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

Eucalyptus Study Group Newsletter

December 2011
No. 54

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

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

Acting Administrator please post subscriptions to:
Sue Guymer 13 Conos Court, Donvale Vic. 3111
Email: aitchguy@gmail.com
Bank details:
BSB No: 033-044
Account No: 289 847
Account name: ASAGP Euc. Study Group

Contents

Eucalyptus genetic secrets unlocked

Source: Greenthumbs, Aug 11

The world's most farmed tree gets its genome read, opening the way to new breeding, biofuel, and conservation opportunities. The genome of the Flooded Gum, *Eucalyptus grandis*, has been mapped, allowing scientists and conservationists an insight into the secrets of this important piece of Australiana. *Eucalyptus* has become the most popular plantation tree in the world – with millions of hectares planted in Africa, America, Europe and Asia. That's one of the reasons that the global community chose a eucalyptus species to map. In a joint project by the US Department of Energy Joint Genome Institute (JGI) and the *Eucalyptus* Genome Network (www.eucagen.org) coordinated by Prof Zander Myburg from the University of Pretoria in South Africa, the genetic code of a specimen of Flooded Gum from Brazil has been mapped and released to researchers.

The Wood of *Eucalyptus* Used for the Construction of Bridges

by Ester Foelkel

Introduction

The wood is part of mankind daily-life since the beginning of human development (Calil Jr. et al., 2006). The arrival of the latest technologies and the relevant environmental concerns have caused to occur a new search for more environmentally friendly alternative materials for using in homes, buildings, road networks, bridges, electricity networks, among other civil engineering works (Giuliano, 2009; Fonte, 2004; Gesualdo, 2003). Therefore, the use of the wood from fast-grown plantation forests, such as the environmentally certified *Eucalyptus* forests, is increasing considerably. In addition, most secondary roads in Brazil do not have asphalt coverage, and their bridges also present little or no concrete structures. These bridges, which typically have small or medium size, are mostly built on wood. Many of them were made by carpenters without preparing a prior required project or even by professionals without the proper qualifications in engineering construction on wood. In many cases, it was also utilized native forest timber with inefficient or absent preservative treatments. This made the life span of many bridges to be short, causing the population to have the erroneous idea that these wooden raw materials would not be too resistant or durable for larger buildings (Gesualdo, 2003; Abdalla, 2002). However, studies have demonstrated the potential of wood of some species of *Eucalyptus*: they are being applied to bridge construction and are considered a full reality. This has led to greater confidence and a gradual growth of opportunities for the *Eucalyptus* timber for this purpose (Giuliano, 2009).

According to Dias (2007) and Barboza (undated) a bridge is defined as a civil work which is intended to cross a barrier (usually water bodies) giving continuation to a transportation route, or better, joining one point to another. Fonte and Calil Jr. (2007) showed that there is a huge deficit and there is a great need for repairing many bridges of small and medium size in Brazil, most of them built with woods. The country depends almost exclusively on highways for driving its production and to supply the huge population. So, the knowledge of wood properties and the use of new technologies are essential to guarantee comfort and safety to the Brazilian economy in addition to the logistics processes.

Consequently, the goals of this technical article are to present the main advantages and disadvantages of using *Eucalyptus* wood in the construction of bridges, and the available types commonly found in Brazil, as well as the species of the genus that are mostly used for this function. The text also aims to provide knowledge about research findings that are related the use of *Eucalyptus* woods for bridges, as well as what could be done to solve the structural and conservative problems existing and accumulated over the years of continuous bridges utilization.

Advantages and disadvantages of the *Eucalyptus* timber bridges

Giuliano (2009) reported that the use of *Eucalyptus* wood to build bridges has many advantages. One of the most significant is that the environmental investment in net energy for obtaining the raw material is almost negligible when compared to concrete. This generates great energy savings and reduced fossil carbon emissions when using wood. In addition to be less expensive, the bridges of treated good quality timber, if properly designed and maintained, are to have good behavior and performance. They are definitively a great alternative to brickwork and concrete.

The *Eucalyptus* wood also makes its contribution for preserving the environment, since it can be planted and produced in sustainable ways. This is because timber of planted forests may be environmentally certified as renewable resources, managed properly and with minimum environmental impact. After the harvesting of the *Eucalyptus* forests, the area may be replanted or managed to ensure the supply of the raw material for future generations (Calil Jr. et al., 2006). *Eucalyptus i*s currently one of the most planted trees in Brazil, fitting perfectly well to the environmental conditions of the country, which leads to rapid growth of the forests. *Eucalyptus* wood is available in essentially all regions of the country, ensuring appropriate acquisition costs. The stable supply of this wood on the markets also brings environmental benefits by reducing the use of wood from native forests, which are increasingly scarce and safeguarded by law. Another benefit is the easy workability and lower basic density of *Eucalyptus* wood, making it increasingly employed in bridge structures and other civil industry works.

The wood, even after the preservation chemical treatment, is not considered a contaminant to the environment (Mullin e Pedoja, 2003). Treatments for preservation are essential, especially in terms of extended longevity. Soriano and Mascia (1999) found that the main problems of the Brazilian wooden bridges are a lack of care and of maintenance repairs. Many of the bridges checked by the authors presented some kind of structural problems, such as rotting wood of the elements on their structures.

Fiorelli and Dias (2005) have assessed the conditions of the structural system of wooden bridges made with untreated *Eucalyptus* wood in the western Sao Paulo state region. Properties such as spans, dimensions, degradation and moisture levels were tested. Much of the unevenness of the bridges has been associated to the fact they had lack on conservation and absence of cup holders. Other identified non-conformities were found at headwaters, foundation (piles) and the stringers (beams).

Another major constraint in the use of wood bridges is the lack of knowledge, both about the *Eucalyptus* wood itself, as well as on expertise by technicians to the preparation of structural engineering projects in wood. This causes many of the bridges to be poorly sized, granting excessive load on them (Souza, 2004; Gesualdo, 2003). The wood, if well preserved, is even stronger than some materials, even to fire, and can bring economic benefits in the long term (Calil Jr. et al., 2006). However, wood, even after proper preservation, needs repairing and painting works. If this is regularly done, this material can have a life expectancy greater than 50 years (Calil Jr. et al., 2006).

Moreover, there is a real need to implement technological advances for promoting conservation measures and restoration of existing wooden bridges on secondary roads (Minnesota, 2011; Ribeiro and Goes, 2009; Calil Jr. et al., 2006). Another way to solve the problems of timber bridges is the creation of specialized training courses and other ways to transfer knowledge from recent research findings about the conservation of wooden bridges to engineers, architects, carpenters and the population in general, those who are bridge users as well (Minnesota , 2011).

Eucalyptus wood in bridges – properties and factors to deserve attention

Abdalla (2002) reported that the species of the eucalypt *Corymbia (Eucalyptus) maculata*, *Eucalyptus paniculata, Eucalyptus punctata, Eucalyptus tereticornis* and*Corymbia (Eucalyptus) citriodora,* when tested in the state of Sao Paulo, have presented ideal characteristics to be used in any type of structural construction work in civil engineering. In the case of *Corymbia citriodora*, some authors have also tested different harvesting ages for the forest. The average values of physical and mechanical properties of wood were different with respect to the harvesting age of trees (Sales apud Abdalla, 2002). Therefore, the use of *Eucalyptus* wood for use in structures can better be performed when there is a an adequate scientific study of physical and mechanical properties for each species, verifying the conditions for growth as well as the ideal age for harvesting and processing the wood (Oliveira apud Abdalla, 2002). The same author studied some mechanical properties of green wood at the breast height diameter (BHD) o*f Eucalyptus* species. The results indicated excellent potential mainly for *E. paniculata, E. tereticornis* and *C. citriodora* to the function.

C. citriodora (lemon eucalypt) has been the species mostly studied and used for the construction of various types of timber bridges. Many studies have been performed around the world in search of the ideal conditions of *Eucalyptus* wood for building bridges. This has helped building confidence and awareness in the engineering teams which are responsible for timber bridges in many countries.

Mina and Dias (2008) performed a study about wooden stakes from *C. citriodora* to the structuring of short vain bridges. The mechanical properties were evaluated, such as compression and bending strengths of the wood samples without the presence of defects. Tests were also made about the performance of stakes when immersed in the soil. Both experiments demonstrated the potential of *Eucalyptus* wood as foundations for bridges.

Despite the many advantages of wood, we must remember that wood is a hygroscopic material, adapting to the existing moisture content in the environment, even after the preservative treatment. Thus, natural drying or re-wetting may come to happen, generating non-conformities in the wooden pieces. When there are high levels of moisture in the soil (a common situation on the banks of water courses), there is swelling of the wood (with later drying in dry season), corresponding to variation in its dimensions. This property can affect the potential of cargo load in the bridge. To solve this problem, usually they are added beams (steel) in the beginning of the bridge structures. Such a measure helps to retain the swelling or shrinkage of the structural part made in wood (Soriano and Mascia, 1999).

Moreover, when the *Eucalyptus* wood comes into contact with the ground, it becomes more sensitive to xylophagous fungi and insects attacks. Therefore, treatment of the wood becomes essential, with a number of allowed chemicals registered through MAPA (Ministry of Agriculture, Livestock and Supply). Another very effective measure to protect the wood is by concreting the treated stake, the part that is stuck into the ground, leaving it protected against the action of detracting organisms (Dias, 2007).

Different environmental factors can also favor the non-treated *Eucalyptus* wood degradation, such as exposure to high temperatures, the sun and the presence of oxygen (Soriano and Mascia, 1999).

The durability of wood is not only determined by the preservative treatment but also the utilization of the bridge in accordance to its cargo capacity. Its proper use is also related to life durability. In addition, frequent maintenance should be performed to avoid future problems (Abdalla, 2002).

Types of wooden bridges

There are several structural systems that can be used on wooden bridges. According to Calil Jr. and Goes (2002) the most common systems are: beam bridges, plate or deck bridges, porched bridges, arched bridges, suspended bridges and cable-stayed bridges. The first two are the most used in Brazil. There are other forms of classification for wooden bridges. One is according to the type of the main raw material such as sawn-timber bridges, round-wood bridges, laminated wooden bridges and wood-concrete composite bridges (Abdalla, 2002).

The other category for classifying bridges is related to the technological age of the structural elements. This classification was created by Abdalla apud Almeida (2002) exclusively to the Brazilian wooden bridges. The first generation of bridges is the one that presents primitive and structural arrangements that leads to low durability because it has structural support columns in direct contact with moisture and water; and this type of manufacture undermine their links. The second generations has been built with greater concerns about the structure, but still retain some pathogenicity's that jeopardize the durability. The third generation corresponds to the most modern bridges; they have all the structural requirements necessary for long life, safety and stability. They have constant use of new technologies and the study of wood properties, especially *C. citriodora* for the development of the bridge projects. Such measures make possible to have suitable structures with longer durability and higher quality levels.

By following the definitions given by Calil Jr. and Goes (2002), the main features of the bridges of *Eucalyptus* wood most used in Brazil are described in the following items: Bridges in beams; Bridges in plates/decks.

- Bridges in beams

This type of bridge presents as major element the beams, which are also known as stringers. They are responsible for the structure of the bridge, holding planks of lumber in its cross-section direction. The beams can be either round-wood or glue-laminated wooden beams, or even lumber, lattices, panels, among others. The bridges using round-wood are considered more rustic and cheaper because they use the format of the tree trunk itself to the formation of the beams. This ensures increased speed of construction and better utilization of the wood, which can be reused after the substitution the beams. Thus, the natural round-wood reduces transportation costs, manpower and industrialization, which brings economic and technical advantages for wooden bridges, making them more competitive in the markets. The round-wood needs to be free from defects and biotic attacks, and the most straight as possible in its longitudinal axis to form the beams. The *Eucalyptus* wood should be treated through preservative process with vacuum / pressure. The round-wood is placed in the same direction as the traffic of the vehicle wheels, supported at the ends, which guarantees the support and distribution of loads. Saw-timber pieces are nailed with self-screwing screws on the wooden beams to help the traffic of users. The beams can also be arranged in the form of wood trusses ("interlaced") with screwed connections or not. The trusses can increase stiffness, and allow easy modulation of bridges with prefab parts. The maximum span that bridges with round-wood beams may have is been reported as 12 meters. However, when we have beams with trusses, this may increase according to the used and engineered structure. These bridges are usually made for only one lane of vehicle traffic.

According to Soriano and Mascia (1999), a great percentage of the rural footbridges (pedestrian walkways) and secondary road bridges have stringers made of wood, often untreated. The direct exposure to moisture in the soil and rain water makes the environment propitious for the infection by fungi to detract the longevity of wood. Many bridges used for landscaping in gardens also show beams and have walkway shapes. They usually have only timber as raw material (Dias, 2007). For all these reasons, monitoring of these bridges of untreated wood should be done with frequency.

- Bridges in plates/decks

This type of bridges can use multiple structural systems. Of these, the wood- concrete decks are the most common, but are also frequent: pre-stressed boards and simple multicellular pre-stressed decks.

The following is a description of the main features of each, according to Calil Jr. and Goes (2002):

Bridges on mixed wood-concrete plates:
In these bridges there are slabs of concrete which are attached to the structure of the wooden bridge. The concrete slab receives effort loads, making the bridge more rigid and resistant, while protecting the structural elements (beams, stakes, etc.) against abrasion, fire and from moisture and deterioration. The concrete slab is also able to absorb the vibrations of transport and acts as an acoustic insulation. Bridges in mixed wood-concrete slabs can support twice the cargo load and are three times more rigid than one made just from wood. The bridge board may have a mixed wooden beam shaped like a "T" to support the concrete slab or the latter can be coupled to an entire surface of layers of lumber. Round-wood logs, packed next to each other, can also support the concrete slab. The wood-concrete system is of two types: rigid or flexible. In the first, a glue or resin binds the two different materials altogether, avoiding even small movements. In the second type (flexible), there are connectors such as nails and screws to couple the two materials, ensuring more economy in this system.

The wood beams receive metal shear connectors to support the bending developed by the concrete during the transit of cargo loads (Astori et al. 2006; Soriano and Mascia, 1999). These connectors prevent the vertical separation between wood and concrete, ensuring a safe traffic on the bridge. A layer of asphalt is used above the concrete, allowing better surface for the traffic of cars, avoiding cracks and, at the same time, generating an extra protection to the wooden structures of the bridge. Generally, bridges are built with mixture of these two basic materials: wood and concrete. However, the steel may also benefit the transfer of efforts, both in vertical and in horizontal direction.

In Brazil, Souza (2004) recommended the utilization of concrete as an urgent measure to increase the load capacity of simple beam timber bridges. The wooden board can be replaced by reinforced concrete, giving increased rigidity to the bridges. To increase the sustaining potential of wooden bridges, steel beams have been interconnected with the wooden beams. This bridge had increased ability to support the traffic of heavy load vehicles (Wenceslau, 2009). Despite the fact that the expenses with concrete and steel are higher than the construction of a bridge entirely with wood, the benefits they offer can extend the life of the bridge in up to 3 times. However, everything needs proper conservation steps to be carried out periodically in the structures. This type of bridge is widely used in countries like Canada, USA, Australia and Switzerland (Soriano and Mascia, 1999).

Bridges on simple pre-stressed plates:

Pre-stressing can be defined as the artifice of introducing in a civil structure, a previous state of tensions in order to improve its strength or its performance under the influence of the effort requests such a structure will suffer. The pre-stressed bridges emerged in 1976 in Canada when there was a need for adjustments of old nailed laminated wooden deck bridges. The wood was still in good condition, unlikely the nails, leading to replacement of nails by bars of high strength steel, which were responsible for the pre-stressing (Abdalla, 2002).

In this system, the board has laminated wood disposed in axial direction, being the pre-stressing made through commercial lumber disposed in cross-sectional direction. The docking between the steel plates and the lumber is made through a set of anchor plates fixed to nuts and to other metal distribution plates. The pre-stressing is applied to steel and to the board thanks to hydraulic cylinders and the most common system used is "Dywidag" (http://www.dywidag.com.br/produtos/sistemas-de-protensao-reforcos-estruturais/sistemas-de-protensao-com-barras-dywidag/sistemas-protendidos-dywidag.html).

The pre-stressed wooden bridges (http://www.scielo.br/pdf/eagri/v27n2/a26v27n2.pdf) only started to be studied with more details in Brazil in the beginning of the 90's (Fonte and Calil Jr, 2007). Laminated wood of *Corymbia citriodora* was used to build the first transversally pre-stressed bridge in South America. Fonte (2004) tracked the behavior of the bridge and through load tests, analysis of rigidity of the board, among other tests, concluded that the eucalypt wood was able to be used for the purpose.

Another study conducted with tensioned laminated wooden board was published in 2007 by Lelles. The wood was originated from *Eucalyptus*sp. and the pre-stressing was done with steel bars. The author evaluated the potential of *Eucalyptus* wood in a system of pre-stressed bridges for highway and road utilization. Final tests were made to record the deflection on the longitudinal and transverse direction in relation to the traffic run. The results indicated a reliable pre-stressing, good enough to guarantee rigidity and stability of wooden board and bridge.

Bridges on multicellular pre-stressed plates or decks:

These bridges are considered the wooden bridges that have the most advanced building technologies up to this time (Goes, 2005). They were developed in order to increase the vain of pre-stressed bridges, since the simple pre-stressed plates could reach a maximum of 9 meters span. In this way, a system of upper and lower blades connected to a central beam was created, being this central beam referred as the soul or vein. It may increase the stiffness of the board, allowing reaching up to 25 meters span. The center beam is usually made from reconstituted wood or high strength plywood both able to absorb high shear stresses. The main utilized panels are Glued Laminated Wood, Laminated Veneer Lumber and Parallel Strand Lumber. The plywood should be well glued in order to acquire the required dimensions of height and width.

Goes (2005) commented that wooden sawn blades are laid one next to the other and subsequently compressed in the transverse direction by pre-stressing bars with high strength. This gives high strength and elasticity to the system. Despite the higher initial costs, the stability and the capacity to cover larger openings make this type of bridge a good selection by engineers in North America and in many other places (Goes, 2005).

Final remarks

The majority of the studies in technological development and academic research have proven the potential of wood of some species of *Eucalyptus* to the use in structural civil works, including the construction of bridges subjected to intense traffic of vehicles (Calil Jr. and Goes, 2002). However, the future use of this raw material for these functions depends on the transfer and acquisition of more knowledge by engineers, architects, designers, workmen and carpenters, especially regarding the performance of wood and the most appropriate structural designs for it.

The incentive for new research aimed at improvements in technology for development of new systems for timber bridges within the standards in force in each region should also be enhanced (Minnesota, 2011; Abdalla, 2002). To do so, cooperation between government, forest companies, research institutes, regulatory organizations and construction industry should be promoted and strengthened, in search of the dissemination in information, so that the bridges of *Eucalyptus* wood may be implemented in all parts of the world fulfilling their environmental, economic and social advantages.

The population must also be better informed about the benefits of *Eucalyptus* wood bridges, helping in its conservation and avoiding the overload of them by the inappropriate use in some specific situations.

The genetic variation in the timing of heteroblastic transition in *Eucalyptus globulus* is stable across environments

By M. G. Hamilton [A C], P. A. Tilyard [A], D. R. Williams [B], R. E. Vaillancourt [A], T. J. Wardlaw [B] and B. M. Potts [A]

[A] School of Plant Science and CRC for Forestry, University of Tasmania, Private Bag 55, Hobart, Tasmania 7000, Australia
[B] Forestry Tasmania and CRC for Forestry, 79 Melville Street, Hobart, Tasmania 7000, Australia.
[C] Corresponding author. Email: Matthew.Hamilton@utas.edu.au

Abstract
Eucalyptus globulus is one of the best known examples of a heteroblastic plant. It exhibits a dramatic phase change from distinctive juvenile to adult leaves, but the timing of this transition varies markedly. We examined the genetic variation in the timing of heteroblastic transition using five large open-pollinated progeny trials established in north-western Tasmania. We used univariate and multi-variate mixed models to analyse data on the presence/absence of adult or intermediate foliage at age 2 years from a total of 14 860 trees across five trials, as well as height to heteroblastic phase change from one trial. Up to 566 families and 15 geographic subraces of *E. globulus* were represented in the trials. The timing of the heteroblastic transition was genetically variable and under strong genetic control at the subrace and within-subrace level, with single-trial narrow-sense heritability estimates for the binary trait averaging 0.50 (range 0.44–0.65). The degree of quantitative trait differentiation in the timing of heteroblastic transition among subraces, as measured by Q_{ST}, exceeded the published level of neutral molecular marker (F_{ST}) differentiation in all cases, arguing that diversifying selection has contributed to shaping broad-scale patterns of genetic differentiation. Most inter-trial genetic correlations were close to one at the subrace and additive genetic levels, indicating that the genetic variation in this important developmental change is expressed in a stable manner and that genotype-by-environment interaction is minimal across the environments studied.

Source: *Australian Journal of Botany* 59(2) 170-175 http://dx.doi.org/10.1071/BT10313
Submitted: 24 November 2010 Accepted: 1 February 2011 Published: 28 March 2011

GE backs aviation biofuel from Eucalypt trees

By David Twomey; 2nd September 2011
Source: http://econews.com.au/

A consortium of local and global companies is behind a move to develop the use of Australia's gumtrees to produce an aviation biofuel.

The aviation industry, airlines in particular, is becoming increasingly focused on carbon emissions as emissions trading schemes (ETS) are set up around the world, and more and more people take to the skies.

A consortium of companies here is taking action by using eucalypt trees to develop a commercial biofuel for the Australian aviation industry.

"Innovation and creativity will play enormous roles as part of the transition to a low carbon future," said Ben Waters, director of ecomagination, GE Australia and New Zealand.

GE announced it was joining Virgin Australia and other partners to research and develop the commercial biofuel.

The focus will be on using a thermo chemical decomposition of organic material, at elevated temperatures in the absence of oxygen, to covert Mallee eucalypt trees to the biofuel.

Mr Waters said a pilot biofuel production unit would be opened in Australia next year.

"We already invest a huge amount in the development of more efficient and alternative energy sources in the aviation industry and beyond, and we hope to bring a huge amount of knowledge to this partnership," he said.

A recent CSIRO report estimated the aviation industry could cut greenhouse gas emissions by 17 per cent, generate more than 12,000 jobs and reduce Australia's reliance on aviation fuel imports by $2 billion a year over the next 20 years through the adoption of biofuels.

Other members of the consortium include Renewable Oil Corporation, the Future Farm Industries CRC, and Canadian biofuels company, Dynamotive Energy Systems Corporation.

Growing Eucalypts on the Northern Tablelands of NSW

By Warren Sheather

Our property, Yallaroo, is situated about 20 km west of Armidale at an altitude of 900 metres. We purchased Yallaroo about 16 years ago when stock were removed from the property. Although heavily grazed before our purchase many native plants survived the grazing onslaught. Seven Eucalypt species are native to the area. These are: *E. albens, E. andrewsii, E. dealbata, E. laevopinea, E. mellidora, E. prava*and *E. youmanii.*

We have created an extensive native garden that is expanding constantly with eucalypts figuring prominently in our horticultural activities. We are particularly interested in Western Australian mallees and have had some success with a number of species including *Eucalyptus macrandra, E. platypus* and *E. torquata*. We also have two *E. woodwardii* specimens that are surviving but not thriving. They have flowered but the number of flowers exceeds the number of leaves.

A few years ago we purchased a number of species from Canberra's Yarralumla Nursery in landscape tubes at $2 each. At this price we were able to expand our collection considerably. *Eucalyptus gregsoniana, E. kybeanensis, E. macarthurii, E. olsenii, E. parvula, E. stricta* are all enduring and prospering.*Eucalyptus gregsoniana* has flowered and *E. stricta* is carrying buds.

Among our other Eucalypts are many specimens of *Eucalyptus crenulata.* This handsome species is included in several Armidale gardens. *Eucalyptus leucoxylon* also figures prominently in our garden. More by good luck than management all our specimens have red flowers.

Eucalyptus boliviana is a very rare local species from the Bolivia Range, north of Glen Innes. Our 5 year old specimen flowered for the first time in July 2011. *Eucalyptus magnificata* is another local rare species this time from the gorge country east of Armidale. Our specimen flowers reliably every year with the tree becoming covered with cream flowers.

We have also managed to grow *Eucalyptus citriodora*, the Lemon-scented Gum. The tree was burnt almost to the ground after the first frost after planting. The specimen recovered and after 6 years is about 5 metres tall. Now each winter only the new growth is frost damaged.

Our Eucalypts give height and structure to our garden. There is an almost endless number of species that we wish to cultivate.

Eucalypt Identification

In response to a request from Liesbeth Uijtewaal for the Identification of a Eucalypt provide in the last news letter. Ian Roberts, Bob Netherton and Phil Hempel quickly responded with an identification of this tree, and all referred to its identification as *E. pleurocarpa* (was *tetragona*). A brief of the species has been provided below. Phil also added that "In the Fitzgerald National Park they grow spindly however in a garden situation they develop into a lovely bush and is one of the most photographed Eucs in my garden. They grow well in Melbourne, wet cold winters and sometimes hot dry and can be humid summers. The flower is white but the main feature is the square shaped limbs and buds and glaucous leaves and stems. Common name –Tallerack".
Thanks for your help with this Ian, Bob and Phil.

General Description of *Eucalyptus pleurocarpa*

Tallerack was until recently known as *Eucalyptus tetragona*, a name that was easy to remember because of the four angles on the fruit. However "Tallerack" is divided into 2 species. Eastern Tallerack (*E.extrica*) has green leaves with longer petioles. True Tallerack has glaucous leaves with short petioles. Unfortunately, the type species for *E.tetragona* was found to be intermediate between the two species. "Consequently the name *E.pleurocarpa* (published 1844), whose type is from Cape Riche, should apply to Tallerack, and the well-known name *E.tetragona* regrettably should be no longer used." (Brooker)

Eucalyptus pleurocarpa
Photo: Jim Barrow

Tallerack occurs in two separate areas. One occurrence is on the northern sandplain near Eneabba. The other is more widespread in the outer part of the wheatbelt and along the south coast. It is locally common.

Tallerack is a member of the sub-genus *Eudesmia*. One of the obvious characters of this group is that the stamens are in four bundles each at the corner of the squareish flower. It is in a sub-group that includes *E.erythrocorys*.

It forms a spreading mallee in its natural habitat with many thin stems arising from a lignotuber. It is sometimes cultivated in Perth where its best use is as a backdrop to other plantings, although it seems to have fallen from favour a bit because of its straggly habit. It tends to spread and become untidy but responds well to pruning. Flowering is January.

Source: http://anpsa.org.au/e-ple.html

Response to a question presented within the article provided by Paul Kennedy in the last newsletter (no. 53), titled *Growing Eucalypts in Strathmerton, Victoria.*

By Phil Hempel

Re Paul's question to dual bud caps., Re your comment on the covering over of some Euc buds. From my understanding this is common in most Eucs where the but had two operculum with the first falling off when very young leaving the familiar scar around the bud. With Eucs that only have one operculum no scar is formed. I believe some 130 species of Euc subgenus Euc do not have the second operculum. As usual there are exception where a Euc has two caps but they are fused together so appear to not have a scar.
I hope I'm on the right track here.

Question on the pedicel and peduncle identification.

By Phil Hempel

"I have a few *E macrocarpas* growing and the latest to bud up was grown from seed I collected from a street tree in Sandstone WA. On inspection I noticed the buds have stems, I always believed that *E* *macrocarpa ssp macrocarpa* did not have a any stem on the buds and this feature is the main item that separates it from *E rhodantha*. However on reading the EUCLID Eucalypts of Australia in more detail I find that *E macrocarpa ssp macrocarpa* has non-pedicellate buds (stalks) though a peduncle of less than 1cm may be present (the common stalk of a cluster of buds). *E rodantha* has stoutly pedicellate buds on peduncles to 3cm long. This has completely confused me as if a peduncle is the common stalk that holds a cluster of buds, how can it be identified on single bud species. How can the pedicel be differentiated from the peduncle if they can both occur on a single bud? Below are four different plants with names given by grower"

E. rhodantha

E. macrocarpa

E. macrocarpa ssp elachantha

E. macrocarpa ssp macrocarpa

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

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 Vic. 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 Vic. 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 ☐