

River Red Gum – the unique Eucalypt

Eucalyptus camaldulensis



It is endemic to Australia. However it is listed as an obnoxious tree on the Indian Sub-continent and one of the world's top ten invasive trees. It is listed as a weed in Portugal, Canary Islands, South Africa, Spain, Bangladesh, USA, Ecuador, Jamaica Galapagos Islands and many other countries. It also listed as invasive in parts of Western Australia. It has the largest distribution range of any eucalypt and has increased the range due to irrigation schemes, in particular below Redbank Weir on the Murrumbidge River. The other great expansion area is on the Murray River between Mildura and Renmark. The area of occupation has increased to 104% of the area it occupied prior to settlement. It is found along the majority of the inland Rivers and its stronghold is in the Murray/Darling basin. There is a small outcrop in the Upper Hunter River, Coastal Victoria and on the sand plains of south eastern South Australia – Bordertown-Naracoote-Penola.

Its growth habit/auto ecology is why it is an effective survivor. It spends the first part of its life as a small sapling, less than 4 meters in height. During this phase, it sends a tap root down until it finds permanent water then the above structure grows. In good seasons its growth rate rivals eucalypts in the moist forest on the east coast of Australia. Due to the irrigation schemes the ground water table is considerably higher than the non irrigations scheme areas. This has made it more susceptible to drought in the irrigations areas.

It has other traits that no other eucalypt has. In droughts its diameter will shrink (mainly the loss of bark thickness) and its seed is spread by floodwaters in addition to normal eucalypt vectors of seed dispersal. In the majority of the Red Gum forests are in depositional landscapes – that is the soil is not eroding but building up as the result of flooding.

Prior to settlement the vast Red Gum forests were subject to regular mild burning by various aboriginal groups. This prevented the buildup of large humus layers mixed in with the flood deposited soil. When the early explorers (John Oxley etc) went through these forests they used bullock drays to cart goods and boats (for the inland sea). Since the cessation of this burning the humus layer has increased as a result ground fires are a major bushfire hazard and the wood debris on the ground is too thick to allow the use of bullock drays.

Taxonomy and naming

Eucalyptus camaldulensis was first formally described in 1832 by Friedrich Dehnhardt. The species name "*camaldulensis*" is a reference to a private estate garden near the Camaldoli monastery in Naples, where Frederick Dehnhardt was the chief gardener. The type specimen was grown in the gardens from seed collected in 1817 near Condobolin by Allan Cunningham, and was grown there for about one hundred years before being removed in the 1920s. Allan Cunningham was an early explorer and botanist. A number of plants, rivers and a highway have been named in his honour.

Each Aboriginal Clan had a specific or multiple names for the River Red Gum, too many to list but a few examples are:

- In the Northern Territory - aper (Alyawarr and Anmatyerr languages), aper or per (Eastern Arrernte language), apere (Kaytetye language), itara, ngapiri, pipalya, yitara (Pitjantjatjara language); and
- In the Kimberley - Dimilan (Miriwoong language)

Seven subspecies of *E. camaldulensis* have been described. The subspecies are;

- *Eucalyptus camaldulensis* subsp. *acuta* is common along rivers from south of Cape York Peninsula in Queensland to the north west slopes and plains of New South Wales but is absent from coastal areas and the arid inland;
- *Eucalyptus camaldulensis* subsp. *arida* has the widest distribution of the subspecies and is found in all mainland states except Victoria. It grows in arid regions but only where there is sufficient subsoil moisture;
- *Eucalyptus camaldulensis* subsp. *camaldulensis* is the dominant eucalypt along the Murray-Darling river system and its tributaries. It also occurs on the Eyre and Yorke Peninsulas and Kangaroo Island in South Australia and in some locations along the [Hunter River](#) in New South Wales. It is the only subspecies in coastal Victoria;
- *Eucalyptus camaldulensis* subsp. *minima* is endemic to South Australia, where it grows in the northern Flinders Ranges and the northern Eyre Peninsula;
- *Eucalyptus camaldulensis* subsp. *obtusa* (is endemic to tropical northern Australia, including parts of the Kimberley, the Top End and the Gulf of Carpentaria hinterland as far east as the Gilbert River, Queensland in Queensland;
- *Eucalyptus camaldulensis* subsp. *refulgens* is endemic to the Pilbara-Gascoyne-Carnarvon region, along rivers flowing westwards, including along some of the tributaries of the upper Murchison River; and
- *Eucalyptus camaldulensis* subsp. *simulata* is mainly restricted to some rivers on Cape York Peninsula, but with some populations further south.

Description

Eucalyptus camaldulensis is a tree that typically grows to a height of 20 metres but sometimes to 45 metres (Macquarie Marshes and Barmah/Echuca Forests) and often does not develop a lignotuber. It is unique as it can withstand long periods of flooding.



The bark is smooth white or cream-coloured with patches of yellow, pink or brown. There are often loose, rough slabs of bark near the base.

The flower buds are arranged in groups of seven, nine or sometimes eleven. Flowering mainly occurs in summer and the flowers are white.

The limbs of river red gums, sometimes whole trees, often fall without warning so that camping or picnicking near them is dangerous, especially if a tree has dead limbs or the tree is under stress.



Flower buds



Flowers



Fruits

Management

The forester's role in those forest in the irrigation areas is to divert the allocated water to areas where required based on the age of the forest stand. These watering patterns and the supporting channels have been developed over many decades. It allowed areas that would not be watered by recent flooding to be flooded.

Two of those foresters (Mike Thompson and Andy Stirling) have retired to Coffs Harbour and both have very interesting stories. After the conversion of the Barmah forest from State Forest to National Parks, a longtime forester (Larry Carrey) was hired to teach the new managers how to do it. Larry was very frustrated with the lack of keenest to learn and time will tell of the level of uptake.

What happens in drought in those irrigation areas now there is a lowering of the water table. In post 2000s drought many areas of the river red gum forests were dying except in forests that had been thinned and the best stand was a large field experiment done by Vic Eddy (more well know by his first initials VIP).

This stand was on the Murrumbidge River flood plain but further from the River than similar stands on what is now Yanco National Park (formally Yanco Station). The thinned stand had not received any flood water for over 13 years and it was healthy and growing at a reasonable rate.

Whilst adjoin stands most trees were dead or had a significant amount of dead limbs due to water stress caused by the drought.

Sorry this is a bit technical, Vic thinned the forest stand to an escapement formula that dates back over 1400 years in Europe and over 2200 years in China. This formula was included in the NSW Private Code of Practice for the River Red Gum forests. The formula is;

“thinning aim to space trees according to the formula $\frac{1}{4}$ DBHOB (cm)*100.”

Yanco Station was the second largest privately owned River Red Gum forest. The largest privately owned River Red Gum forest is owned by the Mormons.

The Barmah forest is the largest stand of River Red Gum and it was formed about 25,000 years ago with the uplift of land along the Cadell fault forced the Murray River onto a new course for 500km. This blocked the then Murray River which is now known as Green Gully and caused it to flow down the Edwards River. This fault lift also caused a large lake on the Goulburn River. Over time this lake broke and the resulting flood waters established the current day Murray River. Flood waters still flow down the Edwards River which flows into the Wakool River which joins the Murray River to the east of the Murrumbidge River junction.

Timber



The heartwood is red to reddish brown and the sapwood is 40mm wide and distinctly paler. It has very hard timber with close grain and often with gum rings. Its texture is fine and even. Grain usually interlocked often producing an attractive fiddleback figure. As such it has a lower sawn recovery rate than most eucalypts – up to 6% no matter if quarter or back sawn, thus generating considerable waste that is often sold for charcoal production, firewood or wood chips.

Green density is about 1130kg/m³ and air dried density about 900kg/m³. Shrinkage is 4% radial and 8% tangential. It needs close stickering and weighted stacks whilst drying to minimise warping. Some collapse will occur during the drying process. Because of the tightly interlocked grain it is necessary to adjust the cutting angle when dressing it.

It is unsuitable for steam bending. It is easy to work with both hand and machine tools. It takes stain easily and can be sanded to an excellent finish. Providing the grain is straight it does not surface check when exposed to the weather. It has a Janka hardness of 7.7 green and 10 dry.

The kino in the gum pockets has been used pharmaceutically in styptics and stringent gargles. The timber has many uses – sleepers, construction, charcoal production, paneling, sills, posts, wood turning, carving, furniture, flooring and firewood.

Care needs to be taken in its use in furniture as it is quite reactive to changes in humidity.

It is one of the most widely planted eucalypts often as a hybrid crossed with Sydney Blue Gum (*E.saligna*) in the world. Plantations occur in Argentina, Arizona, Brazil, Burkina Faso, California, Egypt, Kenya, Morocco, Nigeria, Pakistan, Senegal, Sierra Leone, Spain, Sri Lanka, Sudan, Tanzania, Uruguay, and Zimbabwe.