

# *Eucalyptus camaldulensis* subsp. *camaldulensis* River Red Gum



*Eucalyptus camaldulensis* subsp. *camaldulensis* planted at the main entrance of GBG. Photo: Beverley Stringer.

This tree, commonly known as River Red Gum, is Endemic & Iconic to Australia.

It belongs to the Myrtaceae family. There are 800 species of *Eucalyptus*, with all but 3 or 4 endemic to Australia. The River Red Gum is seen along many river courses providing shade in extreme temperatures in Central Australia. It is frequently a dominant component of Riparian Communities (ie. Vegetation which grows along banks of waterways extending to the edge of the flood plain).

This tree's species *camaldulensis* was named after a Tuscan monastery Camaldoli outside of Naples (-ensis means from). In 1817 a distinguished Italian landscaper Fredrich Dehnhart had propagated the River Red Gums with seeds that had been collected and sent to him by Alan Cunningham, the King's botanist in NSW. These seeds had been collected from gardens near Condobolin in NSW. In 1832 Fredrich catalogued all the species growing in the Camaldoli gardens.

In 1922 all the healthy River Red Gums were felled and the gardens were abandoned. All Australian botanical history was lost. In 1934 after 102 years Dehnhart's catalogue, *Catalogus Plantarum Horti Camaldulensis* was rediscovered in the Natural History Museum in

Vienna. In the intervening years the River Red Gum had been renamed three times. Justice was done in 1934 when the "rule of priority of publication" determined Dehnhart's original naming *Eucalyptus camaldulensis*, was restored.

## Description

See photos on page 2.

Perennial, single stemmed with a thick trunk & heavy twisting branches. Open spreading crown. Grows from 20m to 30m in height. However, recent records have shown some specimens attain 45 metres. Longevity 500 to 1000 years (The Big Tree in Moulamein, Riverina NSW).

The Bark is smooth white or cream coloured with patches of yellow, pink or brown. There are often loose slabs or flakes of bark shed at the base of the tree. Juvenile Leaves are dull green and lance-shaped (80-180mm x 13-25mm). Adult leaves are dull greyish green on both sides and lance shaped to curved in formation (50-300mm x 7-32mm) on a petiole (leaf stalk) (8 x 33 mm).

Flower Buds are arranged in groups 7, 9, or sometimes 11, in leaf axils on a peduncle (stalk of an inflorescence) (5-28mm) in length. Individual flowers on pedicels measure (2-10 mm). Flowering mainly occurs in summer and flowers are white.

The Limbs of River Red Gums & whole trees often fall without warning due to stress or death. (Ill-advised to picnic or camp under these trees ).

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*Eucalyptus camaldulensis*: Clockwise from top left: Buds; flowers; seed capsules open; adult leaves; juvenile leaves; seed capsules growing after the stamens and stigma have fallen. Photos: DJ, CC BY-SA 4.0; Sydney Oats, Wikimedia Commons CC BY 2.0; Linley McGlashan, Wikimedia Commons CC BY 2.5 AU; Geekstreet, Wikimedia Commons CC BY-SA 4.0; Vinayaraj, Wikimedia Commons CC BY-SA 3.0; DJ, CC BY-SA 4.0.



*Eucalyptus camaldulensis* subsp. *camaldulensis* planted beside the stormwater dam Eastern Park.  
Photo: DJ, CC BY-SA 4.0.

### Habitat

*Eucalyptus camaldulensis* has the widest natural distribution of any *Eucalyptus* species and is dominant along the Murray-Darling River Basin & its tributaries. It is also found away from a watercourses where there is adequate ground-water.

*Eucalyptus camaldulensis* subsp. *camaldulensis* is the only subspecies that occurs in Victoria.

In 1979, Indigenous trees were planted in the Howard Glover Reserve (originally Friendly Societies' Reserve) in Eastern Park, as well as along the foreshore of Corio Bay by the City of Geelong. *Eucalyptus camaldulensis* subsp. *camaldulensis* is standing in pride of place at the entrance to the Geelong Botanic Gardens. Planted in 2003.

### Ecology

The species is subject to regular flooding in its natural habitat along banks of water courses. Red Gums prefer soils with clay content as it retains the water from rain fall & flooding. These trees provide a habitat for fish with their fallen branches, especially the native river black fish. Aquatic bird life depends on fish as a food source during their breeding season. Hollows start to form in 120-180 years, which then create habitats for wildlife species, eg. bats, birds and carpet python. Dense foliage of the tree provides shade and shelter from the sun in drier areas. Superb Parrot (threatened species) & Regent Parrot nest in the River Red Gums. Leaf and insect fall provide nutrients and energy for other species. This is especially important for low nutrient area (drier regions).

### Weed

*Eucalyptus camaldulensis* is listed by Global Weed Compendium as a weed in South Africa, USA, Portugal, Spain, Canary Islands, Ecuador & Bangladesh. In WA it is subject to a weed management programme. Drought & soil salinity tolerance, combined with prolific seed production and its capacity to reproduce when very young, make it highly invasive.

### Reproduction

The flower has (male) stamens consisting of 4 parts: filament supporting an anther composed of two pollen sacs. The two pollen sacs are attached to the top of the filament. The sacs open into longitudinal splits releasing pollen. The filaments encircle the receptacle during flowering.

*Eucalyptus camaldulensis* tree at Star Lane Winery, Beechworth. Photo: Brett Barnes. Used with permission.



The flower female parts have ovaries contained in chambers. These chambers are separated below the receptacle containing male parts by a disc. The style (attached to the top of ovary) supports the pollen receptacle, the stigma.

Flowering takes place when pollen from anthers falls into the stigma. This may take a few days as the stigma may not become receptive until the operculum (cap) is detached by the expanding stamens. Self-pollination sometimes occurs as well as fertilisation with other flowers on the same tree. Fertilisation is often helped by winds and insects. After flowering, stamens detach leaving the fruit which become dry and woody.

Triangular valves open which disperse yellow seeds which fall to the ground and are dispersed by wind and water. Dissemination of seed occurs in spring & summer while natural flooding occurs during winter and spring. This is not ideal conditions for germination. However, damp soil and plenty of sunlight are more important for the continuation of the species than seed dispersal by flood waters. River Red Gum seeds germinate rapidly after floods and require regular spring floods throughout their lifetime to survive. Floods are now rare due to irrigation regulations in Murray Darling Basin. As a result 75% of Red Gums in the lower Murray are stressed, dying or dead.

### **Response to disturbance**

The extinction of rare understory plants has been the result of soil disturbance and bare earth due to over a hundred years of timber logging allowing increased weed invasion. The heavy grazing by kangaroos, rabbits & cattle of seedlings during prolonged dry periods alters the understory growth as well. Feral pigs destroy the wetlands due to digging and wallowing causing erosion. The River Red gum is very sensitive to fire which causes cambial injury, as it lacks a lignotuber which is necessary for regeneration.

### **Formation of Barmah Red Gum Forests**

Formation of the forest is a recent geological event in the Murray Darling basin involving the Cadell Fault. The displacement of the Cadell Fault 25,000 yrs ago led directly to the formation of the Barmah river gum forests. This area covers 65,000 Ha (160,000 acres) straddling the Victorian & NSW borders due north of Melbourne. This forest is of enormous cultural significance to the Yorta Yorta Nation.

## Uses

Horticulture: readily germinates from fresh seed and seed stored in cool dry conditions.

Timber: Used as a plantation timber. Brilliant red timber with colour range from pink to almost black depending on age and weathering. Wood can be brittle and often cross grained. Frequently used for fence posts and sleepers. Used by wood turners as it carves well and takes a high polish. Good firewood & makes fine charcoal. Used in Brazil in iron & steel production.

Provides food and habitat for breeding. Heavy yields of honey in good seasons.

## Culture

Trees have been sites for celebrating historic and traditional owner events.

- **Separation Tree:** (located in Royal Botanic Gardens, Melbourne), 400 years old. Where celebrations were held when Victoria became a separate colony from NSW on 15/10/1850. Governor La Trobe. The tree was ringbarked by an intruder, in 2010 and again in 2013. It eventually died.
- **The Old Gum Tree:** Proclamation of SA Glenelg 28/12/1836. Governor John Hindmarsh. (Bent Tree) Engraved for stamp 1936.
- **The Queen's Tree:** Perth WA Planted by Queen Elizabeth II, 27/3/1954. War Memorial King's Park
- **The Big Tree:** Moulamein NSW. Largest in the Riverina 11.6m circumference. Meeting Place, Culturally significant to traditional owners. 500-1000 yrs old. 70km NE of Swan Hill
- **Birthing trees**

Seasonal recreational use of waterways is in the habitat of the River Red Gums.

Scars on trees show where aboriginal people removed bark for making canoes, shields or coolamons.

Leaves & tree have appeared on Australian stamps.

## Medicinal purposes

A handful of young leaves were crushed & boiled in water and used as ointment for chest and joint pain. Young leaves were heated over a pit of hot coals & vapours were inhaled.

## Summary

Family: Myrtaceae

Genus: *Eucalyptus*, subgenus: *Symphyomyrtus*, section: *Exsertaria*, series: *Rostratae*

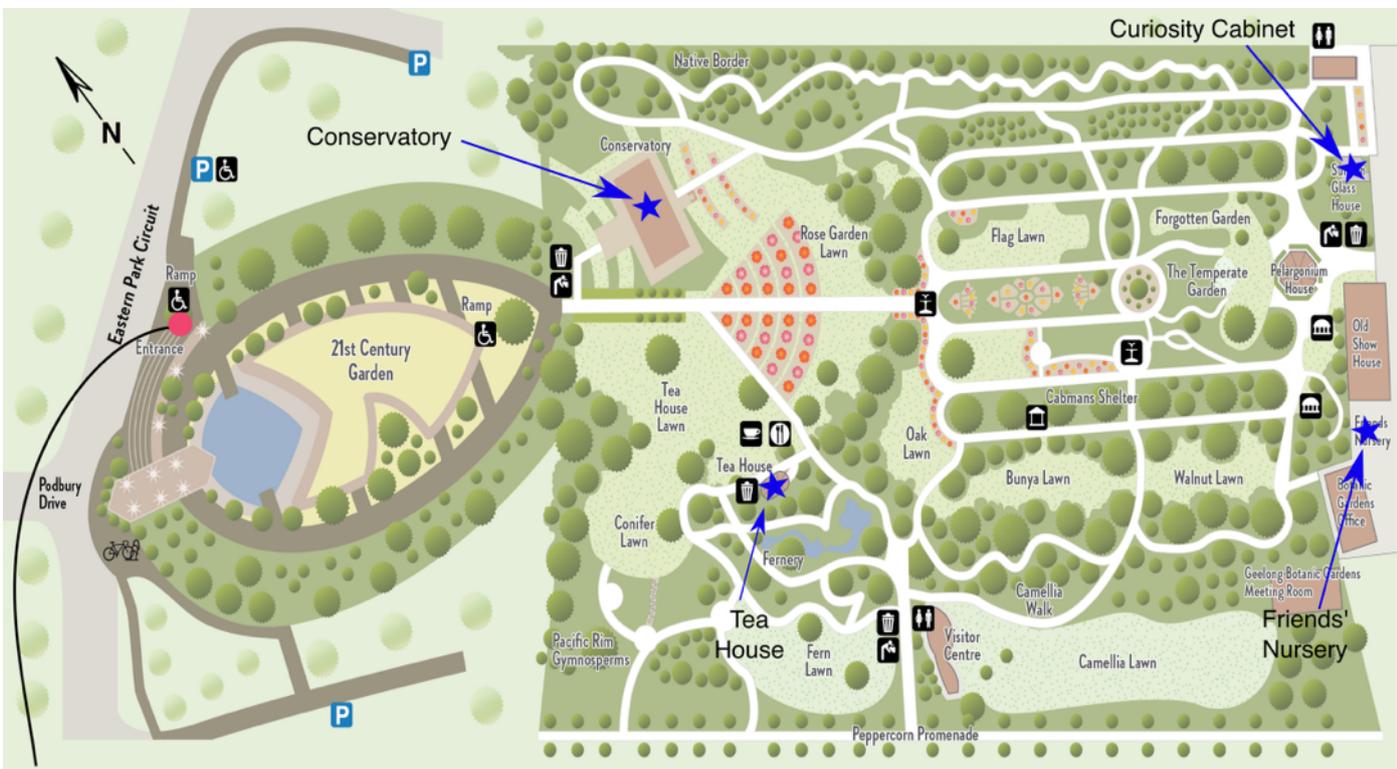
Species: *Eucalyptus camaldulensis*, subspecies: *camaldulensis*

Common Name: River Red Gum.

Distribution: The species grows Australia-wide where there is sufficient ground-water. The subspecies grows in Queensland, NSW, Victoria and SA. Outside Victoria it is focussed on the Murray-Darling River system.

## References

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Maps showing locations of *Eucalyptus camaldulensis* subsp. *camaldulensis* River Red Gum in Geelong Botanic Gardens (GBG) (Top) and Eastern Park (EP) (Bottom).