Association of Societies for Growing Australian Plants Eucalyptus Study Group ISSN 1035-4603

Eucalyptus Study Group Newsletter

March 2013
No. 58

Study Group Leader
Warwick Varley
PO Box 456, WOLLONGONG, NSW 2520
Email: tallowwood@hotmail.com

Membership officer
Sue Guymer
13 Conos Court, DONVALE, VICTORIA 3111
Email: aitchguy@gmail.com

Eucalypt Study Group Website
http://asgap.org.au/EucSG/index.html

Contents

Promiscuous plants and strange bee behaviour: Reproduction in Australian plants

By Professor Helen M. Wallace; Professor in Agricultural Ecology, University of the Sunshine Coast

Plant breeding and pollination

Australian plants have many interesting and unusual ways to reproduce. I am a bit obsessed with Australian plants and it has been a great pleasure for me to study many species over the last 25 years and to discover some of their unusual breeding habits.

Most flowers have both male (anthers and pollen) and female (stigma, style and ovary) reproductive organs close to each other. Self-pollination should be easy, but most plants will only breed with themselves as a last resort. Plants recognize any pollen from themselves as "self-pollen" even if it is from a different flower on the same plant. Many plants have complex mechanisms to prevent or reduce self-pollination. In eucalypts up to 70 % of the seedlings come from pollen from a different plant- quite an achievement when you consider how many flowers there are on a eucalypt tree that could easily self-pollinate!

Many species such as *Persoonia*, *Macadamia* and *Eucalyptus* are protandrous, ie., the anther releases pollen before the stigmas are receptive. If they do accidentally self-pollinate most (but not all) self-pollen will get stopped in the style by a chemical reaction and never make it to the ovary. One exception to this is *Boronia falcifolia* which is quite happy to self-pollinate and shows very high levels of self-pollination in the wild.

Pollinators have a critical job to do to move pollen between plants. Most Proteaceae and Myrtaceae are

visited by a variety of birds, mammals and insects. There is no special relationship with a particular pollinator- unlike in some orchids where a particular species needs to visit the flower. Many flower visitors may simply be freeloaders and not very effective as pollinators for many of these species. We simply don't know which flower visitors are moving pollen between plants or just moving self-pollen around and getting a free meal of pollen and nectar at the same time.

Promiscuous plants- hybridization in the eucalypts

Much of my research work has been about eucalypt breeding systems and hybrids. Eucalypts are surprisingly promiscuous and have little respect for our ideas of species. They easily form hybrids, sometimes even with distantly related species. Hybrid eucalypts have a lot of promise in horticulture and forestry to make new strains or fast growing trees.

There are many things that can prevent plants from forming hybrids in nature, such as different flowering times, different pollinators, different habitats that are far apart. Pollen from one species may not grow in the flower of another and may not be able to form a seed. If a seed is formed problems may emerge when the embryo or seedling develops and the hybrid seed may not germinate or grow very well. Our research looked at hybrids between species that occur together in the wild and others that are widely separated and would not normally have the chance to form hybrids.

I was surprised to find that we were able to create hybrid seed between chinchilla white gum, *Eucalyptus argophloia*, and *E. molucanna, E. macrocarpa*, *E. crebra*, and even more distant species such as *E. resinifera* and *E. pellita*. Some of the naturally occurring trees in our trial looks suspicious and we suspect hybrids with *E. crebra* have formed on their own.

Corymbia torelliana is even more promiscuous and hybridises frequently with the spotted gums and (perhaps less frequently) with *C. tessellaris*. There are many recorded cases of hybrids naturally forming in the wild and many windbreak plantings of *C. torelliana* have the odd hybrid with spotted gum that towers over the rest of the trees (Fig. 1). Our research found that many of these natural hybrids produce their own seed, this seed is viable and can be easily be backcrossed onto *C. torelliana* or spotted gums. We tried crossing even more widely and we got a small amount of seed from some very wide crosses (*C. clarksoniana, C. erythrophloia, C. trachyphloia*).

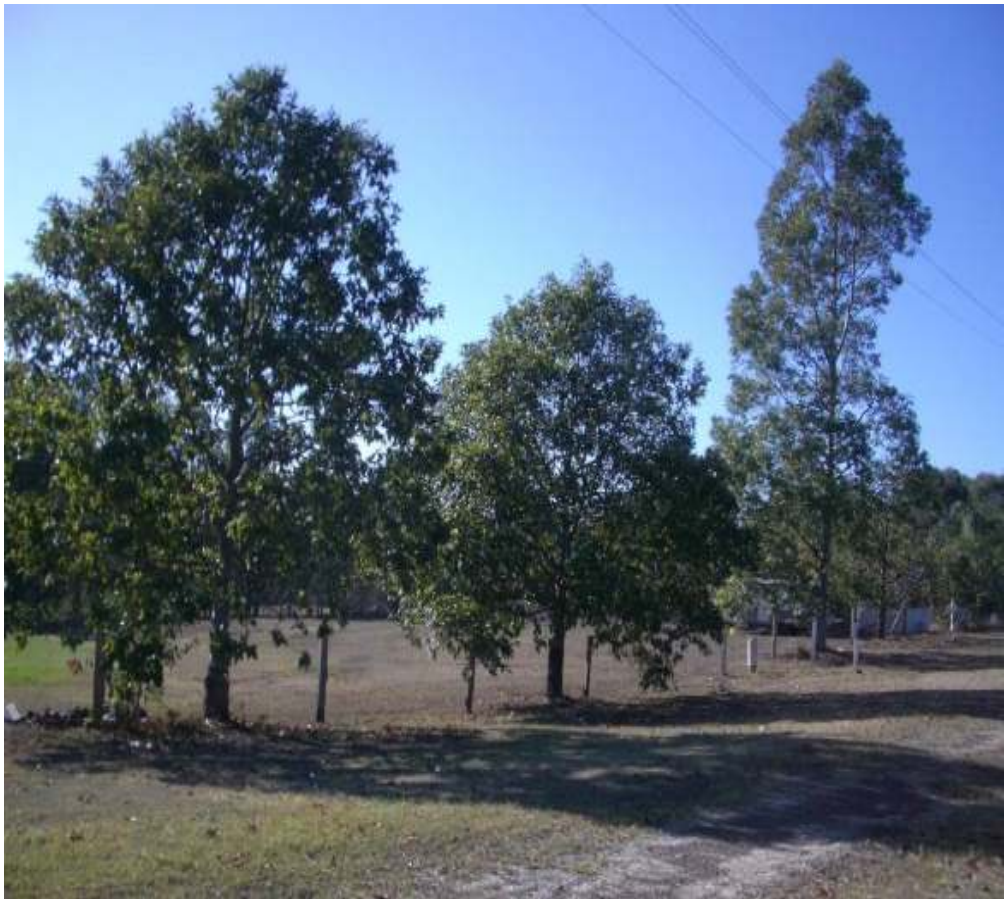


Fig. 1 A windbreak planting of *C. torelliana* and hybrid (third tree)

Strange bee behaviour

C. torelliana also has some other very unusual characters including a very unique relationship with stingless bees. Stingless bees have become more popular as pets. *Tetragonula carbonaria* (formerly *Trigona carbonaria*) is often kept in suburban backyards. In Australia, there are about 10-12 species of stingless bees in 2 genera, *Tetragonula* and *Austroplebeia*.

Stingless bees are social and one of their unique features is their elaborate nest structures, built from a mixture of resin collected from plants and wax which they secrete. Honeypots, pollen pots, and the batumen, the protective layer that surrounds the internal nest structure, are made mostly from plant resins. Stingless bees must collect large quantities of plant resin for these structures. Fig 2

Fig. 2 Stingless bee nest showing brood, honey and pollen pots made from resin

Many years ago I went into the backyard to check my hive of *T. carbonaria*. I found small red seeds stuck all over the outside of the hive, and especially around the hive entrance. I couldn't figure out how they got there and eventually saw the worker bees bringing in the seeds in their hind legs. This seemed like totally bizarre behaviour for a bee. The seeds are from *Corymbia torelliana*. Bees crawl inside the hollow capsule to collect resin, seeds sometimes become stuck. Bees may try to remove the seeds, but many fly back to the hive carrying both seeds and resin. Bees also fly away from the hive to throw away seeds once they have removed the resin.

These seeds are effectively dispersed by bees up to 1km from the parent tree. You will find a nice crop of *C. torelliana* under many wild stingless bee nests and you can often see the bees' flight path by lovely straight rows of *C. torelliana* coming up in the wild! This is the only record of eucalypts that are dispersed by animals- in most species they simply fall out of the capsule, or at best they may be wind dispersed. We described this as a new seed dispersal syndrome, and coined the term "mellitochory" .

What about hybrids? Are they dispersed by bees? We have looked at hundreds of *C. torelliana* hybrids and most do not have the full suite of features that they need to be dispersed by bees. All have resin but very few have the have the right smell and dimensions to attract the bees and allow bees to carry the seeds.

Conclusion

I am constantly amazed by what we find in our research and I still coming to terms with how easily and widely eucalypts hybridize. I have only scraped the surface of research on the breeding systems of Australian plants and their relationships with pollinators and seed dispersers and yet there are so many species that we know nothing about. I hope I have shown you that there is still much to discover about Australian plants.

Eucalypt reveals smelly secret

By Dani Cooper, ABC, Tuesday, 5 March 2013

Biologists have uncovered a yellowbox eucalyptus tree that is able to change the smell of its leaves from one side of the tree to the other to protect itself against predation.

The finding, published in the online journal *BMC Plant Biology*, answers a 20-year-old mystery surrounding a eucalyptus tree in a sheep paddock at Yeoval, New South Wales.

The tree at the centre of the study was almost totally defoliated by insects in 1990, but one branch was left completely untouched.

Lead author Amanda Padovan, a doctoral student at the Australian National University's Research School of Biology, says their study shows the yellowbox *Eucalyptus melliodora* is able to control which leaves are attacked by predators by alterations in its genes.

Padovan says the tree, which is estimated to be 75 years old, has developed this ability known as "genetic mosaicism" as a survival mechanism.

"If an insect outbreak occurs then a part of the plant won't be eaten and therefore it will still be able to grow and reproduce," she says.

'Cocktail of oils'

The research team collected leaves from both sides of the tree and through gene sequencing found there were 10 genes that contained differences between the leaves from each side.

Padovan says one of the main defences the eucalyptus uses against predation is its distinctive smell, which is the result of a "cocktail of terpene oils", including monoterpenes and sesquiterpenes, and formylated phloroglucinol compounds or FPCs that make animals nauseous.

The gene sequencing revealed leaves that were predation-resistant had five fewer monoterpenes and nine fewer sesquiterpenes than the leaves that were "tastier".

However the concentration of FPCs and the remaining monoterpenes was far higher.

As a result, says Padovan, the leaves on the part of the tree that was not eaten had a strong eucalyptus smell whereas the leaves that were attractive to the insects had a stronger florally smell.

Padovan says it appears the impact on vertebrates such as koalas is similar as feeding experiments in the

laboratory show koalas reject the same leaves as the insects.

She says although they have searched the area nearby they have only found one yellowbox tree like this, however she suspects the trait "is more common than we know".

"Trees can't get up and walk away from unfavourable conditions and so we believe this genetic mosaicism is a way for trees to survive changing conditions throughout their life," she says.

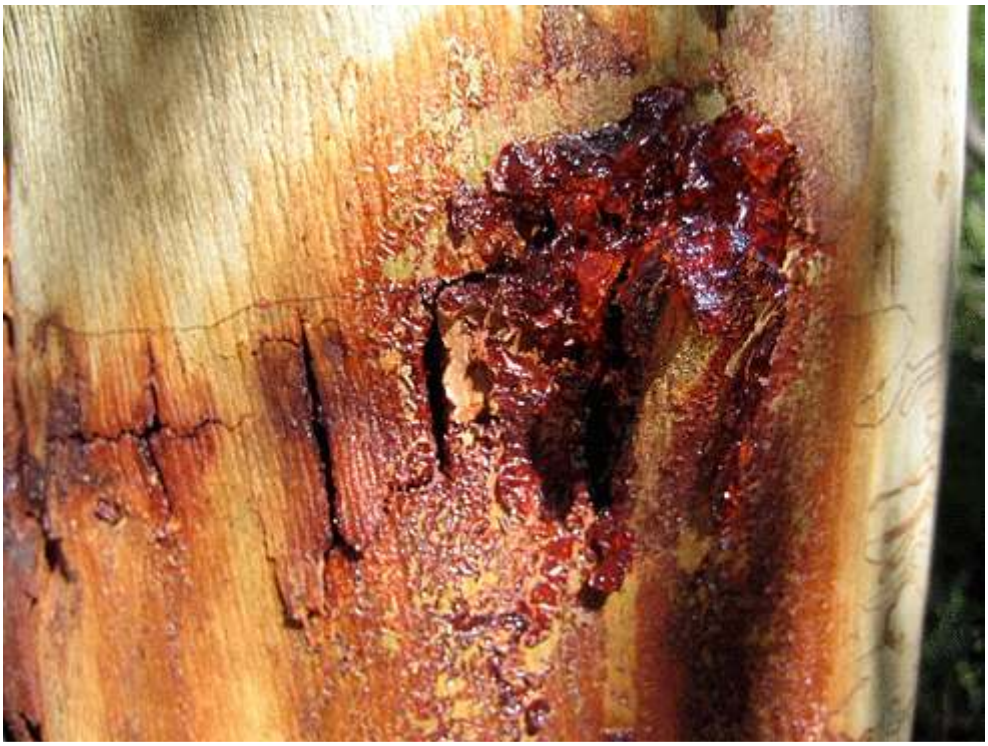
"We believe all trees have the ability in that they can acquire mutations in their stem cells, however we believe the mutation must be favourable - in this case the mutation lead to resistance against feeding ¬- to allow an entire branch to develop."

Padovan is now using gene sequencing on an ironbark eucalyptus *Eucalyptus sideroxylon* to see if it has similar mosaic properties.

Antibacterial treatments from eucalyptus gum?

Source: ScienceNetwork Western Australia; Published: 17 December 2012

The resin from 'wounds' on damaged eucalyptus tree trunks should be investigated for their medicinal use due to their high antibacterial activity, say scientists from the University of Western Australia.



A eucalyptus kino.
Credit: dirtymouse/flickr under Creative Commons CC BY-NC 2.0 licence

According to their study, published in the *Journal of Ethnopharmacology*, the use of kinos (tannin-rich, mostly red-coloured wood exudates) in Aboriginal communities suggests kinos may potentially be a source of effective new therapeutic agents.

UWA Associate Professor Connie Locher says it is surprising to see how little recent research has been carried out into the chemistry of kinos.

‘There are no direct medicinal uses in mainstream medicine, but they are still used as a traditional medicine in Australia and also in other parts of the world (using kinos also derived from other plants),’ Dr Locher says.

‘They are nonetheless interesting from a science perspective as it gives backing to a traditional medicine and of course there is always hope to find new ways of treating bacterial infections – even if this means one has to revisit some old-fashioned medicines.

‘[The study] confirms that kinos do have antibacterial and also astringent activity and therefore confirm a lot of their traditional medicinal uses.’

The study, which looked at 19 different eucalyptus kinos collected from Kings Park, found kinos from *Corymbia maculata* and *Eucalyptus ficifolia* demonstrated a strong antibacterial activity towards Gram-positive bacteria.

‘Their antibacterial effect is assessed in a hole plate diffusion assay, where test solutions are placed in little wells in agar plates,’ Dr Locher says.

‘Explained in lay terms, the substances diffuse into the agar and inhibit the growth of the bacteria in that particular area.

‘The larger the zone of inhibition, the stronger the antibacterial effect.’

Dr Locher adds that most of the kinos were also active against Gram-positive bacterial albeit to a different degree.

‘Although the kinos we tested recently were not active against Gram-negative bacteria we have found in another study [not yet published] that some of the subfractions are active, hence they also seem to contain constituents which in higher concentrations have a broad spectrum antibacterial activity.’

According to the study the use of kinos as traditional medicines is widespread within the Indigenous community.

Aboriginal people have been known to prepare aqueous extracts or crushed pure eucalyptus kinos for direct application on burns, the alleviation of muscle aches, cramps, eye infections and toothache as well as the treatment of wounds, scabies, ringworm, sore lips and venereal sores.

Kinos were also used internally to treat diarrhoea, dysentery, infections, cough, cold and influenza.

Book Review: Eucalypts of Western Australia’s Wheatbelt by Malcolm French

Review by Marion Blackwell

PREAMBLE

Let’s face it, ‘Gum Trees’ can be hard for the uninitiated to tell apart, much less to identify. Also, they are not easy to photograph characteristically, as I well know. They usually grow tangled up with other plants, can look similar to one another and need sunlight from the right direction, to highlight their habit. The trouble is that we, the general public, just don’t know enough about them. Yet eucalypts are the international ikon of Australia, even more characteristic and widely recognised than those supposedly ‘cuddly’ Koalas and Kangaroos). Add to this, that no other continent in the world is dominated vegetatively by just one genus of plants and that this genus has the second largest number of species in Australia, after Acacia (wattles). However, a crucial factor is, that until you can put a name to something, you can’t attach any identity or information to it and so all the little bits of knowledge that various observant people have acquired about many of our ‘Gum Trees’ do not get collated and are often lost. There is nothing to attach them to, so that information will accumulate and be available for a better understanding of those members of such a diverse

genus. For any plant, its name is the first essential if one is to learn to distinguish it from other species and get to know what it is all about. Nowadays we are fortunate in that the International Code of Botanical Nomenclature, decrees that the validly published name of a plant applies to it all around the world, no matter where it is growing. This means that once a plant is named, information about that species can be attached, and be called upon making it possible to learn about that species, and hopefully, to add further information.

BOOK REVIEW

To me, this book is a breath of fresh air. I 'Doff my Hat' as the saying goes, to Malcolm French. It is based upon his acute spotting ability and superb photography, which has resulted in a long awaited major contribution to knowledge regarding the complex and widespread genus of *Eucalyptus* and it's near relatives in regional Western Australia. Although the book is restricted to the Western Australian Wheatbelt, described by the author as "this Pure Eucalypt Country", it is significant that this area alone supports 159 native eucalypt species. He notes that the distribution of many of these species goe well beyond that specific area.

The text of this book is easily understood by any 'man in the street' and the photographs are first-rate and pertinent. They include views of the wheatbelt countryside as we have made it, yet still with those relic specimens of amazing eucalypt trees. They, above everything else still convey the epitomal character of this area, even if in some cases, only by the skin of their teeth. Hopefully these photos will draw attention both to their value and to their plight.

Good photographs are a vital factor in making an eye-catching, and desirable book, but on top of this, it takes skilful graphics to make use of these visions in a telling way. These images are well arranged and colour balanced, so that the pages are both attractive and interesting rather than being repetitive and boring as are some eucalypt books. Even more importantly, the photos are presented in such a way that they not only complement and convey the meaning of the text, but they point out and illustrate the diagnostic features pertinent for the identification of each individual species. Also included are other illustrations highlighting the factors that separate each plant from closely related species as well as from 'look-alikes'. My one criticism of the production is that the colours and thus the vitality of these photographs is somewhat diminished from their originals. However I regard this as the best and most useful book on eucalypts that has been written during my lifetime.

Contents summarised

*The text is written in reader/amateur friendly language (but is still botanically accurate) and each 'Description of a Species' is in botanical terms.
*These terms are described and illustrated.
*Notes are included regarding points of separation between closely related as well as other similar species.
*The photographs are telling as well as being good.
*Diagnostic features are illustrated.
*Additional photos of salient parts are provided, to help with identification and to separate species from close relatives and from look-alikes.
*'Along the way', and as a background the author's encompassing portrayal of the Wheatbelt as it is today, is very pertinent and informative.
*Species are arranged according to current botanical classification and indexed under both botanical and common names; with a glossary.
*There is a list of references and recommended reading.
*Information is provided regarding habitat as well as suitable conditions for growing.

POSTSCRIPT

From what I understand, this book has taken Malcolm French, who was not a botanist 12 years of careful observation to photograph, write and assemble, in his spare time.

It is heartening that he has consulted extensively with Dean Nicolle, whom I regard as 'the current world's leading eucalyptologist'.

The text is 'reader friendly', so will be of use and interest to botanists and the lay-persons alike. In particular, it will be useful for conservation/rehabilitation work in the Wheatbelt and its vicinity.

Photographs were all taken by the author. Some of which took hours or even days to obtain. Malcolm French ' has the eye', as well as the knowledge and a passion for gum trees.

In this book, even the place names, where each species of eucalypt is growing, read like a poem to me; bringing before my mind's eye cameo-visions of their location in this ancient, worn down landscape. Its surviving adapted species need to learn of and understand more, before functional integrity of this landscape is wholly destroyed, and the knowledge forever lost.
Gum Trees are amazing. We still do not understand how such large woody plants can survive and thrive in such nutrient depleted soils and under such low water regimes. Even to growing as low forests in what would internationally be considered to be desert!
For me, strange as it may seem, the first section of the book that I read, immediately threw light on a group of 'square gums', (as I call them), that grow not far north of Perth and which, not being a taxonomist, (just a person who loves Gum trees) have puzzled and bemused me for some time. I am delighted to thus be enabled to sort them out, to know their names, and begin to learn more about them.

To purchase this book , use the following link, or email
www.eucalyptsofwa.com.au or email MEF@EucalyptsofWA.com.au

More on *Eucalyptus x trabutii*

By John Purse

Warwick Varley's article on *Eucalyptus x trabutii* prompted me to add some further background on the history and significance of this hybrid. It was a result of the enthusiasm for planting eucalypts around the Mediterranean coast in the latter part of the 19th century. The French in particular trialled a wide range of eucalyptus species in France and their colonies in North Africa[1], and conducted extensive planting of species that proved well-adapted. As elsewhere in the world, trial plantings of eucalypts were a convenient source of seed for the initial larger plantings. And as has happened elsewhere also, considerable cross-pollination occurred between species within the trial areas.

The Australian taxonomist Joseph Maiden reviewed what was known about the existence of hybrids in eucalyptus[2], and described *E. x trabutii* and its history[3], drawing on publications by French workers and on his correspondence with them. Maiden summarises the origin of the hybrid, as described by Professor Louis Trabut, the government botanist in Algeria. Trabut had specimens of *E. botryoides* and *E. rostrata* (now *E. camaldulensis*) planted in the garden of Nuestapha hospital from 1874. One of the *E. botryoides* was performed sufficiently well for seed to be collected from it in each of the years from 1886 to 1889. Few of the resulting plants looked like *E. botryoides,* and most were vigorous and looked very different. He became convinced that the latter plants were hybrids with the *E. rostrata*, and reported this at a scientific meeting in France in 1891. This conclusion was controversial at the time, but became accepted within a few years. Superficially, the hybrid closely resembled *E. resinifera,* though on close examination they could be distinguished easily.

The superiority of the hybrid over either parent was demonstrated in trials, and led to extensive planting of the hybrid. Inevitably, seed was collected from the hybrid trees, and while some of the progeny were true to type, others looked more like *E. camaldulensis*. Trabut correctly predicted the consequences of this practice for yields! With improved genetic understanding of hybrids, workers with other desirable hybrid individuals of eucalypts have sought to propagate them by vegetative propagation using rooted cuttings from the F_1 hybrids (this approach was also developed by French workers, on hybrid eucalypts in Congo in the 1970s). Vegetative propagation obviously allows exceptional trees to be propagated on a large scale, assuming the selections root readily from cuttings.

E. x trabutii , probably from F_4 or F_5 seed, remained of interest for use on planting programmes until at least the 1980s, notably in parts of Italy[4] and in northern California[5]. Ironically, the interest in Italy led to efforts to propagate superior individual trees using rooted cuttings, though this seems not to have been used on any scale.

Today, many chance eucalyptus hybrids still appear from seedlots originating from stands of trees that

comprise several related species in close proximity. These hybrids are often remarked upon, both in the nursery and in the field, but experience tells us that it is not usually worth collecting seed from the hybrids. The better F_1 hybrids are sometimes screened for rooting ability, though the chances of finding easily-rootable hybrids by this route are poor. The favoured approach today is to use controlled pollination between parents having a range of desirable attributes, including rooting ability, and to select in a large number of desirable hybrid seedling progenies for individuals that root well.

E. x trabutii, is probably still planted on a modest scale in north Africa today, but in the absence of any further R&D it is probably best regarded as an interesting and still useful relic of a largely forgotten part of eucalyptus history.

References

1. Zacharin R F (1978) Emigrant Eucalypts – Gum trees as exotics. Melbourne University Press

2. Maiden J H (1924) A Critical Revision of the Genus Eucalyptus. Vol 6 Part 52 Hybridisation in the genus pp 61-72

   (available online at http://adc.library.usyd.edu.au/data-2/p00109v6.pdf)

3. Maiden J (1924) A Critical Revision of the Genus Eucalyptus. Vol 6 Part 52 CCXCIX pp 79-81 (available online at http://adc.library.usyd.edu.au/data-2/p00109v6.pdf)

4. Mughini G (1990) Results of *Eucalyptus x trabutii* four-year clonal tests in Italy. Paper presented at XIX World IUFRO Congress, Montreal, August 5-11, 10pp

5. Sach R, Booth M and Lee C (1991) Freeze tolerance screening of eucalyptus clones. California Eucalyptus Grower **6** (2), 6-7

For those of you whom would like some seed, please send a letter containing a self addressed stamped envelope to the following address with your request, and I will forward some of this seed to you.

Seed request: *Eucalyptus x trabutii*
C/- Warwick Varley
PO Box 456
WOLLONGONG NSW 2520

Abstract: Estimating the time since fire of long-unburnt *Eucalyptus salubris* (Myrtaceae) stands in the Great Western Woodlands

Carl R. Gosper [A B C], Suzanne M. Prober [B], Colin J. Yates [A] and Georg Wiehl [B]

[A] Science Division, Department of Environment and Conservation, Locked Bag 104, Bentley Delivery Centre, WA 6983, Australia.
[B] CSIRO Ecosystem Sciences, Private Bag 5, Wembley, WA 6913, Australia.
[C] Corresponding author. Email: carl.gosper@dec.wa.gov.au

Australian Journal of Botany 61(1) 11-21 http://dx.doi.org/10.1071/BT12212
Submitted: 6 August 2012 Accepted: 3 November 2012 Published: 17 January 2013

Establishing the time since fire in infrequently burnt, yet fire-prone, communities is a significant challenge. Until this can be resolved for >50-year timeframes, our capacity to understand important ecological processes, such as the periods required for development of habitat features, will remain limited. We characterised the relationship between observable tree growth rings, plant age and plant size in *Eucalyptus salubris* F.Muell. in the globally significant Great Western Woodlands in south-western Australia. In the context of recent concerns regarding high woodland fire occurrence, we then used this approach to estimate the age of long-unburnt *E. salubris* stands, and the age-class distribution of *Eucalyptus* woodlands across the region. Time since fire was strongly predicted by trunk growth rings and plant size predicted growth rings with reasonable accuracy. The best model estimating growth rings contained parameters for trunk diameter, plant height and plot location, although simple models including either trunk diameter or plant height were nearly as good. Using growth ring–size relationships to date long-unburnt stands represents a significant

advance over the current approach based on satellite imagery, which substantially truncates post-fire age. However, there was significant uncertainty over the best model form for estimating the time since fire of stands last burnt over 200 years ago. The management implications of predicted age-class distributions were highly dependent on both the choice of what, if any, transformation was applied to growth rings, and the theoretical age-class distribution to which the actual age-class distribution was compared.

Vale Lindsay James DANIELS

DANIELS, Lindsay James of Biloela, passed away on 11th December, 2012, aged 80 years.
KING OF GRE EN: Biloela man Lindsay Daniels has been honoured for his work with native trees with a tree planting and walk way named in his honour.

Lindsay Daniels was the Don Burke of Biloela when it came to native trees. Lindsay ran a native plant nursery from his Bell Street residence, helping native plants thrive across Central Queensland. The former DPI employee, who worked at the Research Station's piggery for 45 years, started the nursery at the Station.

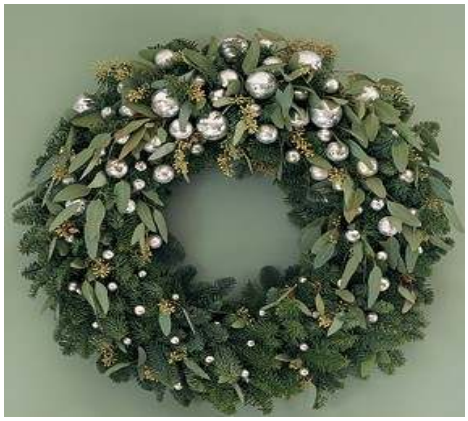
"I started to grow the trees and found out people wanted them, so I set up a small nursery," Lindsay said. It was shut down during the Wayne Goss government, but Lindsay kept going in his backyard. Over the years Lindsay and his wife, Hamidan, tirelessly tended the trees, propagating, watering, and selling the tree stock.

Later he joined forces with Callide Valley Landcare, and each year between 4000 and 5000 plants were sent out across central and north Queensland, including 1000 trees to Townsville. Three years ago during a tour of his native nirvana, he pointed out 500 plants that were heading out to Springsure, and spoke of trees he gave to a Monto caravan park years ago, now fully grown.

The Callide Valley Community Nursery was relocated to the Blue Care grounds in Biloela. The decision to relocate the nursery followed on from a workshop to gauge interest and brainstorm ideas which would allow the nursery to continue to function as a viable project in Biloela. Lindsay continued to have input into the nursery, teaching and passing on valuable skills and knowledge.

Lindsay's work with trees was honoured with a walk set up on State Farm Road , with schools, Callide Valley Landcare and community members planting around 580 trees on the **Lindsay Daniels Walk**. Lindsay was a member of the Biloela community for more than 50 years and contributed to the cultivation of the majority of native trees planted within the region**.** A modest Lindsay said the Walkway was what Landcare wanted to do to honour him.

Lindsay's love of trees started on his parents' station near Emerald. As he followed his dad around, he learnt all the common names of native plants. "I've always had a love of trees – most farmers do," Lindsay said. "My work with trees was probably more valuable than my work with pigs."



Eucalyptus Facebook Page

By Phil Hempill

Phil Hempill has set up a community Facebook site for anyone that wishes to post photos, comments, questions etc. on Eucalyptus trees. Surprisingly, the site is called ***Eucalyptus Trees***. However to get the site more visible, it needs more "likes" and content, so please feel free to visit this site and add any comments, enquiries or photos of Eucalypts that you like to share.

The site link is listed below.

http://www.facebook.com/pages/Eucalyptus-Trees/124249007754284?ref=hl

---

Vacancy required to be filled

Our membership officer, Sue Guymer is retiring from this position. Sue has provided a wonderful job in this roll over the years, initially standing in temporarily. Sue has always been relentlessly punctual in providing feedback and registration of membership, and tending to the financial records. As well as providing advice to me with the group based upon her long standing experience within the Australian Plants Society and study groups. You have been the backbone of this group, and will be certainly missed. I appreciate your assistance and your time with running the Eucalyptus Study Group, and hope to catch up with you at future APS events.

Could any members interested in filling the position of the 'membership officer' please contact either Warwick or Sue. This position will be required to be filled so that the group can continue functioning.

Articles and questions are most welcomed (actually they are wanted).
Please send all correspondence to my;
email address; tallowwood@hotmail.com
or postal; PO Box 456, WOLLONGONG 2520

Care of *Robyn Mackenzie Photography*; http://www.robynmackenzie.com

Membership

New members wishing to subscribe to the *Eucalyptus Study Group*, please fill out the following application and forward to Sue Guymer at;
Email: aitchguy@gmail.com
Postal: No. 13 Conos Court, DONVALE, VICTORIA. 3111

Annual membership costs are;

- $A 10 per year national members, newsletter mailed (black and white).
- $A 20 per year international members, newsletter mailed (black and white).
- $A 5 per year, national and international, newsletter emailed, full colour PDF.

All subscriptions can be mailed via a cheque (made out to the *Eucalyptus Study Group*) or payment made via direct deposit into the account listed below. For payments made via direct deposit, please add your name as reference.

Post address; Eucalyptus Study Group c/- 13 Conos Court, DONVALE, VICTORIA 3111

Bank details:
BSB No: **033-044**
Account No: **289 847**
Account name: **ASAGP Euc. Study Group**

Application for membership to the *Eucalyptus Study Group*

Date: .....

Name:.....

Postal address: ..... post code.....

Contact Phone number:.....

Email: .....

Payment method: Cheque ☐ Direct Deposit ☐