



Fronds

Friends of the Australian National Botanic Gardens
Number 73 April 2013

Inside:

**Making a Meeting
Place**



Friends of the
Australian National
Botanic Gardens

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Email or post material to the *FronDS* Committee at the above addresses or, place in the Friends letterbox, located inside the Gardens' Visitor Centre, between 9.30 am and 4.30 pm, Monday to Sunday. Editorial messages: telephone (02) 6250 9548.

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Cover: A prototype of the laser-cut steel and mortar Red Centre Garden artwork pavement when it was trialed on site. The fly is real! Photo by Wade Bartlett.

Eucalypt Trail map and signs



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Discover eucalypts

John Turnbull and Anne Campbell



Blood red kino dripping from *Corymbia calophylla* (Marri) (M. Fagg); *Corymbia ficifolia* 'Dwarf Orange' (M. Fagg); *Eucalyptus regnans* (Mountain Ash) (HM Rawson); *E. pulverulenta* (M.Fagg); *Angophora costata* (M. Fagg).

Eucalypts dominate much of the Australian landscape and have great cultural significance. In recent years botanists have recognised three closely related genera: *Eucalyptus*, *Corymbia* and *Angophora* which collectively are referred to as 'eucalypts'. A few species were growing naturally on the ANBG site before planting began in the 1940s but now almost 400 of the known species have been introduced.

This large number is daunting for many visitors and so a self-guided 'discovery' walk, taking about one hour and featuring just 21 eucalypts, has been established. The aim is to stimulate public interest in the amazing diversity, usage and conservation of eucalypts. A brochure with a route map indicating the location of the selected eucalypts is available and each tree has an interpretative sign with a key message. Additional information will be available on the ANBG website.

The Walk starts with Cliff Mallee Ash (*E. cunninghamii*) on the edge of the car park below the Visitors Centre. This species has the typical mallee form with multiple stems emerging from a large, easily observed, lignotuber. This form contrasts with tall, straight single stems of Tasmanian Blue Gum (*E. globulus*) and the Mountain Ash (*E. regnans*), both in the Tasmanian Rainforest. Tasmanian Blue Gum is an important commercial species with extensive plantations in Australia and elsewhere. It is also Tasmania's floral emblem. Mountain Ash has the distinction of being the tallest flowering plant and the tallest hardwood tree species in the world. Next is a large Yellow Box (*E. melliodora*), by the Crosbie Morrison Building, a long-term resident of the Gardens, well-known for its delicious honey. The Walk continues past *Corymbia ficifolia* 'Dwarf Orange' and a group of *E. mannifera* to the pond area at the Rockery where two rare species, Weeping

Snow Gum (*E. lacrimans*) and Wallangarra White Gum (*E. scoparia*), are featured. The Wallangarra White Gum is a huge specimen and appears to have benefitted from accessing water from the pond.

The majority of the Walk's eucalypts are on the Eucalypt Lawn where one can appreciate different bark types: the stunning smooth white bark of the Lemon-scented Gum (*Corymbia citriodora*), the beautiful bluish bark of Sydney Blue Gum (*E. saligna*), the rough, hard grey-black bark of Northern Grey Ironbark (*E. siderophloia*) and the intriguing trails of the larvae of the *Ogmograptis* moth on the Scribbly Gum (*E. rossii*). Of historical interest are Swamp Mahogany (*E. robusta*), the first planted street trees in Australia, and Gympie Messmate (*E. cloeziana*) the largest eucalypt in Queensland and provider of timber for the Gympie gold mines and sleepers for Queensland railways. *Eucalyptus benthamii* (Camden White Gum) honours Dr George Bentham (1800–1884), principal author of the monumental 7-volume *Flora Australiensis*, published 1863–84.

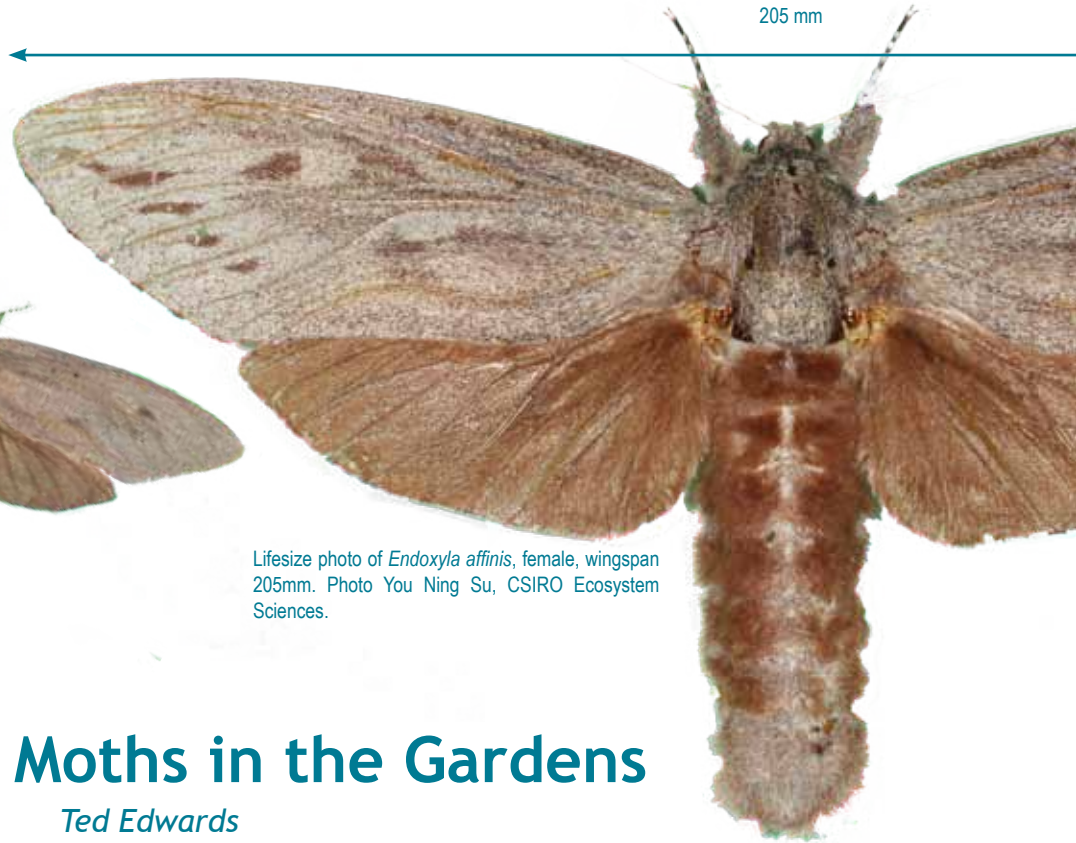
The Western Australian Marri (*Corymbia calophylla*) exudes a blood red kino used in Aboriginal medicine, Blue Mallee (*E. polybractea*) is the main species supporting the Australian eucalyptus oil industry, and the striking leaves of the Silver-leaved Mountain Gum (*E. pulverulenta*) are valued in floristry. On the upper edge of the Eucalypt Lawn is the only representative of the *Angophora* genus, the attractive Smooth-barked Apple (*A. costata*). Returning via the edge of the Rain Forest Gully there are two impressive specimens of Manna Gum (*E. viminalis*) and Flooded Gum (*E. grandis*).

The project was supported by a grant from the Dahl Trust (<http://dahltrust.org.au/>) and matching funds from the Public Fund of the Friends.

Endoxyla cinereus, female, wingspan 203mm. Photo You Ning Su, CSIRO Ecosystem Sciences.



Lifesize photo of *Endoxyla affinis*, female, wingspan 205mm. Photo You Ning Su, CSIRO Ecosystem Sciences.



Giant Wood Moths in the Gardens

Ted Edwards

Every summer in Canberra an adored moggy 'brings home the bacon' to a dotting owner. Puss had quite a tussle with wings beating her face and scales in her eyes but at least she was not bitten or pecked. And she is proud; larger than a mouse, smaller than a rat; puss has caught a Giant Wood Moth.

The Giant Wood Moths (family Cossidae) of Canberra and the Gardens are among the heaviest moths in the world, exceeded in weight only by a massive relative found between Sydney and Brisbane. The Canberra moths can weigh in at 26 g with caterpillars even heavier. To be fair on the gentlemen they are much less massive than the ladies, but because neither he nor she can feed as an adult moth she has to be enormous to carry the thousands of eggs she must lay in the few days she lives.

Why haven't I seen these moth grubs around? Will they eat my tomatoes? Well they won't eat your tomatoes and you haven't seen them around because they bore in the trunks and main branches of *Eucalyptus*, (and *Corymbia* and *Angophora*).

When the Gardens were established the forest canopy formed by *E. rossii*, *E. mannifera* and *E. macrorhyncha* was retained to help shield the young plants from extreme conditions, particularly frosts, and so the Giant Wood Moths of Black Mountain lived on in the Gardens and do so to this day.

Let's watch some of these moths through their life. When

she has dried her wings and night comes she is ready to attract a male by producing a scent (pheromone) which the male can detect from a very long distance. Having mated she sets off to lay her eggs with an unwieldy, heavy and laborious flight among the trees. There is no way she can individually place thousands of eggs so she lays eggs in large batches hundreds at a time in crevices in the bark of trees. What if these hundreds of eggs survive on one tree? They don't of course, but when they hatch after about a fortnight the little caterpillars spin a thread of silk and float off in the wind to be intercepted by another tree some distance away. This is the main way the moths disperse. A small larva landing on a trunk will bore into the bark and then the wood and it will remain as a borer for probably about three years. The larva itself is often reddish while young but as it gets older becomes an ivory colour and looks, without microscopic examination, hairless.

We will look at the bore of a full grown larva more closely. If the trunk is split in half we see that the bore stretches upwards from the original entrance hole. It runs upwards because the pupa, when it is time for the moth to emerge, finds it useful to have gravity to help. The bore is little bigger than the larva. We wonder what is going on here. There is no way that the great, protein- and fat-rich larva obtained all the nutrients in its body from an almost equal volume of notoriously nutrient-poor eucalypt wood. But then we notice that around the entrance to the



Endoxyla encalypti, female, wingspan 195mm. Photo You Ning Su, CSIRO Ecosystem Sciences.

bore, just under the bark, there is a fairly large cavity with visible mandible marks around it. This cavity intercepts the sapwood and cambium and here the caterpillar has its farm. The tree is obliged to repair this wood or the trunk will become deformed and exposed to termite attack so it forms copious callus or repair tissue which the larva crops. This tissue is soft and nutrient-rich and on this diet the larva grows rapidly, constantly eating away the callus tissue as fast as the tree repairs the damage.

When the larva is fully grown it makes extensive preparation for the protection of the pupa and the subsequent escape of the moth. First it extends its bore downwards a little in an arc coming to the bark a little above or below the tiny entrance hole. This is to give the pupa a free path out of the tree. It leaves the bark intact so nothing is visible from the outside but it does score a circle in the bark to make it easier for the pupa to push the circle of bark out when it emerges. Often the scoring is strong enough for the bark circle to dry out and fall away and this is the most visible sign that there is a larva or pupa in the tree. Next it spins some fine silk in a network across the bore hole between the larva and the outside. This is then reinforced with regurgitated goo whose properties have not been investigated but which, with the silk, presumably deters unwanted visitors and predators like ants. Then and lastly the larva chews off large shreds of wood forcing them together to make a thin solid wooden plug across the bore. No Egyptian burial was ever so well protected. In this tomb in

the centre of the tree the larva then pupates.

How does a moth, still fragile even if large, escape from this cell. A cossid pupa has two features relevant to our story. It has a thickened 'battering ram' on its head to push out the plug of wooden shreds and the bark if it is still intact. Next, each segment or section of its body has two rows of stubby spines directed backwards such that when the pupa squirms in a regular circular motion then it, in contact with solid wood, is pushed forwards forcefully. So it is the pupa rather than the moth that escapes from its bore and eventually about one third of it protrudes from the tree. At this stage the pupal shell splits and the moth emerges to dry her wings hanging on the tree.

These Giant Wood Moths are grey in colour and there are two species on Black Mountain. One with darker grey hind wings called *Endoxyla cinereus* and one with dark brick red hind wings, *Endoxyla affinis*. The females have a wingspan of about 200 mm.

Before you go and search for larvae on Black Mountain look at the illustration (next page). There is a slight swelling in the trunk but that is the only indication of a larva's presence. The illustration shows the trunk when the larva has pupated and the scored circle of bark has fallen away making it much more visible. There is a pretty clear swelling on a smooth-barked tree but imagine detecting this

No Egyptian burial was ever so well protected as this tomb in the centre of the tree.

on a stringybark. What about droppings? Will they give the larva away? Moth larvae are usually 'clean' in that they eject droppings rather than let them accumulate in the bore as many beetles do. But little sawdust is produced as the bore is little bigger than the larva and the callus tissue is thin-walled and rich so wastes are minimal and not very obvious but they are pushed out through the entrance hole.

This all looks like a very safe and cosy arrangement. Not so. Believe it or not wasps exist with long, thin and flexible egg-laying tubes which can penetrate 3 or 4 cm of solid hardwood. They wander around on the trunk testing we do not know what before they decide a larva is present and then insert their ovipositors, penetrating the wood, and laying eggs in or on the larva. These will hatch and parasitise and kill the hapless and helpless larva. Then there are the *Calyptrorhynchus funereus* who deserve no better name but also go by the euphemistic title of YTBC or Yellow-tailed Black Cockatoos. Cocky looks closely at a tree trunk, sees something promising and grips the trunk with his bill. If he senses movement he sets to work. First



From left: Half a split log of *Eucalyptus grandis* showing the bore of *Endoxyla cinereus*. Photo Author; The trunk of *Eucalyptus propinqua* showing a searching parasite. The large upper hole is the prepared emergence hole and the lower small one is the entrance hole with ejected sawdust. Photo Nony Edwards; Cut trunk of *Eucalyptus grandis* showing the work of a Yellow-tailed Black Cockatoo. Photo You Ning Su, CSIRO Ecosystem Sciences

he cuts through the bark well above the bore and pulls the bark down to make a spring board on which to stand. Then he sets to and gouges out big splinters of wood with his bill until he has exposed the larva and made his kill. You will not need to be warned to keep your fingers to yourself if you have ever seen these birds at work.

For puss to catch one of these eucalypt-feeding Giant Wood Moths is rare. However puss regularly catches one of the still quite large Wood Moths *Endoxyla encalypti* (I know the name is nonsense but it was named in the

1850s by a European who had no knowledge of eucalypts or the moth's biology), which bore in the butt and upper roots of *Acacia* and which seem to occur more regularly in the suburbs. This moth is dark rusty-red with dark grey strigulations and some white longitudinal streaks on its wings. These few Giant Wood Moths are just the tip of the iceberg. There is a whole suite of smaller ones. They may be in stems, branches or roots of many plants—the Witjuti grub is one.

Ted Edwards is an entomologist and co-author with Paul Zborowski of *A Guide to Australian Moths*. He is also a Guide at the ANBG.

Growing Friends

Yvonne Robinson

Autumn Plant Sale Saturday 13 April 8.30-11.00 am

Yurauna Centre

Growing Friends have been pleased to be involved in a small outreach project for the Yurauna Centre at CIT which was supplied with a selection of 'bush tucker' plants for planting in the Centre's new Indigenous garden. The Centre is CIT's dedicated Aboriginal and Torres Strait Islander support centre, aimed at helping Indigenous students grow in knowledge, abilities and confidence along the path to a career of choice through skills training, advice and cultural support. Growing Friends are pleased to support this initiative.

Plant sale

(Look for the list of plants on the Friends website a week prior to the sale)

The autumn sale of native plants is to be held on Saturday, 13 April 2013, and plants for sale will include:

Lambertia formosa: Small to medium shrub often no more than a metre or so high but sometimes reaching two metres. The red, tubular-shaped flowers occur at the ends of the branches in clusters, usually in winter and spring, and attract honey eating birds. It is a popular plant in cultivation but needs some care to establish. It grows

on sandstone-based soil and requires moist, well drained soil, preferably light in texture with the possible addition of sand, shell grit or lime. It appreciates some protection from the full sun but should not be grown in heavy shade. It is tolerant of at least moderate frosts and can be pruned quite hard. Its common name, Mountain Devil, refers to the woody fruits which are bearded and horned.

Propagation may be carried out from seed which can be slow to germinate. Cuttings may also be slow to strike—best results are achieved using hardened, current season's growth.

There will be a number of species of *Correa* on sale, among them a limited number of *Correa* 'Marian's Marvel', which has a direct link to *Correa* 'Canberra Bells', the plant selected to celebrate the Centenary of Canberra. One of its parent plants is appropriately called 'Federation Belle' and *Correa* 'Marian's Marvel' could be referred to as one of the grandparents in this line.

Native plant breeders, Peter and Jennifer Ollerenshaw, developed the new hybrid at their Bywong Nursery. Peter will talk about developing 'Canberra Bells' at the lunchtime Centenary Chat on 11 April. These plants are now available at commercial nurseries in Canberra.

Feel welcome to join our normal monthly meeting that is held on the first Saturday of each month at 9.00 am (9.30 am during winter - June, July, August) in the Joseph Banks Building. We also have a working bee on the third Tuesday of each month.

Lambertia formosa flowers; the Thorny Devil fruit of *L. formosa*; *Correa* 'Marian's Marvel'.
Photos by Murray Fagg



Botanic Art Exhibition

—until 7 April

Helen Peart

This beautiful painting by Cornelia Buchen-Osmond of *Lambertia formosa* (Mountain Devil) was selected for the advertising image for this exhibition.



The exhibition includes many exquisite paintings of Australian native plants by talented artists, some of whom have won awards and been commissioned to create specific works. On the weekend of 6/7 April sold paintings will be taken down and works priced at \$200 or less will be added to the Exhibition. This co-incides with the Gardens' Family Picnic Day and is focused particularly on seniors (but anyone is welcome to come look/buy!)

The Botanic Art Groups meet twice a month in the Banks building where a morning of painting is enjoyed. The only requirement to join the 'BAG ladies' is to be a member of the Friends (we would welcome men also!).

Guides' activities

Glenys Bishop

It has been a busy start to what is shaping up to be a very full year. In addition to helping with usual Friends' activities at the Summer Concerts, two Guides each evening led a 30-minute walk as part of ACT Health's *Take 30* campaign. Guides were able to take visitors to the upper reaches of the Gardens such as the Western Mallee and beyond.

A group of Guides is developing a series of themed walks to coincide with the Turner exhibition at the NGA. A lot of creative thinking is going in to linking, sometimes tangentially, the Gardens with Turner's paintings and life.

In the wonderful new Red Centre Garden there will be another guiding innovation, namely roving guides—Guides who wander around and chat briefly to visitors, about things they may not have noticed or telling interesting stories about the plants and features.

This year the Guides will be assisting the Gardens' staff with the selection and training of new Guides. See advertisement in Friends briefs.

We will have a booth at the Family Picnic Day on 7 April.

Hooray for Theophrastus: the search for order in the world of plants

Steve Thomas



If you were asked who was responsible for the system of naming plants I expect you would say Linnaeus. In some respects this is correct but he stood on the shoulders of a long line of men searching for order in the great variety of plants. My favourites are Theophrastus and John Ray, separated by 2000 years.

Theophrastus (c.372–287BC) was the first to compile a work about plants. It is still extant in two volumes: *Historia plantarum* and *De causis plantarum*. In these books he describes 500 plants, but was hampered by a lack of many things we take for granted. He had no magnifying glass and so could only describe what he could see. He had no names for petals or other parts of the plants but did identify problems in classifying plants. For example, plants change through the seasons and roots that are normally underground can also be found above ground. He named plants that we still refer to by the Latin form of his name such as narcissus, iris and asparagus. He was not the first to record the healing properties of plants, as there are details of plants and their use for complaints going back to ancient Egypt. But he is the first to give consideration to the need to classify and develop a common name so that people from different regions and countries would know that it was the same plant that cured illness.

The new ruler of Athens, Demetrios of Phaleron, gave Theophrastus a garden where he studied plants for the rest of his life. Demetrios fell from power and became the first librarian at Alexandria which gives credibility to the view that when the Alexandrian library was destroyed, much of the work of Plato, Aristotle and his contemporary and pupil, Theophrastus, was lost.

As far as we know nothing more was done to comprehensively name plants for over two thousand years but the interest in medicinal plants continued. In Europe early in the first century Dioscorides named about six hundred plants and gave useful information such as location. Illustrations appeared but with the repeated copying of the original they became less and less valuable in assisting identification. Galen (AD 130–200) placed his herbal

plants in alphabetical order, an innovation that quickly took on, but it created problems when the works were translated and the alphabetical order changed. Teodoro of Gaza (c.1398–1478) translated Theophrastus's work on plants from Greek into Latin thus making them available to Europeans. Needing Latin names for the various parts of the plants Teodoro pointed the way towards the science we now call Botany.

Illustrations continued to be of little to no value in identifying plants until paper and the printing press and the work of artists such as Leonardo da Vinci and Albrecht Durer made accurate pictures common (round 1500). Andrea Cesalpino (1519–1603) identified the need for a systematic approach and used similar fruit and structures to classify his plants. He published his system in *De Plantis Libri* in 1583. Matthias de l'Obel, known to us as Lobelius (1538–1616), classified plants according to their leaves but did not take account of their different seeds.

John Ray (1627–1705), the son of a blacksmith, studied theology and mastered Hebrew and Latin. His interest in plants was not derived from medicine but a love of the

...and
hooray
for
John Ray



natural world. He described the plants he found around Cambridge and produced a book, *Cambridge Catalogus*. In this little book he placed the plants in alphabetical order.

Unable to take the oath required by the *Act of Uniformity* he resigned from Trinity and left Cambridge and relied on friends for the next seventeen years. These friendships allowed him to travel in Europe and become a member of the Royal Society which gave him a platform to expound his ideas and influence others. He gave an account of his travels in Europe, *Observations and Catalogus Stirium in Exteris Regionibus* (1673). This started him thinking about fixing different species. His paper of 1674 to the Royal Society developed this idea further and made clear

the inherent problems with the herbals with their lack of a scheme by which plants are named universally; the issue first elaborated by Theophrastus and Andrea Cesalpino.

Ray produced his *Historia Plantarum* in Latin. By this time few were reading the language so that after years of work his third volume in 1704 was not a great success. Ray's final work *Methodus plantarum emendata* (1703) lists the rules for grouping plants according to their natural affinities:

- Plant names should be changed as little as possible
- The characteristics of a group must be clearly defined and not rely on comparison—characteristics must be obvious and easy to grasp
- Groups approved by most plantsmen must be preserved
- Related plants should not be separated
- The characteristics used to define should not be unnecessarily increased.

These six rules provided the vital underpinning for taxonomy. It was Ray who coined the term Botany in 1696 and was described as an incomparable botanist in the Royal Society's monthly publication *Philosophical Transactions*.

The binomial system which had been around for a long time in one form or another required the rules set out by Ray for it to be useful. Linnaeus's contribution was profound but his method of classifying plants rested on the work of many great male lovers of plants who worked

within the political and religious restrictions of their times. Today the new science of DNA technology and the additional intellectual energy of the other 50% of humans will probably do what advances in printing, spectacles, microscopes and scientific method did in the past. It seems that human desire to create order in the world of plants never ends.

More detail is in the excellent book The Naming of Names by Anna Pavord (2005) published by Bloomsbury.

Portraits of Theophrastus by J.W. Cook from Wikigallery.org and John May in the National Portrait Gallery London from *Encyclopaedia Britannica* on line.

And the work goes on

Since Linnaeus's *Species Plantarum* in 1753, which is the starting date for modern botanical nomenclature, taxonomists have brought us a continuous stream of plant reclassifications and name changes. Thanks to modern day taxonomists, Brendan Lepschi and Anna Monro, for advice on the recent name changes shown below.



It was *Ptilotus exalatus*, now it is *Ptilotus nobilist* (M.Fagg)



It was *Pityrodia dilatata*, now it is *Quooya dilatata*. (M.Fagg.)

Basketry with plant materials

Shirley Lewis



Dianella tasmanica; cutting the strappy leaves; removing mid-rib with pin; drying the finished product and a bag woven from this material. Photos by Jenny Cooper.

Basketry predates all other crafts. Today's basket makers use plant materials and techniques not dissimilar to those employed by early humans who made mats, cordage for trapping animals and fish and receptacles to carry belongings. Trade between groups of peoples facilitated not only exchange of goods, but also exchange of ideas and techniques. This expanded as the centuries passed to making items for daily life, as well as beautiful ceremonial items.

In many parts of the world this tradition continues, mainly in jungle and forest dwelling peoples and in rural parts of Asia. The techniques of basket making are universal and similar techniques have developed from age old practices.

Such techniques were chosen because of the suitability of the available plant material. In modern societies enthusiasts who practise basket making as a craft follow the same age old techniques and search for suitable plant materials, processing them by traditional methods.

Dianella tasmanica was offered for harvesting from a private garden in Canberra. It is known as a strong, useful fibre but like all plant fibres requires certain processing (which these pictures illustrate) finishing with an example of weaving made from this material.

See What's On for details of *Anthology*, an exhibition of basketry, from 10 April to 9 June.



Making a meeting

As our Centenary gift to the Gardens, the Friends have funded a commissioned public artwork to form the centrepiece of the Red Centre Garden. When the Garden is opened later this year, visitors will be drawn down one of the paths that radiate out from an 8 m diameter circular feature. Inside the circle a 5.6 metre square Indigenous artwork pavement will give a stunning interpretation of country. This \$100,000 gift to the Gardens is our largest single expenditure since the Friends was established in 1990.

The planning and development of the pavement artwork have been directed by Pamille Berg Consulting (PBC). Pamille and her industrial/graphic designer, Wade Bartlett, have taken up the challenge of creating a form that is both beautiful and true to the concept of the Red Centre Garden while also being robust enough to withstand the rigours of the exposed site and the wear and tear of being trampled underfoot.

Pamille's solution was to select an artwork that allowed her to work with laser-cutting the design onto Lyten rusting steel plate—a weathering steel which forms a protective oxide layer of rust which then guards against further corrosion. This rusted look is evocative of the ochres of the Red Centre and the surface just continues to mellow

and become richer with age.

The striking and detailed dot painting, 'Grandmother's Country' by Teresa Purla McKeenan, provides the perfect combination of relevance, artistry and colour for the project. Against an ochre background, Teresa's patterns of delicate creamy white dots of varying shape and size, give depth and richness to her painting. Teresa was also willing to come to Canberra to advise on placing the artwork on site. Because the site called for a square artwork, she worked with PBC to redraw the edges of a selected square from her painting, to ensure the edges would not bisect a 'dot' while still remaining true to the painting's intent.

One of the first challenges in transposing Teresa's intricate design from canvas to steel was to create the computer files allowing the shapes to be enlarged (approximately sevenfold) to the size required for the precision laser-cutting process. As no two dots are the same, Wade Bartlett used Computer Aided Design (CAD) to magnify each dot on screen and to then trace around it. With many thousands of dots, that's a lot of mouse clicks!

To give further depth of colour and tonal variation and to increase the slip resistance of the surface, the steel sheets were first 'sandblasted' with copper slag at a factory in





Queanbeyan. Even the choice of mortar to fill the cut-outs, and also adhere the steel sheet to the concrete slab, required research and experimentation. Following PBC's detailed research stonemason Stephen Loughrey experimented with mortars which could fill the 'dot' holes and be smoothed to create a perfectly level surface with the steel, while also resisting 'bleeding' of the rust colour into the white-filled holes. The choice of mortar is important because, as well as meeting the 'smoothness' and 'bleeding' tests, it needs to be flexible enough to resist cracking in the extremes of temperature.

Producing this artwork has involved the skills of many talented people, from artist, to graphic designer, stonemason and sand blaster to precision laser-cutting operator and many others. All involved in the installation have been challenged to work at the limits of their trades to achieve the precision required for the perfect alignment of all the elements of the structure. With so many trades and experimentation involved (not to mention some extremely expensive high tech mortar), it was certainly a challenge to bring the project in on budget.

The finished artwork will build on the 'sense of place' inherent in the design of the Red Centre Garden.

Combining a beautiful depiction of the red centre country with contemporary landscape design it creates a space that is sure to inspire and engage visitors.

Margaret Clarke

About the Artist

Teresa Purla McKeenan (also known as Theresa Pwerle) was born in Darwin in 1964 into a lineage of distinguished artists; the daughter of Barbara Weir and granddaughter of the late Minnie Pwerle. She now lives in the traditional country of her mother and grandmother north east of Alice Springs on the outstation at Atnwengerrp, 40 km from the central Utopian or Alywarr community of Ampilatwatja. She is a serving member of the Ampilatwatja Council which has responsibilities for the surrounding communities in the Utopia region.

Teresa is known for her highly detailed, multi-layered and finely executed dot painting works. She has exhibited in Sydney, Canberra and Melbourne as well as Paris and Copenhagen.



Panorama showing dark grey aggregate of base of Meeting Place. (HM Rawson)
 From left: Aerial view of Antwengerrp, Teresa Purla McKeenan's home; Pamille Berg, Kaiya Browning and Teresa examine the prototype in situ (Peter Byron); Computer graphic showing different size holes and wavy lines for dividing the whole into 16 parts (Wade Bartlett); Prototype showing fixing points and depth of steel; Kaiya Browning, Pamille Berg, Teresa and her daughter, Peter Byron and the original painting on site at the Meeting Place; The prototype; prototype with fixing point; prototype with mortar.

Friends Briefs

Centenary Dinner

Eighty-five friends and guests enjoyed the 'Centenary' dinner at *Floresco* in the Gardens on Thursday 21 February. The evening was themed around the Canberra Centenary, with a delectable dinner based on what might have been on a menu one hundred years ago. Was the highlight the melt-in-the-mouth lamb or the Neenish tarts?

The guest speaker, Dr Lenore Coltheart, a Canberra historian, has a special interest in the poetry, politics and produce of regional landscapes and the anthroposophical ideas (a philosophy founded by Rudolf Steiner) of Marion Mahony Griffin – she explored these ideas in her entertaining presentation. We now know what 'anthroposophical' means, and a little more about Marion.

The trivia quiz also had a centenary focus – with prizes provided by the Growing Friends. 'Who am I?' questions were quickly answered by erudite diners, while our limerick competition drew forth a number of crowd pleasers, including the following from a table graced by one gentleman among seven ladies:

*In the gardens amid all the greenery
We gather to toast the centenary
With good Aussie grub
Straight out of the scrub
And seven young birds for the scenery*



Marlena Jeffery, Lenore Coltheart and Barbara Podger.
Photo by Patricia Morton.

Centenary Chats



Lesley Jackman watches as Robyn Archer AO, Artistic Director of Canberra Centenary, opens Centenary Chats. Photo by Graham Brown.

On 31 January 2013 the Friends launched their Centenary Chats program, which involves a series of lunchtime talks developed to mark Canberra's Centenary, alongside the regular Thursday Talks. The ANBG Theatre was packed when Robyn Archer, Creative Director of the Centenary, introduced the guest speaker, Ian Warden of the *Canberra Times*. Ian talked about his love of Australian native flora, a love shared by Marion Mahoney Griffin. The audience was thrilled when Ian conjured up Marion's spirit and her responses to the city after its first hundred years.

Alpine research update



The Alpine Seed and Seedling Ecology project has kicked off the writing-up phase with publication of a paper in *Global Change Biology*. The study, which drew conclusions about the impact of soil warming on germination from the alpine soil seed bank, was considered by reviewers to be 'novel' and 'important'. For a copy of this paper, entitled *Soil warming increases plant species richness but decreases germination from the alpine soil seed bank*, please email: gemma.hoyle@anu.edu.au.

Focus has now shifted to telling the

many stories emerging from what has become known as 'the move-along experiment', in which seeds of more than 50 different species were moved through a series of temperature regimes designed to mimic seasonal shifts that dispersed seeds would experience in the field. Results have revealed a range of different ways in which our alpine flora maximises the short alpine growing season and optimises seedling establishment under often harsh and unpredictable conditions. For example, we have uncovered evidence that seeds of several species are capable of cycling in and out of dormancy in order to postpone germination until conditions are 'just right'.

In addition, we are working towards achieving publication of our Honours students' work which includes important evaluations of the variation in seed and seedling traits within and between alpine species. Finally, PhD student Veronica Briceño, continues to examine differences in drought and frost tolerance of alpine seedlings, with fascinating insights into life below the snow.

In the last six months, project findings and their implications for future alpine management have been communicated at a number of major conferences. We continue to form collaborative relationships with others, both within Australia and globally, who seek to support alpine biodiversity conservation through research.

Gemma Hoyle

The Alpine Seed Research Project is a collaboration between the ANU, the ANBG and the Friends. The Friends have contributed \$22,000 a year for three years as well as providing in-kind support including volunteer assistance with seed collecting.



Plant with red fruit is *Pentachondra pumila*, and above is *Erigeron nitidus*. Photos by Gemma Hoyle.

MORE WAYS TO BE INVOLVED

Plant Science group

To bring together some activities and contributions by the Friends that have emerged in the last few years, it has been decided to establish a Plant Science group which will be the umbrella for our more research oriented activities. Initially the group will contribute to the review of the Botanical Resource Centre, due to commence in the near future, continue to organise a monthly series of technical talks and workshops, and act as the umbrella for research projects such as Seedy Vols and a pending stocktake of the ANBG collection.

This group will welcome those with an interest in the more scientific side of the Gardens and native plants. If you are interested please let us know by emailing info@friendsanbg.org.au by 19 April if possible. You will then be informed about proposed activities as they arise, including research projects where volunteer assistance is required. Information about projects will also be posted on the Friends website as appropriate.

Family Picnic Day



Sunday, 7 April 2013
11.00 am to 3.00 pm
on the Cafe and Crosbie Morrison Lawns

A delightful day out for the entire family with a special focus on celebrating our senior members. The program will include displays, guided walks, garden workshops, kids' presentations, mandolins, Scottish dancing and more performances. First 100 Seniors to

Volunteer Guides Recruitment

The Gardens are now recruiting for a new intake of volunteer Guides. The Guides play a vital and important role for the Gardens through their interaction with visitors. You will have the opportunity to learn about the Gardens and its plants and to share your knowledge and enthusiasm with visitors from Australia and the world. Guiding opportunities exist through daily guided walks, Flora Explorer guided tours and roving guides stationed within the Gardens at key locations. Extensive training will be provided. If this appeals to you or you would like to know more, information sessions will be held in the Gardens Theatre at 12.30 pm Wednesday 3 April and 5.30 pm Monday 8 April 2013.

Application forms are available from the Gardens' Visitor Centre or download from: www.anbg.gov.au/gardens. Applications close Monday 22 April. Further information, from Stephen Speer on 62509404 or email: stephen.speer@environment.gov.au

give the over 50 flash (Driver's licence or Senior's card) will receive a complementary gift bag. Bring your own picnic or partake of the special bush BBQ (beef, chicken or veggie options) available all day from the cafe deck with special discount price for seniors. Check Friends web page for more details: www.friendsanbg.org.au.

Buying a picture



The Friends bought 'Brachychiton populneus - Kurrajong', painted by Wendy Antoniak, to give to the Gardens. Admiring the picture are: Cath Franzi who opened the Art in the Gardens Exhibition; Peter Cochrane, Director of National Parks; the artist, Judy West, Executive Director of ANBG; and Peter Byron, General Manager ANBG. See page 7. Photo by Steve Speer.



Work at ANPC?

The Australian Network for Plant Conservation (ANPC) is recruiting for an Office Administrator (15 hours per week) responsible for day to day processes, and the Business Manager (approximately 10 hours per week) responsible for promotion, funding and financial management and reporting. The ANPC is also seeking volunteers to assist in the office. If you are interested, contact Merryl Bradley on 6250 9509 between 9:30 and 3:30 Tuesday, Wednesday and Friday or drop in for a chat.



Tom North, Seed Bank Manager, testing the new Zig Zag Aspirator. 'The National Seed Bank thanks the Friends for their kind donation of specialist seed cleaning and processing equipment. The equipment will improve the seed collections being stored and enable better future use of those collections.' See page 15. Photo by Sue Lawatsch.



where
friends
meet to eat

Open every day (except Christmas)
8.30 am-4.30 pm

Friends receive a 10% discount
(on production of membership card or name tag)

Floresco Bookings – (02) 6248 9680
www.floresco.inthegardens.com.au

Also catering for
Weddings, Conferences and Special Events
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www.hellenicpremiumcatering
enquiries@hellenicpremiumcatering.com.au

Garden Shorts

From the Exec. Director

This Centenary year provides the Gardens with greater opportunity to inspire and connect people with the Australian flora, particularly through events and activities. Raising awareness of the Gardens equips the community to better understand our role in adapting to environmental change.

Summer programs

Kicking off the Centenary year, our biggest *2013 Summer Sounds Concert Series* saw music and dance acts entertain thousands of Gardens visitors. This year's concert series hosted some new features including the *Family Hub* activity area and guided walks, catering for many ages and interests.

Some of our attractions have been sell-out events this summer. The popular music and short film festival *Flix in the Stix* with 1200 tickets sold was the only sell-out event on its ACT and NSW tour. And due to popular demand we hosted additional tours of the adults only *Delicious! afterDARK*.

Our first ever outdoor cinema program *Sunset Cinema* was a highlight this summer with hundreds of cinema-goers experiencing various films including latest releases, classic and arthouse movies. My thanks to our dedicated staff and volunteers for helping to deliver these wonderful summer programs.



Photo by Anne Rawson

Red Centre Garden

Recent developments at the Red Centre Garden are beginning to realise the concept—it is taking shape and starting to look like real arid landscapes. Each day there is something new and exciting unfolding. The first load of 108 tonnes of rich red desert sand has been laid across garden beds, some plantings have taken place, pathways, the meeting place, the desert river and retaining walls have all begun to emerge. The construction of this Red Centre Garden is a major undertaking for the Gardens and many staff are contributing expertise and physical grunt to the project. I am really pleased with the way it is progressing and appreciate everyone's commitment.



Gardens' horticulturist Will Higgisson and Seed Bank manager Tom North collect *Dampiera fusca* seed.

Seed collecting

It's been a successful season for our seed collecting field trips focussing on plant species endemic to the alpine, sub-alpine and grassland regions surrounding Canberra and our thanks go

to the Seedy Volunteers for their valuable assistance. Our staff have also undertaken several trips to Namadji National Park to collect seeds from the endangered ecological community, Alpine Sphagnum Bogs and Associated Fens.

Seed Bank and Living Collections recently had a field trip in search of the threatened species *Dampiera fusca*. After climbing the peaks of the Tinderry nature reserve, south east of Canberra, Gardens' staff discovered masses of plants established following the 2010 Tinderry fire. *Dampiera fusca* is a rare species, germinating as a post-fire pioneer and persisting for only several years following a fire. This trip was planned to coincide with the best stage of development for the team to collect seed, cuttings and herbarium specimens.

The restoration project, supported by a *Caring for Country* grant, to produce seed for the restoration of threatened grassland communities, is trialling the development of seed production areas. This is a partnership between the Gardens, Greening Australia and the Centre for Australian National Biodiversity Research and is showing positive results after six months and we expect most species will produce a significant amount of seed.

Eucalypt Walk

The Eucalypt Walk has recently been installed, resulting from great collaboration and partnership between the Gardens, the Friends and the Friends' Public Fund and I thank everyone involved in this project.

Maintaining the momentum for the remainder of this significant year will be a challenge to us all!

Judy West





Photo by Anne Rawson

Long Paddock garden

The recently developed Long Paddock Garden represents and tells the story of Travelling Stock Routes (TSRs), roadside vegetation remnants and reserves that traverse the continent. TSRs, collectively known as the Long Paddock, are important sites for conservation of plants and ecological communities. In this garden, the reclaimed fence posts and plantings represent the connection between the Grassy Woodland Garden and the remnant vegetation on nearby Black Mountain. The Gardens is also working with Bush Heritage Australia to conserve the nearby Scottsdale travelling stock reserve through seed collection and banking, floristic surveys and herbarium specimen and plant image collection for reference and research.

Thanks to Ron Miller of Gundaroo for all the posts. He is pleased that they are going to a good home at the ANBG.



Staff member Mya at the Long Paddock sign.

New faces

Anna Monro has recently taken the role of Botanical Information Manager. She will manage the botanical content of the Gardens' website, promote Gardens' scientific activities and ensure that plants in the Gardens' living collections are accurately identified and labelled. Anna will also oversee the

Gardens' large collection of botanical images.

Amber Howe is a horticulturist working in the rockery with Shelley Caban and propagating, growing and maintaining plants for the Red Centre Garden (RCG) at the Nursery for part of the week. She previously worked on this RCG project in the nursery for several years. She came to the Gardens after 15 years working as Propagation Officer and Garden Centre Manager at Yarralumla Nursery

Botanical interns

2013 marked 21 years of the Botanical Internship Program at the Centre for Australian National Biodiversity Research. Six students from around the country, including an exchange student from Mauritius, spent their summer holidays gaining scientific work experience and contributing to the vital work of the Centre.



Director of National Parks, Peter Cochrane and President of the Friends of the ANBG, David Coultts presented the interns with their graduation certificates.

Snakes Alive etc

The summer program was rounded out with the annual *Snakes Alive!* reptile exhibition, *Bush Magic Storytime*, the and *Friends and Family in the Gardens – A Capital Experience* photographic exhibition.

Gardens shorts contributions by Sabrina Sonntag.

Kamchatka anyone?

If you're interested in exploring the botanical delights and volcanic landscapes of Kamchatka (peninsular at eastern end of Russia) in August this year, get in touch with Rosemary Purdie. Contact Rosemary at: rwpurdie@netspeed.com.au



Seed Bank in 2012-13

The ANBG seed bank has had a successful collection season in Yellow Box/Red Gum Grassy Woodland and Natural Temperate Grassland as part of our commitment to Mundango Trust and Caring for Country Seed Production Areas for Grassy Woodland Restoration Projects. In field trips with the Seedy Vols we have made over 90 collections of 56 species.

Both projects have enabled us to improve the number and genetic vigour of species being conserved, as well as improving methods for restoration through a better understanding of the seed biology and propagation. The seed bank will be the custodian of seed held for these projects, managing protocols and quality control.

The seed will be used for display purposes in the grassy woodland section at the entry to the gardens (Section 175) and in supplying the stock plants for the new Seed Production Area and Mcleods Creek Nature Reserve.

If you are keen to apply your botanical and recording skills and help ANBG seed banking endeavours we are looking for one or two volunteers to work on the collation of all this information. For a copy of the duty statement, and a chat, please contact Tom North (Thomas.North@environment.gov.au; 02 6250 9462) at the Seed Bank.

Tom North



Top: Winged flat seeds emerging from a drying cone of *Allocasuarina verticillata* Photo by John Fitz Gerald. Above: Collecting tiny seeds of the daisy *Chrysocephalum semipapposum*. Photo by Fanny Karouta.

From the Bookshop
with Tom Butt, Shop Manager

Capturing Flora

300 years of Australian botanical art

Art Gallery of Ballarat, 2012

Hardcover, 287 pages, full colour reproductions, RRP \$85.

Only limited numbers of this publication available.



'Dare I say this book is the most ambitious and arguably the most beautiful publication ever to come out of an Australian regional gallery?' Gordon Morrison, Director, Art Gallery of Ballarat. This is a truly beautiful book. It depicts examples of Australian botanical art over 300 years with interesting essays by Richard Aitken, Julie Collett, Thomas A. Darragh, Jennifer Jones-O'Neill and Gordon Morrison, with a foreword by noted botanist Alex George. Lavishly illustrated with sketches, drawings, watercolours and prints. They make me wonder at the patience and skill of such artists.



Little veggie patch and Backyard farming by Fabian Capomollo and Mat Pember

The Little Veggie Patch Co, Paperback, 240mm x 210mm

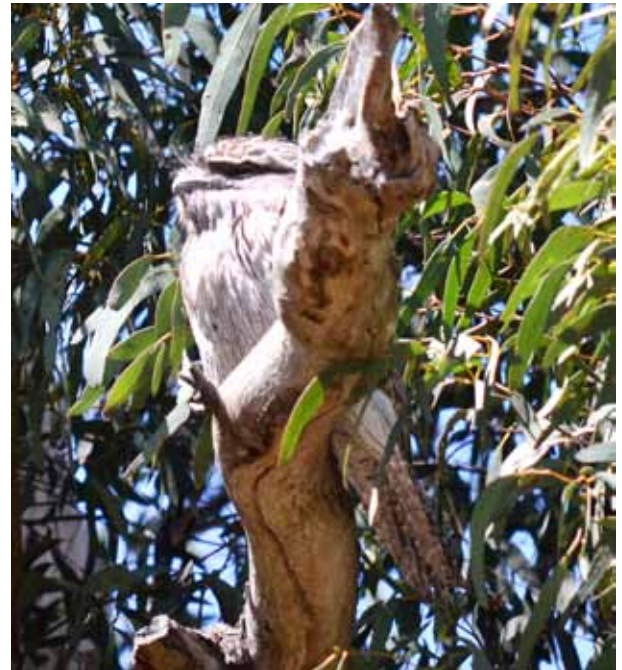
RRP \$45.00 each

How to grow food in small spaces. A great guide to growing vegies in the city – or anywhere, really. Fundamentals such as soil, climate, watering, composting, worm farms, seed saving and sowing and more. Wonderful information on as many vegies as you could want to grow, plus interesting information like: how to build a golf-club trellis, and how cauliflower is good for your liver, so you may be able to justify that extra glass of wine. Even tips on how to avoid losing your tools! Interesting and enjoyable.

Guide to Backyard Farming. Each chapter covers a month of the year and what is happening in the garden, plus some delicious recipes using fresh produce. Also has fun and easy instructions for keeping chooks, growing from cuttings, making a backyard beehive. Also great activities for children. These two books make a wonderful gift.

Photographic Group

Graham Brown



Tawny Frogmouth by Graham Brown.

The Gardens provide many opportunities for the photographer: flowers in Spring; stark white bark of the eucalypts; Water Dragons; the Satin Bower Bird in his new bower; and the Tawny Frogmouths and their young.

At our monthly meetings we have had presentations by both members and guest speakers on many aspects of photography. Close-up photography of flowers presents a particular challenge and we have had several talks on this aspect, the first by David Wong on macro photography and more recent talks on other methods of ensuring sharp close up images. Other recent presentations dealt with the recognition of natural patterns and shapes and the importance of composition in landscape photography and the particular challenges of bird photography. Members also have the chance of presenting recent photographs, mainly taken in the Gardens, where they can seek comment and advice on subjects and techniques.

In other activities, members of the Photographic Group have been invited to photograph recent events in the Gardens such as the Schools Photographic competition, People in the Gardens and Thursday Talks for use in *FronDS* and the Friends website. The Photographic Group is participating in some of the Gardens contribution to the ACT's 100th Anniversary program and plans our own photographic exhibition in early 2014.

See special offer from Bookshop for Friends only on the address sheet mailed with your FronDS.

What's on at the Gardens

April – August

Details of events are correct at the time of printing. For changes and updates please check the Friends' website at www.friendsanbg.org.au or on the Gardens' site at: www.anbg.gov.au or in the local press.

The Friends of the ANBG thank the many speakers who volunteer their time and talents to further the knowledge of all who attend the events in the Gardens. The Friends use the 'gold' coin donations received at each activity to support Gardens' programs and development. The Friends thank all those who have donated, and all those who will.

Please note: unless otherwise indicated, talks are in the ANBG Theatrette.

Summaries or PowerPoint presentations of Thursday talks are available to Friends from the ANBG library. A donation to the Friends for the use of this material will be gratefully accepted.

April School Holidays

Enjoy these school holidays with a series of cartooning workshops for kids of all ages

For the younger kids - 3D Nature Story

Mon 15 & Wed 24 April | 10.00 – 11.30 am

Ages 5 – 9 accompanied by parent | \$15 per child

Children will explore stories and collages inspired by Jeannie Baker's books then develop their own creations using plant material collected from the Gardens

For The Older Kids - Design a Garden Community

Tues 16 & Thurs 25 Apr | 10.00 am – 12.00 pm

Ages 7 – 13 parents welcome to participate | \$25 per child including morning tea

Fun and engaging cartooning workshops lead by local illustrator, Andrew Hore. Workshop groups will explore the Gardens and discover the unique qualities of the Rain Forest Gully, Rock Garden and Red Centre Garden.

For Young Adults - Creative Caricatures

Thur 18 & Tues 23 Apr | 2.00 – 4.00 pm

Ages 12+ | \$25 per person including morning tea

Interpret the fascinating world of Australian fauna in this cartoon illustration workshop lead by local illustrator, Andrew Hore. Participants will work with their creative ideas to develop a poster, cartoon strip or other story illustration.

Information and bookings for all events (essential)
www.anbg.gov.au/gardens/whatson/ Online booking fee applies



Easter Bilby Trail

Friday 29 March
to Monday 1 April
9.30 am – 4.30 pm

Free. Pick up your Easter Bilby Trail from the Visitor Centre and help the Bilby find its way home.

Thursday 4 April 12.30 pm Centenary Chat

Dr David Headon – see page 19



ART IN THE GARDENS WITH FRIENDS Finishes 7 APRIL

Visitor Centre Gallery



The Friends Botanic Art Groups present a collection of botanic art works of our native plants, with a special emphasis on their use as celebratory flowers.

On the weekend of 6 and 7 April, all sold pictures will be removed from the Gallery and works priced at \$200 or less will be added to the Exhibition.



Bush Magic Story Time

Enjoy stories and craft activities in the Gardens

Friday 5 April 10.00-11.00 am
then first Friday of every month,
\$5 per child. Suitable for pre-schoolers
Follow the signs from the cafe.

Star Gazers afterDARK



**Saturday 6 April and Saturday
4 May at 6.30 pm**
Start at the Visitor Centre

Be treated with a heart warming hot chocolate then embark on a fascinating night tour of the Gardens. Finish with a star gazing experience on the Rock Garden Lawn with *The Canberra Astronomical Society*
\$20 adults, \$15 concession Bookings essential at:

www.anbg.gov.au/gardens/whatson

Sunday 7 April 11.00 am–3.00 pm
Family Picnic Day
Café & Crosbie Morrison Lawns



A delightful day out for the whole family with garden workshops, presentations, guided walks and performances including the *Blamey Street Big Band*. Bring a picnic or try the special bush BBQ from Floresco in the Gardens Cafe



ANTHOLOGY

10 APRIL to 9
JUNE

Visitor Centre Gallery

Anthology is an exploration of Australian native plants by Canberra artists and basket makers using a variety of technical possibilities offered by the ancient craft of basketry. See page 9.

Thursday 11 April 12.30 pm
Centenary Chat

Peter Ollerenshaw and Cathy Franzi – see next page

Saturday 13 April 8.30-11.00 am
AUTUMN PLANT SALE
Car park behind Crosbie
Morrison Building

Plants propagated by Growing Friends from material from the Gardens. List of plants on website a week before sale.

Thursday 18 April 12.30 pm
Dr Tony Fischer 'Feeding the Billions'

Dr Tony Fischer will ask 'Can crop yield increase continue to meet growing demand?'

Thursday 25 April
ANZAC DAY no talk

Gardening Workshops in Banks Building

Join presenters from the Gardens, the Australian Native Plant Society (ANPS) and other horticultural organisations as they show you how to create and care for your own native & food garden.

\$30 per participant including morning tea. Bookings essential at
www.anbg.gov.au/gardens/whatson

Saturday 27 April 10.00 am–12noon
Growing contained Australian plants with Ben Walcott from ANPS.

MAY

Thursday 2 May 12.30 pm
Centenary Chat

Linda Groom – see next page

Saturday 4 & Sunday 5 May
Introduction to Permaculture

For further details including times and costs visit:

<http://permacultureexchange.org.au/>

Wednesday 8 May 10 am
Visit to Parliament House

Friends only tour of Parliament House internal courtyards, conducted by Paul Janssens, Landscape Services. Numbers are limited, so book early, by email to: visitparliament@friendsanbg.org.au or phone Marion Jones on 6282 7991. Meet in Foyer by 9.45.

Thursday 9 May 12.30 pm
Doug Laing 'Wallace, Wilsons, and Other Wonders of West Papua'

An enduring fascination in the life and times of Alfred Russel Wallace, the 'father of biogeography', encouraged Mr Laing, in 2012, to undertake his own voyage of discovery to this extraordinary part of Indonesia.

Saturday 25 May 10.00 am–12noon
Yards of Aussie: Principles and benefits of Native Garden Design with Leon Horsnell from the ANPS.

Saturday 22 June 10.00 am–12noon

The Audacious Orchidaceous
Growing Australian orchids in Canberra with Jane Wright from the Orchid Society of Canberra.



CENTENARY CHATS in Theatre at 12.30



**THURSDAY 4 APRIL
DAVID HEADON**

'Centenary Musings—Cricket, Canberra and the New Commonwealth' David, a Cultural Advisor to the ACT Government, will address the April Centenary theme of History, Heritage and Sport.

**THURSDAY 11 APRIL
PETER OLLERENSHAW AND
CATHY FRANZI**



Peter will talk about developing new plants, particularly the *Correa* 'Canberra Bells', and Cathy will focus on artistic interpretation of this Centenary floral emblem in ceramics and other media.

**THURSDAY 2 MAY
LINDA GROOM**

'Natural History Illustration in the First Fleet' Linda Groom, former Curator of Pictures at the National Library of Australia, will give an illustrated talk about the art of George Raper and John Hunter.

**THURSDAY 6 JUNE
ASSOC. PROF. DON BEER**

'The Early History of the Australian National Botanic Gardens' Don will explain how a phrase on the winning design for Canberra led to the world's most comprehensive collection of Australian plants.

**THURSDAY 20 JUNE
GRAEME BARROW**

'"Magnificent" Lake George'. Graeme will explain how Lake George has excited great interest since its discovery by British explorers in 1820.

**THURSDAY 27 JUNE
VICTORIA JONES**

'The History and Design of Old Parliament House Gardens' Victoria will talk about the Old Parliament House Gardens, planning for which began in the late 1920s. The Gardens were renovated and re-opened to the public in 2004.

**THURSDAY 11 JULY
BILL GAMMAGE AND
JAKE GILLEN**

Professor Bill Gammage in his book 'The Biggest Estate on Earth' revealed that Aboriginal Australians used fire management to transform the continent into a mosaic of grasslands and other kinds of plant communities to ensure their supplies of wildlife and plant foods. He will discuss his findings with Jake Gillen from the ANU's Fenner School of Environment and Society.

**THURSDAY 1 AUGUST
DR JUDY WEST**

'The Science Behind Your Gardens' Dr Judy West will ask 'how does the living national cultural institution in the Bush Capital – the ANBG – use science to achieve its mission for all Australians?'

**THURSDAY 8 AUGUST
DR PENNY OLSEN**



'Flocks of Colour now and then: a portfolio of parrots in Canberra 1913-2013' Dr Penny Olsen will describe the images in

the National Library of Australia's collection, particularly a portfolio of parrots that have occurred in Canberra 1913 – 2013; these include our fauna emblem the Gang Gang.

What's on

Botanical Art Workshops with the Canberra Institute of Botanical Art Crosbie Morrison Building

Information and bookings at:
www.botanicart.com.au/courses/
Cost applies

11–12 May Pomegranates with
John Pastoriza-Piñol

29–30 June Dry Brush Techniques
with Dianne Emery

20–21 July Mastering Graphite with
Sharon Field

Thursday 16 May 12.30 pm Dr Nicki Grigg 'Negotiating our Future'

Dr Nicki Grigg will present a report commissioned by the Australian Academy of Science on Australia's social, economic and environmental sustainability to 2050 and beyond.

Thursday 23 May 12.30 pm Dr Virginia Lohr 'Why I Love (and Why You Love) the ANBG'

Research on human response to plants helps us understand how people respond psychologically and physically to plants and what scientists think about why we respond so strongly.

Thursday 30 May 12.30 pm Pat Wright 'Orchids Galore: Spring Festival in Columbia'

Plant enthusiasts the world over like to display the exceptional beauty and diversity of their land; some in competition, others merely aesthetically pleasing themselves. Artistically this festival is a mind-blowing kaleidoscope of colour, shapes and form.

JUNE

Saturday 1 June, 6 July 6.30 pm
afterDARK Firefly Tours
Crosbie Morrison Building

\$20 adults, \$15 concession

Bookings essential at:

www.anbg.gov.au/gardens/whatson

Warm your hearts and hands with a delicious hot chocolate then construct your own hand-made lantern. Have your lanterns lit by a guide then embark on a fascinating after dark discovery of the Gardens

Saturday 1 June 1.00 & 2.00 pm
Seasonal Colours Concert
Cafe Lawn

Choral performances by Sing Australia Choir marking the start of winter

Thursday 6 June 12.30 pm
Centenary Chat

Assoc. Prof. Don Beer – see page 19.

Thursday 13 June 12.30 pm
Dr Michael Whitehead 'The Empty Promises and False Advertisements of Orchid Pollination'

Michael will discuss 'rewardless' flowers that use false advertising to draw pollinators, focusing on the sexually deceptive orchids of Eastern Australia.

Thursday 20 June 12.30 pm
Centenary Chat

Graeme Barrow – see page 19.

Thursday 27 June 12.30 pm
Centenary Chat

Victoria Jones – see page 19.



JULY

Thursday 4 July 12.30 pm
Lee Burgess 'Australian Plants to Aboriginal Artefacts'

Lee Burgess will discuss the different types of native plants Aboriginal people have transformed into their everyday weapons, tools and cultural materials.

Thursday 11 July 12.30 pm
Centenary Chat

Bill Gammage and Jake Gillen – see page 19.



Thursday 18 July 12.30 pm
Bill Hopkins 'Insights from Gardening at the South African High Commission'

Bill Hopkins, gardener at the High Commission in Yarralumla for 43 years, will relate aspects of the garden's history and comment on some fascinating people who have spent time there.

Thursday 25 July 12.30 pm
Ben Walcott 'Classic Italian Gardens and What They Can Teach Us About Design'

Delight in the classic gardens of Lake Como, Lake Maggiore and more.

AUGUST

Thursday 1 August 12.30 pm
Centenary Chat

Dr Judy West – see page 19.

Thursday 8 August 12.30 pm
Centenary Chat

Dr Penny Olsen – see page 19.

Friends' Benefits

As a Friend you are entitled to:

Three issues of *Fronde* a year
Free parking pass
Botanical Bookshop – a discount on most items
Discount at Floresco cafe

You also get:

Advance details of lectures
Advance bookings for some events
Discounts on some events
ANBG library membership – borrow books, serials, videos, DVDs plus use of computers and interactive CD ROMs
Function facilities – special rates for functions at ANBG

And opportunities to:

Join Botanical Art Groups, Growing Friends Photographic Group
Assist with Gardens research projects
Become a Guide
Relax in the Friends Lounge – in the Ellis Rowan Building, open to members 9.30 am to 4.30 pm. Relax with tea/coffee and lots of

The Botanical Bookshop

www.botanicalbookshop.com.au

always welcomes Friends!

A 10% discount is offered:

- on purchases over \$10
- on production of your membership card
- to the person whose name is on this card