

NEWSLETTER

AUTUMN 2013

NUMBER 75

FRIENDS OF THE WAITE ARBORETUM INC.

www.waite.adelaide.edu.au/arboretum

FORTHCOMING EVENTS

Duo Zoco Concert

Jacob Cordover guitar and
Laura Karney oboe

6 pm Monday 13 May in the
Urrbrae House drawing room.

Tickets \$25, \$20 concession:
student <18 and pensioner cards only.

Book now to ensure a seat and
pay at the door

Enquiries and bookings:

Beth Tel. : (08) 8357 1679

Email: bgriech@ozemail.com.au

Fascination of Plants Day

Saturday 18 May

Free Arboretum walks leaving
at 10 am, midday and 2 pm.

AGM Friends of the Waite Conservation Reserve

7.30 pm Wednesday 29 May

Urrbrae House

Speaker: Bob Myers. *Replacing
weeds with native grasses.*

Enquiries and bookings:

Jennifer Tel.: (08) 8313 7405

President: Henry Krichauff, **Vice-President:** Beth Johnstone,

Secretary: Norma Lee, **Treasurer:** Andrew Walters

Editor: Eileen Harvey, **email:** eileengarden@y7mail.com

Committee: Marilyn Gilbertson, Dr Jennifer Gardner (ex officio)

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Sapium sebiferum, Chinese tallow tree. Photo Eileen Harvey

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FRIENDS OF



WAITE
ARBORETUM

PRESIDENT'S ANNUAL REPORT

This is the 18th annual Report of the *Friends of the Waite Arboretum* and the third which I have had the pleasure of presenting. I would like to start by thanking all of you as members, volunteers and guides for your support. Your committee, with its small numbers, has worked hard to achieve the aims of fostering interest in and raising funds for the maintenance and development of our extensive Arboretum.

At last year's AGM we were privileged to hear a most interesting presentation by Dr Suzanne Miller, Director of the SA Museum titled "Ancient Continents – A Dynamic Earth". We look forward to hearing our Guest Speaker at this year's AGM, Dr Katja Hagendoorn, Postdoctoral Research Associate at the School of Agriculture, Food and Wine at the University of Adelaide who has been researching Blue Banded Bees, talking about bees in general and how we can attract them to our gardens.

We had an interesting range of functions and events during the year of which a number were successful fundraisers. In May we enjoyed the long planned visit to the Plant Accelerator led by its Director, Prof. Mark Tester. An afternoon concert in July, "Sunday at the Waite – a musical pot pourri" was presented by advanced music students from Loreto College and in August the Gala Truffle Dinner made good use of the beautiful Urrbrae House dining room. In September, as usual, the second day of the annual Treenet Symposium was held at the Waite with this year's themed walk through the Arboretum being "Trees of California".

The enthusiasm of the Mediterranean Garden Society members with their work here in the Garden of Discovery helped secure a tour of the precinct and the Arboretum by many visitors, both local and overseas during the International MGS Conference in late October. In December we enjoyed another concert, a well attended Sunday afternoon function "A Flute Concert", featuring flautist Jane McKenzie and pianist Leigh Harrold. This was only six days after the annual combined Christmas Celebration held back in Urrbrae House after last year's late afternoon gathering with the Capella Choir held on the southern side lawns.

Notice will be soon out on another guitar recital by the acclaimed guitarist Jacob Cordover and flautist Laura Karney and later on another biennial Basketry Exhibition. Suggestions have been made of holding another special dinner, following the successful Gala Truffle Dinner but this time a themed botanical dinner.

The Arboretum continues to look good, thanks to

the untiring efforts of Director Dr Jennifer Gardner and Groundsperson Andrew Walters. The care and maintenance work has been helped considerably by three major purchases. The first was the completion of the new shed to enable secure tool and implement storage and upkeep close to where they are needed. Second was the purchase of a slasher attachment for the existing machine for better access under and around trees and third a Vermeer Chipper capable of taking branches up to 15 cm diameter, allowing pruning work to be dealt with on the spot. The choice of these machines was the result of thorough investigation of what was on offer by Jennifer and Andrew and needed around \$28,000 of cash reserves and some very generous donations.

Last year we sadly lost a generous supporter of the Arboretum in Les Loffler who will be remembered for his exquisite wooden tree silhouette sculptures representing the tree from which the timber was sourced. He used a hand scroll saw with wonderful effect.

Late last year Prof. Mark Tester had to resign from the Committee to take up an important position in Saudi Arabia.

This brings me to the point where I can't emphasize enough the critical need we have for more members to join the Committee. It is not an arduous job, as we only meet the first Wednesday every two months at 9.30 am for 1 to 1½ hours. Also, in addition we do keep mentioning in each Newsletter the urgent need for a Publicity Officer. Filling this position would help our VP Beth Johnstone who along with Marilyn Gilbertson has been doing a sterling job in handling this task, along with Brian Richards producing flyers, brochures and other promotion work. Members' earnest consideration of offering to take a position would be much appreciated.

I cannot conclude without expressing my sincere gratitude to all those whose input throughout the year has helped this organisation run so smoothly. Jennifer is as ever a tower of strength, putting in untold hours of work in her office or out in the Arboretum no doubt to the detriment of a normal home life. Others to thank are those three just mentioned above for their untiring input; Norma our Secretary/Membership Officer and our Treasurer and importantly Groundsperson Andrew. A special thankyou must go to Eileen Harvey who since joining has taken the Newsletter editorship to a new level with its attractive new layout and liberal use of colour photos.

I move the adoption of this report.

Henry Krichauff

IN THE ARBORETUM
FROM THE DIRECTOR

I would like to thank everyone who has promptly renewed their Friends' membership, especially those who added a generous donation. I hope you will all support the forthcoming fund-raising concert: it promises to be very special.



Autumn is a lovely time of the year with sunny days and cool nights. The Arboretum deciduous trees are just beginning to colour and the *Acer x freemanii* 'Autumn Fantasy' by the labyrinth is a stunning crimson.

Ripe acorns of a number of species of oaks which are not commercially available have been harvested for distribution to interstate nurseries. In addition, acorns of our *Quercus coccifera* subsp. *calliprinos*, have been collected for propagation at The Waite by Treenet for the National Trust of Australia (Vic)'s Gallipoli Oaks Project which aims to propagate up to 2000 juvenile Gallipoli oaks to be planted in Victorian primary school grounds during remembrance ceremonies in the period 2015 to 2018. Substantial patches of native grasses have continued to grow and set seed over summer especially the native Windmill Grass, *Chloris truncata*. We plan to expand the areas which will have only minimum mowing and propagate wallaby grasses, *Austrodanthonia* ssp. to extend the native understorey.

With the cooler weather, members of the Mediterranean Garden Society (SA Branch) have held two working bees in the Garden of Discovery.



MGS member Virginia Kennett



Members of the Palm & Cycad Society (SA) have held another working bee along the watercourse, planting more specimens and tending the collection. The participation of these

groups is greatly appreciated.

You may have read about Elm Leaf Beetle in the news. The European chrysomelid Elm Leaf Beetle (ELB), *Xanthogaleruca luteola*, has become widespread in Victoria since its discovery on the Mornington Peninsula in 1989 and it has also been recorded in NSW and Tasmania. The beetle was first recorded in Adelaide in January 2011 on a mature English Elm in a private garden in Malvern where a dense population of adults, larvae and pupa were discovered. Since that time, Elm Avenue has been monitored for evidence of ELB.

In the summer of 2012/3, elms along North Terrace, the Adelaide Park Lands, and inner suburbs to the north, east and south were observed to have significant damage and defoliation from the beetle. ELB readily hitch-hikes on vehicles so it was only a matter of time before it reached the Waite Arboretum.



Ulmus procera leaves showing ELB damage

Leaf damage and larvae were first recorded in Elm Avenue on 19 March 2013 and the following week volunteer Russell Cook collected baseline information for every tree in the avenue, scoring the evidence of damage on a scale from 0 to 10. He also reported finding eggs and one adult. Signs of leaf damage are 'shot holes' chewed by adults and skeletonisation caused by larvae. While rarely fatal, repeated defoliation can result in reduced vigour of the tree making it more susceptible to attack by other pests and pathogens as well as detracting from the aesthetic appeal. Asian species such as the Chinese Elm and the closely related *Zelkova serrata* (also in the Arboretum) are relatively resistant to ELB.

The adult ELB is elongate in shape, 5-8 mm long, yellow / olive with a longitudinal black stripe on the wing covers and distinctive black spots on the thorax (1, 2). The tiny newly hatched black larvae grow to 12 mm long and are black or black and yellow by the 3rd instar. Mature larvae descend down the trunk from the canopy to the ground to pupate in the soil. The adults overwinter in sheltered places and emerge

again in spring to lay eggs. There may be several generations in a season.

There are a number of strategies for managing ELB with varying degrees of effectiveness. Timing is critical and must correspond to the physiological time for beetle development which is temperature controlled. Cost is also a factor. A conservative approach is advisable as treatments can have other detrimental effects. Advice has been sought from the entomologist and arboriculturalists who are acknowledged at the end of this article and my management decisions will be informed by their views.

The most important strategy is to maximise the health of the trees. At present the elms in the Waite Arboretum are looking better than in any of the previous 27 years that I have been Curator. I attribute their improved health to mulching, irrigation since 2001, installation of inline drip irrigation in 2009, a special water allocation from SA Water during the water restrictions of 2009 and 2010, and pruning and dead-wooding the whole avenue in 2010 funded by a \$20,000 donation from the Friends of the Arboretum. In early spring, we will be improving and decompacting the soil under the elms with a mixture of organic liquid fertilizers and microbial stimulants using a new purpose-made stainless steel lance attached to a pressurized tank.

Simple ways to help interrupt the life cycle of ELB include raking the mulch back 1 m from the trunk to intercept the descending larvae before pupation. However, this should only be done if adults are present and then only at the 3rd larval stage because the beneficial fine feeder roots adjacent to the trunk will be exposed.

Another interception strategy is the banding of the trunk with a sticky substance or painting a 50 cm wide band of 2% carbaryl insecticide which targets the last instar larvae as they migrate down the trunk. Effectiveness may be limited if infestations are dense and some larvae will fall directly to the ground (2, 3, 4). It would also be time consuming to implement with so many trees.

There are three other methods of insecticide treatment. Foliar spray with a neonicotinyl insecticide is not an option for the Arboretum as it would kill butterflies and other beneficial insects and in any case would be impractical given the size and number of our elms and at best would only last till autumn leaf

fall.

Tree micro-injection or vaccination with an insecticide is a last resort because it could be detrimental especially to old or stressed trees (Greg Moore, personal communication). It would also be a very expensive and labour intensive exercise. The advantages of this method are that it is very efficient and fast acting (in as little as 8½ minutes), stable, does not require water and soil invertebrates are not affected.

The preferred option (*but only used if really warranted*) is soil treatment with a systemic insecticide containing imidacloprid (e.g. Confidor) which kills the insects by blocking nerve impulses (6). Treatment potentially lasts two years. Application through the irrigation system would be very efficient and ensure the moisture levels are maintained for effective uptake. The disadvantage of soil treatment is that it can kill earthworms and other soil biota. Moreover imidacloprid is one of the most toxic insecticides to bees and so could pose a threat to the 80 species of native bees recorded in the Arboretum if they were attracted to the elm flowers for pollen. The relative uniformity of the avenue and an irrigation system with solenoids in groups of six trees lends itself to some comparative treatments, if it was decided to use a soil treatment.

Biological control using a tiny parasitic wasp *Tetrastichus gallerucae* has been tried in California (3) and also Victoria but it does not establish. A parasitic fly is still in the experimental stages. *Bacillus thuringiensis* (Novodor) is a larvicide.

Acknowledgements:

I thank the following for sharing their knowledge: Dr Greg Lefoe, Entomologist, Victorian Dept Primary Industries at Frankston in charge of ELB Eradication Plan & DED Contingency Plan (2010); Dr Greg Moore, Arboriculturalist, University of Melbourne (2010 – 2013); and Lee Anderson, Arborist, Taking Care of Trees (2012-13).

References & Resources:

- Australian Govt (2009) PaDIL Pests and Diseases Image Library – Elm Leaf Beetle www.padil.gov.au/viewPest.aspx?id=1791
- Biosecurity SA (2011). Exotic Plant Pest Alert – Elm Leaf Beetle Fact Sheet
- Dahlsten, D., S.M. Tait, D.L. Rowney, B.J. Gingg (1993) A monitoring system and development of ecologically sound treatments for Elm Leaf Beetle. *J. of Arboriculture* 19(4):181 - 186
- Kwong R. & Lefoe, G. (1998) A guide to elm leaf beetle management in Victoria. (Keith Turnbull Research Institute, Victorian Dept Natural Resources & Environment)
- Save our Elms 6th edition (2010) published by Friends of the Elms Inc. with support from Dept of Primary Industries, Vic.
- 6. www.en.wikipedia.org/wiki/Imidacloprid

Jennifer Gardner



GUEST SPEAKER

The AGM guest speaker, Dr Katja Hogendoorn, Postdoctoral Research Associate at the University of Adelaide treated members to a fascinating and beautifully illustrated talk about the native bees found in Australia. Katja explained how honey bees, introduced in the 1880s, compete with the native bees, birds and mammals for pollen and with birds and mammals for nesting hollows. There are about 2,500 species of native bees in Australia and they can be found everywhere from the tropics, to the arid areas and throughout the south. The different species vary in size, shape, colour, nesting habits, flower preferences and pollen collecting methods.

There are only about ten species of social native bees and these live in the warmer areas from Sydney northwards. The tiny social bees are stingless and store small amounts of honey in their nests. All the other species are solitary and female bees build individual nests for their eggs and do not store honey. They sip nectar from flowers for energy but collect pollen to feed their young. These bees can sting or bite but are not aggressive.

Katja discussed five bee Families and showed slides of species in each group and described their different nesting sites (from hollow twigs to snail shells and damp soil) and pollen collecting methods (from grazing to storing in hairs on the abdomen, or legs or in a pouch). The photos were stunning – one showed a bee removing the operculum from a eucalypt flower so that it would be the first to collect the pollen, another showed a leafcutter bee flying away clutching a disc she had just cut from a leaf.

Some native bee species buzz flowers at a certain frequency which causes the pollen held in the anther to shower down onto the bee's body. Flowers which are buzz pollinated do not produce nectar, so the bee relies on other nearby nectar producing flowers for energy. Many native flowers and some crops such as tomatoes and blueberries are buzz pollinated and Katja has been carrying out successful trials using the native blue banded bee to buzz pollinate in tomato greenhouses.

Katja finished her presentation with slides showing a variety of 'bee hotels' and described the construction materials used. Both during the

presentation and at the end there were numerous questions from the floor and Katja gave practical advice about where 'bee hotels' should be sited and talked about how to increase the number of native bees in our gardens.



Bees need a range of plants to provide nectar and pollen from early spring to late autumn. Buzz pollinated plants give native bees an advantage over the feral honey bees. The solanums (including tomatoes), senna, hibbertia, lasiopetalum and native lilies are buzz pollinated. Burrowing species need bare ground in a secluded area, nesting bees need dead wood or pithy canes or vines. Limit the use of pesticides.

Responding to questions from the audience, Katja said the average suburban garden probably has up to 20 species of native bees. Katja briefly described the Waite Arboretum bee wall* and said that 80 species of native bee had been recorded in the Waite Arboretum!

Henry thanked Katja for her enlightening and inspiring talk and Jennifer presented her with a wooden bowl turned by FWA member Ron Allen. The wood is alerce, *Tetraclinus articulata*, from the Waite Arboretum.

Eileen Harvey

*See page 9 for more on our bee wall.

VOLUNTEERS NEEDED

to construct a bee hotel for the Arboretum.

Please contact Jennifer :

Tel. 8313 7405

Email: jennifer.gardner@adelaide.edu.au

FWA COMMITTEE ELECTION

The Vice-President announced the following nominations for the new Committee:

Beth Johnstone, Norma Lee, Henry Krichauff, Eileen Harvey, Andrew Walters, Marilyn Gilbertson, Peter Nicholls, Ron Allen (in absentia), Dr Jennifer Gardner (ex officio). As there were no further nominations those named were elected.

Subsequent to the AGM, the new Committee met to elect the office bearers: Henry Krichauff, (President), Marilyn Gilbertson (Vice-President), Norma Lee (Secretary), Peter Nicholls (Treasurer), Eileen Harvey (Editor) with Beth Johnstone, Andrew Walters, Ron Allen and Dr Jennifer Gardner (ex officio) forming the rest of the Committee.

FRIENDS OF THE WAITE ARBORETUM NEWS

Congratulations to FWA member Ian Roberts who was recently awarded the OAM for services to the community of Blyth.

Perfect gift for someone who loves nature

FWA have a new shipment of Pat Hagan silver jewellery on consignment with commission going to the Friends. Her beautiful hand-crafted items featuring Australian fauna and flora make ideal presents for overseas friends.

RED DOT NOTICE

Dear valued member please note that if you have a **RED DOT** on the front of your latest newsletter, this is to alert you to the inclusion of a Membership Renewal Form for 2013.

Please send us your membership subscription as soon as possible, so that you will continue to receive your Newsletter, or advise us that you do not wish to renew your membership of the Friends of The Waite Arboretum.

You may renew your membership by using EFTPOS. If you decide to do so, please use your name as the reference. Otherwise I am NOT able to identify you for recording your payment.

Peter Nicholls, Hon. Treasurer

MEMBERSHIP SUBSCRIPTIONS

Membership subscriptions and related donations comprise the main source of The Friends income. A recent letter drop in local streets around the Arboretum and a publicity drive amongst staff at the Waite failed to find new members. We are now appealing to current members to recruit one new member each. Your help will be greatly appreciated.

Marilyn Gilbertson, Vice-President

NEW MEMBERS:

We warmly welcome the following new members:

Rosie O'Connell
Alla Marchuk
Nick and Karen Thomas and family
James and Dorothy Pretsell
Laura Molinari and David Storey
Walter Hagoort
John and Margaret Miller
Lorna Aplin

ATTENTION: Death Caps in the Arboretum

Autumn is death cap season. You are warned not to pick or touch **any** fungi in the Arboretum. Nearly all (about 90%) of deaths relating from mushroom consumption come from eating death caps which can be mistaken for the culinary straw mushroom.



Death caps, *Amanita phalloides*
Photo David Catcheside

<http://health.act.gov.au/publications-reports/fact-sheets/death-cap-mushrooms>

***Pinus roxburghii*, 1897 Sarg.;** syn. *Pinus longifolia*, 1803 (Roxburgh ex Lambert)

The Chir pine (syn. Cheer, Chil, or Emodi pine)

Chir pine is the most valuable of the three major pine species of the Himalaya, namely Blue pine, (*P. wallichiana*), and Chilgoza pine (*P. gerardiana*). It is found¹ in the subtropical climate zone from the border of Pakistan with Afghanistan (the North-west Frontier) through Kashmir and Nepal, eastwards to Bhutan, between latitudes 28°N to 33°N. It usually forms closed forest on the lower slopes of the Himalayas at altitudes between 500 and 2000 m and is subject to the benefits of monsoonal rains. It occurs on sedimentary rocks of Precambrian Period (i.e. of similar age to the Adelaide Hills and Flinders Ranges) in the Moist Forest ecological zone. Here it can occur extensively in pure stands on broad slopes as well as mixed with banj oak (*Quercus incana*) and rhododendron in sheltered ravines. At higher elevations it merges into Blue pine forest.⁴

The stands along the valley of the Suttlej River in Pakistan are typical⁴. The forest has been exploited for high quality softwood timber in the valley's foot-slopes for centuries but most slopes have been remote enough to avoid over-cutting. Professional scientific management of the natural pure forest has been provided from the formation of the Indian Forest Service (IFS) in the middle of the 19th century. Reserved forest was demarcated in the 1860s and Working Plans have been produced and revised regularly ever since regulating tree felling and replanting. Planting has been widely used to ensure adequate numbers of trees. The result has been that products, timber and resin mostly, have been sustainably marketed and the species current conservation status is in class 8, 1c (least concern).¹

The first record I can find of Chir pine in South Australia is from the 1881-82 annual report of the Woods and Forests Department, when a supply of seed was donated by the IFS. This appears to have been allocated to the former Mt Gambier Lakes Forest Nursery (beside the Leg of Mutton Lake) and Wirrabara Forest Nursery in the mid-north. Only two or three trees of this source remain. The oldest existing are two on the southeast rim of Umpherston Cave* and one in the arboretum at Bundaleer forest. The Conservator of Forests, J. Ednie Brown, in his manual⁵, nonetheless claimed 'the tree does well in our climate' despite the absence of any specimen plantings by the colonists, thus providing an early example of 'spin' from a government source.

The Chir pines in the Waite Arboretum were planted in 1944 in a group of three, donated as seedlings,



Chir pines in the Waite Arboretum. Photo Eileen Harvey

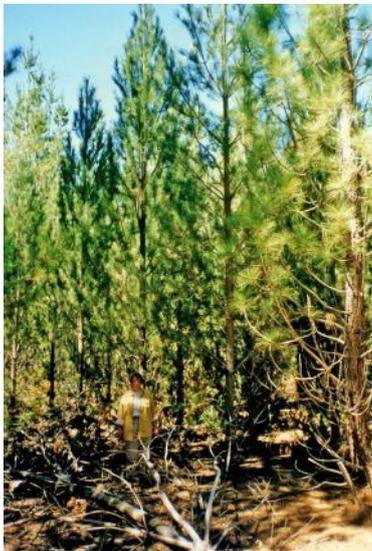
and their location is in Grid row G, units 7 and 8. They are all surviving well, but do not have the typical form of forest-grown pines recorded and admired from the Indian subcontinent: a single straight trunk carried high into the leafy crown. Typical pine form can be seen in their closest relative the Canary Island pine just 60 m away in the Arboretum (1930; Grid E7). If you want to see how a mature well-managed Chir pine forest would look the nearest equivalent is the Canary Island pine plantation, planted in 1918, at the entrance to Kuitpo Forest on the Meadows-Willunga Hill road.

In my student days at Bangor, Professor E C Mobbs told us that when he was first posted to the Indian Forest Service early in the late 1920s, he was disappointed in the Chir pine he saw in the forest in the populous Punjab region where he was stationed, despite the species high reputation. The local trees tended to be curved: the only straight logs cut were short ones. It was not until he was posted deep into the Himalayas, where the human and domestic animal population was much lower that he found just how magnificent fully-grown Chir pines could be.

In the Suttlej Valley a remarkable discovery was made, described by Maclagan Gorrie, which helps to explain why the native forest in the early 1800s was not heavily exploited (see above).⁴ Here bands of mature Chir pine, Blue pine and Deodar occur at successively higher altitudes, only affected by the slopes' north or south aspect. Frequently they appeared to be growing on hillsides covered in abandoned terraces, reaching altitudes to more than 4000 m. They were so abundant that it was surmised that they would have been able to provide for a much larger human population than currently existed. Built by

people long before historic or oral traditions records existed, Gorrie suggests there might have been a mighty plague that swept the Suttlej River valleys; but it may have been due or aggravated by nutritional exhaustion of the soils. Not only this: our understanding today of the relationship between long-term climate variation and agricultural patterns suggests that the world climate may have been warmer at that time. The low-lying plains southwest of the Himalayas may have become drought-stricken and unsuitable for crops, forcing a move to higher elevations.

It would seem, then, that the first two lots of Chir pine seed that came to South Australia had been collected from an area where all the vigorous straight trees had been cut out long since by the local population and left only trees with undesirable traits to provide seed. A third introduction of Chir pine came in 1983 and two plantations were established, one at Penola in the South East and the other at Wirrabara Forest Reserve in the Mid-north. At both sites trees struggled initially which was relieved by adding superphosphate dressings.



Chir pines at Penola when the trees were 12 years old.

Photo Bob Boardman

The fact that the specimen trees have survived well in South Australia outside their usual climate and ecological zones probably is linked to the similar warmth of the climate. Where the soils here are able to store water seasonally, where deep root penetration is possible and the average annual rainfall is greater than 650 mm the benefits to the Chir pine correspond to those it receives from the May to September monsoon rains in its natural range. However plantations at cooler sites, at higher elevations or with higher rainfall have a definite advantage (e.g. those at Mt Gambier and Wirrabara).

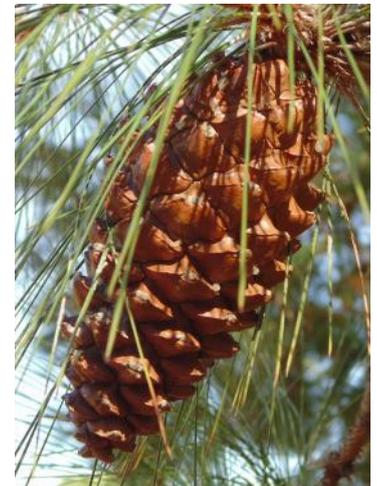
The close relationship with Canary Island pine (*Pinus canariensis*) is based on reproductive structures as sole members of sub-family Longifoliadae.⁶ In 1932 there was confirmation of this relationship when dendrological studies of wood anatomy placed them together in a *Pinus* subgroup'. Chir pine is part of a larger group classed as 'fire pines', including

Canary Island pine, Radiata pine, Aleppo pine and Maritime pine. They are dominant pioneer species as their cones are stimulated to open by fire and sufficient to produce pure stands. Canary Island pines in the Arboretum were conspicuous by the way they have recovered from the fire six years ago, through their unique capacity to coppice and produce adventitious shoots along scorched branches.



Chir pine bud (above) and Chir pine cone (below)
Photos Eileen Harvey

Apart from this unique trait, there are few distinguishing features between the pair: their buds have been described as magnificent, 3 cm long, non-resinous with spreading bracts capping the 'skirt' of long drooping needles in a shock-headed fashion. The inner bark of Chir pine has a greyish tinge compared to a reddish-orange hue in Canary Island pine. Chir pine has the ends of its cone scales longer and curved.¹ Otherwise, these two species of 3-needled pines are remarkably alike - although the natural occurrence of each is widely separated by more than 90° latitude.



Chir pine grows to between 30 m and 50 m tall with trunk diameter of 60 cm to 1 m in forest conditions. They require moderate soil fertility but are tolerant of soils texture and reactivity. The main forest product is timber for house and temple-building and maintenance. It is considered slightly inferior in quality to that of both the Blue pine and Deodar (Indian cedar, *Cedrus deodara*) which grow above Chir pine in the same valleys. Its use is probably preferred because of easier access on the foot-

slopes and shorter cartage. Resin tapping is a major secondary product after timber, for highly-valued natural turpentine, and solid rosin (or colophony). Recent research on resin has shown some geographic differences in essential oils but these may just reflect responses to local diseases. 'Longifoline' an extract of these is described as an agent used in organic chemical synthesis as a 'chiral hydroborating agent'.¹ Its name suggests its discovery comes from the time when the name *Pinus longifolia* was in general use. More recently, Taxifolin, the natural cancer drug has been found in the bark of older trees in significant amounts. Chir pine seeds are edible.

The Chir pine, like its neighbours Blue and Chilgoza pines in the Himalaya, and Canary Island and Radiata pine here in South Australia, are valuable timber resources, workaday tree crops, wonderfully green to look upon, tall and majestic in maturity, providing timber sustainably year on year. The fact that they are not a subject for concern in conservation goes along with their everyday presence.

It is a sobering thought that the conifers have existed on Earth for three times as long as the flowering plants; 300 million years and 100 million years respectively³. For those of us worried about 'climate change' over a century, consider the survival of trees throughout a huge number and frequency of climatic changes over those vast amounts of time. And unlike us humans they are rooted to the spot! If you are bothered, why not have a nice cup of tea? If you want to appreciate this pine in another dimension try Twining's *Lapsang Souchong tea*, its distinctive flavour comes from the leaf tips being smoked over glowing embers of Chir pine.

*Umpherston Cave lies beside Jubilee Highway East and is open to the public. The 'cave' (strictly a doline) was made into a garden in the late 1800s to 1920s. This was when the regional water table (seen at the Blue Lake) was at its highest level and the southeast sector of the cave floor was drowned enough to support a rowboat. The garden was restored in the 1980s by volunteers with a display of early photographs.

References:

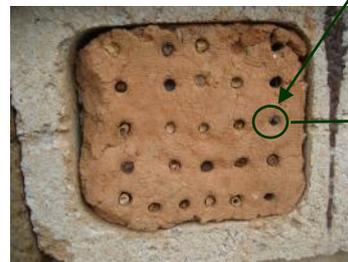
1. *Pinus roxburghii* – current pages from Wikipedia at http://en.wikipedia.org/wiki/Pinus_roxburghii
2. Rol, R. 1932. *Rapp. Congr.Soc.sav.* 65: 333-341.
3. Tudge, Colin 2005. "The Secret Life of Trees; How they Live and Why they Matter." Allan lane/Penguin.
4. Maclagan Gorrie, R. 1933. "The Sutelj Deodar – Its Ecology and Timber production". The Indian Forest Records (Silviculture Series) Vol

17 (4): 4-18.

5. Brown, J.E. 1881. "A Practical Treatise on Tree Culture", p.94. Government Printer, Adelaide, 2nd Edition.
6. Russel, George. The Project Gutenberg eBook of "The Genus Pinus." pp.51-52. at <http://www.gutenberg.org/files/26798/26798-h/26798-h.htm>

By Robert Boardman.

THE ARBORETUM BEE WALL



Arboretum bee wall: leafcutter bees, resin bees and mud wasps have made their nests in the blocks (top), close-up of one of the blocks (left), detail of nest of the common wasp mimic bee, *Hyleoides concinna* (right)

Photos Jennifer Gardner



Hyleoides concinna Photo: Marc Newman

TURNING NUTS IN MY OLD AGE

This provocative but hopefully amusing statement refers to my wood turning, not my mental state. I have always professed to be interested in the whole shrub or tree. The form of the plant, the varied colours and textures of the bark, the diverse shape of the leaves and the beauty of the flowers and fruit all go to make plants one of nature's precious entities. However there is another dimension to their beauty: the wood - warm, tactile and infinitely variable. Woodturning, above all other wood crafts provides the chance to find pieces of branch wood and quickly use a wood lathe to reveal the beauty of the wood. One of the joys of woodturning is to suddenly discover the hidden beauty of wood from something which might seem mundane. A good example is the colour and texture seen within parasitic mistletoe.

Some trees and shrubs have hard woody seed capsules – often called cones or nuts. I have had fun recently trying to turn many of these into common woodturning forms, some of which I will detail below.

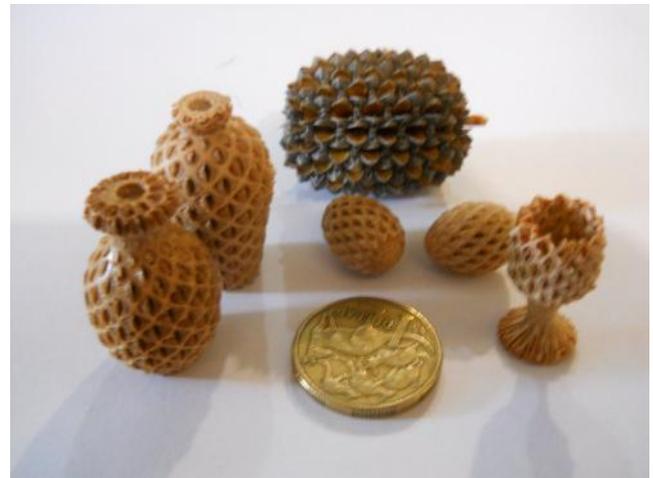


Vase, apple and pear turned from *Banksia grandis* cone

Banksia

The largest of the nuts (or cones) is from the bull banksia, *Banksia grandis*, native to SW Western Australia. These are commonly used in woodturning and are sought by turners from all corners of the world. Many banksia cones contain little hard woody material and simply fall apart, but *B. grandis* is very hard and woody and lends itself to many craft articles. I purchased some in Western Australia last year, some of which are 250 mm long by 90 mm diameter. The beauty of the individual seed casings is revealed when turned, each of them outlined in

darker wood, looking much like eyes. Common to South Australia is the silver banksia, *Banksia marginata*. Although quite small (it was difficult to find one big enough to turn an egg), it is harder and darker and quite attractive. I am sure that other species would create interesting forms.



Assortment of objects turned from Sheoak cone and a typical cone .

Sheoak

One of the nuts or cones which I have had fun with is that of the drooping sheoak, *Allocasuarina verticillata*, native to south eastern Australia, including South Australia. These nuts or cones are hard to turn, but always create interesting textures. Although impossible to make smooth, the small diamond shapes formed from the valves are very interesting and invariably cause comment and questions. Many of the sheoaks are interesting but *A. verticillata* is the largest – up to 40 mm long.

Hakea

Many of the hakeas have hard woody fruits which usually open into two halves each containing a winged seed. Pincushion hakea, *Hakea laurina*, has fruits which are almost spherical. They turn well producing an interesting spotted feature. Although other species of the genus *Hakea* have elongated shapes, I think they would also turn well.



Left, bowl turned from *Hakea laurina*, centre *Grevillea glauca* bowl, and right *G. glauca* fruit (Bushman's peg).

Grevillea

Grevilleas generally produce thin walled follicles as seed cases, however the clothes-peg grevillea, also called the bushmen's clothes-peg, *Grevillea glauca*, produces hakea style fruit. They grow to 50 mm in diameter, are almost spherical and split down the centre to show two winged seeds. They were reputedly used as clothes-pegs by early settlers and are native to northern Queensland, where I collected a number some years ago. They turn very well and the form lends itself into turning small bowls.

Queensland nut

The Queensland nut, also known as popple nut, *Macadamia integrifolia*, is well known for its delicious nuts. Anyone who has tried to break the hard shell to reach the rich nuts will appreciate the hardness of the nutshell. I am always impressed when I see the teeth marks of the rats which break through this extremely hard shell under the trees in the Adelaide Botanic Garden. The shell does turn to produce a very smooth finish as in these miniature bowls.



Macadamia integrifolia bowls and a nut

Eucalypts

I have turned a number of gum nuts, and although they sometimes show interesting textures they are somewhat fibrous and not woody. They also have hollows in each of the valves which always remain.



Tasmanian blue gum, *Eucalyptus globulus* bowl

Tagua Nuts

The king of all of the nuts is that from the palm tree, *Phytelephas aequatorialis*, commonly known as Ecuadorean ivory palm from the tropical rainforests of Ecuador. It is often known as vegetable ivory. The mature seeds are harder than wood and are encased in a bonelike shell which is so hard that it can be polished and carved like ivory. It is widely advertised on the internet and although quite

expensive is in high demand for netsuke carving.



Vegetable ivory bowl

All photos
Ron Allen.

Ron Allen

SEEDS AVAILABLE TO FWA MEMBERS

Seeds have been collected from the Californian and Mexican buckeyes growing in the Arboretum and are available to Friends who would like to propagate them.

Please contact Jennifer for more details.
Tel.: (08) 8313 7405



Flowers and fruit of the very decorative Californian Buckeye, *Aesculus californica*. If you have kept previous newsletters you can refer to Newsletter #5, Spring 1995 which has an article about the species written by Mary Tester and Newsletter #20, Winter 1999 which has one written by David Symon.

The Mexican buckeye, *Ungnadia speciosa* flowers well and is drought tolerant. Seeds are large and may need scarifying before planting.



WHAT TO SEE IN APRIL, MAY AND
JUNE IN THE ARBORETUM



The Lacebark, *Brachychiton discolor*, carries its spectacular pink velvety flowers in clusters at the end of branches. The seed capsules contain many large seeds surrounded by irritant hairs.



In autumn this native of California has large, glossy fruits hanging from bare, silvery branches. The nuts of *Aesculus californica*, the Californian buckeye contain a neurotoxin which causes the red blood cells to rupture. Native Americans ground the nuts and used them to poison streams, stunning fish and making them easier to catch.



Tamarix aphylla, Athel, is a declared weed in arid parts of Australia where it has spread along inland watercourses and is outcompeting native vegetation. It tolerates saline and alkaline soils and spreads both by seed and suckering. It limits competition from other plants by taking up salt from deep ground water, accumulating it in the foliage, and then depositing it in the surface soil where it builds up concentrations harmful to some plant species.



Eucalyptus kruseana, the Bookleaf mallee, is notable for its closely-spaced, stemless rounded leaves and greenish yellow flowers. It is rare, only occurring in three hilly areas east of Kalgoorlie but not currently listed as endangered.



Eucalyptus tetraptera, the four winged mallee has attractive red buds, flowers and fruits. The buds and fruits are square with wings at each edge. The very large (up to 25 cm) leaves are glossy and leathery and are the thickest of all eucalypt leaves.



Jagera pseudorhus, Foam bark is native to Qld and NSW. Aborigines used the bark and leaves as a fish poison. The saponin content blocked oxygen uptake by the fishes' gills.



Autumn colours on the leaves of *Diospyros virginiana*, the American persimmon a native of south-eastern USA where it was cultivated by native Americans in prehistoric times. The ripe fruit is edible, a tea can be made from the leaves and the dense wood is valued for woodturning



The Tallerack, *Eucalyptus pleurocarpa*, has a spreading habit with many small branches arising from a lignotuber. The square, ribbed fruits and smaller branches are white and waxy. The flowers are white with the stamens clustered in four groups, one at each corner of the gumnut.



Eucalyptus erythrocorys, Illyarrie, flowers profusely. The red-capped buds are in groups of three and each of the large flowers has four tufts of golden stamens. It commonly grows on limestone soil and adapts well to pruning.

All photos Eileen Harvey.