



FRIENDS OF THE CANBERRA INTERNATIONAL ARBORETUM AND GARDENS (CIAG) INC

D A T E N O V E M B E R 2 0 0 9 | V O L U M E 6

Dear *Friends*

With the end of Floriade I am pleased to report that the *Friends* Arboretum 'display-within-a-display' proved popular with over 11,000 visitors and around 250 people taking the guided bus tour to the Arboretum. The most popular tours were in the sunny weather! Most impressively, the National Bonsai and Penjing Collection of Australia, the first 'garden' of the Arboretum, had approximately 46,000 visitors. A great outcome considering the overall numbers visiting Floriade were affected by the bad weather.

Much applause for the efforts of our volunteers who staffed the displays and guided tours during Floriade – it was a fantastic effort and the fact that there were 'explainers' was very well received indeed. Thanks also to members of FACTA and STEP who served on our rosters. Please send me comments and suggestions for improvements for next year to hackman@grapevine.com.au.

It is wonderful to report that we have received the support of the ACT Government for our **Festival of the Forests ACT on 14 March 2010**. Roger Hnatiuk, Sherry McArdle-English and I met with Mr Jon Stanhope MLA, the Chief Minister, at the end of September to discuss our plans for a forest-focused event including talks from experts about the various forests, conservation and sustainability displays, guided bus tours, picnics, food concessions, a kite display and a fun run. He was most appreciative of our efforts last year and it is excellent to have his support to build on last year's Festival. We now have the potential for making our Festival an annual event into the future. Of

course, our volunteer effort is what will make this day go with gusto and so I look forward to your involvement in 2010.

We are currently working with the Arboretum Project Team within Chief Minister's Department to finalise the working bee program for 2010. The program will be published in our final newsletter for 2009 and on our website at www.canberraarboretum.org.au. An interesting article contributed by working bee members is in this newsletter. It shows you just what can happen – you too can be at the leading edge of assisting research at the Arboretum.

Dan Payne (Council member) is leading the Tree Data project. He is well qualified in forestry and is organising, with Roger Hnatiuk (Deputy Chair), the training for our volunteers to collect data about the trees growing at the Arboretum. It is expected that the measurements will be taken once or twice a year. Again, how exciting for our volunteers to be involved at the commencement of collecting data about the trees.

Newsletter 6 is packed with information about our activities and items of interest and introduces a new section: *Forest Talk*, with short, up-to-the-minute news items and information.

I would like to thank the members of the *Friends* who have so generously contributed articles and information for the newsletter and I encourage you all to be contributors.

See you at the Arboretum!

Jocelyn Plovits
Chair





***EUCALYPTUS DELEGATENSIS* SEEDS GERMINATED BY AUSTRALIAN NATIONAL BOTANIC GARDENS FOR THE SOUTHERN TABLELANDS ECOSYSTEM PARK**

By Cathy Robertson

I recently visited Sarah Fethers, Seed Bank Manager at the Australian National Botanic Gardens (ANBG) to interview her about forty *E. delegatensis* seeds that the Seed Bank had agreed to germinate so they could be planted on STEP's Block 100 at the Arboretum.

The ANBG Seed Bank is an important part of the *Living Collection* of the ANBG. The ANBG is the custodian of one of the largest collections (in terms of species) of seed of Australian native species with about 4,500 accessions from 2,300 taxa. It houses its own collection of seeds of threatened species which acts as a form of *ex situ* conservation, for the preservation and reintroduction of threatened species. The Seed Bank consists of a fully equipped laboratory, a drying, cleaning and packaging area and a freezer (minus 18°C) for seed storage. It supplies seed for approved projects at other botanic gardens, universities and similar institutions. However it does not supply seed to private individuals.

Sarah explained that seed banks are increasingly being seen as an important conservation tool for maintaining the diversity of the Australian flora. Large quantities of genetic material can be stored in a very small space in a seed bank. She said that this can be demonstrated by comparing the amount of space taken up by ten *Eucalyptus* seeds with ten *Eucalyptus* trees. Seeds can be stored for very long periods of time if the

conditions are suitable. Most importantly seed provides genetic diversity not found in cloned material (cuttings).

She said that many plants cannot be propagated from cuttings and must be propagated from seed. ANBG puts emphasis on germinating the seed for threatened species. There are two main types of seeds based on their storage characteristics. Orthodox seeds can be dried and stored frozen. Recalcitrant seeds are those which cannot tolerate severe dehydration and so cannot be preserved using these traditional methods. The ANBG Seed Bank only stores orthodox seed.

Sarah said 'In January 2009, STEP requested forty seedlings of *E. delegatensis*. We have successfully grown twenty. The seeds were sown on 20/01/09 and spent the first ten weeks in cold stratification: darkness, moisture and experiencing temperatures of between 2-4°C. During this period, the seeds were placed in petrie dishes with towelling/filter paper/seed/filter paper on top and each petrie dish then covered with aluminium foil to exclude light. The only time the seeds experienced light was when moisture/contamination levels were checked fortnightly. On 31/03/09 the seeds of the three collections were placed onto agar and placed in incubators with diurnal temperatures of 15-8°C and 25-10°C and 12 hours light/12 hours dark.'

'Interestingly the success rate for the germination was equal in both alternating temperatures. However, one collection failed to germinate and seeds, although full, were soft, and so they were discarded. On 15/09/09 the seedlings were put into 40 mm tubes.' (See photo, opposite).

Sarah also provided information about the provenance for the germinated seeds, which she extracted from the Australian National



Herbarium database. The ten seedlings germinated from the first collection were collected by Helen Thompson and Peter Ollerenshaw on 29 October 1986. The locality for this seed collection was the Brindabella Range, 11.7km from Piccadilly Circus towards Mt. Franklin. The seed was collected from tall open forest; other vegetation present was *Eucalyptus fastigata*, *Daviesia mimosoides* and *Senecio* sp. The tree from which these seeds were collected was approx 19m in height.

The ten seedlings germinated from seeds in the second collection were collected by R. Jackson and T. Macartney-Snipe on 25 January 1979. These seeds are thirty years old. The locality for this seed collection was the Brindabella Range, 1km SE of Bull's Head Chalet on Bendora Road. The tree from which these seeds were collected was about 30m high. STEP is looking forward to planting the seedlings on Block 100 at the Arboretum as soon as they are ready, probably in autumn 2010.



FOREST TALK

TULIPS AT THE ARBORETUM

On the bank between the Event Terrace and the Wollemi Forest the October working bee found that bulbs from Floriade can survive to produce flowers in subsequent years. We found four yellow tulips and two pink ones growing very healthily. They had come in to the Arboretum in the soil removed from Floriade some years ago.

Photo by Jennie Widdowson



This new feature is for short items of interest. Members are invited to contribute - send information to Jocelyn at hackman@grapevine.com.au

With Spring come the snakes, remember to wear long trousers and sturdy footwear. Let us know where you see a snake and the type of snake if you can – do not go close to collect information.



WORKING IN THE WOLLEMIS – OCTOBER WORKING BEE

By Jennie Widdowson and Cynthia Blount

On Sunday 4 October, ten hardy Friends met to do some work in the Wollemi pine - *Wollemia nobilis* - despite a cold, damp morning.

We were let in to the enclosure which is secured with an electric fence and taken on a tour of the area by Adam Burgess, the Curator. Adam explained that different methods of tree protection were being trialled. The majority of the Wollemi pines had shade cloth mesh set around four stakes to protect them from the elements, rabbits, kangaroos etc. Some other trees were protected by triangular pink tree guards. A thick layer of mulch had been placed around each tree to help suppress weed growth. A small number of trees were left without protection, just as they would grow in the wild.

Although all the approximately six hundred Wollemi pines have been cloned from one tree, they were showing great diversity in their amount of growth and structure. Some were only about 30cm high while others had shot up to over a metre. Some had become multi-trunked while others were growing a sturdy single trunk. Most trees were looking very healthy with some still showing the 'polar caps' at the end of their branches prior to a new growth spurt. We were excited to

find some trees had produced male cones which were covered in pollen. (The Wollemi is bisexual with both female and male reproductive cones on the same tree).



Wollemi pine with male cones



Wollemi pine with polar cap

Have you let us know your e-mail address and/or any other changes to your contact details? Please contact Collette on mob: 0418 412 640 or e-mail us at hackman@grapevine.com.au



Arboreta are places where various conditions can be trialed to see what has the best effect. This testing is taking place with the Wollemis. Most of the plants are protected by a square green shade cloth tree guard. However, a few trees have a triangular pink shade cloth tree guard and some have no guard at all. Those with the pink tree guards did not seem to be flourishing quite as well as those in the green guards although there were only a small number, so it would be difficult to show conclusively that the green guards were preferable. Those with no tree guard had been nibbled by kangaroos, but were still succeeding and sprouting well.

Another trial has been to feed some trees with a mixture of various water retaining crystals and other beneficial substances which last in the soil for about eight years. All these trees looked very healthy and all were multi stemmed – is this a coincidence?

The job for the Friends was to remove weeds (mainly grass) which had grown in the mulch surrounding the trees or inside the tree guards. We used a variety of tools to remove the weeds, made a little easier with all the recent rain. The weeds were thriving in places. We all got stuck into the job at hand and made really good progress. We made a dent in the job and the trees we had weeded looked much better for it.

On the ground between the trees, pink clover had been planted as a ground cover. The clover is thriving and in full flower – it looks spectacular. The clover both helps to stop erosion and to prevent weeds from growing. The plan is to plant red, pink, or white clover or grass in each of the forests to make a patchwork of green, red, pink or white which will cover the hillsides in colour while the trees are growing.

There were still a few weeds that had outlived the careful tilling and hoeing in the Wollemi forest, but these are regularly sprayed. St John's wort seemed to be the most common with a few occurrences of Patterson's curse, field daisies and thistles. There was also some cotton fireweed (a plant that looks like a weed but is a native) and also a few native bulbine lilies (*Bulbine bulbosa*), a densely tufted native perennial reaching 75cm. These lilies grow from subterranean corms, from which the aerial stems, leaves and bright yellow star-like flowers develop.

There are three rocky knolls of dacitic ignimbrite (a Silurian volcanic rock about 430 million years old) in the Wollemi forest and these are the habitat of several troublesome weeds which can easily lodge between the rocks – especially verbascom. These knolls will probably be sprayed in the future to remove the weeds and then, possibly local native groundcovers will be planted to replace them.

At the end of the morning we returned to the Friend' meeting room for a warming cup of coffee or tea and some lovely home-made cakes. There were also a number of very interesting sculptures in the room which had been created from pieces of burnt wood found after the bush fires.

It would be great if we could have some more volunteers next time we have a working bee at the Arboretum.



PICTURING PROGRESS

by Linda Muldoon

The *Washingtonia* working bee on 28 June had given me a glimpse of progress at the Arboretum site, but I had to wait patiently for a fine Sunday to lure me back there. Sunday, 6 September arrived - one of those superb spring days when for a moment all seemed right with the world.

I parked at the new Black Mountain Reserve carpark (accessible via William Hovell Drive) and followed the recreation path to the pedestrian underpass that emerges near the cork oaks. Once through the cork oaks I began to appreciate the progress made since the open day in March, with pink tree guards protecting so many new flowering tree species: the magnolias, the dogwoods, horse chestnuts and Persian silk trees. Then I emerged from the Himalayan cedars and climbed to the turning circle on the hill for the

big picture. That picture was so much greener than in March. The patterns of green and pink tree guards were now complemented by patterns of twin timber posts supporting other saplings. The Japanese cherries were in bloom and giant stripy corrugations of earth had emerged to form the basis of the Central Valley. The monster machines responsible for much of this progress were grouped together, idle on a Sunday, but looking quite proud of their achievements.

I walked back down the hill and followed the road across and up to Dairy Farmers Hill to enjoy our eagle's eye view of the world. This is a landscape like no other.

On descending to the dam I passed more new plantings which will complement the Wollemias in time. A pattern of star pickets and tree guards had emerged next to the dam, replacing the lunar landscape that I recalled in March.

It took me about three hours to get around the site as I was taking photos and savouring the moment. This was time well-spent though, as my photos later demonstrated progress at the Arboretum site via the Friends' display at Floriade.





PICTURING PROGRESS *cont.*



RESULTS FROM FIRST BIRD SURVEY

On 13 September 2009 members of the Canberra Ornithological Group undertook the first survey of birds at the Arboretum. A full article about the survey will be provided by Chris Davey, the President of COG, in 2010; in the meantime here is the list of birds that were found.

Masked Lapwing, Nesting
 Australian Magpie
 Welcome Swallow
 Australian Wood Duck
 Rock Dove
 Australian Raven
 Skylark
 Nankeen Kestrel
 Crimson Rosella
 Australasian Pipit
 Superb Fairy-wren
 Galah
 Flame Robin
 Grey Shrike-thrush
 Grey Currawong, Nesting off-site

Horsfields Bronze-cuckoo
 Goldfinch
 White-browed Scrubwren
 Grey Fantail
 Painted Button-quail, Possible only
 Silvereve
 Yellow-faced Honeyeater
 Rufous Whistler
 Golden Whistler
 Mistletoebird
 Crested Pigeon
 European Starling
 Willie Wagail
 Brown Thornbill
 Yellow-rumped Thornbill
 Galah
 Pied Currawong
 White-plumed Honeyeater
 Red Wattlebird
 Black-faced Cuckoo-shrike
 Weebill
 Eastern Rosella
 Striated Pardalote
 Magpie-lark
 Red-rumped Parrot
 Sulphur-crested Cockatoo



Photo credit Dr R Hnatiuk.



TREES IN FOCUS - THE GINKGO

by Susan Parsons

The ginkgo tree is featured in this newsletter's banner.

Once you are introduced to *Ginkgo biloba* it becomes a favourite tree. Known as the Maidenhair or Duck's Foot Tree, the distinctive foliage is lime green in spring and buttery yellow in autumn. The butterflyed, fan-like leaves are usually divided in two at the tip and they make a honey-coloured carpet when they fall.

Every beauty has a secret and female ginkgo trees produce 'fruit' (actually a seed) with ovoid, foul-smelling fleshy outer layer which is peachy-pink overlaid with a silvery bloom. This is at its worst when squashed underfoot on a warm autumn day. Female ginkgos can take 20 years for first fruits to be produced.

The natural occurrence of *Ginkgo biloba* was originally in south east China and some wild populations possibly exist on Xitianmu Mountain in Zhejiang. Some trees are up to 1,100 years old. The ginkgo is the city tree of Chengdu, Sichuan and a tree near the Tianshi cave is believed to be more than 1,200 years old (i). An ancient tree, known as Ginkgo Queen, grows in the 'wild' in Chongqing and in a rural area near Guilin in Guangxi is a ginkgo forest of one thousand planted trees. (i) However the ginkgo has been in cultivation for so long it is difficult to determine whether any natural stands remain.

This deciduous conifer, a gymnosperm, has ancient lineage to the Jurassic period and it is the only living representative of a genus known otherwise as fossils. It is now endangered in the wild.

In Australia, Dr Roger Spencer in "Horticultural Flora of South-Eastern Australia" (1995) says the finest specimen in Victoria, and possibly Australia, is at Geelong Botanic Gardens. This female tree, 18m tall with aerial roots, has been declared a Heritage Tree by the Australian National Trust.

In "Trees & Shrubs in Canberra" (1991) Professor Lindsay Pryor and Dr John Banks say the oldest known surviving ginkgo in Canberra is a female tree, one of a pair, planted in the Quadrangle of University house in 1953. Its first fruit crop was in 1985 and, in autumn 2009, it was tasseled with a smelly bounty. In 1987 three additional ginkgo saplings were planted near the reflecting pool in the courtyard.

In the John Banks Courtyard, at The Fenner School of Environment & Society at the ANU, formerly the Forestry Courtyard, six ginkgos were planted in the late 1960s down one side of the quadrangle. At least two are fruiting females, which produce a seasonal pungent aroma identified by the Professor of Forestry, Peter Kanowski, as 'noticeable'.

In Weston Park the most splendid tree, about 15m tall, is a male ginkgo in the grounds of Hobday's Cottage (Yarralumla Gallery and The Oaks Brasserie) under which you can eat lunch.

Outside the Treasury Building in Parkes are four handsome spreading ginkgos, two male, two female, which dangle their fruit and foliage at eye height for passersby to admire.

CULINARY AND MEDICINAL USES OF GINKGO

Kernels of ginkgo are prized as a delicacy and medicine in China and Japan and, increasingly throughout the world. 'Ginkgo nuts' are usually roasted before being eaten but this is an acquired taste.



In Australia, and throughout the world, health food shops offer capsules of Ginkgo extract as an aid to memory and debate continues regarding its efficacy in the treatment of high blood pressure, poor circulation, memory loss and even Alzheimer's disease. Dr Joachim Volkner has been awarded a German medical prize for research work on ingredients in ginkgo leaves which were found to be beneficial to circulation of blood and inhalation solutions of essence from the leaves for treatment of catarrh.

THE SEED

Horticulturist Frank Grossbechler has been collecting ginkgo seed in Canberra for Yarralumla Nursery where the trees are being raised for the Arboretum. His main source for seed is the female tree at University House and two or three trees from the Forestry planting at the ANU. Not all the female trees bear fruit every year.

Grossbechler waits until April when the fruit falls naturally. Sometimes he climbs the trees and gives them a shake so the fruit falls onto tarpaulins. He brings them home covered with garbage bin plastic bags so the smell does not permeate his car. From one tree he can harvest 1,000 seeds.

The ginkgo fruit is left to ferment for a few days and then he hoses it through a coarse sieve to blast off the flesh. The pretty kernels are then ready for planting and he sells about 5,000 seeds a year to the Nursery. The seed is sown and left in the open as frosts are good for easier germination.

For the Arboretum, 4kg of seed was brought to Australia from China in December 2006, supplied by Beijing Forestry University Forest Science Co. After passing through quarantine in Sydney it was sown in boxes at Yarralumla Nursery in Canberra. Nursery Manager Michael Kidd says it takes 12 months for seedlings and another year

until planting out and 600 young trees were planted in August 2009.

GINKGO AS BONSAI

In August 2009 the National Bonsai and Penjing Collection of Australia received two ginkgo seedlings raised from the 'sacred seeds' sourced from temple gardens in China. These will become part of the 'Arboretum in Miniature' (AiM) project, specimens of the same age and provenance as selected trees planted in the ground at the Arboretum. Many visitors will gain pleasure from seeing both the small and full-size specimens in relatively close proximity on the site (ii).

The goal of the AiM project is to grow as many of the Arboretum species in bonsai/penjing form as possible. It will take a number of years before these very young and unformed specimens take on the characteristics and qualities of mature miniature trees.

GINKGO HUNT

Susan has asked for additional information about the ginkgo. In particular she has asked for e-mails about any notable ginkgos that you might have seen, or plan to visit, anywhere in the world. She would like to know the place, age, description and provenance if you can obtain it. Please send the information to bodenparsons@bigpond.com

References:

- (i) "The Ginkgo Pages" see: www.xs4all.nl/~kwanten/more.htm
- (ii) Information from Canberra-based Dr Roger Hnatiuk of the NBPCA.

This information is an extract from an article by SUSAN PARSONS (2009). The full text can be seen at our website www.canberraarboretum.org.au.



FRIENDS of the CANBERRA INTERNATIONAL ARBORETUM and GARDENS Inc.

Membership Application Form

Yes, I/we wish to become a Friend(s) of the Canberra International Arboretum and Gardens Inc.

1. Title..... First Name..... Last Name

2. Title..... First Name..... Last Name

Address.....

.....Postcode

Tel (h)(w).....

e-mail.....

Membership arrangements (please indicate)

Contributing Friend.....Single \$25

Household\$30

Contributing Concession\$10

Association or Club.....\$50

Corporate Friend\$2000

not registered for GST

Payment details for contributing members:

Cash Cheque

Cheques payable to the Friends of the Canberra International Arboretum and Gardens Inc.

\$.....

For any enquiries contact

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