LANDCARE
Upper Shoalhaven

Revegetation for Braidwood

A Guide to selecting and identifying appropriate native trees and shrubs.

Prepared by
Mary Appleby, Judy Knowles and Rebecca Cole

Members of the Braidwood Rural and Durran Durra Landcare Groups have been carrying out revegetation projects on the cleared landscape around Braidwood since 1994.

These projects began with the aim of reducing the potential for wind and water erosion, re-establishing wildlife habitat and creating a sustainable farming landscape.

The long term objectives of the project are to develop:
- a mosaic of native vegetation covering the Braidwood Granite basin;
- a more productive farming landscape that is also more resilient to natural disturbances such as drought and flood; and
- a wide recognition of the role and value of native vegetation as an important part of the farming landscape.

We hope that this booklet will contribute to these revegetation projects by helping you to plan for and carry out successful revegetation.

Lyn Ellis contributed a great deal of information and her comments were invaluable. The project arose from work Suzzanne Gray did with students from Braidwood Central School several years ago. Illustrations in this booklet (including many by Reidsdale artist Chris Payne) are reproduced from the Flora of New South Wales with the kind permission of the Royal Botanic Gardens and Domain Trust. Thanks to Alice and Keith McDougall for scanning many of the illustrations.

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Introduction

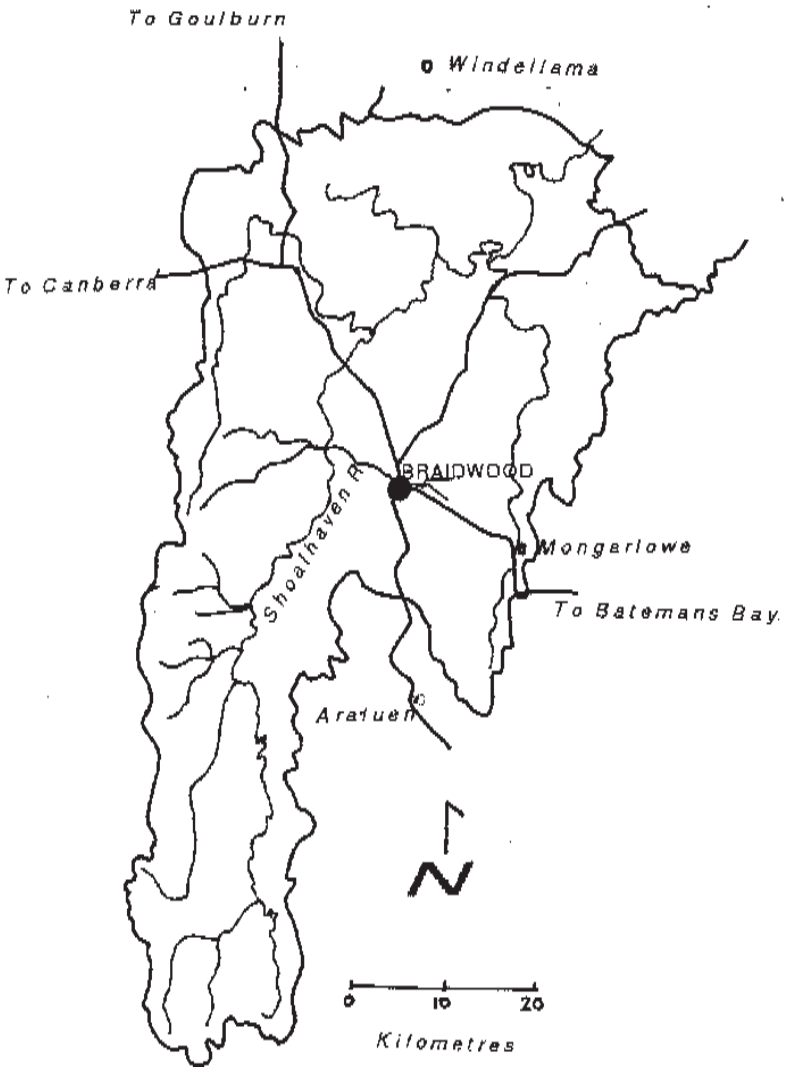
This booklet provides information about revegetation on farmland in the Braidwood area. It is a fairly harsh environment: cold winters, severe frosts, difficult soils, and strong winds. This area has been substantially cleared, and suffers from the consequences: soil erosion, decreasing soil fertility, salinity, lack of shelter, and a decline in the numbers of insect-eating birds, which in turn leads to dieback problems in remaining trees.

Conserving and replanting native vegetation provides:

- Better Soils. Diverse, healthy vegetation stabilises erodable soils, produces greater fertility, soil micro-organisms, and buffers the effects of low pH.
- Regulation of Water Quality. Trees help control water quality by filtering rainfall and reducing the rate of run-off which helps prevent erosion. They also reduce evaporative losses surrounding windbreaks and act like a water pump, preventing subsoil salt reaching the surface.
- Improved Microclimates. Benefits include shade, shelter and insulation through shading.
- Conservation Benefits. Protecting or creating wildlife habitat, providing corridors for wildlife and maintain ing genetic resources. Providing good bird habitat is crucial to controlling insect pests, a major cause of dieback in this and other areas.
- Economic Benefits. Trees and shelterbelts improve carrying capacity, reduce lambing losses, improve growth and breeding efficiency of livestock, improve crop and pasture yields, and increase the overall property value. By-products of shelter trees (firewood from thinnings, seed production, honey, and wood from felled trees) can provide supplementary income.
- Aesthetic and Amenity Values. Healthy, treed landscapes look better and improve property values.

People also benefit from shade and shelter. It has even been suggested that bare, windswept areas have higher rates of psychological ill-health and divorce!

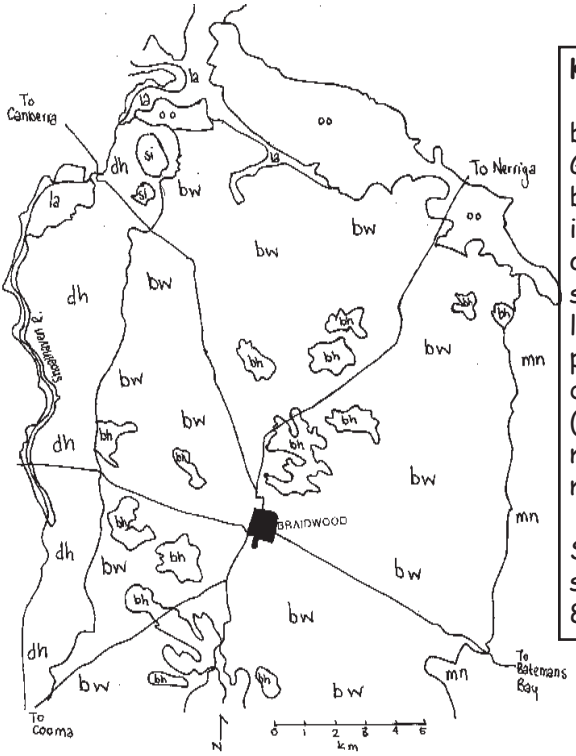
The Braidwood District



Soils and Vegetation Communities of the Braidwood Granites

The Braidwood Granites is a distinct geological region derived from Devonian granite. The landscape is undulating, with outcropping granite boulders and many rocky knobs with large granite tors. Soils are usually shallow sandy loams, acidic and highly porous, with highly erodable subsoils. Fertility is generally low. There are localised problems with waterlogging, rising water tables and gully erosion. Substantial wind erosion has occurred during drought periods (e.g. the early 1980s) throughout the landscape (Jenkins, 1996). Without significant increases in vegetation cover, the landscape remains vulnerable to erosion.

Soil Landscapes of the Braidwood Granites



Key:

bw- Braidwood Granites
bh - Brushy Hill (Granites)
oo- Oorong (undulating sand dunes)
la - Larbert (floodplain)
dh - Duckfield Hut (volcanics)
mn - Monga (metasediments)

Source: Soil Landscapes Series sheet 8827 (Braidwood)

Something in the order of 99% of the vegetation of the Braidwood Granites has been cleared. This makes it very difficult to establish what the original vegetation consisted of, and what species we should be planting to restore the landscape.

Snow Gums (Eucalyptus pauciflora) remain the most widespread eucalypt in the district. Fairly open grassy woodland would have dominated the lower slopes, with Snow Gum and Candlebark (Eucalyptus rubida) being common, and Black Sallee (E. stellulata) and Black Gum (E. aggregata) along creek banks and in wet areas. Frost hollows and alluvial flats would have been grassland consisting mainly of Kangaroo Grass (Themeda australis) and tussock grasses (Poa species). Forests of the upper slopes and crests were most likely to have been a diverse mixture of Snow Gum, Candlebark, Brittle Gum, Ribbon Gum, Swamp Gum, Broad-leaved Peppermint and Mountain Gum (E. pauciflora, E. rubida, E. mannifera, E. viminalis, E. ovata, E. dives and E. dalrympleana).

View of Braidwood in the late 1800's. Note the well vegetated hill tops.

Planning revegetation projects

Conserving remnant vegetation
This is the most important aspect of revegetation. If you have any areas with remnant vegetation on your property, it is far cheaper and easier to protect these sites than to revegetate degraded or completely cleared areas. Areas of remnant native vegetation are like islands of biodiversity and contain seed sources, birds and other predators of insect pests and useful soil micro-organisms. These areas should be managed so that natural regeneration is encouraged- maybe removing or reducing grazing pressure, supplementary planting (e.g. of bird-attracting shrub species or groundcovers), or selective weed control to allow native seedlings to establish. It is generally best to secure the condition of these areas before tackling more degraded areas, so that you have mature stands of trees in good condition that will provide substantial habitat.

Where to plant
With good planning, you should be able to meet conservation objectives as well as improving farm productivity and value.

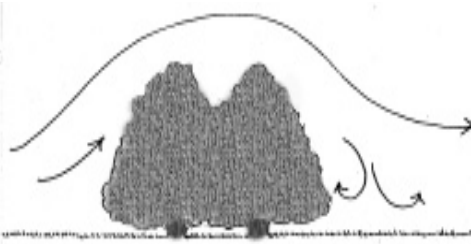
On a landscape scale, plantings should provide buffer areas for existing remnant vegetation, expand these areas, or provide links to allow wildlife and seed/pollen movement. These plantings increase the total habitat area and protect remnants from edge effects such as weed invasion. Planting along waterways increases bank stability and water quality and reduces such problems downstream. Waterways are vital wildlife corridors and habitat areas.

Revegetation can be used to provide shade and shelter for stock, pasture and crops. North-south shelterbelts provide shelter from both morning and afternoon sun and from the cold south-westerlies and hot, drying westerly and north-westerly winds common to the Braidwood district.

Planting along ridges reinforces shelter provided by the terrain and avoids planting problems in frost hollows and poorly drained areas.

Windbreak design

Good design can significantly improve the benefits of a windbreak. The old-fashioned dense, hedge-like shelterbelts are not as effective as less densely planted shelterbelts of two or three rows of different heights. Ideally, windbreaks should have five rows of different sized trees /shrubs for maximum wind resistance. Hedges actually increase wind turbulence nearby.



Impermeable hedge. This blocks wind and creates turbulence on the far side of the windbreak. Wind speed returns to normal 10-20 tree heights downwind.

Permeable windbreak allows wind through at different heights. Wind is filtered through the windbreak, losing speed as it does so. Wind speed returns to normal 30 tree heights downwind.

Spacing between rows is important. Allow 3 metres between rows if you want to use a slasher to control weeds and reduce burning hazard. Allow 2-3 metres from fences to allow low-growing branches (these will slow wind speed close to the ground, where it causes the most erosion damage).

Try to incorporate a mixture of species in the windbreak. Having a good mix of species ensures that the entire planting will not be wiped out by a pest or disease. Companion planting with wattles and late-flowering spring shrubs encourages predatory birds and insects. Plants of different heights will be more effective in controlling wind speed.

The Essentials

What to plant
It is generally best to plant species that are found naturally in the area, as they are adapted to local soils and climatic conditions. Plants of local provenance (i.e. from within about 15km of the planting site) are more "finely tuned" to local conditions, so support your local nurseries, or collect your own seed.

Trees are only one "layer" of natural vegetation and it is important to include shrubs and even groundcover plants to restore habitat. These smaller plants may have added benefits of producing flowers for nectar-eating birds, fixing nitrogen (wattles, native peas and she-oaks), and providing supplementary pasture.

Some non-indigenous trees are included in the planting lists (p.16), as these have been shown to cope well with local conditions. You do need to be careful, however, that non-indigenous species are not likely to become weedy and escape into remnant bush.

When selecting species, look carefully at the site conditions and try to match up native species adapted to these. Are you planting in a valley or an exposed ridgetop? What is the aspect? What is the soil like? How well drained is the site? What are the frost and rainfall conditions? The "grow what where" table on pages 16-17 will provide guidance. You can also get an idea of what species to plant by looking at nearby remnant vegetation or successful plantings on a site similar to yours– you can benefit from the experience of others.

If you are using nursery stock, always use tubestock or trees produced in some form of root control container. Larger trees in a circular pot invariably have a root system which is either too small to sustain the tree in harsh conditions, or will have roots that in a few years may wrap themselves around the main trunk and literally strangle the shoot of water and nutrients. While tubestock is smaller, it grows much faster than

more mature stock and should reach the 2m mark within 2-3 years.

Make sure that the nursery stock you buy is hardened off: lush, well-watered plants will not adapt readily to paddock conditions. You can harden plants off yourself by gradually reducing shade and watering over a few weeks.

When to plant
Spring plantings are recommended in this district. This allows you to control the worst of the weed species before planting (autumn spraying is less effective as weeds are semi-dormant and have seeded), and gives plants a chance to establish before the frosts hit.

Autumn plantings can be successful with good rainfall after planting, but plants may be smaller and less able to withstand frost during the first winter. If post-planting rainfall is poor, autumn plantings will have very little resistance to frost.

Tubestock or direct seeding?
Most revegetation projects in the district use tubestock. Although relatively expensive, it produces reliable results with adequate site preparation and can be used on any type of site.

Direct seeding involves sowing a native seed mix directly into the prepared site. This can be done using a seeder towed behind a tractor or ute. It is potentially a lot cheaper and certainly less labour-intensive than planting tubestock. However, site preparation must be absolutely thorough, and germination and survival rates are unpredictable. Direct-seeded plants are much hardier in the establishment phase than nursery stock, but need to be weeded when small, or tiny seedlings are overwhelmed by grass and weed growth.

Site preparation

Ideally, preparation should begin 6 months before planting - 12 months for direct seeding sites.

Ripping. If possible, rip planting lines in dry soil to break up the soil, preferably 6 months before planting. This disturbance should promote germination of weed seed stored in the soil, reduce the weed seed bank in the area to be planted, improve soil moisture, improve aeration and structure and make planting trees much easier!

Reduce Competition One of the biggest killers of young trees is competition from weeds and deep rooted pasture grasses. It is a good idea to graze the area hard in early spring to reduce grass and weed cover and encourage regrowth. Once stock are removed, spray 1 - 1.5m strips with glyphosate along planting lines (or 1m diameter spots) to remove weed and pasture grass competition. Broadscale spraying is not necessary, it provides lots of bare ground for weed seeds to establish. Spray a second time 1-2 weeks before planting to ensure long term reduction of weeds and grasses.

Planting

Make sure your trees have had a good soak the day before you plant. If you have followed adequate site preparation procedures, all you need to do now is to dig the holes, plant, water in well, and place a guard around each to protect against rabbits, hares and frost.

When planting, create a small "dish" around each seedling – large enough to hold about half a bucket of water. This allows water to soak well into the root zone and prevents runoff. These "dishes" are invaluable to establishing plants, and will prevent any water being wasted if watering is needed in very dry conditions.

Even if it is raining when planting, water plants in well to

establish good contact between tree roots and soil and get rid of air pockets.

Milk or fruit juice containers are fine for rabbit-proofing. Plastic cone guards are recommended against frost.

Fertiliser is generally not recommended as this gives a greater competitive advantage to weeds and pasture grasses. Native trees are tolerant of nutrient-poor soils. You can even damage or kill Banksias, Grevilleas and other members of this plant family (Proteaceae) with added phosphate fertiliser.

Maintenance

Weeds
During the first few years of establishment, trees may require some maintenance. For optimal growth, weed control will be needed. Brush-cutting, slashing or herbicide use are recommended. To protect trees against herbicide damage, a cheap nozzle guard can be made out of an old plastic bucket.

Watering
In a reasonable season, trees planted into well-prepared sites (i.e. ripped and with adequate weed control) will not need further watering after planting. However, if extremely dry conditions occur during the first one or two years, losses will be reduced if trees are watered every 3-4 weeks whilst the drought persists.

Insects

As in many other substantially cleared areas, insect pests are a problem in the Braidwood district.

Christmas beetles are a major cause of dieback. The only recommended eradication method is tree injection, which is time-consuming, expensive and hazardous. The best strategy to deal with them is to control conditions favouring them by planting a diversity of species, particularly those which attract birds and other beetle predators, avoid planting pure stands of trees particularly favoured by Christmas beetles (ie Eucalyptus viminalis). Infestations in young stands of trees can be controlled by giving trees a good shake and collecting beetles in a bucket. Feed these to your chooks – they love them!

Sawfly larvae are easily controlled by knocking them off and squashing them (a very satisfying procedure!) Look for clusters of the small black caterpillars in winter before they get large enough to strip trees in spring.

Wingless grasshoppers are a less common problem, but occur in periodic plagues. Pesticide spraying may be required to avoid large-scale losses. On the bright side, grasshoppers have a wide range of predators and by increasing the habitat on your farm, you will be encouraging these beneficial organisms – natural pest control.

Autumn gum moths have a predilection for blue-grey, waxy juvenile eucalypt leaves. Blue Gums are particularly badly affected. These larvae skeletonise leaves and can completely defoliate a young tree. Follow the same procdures as Christmas beetles.

Get out and admire your hard work regularly. A few inspections during autumn will be sufficient to control most insect pests. Look for the little "packages" of leaves stuck together at the ends of branches. Squashing the caterpillars that harbor within these will allow young susceptible trees to establish sufficiently to produce tougher adult leaves that will not get damaged as easily.

The Revegetation Checklist

1. **Planning.**
   - Do you have remnant vegetation to conserve?
   - Where will you plant?

2. **Choose your revegetation method**
   - Tubestock or Direct Seeding.

3. **Decide when to plant**
   - Spring or autumn

4. **Plan your site preparation**
   - Begin 6 to 12 months before planting and include ripping (if possible) and weed control.

5. **Select the right species for your site**
   - You should order your tubestock at least 6 months before planting

6. **Planting**
   - Will you be able to water your trees?
   - Do you have tree guards?

7. **Maintenance.**
   - Prepare a plan for weeding, insect control and follow up watering if required.

8. **Watch your trees grow** and see the benefits to your entire farm!

Species Commonly Used for Revegetation around Braidwood

Species	Common Name	Rocky Knobs/ exposed sites	Ridges/ wildlife corridors	Gullies and wet areas	Drainage Lines
Eucalyptus aggregata	Black Gum			✓	✓
Eucalyptus bridgesiana	Apple Box	✓	✓		
Eucalyptus dalrympleana	Mountain Gum	✓	✓		
Eucalyptus dives	Broad Leaved Peppermint	✓	✓		
Eucalyptus macarthurii	Paddys River Box	✓	✓		
Eucalyptus macrorhyncha	Red Stringy bark	✓	✓		
Eucalyptus mannifera	Brittle Gum	✓	✓		
Eucalyptus melliodora	Yellow Box	✓	✓		
Eucalyptus nichollii		✓	✓		
Eucalyptus ovata	Swamp Gum	✓	✓	✓	✓
Eucalyptus parvula	Small Leaved Gum	✓	✓	✓	✓
Eucalyptus pauciflora	Snow Gum	✓	✓		✓
Eucalyptus radiata	Narrow-leaved Peppermint	✓	✓		
Eucalyptus rossii	Scribbly Gum	✓	✓		
Eucalyptus rubida	Candlebark	✓	✓		
Eucalyptus sieberi	Silver top Ash	✓	✓		
Eucalyptus stellulata	Black Sallee	✓	✓	✓	✓
Eucalyptus viminalis	Ribbon Gum	✓	✓	✓	✓
Casuarina littoralis	Black She Oak	✓		✓	✓
Casuarina cunninghamia	River She Oak			✓	✓

Species	Common Name	Rocky Knobs/ exposed sites	Ridges/ wildlife corridors	Gullies and wet areas	Drainage Lines
Acacia boormanii	Snowy River Wattle	✓	✓	✓	
Acacia covennyi	Blue Bush		✓		✓
Acacia dealbata	Silver Wattle	✓	✓		
Acacia decurrens	Green Wattle	✓	✓		
Acacia floribunda	White Sallow Wattle			✓	✓
Acacia mearnsii	Black Wattle	✓	✓		
Acacia melanoxylon	Blackwood	✓	✓		✓
Acacia pravissima	Ovens Wattle	✓	✓	✓	✓
Acacia rubida	Red-stemmed Wattle	✓	✓		✓
Acacia trachyphloia	Golden Feathered Wattle	✓	✓	✓	✓
Banksia canei	Mountain Banksia	✓			
Banksia marginata	Silver Banksia	✓	✓		✓
Banksia spinulosa	Hairpin Banksia	✓	✓		
Bursaria spinulosa	Blackthorn			✓	✓
Callistemon citrinus	Crimson Bottlebrush			✓	✓
Callistemon pityoides					
Grevillea arenaria	Grevillea			✓	✓
Grevillea juniperina	Prickly Grevillea			✓	✓
Hakea dactyloides	Finger Hakea	✓	✓		
Hakea ericifolia		✓	✓		
Hakea microcarpa	Small Fruited Hakea			✓	✓
Hakea sericea	Bushy Needlewood	✓	✓		
Leptospermum obovatum	River Tea Tree			✓	✓
Leptospermum lanigerum	Wooly Tea Tree			✓	✓
Lomandra longifolia	Spiny Mat Rush			✓	✓

A Guide to Identification

Because eucalypts and wattles are superficially so similar (and there are so many of them!), it is important to look at as many characteristics of these plants as possible when trying to identify them. For eucalypts, look first at the bark. Is it rough or smooth? Stringy or fibrous? Look carefully at the leaves. Are there any young (juvenile) leaves of different shape or colour to mature leaves? The juvenile leaves are often very distinctive. The number and shape of eucalypt buds and fruits (the woody capsules containing seeds) are also important. Because the differences between eucalypt species are quite subtle, there is a lot of botanical jargon used to discriminate between them. A glossary and illustrations are provided to help (see page 43).

For wattles, leaf characteristics, flower numbers, inflorescence types and pod size and shape distinguish between species.

When identifying plants in the bush, look at the habitat: is the site wet or dry? what is the slope and aspect? what is the soil like? what other plants occur at the site? There are some excellent plant identification books available, and many knowledgeable people locally who can help. See the references and further resources section for further details (page 48-49).

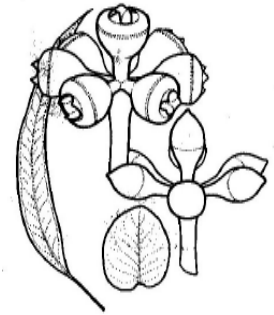
Species Descriptions

1. The Eucalypts

Eucalyptus aggregata (Black Gum)

Form: small to medium sized tree (10 – 20 m)
Habitat/ distribution: South and Central Tablelands at 600 – 1000 m altitude. Prefers moist areas near streams and swamps.
Bark: dark, rough and compact. Persistent to small branches.
Leaves: lanceolate, 6 – 11 cm long. Mid to dark green both sides. Veins faint.
Juvenile leaves: opposite at first, but soon alternate; **ovate**, **elliptical** or broadly **lanceolate**, 4 – 7 cm long, 1.5 – 3 cm wide. Margins sometimes finely toothed (**crenulate**).
Buds: ovoid, 4 – 20 per cluster, small with short stalks (**pedicels**).
Fruit: very small (4 – 5 mm wide), **obconical**, usually with three valves.
Flowers summer to autumn.

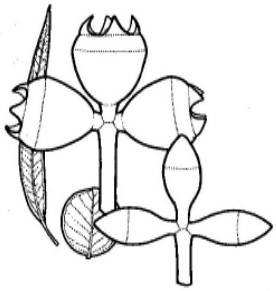
Eucalyptus bridgesiana (Apple Box)



Named after F. Bridges.
Form: medium tree 8-20m. Relatively short trunk with large spreading crown.
Distribution/ habitat: favours heavier alluvial soils. Common on gentle slopes at moderate altitudes.
Bark: grey, short fibred on trunk and larger branches.
Leaves: long, 12-24cm, tapering to a point.
Juvenile leaves: **opposite, cordate** (heart shaped), stalkless, waxy blue-grey (glaucous).
Buds:ovoid, cluster of up to 7. Pointed cap.
Flowers: January- May.
Fruit: hemispherical to conical, 6-8mm diameter. 3-4 **exserted** triangular valves.
Notes: makes a great chopping block. Good honey tree.

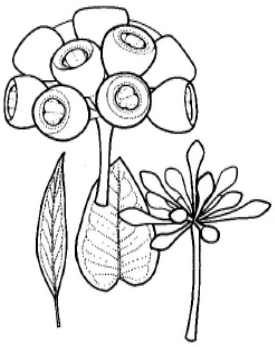
Eucalyptus dalrympleana (Mountain Gum)

Named after R. Dalrymple Hay, a forester.
Form tree to 40 m.
Distribution/ habitat: Widespread in **sclerophyll** and grassy woodland at higher altitudes on the Northern, Central and Southern Tablelends, Queensland, Victoria and Tasmania.
Bark: smooth grey, sometimes pink or yellow. Short **stocking** of grey fibrous bark on lower trunk.
Leaves: alternate, narrow-**lanceolate** to lanceolate, 10 - 20 cm long, 1.5 – 2.5 cm wide, green, glossy, concolorous. **Juvenile leaves**: opposite, orbiculate to **elliptic** to **ovate**, dull grey-green.
Buds: in clusters of 3 - 7 , ovoid, 5 – 8 mm

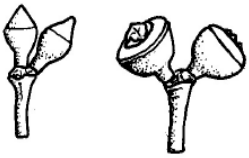


Eucalyptus dives (Broad-leaved Peppermint)

Meaning: dives (L.) = rich, plentiful. Refers to the leaves, which are larger and more oil-rich than the narrow-leaf peppermint, E. radiata.
Form: medium sized tree, 8-25m
Distribution/Habitat: Widespread in open forests, usually on slopes and ridges. Prefers poorer well- drained soils.
Bark: rough, fibrous, grey-brown, continuing to small branches.
Leaves: broad lance shape up to 15 x 3.5 cm. Veins and oil glands prominent. Strong peppermint smell. **Juvenile leaves:** blue-grey, opposite, **ovate** to **cordate** (heart-shaped), gradually lengthening to **falcate-lanceolate** with age.
Buds: 7-15 per cluster, small and club shaped.
Fruit: cup-shaped, **obconical** or hemispherical with 3- 4 valves level with flat disc.
Flowers Oct- Dec.
Notes: the timber has some fuel value, fast burning. Leaves are rich in oil, used commercially for extraction. Hybridises with E. radiata (narrow-leaved peppermint).



Eucalyptus macarthurii (Paddys River Box)



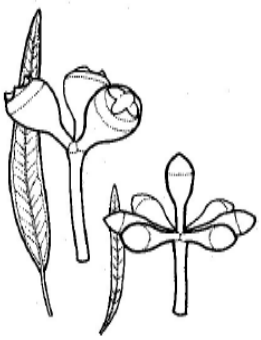
Named after Sir William Macarthur, 1800-1882, horticulturalist and botanical writer.
Form: Large tree, 20- 40m
Habitat: usually found on poorly drained flats near swamps and streams, however it also occurs on lighter sandy loams as a smaller tree.
Distribition: Central and Southern Tablelands, Lower Blue Mountains and Goulburn.
Bark: rough, grey, fibrous with lengthwise fissures, smooth grey on smaller branches.
Leaves: narrow lanceolate-falcate. **Juvenile leaves**: opposite, stalkless, **ovate, cordate** or **deltoid**, dull grey-green.
Buds: short stalked or stalkless, **ovoid**, green- yellow.
Fruit: short stalked or stalkless, **obconical** to **campanulate** (bell-shaped). 4 – 6mm wide, 3-4 valves, raised **disc**.
Notes: frost hardy, adaptable tree for planting on open sites in a variety of soils. Easy to establish and less prone to insect attack. Associated species include Snow Gum, Narrow-leaved Peppermint, Broad-leaved Peppermint, Manna Gum (E. viminalis) and Mountain Gum (E. dalrympleana).

Eucalyptus macrorhyncha (Red Stringy bark)

Meaning: macro = large + rhynchos = beak, referring to the long beaked cap or operculum covering the bud.
Form: medium tree, 12-35m.
Distribution/Habitat: occurs on ranges and tablelands of NSW and Vic to about 1000m. Prefers well drained hilly sites. Common on western side of Tallaganda Shire.
Bark: stringy, grey exterior, reddish brown

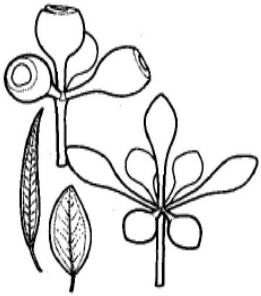
interior, continuing to small branches.
Leaves: lanceolate, 10-16cm long, dark green and glossy.
Juvenile leaves: ovate, opposite to alternate. Easily distinguishable as seedlings due to the leaves and stem being covered in short, reddish hairs.
Buds: diamond-shaped, varying from 6-12 per cluster. Conical caps. Flowers Jan-April.
Fruit: hemispherical to **truncate-globose** with a large, domed top, 3 large, pointed valves.
Notes: Timber- hard, pink. Possible light construction, fair fuel.

Eucalyptus mannifera (Brittle Gum)



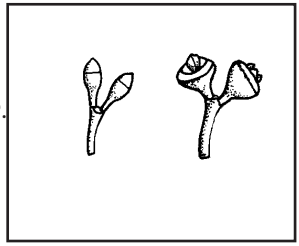
Meaning: bearing manna.
Form: medium tree, 6-25m
Distribution/ Habitat- Central and Southern Tablelands. Occurs on drier and more open sites with shallow and rocky soils.
Bark- Smooth white, cream or grey. Seasonal red shades prior to shedding.
Leaves- Lance shaped, to 15x1.5m. Dull, grey-green both sides.
Juvenile Leaves- **Elliptic-oblong**, opposite becoming alternate, bluish green.
Buds- 4-7 per cluster. **Ovoid** with conical cap. Flowers Oct-Dec.
Fruit- 0.5 x 0.4cm, rounded on short stalks.
Notes: frost hardy and drought tolerant, easy to establish. Prolific flowering attracts birds. Associated species include Snow Gum, Broad-leaf Peppermint, Ribbony Gum, Candlebark, Fine-leaf Peppermint and Red Stringybark. Timber is brittle, light red, fairly hard. Some fuel value.

Eucalyptus melliodora (Yellow Box)



Meaning: mel = honey + odora (L.) = smell. Refers to the strongly honey-scented flowers.
Form: medium tree 12-30m, large rounded crown.
Distribution/ Habitat: woodlands and open forests of foothills to tablelands. Favours better quality loams on lower parts of slopes.
Bark: grey- brown, rough, becoming dark and course with age. Inner bark yellow. Upper trunk and limbs smooth and pale.
Leaves: dull grey- green, small and thin, 6-12cm x 1.2-2.5cm. **Juvenile leaves**: **elliptic**, grey- green.
Buds: clusters of 3-7. Short cap. Flowers September- February.
Fruit: **ovoid** capsules, 5-7mm. Flat **disc**, valves enclosed.
Notes: Produces high quality, distinctive honey. Timber is hard strong and durable, suitable for fencing etc. Excellent fuel wood.

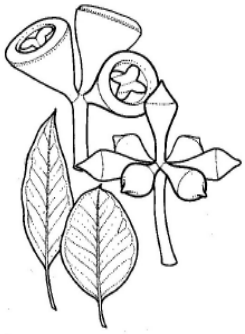
Eucalyptus nicholii
(Narrow-leaved Black Peppermint)



Named after R. Nichol, a herbarium worker.
Form: medium tree 8-20m. Dense, quite narrow crown.
Distribution/ habitat: grows on relatively infertile shallow shale and slate soils in grassy woodlands of the Northern Tablelands from Niangala to Glen Innes. Performs well in cultivation on a wide variety of soils.
Bark: persistent throughout the tree. Grey-brown, thick and short fibred on trunk.
Leaves: crowded, dull grey-green, **concolorous**, narrow-**lanceolate**, 6 - 12 cm long, 0.5 – 1 cm wide. **Juvenile leaves**: **disjunct**,

narrow-**lanceolate**, dull grey-green.
Buds: ovoid or **fusiform**, 3 – 5 mm long, 2 – 3 mm diameter, in cluster of 7. Conical cap.
Flowers: January- May.
Fruit: hemispherical to conical, 2 – 5 mm long, 3-4 mm diameter. **Disc** flat or slightly raised; 3-4 exserted triangular valves.
Notes: widely grown as a street and garden tree in southern Australia.

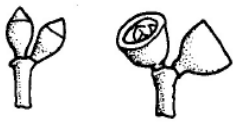
Eucalyptus ovata (Swamp Gum)



Meaning: ovum (L.), egg. Refers to ovate leaf shape.
Form: small to medium tree, 8-25m.
Distribution/ Habitat: poorly drained slopes and periodically swampy flats, valleys etc., to 800m on foothills. Associated species include Manna Gum (E viminalis).
Bark: dark and rough at base of trunk, shedding in ribbons from upper trunk and branches to reveal light smooth pale pinky-brown surface.
Leaves: broad **lanceolate** to **ovate**. Dark green and glossy on both sides. Edges usually wavy. 8-14cm x 2-5cm. **Juvenile leaves**: broad, almost circular. Large at intermediate stage.
Buds- Usually 7 per cluster, shortly stalked, 1.1 x 0.6cm. Conical cap.
Flowers: March - July
Fruit: funnel shaped, shortly stalked. Flat top 6-8 mm. 3-4 valves at rim level.

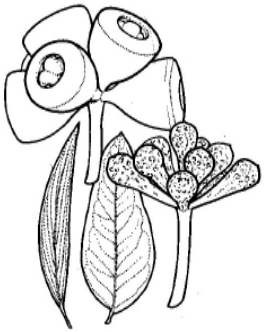
Eucalyptus parvula (Small-leaved Gum)

Meaning: parvulus (L.) little, referring to both the size of the tree and of its leaves.
Form: small tree to 10 m. Compact crown with dense foliage.
Distribution/ habitat: Rare in grassy woodland and damp flats of the Southern Tablelands from Countegany to Kybean.
Bark: persistent, red-brown fibrous or flaky on lower trunk. Smooth grey or green above, shedding in ribbons.
Leaves: **alternate** or opposite, **lanceolate**, 4 - 7 cm long, 0.6 – 1 cm wide, dull green, **concolorous**. **Juvenile leaves**: opposite, elliptic, **obovate** to broad-**lanceolate**, glossy green.
Buds: sessile (stalkless or nearly so), ovoid, 3 – 4 mm long, 3 - 4 mm diameter, in cluster of 7. Conical cap. Smooth or warty texture.
Fruit: cylindrical, conical or **ovoid**, 3 – 4 mm long, 3 - 4 mm diameter. **Disc** flat or slightly raised; valves enclosed or at rim level.
Notes: this species is slightly prone to sooty mould. This does not seriously harm the plant and does not require treatment. Including species which encourage birds in plantings helps keep **scale insects**, **lerps** and **sooty mould** under control.



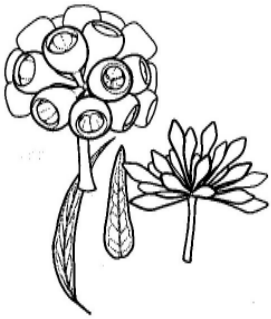
Eucalyptus pauciflora (Snow Gum)

Form: small to medium tree, 6m-20m. Sometimes multi-trunked i.e mallee-like.
Distribution/ Habitat: occurs often on the Southern Tablelands as a remnant eucalypt species where land has been extensively cleared for grazing. Prefers cool to cold climates on mountain slopes, exposed ridges and tabletops, however can also occur on plains at lower altitudes. Commonly found on shallow rocky soils as well as moderate quality well drained alluviums.
Bark: smooth, white with grey stripes.



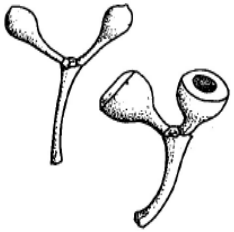
Seasonal red or olive colouring. Insect scribbles sometimes present on bark.
Leaves: 6-19cm long, broadly lance shaped (**lanceolate**) or **elliptical**, thick and glossy on both sides. Parallel veins.
Juvenile leaves: red stems, leaves opposite, **ovate** and grey-green.
Buds: club shaped, 9-15 per cluster.
Fruit- 8-11mm, short stalks, cup-shaped, **obconical** or hemispherical, with a broad **convex disc** and 3-4 valves.
Flowers Oct-Feb.
Notes: Very frost tolerant and not prone to insect attack. Associated species are Black Sally, Ribbony Gum, Candlebark and Mountain Gum. The timber is light and moderately strong, suitable for fuel and fence posts.

Eucalyptus radiata (Narrow leaved Peppermint)



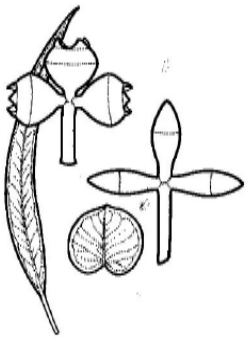
Meaning: radiatus (L.) = radiating, referring to the bud clusters.
Form: medium to large tree, 12-45m
Distribution/ Habitat: Common on foothills and mountains to 1200m. Tolerates varying soil types. Often mixed with E. dives but more prevalent on better quality soils with higher rainfall.
Bark: same as E. dives
Leaves- long and narrow, 8-16x 1-2cm. Strong peppermint odour. **Juvenile leaves**: green, narrow (<2cm), opposite, stalkless (**sessile**).
Buds: small club shaped, 8-16 per cluster.
Fruit: small cone shaped, similar to E. dives
Notes: timber has some fuel value. Suitable for light construction and pulpwood. Leaves used for oil extraction. Distinguished from E. dives by the much narrower juvenile leaves.
A subspecies, E. radiata ssp. robertsonii also occurs on the Braidwood granites. This has a more open dull grey- to blue-green canopy, broader leaves and whitish, waxy (**glaucous**) buds.

Eucalyptus rossii (Scribbly Gum)



Named after W.Ross, a teacher at Bathurst Technical College.
Form: medium size tree, 8-25m depending o soil quality.
Distribution/Habitat- NSW foothills, 250-900m. Common on sandstone or granite ridg and hillslopes.
Bark: smooth, white, grey and cream, shedding in patches to reveal insect larvae markings ("scribbles") on trunk and branches.
Leaves: long, up to 15 cm. Dull grey green.
Juvenile leaves: opposite to alternate early on. Grey- green, long, narrow and lance shaped.
Buds: 9 - 15 per cluster, short club shape, with a small, rounded **operculum**. Flowers Nov-March.
Fruit: small, 4-6mm, cup-shaped, hemispherical or **truncate-globose**. 4 tiny valves level with rim.
Notes: Timber- light red, brittle, some fuel value.

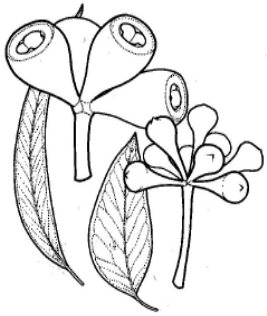
Eucalyptus rubida (Candlebark)



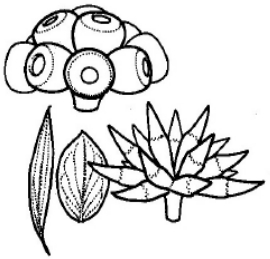
Meaning: rubidus (L.) red
Form: tree to 40 m, rarely exceeds 20 m locally.
Distribution/ habitat: Widespread species of **sclerophyll** or grassy woodland and cold flats of the Southern, Central and Northerr Tablelends, Victoria, and Tasmania.
Bark: Smooth grey or white, powdery shedding in patches. New bark distinctive orange pink colour in summer. Horizontal black inse scars sometimes present.
Leaves: alternate, **lanceolate** or narrow-lanceolate, 9 - 15 cm long, 1 – 2.5 cm wide, dull green, **concolorous**. **Juvenile leaves**: opposite, **orbiculate** (nearly circular), powdery blue-grey (**glaucous**).
Buds: in clusters of 3 – 7, **glaucous**, ovoid, 4

- 8 mm long, 3 - 5 mm diameter. Conical or hemispherical cap..
Fruit: cylindrical, hemispherical or **ovoid**, 4 - 6 mm long, 5 – 7 mm diameter. **Disc** flat or slightly raised; valves **exserted**.
Notes: useful for fence posts, fuel and honey.

Eucalyptus sieberi (Silver Top Ash)

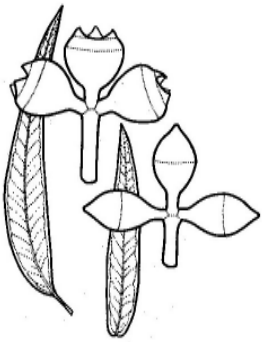


Named after F.W. Sieber, a botanist.
Form: tree to 30 m.
Distribution/ habitat: eastern Australia south from the central coast of NSW to Tasmania. In wet or dry **sclerophyll** forest or woodland on poor soils.
Bark: persistent, grey-brown to nearly black, fibrous on trunk and larger branches. Smooth grey or white above, shedding in ribbons.
Leaves: alternate, **lanceolate**, 9 - 15 cm long, 1.2 – 2.8 cm wide, dark green, glossy, **concolorous**. **Juvenile leaves**: alternate, broad-lanceolate to ovate, dull grey-green.
Buds: in clusters of 7 – 15, **clavate**, 4 – 7 mm long, 3 - 4 mm diameter. Hemispherical cap.
Fruit: conical or pear-shaped (**pyriform**), 8 – 11 mm long, 7 - 9 mm diameter. **Disc** raised or flat; valves enclosed or at rim level.
Notes: valuable timber species.
Eucalyptus stellulata (Black Sallee)



Meaning: star-like, referring to the sharply pointed, numerous buds.
Form: small tree 5-14m. Often muti-stemmed.
Distribution/ Habitat: Low, poorly drained frost hollows beside creeks. Fairly common throughout Tallaganda Shire in lower lying areas.
Bark: smooth, dark grey to olive green with dark fibrous "**stocking**" at the base.
Leaves: 5-10cm long, varying in width from narrow to broad lanceolate, slightly glossy, green on both sides. Parallel venation. **Juvenile leaves**: ovate, opposite.
Buds: conical pointed caps, in clusters of 8-20.
Flowers: April- Oct
Fruit: small and stalkless in tight clusters. Rounded with a flat rim, usually 3 valves
Notes: Black Sally is the most frost tolerant of the eucalypts, even more so than Snow Gums. It is suitable for frost hollows with poor drainage. The timber has some fuel value

Eucalyptus viminalis (Ribbon Gum)



Form: medium to large tree (25 – 50 m), variable in form and size.
Habitat/ distribution: widespread in wetter areas in south-eastern Australia, but also extending to drier sites (e.g. Mt Gillamatong). On well-drained alluvial soils near mountain streams, Manna Gums grow into tall, well-formed trees. The same species will be shorter with a more spreading crown on poorer , more open sites.
Bark: persistent and dark at the base, peeling in long ribbons from the crown.
Leaves: 10 – 20 cm, narrow, **lanceolate**, bright green.
Juvenile leaves: opposite, not stalked (**ses-**

sile), lanceolate
Buds: in flat clusters of three, occasionally in 7s, ovoid to spindle-shaped (**fusiform**), sometimes with a beaked cap.
Fruit: in 3s, cup-shaped to hemispherical
Flowers anytime.

2. Other Trees

Casuarina littoralis (Black She Oak)

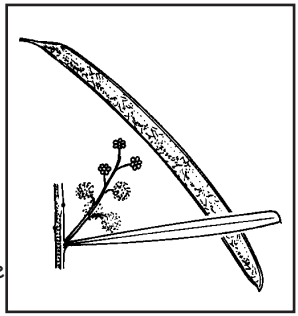
Meaning: littoris (L.), shore or riverbank.
Form: tree 6-12m
Distribution/ Habitat: sands, clays or rocky sites, often along water-courses
Leaves: needle-like, fine and straight. Dark green.
Fruit: cylindrical cones, 2-3cmx1.5-2cm, with numerous valves releasing the seed.
Flowers: male flower spikes are reddish brown, 1-3cm. Cones are borne on separate female trees.

Casuarina cunninghamia (River She Oak)

Form: large tree to 35 m. Similar to pine tree in appearance, usually with drooping branches.
Habitat/ distribution: grows along freshwater courses in rich alluvial soils from Queensland to the south coast, extending west as far as the western plains.
Leaves: Dull grey-green needle-like "leaves" are actually cladodes (photosynthetic branches), with leaves reduced to whorls of small teeth every 6 – 9 mm along the cladode.
Flowers: inconspicuous. Male and female flowers are borne on separate trees. Male trees are distinguished by brownish tinge produced by pollen-bearing flowers, female trees by the cones, 2.5 cm long x 2.5.cm diameter.
Notes: superb large tree. Fixes nitrogen in the soil, self-mulching. Timber is very attractive and durable, and used for cabinet work and solid benches.

3. The Wattles

Acacia boormanii (Snowy River Wattle)

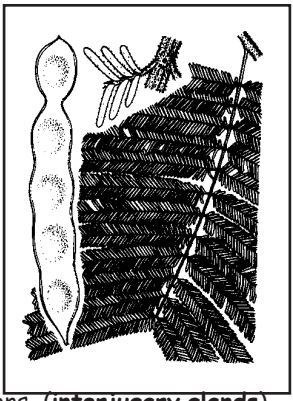


Form: upright or spreading shrub, 2 – 4 m.
Distribution/ habitat: **sclerophyll** woodland, especially in gullies and along creeks south from Cooma district, Southern Tablelands; Victoria.
Leaves: grey-green, linear leaves 3 – 8 cm long, 1 – 3 mm wide, sometimes with a waxy bloom (**glaucous**). Small point (**mucro**) at the tip, and a small **gland** along the margin of the leaf.
Flowers: 6 – 13 small golden yellow heads on 2 – 4 cm branchlets arising from leaf **axils**; August to September.
Pods: straight and flat, 4 – 9 cm long, 4 – 6 mm wide.
Notes: nitrogen fixing. A very attractive small and early-flowering wattle.

Acacia covenyi (Blue Bush)

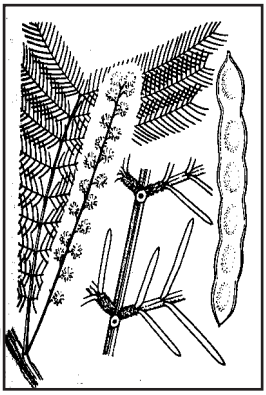
Form: upright or spreading tree or shrub, 1.5 – 7.5 m high.
Distribution/ habitat: on limestone or quartzite slopes and ridges from Bendethera to Bega.
Bark: smooth and greyish.
Leaves: bluish-grey, straight or slightly sickle-shaped (**falcate**), 3 – 5 cm long, 6 – 9 mm wide; short point (**mucro**) at the end of a blunt tip; one gland along the leaf margin.
Flowers: 5 – 11 golden yellow flowers on a 3- 8 cm **axillary** branch, August to September.
Pods: straight 3.5 – 6 cm long, 8 – 10 mm wide, **glaucous**.
Notes: nitrogen fixing. Very attractive shrub grown ornamentally for its bluish foliage.

Acacia dealbata (Silver Wattle)



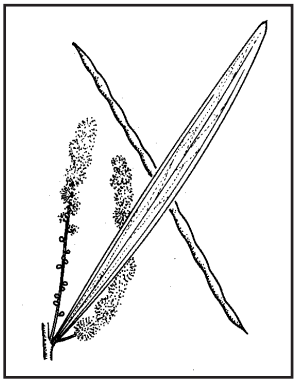
Form: tree to 15 m.
Distribution/ habitat: widespread in temperate areas of NSW, Victoria, SA and Tasmania, in dry **sclerophyll** forests, often on slopes and creek banks.
Bark: smooth to deeply fissured, dark grey, often covered with lichen. Branchlets angled or flattened, hairy.
Leaves: silvery **bipinnate** leaves 4 – 10 cm long with 10 – 26 pairs of **pinnae**, each with leaflets (**pinnules**) 2 – 5 mm long. Glands along the midvein at the junction of each pair of pinnae; glands between these junctions (**interjugary glands**) absent. (This distinguishes Silver Wattle from Black Wattle and other wattles with similar leaves).
Flowers: 10 – 40 mid-yellow flowers on branchlets 6 – 10 cm long in leaf axils; July to November (later in frost-prone areas).
Pods: light purplish-brown, sometimes **glaucous**; more or less straight and flat, sometimes constricted between seeds.
Notes: nitrogen fixing. Won't stand really severe frosts in the first year in an exposed position. Make sure stock is well hardened off before planting, and either plant in more sheltered sites, or plant into an existing site. Even if frost damaged, silver wattles often survive if dead shoots are pruned back.

Acacia decurrens (Early Black Wattle)



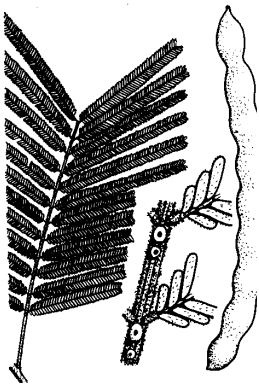
Meaning: Decurrent leaf, i.e. having two raised lines extending from the stalk (petiole) down the stem.
Form: small tree, 4-12m.
Distribution/ Habitat: dry open forest and open country
Bark: greenish, with distinct ridges.
Leaves: **bipinnate** (twice-divided) leaves with 5-12 pairs of leaflets (**pinnae**). **Pinnules** (tiny leaf segments) 5-12mm long, well separated.
Flowers: bright yellow globular heads, July-September.
Pods: brown, 5-11cm x 4-7mm.

Acacia floribunda (White Sallow Wattle)



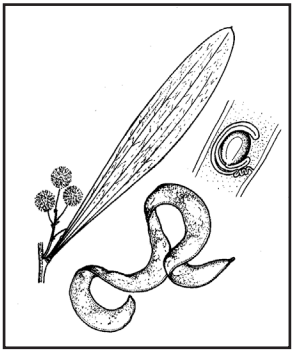
Meaning: abundant flowers (L.)
Form: dense shrub or small tree, 3-8m.
Distribution/ Habitat: frequent along rivers in eastern forests, near coast to margins of tablelands.
Foliage: crowded, dense, dark green. Straight or gently curved **phyllodes**, 6-15cm x 2-10mm. Fine veins with stronger central vein.
Flowers: August - October. Abundant long cylindrical spikes, pale lemon, 3-6cm long.
Pods: very narrow and thin walled. 6-10cm x 2-3mm.
Note: fast-growing and seeds prolifically. It is recognised as an **environmental weed** outside its natural area.

Acacia mearnsii (Black Wattle)



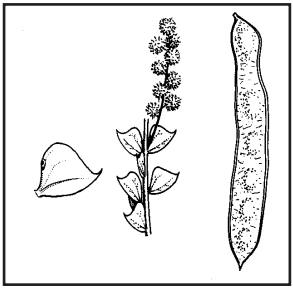
Named after E.A Mearns, collector of the first specimen.
Form: medium tree 5-15m, with sappy bark.
Distribution/ Habitat: common on cleared country and in open forest from low to **montane** areas. Likes dryer shallow soils.
Leaves: Dark green with yellowish new growth. **Bipinnate**, consisting of 9-20 **pinnae** with up to 60 pairs of leaflets on each. Stems slightly ribbed. Numerous hairy **glands** visible down the midrib of the leaf.
Flowers: Globular, pale yellow, very fragrant. October - December.
Pods: 6-15 cm x 5-9 mm. Constricted between seeds.

Acacia melanoxylon (Blackwood)



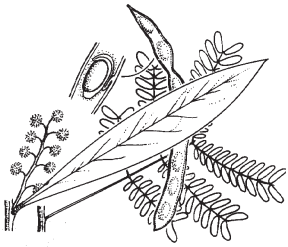
Meaning: melanos = black, oxylon = wood (Gr.).
Form: upright or spreading tree 6-30m
Distribution/ Habitat: common on a variety of sites in south-eastern Australia where annual rainfall exceeds 600mm.
Foliage: dark green, dense. Phyllodes 6-14 cm x 1-2.5 cm with 3-5 main veins. Younger bipinnate foliage often persists into adulthood.
Flowers: Large, globular, creamy pale yellow, August - October.
Pods: Light brown, 4-12 cm x 5-10 mm, becoming twisted with maturity.
Note: timber is highly sought-after for furniture and cabinet work.

Acacia pravissima (Ovens Wattle)



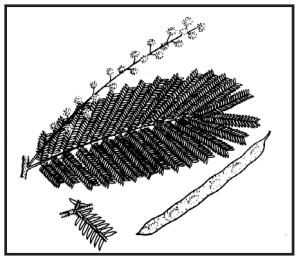
Meaning: pravissima (L.) = most irregular. Refers to branching habit and asymmetrical leaves..
Form: shrub or small tree, 3-8m.
Distribution/ Habitat: NE Victoria to NSW southern tablelands. Occurs near streams and damp sheltered areas of open mountain forest.
Leaves: Grey-green **phyllodes**, 6-16mm x 4-13mm, upper margin humped. Two main veins, distinct glands.
Flowers: masses of globular yellow blooms forming small **racemes**, August - October.
Pods: Fairly straight, flat. 3-8cm x 5-7mm.

Acacia rubida (Red-stemmed Wattle)



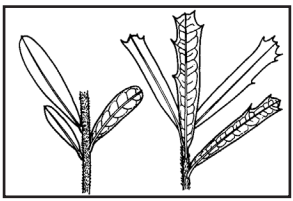
Meaning: ruben (L.) = red.
Form: shrub to small tree, 2-10m.
Distibution/ Habitat: common in eastern NSW and eastern Victoria. Tolerates a variety of soils including clays and sands.
Leaves: **bipinnate** juvenile leaves which can remain on mature trees. Hanging adult "leaves" are actually **phyllodes** (tough, photosynthetic modified leaf stalks). These are green, developing to red on drying. Leaf shape is variable, from straight to curved, 6-20 cm x 8-25 mm.
Flowers: Profuse yellow globular heads in racemes 2-7 cm long, August- October.
Pods: 6-12cm x 6-9mm, flat and straight, becoming dark.
Note: widely adaptable in cultivation.

Acacia trachyphloia (Golden Feathered Wattle)



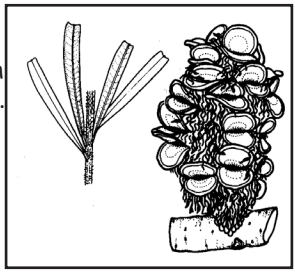
Form: spreading tree 4 – 18 m
Distribution/ habitat: dry **sclerophyll** forest, often on alluvial soil and creekbanks in coastal ranges from Lake Conjola to Bodalla, and Southern Tablelands.
Bark: grey, finely or deeply fissured, branchlets sometimes angular and/or hairy.
Foliage: **bipinnate** leaves to 8 cm long, 9 – 25 pairs of **pinnae**, leaflets (**pinnules**) to 2.5 mm long, smooth or hairy. Glands present on the leaf midvein at the junction of each pair of pinnae.
Flowers: pale to golden yellow, in branchlets of 10 – 25 heads extending from the leaf axil; flowering branchlet (**inflorescence**) 5 – 9 cm long. Flowers August to October.
Pods: more or less straight and flat, 4 – 7 cm long, 4 – 8 mm wide.
Notes: nitrogen fixing.

4. Other Shrubs



Banksia canei (Mountain Banksia)

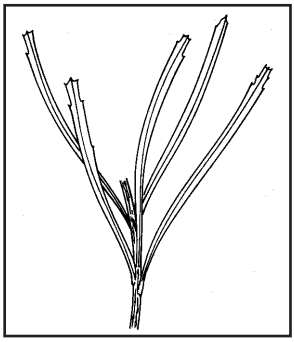
Form: dense shrub with spreading habit, 1-2.5 m.
Distribution/ Habitat: frequently found in heaths on rocky sites above 900m in sub-alpine mountains.
Leaves: elliptical, 3-5cm x 6-9mm. Shiny green with whitish veins underneath. Irregular, sharp spiked **margins**.
Flowers: pale yellow with grey tips, in spikes 6-14cm x 4-6cm, November - March.
Notes: nectar-rich flowers provide good bird habitat.



Banksia marginata (Silver Banksia)

Meaning: Banksia is named after Sir Joseph Banks, an early explorer and noted botanist.
Form: low shrub to bushy tree to 7m in open forests of south-eastern Australia.
Distribution/ habitat: common on variable soils from coast to sub-alps and inland.
Leaves: Narrow-**elliptical**, 3-8cm x 3-8mm, **truncate** or notched at tip, without **marginal** teeth (except juvenile)
Flowers: pale yellow, 5-10cm long, cylindrical. October- March.
Fruit: grey banksia cone, 8 cm x 3 cm.
Notes: Nectar-rich shrub, providing good bird habitat and a good source of honey.

Banksia spinulosa (Hairpin Banksia)

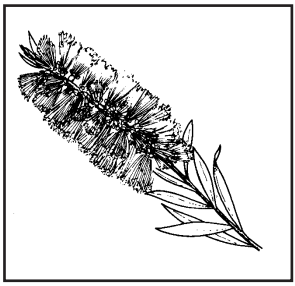


Form: multi-stemmed shrub to 3 m high with prominent **lignotubers** present at the base of the trunk; bark grey-brown, platy.
Distribution/ habitat: widespread in heath, dry **sclerophyll** forest or woodland in south-eastern Australia from Queensland to Tasmania.
Leaves: narrow-linear to oblong, 3 – 10 cm long, 1 – 10 mm wide, with a notched **apex**.
Flowers: dense spikes of yellow-gold flowers, 6 – 15 cm long, up to 6 cm diameter, April to August.
Fruit: a woody cone consisting of many **follicles** 15 – 17 mm long, 6 – 8 mm wide, splitting open to reveal a winged seed.
Notes: beautiful shrub which attracts nectar-eating and insectivorous birds. Not particularly hardy in exposed sites.

Bursaria spinosa (Blackthorn)

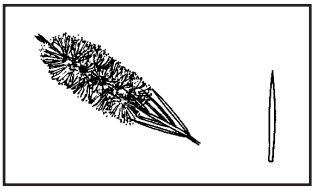
Form: small, prickly shrub to small tree, 1 – 8 m.
Habitat/ distribution: Widespread. Grows as a shrub on drier sites, as a tree in moist gullies.
Leaves: Small, dark green and glossy, 8 – 40 mm x 5 – 15 mm.
Flowers: small, creamy and fragrant, in pyramidal panicles, November-February.
Fruit: clusters of thin, dry purse-like capsules.
Notes: Blackthorn provides excellent habitat for small birds due to its thorny habit and abundant supply of nectar.

Callistemon citrinus (Crimson bottlebrush)



Form: shrub 1 – 3 m high with stiff, upright branches.
Distribution/ habitat: widespread in swamps and along rocky watercourses in eastern Australia from Queensland to Victoria.
Leaves: **oblanceolate** to narrow-elliptic, 3 – 7 cm long, 5 – 8 mm wide, **apex** pointed and sharp to the touch; aromatic when crushed (oil glands sometimes visible).
Flowers: red bottlebrush spikes, 6 – 10 cm, 4 – 7 cm diameter, November to December.
Fruit: woody capsules in spikes 6 – 10 cm, 4 – 7 cm diameter.
Notes: very attractive shrub often grown as an ornamental.

Callistemon pityoides



Form: shrub to 3 m high with silvery grey tips and newer growth.
Distribution/ habitat: widespread on tablelands, especially at higher altitudes in the Southern Tablelends; also Queensland and Victoria. Grows in boggy areas, often in peaty granitic heathland or in shallow water.
Leaves: rigid, linear, 1 – 2 cm long, up to 1.5 mm wide, apex pointed, aromatic when crushed (oil glands sometimes visible on the undersides of leaves).
Flowers: pale yellow-green bottlebrush **spikes**, sometimes tinged with pink, 3 – 4 cm, up to 7 cm, up to 2.5 cm diameter, November to February.
Fruit: woody **capsules** in spikes.
Notes: attractive and hardy shrub for waterlogged areas.

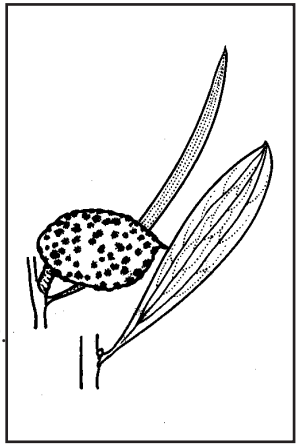
Grevillea arenaria (Sand Grevillea)

Form: spreading shrub to 3m.
Habitat/ distribution: mostly on sandy soils near rocky watercourses in eucalypt forest north of Moruya/ Braidwood to western slopes.
Leaves: Dull grey-green, 2 – 4 cm long x 4 – 10 mm wide, slightly hairy; leaf margins rolled toward the underside of leaf (**recurved**).
Flowers: green/ pink grevillea flowers in small clusters. The unusual green tinge to the flowers makes them surprisingly inconspicuous for their size.
Notes : Attracts nectar-feeding birds. Although it grows in wetter sites, soils need to be well-drained.

Grevillea juniperina (Prickly Grevillea)

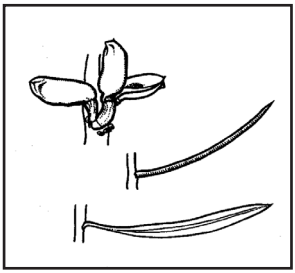
Meaning: having leaves like a juniper (northern hemisphere conifer)
Form: erect prickly shrub, 1-2.5 m.
Distribution/ habitat: sandy and rocky soils along water courses in Southern Tablelands.
Leaves: 1-2cm long, narrow, needle-like and sharp pointed, on short slightly hairy lateral branchlets.
Flowers: showy spidery usually red flowers in short **racemes**, October - January. Local variants have pretty pale orange flowers.

Hakea dactyloides (Finger Hakea)



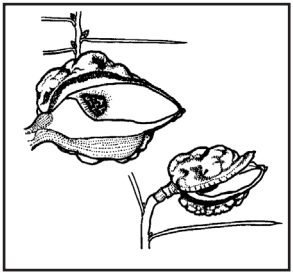
Meaning: dactylus (Gr.) = finger. Refers to the leaves, which are the size and shape of an index finger.
Form: shrub, 1-3m
Distribution/ habitat: common in NSW open forest and heaths. Prefers poorer granite and sandstone derived soils.
Leaves: flat and rigid **phyllodes** with three prominent veins, 5-10cm x 7-20mm.
Flowers: white, spider-like. Spring- summer.
Fruit: grey woody **follicle**, 3cm x 2.5cm. Reasonably smooth, not beaked.
Notes: nectar-rich shrub; very tough; provides good bird habitat.

Hakea microcarpa (Small-fruited Hakea)



Meaning: micro=small, carpus=fruit (L.)
Form: spreading shrub to 2 m high.
Distribution/ habitat: grows in wetter areas of heath, dry **sclerophyll** forest or woodland, mainly on the tablelands at higher altitudes in south-eastern Australia from Queensland to Tasmania.
Leaves: rigid, needle-like, 3 – 11 cm long, up to 1.5 mm wide, **apex** pointed, with a prominent midvein.
Flowers: clusters of creamy spider-like flowers in leaf **axils**, spring to early summer. .
Fruit: a woody follicle 15 – 17 mm long, 6 – 8 mm wide, splitting open to reveal a winged seed.
Notes: attractive and hardy shrub for waterlogged areas.

Hakea sericia (Bushy Needlewood)



Meaning: sericeus (L.), silken.
Form: shrub of varying shape, 2-5m
Distribution/ habitat common in hill country of NSW and Victoria as a component of heaths and scubby understoreys of open forests.
Leaves: needle-like, green, 2-6cm.
Flowers: white or pink, scented, in clusters in axils of leaves, May-September.
Fruit: woody grey **follicles**, rough and knobby, 2.5-4cm long and wide. Double pointed beak.

Leptospermum obovatum (River Tea Tree)

Form: shrub to approximately 2 m.
Distribution/ habitat: rocky areas (granite or sandstone) near waterways or swampy places, central and south coasts, central and southern tablelands, north-west slopes and Victoria.
Bark: smooth, grey; young stems slightly hairy.
Leaves: strong tea tree smell when crushed; narrow-**oblanceolate** to broad-**obovate**, 5 – 20 mm long, 2 – 8 mm wide, with a broad and pointed tip (**apex**) gradually tapering to the base, with virtually no stalk.
Flowers: solitary or in pairs, white, sweetly scented, 8 – 12 mm diameter, 5 **sepals** and petals; November to January.
Fruit: woody **capsules** 5 – 8 mm diameter, 5 **valves** which spread outwards as fruit matures.

Leptospermum lanigerum (Wooly Tea Tree)

Form: dense shrub to small tree, 2 – 6 m.
Habitat/ distribution: common in damp areas along watercourses, sometimes forming closed scrub along streams in mountainous areas and on swampy plateaus.
Leaves: short, grey-green with pointed tips, 5 – 24 mm long x 2 – 4 mm wide; silvery-hairy beneath..
Flowers : creamy-white, fragrant, 1 – 1.8 cm diameter; 5 short, round petals; **sepals** woolly. September to December.
Fruit: Woody **capsules** with 5 valves.

Lomandra longifolia (Spiny Mat Rush)

Meaning: longi=long, folia=leaves (L.)
Form: tufted perennial herb.
Distribution/ habitat: very widespread species, adapted to a wide range of habitats in eastern Australia, from Queensland to Tasmania and SA.
Leaves: 50 – 100 cm long, 5 – 7.5 mm wide, tough, strap-like, olive to dark green. Distinct triple-notched apex.
Flowers: borne in a spiny **inflorescence**; small, creamy-yellow to purplish outside, paler cream on inner petals.
Notes: Useful for swampy areas and drainage lines, but will also grow in exposed areas.
Often used in large urban landscape projects for its compact tufted habit, and tolerance to drought, waterlogging and frost, as well as a wide variety of soils and growing media.

Glossary

alternate (of leaves): inserted singly up the stem, spiralling around the stem.
anther: pollen-bearing part of the stamen.
apex: tip (pl. apices).
axil: upper angle between the stem and leaf or leaf stalk (petiole).
axillary: a bud, inflorescence or other structure arising in the leaf axil.
beak: prominent projection on bud or fruit.
bipinnate: a leaf where the blade is divided into leaflets which are themselves divided (see illustration).
bole: the trunk of a tree below the lowest branch.
box bark: persistent short-fibred bark which sheds irregularly in patches (e.g. Red Box, Yellow Box)
calyptra (operculum): cap-like covering or lid on eucalypt buds and fruit.
campanulate: bell-shaped.
capsule: dry woody fruit which releases seed through valves.
chaff: small, dry unfertilised ovules found among developed seeds in eucalypt capsules
cladode: a photosynthetic stem which functions like a leaf (e.g. the needle-like "leaves" of she-oaks).
clavate: club-shaped.
compound: composed of several more or less similar parts, such as in a leaf divided into several leaflets.
concolorous: same colour on both surfaces (used particularly of leaves).
cordate: heart-shaped (of leaves – see illustration).
crenate: scalloped leaf margin.
crown (canopy): the leafy head of a tree
decorticate: to shed bark.
decurrent: describes the base of a leaf which extends down the stem beyond the point of insertion (see illustration).
dehiscence: shedding the operculum from a eucalypt bud; release of pollen from anthers, or a capsule or other fruit splitting to release seed.
disc: ring of tissue between where stamens are inserted and the ovary (seed chamber). This looks a bit like a doughnut just below the valves in a eucalypt fruit.
discolorous: different colours on the top and bottom surfaces (of leaves).
disjunct: (of leaves) separated along the stem or axis, but not spiralling around the stem (cf. **alternate**, **opposite**).
dry sclerophyll forest: forest where hard leaved (sclerophyll) shrubs form a layer beneath the eucalypt overstorey.

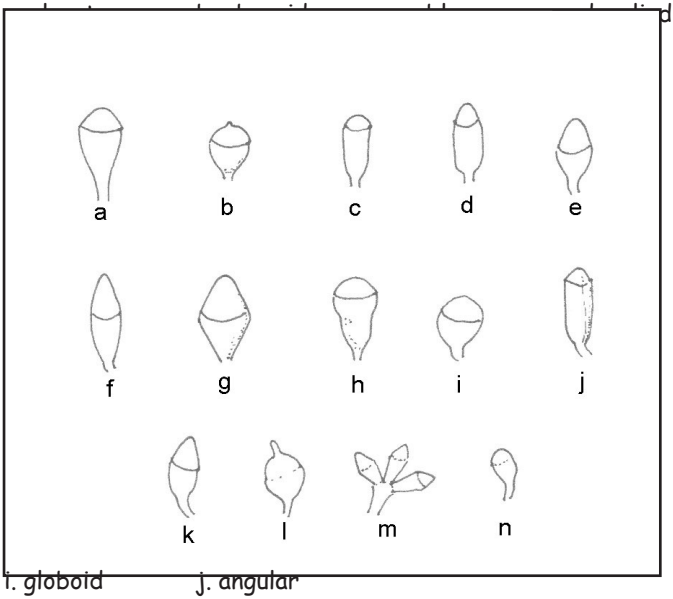
elliptic: ellipse (oval) shaped, but with pointed tip and base.
endemic: where the distribution of a plant is confined to a particular area (cf. **indigenous**, **native**)
environmental weed: a weed which is not confined to agricultural areas, and invades natural bushland. This includes some native but non-indigenous plants such as Cootamundra Wattle and Sallow Wattle.
exotic: plants or animals introduced from outside the area, usually from overseas.
falcate: shaped like a scythe.
fertilisation: union of male gametes from pollen with female gametes in the ovary of a flower.
fibrous: bark that persists on the tree (i.e. is not shed at the end of a season) with obvious short or long fibres (e.g.stringybark).
fruit: the seed-bearing structures of plants which develop from a fertilised flower.
fusiform: spindle- or cigar-shaped.
gamete: a reproductive cell. In plants, male gametes are located in pollen grains, and female gametes in the ovary of a flower.
genus: a group of closely related species or a single species without close relatives (pl.= **genera**).
All the eucalypts belong to the genus Eucalyptus; the wattles belong to the genus Acacia.
glabrous: smooth, without hairs, scales or wrinkles
gland: a structure usually on the leaf of a plant which secretes substances such as nectar or aromatic oils (see **jugary** and **interjugary** glands)
glaucous: covered with a grey, blue of white waxy bloom.
globose: globe-shaped.
gum: eucalypts with smooth bark which is shed every season (cf. **persistent** bark).
habit: characteristic form or appearance of a plant (e.g. tree, shrub, bulb etc.).
habitat: the environment in which a plant naturally occurs.
hybrid: progeny of two different species. Eucalypts are well known for their ability to hybridise. In areas where the distribution of two species overlap, you will often find individual trees with features that are intermediate between the two species.
hypanthium: a cup-like structure formed above the base of the ovary into which stamens and other flower parts are inserted in some plants, notably eucalypts and fuchsias. In eucalypts, the the petals and sepals fuse to form the hypanthium.
indigenous: native to the area, not introduced. Differs from **endemic**, in that endemic species are restricted to only one geographic location in nature.

inflorescence: general term for the flower-bearing parts of a plant. This may be a single flower (e.g. a daffodil) or a branch bearing several flowers, or a single flower head with numerous florets (e.g. a daisy).
interjugary: glands between the leaflet pairs on the rachis (midvein) of wattle leaves (see illustration).
jugary: glands at the intersection of leaflet pairs in wattles (cf. **interjugary;** see illustration).
juvenile leaves: the first formed leaves on a plant, or those first arising after insect, fire or other damage. In eucalypts juvenile leaves are usually distinct in size, shape and even colour from mature or adult leaves.
lanceolate: lance-shaped, typical of eucalypts.
lignotuber: woody swellings at the base of the trunk or below ground containing bud tissue which will sprout following fire, drought, insect or other damage. Lignotubers are a feature of many eucalypt species, particularly mallees.
linear: long and narrow (more than 12 times as long as broad).
mallee: a habit (growth form) in eucalypts in which many stems arise from a lignotuber. This term is also used to apply to vegetation communities dominated by eucalypts with a mallee habit.
margin: the edge or perimeter of a leaf.
mucro: a sharp point at the apex of a leaf.
ob-: prefix meaning literally the other way around, as in leaves which are widest at the apex, not the base or middle, as in
oblanceolate: lanceolate, but widest above the middle of the leaf.
obconical: inverted cone-shape.
obtuse: blunt.
open forest or woodland: vegetation with a sparse tree cover, allowing plenty of sunlight through to the ground.
operculum (=**calyptra**): cap-like covering or lid on eucalypt buds.
opposite: leaves inserted at opposite points on the stem (cf. **alternate, disjunct).**
orbicular: circular (of leaves)
ovary: chamber within the flower containing the ovules, which after fertilisation develops into the fruit.
ovate: egg-shaped (2-dimensional: used of leaves).
ovoid: egg-shaped (3-dimensional; used of fruit).
ovule: structure containing the female gamete, which after fertilisation develops into a seed.
panicle: a branched inflorescence.
pedicel: stalk of a single flower.
peduncle: stalk of an inflorescence.
penniveined: where the side veins in a leaf are close, parallel to one another and are at a fairly wide angle to the midvein.

peppermint: group of eucalypts typified by fine fibrous bark and distinctive peppermint-smelling aromatic oils.
persistent: when bark is not shed and accumulates on the trunk (includes peppermints, stringybarks, ironbarks and box-barked species).
petiole: leaf stalk.
phyllode: a flattened photosynthetic leaf stalk which functions as a leaf in many wattles.
pinna: leaflet; primary division of a compound leaf (see illustration).
pinnate: a compound leaf in which the leaflets are produced in pairs along the rachis or midvein.
pinnule: a smaller leaflet, the secondary division of a bipinnate leaf (see illustration).
pubescent: with a covering of short, fine hairs.
pyriform: pear-shaped.
raceme: simple inflorescence with stalked flowers.
rachis: the axis of a pinnate or bipinnate leaf, equivalent to the midvein in a simple leaf (see illustration).
reticulate: (of veins) forming a network (cf. parallel venation, penniveined).
ribbony: (of bark) shedding in long strips or ribbons, as in Ribbony or Manna Gum (Eucalyptus viminalis)..
scar: the ring scar left on a eucalypt bud after the outer operculum is shed.
sepal: leaf –like structures which form the outer whorl (**calyx**) of a flower; enclosing the petals in bud.
sessile: without a stalk.
species: a group of organisms which share a set of distinguishing features, and which interbreed to produce fertile offspring with the same features (cf. genus, hybrid, subspecies). The botanical name of a species consists of the name of the **genus** (e.g. Eucalyptus) followed by the **specific epithet** (e.g. viminalis): Eucalyptus viminalis, or Ribbony Gum. Note that botanical names are written in italics or <u>underlined.</u>
stamen: male organ of a flower, consisting of the pollen-bearing anther fixed to a filament or stalk.
stocking: a relatively short length of persistent bark at the base of a gum-barked tree (e.g. Woollybutts).
subspecies: a rank below species, with minor variation in appearance to other members of the species, and separated from other forms of the species geographically or by ecological barriers (e.g. snow cover, soil type). Examples include snow gums, Eucalyptus pauciflora. The general form, which has a wide distribution, is a tree or robust mallee. In alpine areas, a stunted, twisted mallee form with smaller leaves and buds occurs (E. pauciflora subspecies niphophila). Another subspecies, E. pauciflora ssp. debeuzevillei, occurs on Mt. Franklin,

Jounama Range, Yarrangobilly and Yaouk. This subspecies has very angular buds and fruit.
terminal: positioned at the apex.
tessellated: (of bark) a chequered or tiled appearance.
truncate: having an abrupt edge, as if cut off.
urceolate: urn-shaped.
valve: segment of a capsule which opens at maturity to release seed.
venation: patterns of veins within a leaf .
winged: (1) dry tissue which surrounds a seed to aid its dispersal; (2) small flange of stem tissue extending from the leaf or flower stalk along the stem or branch.

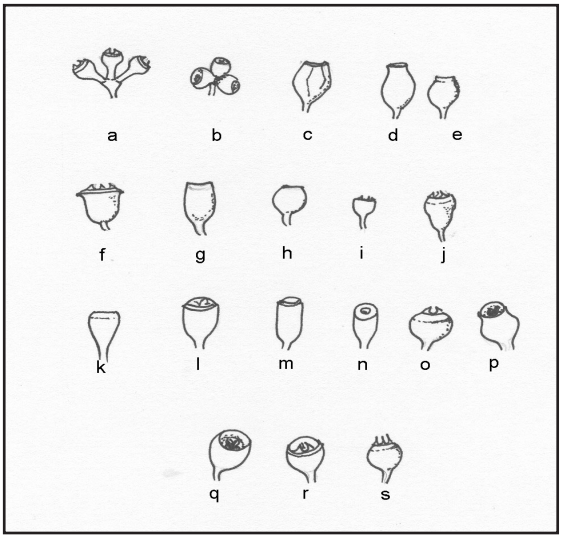
Eucalypt buds



i. globoid j. angular

Operculum details
k. scar present l. beaked m. conical n. hemispherical

Eucalypt fruit



a. pedicellate b. sessile c. angular, ribbed d. urceolate
f. campanulate g. barrelh. truncate-globose
i. hemispherical j. pyriform k. obovate l. cup-shaped
m. cylindrical
Discs: n. level with rim o. ascending p. descending

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For more information and assistance, contact:

Upper Shoalhaven Landcare Coordinator:
Felicity Sturgiss
02)48422594
42 Ryrie St
Braidwood
upper.shoalhaven@cma.nsw.gov.au