

# EUCALYPT WALK MARCH 2022

Walk developed by Kerry Moir and Glenys Bishop

## Theme

Generally, this walk is about Eucalypts. Specifically, we want to tell visitors about:

- The three genera Eucalyptus, Angophora and Corymbia and how they differ;
- Different adaptations by Eucalypts to fire and other stressors;
- Different features such as bark, leaves, form etc.

By the end of the walk, we want visitors to understand why Eucalypts are so widespread in Australia.

## List of Numbered Stops

Stop	Species	Location
1	Eucalyptus macrorhynca Corymbia ficifolia Angophora costata	Opposite clock S168, and top row of northern car park on the rainforest gully end
2	Eucalyptus botryoides	S169 at bend to bottom level of northern car park adjacent to rainforest gully.
3	Eucalyptus vernicosa Eucalyptus regnans	Next to the information sign near the Casuarina pond.
4	Eucalyptus imlayensis Eucalyptus caesia	Part way down the steps between the VIC and the Banks statue.
5	Eucalyptus goniocalyx	Eastern mallee entrance
6	Eucalyptus rossii	A short way into the eastern mallee on the right.
7	Eucalyptus polybractea	Eastern mallee after first bend, one on right and one on left.
8	Eucalyptus socialis	Eastern mallee just past the seat on the right
9	Eucalyptus gillii	At end of the Eastern mallee, past the steps on the left
10	Eucalyptus dwyeri	At start of track above the eastern mallee on right.
11	Eucalyptus behriana Eucalyptus populnea	On track between Eastern mallee and rainforest
12	Eucalyptus planchoniana Eucalyptus macrorhynca	Further along the track on the right, several of each
13	Eucalyptus fastigata	On left as approaching steps down to bitumen.
14	Eucalyptus grandis	Rainforest next to steps going down to lower level
15	Angophora floribunda	At the end of the Brisbane Bridge on left
16	Eucalyptus pilularis	On left at main path 105, just before Wollemi pines
17	Eucalyptus lacrimans Eucalyptus macrocarpa Eucalyptus scoparia	At bottom of Rock Garden near the pool.
18	Eucalyptus mannifera	At northern entrance to Brittle Gum Lawn
19	Eucalyptus sideroxylon	Top edge of Brittle Gum Lawn

## Suggested alternatives when there are several simultaneous groups

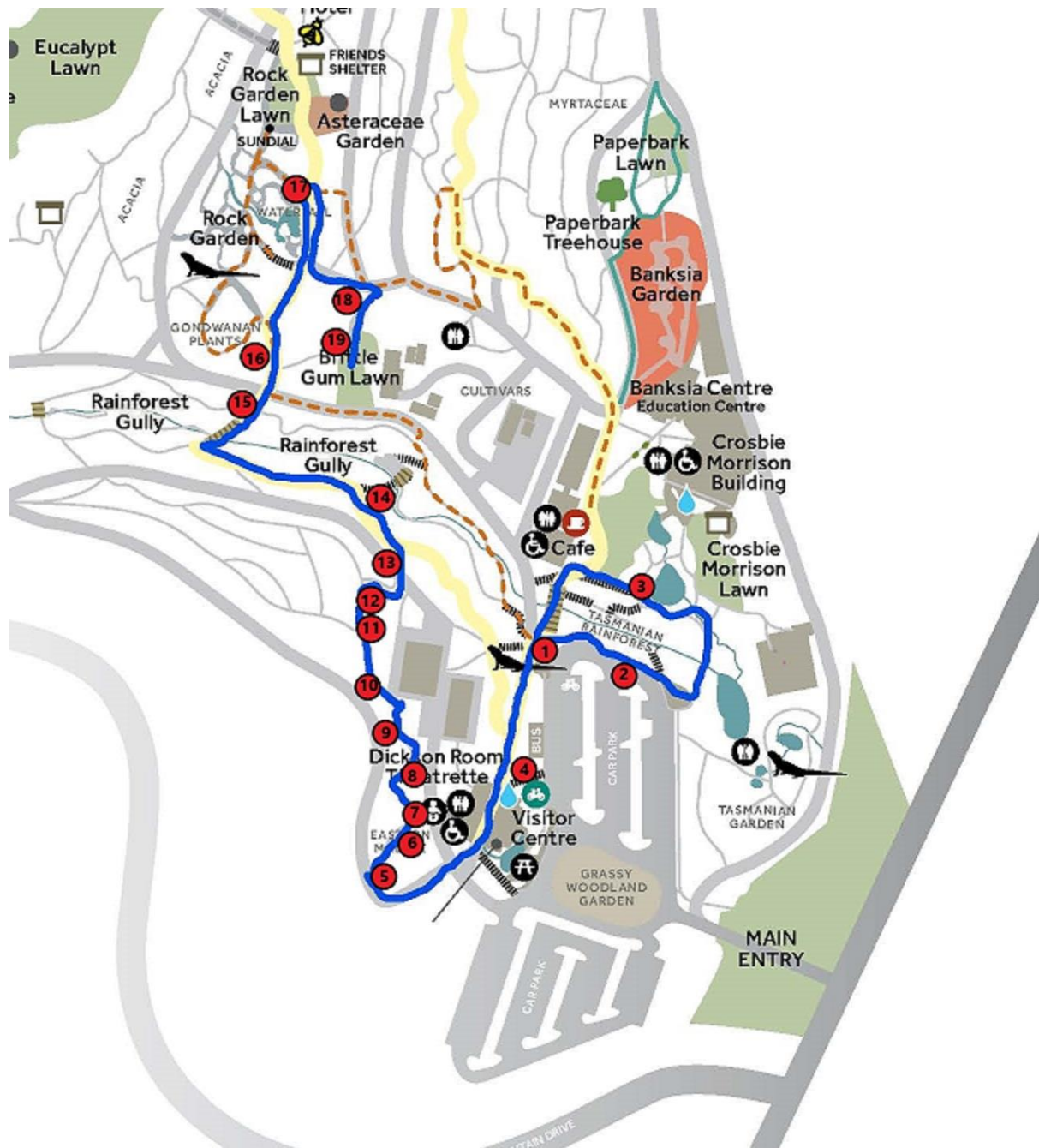
**Group 1** as above

**Group 2** take the route in reverse, i.e. head straight up to the Brittle gum lawn to *E. sideroxylon*. When you get to the eastern mallee you will be at the top entrance. There is no map there but you can use the map in the Appendix. There is an old lignotuber on display.

**Group 3** Ignore stops 1 and 2 and begin at stop 3. Exit towards the Grassy Woodlands, where there is a *E. mannifera* (see stop 18 notes), *E. pauciflora* (omit *E. lacrimans* later). *Angophora costata* (see stop 1 notes) can be viewed at this end of the carpark. Then walk up to top level of southern car park where there is a *Corymbia peltata* at the corner (as an example of a *Corymbia*). There is also a *E. camaldulensis* and *E. sideroxylon* (see stop 19 notes) in the car park. Then come back to the steps for stop 4 and follow the route as far as stop 17.

See Additional notes just before the Appendix.

## Route Map



## Plant Descriptions

**Stop 1. Opposite the clock and then move to S168, top row of northern car park on the rainforest gully end.**

**Theme:** Comparison of three genera within Eucalypts - *Eucalyptus*, *Corymbia* and *Angophora* – an example of each can be seen here.

### General

*Notes on genera:* The genus *Eucalyptus* was named by a French botanist in 1792 from a specimen collected in Bruny Island Tasmania in 1777. In 1797 a Spanish botanist recognised *Angophora* as a distinct genus because of the absence of a cap covering the developing flowers, the opposite mature leaves, the distinctly ribbed capsules and small greenish sepals. In 1995, Hill and Johnson of RBG, Sydney separated the genus *Corymbia*, which consists of two main groups—the Bloodwoods and the Ghost Gums.

Reference: *Wrigley and Fagg, (2010) Eucalypts: a celebration*

### ***Eucalyptus macrorhyncha* (Red stringybark)**

**Location:** On Banks Walk just opposite the clock

**Meaning:** Greek macro, large or long and rhynchos, nose, referring to the beak-shaped cap on the flower bud.

- This one is a *Eucalyptus*. There are about 760 species of *Eucalyptus*.
- An example of stringybark. It has rough, stringy, grey to reddish brown bark on the trunk and branches and lance-shaped alternate adult leaves. Stringybark isn't shed each year but builds up in layers. It is dark grey on the outside but the inner bark is red
- Red stringybark is a medium-sized tree that grows to 12–35m high and forms a lignotuber.
- It occurs on relatively dry, poor soils on ranges and tablelands of NSW, the ACT and Victoria, with a small, separate population near Clare in South Australia.
- Widespread and locally dominant, in dry sclerophyll forest or woodland
- The flower buds have a beaked-shaped cap (hence the name) and are arranged in groups of seven, nine or eleven. White flowers appear between February and July. Fruit are cup-shaped.
- Used for construction timber. *See photo in Appendix.*
- Bark was used as roofing for settler huts

### ***Corymbia ficifolia* (Red flowering gum, Albany redgum)**

**Location:** on both sides of Banks Walk in the middle.

**Meaning:** *Corymbia* is Latin for corymb, a flower cluster whose lower stalks are proportionally longer so that the flowers form a flat or slightly convex head. *Ficifolia* from Latin: *fici*, of figs, and *folium*, leaf, and refers to the leaf shape resembling that of the genus *Ficus*.

- Use the large buds to demonstrate the meaning of eucalyptus. *Eucalyptus* is derived from two Greek words 'eu' meaning well and 'kalyptos' meaning covered. An example of the third of the three genera that make up the eucalypt group. There are 93 *Corymbia* species.
- It is native to a very small area of south coastal Western Australia (measured in just tens of kilometres) to the east of Walpole (430 km Southeast of Perth), but is not considered under threat in the wild. Also found near Albany and in the Stirling Range.
- The trees grown for ornamental purposes are from hybrids between *C. ficifolia* and *C. ptychocarpa*, another WA tree from further north. Various cultivars have been developed and to ensure reliable flower colour, they are grafted. (It is believed that *Corymbia gummifera* and *C.intermedia* may be successfully used as stock.)
- Trees in the Gardens are grafted cultivars. 'Dwarf orange', 'Precious pearl', 'Wildfire' and 'Summer Red'.

- It grows well in sandy or loamy soils even those containing gravel and is often found on flats and on hillslopes. Mediterranean climate.
- This *Corymbia* is a bloodwood, so named because of its thick dark red sap.
- The bark is brown to grey-brown, rough to the small branches, fibrous, or less often tessellated on larger trees. Small, straggly tree, generally with a single trunk and with dense foliage and masses of flowers. Generally grows to about 3 – 10 m. Has a lignotuber. Large woody fruit is urn shaped – characteristic of *Corymbias*
- Often grown as a street tree as it will fit under power lines.

References: [Corymbia Cultivars \(anpsa.org.au\)](http://anpsa.org.au)

[Botanic Gardens and Parks Authority - Corymbia ficifolia \(bgpa.wa.gov.au\)](http://bgpa.wa.gov.au)

[Corymbia plant notes \(bgpa.wa.gov.au\)](http://bgpa.wa.gov.au)

### ***Angophora costata* (Smooth-barked apple, Sydney red gum)**

**Location:** along the top level of the car park

**Meaning:** Greek, 'angos' a goblet or vessel and 'phorus' meaning carrier or bearing, referring to the shape of the fruit; 'costata' a rib, refers to the ribbed fruit.

- There are 10 species of *Angophora*
- Flower buds don't have a cap (operculum) unlike *Eucalyptus* and *Corymbia*. The seed capsules are goblet-shaped, 2 cm long and as wide, often with fairly prominent ribs – a distinguishing feature from other eucalypts.
- *Angophora costata* was first collected by Joseph Banks and Daniel Solander in Botany Bay in 1770 and the common name Apple was applied to a number of eucalypt species in the early days of the colony.
- This is the only smooth-barked *Angophora* species, and the bark is shed in mid-summer, leaving distinctive pink- or orange-coloured trunks. Over the year, these fade to grey. The trunks are often stained with a reddish gum known as kino.
- It grows well on Hawkesbury sandstone as well as southeast Queensland and down the east coast of NSW. It occurs in open forests in coastal regions. It has an attractive appearance and is a well-known tree of the Sydney basin. It is a large, wide, spreading tree growing to a height of between 15m and 25m.
- The flowers are white and in large showy bunches. The individual flowers are about 2 cm wide with a large number of long stamens – fluffy appearance. The usual recorded flowering time is December or January.
- Its timber is rather brittle and is rarely used except for firewood.
- Many creatures use older trees for breeding and roosting, the nectar is a major source of food for insects and flying foxes, and birds eat the seeds.

### **Stop 2. S169 in car park adjacent to rainforest gully.**

**Theme:** Comparison of form and bark with *E. regnans* behind.

### ***Eucalyptus botryoides* (Southern mahogany, Bangalay, Bastard jarrah or Woolly butt)**

- Meaning: *botryoides* means 'like a bunch of grapes', referring to the clustered fruits
- The thick, fibrous, rough and flaky bark covers the trunk and larger branches. The bark on smaller branches is smooth and pale grey.
- This is a coastal south eastern Australia tree, common on sandy soils, south from Newcastle and the Hunter River to Victoria's Lakes Entrance in East Gippsland, generally near salt water.
- It grows predominantly on low nutrient sandy soils behind coastal sand dunes, or further inland in alluvial soils in valleys.
- In favourable conditions it can grow as a straight-trunked tree to 40 m. In exposed areas behind sand dunes, it is a lower spreading tree 6–12m. Can be a multi-trunked mallee in poor sandy soils. Some have been dated at 600 years old.
- It resprouts from a lignotuber or epicormic buds after bushfire.

- The white flowers appear in summer and autumn in clusters of 6 to 11
- The hard, durable wood has been used for panelling and flooring.
- A useful honey species

### Stop 3. Next to the information sign near the Casuarina pond.

**Theme:** The tallest and the smallest eucalypts.

#### ***Eucalyptus regnans* (Mountain ash)**

**NB** Can also be viewed from the middle of the bridge below the Tasmanian rainforest.

**Meaning:** Latin *regnans*, ruling, referring to the height and dominance of the trees

- *E. regnans* is the tallest tree in Australia and the tallest flowering plant in the world. The tallest living *E. regnans*, in Tas, is over 100m tall. Taller trees in US (Californian redwoods) are conifers, non-flowering plants. Tallest tree in southern hemisphere. This specimen is about 30 m tall.
- A living tree 'Centurion' in southern Tas, was recorded at 100.5m in November 2018, using laser technology, having grown 80 cm in ten years. During the summer 2019 bushfires in the Huon Valley, the Centurion was damaged. Efforts were made to protect it, but the fire burnt the base of the tree and the surrounding understorey. However, it appears to be OK. There were four *E. regnans* in Vic that were taller than 90 m and they were destroyed in the 2009 bushfires.
- There are unverifiable reports from Vic of much taller trees varying from 128 - 160m in the past.
- *E. regnans* can live for 400 years so existing trees may reach that height in future.
- There is a competitor for the title of tallest flowing plant, Yellow meranti (*Shorea faguiana*) from Borneo, the Malay Peninsula and Thailand. One of these in the Danum Valley in Sabah on Borneo has been measured at 100.7m.
- This tree is between 25m and 30m tall
- *E. regnans* does not have a lignotuber but regenerates from seed. The seeds remain in the canopy and are released sometime after the fire when the branchlets die. Seeds very tiny and harvested by ants so there is not much on the ground. Short viability. Smoke from the fire assists the germination of the seeds. Many new trees will germinate in the ash after a fire when there is little competition from other plants. As they mature, they thin out. However, the new trees will not produce viable seed until they are at least eleven years old. If there is another major fire event within that time, the forest may never recover.
- *E. regnans* is susceptible to the soil fungus *Armillaria*. The ANBG has been inoculating the soil around the tree and throughout the gully with various products for a few years. The products contain *Trichoderma* (fungi) species which are proven to consume *Armillaria* as well as Mycorrhizal products which is hoped will colonise the roots and out compete *Armillaria*. These are being applied to the soil around the base of the *E. regnans* and as a barrier right across the gully between it and the closest known *Armillaria* fungus. No soil has been moved from the base of the tree but an inoculated mulch has been added to its base.
- Grows in Vic and Tas, in cool, mountainous areas that receive over 1,000 mm of rain per year.
- Big, old trees support many other species of wildlife - sometimes called 'nature's high-rises' and support birds, mammals, reptiles, insects as well as fungus and epiphyte plants. Mountain ash forests are the main habitat for a number of endangered species such as the Leadbeater's possum.
- It is valued for its timber (Tassie oak) and so is extensively logged. Highly regarded by builders, furniture makers and architects. Exported to Japan as woodchips. Harvesting is controversial.
- A study in 2009 identified that mountain ash forests in Vic's Central Highlands are the best in the world at locking up carbon.

#### ***Eucalyptus vernicosa* (Varnished gum)**

**Location:** In a pipe next to the information sign.

**Meaning:** Latin *vernicosus*, varnished, referring to the surface appearance of the leaves.

- Smallest of all the eucalypts.
- A very rare dwarf *Eucalyptus* endemic to alpine regions in the west and southwest of Tasmania, including Cradle Mountain.
- It is exceptionally hardy and one of the most extreme of all eucalypts. Its habitat typically has high average rainfall varying from 1000mm to 2500mm per year, and very cold winters with continuous frosts and snow for several months. The harsh climate and nutritiously poor soils probably explain the small size and tough leaves. It usually grows above the tree line and can be a dominant plant in the heath communities.
- It can be almost prostrate, a shrub to about 1m high, or a small mallee to about 4m high.
- Leaves are small, oval-shaped and a glossy dark green with no difference between juvenile and adult foliage.
- In the early 20th century *E. vernicosa* was harvested for its oil, which was believed to have medicinal properties.

#### Stop 4 Part way down the steps between the VIC and the Banks statue.

**Theme a:** ANBG work on maintaining and preserving threatened species

##### ***Eucalyptus imlayensis* (Imlay mallee)**

**Location:** On the left of the steps

- A very rare and endangered eucalypt and an example of the crucial role the ANBG plays in conservation
- The only known population of *E. imlayensis* occurs on Mt Imlay, in Mt Imlay National Park, southeast NSW, where it grows on the eastern face of the mountain just below the summit at 850 metres altitude. There are no young trees in the population. The entire population consists of 60-80 mature individuals, a majority of which are confined to an area of about 1 ha.
- Restricted species distribution and decline in the number and health of individual plants, due to a lack of seedling recruitment and infrequent seed production, has led to *E. imlayensis* being listed as Endangered under the EPBC Act and as Critically Endangered in NSW. Insect attack by leaf-eating scales further threatens the population.
- The entire wild population was burnt during the Black Summer fire of January 2020. There are only two known unburnt trees left, both growing in the ANBG. The National Seed Bank holds a small amount of seed. One strategy to save the endangered mallee will be grafting cuttings onto rootstock from other closely related *Eucalyptus* species.
- It is possible that the wild trees will regrow from their lignotuber.
- Typical 'mallee' form with multiple stems originating from a lignotuber, forming a dense canopy of thick, green and glossy leaves. Grows to about 7m. Stems are characterised by smooth bark shedding in ribbons. Freshly exposed bark shows an attractive green colour which subsequently weathers through orange-brown to grey. In the wild small, white flowers are produced during summer followed by fruiting in autumn.
- The terrain is steep and rocky with a ground layer of mosses. Underneath the open eucalypt canopy the vegetation is dominated by closed heathland. Grows in mossy shrubland dominated by tea tree on steep quartzite outcrops with poor soils that are in nutrient, based from sandstone and conglomerate rocks.

**Theme b:** An interesting bark form

##### ***Eucalyptus caesia* (Gungurru, Silver princess)**

**Location:** On the right side of the path

**Meaning:** Latin caesia means light grey, referring to the greyish appearance of the buds, fruit and stems.

- This striking mallee, that grows up to 14 metres, has attractive deep brown bark which peels in narrow, curling strips to reveal a pale undersurface. This type of bark is known as 'minni ritchi' and is a feature of a small group of eucalypts and some acacias in Western Australia.



- Grows in crevices at the base of granite outcrops in a restricted relatively dry area in south Western Australia
- Has deep green foliage with a whitish bloom. The flowers are large (up to 50 mm in diameter) and normally pink to red in colour but white flowered plants are known. Flowering is very conspicuous and occurs in winter and spring. Flowers are followed by large, urn-shaped 'gumnuts' about 30 mm in diameter. The weight of the old fruits may cause the branches to bend excessively and lead to damage.
- Very attractive garden species with contrasting red and pale grey branches, drooping form and attractive flowers and fruit. Suitable for a dry climate.

### Stop 5. Entrance to Eastern Mallee and a good example of a visible lignotuber.

#### Theme: the meaning of mallee and lignotubers

##### General

The name 'mallee' is of Aboriginal origin and is used generically to refer to a particular group of eucalypt species, to the vegetation formation in which they occur, and to the region in western Victoria, eastern South Australia and south western NSW that was predominantly covered by this vegetation. (*refer to ANBG map*) Mallee vegetation comprises an open layer of shrubs and low trees and an understorey that is strongly influenced by rainfall, soil types and fire regime. This type of vegetation occurs in low rainfall areas (225-500 mm p.a.), occurring predominantly in winter. Soil types range from deep sand to shallow and rocky. (Water drains rapidly.) Mallee woodlands are among the most fire prone of all plant communities in semi-arid and arid zones. It is a uniquely Australian ecological system.

Reference: [NVIS Fact sheet MVG 14 – Mallee woodlands and shrublands \(awe.gov.au\)](http://www.awe.gov.au)

#### ***Eucalyptus goniocalyx* (Long-leaved Box, Bundy, Olive-barked box)**

**Location:** At entrance to Eastern Mallee section.

**Meaning:** Greek *gonia* meaning 'angle' and *calyx*, referring to the angles on the fruit.

- Example of a mallee form with a clearly visible lignotuber
- Swollen woody base of the tree is a lignotuber. It stores water, carbohydrate and other nutrients that allow the plant – once it's mature – to survive long periods without rain, to recover from fire or other stress because if the stems and leaves are destroyed, the plant can regrow from the lignotuber.
- Mallee lignotubers are often referred to as roots but that's not correct. Mallees do have roots as well and these are very deep and extensive and enable the plants to extract what moisture and nutrients are available in the soil. Lignotubers are considered good firewood.
- An example of box bark.
- Box bark - rough, fibrous or flaky bark. The dead flaky bark is usually retained on the trunk for a period before falling, leaving patches of paler bark. Box bark varies considerably between species.
- Long-leaved Box is a small to medium-sized tree (to about 15m) that is endemic to southeastern Australia. Grows in woodland, usually on hilly, rocky ridges and is widespread south of Mudgee in New South Wales, including in the ACT and through central Victoria. There are also scattered populations in the south-east of South Australia.
- Mallee form, but not restricted to the mallee region, similar to a number of other mallees
- The leaves of this species are distilled for the production of eucalyptus oil.

### Stop 6. A short way into the eastern mallee on the right.

#### Theme: Scribbly gums

#### ***Eucalyptus rossii* (Scribbly gum)**

**Location:** Also at numerous locations throughout ANBG.

*Meaning: rossii* honours science teacher William John Ross (1850-1914), a member of the Clunies Ross family, one of whose sons was a distinguished scientist and administrator at CSIRO of which he became Chairman in 1949 (Ian Clunies Ross).

- About 20 eucalypts have scribble markings and this is one of the small number which are called scribbly gums.
- Best known for the scribbles on the trunk, caused by a moth called *Ogmograptis scribula*. The genus name, *Ogmograptis*, translates to 'the writer of the Ogam script', because the patterns (or 'scribbles') left on tree trunks by its mining resembled this ancient Celtic script. The insect lays eggs within layers of bark and when the larvae hatch they burrow into the bark. As the caterpillar bores into the tree, the tree responds by producing a kind of scar tissue in an attempt to heal itself – and this new tissue is full of rich nutrients for the caterpillar to live on. This scribble has the form of a zigzag gallery in the surface of the bark. The mine consists of a sinuous, zigzag gallery that widens gradually as the larva grows. When the larva is about half grown, it reverses course and mines back parallel to the old mine. The scribbles are revealed when the covering layer of bark is shed
- May Gibb's children's story *Snugglypot and Cuddlepie* refers to the scribbles as 'fairy writing'.
- If you are having trouble telling the difference between a scribbly gum and a brittle gum in the bush, remember that *Eucalyptus Rossii* has wrinkles in its armpits
- Endemic to ACT and NSW. It has a scattered distribution over the NSW tablelands, western slopes and the central coast and is found from Tenterfield in the north down to Bombala in the south. The trees grow well in sandy and stony well-drained soils, usually on slopes. They are part of open dry sclerophyll woodland communities. It grows in areas of moderate temperature and rainfall of 600-1000mm per year, but will tolerate frosts.
- Typically grows to around 15 to 20 m. It normally has a solitary straight trunk and an open moderately dense crown that reaches a width of about 9 m. The smooth yellowish bark sheds throughout the year in patches, giving a mottled grey to white aspect. Small white flowers in clusters between December and February, followed by gum nuts or fruits that are hemispherical about 4 to 5 mm long and 5 to 6 mm in across.

### Stop 7 Eastern mallee after first bend, one on right and one on left.

**Theme:** Uses of blue mallee

#### ***Eucalyptus polybractea* (Blue mallee, blue-leaved mallee)**

- Majority – but not all - mallees are found in semi-arid areas, which are referred to as 'The Mallee' in western Vic, eastern SA, south western NSW and southern WA. See General comments at stop 4. **See map of original and remaining mallee areas in Appendix.**
- Much of this land, particularly in southern WA has become unproductive due to salination. Blue Mallee is now being planted extensively to help keep the water table down and to provide income from oil production. After the branches and leaves have been harvested, the trees can regenerate from the lignotuber. *E. polybractea* has the highest content of good quality oil in any eucalypt in Australia and is the preferred species for eucalyptus oil production in Australia. The oil is primarily used medicinally and for flavouring.
- Trees in commercial plantations are cut to the ground every two years and the new growth of leaves sprouting from a lignotuber is harvested by machine. Oil is extracted from them by distillation. Blue mallee has not grown well as an exotic overseas and other species, such as Tasmanian Blue Gum (*Eucalyptus globulus*), are used for eucalyptus oil production in other countries.
- Blue mallee trees also store large amounts of carbon in their extensive root system and when the top of the tree is harvested or damaged by fire, most of the carbon remains in the roots – additional farm income from carbon offsets. This is the most commonly planted tree in Australia as part of carbon offset programs. Primarily, because the blue-leaved mallee can grow effectively in drought conditions and can store a great deal of carbon quickly.

- Despite the poor soil and low rainfall, mallee areas support a diverse range of flora and fauna including reptiles, small mammals and birds. Parrots and cockatoos are common residents in the mallee as well as the mallee fowl, a fascinating bird the size of a large hen which builds huge mounds of sand and litter to incubate its eggs. Widespread clearing of mallee shrublands for agriculture has significantly reduced the habitat for those creatures.

### Stop 8. Eastern Mallee just before and just past the seat, on the right.

**Theme:** A source of water for indigenous people

#### ***Eucalyptus socialis* (Christmas mallee or red mallee)**

*Meaning:* Latin *socialis*, friendly, referring to its occurrence with several other species.

- The name 'mallee' is of Indigenous origin and means 'water' or 'water tree'. Water can be harvested from large roots, as observed by explorer Ernest Giles in 1889,
 

*The eucalypts of the mallee species thrive in deserts and droughts, but contain water in their roots which only the native inhabitants of the country can discover... A very long root such as I have mentioned might give nearly a bucketful of water; but woe to the white man who fancies he can get water out of the mallee... it is an Aboriginal art at any time or place to find it.*
- The way to obtain water was to dig a trench around the base of a tree, locating the roots which ran out from just under the surface of the soil. The roots of the tree were then removed, cut into pieces up to a metre long and held or stood them up so the water drained out. [See appendix.](#)
- Flowers throughout much of the year, but particularly in December – hence, Christmas mallee.
- Mallee to 10 m tall. Forming a lignotuber.
- One of the most widespread mallee species in dry interior of Australia. In southern Australia, also in the Great Victoria Desert and in numerous other desert sites north-west to the Pilbara of Western Australia, north and north-east to Central Australia and in central Queensland.
- It usually has rough, grey bark on the trunk and smooth dull grey bark that is shed in long ribbons above.
- Flowering occurs in most months and the flowers are white to pale yellow. The fruit is a woody urn-shaped to shortened spherical capsule 4–9 mm long and 4–8 mm wide.
- In wheatbelt regions it is beneficial as the tree will reduce salinity, give shade to stock, act as a windbreak and reduce erosion.
- Indigenous Australians used the tree for making bowls and medicines from the leaves, shields and spears from the bark as well as a source of water.

### Stop 9. At end of the Eastern mallee, past the steps, on the left.

**Theme:** A eucalypt that maintains juvenile leaves in the crown.

#### ***Eucalyptus gillii* (Curly mallee, Arkaroola mallee or Silver mallee)**

*Meaning:* *gillii* after Walter Gill (1851–1929). In 1884 Walter Gill joined the South Australian government services as an inspector of Government Lands. Two years later he became Chief Forester at Wirrabara and in 1890 was appointed Conservator of Forests in South Australia, a position he held until 1923. He is credited with the first plantings of *Pinus radiata* in the State of South Australia. During the period Gill was Conservator, he collected extensively whilst examining land potential in the state.

- This species occurs in the northern Flinders Ranges of South Australia extending east into the Barrier Ranges north of Broken Hill and Fowlers Gap area of New South Wales. It grows in open mallee in gullies and undulating hills, sometimes in pure stands.
- Juvenile leaves of eucalypts are usually quite different to the mature leaves. They are often greyish in colour, and can be more rounded and opposite rather than alternate. The juvenile leaves can be found on young plants (to about a metre high), on coppice growth, or new shoots growing on the trunk. The last is common after a fire, or if the tree is stressed.

- The juvenile leaves are usually superseded by the adult leaves early in the tree's development but, in a few cases, including this one, the juvenile leaves are maintained into the adult stage. Adult leaves may occur at the ends of the branches. Others are *E. cinerea* (Argyle apple) and Tasmanian blue gum (*E. globulus*).
- *E. gillii* is closely related to *E. socialis* (red mallee, previous plant) but differs in that *E. gillii* retains juvenile foliage in the crown of the tree. Where they coexist, the two species often hybridise. See [PlantNET - FloraOnline \(nsw.gov.au\)](http://PlantNET - FloraOnline (nsw.gov.au)) and [Eucalyptus gillii \(anpsa.org.au\)](http://Eucalyptus gillii (anpsa.org.au))
- *Eucalyptus gillii* is a small tree, usually of 'mallee' habit (multi-trunks arising from a lignotuber) but occasionally growing on a single trunk. It reaches about 5-7 metres in height. The bark is greyish near the base of the trunks but is smooth and cream/grey elsewhere. The white flowers occur in clusters in the leaf axils in spring and early summer.

### Stop 10. At the start of the track between the eastern mallee and the rainforest.

Theme: Food for koalas

***Eucalyptus dwyeri* (Dwyer's Red Gum)** on right at start of track.

Meaning: honours Joseph Wilfred Dwyer (1869-1939) priest and plant collector.

- A mallee with white flowers to 10m and typical lance-shaped leaves, smooth white to grey or grey-brown bark, shedding in plates or flakes. Locally but sporadic mallee shrublands in western slopes and plains of NSW, extending into Vic and Qld.
- Koalas and koala habitat are threatened by a variety of factors including habitat clearing and fragmentation (due to agriculture, increased mining of coal and coal-seam gas, as well as rural residential development), climate change, drought, heatwaves, bushfires, vehicle strike, disease, tree dieback, absence of permanent water.
- Habitat restoration aims to reduce threats to koalas, increase habitat and help conserve koala populations. Trees preferred by koalas for food, shelter, rest and socialising vary with location. This particular species is one of the high use trees preferred by koalas in the northwest slopes of NSW, i.e. Coonamble, Dubbo Regional, Gilgandra, Gunnedah, Gwydir, Moree Plains, Narrabri, Warrumbungle. See [Koala habitat | NSW Environment, Energy and Science](#) and [Revegetating Koala Habitat - Western Slopes and Plains Koala Management Area | NSW Environment, Energy and Science](#)

### Stop 11 on the track between the eastern mallee and the rainforest.

Theme: Compare the bark and foliage of several different eucalypts.

***Eucalyptus behriana* (Broad-leaved mallee box)** on right.

Meaning: honours Herman Hans Behr (1818-1904) German doctor and plant collector.

It is a mallee with white flowers to 12 m from NSW, Vic, SA. Its bark is greenish and peels off in ribbons. Several trees of this species here.

***Eucalyptus populnea* (Poplar Box)** on left.

Meaning: *populnea* = poplar-like, referring to the leaves, that are heart-shaped.

- This tree, of up to 20m, has box bark that is retained into the small branches.
- This tree was and is common in the ecologies from pre-mining landscapes in the coal basins of Qld. As with many box species it is not generous with seed and this conflicts with the demand for its seed in coal mine rehabilitation work. Also found on the western slopes of NSW.
- Another koala food tree in the NW slopes of NSW.

### Stop 12 Further along the track on right

Theme: Continuing different barks theme; here two examples of stringy barks

***Eucalyptus planchoniana* (Needle bark stringybark, bastard tallow wood)**

- Meaning: Honours Jules Emile Planchon (1823-88) Assistant Herbarium Curator, Kew, UK.

- In a group of four trees, with ochre-coloured bark, **typically grows to a height of 20–25 m and forms a lignotuber**. Found in open forests on Moreton Island, Stradbroke Island, NE NSW and SE Qld.

### ***Eucalyptus macrorhynca* (Red stringybark)**

See notes at stop 1.

### **Stop 13 On left as approaching steps down to bitumen. There is also a stump of a large *E. fastigata* near the entrance to the rainforest**

**Theme:** Management of trees in the ANBG, also ACT trees.

### ***Eucalyptus fastigata* (Brown Barrel)**

- *Meaning:* Fastigatus means high or exalted, referring to the habit of the tree.
- A younger tree before descending the steps to the road but the stump of one that was cut down a few years ago gives an idea of size. It was cut down because it, along with several other eucalypts (*E. viminalis* and *E. nitens*) was in trouble in the rainforest. The rainforest soil is poor with erosion deposits above sticky clay and some Eucalypts had fungal infections from the dampness. In 2018, the estimated cost of removing a tree was \$10,000.
- Grows in the ACT in moist forests of gullies and cooler south and east facing slopes. It also occurs on heavy, red or chocolate-coloured soils on well-watered sites of the eastern margins of the Northern Tablelands of NSW, south through the Blue Mountains, e.g Mt Tomah Botanic Gardens, extensively on the eastern ranges and escarpment of the Southern Tablelands, e.g. Illawarra Fly treetop walk, Brindabella Range, Bombala, and just into eastern Victoria, e.g. Errinundra Plateau.

#### *References:*

Field Guide to the Native Trees of the ACT, National Parks Association of the ACT Inc.  
Rainforest Walk led by Toby Gulson, June 2018

### **Stop 14 Rainforest next to steps going down to lower level**

**Theme:** Nexus between eucalypts and rainforests

### ***Eucalyptus grandis* (Flooded gum, Rose gum)**

- *Meaning:* grandis = great, large, referring to its size
- This is a straight and tall tree, usually reaching 50 m but sometimes up to 75 m. The bole is straight for 2/3 to ¾ the height of the tree. It is found in wet forests from west of Daintree in Queensland to Newcastle in New South Wales, fringing rainforests.
- *E. grandis* is not a rain forest tree but they grow near rainforests. They were among the first plantings when the rain forest gully was developed, because they are fast-growing. Once they were established, they provided shelter for more frost tender rainforest species.
- Eucalypts that drop seed after a fire can grow quickly whereas rainforest trees are killed by fire. If there are no fires, the rainforest will take over the area. On the other hand, if fires are too often and too fierce, eucalypts will take over the rain forest.
- An important timber tree, the pinkish timber is used for general construction, joinery, plywood, panelling, boat building and flooring. Massive planting programs in South Africa and Brazil where hybrids with River Red Gum have been developed.

Reference: *Wrigley and Fagg, (2010) Eucalypts: a celebration*

### **Stop 15 At the end of the Brisbane Bridge, on the left**

### ***Angophora floribunda* (Rough-barked apple)**

*Meaning:* Angophora (see stop 1) Floribunda from the Latin meaning profuse flowering.

A tree to 30 m with cream or white flowers, it grows in SE Qld from south of Rolleston and east of Roma, throughout eastern NSW apart from the north coast, extends just into the Murrumbidgee area in Vic. Also disjunct occurrences in far north Qld. This and three other Angophoras (*A. bakeri*, *A. inopinata*, *A. melanoxylon*) have rough bark and develop true adult leaves in the mature crown. It flowers in Dec, Jan, Feb.

*Notes on genus:* see stop 1.

Reference: [Angophora floribunda \(lucidcentral.org\)](http://lucidcentral.org)

### Stop 16 At main path 105 on the left, just before the Wollemi pines

#### ***Eucalyptus pilularis* (Blackbutt)**

- *Meaning:* Latin *pilularis* means small pill, referring to the gumnuts
- A tall forest tree that may grow to 70 m and occurs in coastal areas from Eden in southern NSW to south-east Qld. It is one of the most important timber trees in eastern Australia, used for house construction, flooring, plywood and veneer. About 40% of plantation timber in NSW is Blackbutt. It has persistent bark on the lower part of the trunk and smooth white bark above, which sheds in long ribbons.
- This tree along with *Angophora costata* and *E. mannifera* is particularly dangerous for dropping branches. These have been nicknamed 'widow makers'.
- There is a well-known example of this tree in the Middle Brother NP, Kendall, NSW, called Bird Tree. It is 69m tall and has a diameter of 3.6m. Another was The Explorer's Tree at Katoomba NSW, which nowadays is a dead stump under a shelter. When Blaxland, Lawson and Wentworth crossed the Blue Mountains in 1813, Lawson carved his initials into this tree.

Reference: *Wrigley and Fagg, (2010) Eucalypts: a celebration*

### Stop 17 at the bottom of the Rock Garden near the pool

**Theme:** Some extraordinary Eucalypts

#### ***Eucalyptus lacrimans* (Weeping Snow Gum)**

*Location:* Look up above the pool to see two of these.

- *Meaning:* *lacrimans* meaning weeping, referring to the pendulous branches.
- This slender tree that grows to 12 metres occurs in subalpine areas around Kiandra, NSW. It was described in 1991. The smooth white bark is marked with cream and grey patches while its branches and gumnuts have a greyish bloom. The leaves have side veins that are parallel to midrib. The shape of the tree is very different to that of *E. pauciflora* which also has parallel veins.
- There are also some *Eucalyptus pauciflora subsp. debeuzevillei* (Jouname Snow Gum) in the rock garden. These grow on Mt Ginini and Mt Gingera.
- Although not labelled 'Scribbly gum', it is often found with scribbles, possibly made by other species of moths.

References: *Wrigley and Fagg, (2010) Eucalypts: a celebration*

John Turnbull, volunteer guide

#### ***Eucalyptus macrocarpa* (Mottlecah)**

*Location:* near the steps on the northern side of the pool

- *Meaning:* *macrocarpa* meaning large fruit.
- This is a sprawling mallee, with a lignotuber, reaching 3 metres, and grows in dry sand plains north and east of Perth, WA. It has the biggest flowers, which may be up to 10 cm in

diameter, and the largest gumnuts, up to 9 cm across, of any eucalypt. The heart-shaped leaves clasp the stems and the red stalkless flowers are borne singly in the leaf axils.

- The silver foliage, large gumnuts and striking flowers make it popular in floral arrangements.
- A garden favourite because of the flowers and low bush, it grows best in semi-arid or temperate regions with a dry summer.

References: *Wrigley and Fagg, (2010) Eucalypts: a celebration*

[Eucalyptus macrocarpa \(anpsa.org.au\)](http://anpsa.org.au)

### ***Eucalyptus scoparia* (Wallangarra White Gum)**

*Meaning:* scoparius means broom-like but the allusion is obscure

- This tree from a few granite rocky mountains in the vicinity of Wallangarra near the NSW Qld border grows to about 15m in the wild and has a lignotuber. Here it appears to have benefitted from accessing water from the pond.
- It is frequently grown in SE Australia as an ornamental tree in municipal and domestic gardens. It is reliable in areas of moderate rainfall and frosty winters.
- It is listed as vulnerable by the Commonwealth Govt.

Reference: [Eucalyptus scoparia \(lucidcentral.org\)](http://lucidcentral.org)

## **Stop 18 at entrance to Brittle Gum Lawn**

**Theme:** ACT tree, fire

### ***Eucalyptus mannifera* (Brittle gum)**

- *Meaning:* *fera* means bearing, so bearing manna, referring to the powdery white bark.
- Sometimes this tree is referred to as "Red Spotted Gum" because the outer bark often turns red before it is shed in late summer.
- There are 20 *Eucalyptus* relatively common in ACT and another four fairly rare (*E. sieberi*, *E. cinerea*, *E. perriniana* and *E. aggregata*). Some common ACT species include *E. mannifera*, *E. rossii*, *E. macrorhyncha*, *E. viminalis*, *E. melliodora*. There is one *Corymbia* species at Jervis Bay.
- When Australia separated from Gondwana, it moved north and the climate became hotter and drier. Some of the Myrtaceae adapted to the new climate. Observe the way that the leaves are positioned relative to the sun.
- The tough leaves are typical of trees grown in dry sclerophyll forests. Hold a leaf up to the light and observe the oil glands or crush a leaf and smell the eucalyptus oil – an opportunity to talk about bush fires.
- During a fire, the oil in *Eucalyptus* leaves volatilises, i.e. becomes volatile, and forms a ball which catches fire, hence a fireball. During a fire, *Eucalyptus* trees sometimes explode. This is not because of oil in the leaves but because the water in the trunk superheats.
- The wood is very brittle and not considered useful for timber. It has a reputation for dropping branches and causing harm or damage – sometimes referred to as 'widow makers'.
- Tree holes eaten out by fungi or termites and exposed by broken limbs or fire become important nesting sites. In SE Australia 17% of bird, 42% of mammals and 28% of reptiles use nesting holes. Small holes used by tiny mammals require 100 years to eventuate. Medium holes for parrots 200 years. Large holes for possums, cockatoos and owls even longer. Even holes in trees that have fallen into rivers provide shelter for aquatic animals.

*References:* Field Guide to the Native Trees of the ACT which provides excellent help with identifying the species. Fire information from John Turnbull, volunteer guide.

### Stop 19 Top edge of Brittle Gum Lawn

**Theme:** Ironbark

#### ***Eucalyptus sideroxylon* (Red ironbark, Mugga ironbark)**

- Meaning: Greek *sidero* = iron, *xylon* = wood, referring to the hard wood. (NB compare this meaning with another ironbark, *E. siderophloia*, in which *siderophloia* means iron bark referring to the hard bark)
- This tree grows to 25 m on the western slopes of NSW, and extending into NE Vic and SE QLD.
- Ironbark is a common name of a number of species that have dark, deeply furrowed bark. There are two other species also called red ironbark: *Eucalyptus tricarpa* and *Eucalyptus crebra*, all three having dark red timber.
- Instead of being shed annually as in many of the other species of *Eucalyptus*, the dead bark accumulates on the trees, forming fissures. It becomes rough after drying out and becomes impregnated with kino (red gum), a dark red sap exuded by the tree. What we now refer to as Eucalypts were originally called gum trees, because of the kino that some of them exude.
- *William Dampier visited NW Australia in 1688. He commented on trees which 'exude the resin that distils out of the knots or cracks of dragon trees. In 1770 Joseph Banks described a large tree yielded a blood red resin or rather gum-resin very nearly resembling Sanguis draconis. This was probably Eucalyptus crebra (AFHS Newsletter).*
- This is a striking tree with black furrowed bark. It is used as a street tree in Canberra and also in San Francisco. The flowers are usually white but can be pink or red. Usually the ones chosen as street trees have pink flowers.
- This species produces premium honey but is of no value as a pollen source for bees, being favoured for its nectar. Douglas Summerville uses a star rating and gives this species five stars. He gives four stars to *E. globulus*, *E. viminalis* and *E. coolabah*.
- Ironbark timber is exceptionally hard. 'New Chums' were given an axe and asked to chop up Ironbark timber. Dampier's crew reported that Ironbark would blunt your axe very quickly.

*References:*

- *Australian Forest History Society (AFHS) Newsletter #36, December 2003*
- Douglas Summerville (2019) *Honey and Pollen Flora of South Eastern Australia*, NSW Dept Primary Industries
- *Wrigley and Fagg, (2010) Eucalypts: a celebration*

### Additional Notes for alternative route at beginning

#### ***Corymbia peltata* (Yellowjacket, Rustyjacket)**

Example of *Corymbia* – see notes for *Corymbia ficifolia* (stop 1)

*Meaning:* from the Latin 'peltatus' meaning 'peltate', referring to the attachment of the petiole to the leaf blade. ('Peltate' = shaped like a shield; specifically : having the stem or support attached to the lower surface instead of at the base or margin)

<https://www.merriam-webster.com/dictionary/peltate>.

- Bark unusual tessellated to finely flaky, yellow-brown to yellow-grey with a hint of orange. *Corymbia peltata* is fully rough-barked on the trunk and branches. Flowers in February.



- A small to moderately-sized tree to 10m rarely 20m endemic to northern Queensland distributed from the Newcastle Range south-east to the Hervey Range near Townsville, and south to the Burra Range east of Hughenden. It is a component of tropical dry sclerophyll woodlands and forest, preferring sandstone slopes and ridges with shallow sandy soils. Forms a lignotuber
- Fruits urn-shaped to barrel-shaped and leaves are rough and scaly. It mostly has juvenile leaves and rarely develops adult leaves.

[https://apps.lucidcentral.org/euclid/text/entities/corymbia\\_peltata.htm](https://apps.lucidcentral.org/euclid/text/entities/corymbia_peltata.htm)

### ***Eucalyptus pauciflora* (Snow gum, White sallee)**

*Meaning:* from the Latin, 'pauci', meaning 'few' and 'florus' meaning 'flowered'

- Despite its name it flowers profusely from October to January.
- Branches and leaves hang down to shed snow and ice. Leaves have parallel veins.
- During the last drought (2019) Snow gums in a substantial area within Kosciuszko National Park, as well as Namadgi National Park and Victoria's Alpine National Park, were affected by a widespread dieback event. Scientists found the damage was caused by infestations of *Phoracantha* beetles, which tunnel in and feed within the host trees. The beetles occur naturally but drought-stressed trees are more vulnerable to attack by the beetles. When the bark is dry the larvae can penetrate the bark, whereas if the well hydrated, the can't bore through it.'  
<https://the-riotact.com/why-are-the-high-countrys-iconic-snow-gums-dying/329459>
- Snow gum is amongst the hardiest of all eucalyptus species, surviving the severe winter temperatures of the Australian Alps. It is widespread and locally common in woodland in flat, cold sites above 700 m altitude. It is the most cold-tolerant species of eucalyptus, surviving temperatures down to -23°C and year-round frosts.
- It occurs primarily in the Snowy Mountains, along the tablelands in southern NSW through Victoria to Tasmania. Also in Canberra in original grassy plains, and in the Aranda bushland.
- A small to medium spreading tree or mallee. It usually has a somewhat crooked trunk and many branches with distinctive beautiful smooth green, grey and cream bark that is shed in ribbons and sometimes has insect scribbles. Only grows to about 30 metres tall. It regenerates from seed, by epicormic shoots below the bark, and from lignotubers.

### ***Eucalyptus camaldulensis* (River Red Gum)**

*Meaning:* Named after a garden near the Camaldoli monastery in Naples. Frederick Dehnhardt, who first described and named the species, was chief gardener at the estate.

- Most widely distributed of all the eucalypts in Australia, except Tasmania and central deserts.
- Grows along river courses and in areas that are flooded regularly. Can survive up to 9 months of total inundation
- Barmah Forest beside the Murray River on the Victoria–NSW border is the biggest native forest of River Red Gums in the world. Some of the trees are over 40 m high and 500 years old. Important habitat for many animals.
- Roots growing in the water offer basement living for small fish and frogs. Exposed roots provide perches for cormorants and other birds as they wait for fish to appear. Leaves are homes for aphids, lerps, saw-flies and numerous caterpillars. Bark is a hideaway for ladybirds, beetles, insects and lizards. Rosellas, cockatoos, galahs, owls and kookaburras nest in hollows, which also make good hives for native bees to store honey. Flocks of Little Corellas rest on branches. And kites and eagles nest in the highest branches.
- Drop branches during times of drought. There are many signs in some parts of the Flinders

Ranges National Park warning people not to stop under the river red gums

- Often depicted by Hans Heysen.
- Regarded as invasive in many countries
- The sap of River Red Gum was used by the Yarra people in Vic as an ointment for burns and other skin problems. A gargle for sore throats was made by mixing sap with water. Sap was also used as a fixative to mix with ochres for paintings.

***Eucalyptus viridis* (Green mallee, Green mallee box)**

*Meaning:* Latin *viridis*, green, referring to the leaves.

- **Bark** rough, dark grey and box-type on lower stems, smooth above, grey-brown and coppery to bronze-grey and pink-grey, or smooth throughout.
- A glossy green-leaved mallee box to 8m. It has relatively narrow adult leaves. Fruit are small and cup-shaped and juvenile leaves green or blue-green.

[https://apps.lucidcentral.org/euclid/text/entities/eucalyptus\\_viridis.htm](https://apps.lucidcentral.org/euclid/text/entities/eucalyptus_viridis.htm)

- The oil glands are prominent.
- The flowers are abundant and creamy-white, mainly spring to summer.
- Green mallee is a big honey producer in NSW, and is important for the distillation of essential oils.
- Green mallee generally grows in areas with low rainfall, high summer temperatures and few winter frosts, but also grows well in southern temperate areas. It can be found in a wide range of soils, from poorly drained clays to well drained sand.

<https://www.anbg.gov.au/gnp/interns-2010/eucalyptus-viridis.html>

- The green mallee grows in mallee shrubland on plains and gently undulating country. It occurs in Queensland, mainly south from Taroom, through the western slopes and plains of New South Wales, near Bendigo and in the Little Desert National Park in Victoria to the south east of South Australia.

## Appendix

*Eucalyptus macrorhynca*, showing the beak-shaped cap on the flower-bud.

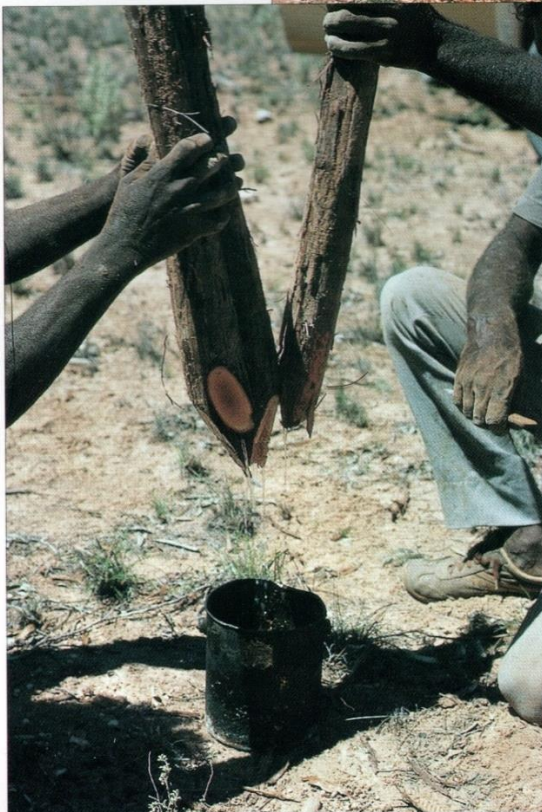
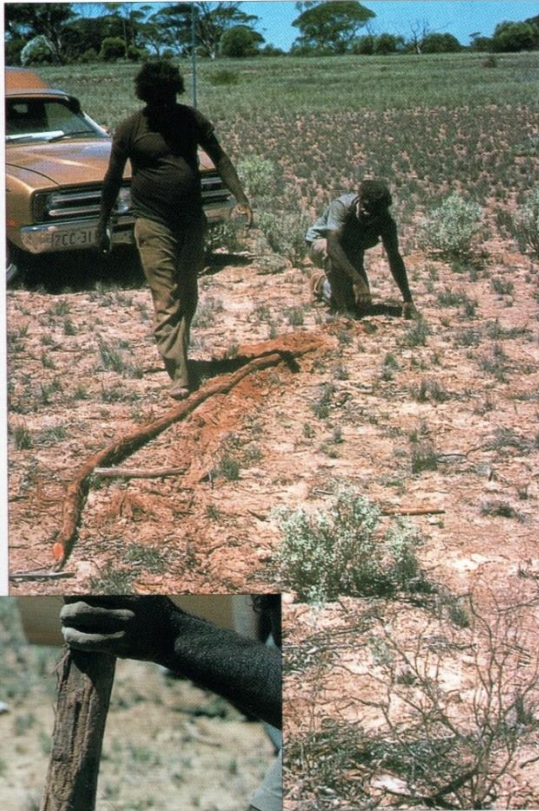


## Harvesting water from mallee roots.

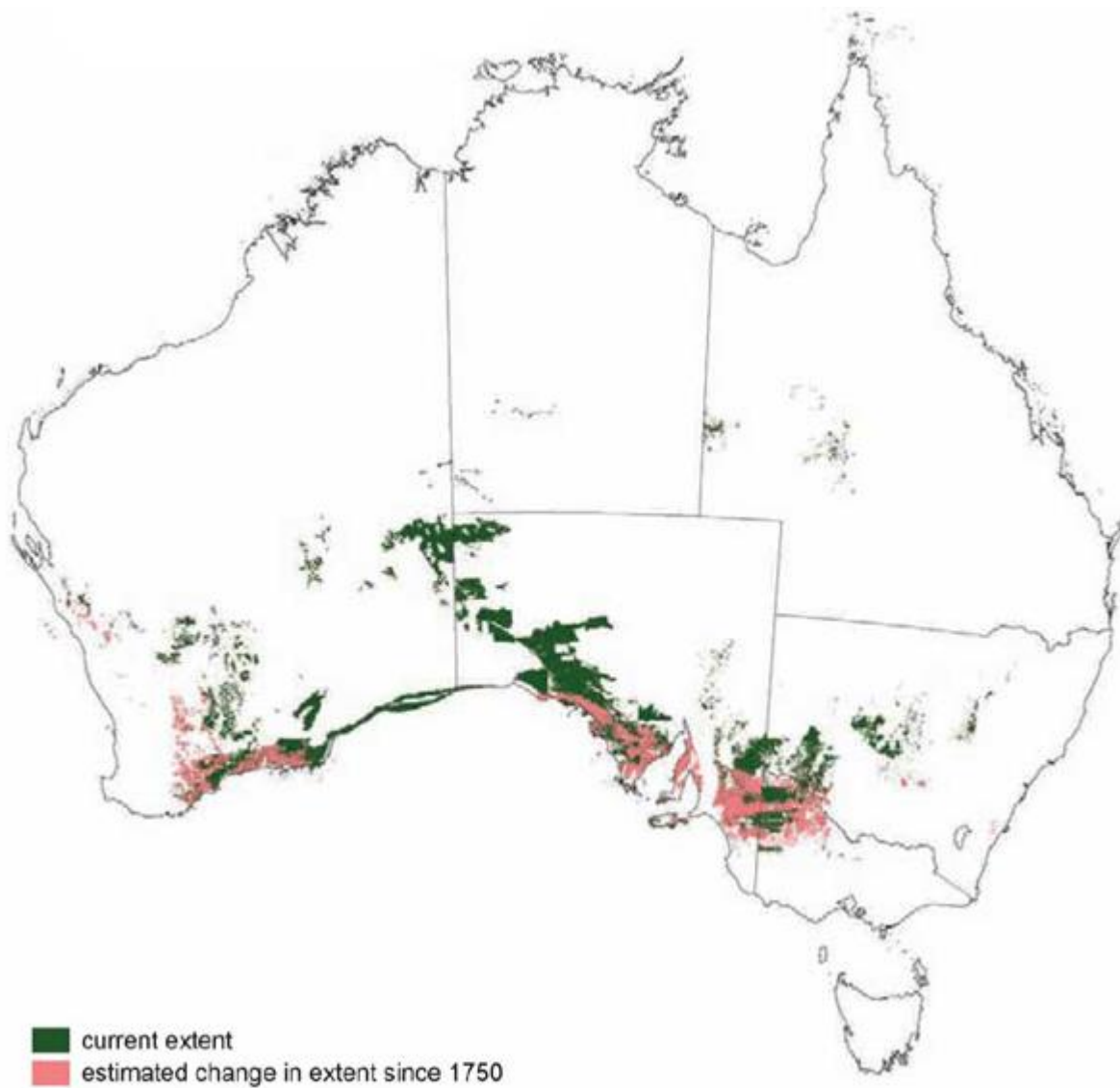
Source: *The Delicate and Noxious Scrub*, by James Noble, published by CSIRO, 1998. Wrigley & Fagg (*Eucalypts. A Celebration*) state the lower picture shows *E. socialis*

*The Delicate and Noxious Scrub*

**Plate 19:** Drinking water can be obtained from roots of a large mallee. A large lateral root of a water mallee near Yalata, South Australia, exposed prior to cutting into roughly metre-long segments.



**Plate 20:** These then drain freely when held vertically.



Department of the Environment and Energy Map of Mallee woodlands. The pink area shows what has been cleared since European settlement.

See [NVIS Fact sheet MVG 14 – Mallee woodlands and shrublands \(awe.gov.au\)](http://awe.gov.au)