

Dear Members,

I have just returned from a two week holiday in Tasmania. What a marvellous place it is. I was fortunate enough to see all of their indigenous eucalypt species during my stay, many for the first time. I met all of the ESG members from the Apple Isle plus many other SGAP members and other eucophiles.

Correspondence has been steady over the last few months, but demands on the seedbank have been light. I have still not found time to update the slide library. There are numerous new slides which need incorporating into the library. I would like to hear from anyone who is willing to take on this task, and perhaps update the tape commentary.

Welcome to the following new members who have joined since November:

The Eucalyptus Oil industry - Present and Future

Despite being the home of the eucalypt, Australia is now a net importer of oils. Many overseas countries have developed their own industries based mostly on the Tasmanian Blue Gum (*E.globulus*), including Spain, Portugal, Sth Africa, Brazil and India. Even China produces a synthetic eucalyptus oil from a by-product of the camphor oil industry.

The Australian eucalyptus oil industry is structured to supply (through refiners and distributors), local consumers (the pharmaceutical, disinfectant and manufacturing industries) and export markets. There are about twenty-five producers of crude eucalyptus oil. Most are small scale distillers operating on a part-time basis jointly with other rural pursuits. Output is dependent on the relative returns for oil and other on-farm activities. Traditional methods of eucalyptus oil extraction involving the working of natural stands are labour intensive and costly. Chain saws, shredding equipment and mobile vats are now being used to increase output and reduce handling costs.

Successful advances have been made in the Blue mallee (*E.polybractea*) oil industry because of the adaptability of this species to mechanisation. Blue mallee is a small gum-barked species which typically develops a number of stems from one rootstock to form the distinctive mallee habit. Blue mallee derives its name from the attractive bluish tinge of the narrow young leaves which sprout from the rootstock when the trees are cut or burned. It occurs naturally in two small pockets in the Wyalong district of New South Wales and the Bendigo-Wedderburn area of northern Victoria. A Victorian company now harvests about 1500 hectares of *E.polybractea* a year in the Inglewood-Wedderburn area. The mallee growth habit is admirably suited to mechanical harvesting. As well, repeated cutting at ground level stimulates coppice, thereby sustaining leaf supply. The top growth is cut by forage harvester, fed into a mobile vat, and hauled to the distillery where the vat is fitted with a removable lid. A flexible outlet connects the lid to a multitubular condenser. Steam from a boiler is reticulated through pipes set in the bottom of the vat and passed through the leaf charge. The vat contains about 3000 kilograms of leaf and stems, takes two hours to distil, and yields from 35 to 60kg of oil depending on the proportion of blue mallee in the field. Usually five or six vats are distilled per 8-hour day. Part of the spent leaf fires the boiler, with the remainder being spread on harvested areas as mulch. The system utilizes a forage harvester and a number of mobile vats and eliminates handling the leaf throughout. These developments in the cineole oil industry have been implemented by the large-scale distiller. Technical constraints have limited similar developments in the *E.dives* oil industry which is undertaken by the small-scale part time distiller.

At present, natural stands are being utilised, but without doubt the future of the industry lies with eucalypt plantations, with initial harvesting 15-18 months after

establishment, and the second and subsequent harvests made at 12 to 15 monthly intervals. Once a high yielding form or individual tree has been identified, it can be mass produced by use of tissue culture methods (cloning). This will ensure that all progeny are identical and equally high yielding. Undoubtedly, other species will be investigated for their potential oil yield. Already in W.A., various eucalypts are under trial, with special emphasis being placed on species which will grow on salt affected land. Most promising of the W.A. eucalypts for future cultivation could be *E.plenissima*, *E.kochii* and *E.oleosa* var. *borealis*, which are all mallees or small trees. One of the most promising salt tolerant types is *E.kondininensis*. This may not be the best oil producer, but has the major virtue of growing on salty land.

Eucalyptus oil production from plantations could provide useful income for many farmers, and perhaps become an important rural industry.

Paddock planting and Revegetation

by Roxaine O'Toole

In 1976, having completed planting an avenue of trees each side of the driveway to our farm sheds I had to look further afield for somewhere to plant the eucalypts I was growing from seed. As we would like, one day, to build a house on our 100 hectare farmlet on the northern side of Katanning I planted a double row of trees down the centre of a two hectare paddock on the western side of the "house" site. The plan was to fence this out of the paddock. As each winter has come around, the fence is not up and the area increases until now the trees occupy about half the paddock.

Originally this land was timbered with *E.wandoo*, *E.rudis*, *Acacia*, *Dryandra* and *Casuarina*. A thick belt of this bush still stands between the boundary fence and the road. Only a few large Wandoo trees still stand in the paddock, the land having been cleared about the turn of the century and used for cereal crops and sheep grazing until 1976. After a flood in 1982 a lot of seedlings of *E.rudis* grew in the lower part of the paddock, but no volunteer seedlings of *E.wandoo* have grown.

Trees planted have been anything that takes my fancy that I can obtain seed or seedlings of. The aim has been to grow as large a variety as possible to see what will grow in our 450mm rainfall (never achieved since I've been growing trees) on a gravel over clay soil on a hillside gently sloping from north to south.

Seed is sown in 50mm pots from September to January in a mixture of german peat and sand with osmocote. A pinch of seed is sown in each pot, with the intention of thinning to the strongest seedling. In practice the rejects are usually potted up too. The main problems at this stage fungal; damping off and mildew. I have tried Rovral and Fongarid, both in the mix and watered on, and Bayleton Azalea Fungicide sprayed on the seedlings. The latter was the most effective. These problems seem to affect some species more than others.

Trees are planted out with the first good rain (May or June), but often I do not finish planting until mid August. The earlier they are planted the better they do, as they are well established before the summer drought. At first we did not water at all but now we water this area through the first summer. Trees are planted in rip lines which conserve winter moisture. An area a metre across is sprayed with Roundup to give weed control in the first year. No fertiliser is used, though the paddock would have a fertiliser history prior to tree planting.

Insect damage has been heavy in some years and on some varieties. *Euc leucoxyton* ssp *megalocarpa* has had its new growth stripped by insects each year but they have still grown into attractive specimens. No insect control is carried out. An increase in birdlife is becoming evident and this should be helping.

At least sixty varieties of Eucalyptus are growing as well as *Acacias*, *Casuarinas*, *Dryandras*, *conifers*, *Banksias* and other shrubs. Among the highlights thus far are three *E.elata* 5 or 6 years old and perhaps the tallest at 5 metres high; *E.youngiana* about 1.2 metres high but no flowers as yet; *E.sepulcralis* 3 metres high.

In 1974 we began an attempt to revegetate a salt creek running the length of our farm block. The seepage areas were spreading and eroding the good land. On one of the seepage patches, bare and encrusted with salt, 100 *E.sargentii* were planted each on a raised mound. 25 survived after the first year, the rest having drowned or been eaten by sheep. These 25 have resulted in the area being now covered in grasses and the erosion halted in that spot. Subsequent attempts over the next few years failed, mainly because sheep got into the area, the high water table lifting fence posts out of the ground in places.

In the last five years two more areas have been planted mainly with salt tolerant species; *E.lehmannii*, *E.spathulata*, *E.camaldulensis*, *E.macrandra*, *E.kondininensis*, but also many other varieties to try for salt tolerance. *Euc leucoxydon* 'Rosea' has been very successful, seldom failing. Other trees doing well include *E.sideroxydon*, *E.flocktoniae* and *E.angulosa*. Trees planted along the creek get no summer water. The main cause of loss would be wet feet.

Ice Age Eucalypt

Australia's newest, and rarest, species of eucalypt has been discovered on private property in bushland near Braidwood, east of Canberra. Ms Robyn Jane, a trained botanist, discovered the new species in late August last year.

The new eucalypt, represented by only five plants growing in a clump less than ten metres across, has already caused a stir among botanists because it appears to be the last remnant of a species that may have flourished in the region when the climate of eastern Australia was very cold. Although it grows in an area which has a fairly mild climate, it appears to have affinities with two cold tolerant eucalypts - *E.parvifolia* which grows close by, and particularly with *E.vernicosa* from sub-alpine Tasmania.

It is a shrubby species with smooth green bark and orange stems. It has tiny, glossy leaves in pairs along its stems, studded with hundreds of large oil glands. The leaves, uniquely among eucalypts, are recurved, flexing backwards and downwards. Its appearance is so unusual that Dr Mike Crisp of the National Botanic Gardens initially thought the new species was an *Eriostemon*! *E.parvifolia* and *E.vernicosa* appear to be relics of a glacial epoch, and are among the very few species that will flourish without cold damage in Britain. As such, they (and probably the new species) are a potential source of cold-tolerant genes for eucalypt breeding programs.

Attempts to germinate seeds of the new species have so far failed. Dr Crisp fears that the species is so inbred that it is sterile.

Members Letters

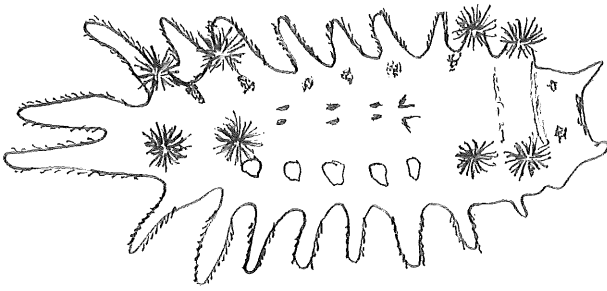
Tony Price from Sydney comments that his specimen of *Euc mitchelliana* (Mt Buffalo Gum) has been badly affected by a red scale during the wet weather in November. Tony writes "I have tended to blame ants for its rapid spread in the past, but this time ants have not been on the tree, yet the nymph numbers have increased almost explosively." Tony speculates that this rapid increase may be partly due to an increase in the levels of foliar nitrogen as the plant put on quite a lot of new growth.

Rosemary Butler from Katoomba (NSW) reports great success with *Eucalyptus nicholii*. She writes "We need low to medium windbreaks here and there. I planted *E.nicholii* seed in spring 1983. Out of the 112 seedlings planted out last spring, not one has died. The best are a metre high and quite bushy."

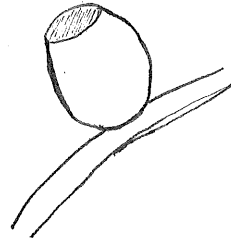
Roxaine O'Toole from Katanning (see article this N/L) has growing a most unusual form of *E.cladocalyx* (Sugar Gum). It is a small weeping form, in which the branches are very pendulous and scrape the ground. In other respects (leaves, buds, fruits), it is typical. Roxaine has kindly sent seed from this tree, which is now installed in the seedbank. I don't know if it will come true from seed, but it is certainly worth a try.

Pests of eucalypts - Cup Moth

The larvae of the cup moth are common pests of eucalypts. They feed on the foliage of many eucalypt species, sometimes causing considerable damage. The caterpillar itself is green and slug-like, about 25mm long with four sets of tufted, coloured spines at each end of its body. These coloured tufts are actually stinging spines, which can cause considerable pain for a short period if you happen to touch them. For this reason, they are sometimes known as "stinging caterpillars". The pupal case is cup-like, silvery-grey in colour, with a circular lid and is firmly attached to a branch. They may be mistaken for gum-nuts at first glance. It is the pupal case which gives rise to the name "cup moth".



Cup moth larva



Cup moth pupal case

The adult is a hairy brown moth with mottled brown wings, and a wingspan of 25-30mm. The cup moth occurs over a wide range in most Australian states. Young trees can be sprayed with Carbaryl if there is a bad infestation of caterpillars. However in most cases, (careful) removal is an adequate control method.

Seedbank

The current seedlist and classification appears below. The seedbank continues to grow, through purchases and donations. For the first time, the seedbank contains seeds of more than 400 eucalypt species. Thanks to all of you, too numerous to list, who have sent in seed donations over the last 12 months. Special thanks are due to Lyn Stewart, from Avon, S.A., who has kindly sent seeds of many "needed" species.

I would still like to receive seed of species which are out of stock or in short supply, but for the coming year, I'd like to concentrate on provenances of widespread species. Please send seed from your local area of the following very widespread species (from natural stands only): *E.microtheca*, *E.tereticornis*, *E.viminalis*, *E.obliqua*, *E.intertexta*, *E.melliodora*, *E.leucoxyton*, *E.pauciflora*; and especially *E.camaldulensis*. Having two or more provenances of a species in the seedbank will allow me to match a member's climate to a suitable provenance in stock.

2 - means that there are adequate stocks of this species in stock 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, with increased postage for large orders.

Eucalyptus Study Group Seedlist and Classification - March 1986

ANGOPHORA		CORYMBIA			EUDESMIA		
		<i>Bloodwoods</i>		<i>cliftoniana</i>	2		
<i>costata</i>	1	<i>setosa</i>	2	<i>abergiana</i>	2	<i>tetragona</i>	2
<i>floribunda</i>	2	<i>ferruginea</i>	1	<i>ficifolia</i>	2	<i>erythrocorys</i>	2
<i>woodsiana</i>	1	<i>abbreviata</i>	0	<i>calophylla</i>	2	<i>eudesmioides</i>	0
<i>bakeri</i>	0	<i>zygophylla</i>	2	<i>haematoxyton</i>	2	<i>gittinsii</i>	0
<i>subvelutina</i>	0	<i>perfoliata</i>	2	<i>gummifera</i>	2	<i>ebbanoensis</i>	2
<i>melanoxyton</i>	2	<i>ptychocarpa</i>	2	<i>trachyphloia</i>	2	<i>roycei</i>	2
<i>hispida</i>	1	<i>collina</i>	1	<i>jacobsiana</i>	0	<i>jucunda</i>	2
		<i>bleeseri</i>	1	<i>peltata</i>	2	<i>gongylocarpa</i>	1
		<i>foelscheana</i>	1	<i>leichhardtii</i>	2	<i>odontocarpa</i>	1
BLAKELLA		<i>latifolia</i>	1	<i>bloxsomei</i>	2	<i>gamophylla</i>	0
<i>Paper-fruited Bloodwoods</i>		<i>dichromophloia</i>	0	<i>watsoniana</i>	2	<i>tetrodonta</i>	0
<i>tessellaris</i>	2	<i>erythrophloia</i>	2	<i>eximia</i>	2	<i>similis</i>	1
<i>papuana</i>	2	<i>terminalis</i>	2	<i>eximia 'nana'</i>	2	<i>lirata</i>	1
<i>grandifolia</i>	1	<i>nesophila</i>	1	<i>torelliana</i>	2	<i>baileyana</i>	2
<i>confertiflora</i>	0	<i>polycarpa</i>	2	<i>citriodora</i>	2	<i>miniata</i>	2
<i>clavigera</i>	0	<i>intermedia</i>	2	<i>maculata</i>	2	<i>phoenicea</i>	2
<i>kombolgiensis</i>	0	<i>lamprophylla</i>	1	<i>henryi</i>	1		
<i>gilbertensis</i>	1	<i>porrecta</i>	1			NOTHOCALYPTUS	
<i>aspera</i>	0					<i>microcorys</i>	2

SYMPHYOMYRTUS							
<i>Eastern Blue Gums, Grey Gums, Red Myrtogenis etc.</i>		salubris	2	kingsmillii	2	brevifolia	0
guilfoylei	2	salubris "glauca"	1	sessilis	0	confluens	0
diversicolor	1	campaspe	2	gracilis	2	umbrawarrensii	0
deanei	2	diptera	2	calycogona	2	leucophloia	1
grandis	2	effusa	2	var spaffordii	2	mooreana	0
saligna	1	kruseana	2	celastroides	1	houseana	0
botryoides	2	loxophleba	2	rigidula	0	apodophylla	0
robusta	2	doratoxylon	1	foecunda	2	herbertiana	0
urophylla	1	decurva	0	fruticosa	0	cupularis	1
pellita	2	indurata	2	formanii	1	hallii	2
notabilis	2	goniantha	2	uncinata	1	seeana	2
resinifera	1	falcata	2	discreta	0	bancroftii	2
propinqua	2	ornata	0	albida	0	aff. bancroftii	2
major	2	decipiens	1	halophila	0	parramattensis	2
punctata	0	micranthera	0	woodwardii	2	pumila	2
var didyma	1	cneorifolia	2	georgei	0	amplifolia	2
v. longirostrata	2	angustissima	2	sheathiana	0	tereticornis	2
canaliculata	1	squamosa	2	obtusiflora	0	glaucina	2
longifolia	2	pachycalyx	2	(was dongarraensis)		blakelyi	2
cosmophylla	2	jutsonii	2	striaticalyx	0	flindersii	0
<i>MOSTLY W. A. Y-shaped cotyledons</i>		mannensis	0	dumosa	2	sp. Mt Beerwah	2
gomphocephala	2	bakeri	2	pileata	2	dwyeri	2
cornuta	2	cladocalyx	2	calcareana	2	gillenii	0
burdettiana	2	"weeping form"	2	cyanophylla	2	incurva	0
talyuberlup	2	cladocalyx 'nana'	2	conglobata	1	camaldulensis	2
megacornuta	2	brockwayi	2	anceps	2	rudis	2
newbeyi	2	longicornis	0	fraseri	1	brassiana	1
lehmannii	2	grasbyi	0	kondininensis	2	umbellata	2
conferruminata	2	oleosa	2	clelandii	2	morrisii	2
occidentalis	1	oleosa v borealis	0	lesouefii	2	michaeliana	2
astringens	2	kochii	0	"pterocarpa"	2	<i>S. E. AUST "GUMS"</i>	
sargentii	2	plenissima	2	rugosa	1	camphora	2
stowardii	0	peeneri	2	brachycalyx	2	ovata	2
macrandra	2	transcontinentalis	2	melanoxylon	0	yarraensis	2
annulata	2	socialis	2	comitae-vallis	0	barberi	2
nutans	2	yalatensis	2	deflexa	0	brookeriana	2
platypus	2	gillii	2	concinna	2	aggregata	2
platypus 'red'	1	yumbarrana	2	griffithsii	0	rodwayi	2
v. heterophylla	2	eremicola	0	corrugata	1	aromaphloia	2
spathulata	2	cooperiana	1	torquata	2	acaciiformis	1
var grandiflora	0	flocktoniae	2	merrickiae	2	nicholii	1
steadmanii	2	balladoniensis	2	scyphocalyx	0	mannifera	2
eremophila	2	salmonophloia	1	platycorys	0	ssp praecox	0
cylindriflora	0	leptopoda	2	leptocalyx	0	ssp elliptica	2
erythronema	2	synandra	2	pimpiniana	2	ssp gullickii	0
var marginata	2	beardiana	0	incrassata	2	scoparia	2
dielsii	2	oxymitra	2	angulosa	1	neglecta	0
cerasiformis	0	ewartiana	1	stoatei	2	kitsoniana	2
wandoo	1	orbifolia	2	tetraptera	2	sturgissiana	0
histophylla	2	ssp websteriana	0	forrestiana	2	parvifolia	1
redunca	2	crucis	2	litorea	2	crenulata	0
flavida	2	ssp lanceolata	0	ovularis	0	dunnii	2
gardneri	1	caesia	2	myriadena	2	angophoroides	0
ssp porphyrea	2	ssp magna	2	cylindrocarpa	0	bridgesiana	2
desmondensis	2	lanepoolei	2	oraria	0	banksii	2
laeliae	2	drummondii	2	cyclostoma	2	goniocalyx	2
accedens	2	macrocarpa	2	brachycorys	0	nortonii	1
trivalvis	0	rhodantha	2	dundasii	2	cypellocarpa	1
prominens	1	oldfieldii	0	<i>TROPICAL GUMS, RED GUMS</i>		nitens	2
grossa	2	burracoppinensis	1	alba	2	maidenii	0
stricklandii	2	pyriformis	2	var tintinnans	0	pseudoglobulus	0
carnei	0	youngiana	2	bigalerita	0	bicostata	2
		stricklandii	2				

globulus	2	argophloia	1	MONOCALYPTUS		<i>Ashes</i>	
globulus'compacta'	0	bosistoana	1	<i>W. A. "monos"</i>		sphaerocarpa	2
quadrangulata	0	porosa	2	megacarpa	2	planchoniana	2
vernica	1	lansdowneana	2	aquilina	2	obliqua	2
subcrenulata	2	ssp albopurpurea	2	preissiana	2	delegatensis	2
johnstonii	2	odorata	1	coronata	0	regnans	2
imlayensis	0	polybractea	2	acies	2	fastigata	0
macarthurii	1	froggattii	2	ligulata	2	oreades	2
smithii	0	viridis	2	calcicola	2	luehmanniana	2
viminalis	2	<i>IRONBARKS</i>		pachyloma	1	consideniana	2
ssp cygnetensis	0	fibrosa	1	diversifolia	2	remota	2
pryoriana	1	ssp nubila	1	patens	2	sieberi	2
badjensis	0	decorticans	2	totdiana	2	multicaulis	2
wilcoxii	0	drepanophylla	0	buprestium	2	pauciflora	2
baeuerlenii	1	quadricostata	1	sepulcralis	0	ssp debeuzevillei	1
benthamii	0	xanthoclada	2	pendens	0	ssp niphophila	1
var dorrigoensis	2	siderophloia	0	exilis	0	gregsoniana	2
kartzoffiana	0	cullenii	0	johnsoniana	0	stenostoma	1
dalrympleana	1	whitei	2	insularis	0	fraxinoides	1
rubida	2	exilipes	1	brevistylis	0	triflora	0
chapmaniana	2	staigeriana	1	marginata	2	dendromorpha	0
glaucescens	0	crebra	2	staeri	1	burgessiana	2
gunnii	2	jensenii	0	jacksonii	2	stricta	1
archeri	1	melanophloia	2	<i>White Muckgenia, Blackbutts</i>		obstans	2
saxatilis	2	shirleyi	2	umbra	2	apiculata	0
morrisonii	2	<i>BOXES</i>		ssp carnea	2	rupicola	2
urnigera	2	rudderi	1	acmenoides	2	approximans	0
perriniana	2	conica	1	pilularis	2	codonocarpa	2
cordata	2	baueriana	1	pyrocarpa	2	paliformis	0
pulverulenta	2	polyanthemos	2	<i>Stringybanks</i>		kybeanensis	0
nova-anglica	2	dawsonii	2	muelleriana	1	mitchelliana	2
cinerea	2	fasciculosa	2	laevopinea	2	stellulata	2
cephalocarpa	2	lucens	0	macrorhyncha	2	moorei	1
<i>BOXES</i>		<i>IRONBARKS</i>		ssp cannonii	2	var latiuscula	0
rummeryi	2	melanoleuca	2	youmanii	2	piperita	2
leptophleba	0	tetrapleura	2	youmanii	2	ssp urceolaris	0
patellaris	2	paniculata	2	baxteri	1	andrewsii	2
oligantha	0	beyeri	0	alpina	1	ssp campanulata	1
koolpinensis	0	virens	1	blaxlandii	1	haemastoma	2
tectifera	0	panda	2	camfieldii	0	sclerophylla	2
argillacea	2	caleyi	2	capitellata	2	signata	2
microneura	0	melliadora	2	agglomerata	2	racemosa	0
microtheca	0	leucoxydon	2	tindaliae	2	rossii	1
coolabah	2	ssp pruinosa	0	eugenioides	1	<i>Peppermint</i>	
distans	0	ssp megalocarpa	2	caliginosa	2	pulchella	2
pruinosa	1	sideroxydon	2	globoidea	2	amygdalina	2
largeana	1	ssp tricarpa	2	cameronii	1	nitida	2
normantonensis	1			conglomerata	2	coccifera	2
lucasii	0	<i>TELOCALYPTUS</i>		oblonga	2	risdonii	2
populnea	1	deglupta	1	ligustrina	2	tenuiramis	2
brownii	0	raveretiana	2	mckieana	2	radiata	1
largiflorens	2	brachyandra	0	sp Blackdown Tab	2	ssp robertsonii	1
behriana	2	howittiana	1	olsenii	2	elata	2
sparsa	0					willisii	1
cambageana	2	<i>near Monocalyptus</i>				dives	2
intertexta	2	curtisii	2				
orgadophila	2	tenuipes	2			<i>Hybrids</i>	
thozetiana	2	rubiginosa	2			"Torwood"	1
ochrophloia	2	cloeziana	2				
moluccana	2						
microcarpa	2						
pilligaensis	2						
albans	2						