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Seed Notes for Western Australia

No. 6 Eucalyptus

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This issue of **Seed Notes** will cover the genus *Eucalyptus*.

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Eucalyptus

The name *Eucalyptus* comes from the Greek *eu* meaning well and *calyptos* meaning covered. It refers to the flower bud that is covered by the operculum or cap. The first *Eucalyptus* species were introduced into cultivation around 1771. The genus is now one of the worlds' most important, the main use being for timber production. Some species are very hard and resistant to termites, while others are soft and used for pulping for paper production. The timber is also very important for fuel wood in many developing countries. The bark has been used for tannin production although it is now rarely employed. The leaves of a number of species are utilised for ornamental floristry. Trees have been used for wind and water erosion control; others



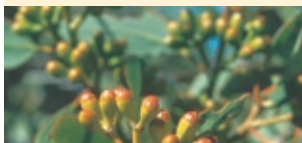
The yellow flowered *Eucalyptus preissiana*.

Photo – Andrew Crawford

are used for draining marshy areas due to their high water uptake. The genus has use for apiarists due to the richness in nectar of the flowers. Trees and shrubs of many species are widespread in amenity horticulture. The bark and fruit are often used in craft making while the leaves produce many shades of colours and are used in wool dyeing. Many species provide food and habitat for native animals (e.g. koalas) and birds (e.g. parrots).

Description

Members of the genus *Eucalyptus* (family Myrtaceae) are woody perennial shrubs and trees, mostly evergreen. They may have persistent or deciduous bark, rough or smooth, or a combination of the two and the bark type is one means of identification of species. The juvenile leaves often differ from the mature ones and this can assist in identification. The foliage ranges in colour from bright green to dull olive green and silver-grey. There is a strong mid vein in the mature leaves and oil glands may be prominent. The leaves contain oil that in some species is extracted for its medicinal and industrial properties. The flowers consist of an inflorescence of between three and 35 flowers in a umbel (all the individual flower stalks arise in a cluster at the top of the stem). The numerous stamens of the flowers may be white, cream, yellow, orange or red. The fruit is a capsule, which may be woody and comes in all shapes and sizes, further assisting in identification of species.



Variations in flower colours in *Eucalyptus ficifolia*. Photos – Kate Brown



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Geographic distribution and habitat

Eucalyptus is the second largest genus in Australia and all but about eight species are endemic. Members of the genus occur throughout Australia, from sea level to over 2000 metres in height. They occur in a variety of habitats from exposed coastal sites to closed forests to dry inland regions. Most occur in dry or wet sclerophyll forests and woodlands with a few found in the rainforests of the tropics.



Approximate distribution of *Eucalyptus* in Australia.

Eucalyptus species grow on a range of soil types, from well drained to poorly drained or even waterlogged; from acid to alkaline; from sandy soils to rocky clay loams. There is a wide array of growth habits in the genus *Eucalyptus*. They may be very tall trees or they may be almost prostrate. Trees or shrubs may be multi-stemmed (mallee) or with a straight trunk and branching at a height (mallet). Many species can be coppiced during harvesting, resprouting from the base. Although some species are tolerant to saline soils, the survival of several species

in the eastern wheatbelt of Western Australia is threatened by rising salt levels and waterlogging. Some species, such as *E. marginata* (jarrah), are susceptible to the dieback disease, *Phytophthora cinnamomi*.



A range of fruit shapes and sizes.
Photo – Andrew Crawford

Seed collection

Eucalyptus species generally produce copious quantities of seed annually and the fruits may take a year to mature from flowering. The capsules are mainly woody, hard and may be brown when mature, and located on older wood. Check to see that seed is ripe by cutting the capsule carefully with a pair of secateurs. The endosperm should be white and firm, with a brown to black seed coat. The fruits should not be green, and if the valves on the capsule look as if they are beginning to open then the fruit should be ripe enough to collect. The seed of most species of *Eucalyptus* are easy to collect, although seed from tall trees can only be reached by climbing or using long-handled pruners. The capsules generally shed seed on maturity and the timing of collections may be crucial, although many species hold seed for a year. It is important that unopened capsules are collected. Capsules will release their seed if kept under warm, dry conditions from a day to several weeks.



Collecting *Eucalyptus dolichorrhyncha*.
Photo – Anne Cochrane

Reproductive biology

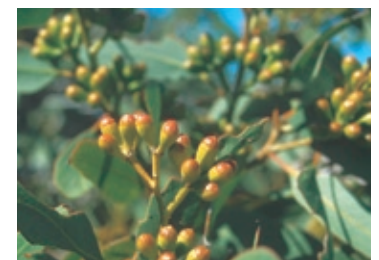
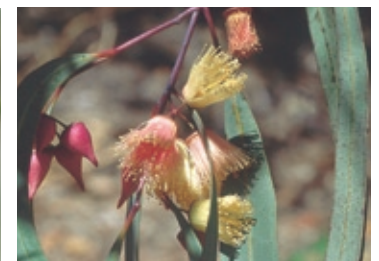
Many species produce copious quantities of nectar that attracts insects, birds and small mammals such as honey possums. Plants may be insect, bird and sometimes animal pollinated. Sawflies and native bees are implicated in pollination. The genus is renowned for its ability to hybridise between species, giving rise to a range of variable combinations. Some species do not flower every year and may have years when flowering is phenomenal. Eucalypts are divided between those that are killed by fire, regenerating from seed and those that have a lignotuber, a below or partially-below ground root swelling that allows them to resprout after disturbance, such as fire. Seed is dispersed by gravity and by wind.



Above: *Eucalyptus* buds.

Right from top: *Eucalyptus synandra*,
Eucalyptus petita, *Eucalyptus argutifolia*.

Photos – Anne Cochrane





Eucalyptus aquilina.



Eucalyptus erectifolia.



Eucalyptus creta.



Eucalyptus dolichorrhyncha.



Eucalyptus macrocarpa.

Photos – Anne Cochrane



Robin Probert from the Millennium Seed Bank collecting *Banksia tricuspis* seed.

Photo – Andrew Crawford

Seed quality assessment

The seed of *Eucalyptus* are present within the fruits or capsules in association with chaff, or non-viable seed. For some species it is very difficult to distinguish the chaff from the seed. The chaff is sometimes a different colour or shape, but there is no white endosperm inside the chaff, and it has a more brittle texture. A cut test and count can be performed on the seed and chaff to give an estimate of the number of seeds



within a given weight. This is often easier than to separate seed from chaff.



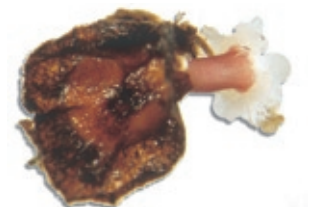
Eucalyptus seed and chaff.
Above: *Eucalyptus bennettiae*.
Left: *Eucalyptus angustissima*.
Photos – Anne Cochrane

Germination of seeds

The germination of *Eucalyptus* seed is generally easy without the need for pre-treatment. Some montane species benefit from cold stratification (putting seed in a fridge for a few weeks before conducting germination testing) prior to sowing. This is not necessary with Western Australian species. Germination is generally very high (provided good seed, not chaff, is used) and seed maintains viability for a long time provided it is stored under cool, dry conditions. The seed responds well to surface sterilisation of the seed coat with a diluted solution of bleach (10 per cent). This helps prevent fungal infection during germination.



Germinating Eucalyptus seed.
Above: *Eucalyptus bennettiae*.
Below: *Eucalyptus rhodantha*.
Photos – Anne Cochrane





Seed Notes

for Western Australia



These **Seed Notes** aim to provide information on seed identification, collection, biology and germination for a wide range of seed types for Western Australian native species.

THREATENED FLORA



SEED CENTRE

They have been written and compiled by Anne Cochrane, Manager of DEC's Threatened Flora Seed Centre.

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Seed Notes

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Top: Bark colouration in *Eucalyptus creta*. Above: *Eucalyptus synandra*.

Photos – Anne Cochrane

Recommended reading

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