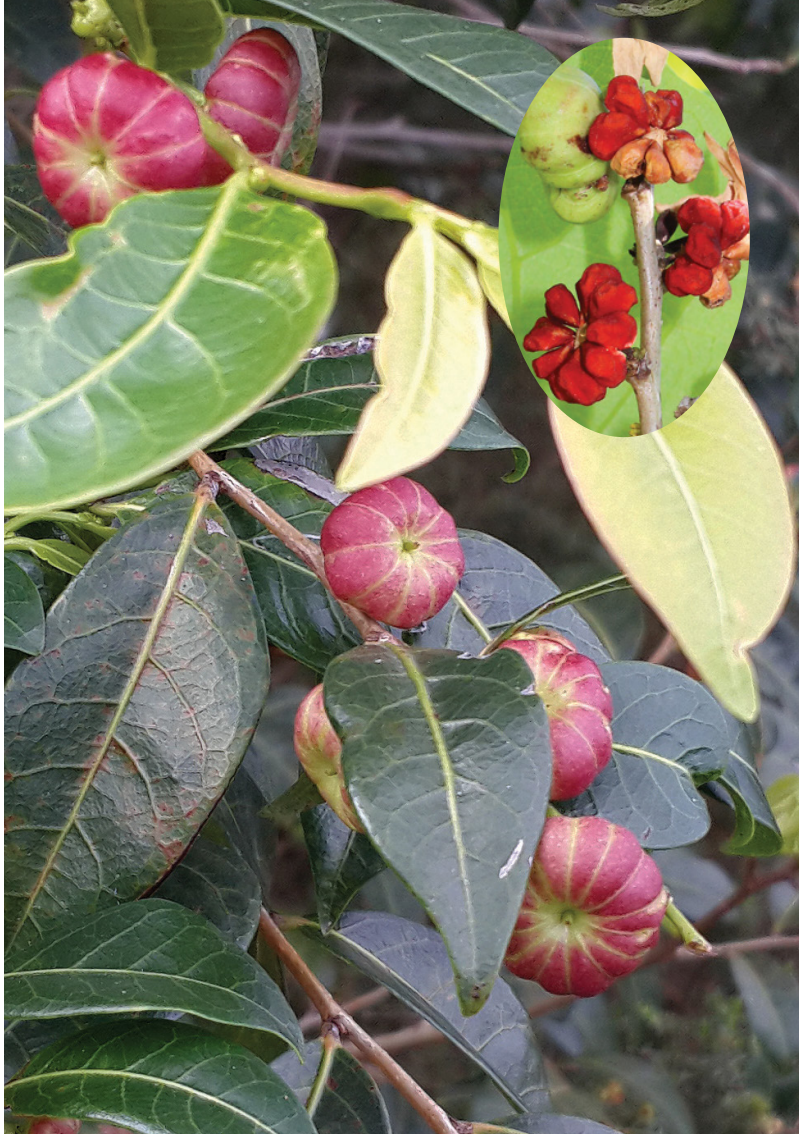
Ecology: A sub-tropical, dry rainforest pioneer or early succession species colonising gaps in the vegetation. A rapid grower found to live 60 years or so. The extra-floral nectaries attract ants and other insects.

Fruits are food for various birds: the Brown Cuckoo-Dove, Lewin's Honeyeater, Olive-backed Oriole, Top-Knot Pigeon, White-headed Pigeon and the Australian King-Parrot (Benson & McDougall).

Young leaves eaten by Rainbow Lorikeets. Ladybirds feed on aphids on the foliage. Food plant for the larvae of the Shining Pencil-blue and Common Oak Blue Butterflies. Produces a durable soft red, close-grained timber.

Notes: *Glochidion* from Greek *glockhis*, a projecting thorn or point.
Ferdinandi after Ferdinand von Mueller (1825-1896), German botanist and plant taxonomist who emigrated to Adelaide in 1847. Later appointed Government Botanist in the Colony of Victoria and author of many Australian species.

'Cheese Tree' from the segmented fruits resembling small rounds of cheese.



Introduced pest plants - weeds

Introduced plants continue to impact the survival of these indigenous plants. Below are four well-adapted "garden escapes", turned weed invaders found in the area known to outcompete and displace indigenous plants.

All grow rapidly, reproduce prolifically and can form monocultures. In doing so they transform the bush, reduce biodiversity and disrupt ecosystems. Their aggressive root systems detrimentally affect soil biota, the diversity of soil fungi, and invertebrates which are essential for ecosystem processes such as litter decomposition, water filtering and nutrient recycling.

Three have been classified as a **Weed of National Significance (WONS),** recognised by all State, Territory and Federal Governments.

Asparagus aethiopicus, Asparagus Fern,

One of 7 Asparagus species all classified as a WONS. A climber or ground cover with sharp, prickly foliage. Grows over native plants smothering and out-competing them.

Forms monocultures of dense, thickets of foliage above ground and thick inter-twining mats of fleshy root tubers underground. Spread by seed-eating birds attracted to the red fleshy berries. Introduced from South Africa in the 1800s.

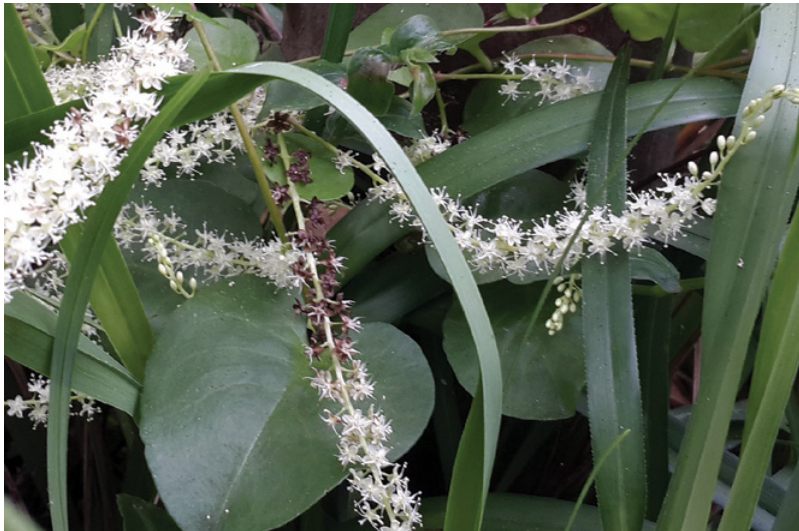
Andredera cordifolia, Madiera Vine, Potato Vine, Lamb's Tails

Classified as a WONS. A fast-growing, fleshy, long-lived climber from the Amazon. Densely covers understorey plants, smothering and preventing their growth. Capable of extending into the tree canopy, blanketing trees and breaking down the canopy.

Grows from fleshy rhizomes forming extensive underground potato-like tubers as well as clusters of reproductive aerial bulbils (bulbs) along the twining stems. Bulbils fall to the ground and sprout.

Above: Asparagus Fern.

Below: Madiera Vine flowers twining among native *Dianella,* (Flax Lilly).



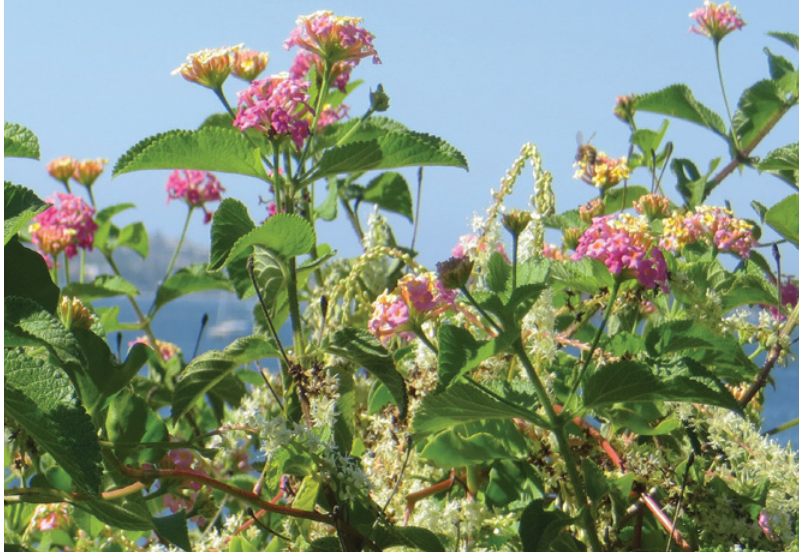
Lantana camara, Lantana

Dense prickly shrub forming impenetrable thickets. Lateral roots develop thick mats. Roots can release inhibitory substances into the soil to suppress native plant growth (allelopathy).

A single plant is capable of producing hundreds of black fleshy, single-seeded berries which attract seed-eating birds, also foxes aiding disperal. Seeds germinate readliy once digested and excreted.

Introduced from tropical South America. First recorded in Adelaide 1841 and a Port Macquarie garden in 1846. Declared noxious around 1920, and now estimated to have invaded more than 4 million hectares across Australia in 2018. Toxic to humans and stock. The cost of control in NSW is around $22m annually, (NSW Dept. of Primary Industries 2018). Classified a WONS.

A problem for bush regenerators working on Lantana is that groups of the tiny native Australian Reed Bee, (*Exoneura spp*) sometimes occupy the dead wood canes following loss of their usual habitat. A female bee typically guards the 'hive' entry.



Above: Lantana with the white flowers of Madiera Vine intertwining.

Ipomoea indica, I. purpurea, Morning Glory, Blue Dawn Flower, Coastal Morning Glory

Vigorous climber or trailing vine with large mauve, blue to purple tubular flowers. From tropical South America.

Grows rapidly from stem and root nodes in and over other plants. Can form a thick, mat-like cover smothering plants underneath.

Capable of reaching into the tree canopy covering understorey plants, restricting light and creating dense shade suppressing native plant growth. Develops large roots.

The purple form is toxic to humans. Seed dispersed by water and birds.

Below: Morning Glory Vine.

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About the authors

Amanda is interested in Australian native flora, fauna and threatened species. An enthusiastic photographer she tries to capture an unusual perspective to draw attention to a flower's uniqueness. Amanda established #Antipodeanflora on Instagram and the website https://www.antipodeanflora.com.au/ to show a little of the biodiversity of Australian flora.

Bronwyn studied botany for 3 years at Adelaide University as a science major. She has retained a strong personal interest in native plants, their ecology and cultivation. Growing up on the land in a semi-remote part of Australia instilled a curiosity in native flora. She volunteers for Mosman Council's Bushcare Program. Both live locally.