

Dear Members,

Hope you are all well. Summer is nearly over, and I for one, am glad. Here in Queensland, it has been very hot and relatively dry. My little Risdon Peppermint succumbed, but most of the Qld species seem to revel in the steamy conditions. I still look forward to receiving your letters, and your thoughts and ideas on Eucalypt growing and studying. Welcome to the following new members who have joined since November:-

Eucalypt Seeds

Think about a eucalypt seed for a moment. Bored. Well you shouldn't be! They are small admittedly, but quite remarkable.

Is it not awesome to contemplate that a seed weighing just a hundredth of a gram can eventually grow into a 100 metre high forest giant? Internally, a seed consists of a small living, though quiescent plant - genetically the product of the current generation and potentially an individual of a new generation.

But if these thoughts do not impress you, the physical diversity of eucalypt seeds surely will. Close examination of eucalypt seeds reveals a wonderful new world. The seeds of any one species are more or less constant, but different species vary greatly; in size, colour, shape, and surface features. A microscope is the ideal way to examine seeds at close quarters, but a 10X hand lens is sufficient to unlock many of the marvellous mysteries.

The largest eucalypt seeds are those of E.calophylla (Marri). They are about 15mm long, black and glossy, and weigh about one-seventh of a gram. Almost as large are the seeds of E.haematoxylon and E.ficifolia.

The smallest seeds are those of E.howittiana, E.brachyandra, E.thozetiana and a few other species. They are only about half a millimetre long and broad, and weigh less than one thousandth of a gram!

Eucalypt seeds vary greatly in colour, and may be black, brown, yellow, orange or even red. They are all shapes from the linear seeds of E.curtisii to the chunky, cuboid seeds of the stringybarks.

Perhaps the most amazing, and unexpected, feature of euc seeds are their variety of surface features. Some seeds are almost perfectly round and smooth. Seeds of E.redunca (and related species), if placed on a piece of paper, literally roll around like tiny marbles! Other seeds look like miniature pieces of honeycomb - deeply pitted and with toothed edges. Examples are E.torquata (Coral Gum), E.salubris (Gimlet) and E.brachycalyx (Gilja). Still others are quite jagged or angular eg. E.tetraptera.

Some are boat-shaped, and even have a distinct "keel" (no, not a winged keel!) eg. E.peltata. Some seeds are winged, and many have shallow reticulations.

The great diversity shown by the various species' seeds means that they are of some importance in the classification of species into their correct groups. Often examination of seeds can determine which Section or Series it belongs to. Sometimes seeds are so distinctive that the actual species may be identified eg. E.calophylla, E.curtisii, E.microcorys, E.deglupta.

Seeds of Angophoras and Paper-fruited Bloodwoods (Blakella) are saucer-shaped, sometimes with a rudimentary wing surrounding it. Bloodwood seeds are large - some are winged and some are not. This is at times a useful diagnostic feature. For example, E.calophylla and E.ficifolia can be easily separated by looking at their seeds.. E.calophylla seeds are black and wingless; E.ficifolia seeds are brown and prominently winged. The eastern Monocalypts (stringybarks, ashes, peppermints) are the least varied of all eucalypts, but are still worth looking at.

An interesting exercise, which everyone would be able to do, is to collect a few gum nuts from a few different eucalypt species, wait for them to expel, and then examine the seeds under a hand lens. You'd be surprised how fascinating this can be. But beware - not everything that comes out of a gum nut is a seed. There is also chaff! The intricacies of "chaff" could comprise another complete article, but suffice to say here that the viable seeds are generally larger and darker than the chaff, and also are located at the bottom of the fruit (gum nut).

If you would like to learn more about gum-tree seeds, the definitive reference on the topic is "Eucalyptus Seed" by Boland, Brooker and Turnbull. Published in 1980, by C.S.I.R.O.

NOMENCLATURE NOTES

E.peltata ssp *leichhardtii* is now considered to be quite distinct from *E.peltata*, and is now raised to species status ie. *E.leichhardtii*
Recent studies have shown that three named stringybarks, *E.tindaliae*, *E.phaeotricha* and *E.nigra* are synonymous ie. they comprise just one species. *E.tindaliae* was the first name published, hence this name refers to all the trees that were formerly called by any of the three names. *E.nigra* and *E.phaeotricha* are now redundant.

Fertilising your eucalypts

It is a commonly held misconception that native trees, and particularly eucalypts, do not need or do not benefit from the application of fertiliser. The fact is, in many cases, the addition of fertiliser to eucalypts is very beneficial.

Trees in their natural undisturbed environment do not need mineral supplements, as they obtain all their requirements from the decomposing leaf litter and animal droppings. The important thing to note is that the nutrients are recycled.

Trees which are planted (or retained) in parks, gardens or farms will almost certainly benefit from fertiliser, because the nutrient cycle is interrupted. Farm trees are often isolated specimens, which derive reduced benefit from leaf litter and animal droppings. In parks and gardens, leaves are often raked up, lawns are mown and clippings removed, and animal refuse is discouraged.

The roots of the lawn grasses and small plants compete with those of the trees for the available minerals, with the result that the trees suffer more than the grasses, as grass roots are able to compete more effectively for minerals than the tree.. Obviously, fertiliser will be necessary in these cases to re-establish the mineral balance. Where possible, organic materials, such as leaf litter, compost or manures should be used to supply the minerals, as they have the added benefits of improving soil texture, water retention, aeration etc. However there are cases where this may not be appropriate (formal gardens, parks etc.).

Why bother to fertilise?

1. Growth Rates - generally it may be stated that growth rates are increased, and may be increased as much as two fold by fertilisation on low-nutrient sites. Response to fertiliser application is, of course, less in the more fertile soils.
2. Health - there is a correlation between the mineral content of the soil and the tree's ability to resist insect attack of the bark region. Trees deprived of minerals do not produce enough of the defensive materials like kino, gums and resins; substances which are capable of engulfing young insect larvae or eggs before they can damage the bark tissue. Once these insect larvae are established it is more difficult for the tree to produce the quantity of these materials necessary to engulf the larger larvae. The presence of runs of kino in eucalypts is often considered to be a symptom that the tree is not healthy and vigorous. Rather, it should be viewed as a sign that the tree is resisting attack. It is when kino is in short supply that the tree is actually debilitated. It is these trees which respond well to fertiliser applications. However, the conditions which are likely to lead to mineral depletion should be recognised and fertiliser added before any deterioration in the tree's health takes place.

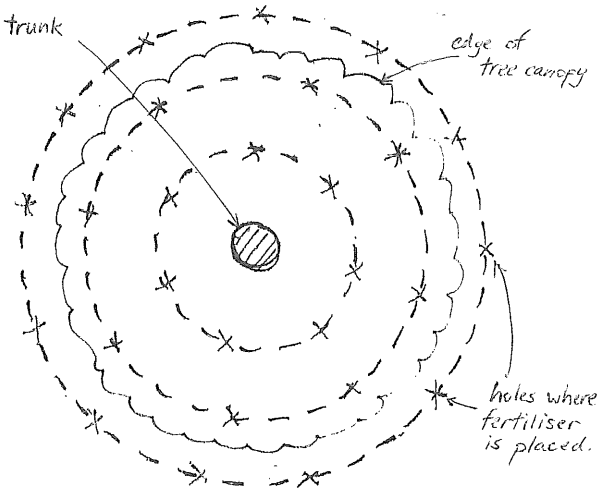
The exact type of fertiliser needed depends, naturally enough, on the minerals already present in the soil, and the mineral requirements of the particular tree species. However, these parameters are difficult or expensive to determine, so an application of a "complete" fertiliser is generally advised.

At Planting - a mixed fertiliser application containing nitrogen and phosphorus (about 30g per tree) should be made at planting on all sites. Additional nutrients should be considered and are likely to be needed on poorer soils. Pocket application approximately 10cm from the tree (and 10cm deep) is recommended to encourage tree growth rather than competing weeds. Alternatively, a slow release fertiliser may be mixed with the soil at the bottom of the planting hole.

Existing Trees - Where there is loose and fairly open soil, the fertiliser may be spread over the soil in the area of the crown spread, that is, the drip line of the tree. It can then be stirred into the surface soil with a garden fork or hand scarifier. The quantity required will vary with the size of the tree, but the following is a general guide:-

		Small trees (up to 3m)	$\frac{1}{2}$ -1 kg
Medium trees (3-8m)	2-5 kg	Large trees (above 8m)	5-10 kg.

Where lawn or gardens exist around a tree, a ring of holes about half a metre beyond the circle of the drip line should be made with a garden fork or crowbar. In the case of large trees, concentric circles of holes should be made towards the tree trunk. The depth of the holes should be 150-200mm, but this depends on the depth and type of soil (shallower for heavy soil).



View from above the tree

Place 10-20 grams of fertiliser in each hole. The treated area should then be well watered. Two applications of fertiliser a year are desirable; one in early spring and another in mid-summer. If you simply sprinkle the fertiliser over the lawn, the tree will receive only minimal benefit.

Some of the nutrients for your eucalypts may be supplied by planting *Casuarina* spp, *Acacia* spp and other native legumes (pea flowers and *Cassias*). These plants fix Nitrogen from the atmosphere, and in the long term, this nitrogen is returned to the soil, and is then available to other plants. But the use of nitrogen-fixing plants is only a partial answer at best.

In summary: Use organic fert (leaf litter, compost, manure) whenever possible. Don't

sprinkle fert on the lawn and expect the tree to get it. Most will be taken by the grass. Instead place fert in holes below the level of the grass roots. Wattles and other N-fixing plants may be used to supplement nutrients in the long term.

A New Eucalypt from N.S.W.

A new species of *Eucalyptus* has recently been described by Mr D.J.Boland and Mr D.A.Kleinig.

This is *Eucalyptus wilcoxii*, a rare species known only from the Deua and Wadbilliga National Parks in far south-eastern New South Wales.

It is a mallee or small tree to 10 metres tall. The bark is smooth to ground level, shedding in long broad strips or ribbons, coloured olive-green with a yellow tinge.

The seedling leaves are opposite for about six pairs, then alternate, with distinct stalks. Leaves are narrow elliptical and bluish-green in colour. The adult leaves are narrow-lanceolate and sickle shaped, with prominent oil glands.

The inflorescences are 3-flowered, borne in the axils of the leaves. Buds are up to 6 x 4mm, with a conical operculum. The fruits are shortly stalked, cylindrical to bell-shaped.

Distribution: south-eastern New South Wales. The population from which the type was collected covers approximately 10 hectares in total on the north and north-western scree slopes of Mother Woila Mountain, between 500 and 900 metres altitude. A second population occurs on the scree slopes beside Galoon Creek, Wadbilliga N.P., between 200 and 500 metres.

Affinities: *E.wilcoxii* belongs to the Subgenus *Symphomyrtus*, and is a member of a large series which includes Manna Gum (*E.viminalis*). *E.wilcoxii* is most closely related to *E.bauerlenii*, a species from the Blue Mtns and around Mt Budawang. While obviously very similar, these two species differ in several respects. *E.wilcoxii* has smaller adult leaves and fruits. The outer fruits (in the clusters of 3) are pedicellate (stalked) in *E.wilcoxii*, but consistently sessile (stalkless) in *E.bauerlenii*.

E.wilcoxii seedlings are most distinctive, having shortly petiolate, narrow-elliptic seedling leaves. All other species in the Series *Viminales* have sessile or connate juvenile leaves and for those species with narrow leaves, the broadest part of the leaf lamina is towards the leaf base rather than toward the middle as in *E.wilcoxii*.

While it is a very rare species, its occurrence inside National Parks should ensure its continued survival, in view of the fact that it produces adequate quantities of seed and regenerates freely from the lignotuber after fire. The common name "Deua Gum" has been suggested for *E.wilcoxii*.

Members Letters

Beverley Overton of Kangaroo Island has written some interesting notes on some of the K.I. eucs, which were flowering in the latter half of spring (late Oct to early Dec). *E.leucoxydon* - at latter end of flowering, some pink and some cream flowered, near Parndana and near Cape Hart. *E.cosmophylla* - attractive small tree, widespread on the island, cream flowered. *E.cneorifolia* - narrow leaved small tree, cream flowered, with lovely honey scent, occupies the eastern half of the island. *E.lansdowneana* ssp *albopurpurea* - a mallee to 8 metres, or as small as 2-3m on the coast. Flowers cream to purplish.

Kevin Rule of Melbourne has been investigating a form of *E.leucoxydon* growing on siliceous sands in the semi-arid region of western Victoria and the upper south-east of S.A. While it is obviously close to subsp. *pruinosa*, Kevin's studies in the area have shown that it is a distinct taxon.

The Meaning of Eucalypt names - Part 3

The Greek root phloios means "bark of a tree". Several species' names end with -phloia. In most cases, the names refer to various bark colours:

argophloia argos - white, bright
dichromophloia di - two chroma - colour
erythrophloia erythros - red
leucophloia leucos - white
melanophloia melas - black, dark
ochrophloia ochra - ochre
salmonophloia salmonus - salmon coloured

For a few species, the texture or smell of the bark is indicated:

aromaphloia aroma - sweet smell, aroma (this species has scented bark)
siderophloia sideros - iron
trachyphloia trachys - rough, shaggy

Approximately 140 eucalypt species are named after people; usually botanists associated with eucalypts, or collectors and discoverers of eucalypt species. Species named after people end with -i, -ii, -ana, -iana or -iae. For example:

-i : brockwayi, gardneri, caleyi, bloxsomei, georgei
-ii : gillii, formanii, olsenii, rossii, johnstonii
-ana : cambageana, foelscheana, seeana, kruseana, largeana
-iana : cooperiana, bridgesiana, perriniana, watsoniana
-iae : flocktoniae, tindaliae, merrickiae.

However, not all species ending with these letters are named after people. For example:

risdonii - refers to Risdon, a locality near Hobart.
papuana - refers to Papua, where the type was collected.
dundasii - refers to Dundas, a small township south of Kalgoorlie.
pimpiniana - is an aboriginal name

Some other interesting names are as follows:-

phoenicea - refers to the colour of the filaments of the flower, after the feathers (scarlet, red) of the mythical Arabian bird, the Phoenix.
neglecta - apparently applied because the species had been botanically neglected for a long time. It had been thought to be a dwarf, highland form of E.gunnii by at least one botanist. L. neglectus (neglected).
viminalis - refers to the resemblance of the adult leaves to those of the osier willow. L. viminalis (viminous, osier-bearing).
transcontinentalis - refers to its supposed distribution across much of Australia. L. trans (across, over beyond, on the further side) N.B. this species is endemic to Western Australia.
socialis - refers to it growing in communities with several species of eucalypts. L. socialis (friendly, gathering, companionable).

Seedbank

On the following two pages is the revised seedlist. The species are arranged botanically, so that related species are side by side. The subgenera are listed in capitals.

2 - means that there are adequate stocks of this species at present.
1 - means that there is some seed of this species in stock, but more is needed.
0 - means that there is no seed of this species in stock.

Members are invited to request up to 15 packets of seed per order, or up to 30 packets a year. A stamped self-addressed envelope is required. The seedbank continues to grow, but donations are always welcome of seed which is low in stock.

Woodgate National Park

Woodgate NP lies east of Childers on the coast of southern Qld. Apart from being a very pleasant place to relax, it's an interesting spot euc-wise. There are 8 species, including the rare E.hallii (Goodwood Gum). The other species present are: E.tereticornis, E.tessellaris, E.robusta, E.bancroftii, E.intermedia, E.umbellata, and E.umbra ssp umbra.

Eucalyptus Study Group Seedlist and Classification - March 1985

ANGOPHORA			
costata	1	gamophylla	0
floribunda	2	tetrodonta	1
woodsiana	1	similis	2
bakeri	0	lirata	1
subvelutina	0	baileyana	2
melanoxyton	2	miniata	0
hispida	0	phoenicea	2
		microcorys	2
BLAKELLA			
tessellaris	2	SYMPHYOMYRTUS	
papuana	2	guilfoylei	1
grandifolia	1	diversicolor	1
confertiflora	0	deanei	2
clavigera	0	grandis	2
kombolgiensis	0	saligna	2
gilbertensis	1	botryoides	2
aspera	0	robusta	2
		urophylla	1
		pellita	2
		notabilis	2
setosa	1	resinifera	1
ferruginea	1	propinqua	2
abbreviata	0	major	2
zygophylla	2	punctata	2
perfoliata	2	var didyma	0
ptychocarpa	2	var longirostrata	2
collina	0	canaliculata	1
bleeseri	1	longifolia	2
foelscheana	1	cosmophylla	2
latifolia	1	gomphocephala	2
dichromophloia	0	cornuta	0
erythrophloia	2	burdettiana	1
terminalis	0	talyuberlup	2
nesophila	1	megacornuta	2
polycarpa	2	newbeyi	0
intermedia	2	lehmannii	0
porrecta	1	conferruminata	2
cliftoniana	1	occidentalis	1
abergiana	2	astringens	2
ficifolia	2	sargentii	0
calophylla	2	stowardii	0
haematoxyton	1	macrandra	2
gummifera	2	annulata	1
trachyphloia	2	nutans	1
jacobsiana	0	platypus	2
peltata	2	spatulata	1
leichhardtii	2	var grandiflora	0
bloxsomei	2	steedmanii	1
watsoniana	2	eremophila	2
eximia	2	cylindriflora	0
eximia 'nana'	2	erythronema	2
torelliana	2	var marginata	0
citriodora	2	dielsii	1
maculata	2	cerasiformis	0
henryi	1	wandoo	1
		redunca	0
		gardneri	2
EUDESMIA			
tetragona	2	desmondensis	1
erythrocorys	2	laeliae	1
eudesmioides	0	accedens	1
gittinsii	0	trivalvis	0
ebbanoensis	2	prominens	0
roycei	2	grossa	1
jucunda	2	stricklandii	2
gongylocarpa	1	carnei	0
odontocarpa	1	salubris	2
		campaspe	2
		diptera	2
		effusa	2
		kruseana	2
		loxophleba	2
		doratoxyton	1
		decurva	0
		goniantha	2
		falcata	0
		decipiens	1
		micranthera	0
		cneorifolia	2
		angustissima	2
		squamosa	2
		pachycalyx	2
		jutsonii	2
		mannensis	0
		bakeri	2
		cladocalyx	2
		cladocalyx 'nana'	2
		brockwayi	0
		longicornis	0
		grasbyi	0
		oleosa	2
		kochii	0
		plenissima	2
		peeneri	0
		transcontinentalis	2
		socialis	2
		yalatensis	2
		gillii	1
		yumbarrana	2
		oleosa v borealis	0
		eremicola	0
		cooperiana	1
		flocktoniae	2
		balladoniensis	0
		salmonophloia	1
		leptopoda	2
		synandra	2
		beardiana	0
		oxymitra	2
		ewartiana	1
		orbifolia	0
		ssp websteriana	0
		crucis	1
		ssp lanceolata	0
		caesia	2
		ssp magna	2
		lanepolei	0
		drummondii	1
		macrocarpa	2
		rhodantha	2
		oldfieldii	0
		burracoppinensis	1
		pyriformis	2
		youngiana	2
		pachyphylla	2
		kingsmillii	0
		sessilis	0
		gracilis	0
		calycogona	1
		var staffordii	2
		celastroides	0
		rigidula	0
		foecunda	2
		fruticosa	0
		formanii	1
		uncinata	0
		discreta	0
		albida	0
		halophila	0
		woodwardii	2
		georgei	0
		sheathiana	0
		obtusiflora	0
		(was dongarraensis)	0
		striaticalyx	0
		dumosa	2
		pileata	2
		calcareana	2
		cyanophylla	0
		conglobata	1
		anceps	2
		fraseri	1
		kondininensis	0
		clelandii	0
		lesouefii	0
		SLE:0 "pterocarpa"	2
		rugosa	1
		brachycalyx	0
		melanoxyton	0
		comitae-vallis	0
		deflexa	0
		concinna	2
		griffithsii	1
		corrugata	1
		torquata	2
		merrickiae	0
		scyphocalyx	0
		platycorys	0
		leptocalyx	0
		pimpiniana	2
		incrassata	2
		angulosa	1
		stoatei	2
		tetraptera	2
		forrestiana	2
		ovularis	0
		myriadena	1
		cylindrocarpa	0
		oraria	0
		cyclostoma	2
		brachycorys	0
		dundasii	0
		alba	2
		var tintinnans	0
		bigalerita	0
		brevifolia	0
		confluens	0
		umbrawarrensii	0
		leucophloia	1
		mooreana	0
		houseana	0
		apodophylla	0
		herbertiana	0
		cupularis	1
		hallii	2
		seeana	2
		bancroftii	2
		parramattensis	2
		pumila	2
		amplifolia	2
		tereticornis	0

glaucina	2	archeri	1	paniculata	1	pilularis	2
blakelyi	1	saxatilis	0	beyeri	0	pyrocarpa	2
dealbata	2	morrisbyi	1	virens	1	sphaerocarpa	2
chloroclada	2	urnigera	1	panda	2	planchoniana	2
flindersii	0	perriniana	1	caleyi	1	olsenii	2
sp. Mt Beerwah	2	cordata	1	melliadora	2	obliqua	2
dwyeri	2	pulverulenta	2	leucoxylon	2	delegatensis	2
gillenii	0	nova-anglica	2	ssp pruinosa	0	regnans	2
incurva	0	cinerea	2	ssp megalocarpa	2	fastigata	0
camaldulensis	2	cephalocarpa	2	sideroxylon	2	oreades	2
rudis	2	rummeryi	2	ssp tricarpa	0	luehmanniana	2
brassiana	1	leptophleba	0	TELOCALYPTUS		consideniana	2
umbellata(exserta)	2	patellaris	2	deglupta	1	remota	2
morrisii	2	oligantha	0	raveretiana	2	sieberi	2
michaeliana	2	koolpinensis	0	brachyandra	0	multicaulis	2
camphora	2	tectifera	0	howittiana	1	pauciflora	2
ovata	2	argillacea	2	microxylon	1	ssp debeuzevillei	1
yarraensis	1	microneura	1	curtisii	0	ssp niphophila	1
barberi	2	microtheca	0	tenuipes	1	gregsoniana	2
brookeriana	1	coolabah	1	rubiginosa	0	stenostoma	0
aggregata	2	distans	0	cloeziana	1	fraxinoides	0
rodwayi	1	pruinosa	1	MONOCALYPTUS		triflora	0
aromaphloia	0	largeana	1	megacarpa	2	dendromorpha	1
acaciiformis	1	normantonensis	1	aquilina	2	burgessiana	2
nicholii	1	lucasii	0	preissiana	2	stricta	1
mannifera	2	populnea	1	coronata	0	apiculata	0
ssp praecox	0	brownii	0	acies	2	rupicola	2
ssp elliptica	2	largiflorens	1	ligulata	0	approximans	0
ssp gullickii	0	behriana	1	calcicola	0	codonocarpa	2
scoparia	2	sparsa	0	pachyloma	2	paliformis	0
neglecta	0	cabbageana	2	diversifolia	1	kybeanensis	0
kitsoniana	2	intertexta	2	patens	2	mitchelliana	0
sturgissiana	0	orgadophila	2	todtiana	2	stellulata	1
parvifolia	1	thozetiana	2	buprestium	1	moorei	1
crenulata	2	ochrophloia	1	sepulcralis	1	var latiuscula	0
dunnii	2	moluccana	2	pendens	0	pulchella	2
angophoroides	0	microcarpa	1	exilis	0	amygdalina	2
bridgesiana	1	pilligaensis	2	johnsoniana	0	risdonii	2
banksii	2	albens	1	insularis	0	tenuiramis	1
goniocalyx	2	argophloia	2	marginata	0	coccifera	2
nortonii	1	bosistoana	1	staeri	1	nitida	2
cypellocarpa	1	porosa	2	jacksonii	0	radiata	1
nitens	1	lansdowneana	2	umbra	2	ssp robertsonii	1
maidenii	1	ssp albopurpurea	2	ssp carnea	1	elata	2
pseudoglobulus	0	odorata	1	acmenoides	2	willisii	2
bicostata	2	polybractea	1	muelleriana	1	dives	2
globulus	1	froggattii	2	laevopinea	1	piperita	2
globulus'compacta'	1	viridis	2	macrorhyncha	2	ssp urceolaris	0
quadrangulata	0	fibrosa	1	ssp cannonii	2	andrewsii	2
vernica	0	ssp nubila	1	youmanii	1	ssp campanulata	1
subcrenulata	1	decorticans	2	baxteri	1	haemastoma	2
johnstonii	1	drepanophylla	0	alpina	1	sclerophylla	2
imlayensis	0	quadricostata	0	blaxlandii	1	signata	2
macarthurii	1	siderophloia	0	camfieldii	0	racemosa	0
smithii	0	cullenii	0	capitellata	2	rossii	1
viminalis	2	whitei	2	agglomerata	2	Hybrids	
ssp cygnetensis	0	staigeriana	1	tindaliae	2	"Torwood"	2
pryoriana	1	crebra	1	eugenioides	1		
badjensis	0	jensenii	0	caliginosa	2		
wilcoxii	0	melanophloia	2	globoidea	2		
baeuerlenii	1	shirleyi	2	cameronii	1		
benthamii	0	rudderi	1	conglomerata	2		
var dorrigoensis	2	conica	0	oblonga	1		
kartzoffiana	0	baueriana	1	ligustrina	2		
dalrympleana	1	polyanthemom	2	mckieana	1		
rubida	2	dawsonii	2				
chapmaniana	2	fasciculosa	2				
glaucescens	0	lucens	0				
gunnii	1	melanoleuca	2				
		tetrapleura	2				