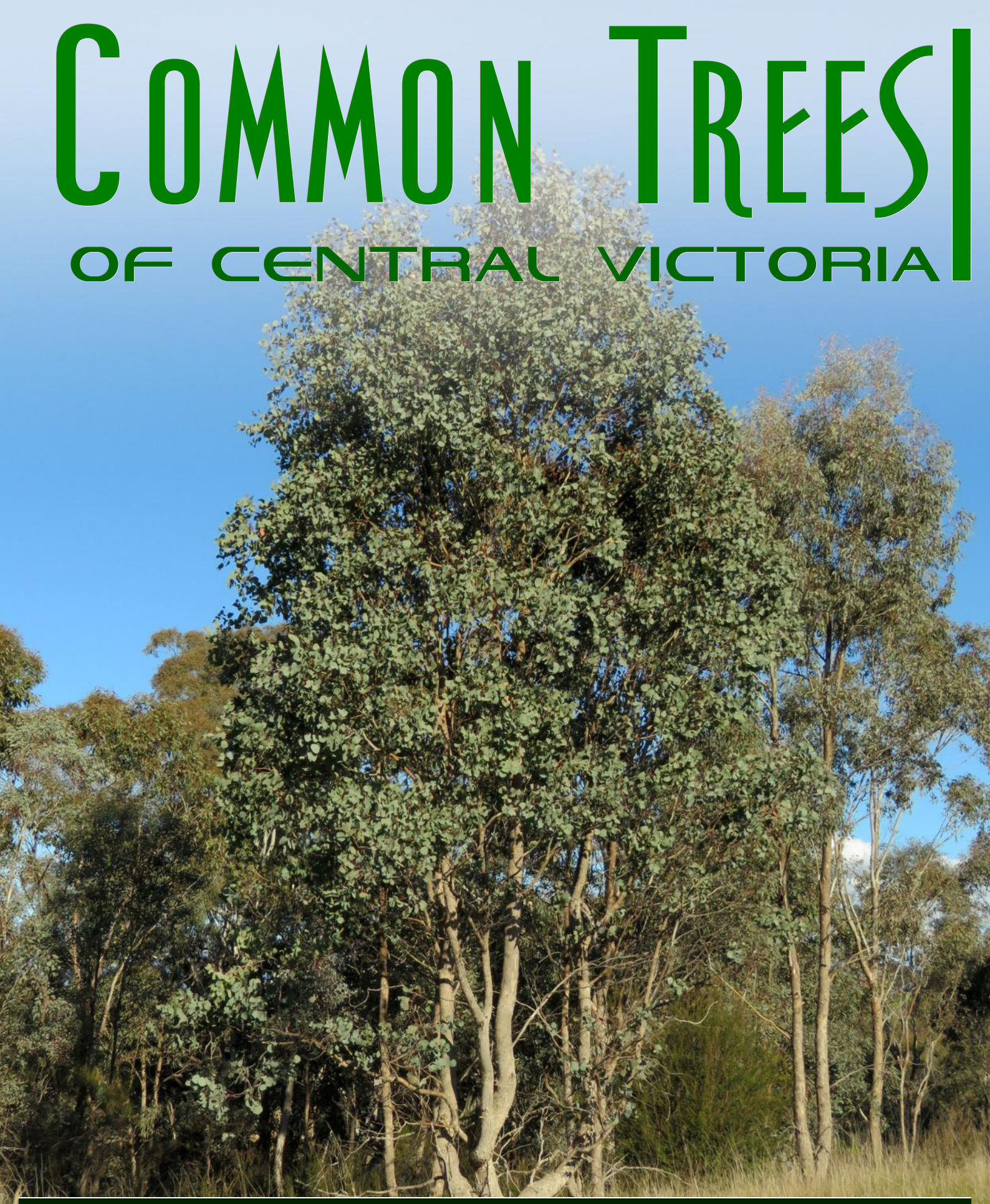
Common Trees of Central Victoria



RED BOX

By Steven & David Hibbert

COMMON TREES OF CENTRAL VICTORIA

RED BOX

E. polyanthemo, subspecies vestita

By Steven and David Hibbert

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INTRODUCTION

This publication is dedicated to our father Trevor Hibbert who passed in early 2019. As the patriarch of our family, he guided us into a greater understanding of nature and taught us to appreciate and respect our natural environment. As a carpenter for most of his adult life, he loved wood and understood its strengths and weaknesses.

This book is a collaborative effort between two tree-loving brothers Steven Hibbert and his younger brother David Hibbert. As brothers growing up in the rural township of Alexandra in Central Victoria, we were constantly around trees and wood.

This book is a comprehensive free photographic eBook on the iconic red box (subspecies *vestita*). It is our hope that it can be used for nature-based education in schools as well as for the broader community.

As an education aid, this publication has been designed with teachers and their classrooms in mind. Teachers can easily load the eBook onto their students' electronic learning devices and the content has been crafted to be visually instructive and easily understood.

This eBook will continue to improve over time, including through community input and direction. If you can help, we would love to hear from you.

Thanks to our contributors for helping make this publication possible.

Steven and David Hibbert

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CLASSIFICATION & INFORMATION

Common name:	**Red box**
Kingdom:	Plantae
Order:	Myrtales
Family:	Myrtaceae
Genus:	*Eucalyptus*
Species:	*E. polyanthemos*
Subspecies:	*vestita*

Growth rate:	Fast
Height:	Up to 20 metres (dependant on the soil and moisture level)
Trunk:	Up to 1.2 m diameter (3.7 m at one metre above ground)
Age:	80–100 years
Distribution:	Vic. and Southern NSW (Ararat to Albury and Bombala, to Cann River)
Altitude:	Sea level to 600 m
Cultivation:	From seed in summer to autumn months
Frost:	Tolerant
Drought:	Tolerant
Fire:	Moderate
Bark:	Fine to medium scaly
Bark colour:	Grey to dark grey
Adult leaves:	Ovate and often glaucous with a greyish-green crown
Flowers:	Cream to white flower in bulk from August to December

Description

The red box species *Eucalyptus polyanthemos* Sub. *vestita* has a wide naturally occurring distribution in Central Victoria, Gippsland and southern NSW. It prefers drier soils and will easily make its home in rocky soils as long as they are well drained. Red box are often found with red stringybark and grey box.

It was named for its dense wood coloured wood which is long burning. It is also widely used for fence posts and basic farming structures as well as furniture. It was first described in 1843 from elements collected in 1822 near Bathurst, NSW.

Red box generally flowers in bulk from August to December (Spring to Summer), though minute numbers of red and cream flowers have been identified on a very small number of trees in Central Victoria in Autumn and Winter.

Eucalyptus polyanthemos, Subsp. vestita

Red Box

Eucalyptus polyanthemos, Subsp. vestita

QUICK ID

A Quick Reference Guide for the red box

QUICK ID

The red box is a common medium sized tree that grows to 24 m and prefers drier rocky soils.

Trunks can grow crooked and have limbs extending from the lower section of trunks.

Bark ranges from light grey to dark grey and is fine to medium scaly.

QUICK ID

The scaly bark ends at the outer branches and is replaced with smooth bark.

Adult leaves are ovate and generally grow to 13 cm length and 110 mm width. But they can grow up to 18 cm long and 14 cm wide.

Buds grow in clusters of 3 to 7 and each bud can swell to a width of 6 mm. Buds can be reddish and glaucous.

QUICK ID

The red box flowers each year between August and December. The width of the flower can be up to 15 mm.

The fruits swell after the flower is pollinated. They eventually dry, open and drop their seeds.

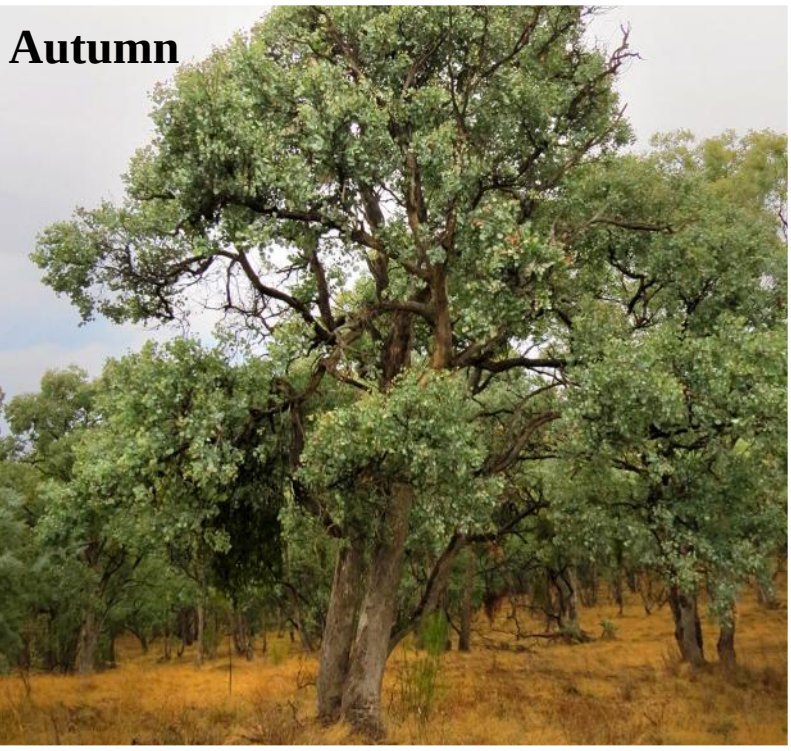
Capsules have between 3 and 5 valves, which open up as they dry. When dry, they are known as gumnuts.

Red Box

Eucalyptus polyanthemos, Subsp. vestita

Tree

The red box can grow to 24 metres tall, but height depends on its location and soil quality.



The crown of the red box is generally uneven.

Red box grow alongside other species such as yellow box, red stringybark and the long-leaved box.

Saplings

New red box saplings can display new leaves at ground level.

Juvenile leaves are ovate (shaped like an egg) and can grow to be very large.

As the tree grows, the large round juvenile leaves remain. But adult leaves will also appear.

Trunk

Trunks of the red box are not always uniform and can vary greatly.

Red box can grow well in drier rocky soils.

Red box can have multiple trunks.

OLD RED BOX

Eucalyptus polyanthemos, Subsp. vestita

Bark

Bark of the red box has a rough uneven texture.

Bark can vary from light grey to dark grey depending on factors such as age, location and health.

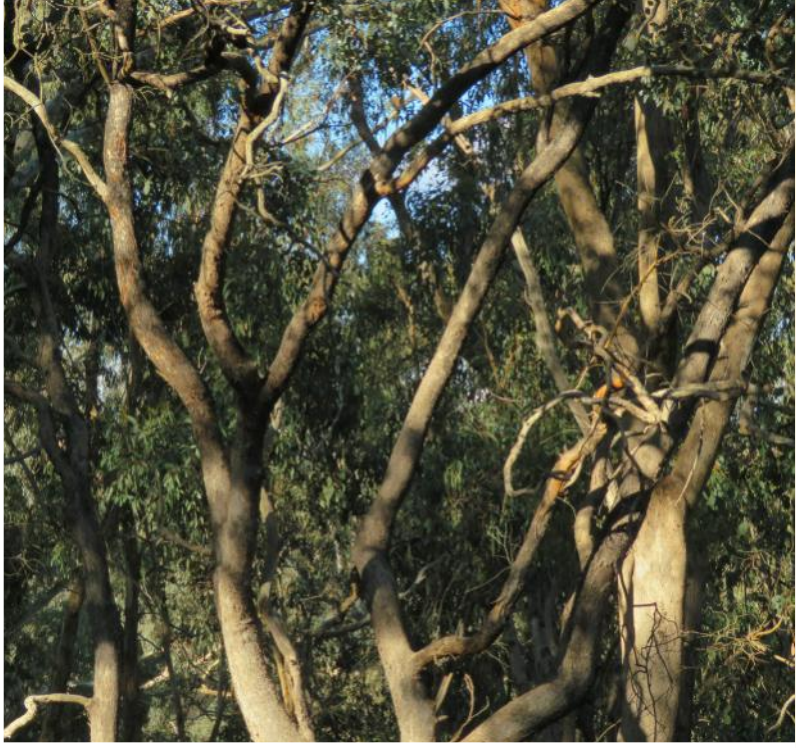
Bark can become more deeply ribbed on older trees.

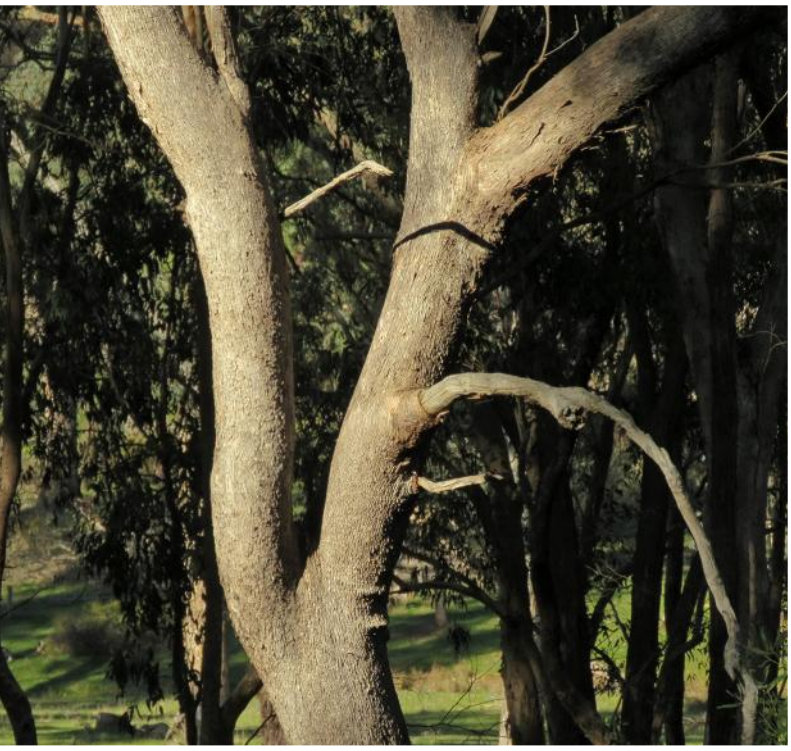
Red Box

Eucalyptus polyanthemos, Subsp. vestita

Lower Limbs

Limbs of the red box are irregular in shape.





Bark on lower limbs is grey to brownish, though like the trunk, can vary with age.

Their rough bark continues to the smaller upper limbs, which turn smooth and gum-like.

Upper Limbs

The upper smooth bark on some red box trees may extend further down the tree.

The bark on medium sized limbs may even be shiny and smooth on some specimens.

Upper bark can appear as ribbons of bark, like seen on other species such as the river red gum.

Red Box

Eucalyptus polyanthemos, Subsp. vestita

Canopy

Limbs of the red box are numerous towards the canopy.

Leaves are tightly grouped together.

The canopy of the red box attracts the mistletoe parasite.

Canopy

The canopy of the red box can appear lighter than surrounding trees during the warmer months of the year.

This species can be easily identified on this hill facing east.

The lighter colour is due in part to the leaves being more glaucous (covered with a bluish waxy coating).

Canopy

The canopy of the red box can be more reflective than other gums at certain parts of the year.

Headlights from vehicles illustrate the reflective quality of the leaves.

These three images were taken in late summer though were reflective in early summer as well.

Juvenile Leaves

Juvenile leaves of the red box appear from January to April.

Juvenile leaves are roundish, leathery, and often have reddish edges and stems.

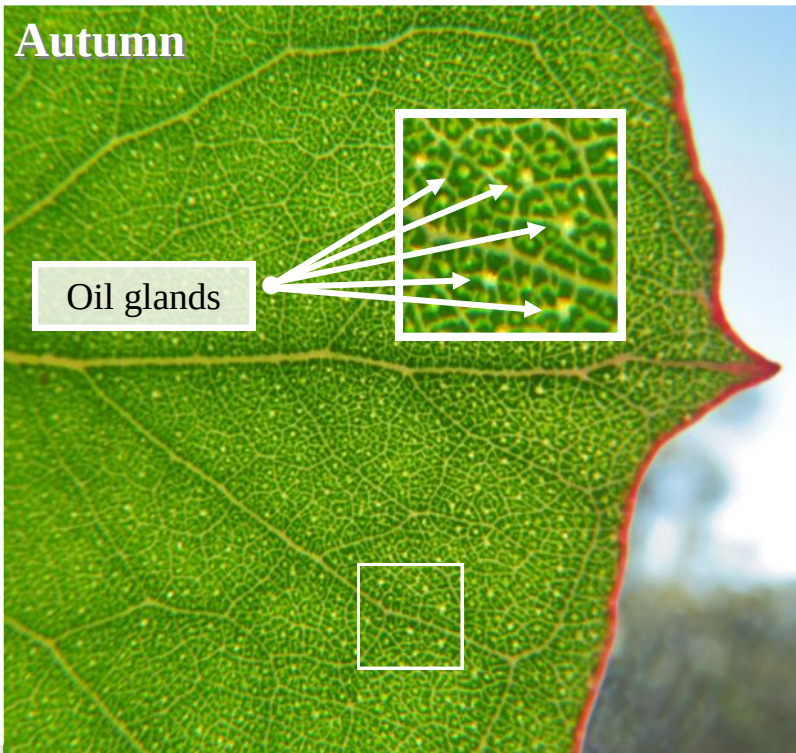
Juvenile leaves can be glaucous, concave and have visible veins. Some are also concave, having a spoon-like appearance.

Intermediate Leaves

Intermediate leaves of the red box are darker than juvenile leaves.

Leaves get tougher as they age and have a wax-like coating. They are often shaped like an egg (ovate).

Leaves can be up 12 cm wide and all have oil glands. As they age they turn a duller green and can even appear greyish in colour.

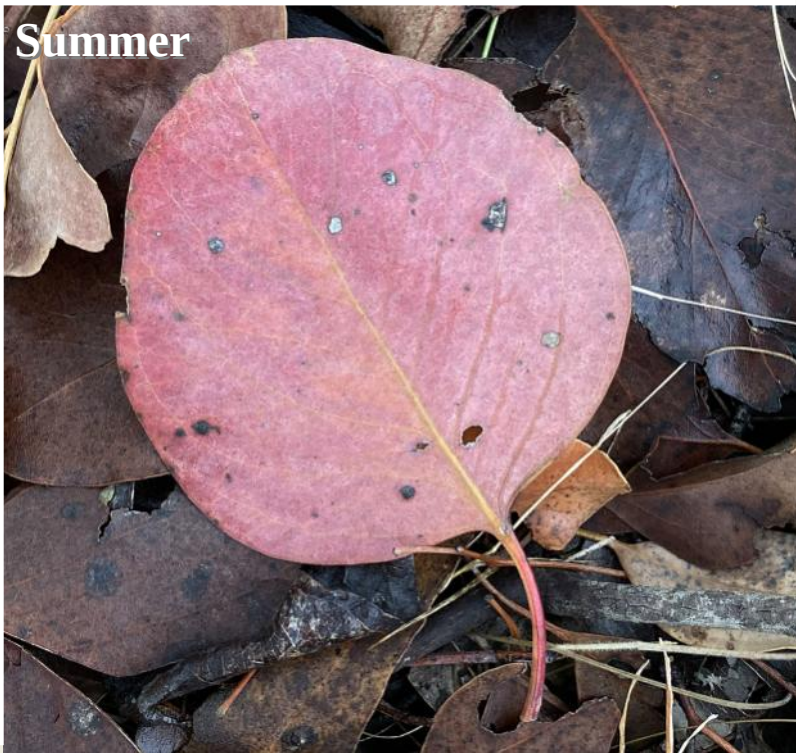


Adult Leaves

Adult leaves of the red box often turn reddish orange as they die.

You can see leaves that are dying on red box trees all-year-round.

The dying leaves eventually fall to the ground where they die and decay.



Juvenile Buds

These red box buds seen in early summer are only a few millimetres in length.

They are the earliest forms of new buds.

Here the buds are thinner than the bud stem.

Intermediate Buds

Buds are club-shaped and grow in cluster sprays that usually have 3–7 buds.

Buds appear in early Autumn. Young buds are just 2–3 mm wide.

Buds can grow in different formations.

Adult Buds

Buds grow from 3–5 mm wide and often redden prior to flowering.

Buds have small caps which fall off when the flower emerges.

Buds have a club-like shape.

Glaucous Adult Buds

Some red box buds and stems may be covered in a glaucous coating.

This can occur on new buds.

The glaucous covering can also appear on the stem.

Unusual Buds

Deformed buds can form on the red box along with normal buds.

They are a purplish-red berry-like growth that swells to 5 mm in width.

Their inside is more akin to a fruit than a bud forming a flower.

Red Box

Eucalyptus polyanthemos, Subsp. vestita

Flowers

Flowers are cream to white and mainly appear from September to December.

With a flower width of up to 15 mm They are larger than their Autumn-Winter counterparts and significantly more abundant.

New flowers have cups that contain nectar.

Rare Red Flowers

An extremely small number of trees exhibit rare red flowers from Autumn–Winter.

These red flowers measured just 5 mm across and appeared in a tight cluster on a few random trees in April, well after the normal flowering.

Nothing is currently known about this very unusual red flower and why it is so rare.
Are you able to help?

Rare Winter Flowers

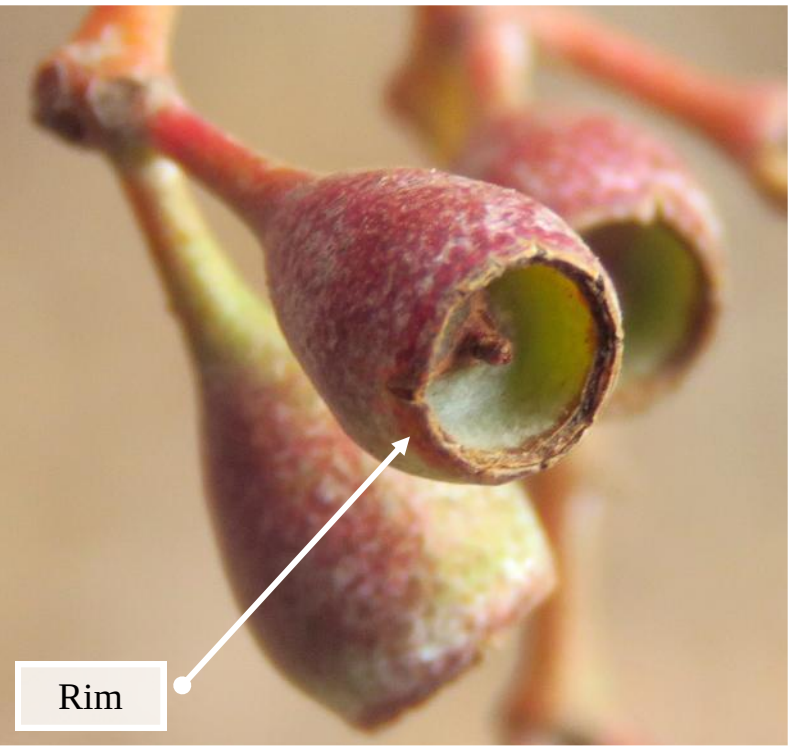
A small number of red box trees produce creamy-white flowers in Winter.

The flowers on this page were photographed in early June and has a small width of just 6 mm.

Years of drought may be the reason these are flowering early.
Any help appreciated.

Fruits

Fruits of the red box appear in the summer months and are first a green colour.



Fruits have a depressed disk. Different fruits on different trees may have disks at different depths.

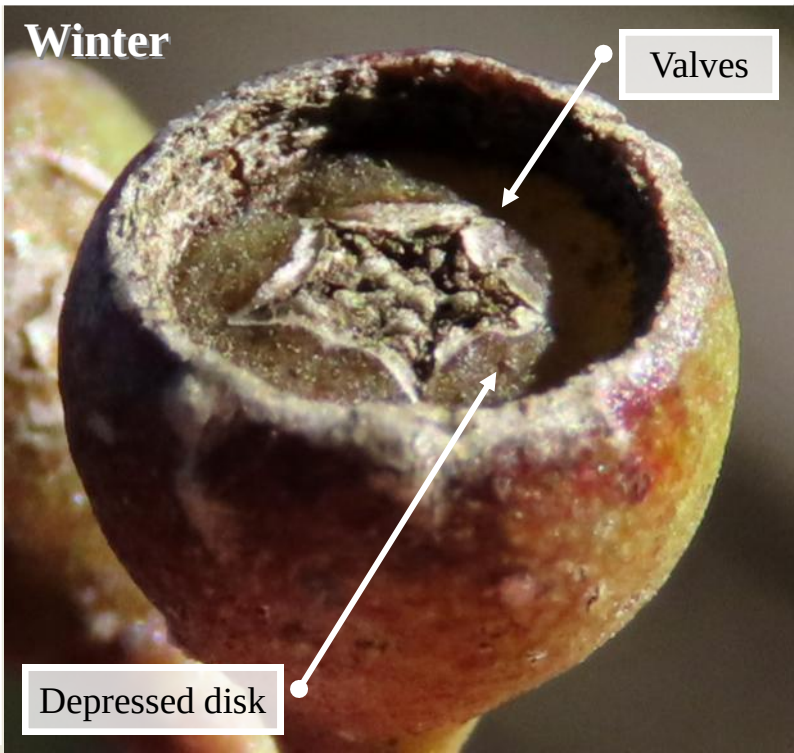
As fruits age, they take on a reddish colour.

Fruits

As fruits of the red box age, they usually turn darker red or even brown.

Adult fruits grow up to 6 mm in width.

Fruits have three to five valves. The disk on this fruit is shallower than the ones shown earlier, showing diversity.



Unusual Fruit

Occasionally an unusual fruit forms.

This occurs after buds are penetrated by insects which then live inside the bud and feed on its soft contents and sap.

Insect exit bore holes can be seen on this hard woody growth.

Nuts

Nuts are dried seedless fruits.

Like fruits, nuts are up to 6 mm in width.

By this stage they are known as Gumnuts. This specimen of gumnut has five valves.

Red Box

Eucalyptus polyanthemos, Subsp. vestita

Habitat - Birds

Male white-browed woodswallow.

Female white-browed woodswallow.

Grey shrike thrush visit red box trees.

Habitat - Insects

Ants frequent the red box tree.

Bush flies are attracted to the red box.

Long-legged flies rest on leaves and feed on flowers.

Habitat - Insects

Larva of the leaf bug are found on red box.

They feed on the leaves of this species, as well as other species such as blue gum and river red gum.

They eat the leaf and develop into a tiny beetle.

Parasites

Lerps are the homes of tiny psyllid bugs and are often built on red box leaves.

This lerp is made of honeydew, is edible, and is slightly different to the those found on river red gums.

Psyllid bugs hide under their lerps, such as this one seen with its lerp removed.

Parasites

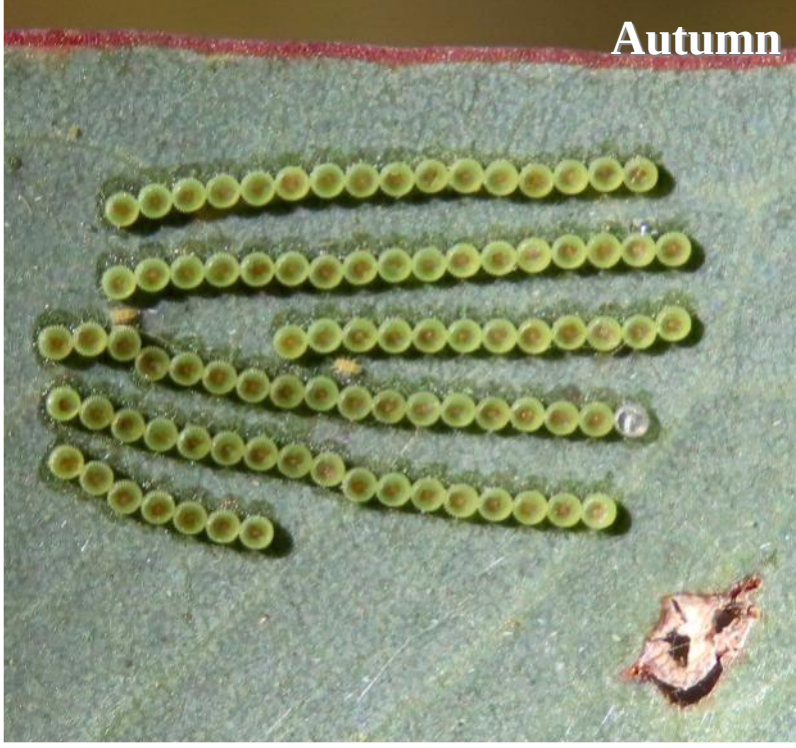
Small galls on a red box leaf. These appear after an insect injects larvae into the leaf.

The insect larvae taps into the nutrients of the leaf.

It is not known what insect these are associated with.

Parasites

Small eggs laid by an insect on a red box leaf.



The eggs are laid in rows and are around 1 mm in diameter. Similar eggs have been found on other eucalypt species.

Some eggs in this photo appear like they have been compromised.

Parasites

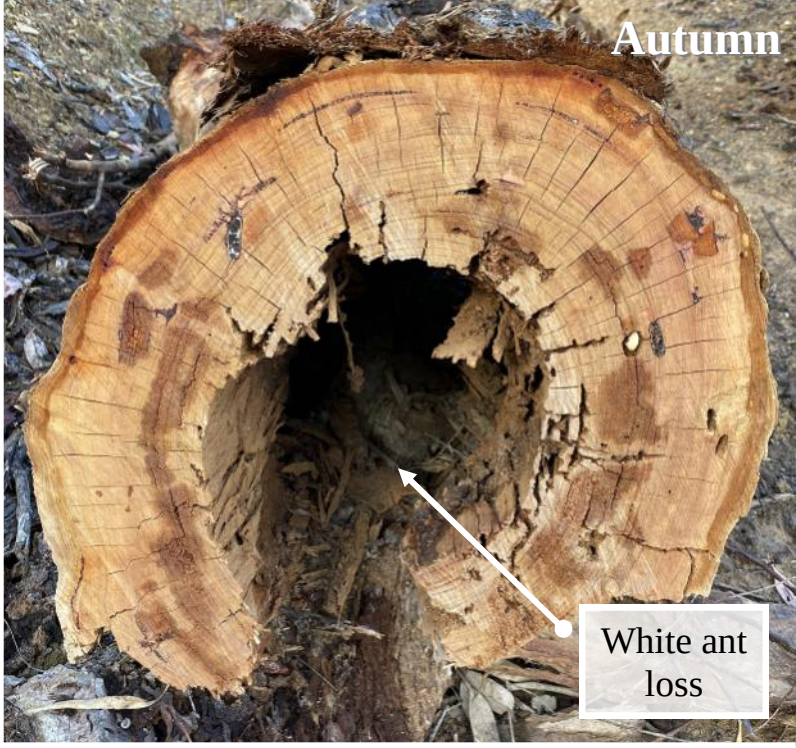
Small growths on a large number of red box leaves on a tree, but not on other trees nearby.

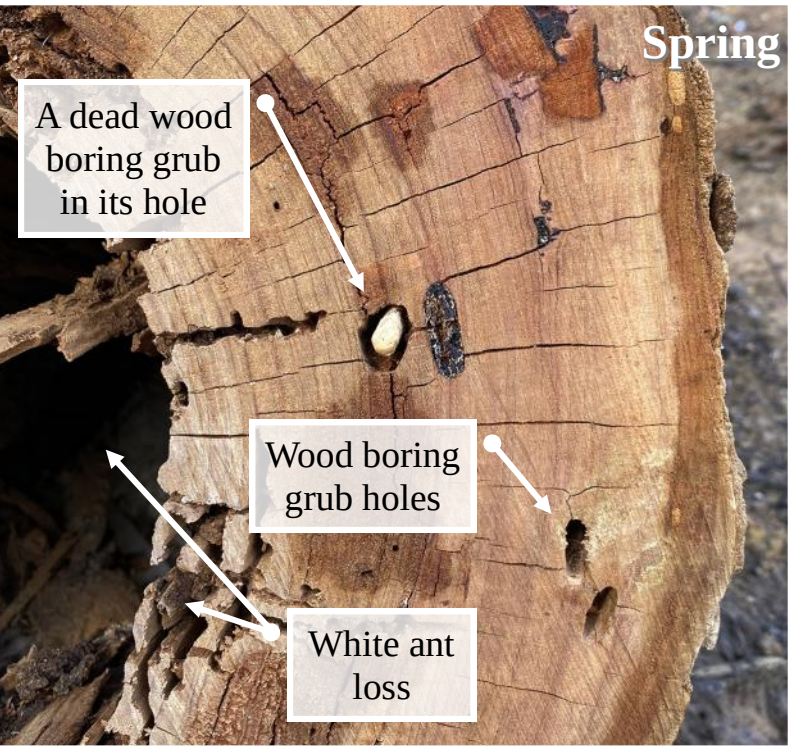
The growth are up to 1.5 mm wide and up to 6 mm long.

Growths also appear on the leaf stems and smaller branches.

Parasites

A red box trunk cross-section showing that white ants ate out its centre leading to it being weakened and falling.





Red box cross-section showing a dried dead wood boring grub in the sapwood.

Unknown growth believed to be an insect habitat.

Parasites

Large parasitical galls can be found on leaves of the red box.

Here smaller growths can be seen, in greater numbers than the gals.

Red box attract the mistletoe parasite which has berries that attract the mistletoe bird.

Red Box

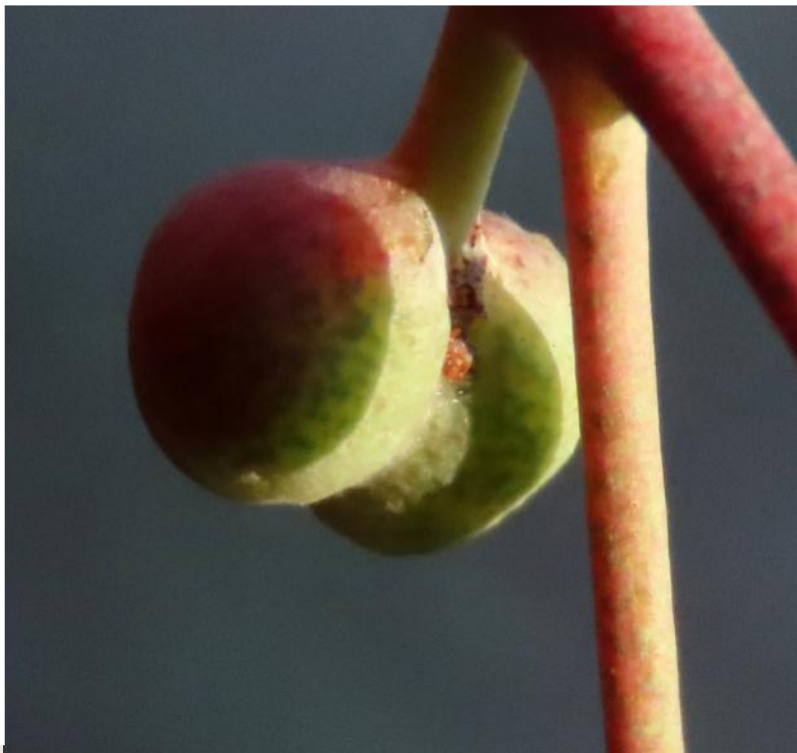
Eucalyptus polyanthemos, Subsp. vestita

Parasites

Parasites come in different shapes and sizes and cause unusual growths.

These parasites attack the stem of the leaf.

The colour of these parasites change as they age.



Parasites

Gall wasp galls
on a red box leaf.

Unknown parasite
found along the main
vein of a leaf.

Unknown parasite
found along the
main vein of a leaf.

Parasites

Unknown insect growths.

Unknown parasites have stripped away the surface of the leaf.

It is believed that the insects are feeding on the nutrients found below the surface of the leaf.

Parasites

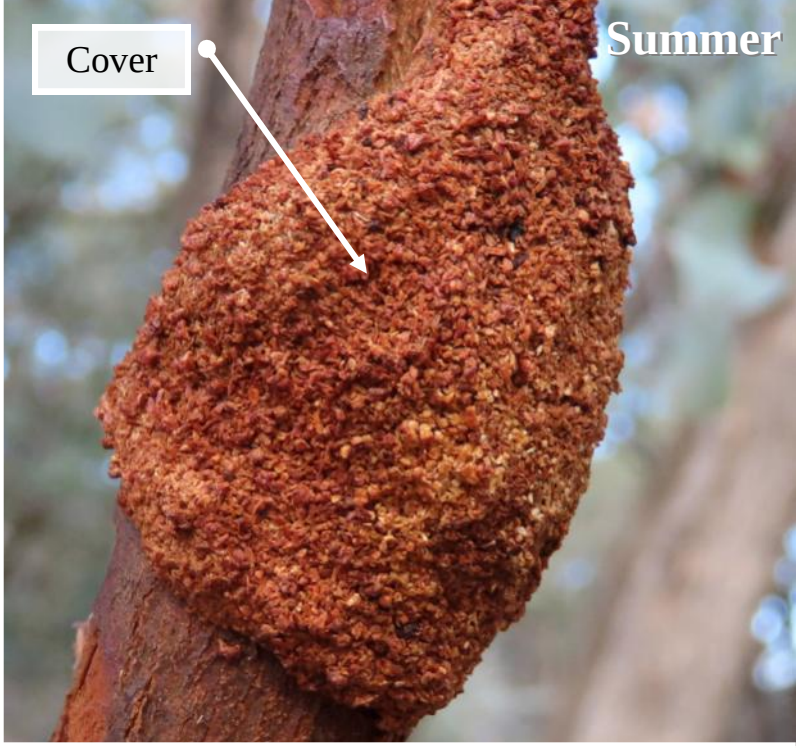
An unknown leaf insect that binds two leaves together. Here they have been separated.

This insect lives between two leaves for safety and they consume the leaf surface.

Left over excrement can be seen in these images. The insect was not found.

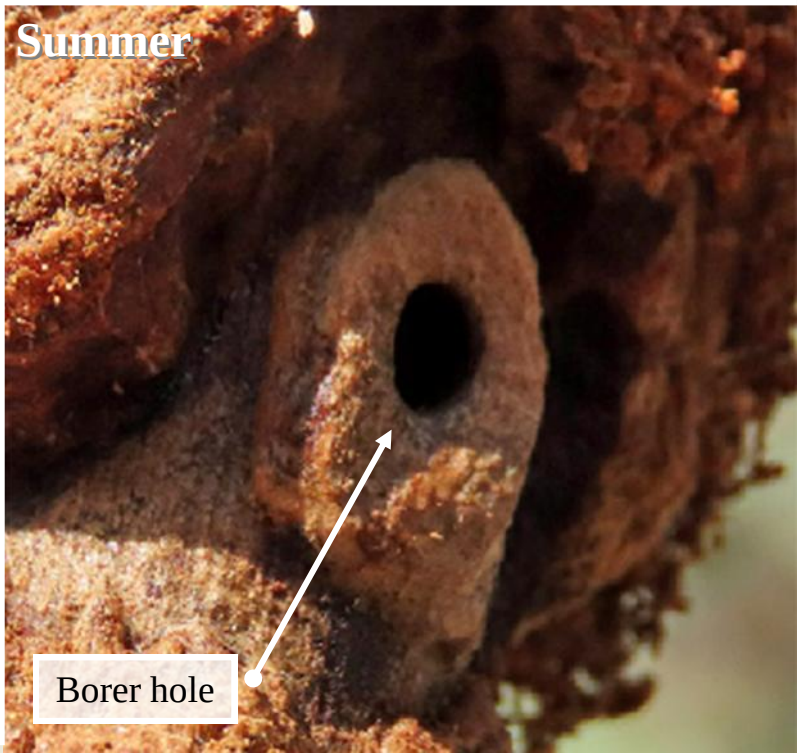
Parasites

Limbs are susceptible to species of boring beetle which hide under their well-made cover.



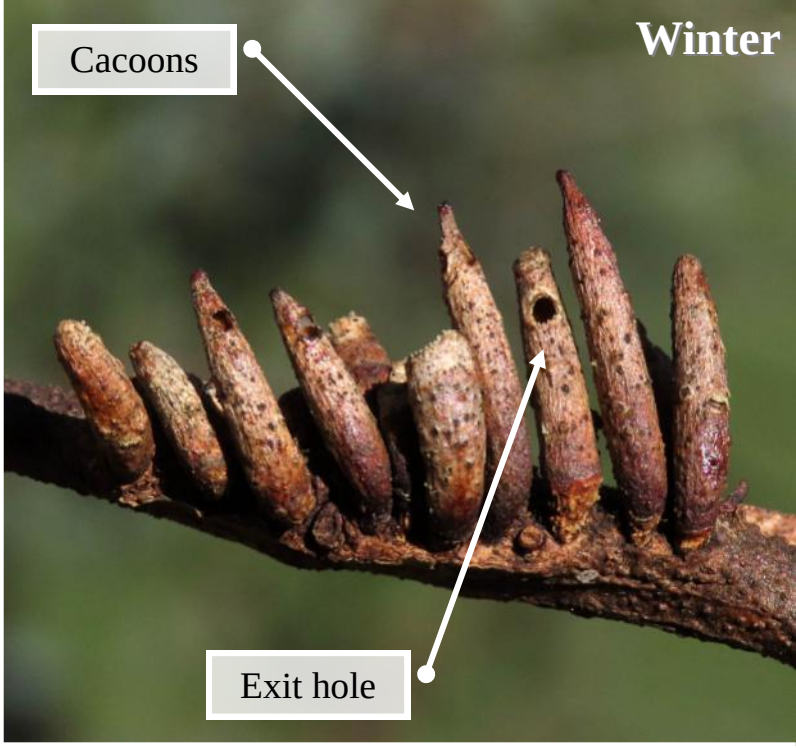
Limb boring beetles will ringbark limbs under their protective cover.

They also enter the limb, consuming wood as they burrow further and further into the tree.



Parasites

Insects have built these unusually shaped small cocoons.



Insects grow to a certain size then exit their cocoon.

The end of some cocoons are missing, likely broken as the insect left its home.

Parasites

Another unusual empty cocoon from an unknown insect.

QUICK FACTS

Some Quick Facts about Red Box

QUICK FACTS

Red box is noted for being both frost and drought tolerant.

Red box wood is considered a good burning wood. As it is a dense wood, it burns long and hot.

Red box is considered a reasonable wood for making fence gateposts as they last a long time when buried in the ground.

Red box wood has been used over the years as railway sleepers.

Red box has also been used for furniture, tools and tool handles.

Red box attracts numerous wood-boring insects, which consume wood at the cambium layer as well as boring deeper into the tree. Large infestations of these insects in one tree will reduce the life of the tree. When one tree is targeted by wood boring insects, other trees around it are also at a greater risk of being attached.

Red box is known to attract the mistletoe parasite more than many other species of eucalypt.

The round juvenile leaves are often used in floral arrangements.

Some ants can build their colonies in gaps in red box trees.

GLOSSARY

A Growing Basic Glossary of Terms

Basic Glossary

.ssp	*(acronym)* Sub Species.
Abscission	*(noun)* The normal separation of flowers, fruit and leaves from plants.
Adult	*(noun)* Any life form that has stopped developing.
Alleopathy	*(adjective)* The phenomenon where a plant us able to stop other plants growing near them by producing biochemicals which resist their germination, growth and reproduction.
Bark	*(noun)* The outer protective layer of tissue that surrounds all stems, roots and woody plants, such as trees. Bark is most evident on tree trunks.
Borer	*(noun)* A term often used to describe any of the wood boring insects that can infect a bush or tree.
Capsule	*(noun)* A dried fruit that is at its seeds releasing stage. They are also known as gumnuts.
Chlorophyll	*(noun)* A green pigment manufactured by trees and found in their leaves. Chlorophyll helps leaves absorb energy from light (photosynthesis).
Conifer	*(noun)* A tree where the seeds are located within a cone.
Corolla	*(noun)* Whorl of petals of a flower.
Deciduous	*(adjective)* A tree that sheds all of its leaves each year.
Endemic	*(adjective)* Prevalent or regularly found among a people or in a district; confined to a particular area (*biology*).
Escarpment	*(noun)* A long, steep slope, esp. one at the edge of a plateau or separating areas of land at different heights.
Eucalyptus Longhorne	*(noun)* The beetle (*Phoracantha semipunctata*) which attacks eucalypt trees, eating the sapwood under the bark.

Basic Glossary

Flower	*(noun)* The seed bearing reproductive organ of a plant..
Frass	*(noun)* A fine powdery wood produced as excrement by wood boring insects.
Fruit	*(noun)* A seed bearing reproductive organ.
Geotropism	*(noun)* Oriented growth with respect to gravity.
Girth	*(noun)* Circumference of a tree trunk (usually measured a certain height from the ground – this measurement varies around the world though is often 1 m or 1.2 m).
Glabrous	*(adjective)* Free from hair.
Glaucous	*(adjective)* Of a dull greyish-green to greyish-blue colour, or covered with a powdery bloom.
Heartwood	*(noun)* The older harder wood found between the sapwood and the centre of woody plants (pith), It is classed as non-living.
Inflorescence	*(noun)* A cluster of flowers arranged on a stem that is composed or a main branch or a complicated arrangement of braches.
Internodes	*(adjective)* The part of the plant between the nodes on a stem from where leaves grow from.
Inosculate	*(verb)* to unite intimately, connect or join so as to become one.
Juvenile	*(noun)* Any individual organism that has not reached its adult form. Juvenile life forms are still developing, but adult life forms have stopped developing.
Kino	*(noun)* Resin from a eucalypt tree, especially those known as bloodwood trees.
Node	*(noun)* The part of a plant's stem from where leaves emerge.
Organism	*(noun)* Any plant or single-celled life form.

Basic Glossary

Pinacle	*(noun)* A loose cluster of buds or flowers.
Perenial	*(noun)* A plant that lives for two or more years.
Petiole	*(noun)* The stalk that attached the leaf blade to the stem. It can twist the leaf so it faces the sun.
Pith	*(noun)* The very centre wood of a tree. It is found inside the heartwood.
Phyllode	*(noun)* Modified petioles (leaf stems) which look like a and function as a leaf. In some species the leaf and petiole is modified to the point that the phyllode serves as a leaf. They are common in acacias such as the narrow-leaved wattle (*Acacia linearifolia*).
Root	*(noun)* Anchors the tree to the soil and absorbs water and soil minerals.
Sapwood	*(noun)* The softer section of recently formed wood found between the bark and heartwood of a woody plant.
Sclerophyll forest	*(noun)* Vegetation dominated by evergreen species with hard leaves to reduce water loss and short internodes.
Sessile	*(adjective)* Attached directly by its base without a stalk or peduncle or fixed in one place and immobile.
Stamen	*(noun)* The male fertilising organ of a flower, typically having a anther which contains pollen and a filament.
Stigma	*(noun)* The part of the flower that receives the pollen during pollination.
Tree	*(noun)* A single erect woody perennial plant that has a trunk, lateral branches and attains a good height.
Tubor	(noun) The thick underground root-like part of some plants that serves as a food reserve as well as bearing buds. A potato is a tuber.

Basic Glossary

Umbel *(noun)* An inflorescence in which a number of similar length flower supporting stalks or pedicels, emerge from a common point.

Umbrageous *(noun)* Creating or providing shade.

Understory *(noun)* The shrubs and plants growing beneath the main canopy of a forest or tree.

Whowl *(noun)* A set of leaves, flowers, or branches extending from a stem at the same level and encircling it.

By
Steven and David Hibbert