

Dear Members,

How are you all? The last four months have been pretty quiet as far as correspondence is concerned, but I've received some very interesting letters from members as well as people outside the group. Now that summer is on its way, I expect many of you will be planting eucalypt seeds. The seedbank continues to grow steadily, although donations have been fairly sparse of late. Welcome to the new members who have joined since July. They are:-

A Summary of Information received on the 20 spp listed in the July newsletter

E.ficifolia (W.A. Red Flowering Gum) 17 reports. Successful in many parts of southern Australia, provided the following conditions are met: 1 climate with a winter rainfall maximum 2 no heavy frosts 3 no severe seasonal drought 4 salt free soil 5 reasonable drainage. Very common in and around Melbourne; also Adelaide, Hobart and Perth. Successful in Sydney, but somewhat undependable. Fails in Qld except in high altitude areas with good drainage eg. Toowoomba. In Perth, it is subject to canker, which kills or debilitates old trees. Growth rate $\frac{1}{2}$ -1m/year, dense canopy. Trees in low rainfall areas (<900 mm/yr) may be slow with chlorotic leaves, and may flower poorly. Flowers abundant in summer, pink through orange to crimson, from about the 4th year. Adaptable to many different soil types, including limestone.

E.sideroxylon (Mugga Ironbark) 17 reports. A moderate to fast growing tree, 1-2m per year in the early stages, reaching 20m at maturity. Reported from all states except N.T. Probably not suitable for tropical areas. Very frost and drought hardy and adaptable to a wide range of soils, including limestone. It will tolerate some salt spray, but prefers well drained sites. Few pest or disease problems. First flowers at about 4 years old. Fls June (Springsure), ranging from white to deep pink. Supplementary watering usually increases growth rates and flowering intensity. Coppices well.

E.kruseana (Bookleaf Mallee) 14 reports. Commonly grown, mainly in southern states, but also successful at Springsure (Qld) and Alice Springs. Rather slow growing with a rounded open canopy. Only moderately drought resistant. Adaptable to various soil types, but requires good drainage. Will tolerate limestone. May be susceptible to caterpillar attack. Flowers yellow or lime-green, often commencing in second year, and subsequently in bud or flower for much of the year.

E.tetraptera (Square-fruited Mallee) 13 reports. Slow growing mallee, often less than 50cm/yr. Generally successful in Vic, SA, southern WA and inland NSW and Qld south of the tropic. Soil type unimportant, but it requires moderate to good drainage. Tolerates limestone soils. It is drought tolerant, but additional watering is necessary where annual rainfall is less than about 450mm. Will endure light frosts. Invariably straggly and untidy in habit, although this may be corrected by careful pruning. Flowers after about 5 years of age.

E.alpina (Grampians Gum) 7 reports. Successfully grown in Vic, Tas and NSW. Very tolerant to frost and drought, but will not survive waterlogging. It will grow in a variety of soils, from sand to heavy clays. Always very bushy in cultivation, often with foliage to ground level. New growth bronzy-gold in colour. Growth rate moderate. Flower buds may be produced at 2yrs of age, but are held for a long time (up to 2yrs) before the flowers open. Warm moist soil promotes root rot.

E.ovata (Swamp Gum) 4 reports. Frost hardy, tolerant of drought and particularly waterlogging. Can be grown in low rainfall areas eg. 300mm/yr if supplementary watering is available. Performance in Qld and WA unknown.

E.vernicosa (Varnished Gum) 3 reports. A very small shrub, often broader than high. Very slow growing. Very frost tolerant, but not drought resistant. Withstands poor drainage. Grown in Sydney as a pot plant, where it resided happily for 3-4 years. An attractive, compact plant with tiny leaves.

E.microtheca (Coolibah) 3 reports. Drought and frost tolerant and withstands poor drainage. Prefers heavy clay soils. Growth rate slow (temperate areas) to moderate (subtropics and tropics). May ultimately reach 15m.

A.floribunda (Rough-barked Apple) 2 reports. Vic and NSW. Flowers profusely in Sydney, but sparsely in Melbourne. Growth rate moderate. Adaptable to many soil types. Can flower when only 1½ metres high.

E.wandoo (Wandoo) 2 reports. SA and NSW. Slow growing, watering necessary in dry climates. Possibly susceptible to borer attack.

E.confertiflora (Broad-leaved Carbeen) 2 reports. Qld. Slow, growing only in the warmer months. Frost tender.

E.resinifera (Red Mahogany) 2 reports. NSW and Qld. Slower growing than related species, but adaptable to many soil types.

E.gamophylla (Blue Mallee) 1 report. SA. Very slow, probably due to cool climate and shading. No notable pests.

E.drummondii (Drummond's Gum) 1 report. NSW. Grew to seven metres before being removed. Flowered in third year and thereafter. Clay soil.

E.buprestium (Apple Mallee) 1 report. NSW. Failed due to fungal attack of the roots in hot, wet weather. Never raised to flowering stage.

E.apiculata (Narrow-leaved Mallee Ash) 1 report. Melbourne. 3m x 3m in 4 years, in sandy loam with good drainage. Tolerant to frost and drought.

I received no cultivation information on the following species :- brachycalyx, porosa, socialis and zygophylla.

Below is the list of 20 spp for consideration before the March '84 newsletter.

<u>capitellata</u>	<u>chapmaniana</u>	<u>coccifera</u>	<u>cooperiana</u>
<u>curtisii</u>	<u>fasciculosa</u>	<u>fraseri</u>	<u>gillenii</u>
<u>longicornis</u>	<u>michaeliana</u>	<u>orgadophila</u>	<u>pruinosa</u>
<u>pyriformis</u>	<u>rugosa</u>	<u>salubris</u>	<u>sargentii</u>
<u>terminalis</u>	<u>triflora</u>	<u>viminalis</u>	<u>viridis</u>

If you have grown any of these species, or have knowledge of specimens in your neighbourhood, please let me know. Remember to tell me about the ones that failed (and why), as well as your successes. Try to include the following information:-

1. Climatic/soil data - rainfall, frost ; slope, aspect, drainage, soil type, salinity.
2. Physical data - age, height x width, age to flowering, flowering period, vigour, tolerance to drought, frost, waterlogging, salinity; appearance (healthy or sickly).
3. Cultural data - fertilization, supplementary watering, insect or fungal problems.

Please make sure you are sitting down before you read this!

The most controversial and far reaching changes ever in Eucalypt classification are about to take place.

Dr Lawrie Johnson and Mr Don Blaxell of the Sydney herbarium are soon to publish a revised classification of all eucalypts, in which the present genus will be split into about eight genera! The consequences are that about 80% of species will no longer shelter under the generic name Eucalyptus.

The present subgenera will be promoted to the status of genera.

Since it was E.obliqua which was the first described species (type species), it is only its relatives which will be Eucalyptus spp in the new scheme of things; namely the Stringybarks, Ashes, Peppermints, Scribbly Gums and other species presently contained in the subgenus Monocalyptus.

Here are some examples of the changes in store:-

<u>Eucalyptus gittinsii</u>	becomes	<u>Eudesmia gittinsii</u>
<u>Eucalyptus ficifolia</u>	"	<u>Corymbia ficifolia</u>
<u>Eucalyptus papuana</u>	"	<u>Blakella papuana</u>
<u>Eucalyptus tereticornis</u>	"	<u>Symphyomyrtus tereticornis</u>
<u>Eucalyptus salmonophloia</u>	"	<u>Symphyomyrtus salmonophloia</u>
but <u>Eucalyptus remota</u>	remains	<u>Eucalyptus remota</u>

Over 300 species will become Symphyomyrtus spp. (pronounced sim-fee-o-mer-tus). The justification behind this monumental change in classification is that some of the eucalypt subgenera are more closely related to trees outside the genus than they are to some other eucs. It is certainly true that the Bloodwoods and Paper-fruited Bloodwoods are closer to Angophora than they are to say, the Stringybarks.

Also, if the 550-odd eucalypts can all be under one genus, then to be consistent, other Myrtaceae genera would need to be melded together eg. Melaleuca and Calothamnus ; Baeckea and Chamelaucium.

Personally, I am not in favour of the changes, as I feel the price will be too high in terms of confusion (overseas as well as here), and that the splitting of such a "natural group" should be avoided.

Of course, the term "Eucalypts", will continue to refer to the whole 550-odd species, and the Eucalyptus Study Group will be unchanged in terms of the species under consideration.

I'll be interested to hear your opinions and comments on this topic.

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Notes on the Distribution and Botanical description of Eucalyptus alpina (Grampians Gum) by Marj Bowyer, Warrnambool.

In spite of its botanical name, Eucalyptus alpina is not found in alpine regions. In this case, the common name is more appropriate, as E.alpina is endemic to the Grampians in the Western District of Victoria. It grows on the higher peaks - Mt. William, Major Mitchell Plateau and Mt. Rosea - mainly above 1000metres, but it is also found on Mt. Abrupt, Mt. Burchell and the Pinnacle, all around 800 metres. The lowest altitude I have seen it is at Mirranatwa Gap, where it can be seen growing right on the roadside, at about 500-600 metres.

It was first discovered by Major Mitchell in 1836 and named by John Lindley, professor of botany at University college in London at that time.

E.alpina grows in association with Brown stringybark (E.baxteri), with which it sometimes hybridises, and specimens can be found which bear characteristics of both species. These can be seen quite frequently on Mt. William, at altitudes around 1100 metres.

On the exposed summits it appears as a stunted tree, often no more than two or three metres high, growing in rock fissures and other seemingly impossible places. On the lower trunk the bark is stringy, but peeling on the gnarled and twisted branches above. Just a little below the ridges, in the lee of rocks, it will reach 5 or 6 metres high and grow a more shapely tree. In cultivation it could possibly reach 20 metres although I have never seen one even half that height.

The alternate adult leaves are 7-10cm long, thick, leathery and glossy. The juvenile leaves are opposite and ovate. Veins are not prominent. The sessile buds have a rough warty appearance and can remain on the tree for a year or more before opening. They are in groups of 3 to 5. Flowering period is summer to early winter and the stamens are cream. The woody seed capsules are quite large (12-20 mm diam), tightly pressed against the stem and roughly hemispherical, with a narrow disc and sharp projecting valves.

Growing naturally in harsh windy conditions, E.alpina should be a good windbreak at lower altitudes, but it must have good drainage. It should be frost and drought tolerant. Plants I have put in have survived temperatures down to -5°C but died through waterlogging.

Hybrids

Hybrids between pairs of eucalypt species sometimes occur under natural conditions, particularly in temperate areas of Australia.

Three main conditions must be met before a hybrid may occur:

1. The two species must be closely related. Species from different subgenera (or genera after Johnson & Blaxell) cannot hybridize eg. a bloodwood will not cross with a red gum.
2. The two species must be in the same vicinity ie. the parent trees need to be within a few hundred metres of each other.
3. The flowering periods of the two species must overlap. Obviously, if only one species is flowering, no hybridization can occur.

Under natural conditions, all three requirements are not often met. For example, although there are many "box" species on the western slopes of New South Wales, they generally have distinct habitat preferences, so that trees of different species rarely adjoin. And when they do, the flowering periods are usually quite different.

Under garden conditions however, requirement No2 is usually overcome, and No 3 is often overcome, since many species flower more regularly and for a longer period under cultivation. Hence in a park or garden where there are numerous species, hybrids are fairly likely to arise. Hybrid plants are usually detectable in the seedling stage, particularly when the juvenile leaves of the parent species vary markedly eg. E.viminalis x E.dalrympleana, as hybrids are generally intermediate in morphology between the two parents.

Hybrids may be of two kinds, and it's important to realize the attributes of each.

a) F1 hybrids - In the case of the average eucalypt grower, F1 hybrids are encountered under the following circumstances. A batch of seed is collected from a true species, and upon planting, one or more seedlings are found to be different from the rest. These F1 hybrids are generally more vigorous than either parent and display some characteristics of both parents.

b) F2 hybrids - These arise when seed is collected from a known hybrid tree and result from selfing of the F1 plant. There is generally some genetic deterioration

and considerable variation between plants. They are often undesirable plants, although there are exceptions. It is F2 seed which is available in seed banks.

There is definite potential for the development of F1 hybrid eucalypts, particularly to combine the good points of two species. Some very promising work is being done by Beardsell, Jones and Beardsell, who have already produced leucoxyton x caesia as well as sideroxyton x caesia hybrids, by controlled artificial pollination. (Refer Aust Plants Vol 10, No 78). I would like to hear from any member who has observed hybrid eucalypts in the bush or as cultivated plants, and his/her opinion of them for widespread culture.

I'm sure you will all have read with interest, the article by Greg Keighery in the most recent edition of Australian Plants. As Greg says, there are just two species of eucalypt possessing connate filaments, namely E.beardiana and E.synandra. I would like to point out that contrary to what is stated in the article, the anthers are not fused in these species. It is the filaments that are fused. The anthers (which contain the pollen), are quite free. The word 'anther' should be replaced by 'filament' in this article.

E.beardiana was described only a few years ago, and is known from only three small populations just south of Shark Bay in W.A. At least some of these populations have flowers with fused filaments (not anthers).

E.synandra was described only last year, and does not even appear on the last ESG seedlist. The botanical name literally means fused androecium, and this is its most striking feature. It is very similar to, but distinct from Tammin Mallee (E.leptopoda), a widespread species of the wheatbelt and goldfields. E.synandra has a peculiar distribution, with some occurring in the wheatbelt near Morawa, near Koorda and at Mt Gibson; while others are found about 700km away in the Great Victoria Desert, north of Kitchener. Dr Crisp (the author) is reluctant to propose any subspecies until the species is better known.

Also in this most recent journal, is a key to the Orbifoliae species, by Steve Hopper and Ian Brooker. All these species have the strange and beautiful curly "minneritchi" bark. The best known species is E.caesia, which occurs in two well known forms. Please note the typographical error in this article. In the first section, after a brief description of the two subspecies of E.caesia, the next taxon described should be E.crucis ssp lanceolata (not caesia).

Connate foliage in Eucalyptus

In newsletter No 2, I made a list of eucalypt species which possess connate foliage at some time in their lives. Since then, I have been advised of a couple of additional species, namely E.crucis ssp crucis and E.mooreana. So the revised list reads:-

Subgenus Corymbia	E.perfoliata
" Eudesmia	E.odontocarpa, E.gamophylla
" Monocalyptus	E.tenuiramis, E.risdonii, E.dives(uncommon)
Symphyomyrtus (Bisectaria)	E.uncinata, E.crucis ssp crucis
(Exsertaria)	E.mooreana
(Maidenaria)	E.sturgissiana, E.perriniana
(Adnataria)	E.leucoxyton (some forms only)

NOMENCLATURE NOTES

It was decided at a recent Botanical conference, that species names ending in -erana will be changed to end in -eriana. In Eucalyptus, this affects six species and they are now muelleriana, cooperiana, websteriana, brookeriana, staigeriana and baueriana.

One of the most widespread Queensland eucalypts, the Queensland Peppermint, which has been known for many years as E.exserta, has had a name change. It is now correctly known as E.umbellata. These two names have been found to be synonymous, and since umbellata is the earlier name, it has nomenclatural priority.

Eucalypt leaves as food

Have you ever wondered why, in a land full of eucalypt trees, and therefore euc leaves, so few animals have exploited this almost endless resource? In fact, there are only four marsupials whose main diet is eucalypt leaves! Certainly a case of supply exceeding demand. The best known gum-leaf eater is of course the Koala. The others are the Brush-tail Possum, Ring-tailed Possum and the Greater glider. The reason for this situation is that the essential oils of gum-leaves are poisonous if taken in quantity, hence these creatures must limit their intake, and therefore need to have a low metabolic rate. This explains why these animals are generally slow-moving and "sleepy", although of course they are capable of rapid movement and aggression.

This looks like being a great success. Several members have donated slides, and I have put in about 30 of my own, so that we now have two slide packages, each with about 40 slides!

The first deals with eucalypts native to temperate Western Australia and South Australia, and included are photos of trees, flowers and fruits of both rare and common species throughout the area. Southern WA boasts many of the most ornamental eucalypts, so this selection is worth seeing.

The second deals with eucalypts and angophoras native to tropical Australia, NT and the eastern states. Included are some of the Kimberleys and 'Top End' eucalypts, such as the Scarlet Gum (E.phoenicea), and numerous Qld, NSW, Vic and Tas species. Many have spectacular foliage or form.

These two packages are now available for loan, by any ESG member, and may be kept for a one month period. I must ask you to adhere to this time limit, so that everyone gets a chance to use the library. The only cost you will incur is the return postage. The slides will be accompanied by a written description and a cassette with a similar description on it, so that the package may be used as an audio/visual presentation. If you would like to borrow these slides, just write and let me know. Indicate which package you would prefer, and I will send it out to you, or put you on the waiting list.

Of course, I will still be looking for more slides to increase the range of species and topics covered.

Members Letters

David Albrecht from Melbourne is interested in growing mallees as mallees in cultivation. As many of you will be aware, species that are mallees in the bush usually grow as single-stemmed "trees" when cultivated. David is trying to gather information on this topic, and has done experiments on a few species already. The most obvious method of achieving mallees is to decapitate the plant. The trick is to know when and how to do it. Also, each species will respond differently. David comments, quite correctly, that information on producing mallees for home gardens would be invaluable to landscapers and other plant managers. Could anyone who has ideas on this subject, please let me know?

Chris Brown of Yarra Glen reports on the population of E.crenulata near her place. This is probably Victoria's rarest eucalypt, known from only two places, Buxton and Yering. Chris says that at Yering, there are only about 20 crenulatas plus 10 crenulata x ovata hybrids. They are on privately owned land with cattle grazing, and although it has been declared a reserve, there is no fencing, and there don't appear to be any new plants coming up.

Beverley O'Keeffe of Springsure has organized, and almost single-handedly implemented a large planting of eucalypts at the local school, with the cooperation of the teachers and pupils. Each child "owns" a tree and is responsible for weeding it and looking after it. Beverley chose about twelve local and other hardy species which are sure to do well, and was fortunate in having good rains after planting, so establishment rates are very good. Species planted included E.papuana, E.citriodora, E.umbellata (=exserta), E.intermedia and E.melanophloia.

Mick Richardson from Brisbane has begun painting flowering and fruiting eucalypt branchlets. His first three were E.planchoniana, E.ptychocarpa and E.leucoxydon ssp megalocarpa. I have seen these and I was very impressed. Mick uses fresh specimens where possible, but otherwise uses drawings in books as a guide. He has already had an order for some paintings from a friend who lives nearby. Stan Kelly beware!

Woodchipping in Tasmania

Woodchipping of eucalypts is taking place in southern NSW, WA and Tasmania. Mr Alan Gray has sent in some information on the Tas situation. Alan is strongly opposed to the industry, as are all people who care anything about things natural.

Woodchipping is widespread in northern and eastern Tas, centred at Longreach and Triabunna respectively, and affects about nine species of eucalypts. Private landowners are encouraged by the quick dollar to clear their land, supposedly to re-afforest later. Few of them do, so that forest continues to be turned into pasture (often poor quality). In other areas, the unwanted "rubbish" is burned and the area planted with Pinus radiata, without any buffer zones or corridors of natural bush. The huge log-trucks travel at breakneck speed to complete as many trips as possible per day (to the detriment of the roads) and present a real danger to other road users. Incredibly, the woodchips are sent overseas for processing, and then sold back to us as packaging material. For the sake of short-term gains, Australia's forests are being decimated, in many cases permanently.

Propagation of Eucalypts (cont)

Transplanting. Ideally, eucalypt seedlings should be transplanted when they are quite small, with only 1 or 2 pairs of true leaves. They can be transplanted later, but the success rate is lower.

The seedlings should be held by a leaf (not the stem!), and a pencil or similar object is used to assist in the removal of the roots + soil from the pot. You will probably find that the young seedling has a tap root which is much longer than the above ground portion. This can be pruned back with impunity, and in fact, if the root is longer than the depth of the new container or if there is a possibility of "root curling", root pruning is advantageous. A hole should be prepared in the new container to receive the seedling. Hold the seedling in position, and place soil mixture around the roots and gently firm it. Water thoroughly to remove air pockets. Newly transplanted seedlings should be protected from direct sunlight and wind, as their ability to replace water loss is temporarily impaired.

Pests. In theory, you can sit back and watch your seeds grow into lovely plants ready to plant out. In practice however, it is a rocky road. Almost constant vigilance is required to keep weeds, insects and fungi at bay. Optimum conditions for plant growth co-incides with the maximum incidence of pests. Weed control will inevitably involve some hand pulling, but you should concentrate on preventative measures such as 1.careful selection of weed free ingredients in your soil mix 2.not allowing weeds to reach reproductive stage 3.prevent weed seeds from blowing in. Fungi usually make their presence felt in the form of mildews or root rots. The incidence of root rots can be minimized by the application of fungicides, and by the sterilization of implements, containers and benches. Mildews can also be combatted by fungicides, or by avoiding propagation during the warm, humid periods of the year.

Insects are often a problem. Caterpillars can appear almost overnight, and one caterpillar can completely defoliate a small plant. Often they are not visible at first glance, hiding under the leaves or on the soil surface. If you have large numbers of plants, you may need to resort to the use of insecticides, such as Carbaryl. Aphids can be a problem, especially on young growing shoots. The incidence of insect attack can be lowered by the use of a fully enclosed bushhouse, which limits access to larger insects eg. butterflies, grasshoppers. But in general, insect control involves the careful monitoring of insect populations, at least every few days.

Hardening. As your eucalypt plants approach the planting out stage, the interval between waterings should be increased, so that the plants are subjected to some degree of stress. This will make them more hardy and better able to cope with the rigours of the outside world. Also, plants grown under shade should be exposed to more and more sunlight, until they are used to full sunlight all day.

Planting Out. Small plants (15-20cm tall) establish better, and form a superior root system, but larger plants are less subject to damage by rabbits, wallabies and frost. So, depending on your own situation, the plant size and time of planting will need to be a compromise. If possible, prepare the planting site some weeks or months before planting, particularly in clay soils, as it is desirable to have the soil in a fine tilth, and to incorporate organic matter or rotted manures. Soil should be prepared to twice the depth and width of the pot. Fertilizer can be added in the planting hole at planting, but not in direct contact with the roots. Soil should be gently but firmly packed around the young tree's roots, followed by a thorough watering, to ensure root-soil contact. Mulching will inhibit weed growth and retain soil moisture.

A new population of Eucalyptus carnabyi, a rare hybrid eucalypt, has been found near Cataby, north of Perth. It is a hybrid between E.macrocarpa and E.drummondii, and is highly sterile, producing no nuts and with only 3% of its pollen developing normally. The flowers are pink or white. A total of 8 plants are now known. The new population grows on a road verge, and overlooks thousands of hectares of recently cleared farmland, all of which was made available without prior botanical survey.

E.formanii was named after Francis Gloster Forman, a former Government Geologist of Western Australia, who first collected the species. This species has been incorrectly spelt in "A Gardener's Guide to Eucalypts" by Ivan Holliday.

The March newsletter will contain the revised seedlist/classification.