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Dear Members,

It is Newsletter time again. In the past six months I have had letters from many of you and filled quite a number of orders for seed. Subscription fee is now due again. For this year it will remain at \$2.00 per member. A few of you have already paid but for those who have not, could you please pay within the next month or so. Membership now stands at about 110. Because of the high cost of postage, I am now checking the membership list at the end of each calendar year and dropping those who are no longer financial.

In Central Queensland, the past summer has been very long and fairly hot and dry. Although this area has not been actually drought stricken as are areas further south and West, it has not been a good year for rainfall. This appears to have had an adverse effect on the flowering and setting of seed on many of the natural growing eucalyptus with the result that I have not been able to collect much seed from them. On the other hand cultivated trees appear to have set seed fairly well. During January and May, I made trips in Central Queensland collecting seed and visiting people interested in native plants. On the Anzac Day weekend I attended the Qld. State Convention of S.G.A.P. in Brisbane where I spent a very enjoyable and educational three days. Emphasis of the convention was on the use of native plants particularly in the ways they can be used to improve our environment. Many of us are only now beginning to realise the important part that native plants can play in improving our life and the diverse and important uses that they can be put to.

I am now getting an increasing number of specimens to identify. Although this takes time, I enjoy it and am willing to help any member who has difficulty in identifying species of eucalypt. However it is important that suitable material and information is forwarded. Each specimen must contain fruit and/or buds (include fruit if possible) and mature leaves, flowers can be helpful but are not as useful in identification as fruit and buds. Information required includes, tree form, bark type, soil type, whether growing on hills, flats etc., locality in relation to the nearest town, whether natural growing or cultivated, and where possible say what you think it may be, even if your guess is wrong, and it often is not, it helps me as I know what type of species we are looking for. Where a small town is given as locality, also name a larger town in the vicinity. A photo may help but is not essential. If you forward a photo please state if you want it returned. Please include a 22 cent stamp or a stamped envelope so that I can forward a reply. Except for most Qld species and a few from N.S.W. that I am rather familiar with or have pressed specimens of, I have to rely on books for identification so my accuracy would not be as good as that of the botanists of your State Herbarians.

Since the last newsletter I have obtained quite a lot of information on endangered species or species at risk from individual members, the various state regions and from botanists. I wish to thank all who forwarded me valuable information. Generally there was a fair amount of agreement of what species were at some risk but there was considerable difference of opinion of how great that risk was to some individual species. This was not surprising considering the number of factors involved and the incomplete information on the distribution of some species. For example the creation of a reserve for or the finding of a new population of a particular species could reduce the risk of that species from endangered to a less critical category. Conversely the building of a large dam or a mining venture in the habitat of a less threatened species could increase the risk of that species to endangered or threatened. The position really is not static but is changing according to land usage.

Hartly and Leigh in their paper 'Plants at Risk in Australia' have listed approximately 120 species of eucalypts that are under some 'threat' in their natural state in Australia if the present form of land usage continues and adequate protection is not given to them. Of these, 52 occur in W.A., 36 in N.S.W., 12 in Qld, 9 in Vic., 8 in S.A. and 5 in Tasmania. Of these 8 are presently considered to be endangered and 36 are vulnerable. Endangered species are those in serious risk of disappearing from the wild state within 10 or 20 years if present land use and other factors continue to operate and no action is taken to protect them. Vulnerable species are those not presently endangered but at risk over a longer period or if land use patterns are introduced which would be deleterious to those species. Following is a list of those species that are considered to be endangered or vulnerable. They are listed on a state by state basis.

	W.A.	S.A.	Qld	N.S.W.	Vic.	Tas.
Endangered	6	-	-	2	-	-
Vulnerable	9	2	8	11	6	-

W.A. Endangered - *calcicola*, *fitzgeraldii*, *megacornuta*, *pendens*, *steadmanii*, *stoatei*.
Of these *steadmanii* may already be extinct in its natural state while if they are proved to be true, species *carnabyi* and *rhodantha* would be added to this list. At present some botanists consider them to be hybrids while others consider them to be separate species.

W.A. Vulnerable - *brockwayi*, *caesia*, *coronata*, *desmondensis*, *dielsii*, *erythrocarys*, *forrestiana*, *jacksonii*, *kruseana*.

S.A. vulnerable - *cladocalyx*, *cneorifolia*.

Qld vulnerable - *argophloia*, *conglomerata*, *curtisii*, *melanoleuca*, *pachycalyx*, *panda*, *quadricostata*, *socialis*,

Vic vulnerable - *crenulata*, *froggattii*, *kitsoniana*, *mitchelliana*, *neglecta*, *yarraensis*.

N.S.W. Endangered - *badjensis*, *camfieldii*

N.S.W. vulnerable - *acaciformis*, *benthamii*, *deformis*, *glaucina*, *gregsoniana*, *leuhmanniana*, *nicholii*, *parvifolia*, *pulverulenta*, *pumila*, *tindalae*.

I have a list of those species (about 75 species in all) that are considered to be at some risk but not at present endangered or vulnerable. Most of the species listed by S.G.A.P. State Regions as considered to be in some danger are included on it if they have not been named as endangered or vulnerable. If any of you would like a list please let me know. It is interesting to note that some endangered or vulnerable species such as *steadmanii*, *rhodantha*, *forrestiana*, *caesia*, *cladocalyx*, *argophloia*, *curtisii*, *crenulata*, *nicholii* and *pulverulenta* are fairly widely grown in cultivation while others have only been tried by a few and others have not been grown at all. I would like suggestions on how we can help reduce the risk particularly to the endangered and vulnerable species. Perhaps some of us can be active in trying to get reserves established for those not yet given some form of protection. We would try to get some of them more widely grown in cultivation. For some species the growing of them in cultivation is relatively easy but there appears to be some that are more difficult as they appear to be very climate and/or soil specific and growing them out of their natural environment may not be easy. I have seed of quite a few of the species in the seed bank and I will try to get seed of some of the others. Since the last seed list went out in December, I have obtained seed of *melanoleuca* and *yarraensis*.

I wish to thank all of you who have forwarded seed for the seed bank. Donations of fresh seed is always welcome as because of the cost of purchasing seed, the bank is now becoming more reliant on donations of seed from members.

A considerable number of you are now growing eucalypts from seed or would like to do so. Within the study group there are a number of experienced growers who have been growing eucalypts very successfully from seed for a number of years. However some of those recently trying to grow eucalypts appear to be having some problems while some of you may be deterred from starting by the mistaken belief that growing eucalypts from seed is difficult. This is not so. Once a few basic principles have been understood, growing eucalypts is no more difficult than growing vegetables or garden flowers from seed. However like flowers and vegetables there is considerable variation between species or groups of species and some are much easier to germinate and rear than others, so don't expect to plant seed of a wide range of species and get similar results from them all. There are a number of ways of germinating and rearing eucalyptus seedlings. Some people like to grow them in seed pots or trays then transplant out the seedlings when small, others germinate in the pots the plants are to grow in, while a few are germinating in garden beds of fine soil. Watering can either be done by placing the pots in trays of shallow water or by overhead watering with a very fine spray. I use the 'bog' method in which the seed pots or trays are placed in a shallow tray of water and the potting mixture is kept moist by the water being drawn up from the tray. I have found this method very successful, particularly for species from the higher rainfall areas of Eastern Australia, but is not so successful with species from semi-arid areas of W.A. and S.A., as the potting mixture is kept quite moist at all times. I will now describe the method I use, but I must emphasize that this is not the only method that can be used for the successful propagation of eucalypts from seed and I would like to hear more of the methods that others of you are using and the problems that you have experienced and how they can be overcome. Generally I use a potting mixture of $\frac{1}{2}$ coarse river sand and $\frac{1}{2}$ sieved peat moss. For some species the percentage of sand is increased. I boil this mixture to reduce harmful fungi and bacteria and kill the seeds. I use 4 inch square seed pots mainly because they can be packed together and I get more into each tray. A few small clean pebbles are placed in the bottom of these pots and then covered by a layer of river sand. When cooled but still moist the potting mixture is packed into the pot and the surface levelled and firmed. The fine seed is then carefully sprinkled on this surface and covered by a very thin layer of finely sieved sand and peat moss and the surface gently pressed but kept level. The pots are then placed in a shallow tray. This tray is made out of galvanised flat iron and has sides of approx. $2\frac{1}{2}$ cm in height. The water level in this tray is kept at a depth of $1\frac{1}{2}$ to 2 cm. No overhead watering is given. As ants tend to carry away newly planted seeds I keep a gap of water like a moat between the edges of the tray and the pots so that the ants

cannot gain access to the pots. I find that tiny eucalyptus seedlings are very attractive to leaf eating insects and to prevent damage I place my water tray in a germinating box. This consists of timber sides about 15 cm in height, but gauze bottom and lid to allow for light and ventilation. The germinating box is placed in an open position on the northern side of a plant house. Ventilation and light is good and it is protected from direct rain. During the summer it is out of direct sunlight but in winter it does receive some direct sunlight. If the weather is cold when I plant the seed, I sometimes warm water in the water tray for the first 2 or 3 days. On cold nights I place glass over the lid of the germinating box. Providing the seed is fertile, germination usually occurs in from 4 to 14 days depending on specie and temperature.

Probably the most critical and tedious procedure in the growing of eucalypts from seed, I find, is the transplanting of the tray seedlings from the seed pots to the propagation tubes. As the seedling soon puts down a long tap root, they are best transplanted as early as possible to prevent damage to their root systems. Usually I try to get most of them transplanted when they are between 1 and 2 cm in height. Although they can be successfully transplanted when larger, the risk of root damage is greater and losses heavier. When transplanting, I try to get some potting mixture to adhere to their tiny roots to reduce root damage, but this is not always possible. Usually I transplant the tiny seedlings into 1½ inch propagating tubes. In these I use a mixture of approx. 1/3 peat moss, 1/3 coarse sand and 1/3 light loam. This is passed through a coarse sieve to break up large particles and mix it. I also boil this mix before use to reduce disease risk. When still moist this mix is packed into the small tubes. As soon as it is cool, I put the seedlings into the tubes. I have found that particularly in hot weather or if the seedlings are likely to have suffered root damage during transplanting, if I put the propagation tubes into a tray of very shallow water (½ to 1 cm in depth) for a few days, losses at transplanting are considerably reduced. The propagation tubes are placed in shallow boxes on a bed of moist sand and watered by overhead watering. When large enough, the plants in the propagation tubes are transplanted either into a larger pot or black polythene plant bags. I prefer the 11 x 4½ x 4½ inch plant bags because their depth allows better root development and they are very easy to remove the plant from when they are large enough for planting in the ground.

The soil used in the larger pots or bags is creek loam. Here again care is taken during transplanting to see that root disturbance and damage is kept to a minimum. Generally however the risk during this procedure is generally much less than during the transplanting from the seed pots. Provided the mixture in the propagation tubes is moist but not too wet the whole contents of the tube will easily slip out when the tube is inverted and tapped. I do not let the plants in the tubes get too large before re-potting, otherwise I find that as well as the tap root tending to curl around in to bottom of the tube, sometimes the roots go through the bottom of the tube and this will cause root damage when they are transplanted. After a few days in the shade to get over the shock of transplanting, the plants in the larger pots or bags are placed in an open area but given some protection by shade cloth. They remain in this area until they are large enough to be planted into the ground. Although I find that the best month for sowing most species is September and for tropical species a little later, I have been able to germinate right throughout the year. I live in a fairly warm climate, although we do get some cold winter nights, so that you who live in other areas of Australia with different climatic conditions may have to make some adaptations to allow for these differences. I have found that there is a large variation between various species or perhaps more correctly between groups of species in the ease in which they can be germinated and seedlings reared. I have also found that although there are some exceptions, species that are native to the Eastern half of Queensland and adjoining areas of N.S.W. are easier to grow than those from other areas of Australia. It is likely that plants native to your particular area could be easier for you to grow than those from other climatic zones.

Following is how I have found some of the groups of eucalypts to germinate and rear.
Red Gum Group - Easy to germinate and rear. *E. camaldulensis* in particular is an easy specie and this is one specie that beginners should try.

Eastern Blue Gum Group - Easier to germinate provided seed is fresh and fairly easy to rear.

Mahoganies and related species - Fairly easy to germinate and rear.

Ironbark - Box Group - Easy to germinate but some species subject to powdery mildew.

Southern Blue Gum Group - Generally poor germination, fairly easy to rear in the cooler months but more difficult in summer.

Bloodwood Group - Very variable germination and generally difficult to rear as they are very subject to mildew and damping off.

W.A. mallees - Germination generally reasonable but very difficult to rear as they are very subject to mildew and damping off. The problems that I have with this and other groups is probably due to the climatic conditions of my area and the methods I use and those of you in cooler and drier areas or who use other methods should not have the same problems.

Following is the completion of the description of species which form the grey gum group and related species.

E. punctata SECED. A Grey gum. page 70 of Forest Trees of Australia - 78 of Blakely

This species is usually divided into four subspecies. *E. punctata punctata* SECEDA, *E. punctata canaliculata* SECEDC, *E. punctata didyma* SECEDD and *E. punctata longirostrata* SECEDE.

This Grey Gum is similar in size and appearance to *E. propinqua*. It grows mainly on the Central Coast of N.S.W. but does extend up to 180 kilometres inland onto the slopes of the adjacent tablelands. There are small occurrences elsewhere including in the Stanthorpe area of S.E. Queensland. On the coast it grows mainly on low hills but further inland it extends to higher country. It grows on a wide range of soils.

Bark decorticates in large irregular plates leaving a blotched cream to orange surface which turns brown with age. Adult leaves are lanceolate, strongly discoloured and 8 to 17 by 1.7 to 3.0 cm. Fruit is generally cylindrical to sub-hemispherical with deltoid valves and 1.0 by 0.8 cm. There are some differences in bud and fruit characteristics between the various sub-species and there appears to be some intermediate types. Although similar to *E. propinqua*, *E. punctata* generally has larger fruit and a more southerly and inland area distribution.

E. longifolia SECGA Woollybutt. Page 72 of Forest Trees of Australia - 81 of Blakely.

Woollybutt is a moderate sized forest tree which occurs as scattered trees in the Central and Southern coastal areas of N.S.W. with a very small area in Victoria in east Gippsland.

It is found mainly in valleys and on low country on moderate to heavy soils which do not dry out. Bark is sub-fibrous, irregularly ridged and cracked, tending to be flaky, grey and persistent on trunk and lower branches, but is shed from the smaller branches in irregular flakes. Adult leaves are narrow lanceolate, usually curved, pale or dull green concolorous and 12 to 22 by 2 to 5 cm. Fruit is ovoid to bell shaped and 1.0 by 1.4 cm. Although fairly common in narrow strips along streams and drainage lines it is less common in adjacent forest areas. It can usually be distinguished by its sub-fibrous grey bark and sub-cylindrical relatively large fruit.

E. cosmophylla SECCB. Cup Gum. No. 126 of Forest Tree series leaflets - 85 of Blakely.

Cup Gum varies from a short few stemmed mallee to a small tree which occurs in the Mount Lofty ranges east of Adelaide and extends to the Fleurieu Peninsula and northern part of Kangaroo Island in South Australia. In the higher rainfall areas of its distribution it grows in dense scrub with other species of eucalypts but elsewhere it mainly occurs as scattered patches of scrub. In areas of poor drainage it may occur in almost pure stands. Bark decorticates from the branches and most of the trunk leaving a smooth mottled whitish to greyish surface. A short stocking of compact dark grey or brown bark is retained at the base of the trunk. Adult leaves are long stalked, lanceolate to broadly lanceolate, grey green to light green, concolorous and 8 to 15 by 1 to 2 cm. Fruit is cupular with large valves and 1.7 by 1.5 cm. This mallee or small tree tends to favour areas of poor drainage. It can easily be distinguished from other species in the area by its cup like fruit.

Following is the description of a species which is not closely botanically related to any other species of eucalypts.

E. cloziana LAA:A Gympie Messmate. Page 148 of Forest Trees of Australia - 295 of Blakely.

This species does not appear to be closely related to any other species and Pryor and Johnston in 'A Classification of the Eucalypts' have placed it as the only species in the subgenus *I. diogenes*. Gympie Messmate is usually a moderately large tree which occurs in a number of disconnected locations in Eastern Queensland with the main occurrence being in the Gympie district in the South East of that State. It attains its best development on moist gravelly or sandy loams of good depth on the lower slopes of valleys. However it can be found on other sites including tablelands. On favourable sites Gympie Messmate grows in pure stands but is more often found in association with various other eucalypts. Bark is dark brown flaky-fibrous furrowed, but rather soft and persistent on trunk and larger branches. Smaller branches have a smoother grey-brown bark. Adult leaves are lanceolate, often curved 7 to 12 cm by 3 to 4 cm. and discoloured with a dark green upper surface and paler underneath. Buds are ovate to club shaped and 1.0 by 0.5 cm while fruit is hemispheric to globose and 0.8 by 1.0 cm. This moderate to large tree can usually be identified by its rather distinctive bark pattern.