

NEWSLETTER

WINTER 2012

NUMBER 72

FRIENDS OF THE WAITE ARBORETUM INC.

www.waite.adelaide.edu.au/arboretum

URGENT

The FWA committee desperately needs someone to assist with promotion of events.

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

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

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

Committee: Prof. Mark Tester, Marilyn Gilbertson, Dr. Jennifer Gardner (ex officio)

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FORTHCOMING EVENTS

WHAT'S ON AT URRBRAE HOUSE

Gala Truffle Dinner

7.00pm Saturday 4th August
in Urrbrae House Dining room.

FWA flute and piano recital

2 – 4 pm Sunday 16 December in
Urrbrae House Drawing room.

ALL ENQUIRIES & BOOKINGS

To Beth Tel. : (08) 8357 1679.

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Now flowering, *Sterculia alexandri* Photo Eileen Harvey

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FROM THE PRESIDENT

At the committee meeting held on 6th June regret was expressed at the recent retirement of Jean Bird. Jean has been a loyal committee member since taking over editorship of the Newsletter in 2005. Before that and during much of that time she had been an Arboretum Guide until her mobility became restricted. She is a worthy recipient of Life Membership of the FWA.

At the meeting Andrew Walters was welcomed as our new treasurer having taken over this important role from Peter Nicholls. We appreciate Andrew's contribution as he is fully occupied in his work in the Arboretum. Added bonus, he is a qualified accountant.

With a view to minimising the use of herbicides in the Arboretum, hand removal of areas of unwanted plants is being carried out in selected areas. The Committee approved a sum of \$5000 to be allocated to employ an assistant over a period of some weeks to help Andrew. This would be timely in helping to make things look neat and tidy for Treenet, which is again on the first Thursday and Friday of September. Again this year, a large number of young trees have been planted and are establishing well with the rains coming now and the watering-in after planting when still dry. As was the case last year, Elm Avenue has been a most impressive display of golden autumn foliage. On a serious note, Death Cap (mushrooms) seem to be becoming an annual problem. A number of around 250, mostly close to oak trees, were recently destroyed; one needs to be aware.

Mrs Lindsay McWha, Patron of the Volunteer Programme of the University of Adelaide again held an Annual Volunteer Recognition Event in Bonython Hall. This was on Friday 8th June and she must be commended for her enthusiasm in convening this well supported event.

Looking ahead, at time of writing, the Concert on Sunday 22nd July, following light refreshments, features solo voice, piano, flute and violin performances by advanced music students of Loretto College. It promises to be a delightful occasion. On 16th December, we are hosting a Flute Concert (with piano) featuring Jane Mackenzie, who has played here before. Still on

the calendar, a significant event will be the Gala Truffle Dinner on Saturday 4th August.

As you see from the invitation, this will be a unique experience. We are fortunate that the truffle grower, Peter Marshall, Terra Preta Truffles in NSW, is an enthusiast and is fanatical about the extensive Oak collection in the Arboretum. Oaks are of course, the main host plant for these fungal delicacies. For this reason he has been more than generous in donating truffles to be featured at the dinner and has been totally supportive of holding this event. Urrbrae House in all its glory would be hard to better for an appropriate venue.

In closing the Committee hopes that you will enjoy the new format for this Newsletter.

Henry Krichauff



Barb Wheaton. Photo Laine Langridge

CONGRATULATIONS BARB WHEATON

Congratulations to Barb Wheaton, Friend of the Waite Arboretum, on her OAM in the recent Queen's Birthday Honours list. Her award is for service to the community, particularly through the Friends of the Botanic Gardens of Adelaide.

Barb joins a distinguished company of other Friends awarded Australia Honours: Cicely Bungey AM (1989), Marilyn Gilbertson OAM (2001), Anna Cox OAM (2003), Beth Johnstone OAM (2004), David Lawry OAM (2008).



IN THE ARBORETUM FROM THE DIRECTOR

Armillaria

I have just returned from a visit to the Australian National Botanic Gardens (ANBG) where I met Curator Phil Hurlé to discuss ANBG's 10 year *Armillaria* control strategy. *Armillaria luteobubulina*, Australian honey fungus, was first described in 1978 and is distinguished from other known Australian *Armillaria* species by its aggressive pathogenicity. It occurs naturally over large areas of south-eastern Australia and is capable of attacking and killing many native and introduced plant species as well as colonising dead wood. A number of areas in the Australian National Botanic Gardens have been affected as have parts of the Royal Botanic Gardens, Sydney and the Tasmanian Botanic Gardens. The fungus is present in the Karri and Jarrah forests of southwest WA and in Kings Park, Perth. The species has also been reported from southern South America and both molecular phylogenetics and pattern of distribution suggest it is an ancient species of Gondwanan origin.

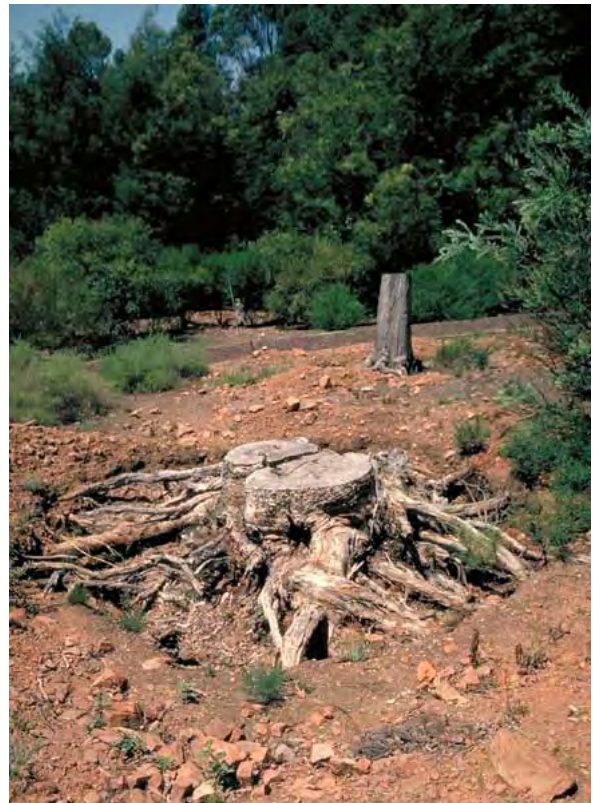
Australian honey fungus was recorded in the Arboretum for the first time in May 2010 when a cluster of the honey-coloured caps were found growing at the base of a blue oak *Quercus douglasii*.



Armillaria at base of *Quercus douglasii*, Waite Arboretum, 2012. Photo Jennifer Gardner

soil injection and surface spraying the area and foliage with TRI-D25 which is a mixture of two species of *Trichoderma* - a non-toxic competing fungus which feeds on *Armillaria*.

At this stage there is no totally effective control of *Armillaria*. After 10 years of dealing with *Armillaria* at ANBG a number of strategies have been tried but no single method has been satisfactory. *Armillaria* is spread by mycelia by root to root contact so one strategy is to try to remove infected trees including excavating the stumps and all major roots. This has been done in parts of ANBG. Their website (<http://www.anbg.gov.au/fungi/images-captions/armillaria-damage-0139.html>) has images of this drastic and expensive remedial action which has been discontinued. The affected areas will not be replanted for some time.



Armillaria damage ANBG Photo Heino Lepp

Another method tried at ANBG to reduce the spread of the inoculum was to isolate affected trees. A deep trench was dug along the edge of a bitumen road and a thick plastic root barrier inserted to prevent the spread from an infected bed to the adjacent Rainforest Gully. This technique is still being contemplated around our blue oaks, however it is difficult to determine the extent of the infected roots and at the ANBG *Armillaria* was subsequently found on both sides of the barrier.

The identity was confirmed by expert Dr Nick Malajczuk in WA. Our group of three blue oaks was treated in spring 2010 and again in spring 2011 by



At the ANBG I was shown a huge old eucalypt which looked surprisingly healthy though it is infected by *Armillaria*, while adjacent trees and shrubs had died. Opinions on the effectiveness of the *Trichoderma* treatment differ although according to arborist Kym Knight it has given good results over two years of trialling in SA. It has not eliminated the *Armillaria* from our infected specimen; it may have suppressed it.

In a healthy ecosystem *Armillaria* is usually kept in check by competing beneficial fungi but when trees are weakened by drought, senescence or other stresses they become predisposed to infection and the pathogen can readily colonise the root system, so the best strategy would seem to be to maximise the health of the tree by decompacting the soil and inoculating it with beneficial VA mycorrhizal fungi in combination with other techniques.

National Arboretum Canberra

While in Canberra I met with Fay Stewart, Executive Director ACT Parks and City Services, and Alan Franklin Senior Manager of the National Arboretum Canberra. Fay visited the Waite Arboretum earlier this year. I was given a tour of the National Arboretum by Alan and Curator Adam Burgess. The Arboretum is being developed on 250 ha at the western end of Lake Burley Griffin on the site of a former pine forest destroyed by fire in 2003. The concept is for a mosaic of 100 Forests, each of one species which is rare and endangered or of cultural significance, and 100 Gardens.



View towards Visitor Centre with new plantings.
Photo Jennifer Gardner

Since work commenced in 2005, 80 forests have been planted, roads built and the construction of a large Visitor Centre is underway. Many of the forest species selected are represented in the Waite Arboretum including our iconic dragon tree *Dracaena draco*, Engelmann or mesa oak *Quercus engelmannii* which is probably the most imperilled of all Californian oaks, Himalayan cedar *Cedrus deodara* and callery pear *Pyrus calleryana*. Adam, who is a regular attendee at Treenet Symposia, agreed to send me some seed of uncommon material including the Buchan blue wattle *Acacia caerulea*. The National Arboretum will open to the public in February 2013 and I will watch with interest as it evolves.



Cedrus deodara forest, older planting.

Photo Jennifer Gardner.

Of oaks and truffles

A highlight of my visit to Canberra region was a visit to the Marshall family farm of Terra Preta Truffles at Reidsdale near Braidwood, NSW. The idea to hold a Gala Truffle Dinner hosted by the Friends to raise funds for the Arboretum originated with Peter Marshall, and the family are generously donating the truffles and the willow-fed lamb for this special evening. This is how it came about.

Waite Arboretum has a very special oak collection of 120 trees representing 65 taxa, many of these from California or the Mediterranean region. Early last year I was contacted by Peter enquiring about obtaining some acorns from Arboretum oak species not commercially available. Peter had discovered the Arboretum on the internet in his search for Mediterranean oaks and I sent him a parcel of

acorns of different species. Soon afterwards a surprise and generous gift of premium French black truffles from the farm arrived as a thank you.

The Marshalls farm on the 'Dehesa' system - a traditional Spanish agrosilvopastoral system of very diverse, efficient, sustainable rural development compatible with nature conservation. The system is appropriate for Mediterranean climate (hot dry summers and cool wet winters) and soils of low fertility. The major features are multiple interconnected layers of productivity: a tree layer (typically Holm oak or cork oak), grassland, crops and livestock (usually Merino sheep or Spanish pigs), to which the Marshalls have added a productive subterranean component: truffles growing on oaks or hazels trees. Peter, a qualified forester, his wife Kate and family purchased the 250 ha property 12 years ago. The land had been degraded by complete tree removal, erosion, gold mining and dairy farming. The Marshall family are restoring the land by planting hectares of trees, reinstating the natural wetlands by excavating accumulated silt and rehabilitating eroded gullies with weirs and planting of reeds. With informed land management, no herbicides or pesticides and best arboricultural practice, the birds, frogs and other native wildlife have returned.

In March this year Peter came to collect more acorns of a variety of Mediterranean and Californian species. It was his first visit to the Arboretum. He was 'bowled over' by it and suggested the dinner to raise funds. On my visit to his farm Peter showed me the paddocks where in spring 6,500 well-spaced oak seedlings, germinated from the acorns he collected in the Arboretum, will be planted after dipping in a slurry of spores of the premium black truffle, *Tuber melanosporum*. The Marshalls also grow other edible fungi: Shitake mushrooms on inoculated logs and Porcini mushrooms growing in their *Pinus radiata* plantation.

I was lucky enough to join a group of top chefs and their families from the Canberra region on a truffle hunt on the property. Kate and superlative truffle dog Sal work as a close team. Sal would approach a young oak or hazel tree and with a gentle tap with her paw indicate the spot to dig. The Marshalls' 13 year old daughter Rita has an amazing ability to

locate truffles even without the dog by reading the environment. Each of us had a turn excavating a prized truffle which ranged in size from 3 to 9 cm diameter. The largest truffle unearthed this season was a whopping 980 gm. Terra Preta Truffles are in high demand and are exported to France, Italy, Hong Kong and USA.



Excavating truffle under hazel tree with Sal the dog.

Photo Jennifer Gardner

I am delighted that the Waite Arboretum collection is proving to be a very valuable resource for the developing Australian truffle industry, and am grateful for the support shown by the Marshall family.

I look forward to seeing some Friends at the Gala Truffle Dinner which promises to be a very special event.

References:

Armillaria Strategy. Australian National Botanic Gardens 2003-2013

Smith, I.W. & Smith, D.I. (2003) Armillaria root rot: a disease of native and introduced trees. State of Victoria, Dept. of Sustainability and Environment Fact Sheet

www.anbg.gov.au/fungi/ecology-woodrot.html

www.rbgsyd.nsw.gov.au/plant_info/pests_diseases/fact_sheets/armillaria_root_rot

http://en.wikipedia.org/wiki/Armillaria_luteobubalina

www.terrapretatruffles.com

www.abc.net.au/landline/content/2010/s3287470.htm

Jennifer Gardner, Director

MANY THANKS

I am most appreciative of a special one-off grant to the Arboretum from the Office of the Deputy Vice-Chancellor (Research) and a grant from the Friends of the Arboretum.

These grants will be used to buy equipment, engage an arborist to do specialist pruning and other work to improve the soil and tree health, as well as for additional hours and assistance for Arboretum grounds person Andrew Walters to ready the Arboretum for the Treenet Annual National Street Tree Symposium.

Mediterranean Garden Society (SA Chapter) held a working bee on 27 May and 12 members pruned and weeded the Garden of Discovery. It will be visited by delegates attending an International Conference of the MGS to be held in Adelaide later this year.

Congratulations to Jean Bird on her well deserved Life Membership of the Friends.

Jennifer Gardner, Director

Henry Krichauff presented Jean with the Life Membership at the Volunteers morning tea on Tuesday July 3rd.



Jean Bird with Henry Krichauff and Jennifer Gardner

Photo Eileen Harvey

THE FWA COMMITTEE URGENTLY NEEDS HELP

FWA committee desperately needs someone to assist with promotion of events and publicity. Attendance at the concerts, exhibitions, walks and all other events needs to be increased by raising general awareness. The committee urgently needs someone willing to organise publicity such as circulating fliers, putting up posters, developing a portable display, sending notices to radio stations and local papers and giving talks to community groups (PowerPoint presentations are already prepared).

Prior to the Treenet Symposium on Thursday September 6th, 2012, the Committee would appreciate some help with organisational details.

If you think you may be able to assist the committee in any capacity, please contact:

Beth Johnstone Tel. : (08) 8357 1679.

Email : bgrich@ozemail.com.au

JEAN BIRD

Jean Bird has decided to leave the committee of the Friends of the Waite Arboretum, although she will retain other connections. The committee are seriously disappointed at this news, but also recognise the dedication and skills that Jean has provided via a number of ways over many years.

Jean has been a regular Arboretum guide, starting in 1995 and retiring in 2011.

At the same time she gave 7 years service on the Friends Committee where she performed the task of preparing (and often writing content for) the Newsletter.

Jean also helped at Treenet, as well as helping out with functions and exhibitions.

It was decided at the last committee meeting that such exemplary service had earned a Life Membership and this will be done. All of us wish Jean well.

Beth Johnstone

VISIT TO THE PLANT ACCELERATOR

The much-anticipated visit to The Plant Accelerator, which is the headquarters of the Australian Plant Phenomics Facility, took place on Wednesday 23rd May, after the deferred, previous date had been set for March.

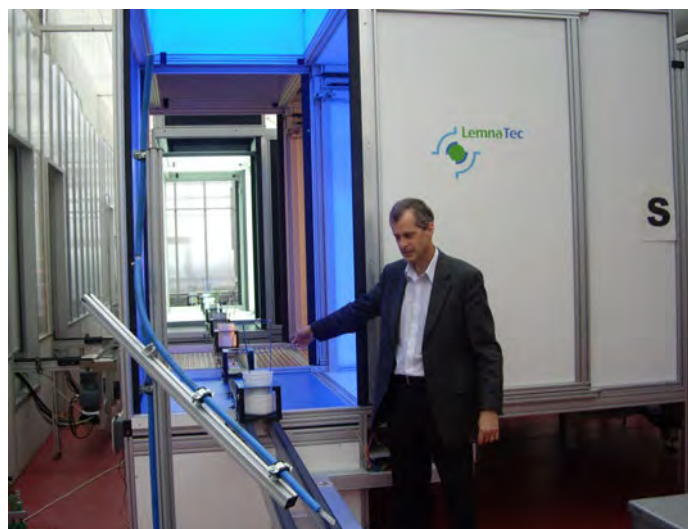
An optimum sized group of 13 members of the FWA were shown around this truly amazing facility by our Committee member, Prof Mark Tester. Mark kindly gave us his valuable time explaining the workings and the design of this world-class building. Because of his enthusiasm and foresight he was largely responsible for many of the ideas incorporated into its design and the securing of the funding. Practical and cost saving technology is a big feature in the building's construction. The extensive machinery area is situated in the basement, which is excavated into the hillside and houses the numerous air conditioning and power units. Any waste heat from these or the gas powered electricity generators is recycled in this energy efficient building. Each of the a/c units is dedicated to a specific section or room, in which temperature and humidity are controlled, with positive pressure if required for further isolation.

The main plant growing and analysing sections comprise two totally separate areas, with the high security one being for highly quarantined and GM approved facilities. Most of the very sophisticated equipment is true state of the art, specifically manufactured for this facility.

The photograph shows Mark describing the area where the pots are stored, in ordered lines on racking, from which they move by conveyor belt through the five analysing stations. This number of stations exceeds the normal three or less, which is the standard employed, making the set-up here unique and world leading.



Mark at storage area. Photo Henry Krichauff



Mark showing process (above) and addressing group (below). Photos Bryan Milligan.



Plants from public and commercial researchers from around the globe have made use of these services, which are generally on a user pays contract basis. The type of work undertaken includes high-throughput phenotyping servicing for a range of plants including, but not limited to wheat, barley, maize, rice, sorghum, tomato, chickpeas and cotton. This high rate of analysing includes imaging and computing technologies able to phenotype up to 2400 plants at a time; digital image processing and data analysis and controlled water/nutrient supply at individual plant level. A couple of examples of projects include drought tolerance in wheat and tomato and salinity tolerance of transgenic barley and rice.

Adelaide and The University of Adelaide can be truly proud of this world-class building and its contents and of Mark's contribution, all playing their part in what is becoming a major challenge facing mankind; providing food for our burgeoning populations.

Henry Krichauff

***Allocasuarina inophloia* Stringybark Oak**

Tree No. 300B, *Allocasuarina inophloia*, was planted in 1959 and died some time ago. With Jennifer's approval I cut it down and salvaged the wood. The tree is more widely known as Hairy Oak with reference to its bark, which I believe is an apt description. The bark itself is particularly stringy with a myriad of fine 'hairy' strings (see photo), unlike *Eucalyptus obliqua*, our Messmate Stringybark. These strings are freely shed when handled, creating quite a mess. When I arrived home the bottom of my trailer



was a thick blanket of fine bark. The distinctive bark is unique in the genus and is a very decorative feature of the growing tree. It is also called Woolly Bark. The specific epithet *inophloia* is a direct reference to fibrous bark.

Allocasuarina inophloia bark.

Among woodworkers it is most commonly known as Flame sheoak, a name which reflects the beauty of the wood – it arguably has the most beautiful wood of all of the sheoaks and is seen by many as one of the most striking and beautiful of all Australian woods. As it is not a commercial timber, it is difficult to find references about the qualities of the timber. The most useful reference I have is a well loved and used book by E. H. F. Swain, *The Timbers and Forest Products of Queensland*, published by the Queensland Forest Service in 1928. Other than that, I rely on my experiences in using the wood.



End grain showing medullary rays.

The most striking features of the wood are the rich colours and large medullary rays. It is said to have the appearance of hot coals behind a fire grate,

thus the flame reference. The yellow sapwood is usually narrow, although the tree in the Arboretum had a wide band of sapwood. The heartwood is a contrast, usually bright flame red. The large medullary rays are brown to red in colour and are also prominent in the sapwood. The ray figure is the most prominent of all of the Sheoaks. The end sections display the interesting radial figure, and the most beautiful boards are obtained in the quarter sawn boards – these are boards which are radially cut, following the medullary rays.

The natural habitat is on the western slopes of the dividing range in southern Queensland and northern New South Wales where it grows on poor soils and occurs as scattered individuals. It is considered to be rare. The tree grows to 15 metres, rarely having trunks exceeding 300mm. and is usually gnarled, rarely having straight stems. The specimen in the Arboretum had a good form with a butt of 250 mm. The greatest problem in gaining sound wood with Sheoaks is their propensity to split radially. Because this tree had died while still standing, I thought that any splitting would be minimal, however as soon as cuts were made with the chain saw, the amount of splitting was displayed. Unusually, even the small branches had radial splits. Despite this, the wood was still regarded as precious and although much machining is required a quantity of smaller pieces can be salvaged.

Heartwood
bowl



The accompanying photos show some small pieces made from the salvaged wood. The bowl cut from the older heartwood shows the fiery red which makes the wood highly sought after. The pens and eggs were turned from the sapwood or the transition between the sapwood and the heartwood and show the paler colours but still display the medullary rays. This colour and figure is quite unique.



Ron Allen

Sapwood
pens and
eggs.
All photos
Ron Allen



***Elaeodendron croceum* (Thunb.) DC.**

Elaeodendron croceum, Family Celastraceae, is native to southern Africa and is most common in the southern Cape forests and on escarpments and mountains in Zimbabwe. It grows best on the margins of moist coastal and inland forests.

The name of the genus, *Elaeodendron*, comes from the Greek for olive, 'elaeos', because of the resemblance of the fruit to that of the olive tree. The specific name 'croceum' means 'saffron yellow' and refers to the saffron yellow colour of pigments in the bark. This colour is present in the bark of many other species of the Family Celastraceae. The common name of this species, saffron wood, also refers to this colour.

Elaeodendron croceum is a slow growing, medium to tall, upright, evergreen tree. The bark is grayish, with a conspicuous layer of a powdery yellow pigment in the freshly exposed bark. Branches are grayish brown with prominent, coarse black lenticels (blister-like breaks in the surface). The dark green leaves are opposite, hard and leathery with inconspicuous veins, elliptic in shape and between 15 mm to over 200 mm long. The base and apex are sharp-pointed.



Elaeodendron croceum is an attractive, evergreen tree with a neat, upright shape. Arboretum specimen #264 Planted 1929

The tiny green and white flowers occur in inflorescences of 3 to 15 flowers. The fruit resembles a cream coloured olive. The small

seed is enclosed in a hard stone. In its native habitat the fruit is eaten by birds and animals but is unpalatable to humans.



The fruit of *Elaeodendron croceum* resemble cream coloured olives in size and shape.

Photos Eileen Harvey

The wood of *Elaeodendron croceum* is rarely available but is of fine quality, has a beautiful golden lustre and is suitable for fine furniture and craft work. Early settlers in the Cape Province of South Africa used the bark for tanning and dyeing. Some parts of the tree are known to be poisonous. Preparations of the roots and bark can be fatal to humans and were traditionally used by witchdoctors in trial by ordeal ceremonies.

Three of the splendid, healthy *E. croceum* planted in the Arboretum are over 80 years old and have received no additional water for the last 50 years.

References:

Van Wyk, B., Van Wyk, P. & Van Wyk, B-E. 2008. *Photographic guide to the trees of southern Africa*. Briza Publications, Pretoria.
Coates Palgrave, M. 1990. *Trees of southern Africa*, second revised edition. Struik, Cape Town.

<http://www.plantzafrica.com>

Eileen Harvey

WHAT TO SEE IN JULY, AUGUST & SEPTEMBER IN THE ARBORETUM

The bronze loquat, *Eriobotrya deflexa* has bright red-bronze and burnished copper new leaves to be followed by showy panicles of small white flowers. The small fruit are unpalatable.



Eriobotrya deflexa

Photo Jennifer Gardner

Many of the Australian native trees have new leaves; those on the angophoras are very colourful. Some native trees have begun to flower; especially the mallees and hakeas. The pear-fruited mallee, *E. pyriformis* x *E. youngiana* has very large flowers and decorative fruit.



E. pyriformis x *E. youngiana*

Photo Eileen Harvey

Lorikeets and honeyeaters feed on nectar in the long red flower spikes of the Grass leaf hakea, *Hakea francisiana*. Walk through the Hakea collection to see other hakeas in flower.



Hakea francisiana.

Photo Eileen Harvey

There are still flowers remaining on the spectacular Firewheel tree, *Stenocarpus sinuatus* and flowers are opening on the willow leaved *Stenocarpus salignus*.



Stenocarpus sinuatus (upper),
and *Stenocarpus salignus* (lower)

Photos Eileen Harvey

In early spring the Mexican buckeye, *Ungnadia speciosa*, has clusters of bright-pink, fragrant flowers which appear before the leaves. This species, the only one in the genus, is named after Baron Ferdinand von Ungnad, Austrian ambassador at Constantinople, who introduced the horse chestnut into western Europe in 1576.



Ungnadia speciosa flowers

Photo Jennifer Gardner

As spring approaches watch for blossom on the trees in the pear collection and fresh new growth on the deciduous oaks.



Catkins and new growth on
Quercus canariensis

Photo Eileen Harvey