



Fronds

Friends of the Australian National Botanic Gardens
Number 81 December 2015

*Inside:
Leaf eating moths*

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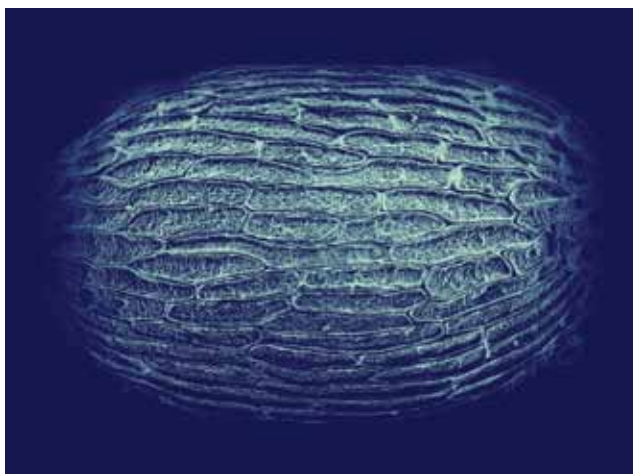
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Email or post material to the *Fronds* Committee at the above addresses or, place in the Friends letterbox, located inside the Gardens' Visitor Centre, between 9.30 am and 4.30 pm, Monday to Sunday. Editorial messages: telephone (02) 6250 9548.

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Another planet



'Very excitingly, two entries from the Friends (through the Seedy Vols) were submitted to this year's New Scientist Eureka Prize for Science Photography. One of these, Another Planet: *Epacris paludosa* (Alpine Health), Ericaceae, was highly commended. Our warm thanks go to those who entered and our congratulations to Fanny Karouta-Manasse for Another Planet.' *Lesley Jackman*

The information that accompanied the entry elaborates the process. 'SEM imaging [Scanning Electron Microscope at ANU] reveals the intricate form of tiny plant seeds; much like discovering another planet, and this idea inspired our post-processing. The National Seed Bank aims to store living seeds for tens to thousands of years for conservation and research of native plants and this seed is one of them. Many native species have complex and unknown seed dormancy mechanisms. Much research is required to enable seed germination so that plants can be grown for conservation and restoration.'

[See page 15 for John Fitz Gerald's entry.]

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Cover: An entry in the Friends' School Photo Competition entitled 'Bending Away' by Adina Leigh-Fitzsimons of Canberra High School.



A birthday party to remember

The Friends were formed on 14 October 1990 at a ceremony on the Eucalypt Lawn, presided over by Professor Lindsay Pryor (founder of the Gardens).

2015 marks our 25th anniversary. Celebrations began with a Dinner in February at which guest speaker, Don Beer, talked about the history leading up to our formation. On 1 October we marked the month of our launch with a cocktail party attended by our Patron, Lady Cosgrove, Vice Patron Marlena Jeffery, Sally Barnes (Director of National Parks), Dr Judy West (Executive Director of the ANBG), Life Members, members of the Friends, and staff.

The focus of the evening was remembering the contributions made by the Friends, and guests were offered a walk before the formal festivities, to look at a number of projects funded by the Friends. Members of our volunteer Guides led tours which included the Seed Bank, the Cascades, Growing Friends propagation area, the Rock Garden, Asteraceae Garden, and the Eucalypt Trail.

A photographic exhibition pictured many Friends projects, events and occasions, and activities by our special interest groups. It also featured photos, shared by members, of family events and favourite photos of the Gardens.

A catering crew of Friends volunteers, led by Mary Lovett, had prepared a wonderful array of canapes, accompanied by sparkling wine. The formal part of the evening was introduced by our Vice President, Jan Finley (who deputised for President Lesley Jackman who was ill). Gardens Executive Director Judy West spoke of the contributions of the Friends in terms, not only of the financial donations which have made many projects possible, but also in terms of the myriad of volunteer jobs they perform, and the community support they engender. She commented on the warm relationship between the Friends and the Gardens, and congratulated the Friends on reaching this milestone.

Lady Cosgrove spoke about the history and role of the Friends and congratulated the Friends on their 25th



Lady Cosgrove cutting the birthday cake, with Friends Vice President, Jan Finley, looking on.

anniversary. She toasted the Friends and wished them a continuation of the positive and valuable role that they have played over the last 25 years. Lady Cosgrove cut the birthday cake which was decorated with white and yellow *Rhodanthe* flowers from the Gardens.

Guests were driven in a sparkling Flora Explorer up to the Red Centre Garden, or guided by friendly Guides carrying torches. The Red Centre Garden was bathed in colour by the Friends-funded lights, and Guides were on hand to show guests other Friends-sponsored highlights, including the Aboriginal art work and the facsimile termite mounds. The evening concluded with a walk down through the illuminated rain forest where ethereal music and wafting mist combined to provide a magical experience. As they departed guests were presented with a piece of wrapped birthday cake to take home.

Our thanks to all those who organised the evening, and volunteered on the night, and to Gardens staff for all their help and support. Truly, an evening to remember.



Judy West, Exec. Director ANBG; Lady Cosgrove, Friends' Patron; and former Director of the Gardens, Roger Hnatiuk.



Rita Maclachlan, Friends Secretary; Sally Barnes, Director National Parks; and Marlena Jeffery, Friends Vice Patron

Many positives to report at AGM

Following are summaries of the reports to the 27th AGM of the Friends on 8 October 2015 by Lesley Jackman, President; Marion Jones, Treasurer; and Dr Judy West, Executive Director, ANBG. Full reports are on the Friends' website www.friendsanbg.org.au.



Pam Rooney



Ann Eldridge



ANBG Facebook



Andy Rawlinson

President's Report

In her first report as President, Lesley reflected on the performance of the Friends against the goals of the 2010-15 Strategic Plan. Happily there were many positives to report against the major elements of the Plan.

For example the success of our public promotion through Thursday talks, now attracting audiences of 70 each week; Breakfast with the Birds (see page 15); Australasian Guides conference coming up in 2017; continuing success of summer concerts; and two entries from Friends in the Eureka science photography prize (see pages 2 and 15). And our highly responsive web team keeps the world up to date with all the Friends' activities in the Gardens.

Lesley said our happy and positive partnership with the Gardens is epitomised by our input into the deliberations for the Master Plan, and by our future contributions to its implementation. Other areas of practical partnership highlighted by Lesley were: planning for the new Guides intake; opportunities for assisting in research projects in the Southern Annex (see Plant Science Group report on page 14); and our continuing support for the annual intake of botanic interns.

A primary area of fundraising is the summer concerts. Last summer the budget for eight summer concerts was \$32,000, so the Gardens and the Friends were delighted to attract two sponsors, Goodwin as the Major Sponsor, and ACTEW Water, now rebadged as Icon Water, as a Supporting Sponsor. The work to obtain these sponsors was done mainly by Lesley and Peter Byron, General Manager. The Gardens have now appointed a Partnership Development Manager to work on sponsorships for the Gardens, which will be a great help.

Over the past year Friends' funds supporting the Gardens included: a plant collection trip for the rainforest gully; the Asteraceae Garden; a feasibility study for the construction of a treehouse/gazebo in the Melaleuca Swamp; purchase

of books for the library; the gift of two artworks from this year's botanical art exhibition; refurbishment of the Growing Friends' area; and money from the Public Fund to purchase equipment for the Seed Bank.

For the Friends to continue to be 'lively, stimulating, rewarding and dedicated to the ANBG' the organisation must retain our existing members and attract new ones. There are now 2,138 individual members, comprising 1,572 memberships, a solid increase over last year's 1,536 members. Our membership team has been central to this success and Lesley thanked them for their hard work.

Reflecting on the past year and looking ahead, Council is very aware that much of what the Friends do to help the Gardens is the work of a smallish group of volunteers. So Council has been discussing what we might do to look after these existing volunteers and to bring more people into the pool of volunteers, so the effort is spread more widely.

Lesley concluded her report by thanking everyone from the Gardens who makes us feel so welcome, all those who support us by becoming Friends, and all those who find time to volunteer.

New Council members

In the absence of nominations for Treasurer, Marion Jones kindly agreed to continue in an acting capacity until Council can find a replacement. Congratulations to Jeff Brown and David Cox on their election. Retiring members, David Ayliffe and Ian Primrose, were thanked for their contribution.

Constitution

A special resolution was put to replace the current 1991 constitution. It was adopted unanimously. The full text can be seen on the Friends' website.

Treasurer's Report for the year ended 30 June 2015

There has been a steady increase in income from all our regular activities and events. In addition, funds were received from a book sale, Botanic Art Group workshops, the Photographic Group Exhibition, the Enlighten events and a donation from the Australian Biological Resources Study. Income from the Summer Concerts series was \$10,000.

Expenditure was largely consistent with previous years. Major Gardens support totalled approximately \$70,000, including the Rainforest lighting at \$35,000.

Accumulated funds at 30 June 2015 were \$373,374.

Donations to The Public Fund totalled \$13,690 and funding of \$22,000 was provided for Seed Bank equipment. Accumulated funds at year end were \$71,055.



Murray Fagg



Geoff Puleston

Executive Director Presentation

The Gardens has had another productive year leading up to and including our 45th Anniversary, with the June launch of the Master Plan and major works on the Bookshop extension, beautifying toilets, and upgrading the Seed Bank with a seed counter, freezer and climatron growth chamber. (Other gifts from the Friends are detailed in the President's report.) Visitor numbers for 2014-15 increased one per cent over 2013-14; 20,000 of them participated in AfterDARK, Enlighten Festival, Twilight Forest Adventure (schools), Sunset Cinema and Summer Concerts. The Gardens is ranked 13th of 138 things to do in Canberra.

Some achievements for the year include completing the Asteraceae Garden and the Monocot Section upgrade. We have established plant working groups on *Homoranthus*, *Prostanthera*, *Melaleuca*, and *Banksia*. On threatened species the Gardens is giving priority to its *ex situ* collection of 300 threatened species and the NSW critically endangered *Pomaderris delicata*, with over 500 plants returned to the wild. The National Seed Bank made 418 accessions of 166 species by fourteen collectors, a majority from Commonwealth reserves, primarily Kakadu, Christmas Island, local grassy woodlands and peatlands.

Dr West concluded noting the successes of the Prehistoric Garden Trail (National Science Week); the Canberra International Music Festival lunchtime concert; installation

of the Aboriginal Plant Use Trail signage; and growing attendance at AfterDARK programs, Luminus botanicus (Enlighten Festival), Sunset Cinema and Friday afternoon Farmers' Markets.

Guest Speaker

Our thanks to guest speaker, Sally Barnes, Director of National Parks, for bringing us up to date with the Parks' priorities and master planning for the Gardens. Sally invited Gardens' General Manager, Peter Byron, to assist her in bringing us up to date with the process for the implementation of the Master Plan. Part of the implementation phase is to draw up plans for the capital works, the Conservatory and the new Visitors Centre Precinct. Peter thanked Sally for the \$5 million committed by the Government for capital works to implement the Master Plan.



David Cox



Jay Cronan

Life Members



Life Memberships were awarded to Pat and Warwick Wright in recognition of their dedicated service to the Friends and the ANBG. Pat and Warwick joined the Friends in 1996 and amongst other roles have been voluntary Guides, education rangers, provided active support for children's activities at the summer concerts, and spoken to many community groups in Canberra and interstate about the Gardens. Warwick established the Thursday Talks and remained actively involved in their organisation from 2003-11. He was also a member of Council for many years.

Captions: Keen Breakfast with the Birders; Wet summer concert; Strings in the Rainforest Gully; Friends planting the Asteraceae Garden; *Pomaderris delicata*; Austroraptor; Sally Barnes at the AGM; Pennie Scott, founder of Eat Local, and Costa Georgiadis at the first market day (from *The Canberra Times* web page); Life Friends Warwick and Pat Wright.

Eucalyptus recurva

Mongarlowe Mallee

Botanic Artist wins Gold

Canberra-based artist, Halina Steele, has recently returned from the UK where she exhibited her works in a botanical art exhibition held by the Royal Horticultural Society (RHS). With a prestigious reputation internationally in the botanical art field, the RHS exhibitions are held in conjunction with their flower shows, attracting exhibitors worldwide.

Each artist must produce at least six paintings based on a theme, with works being judged first and foremost on botanical accuracy. Wanting to showcase the diversity and uniqueness of Australia's wonderful native flora, Halina selected Australian Eucalypt Mallees as her theme. One of the species chosen was the critically endangered *Eucalyptus recurva* (Mongarlowe Mallee) which was discovered growing in the Mongarlowe area near Braidwood in 1985.

Not only was Halina awarded a Gold Medal, but her works were judged Best Botanical Art Exhibit. In addition, the Royal Horticultural Society has purchased her illustration of *E. recurva* for their permanent collection at the Lindley Library London. The Library is the largest of the RHS libraries and the largest horticultural library in the world. In addition to the RHS' collection of paintings and photographs, the Library's collection includes current and historical books, journals, archives and botanical drawings, and covers horticulture, flora, birds and other related subjects.

Halina previously exhibited with the RHS in 2004 and was awarded a Silver Medal for a series of eight paintings depicting Australian native hibiscus.

Only six survivors

Mongarlowe Mallee is one of Australia's rarest eucalypts. Its name *recurva* derives from its distinctive small, opposite, outwardly curved leaves. The species is only known from four privately owned sites on the Southern Tablelands of NSW, three near Mongarlowe and one near Windellama. Three of these sites each support only single plants and the other site has three individuals. All occurrences are within largely uncleared country that is unsuitable for agriculture. It therefore appears that the species is naturally rare, rather than having been reduced in numbers through human activities.

As propagation has proved extremely difficult, survival of the species in the wild currently appears dependent on



the survival of the existing adults, most of which appear to be already of a great age (possibly 3,000-13,000 years).

In 2011, the New South Wales Department of Environment and Climate Change donated a graft of the plant to the Gardens. Previous efforts to reproduce the species from tissue culture and cuttings had failed, but one grafting trial was successful. The surviving graft is from a plant at Mongarlowe onto the stock of *E. parvula*, or small-leaved gum. The plant in the Nursery is happily still alive and doing well, providing potential for future research into this remarkably rare species.



Saving a species: John Briggs of NSW DECCW shows Gardens' Curator, David Taylor, the uniquely curved leaves of the rare Mongarlowe Mallee.



Visiting European Botanic Gardens

David Coutts

Zurich garden conservatories.

Among many fabulous gardens my wife and I visited in Europe earlier this year, one thing that stood out for us was the conservatory at Zurich. The ANBG could look closely at the conservatory model in Zurich as we move towards our own new conservatories under the recently unveiled Master Plan.

But before Zurich we went to the Hortus Botanicus in Amsterdam. This is one of the oldest botanic gardens in the world and is close to the centre of Amsterdam. It is roughly 375 years old and has been a place of scientific botany for most of that time. It was established by the city government and the collections include many plants brought by the Dutch East India Company and the West India Company. Today it has a variety of greenhouses and other structures that are listed as historic landmarks. The Hexagon Pavilion dates from the late 1600s and the entrance gate was built in the early 1700s.

Another garden that surprised us was the Zurich Botanischer Garten. This is part of the University of Zurich and is not to be confused with the Old Botanic Garden which is in the centre of Zurich and is now a recreation area, arboretum and medieval herb garden. The new garden was established in 1977 and is easy to reach by tram or bus. It has a major international botanical

research centre and a very impressive large meadow area. However the jewel in the crown is the set of conservatories which are linked to each other and take the visitor on a journey through several environments not found in northern Europe.

Another surprise was the Botanischer Garten Munchen-Nymphenburg. This is in the same area of Munich as the Nymphenburg Palace, which many Friends may have visited, and can be accessed by tram. It is a major garden with over 16,000 plants and again a very impressive set of conservatories. The garden is a research centre, especially for phenological studies, a training and education centre and a refuge for a number of bee species. It has an active Friends group, which run the shop and small café. A highlight is the ten minute walk from the top of the garden through forest to the palace and gardens of Nymphenburg. One can then walk through those gardens back to the tram.

There were two other gardens that we found quite fabulous, although they are not strictly botanic gardens: the Mirabell Gardens in Salzburg and the Mainau garden island on Lake Constance. Mainau is reached by a lovely ferry ride from Konstanz and that gives the chance to get off and see the medieval lake town of Meersburg as well.

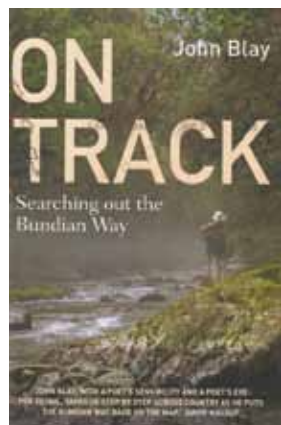


Mirabell gardens in Salzburg



Hortus Botanicus in Amsterdam from the its website.

From the Bookshop with Bookshop staff



On Track - Searching Out the Bundian Way

John Blay

2015

Paperback, 376 pages

Includes full colour photographs

\$40

This book tells the story of author John Blay's search for the Bundian Way, an important Aboriginal pathway between the Kosciuszko High Country and Twofold Bay near Eden on the far south coast of New South Wales. The route spans 360 kilometres and traverses some of the nation's wildest, most remarkable landscapes. In what is essentially a bushwalking story, Blay reveals the story of the region's people and its natural history as well as bringing to light the rediscovery of an important piece of shared history. The Bundian Way is now heritage-listed thanks to the work of Blay, Aboriginal communities and the local people of the area, setting it up to become one of the great Australian walks. John Blay is a writer and naturalist who since 2001 has researched the South East Forests of NSW in association with local Aboriginal communities.

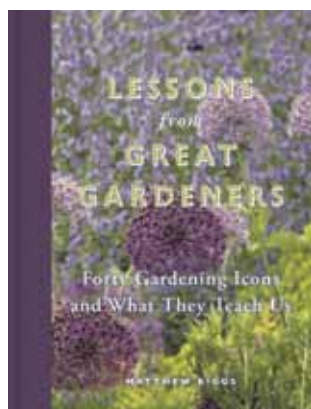
Friends' Schools Photo Competition

Another year of excellent photos, submitted by students for the 19th Annual Friends' Schools Photographic Competition. Award winners eagerly gathered in the ANBG Theatre to collect their prizes on Saturday 17 October 2015.



Clockwise from top left: *Looking underneath* by Georgia Kinnane, Canberra Girls Grammar (First High School Colour); unnamed by Hamish Angus, Marist College (First Prize Altered Image); *Botanic Avatar (edited)* by Emma Horeton, Canberra College (Third Prize Altered Image); *Branches* by Emily Ridley, Canberra High School (Second Prize High School Colour); unnamed by Brett Allen, Canberra College (First Prize College Colour).

Book Review



Lessons from Great Gardeners: Forty gardening icons and what they teach us
Matthew Biggs
 Exisle Publishing
 223 pp, photos, illus,
 index, bibliography.
 RRP \$34.99
 ISBN 978 1 921966 92 7

Although there's barely a mention of an Australian native plant in this book, there is a wealth of gardening passion and wisdom. UK gardening guru Matthew Biggs explores the work and legacy of 40 great gardeners spanning seven centuries. The gardens are predominantly from the northern hemisphere and have been carefully chosen to illustrate how creativity and practical experience develop gardening style.

Some are the work of owners of great wealth and the gardens remain showcases, as with Pierre S Du Pont's Longwood in the US. Others have fallen into disrepair like that of Ellen Willmott whose irrepressible passion for plant collecting and garden development eventually swallowed her vast inherited wealth.

Starting with the famous fifteenth century Japanese garden Ryoan-ji, Biggs is still able to draw lessons for contemporary garden design in terms of the use of proportion, illusion and choice of materials. His final four gardeners are all living proof of the age old spirit of plant collectors and gardeners with an infectious enthusiasm for beauty and design.

Only one Australian garden is featured in the book, Jeremy Francis's world-class garden Cloudehill in the Victorian Dandenongs. Francis blends patience with inspiration from many great gardens and his own artistic and creative flair. He believes 'every plant has to pay its rent' and plants that flower only briefly or have poor foliage don't make the cut.

While there are some lovely photos of some of the gardens and a good number of botanical art illustrations of featured plants, it is the stories of the gardens and the gardeners that make this book. Biggs finds useful gardening lessons in all his chosen gardens, but it is the passion and patience of the gardeners themselves that most inspires.

Margaret Clarke

Public Fund

The Friends Public Fund was set up in 2004 to raise funds for environmental projects within the Gardens, and to offer a way for the Friends to receive tax deductible donations. To date, \$208,000 has been received by the Fund.

Last financial year the Fund provided \$22,000 to enable the Gardens to purchase equipment for the Seed Bank, including a seed counter to save time on manual seed counting, for seed weights, and germination testing, and a freezer to enable continuation of long-term seed collections.



HM Rawson

The committee has agreed to donate \$10,000 to pay for interpretive signs for the Aboriginal Plant Use Trail, which were installed in September this year. The Public Fund has also agreed to commit \$30,000 of current funds to support the Friends Public Art Project, a proposed sculptural treehouse/gazebo to be built in the Melaleuca Swamp, and will be seeking further donations in the New Year towards this exciting and imaginative project.

The Friends would like to thank all those who have donated over the last year. Donors of \$200 or more are included:

- | | |
|-------------------------|----------------------|
| • M Lindenmayer | • J Refshaug |
| • Mr and Mrs J Moten | • C Hauff |
| • K Holtzapffel | • J Adler |
| • Inner Wheel Belconnen | • R Munns |
| • M Jeffery | • A Wheeler |
| • S and G White | • J Finley |
| • N Landau | • L Jackman & M Dimo |

plus M Davidson (in memory of Peter Davidson, a Guide at the Gardens), and three donors who wish to remain anonymous.

We welcome your donation to the Public Fund to be used for projects in the Gardens.

Barbara Podger, Chair

Where do

Ted Edwards

What litter is good litter? Leaf litter, of course.

It protects the soil from erosion. It provides some barrier to weed invasion. It protects the soil from desiccation. It is the major source of soil nutrients, recycling them perpetually. It protects and nourishes all the living organisms which feed on it and which in their turn nourish all the plant and animal life of the forests, woodlands and plains.

What sorts of leaf litter are we familiar with? There is the mostly-damp litter in a rainforest where the breakdown is accomplished mostly by micro-organisms, fungi and bacteria. Insects, small crustaceans and molluscs, may also play an important role, an example being the larvae of the ghost moths of the genera *Oxycaanus* and *Oncopera* in rainforest. These dig vertical tunnels in the soil and emerge to feed on the litter at night.

Most familiar in this area is the dry litter of the eucalypt forests, woodlands, mallee and grasslands. Here it is too dry for fungi and bacteria and they and crustaceans can operate only in seasonally damp conditions and even then they are effective only when the litter is already partly broken down.

Who attacks the whole freshly fallen leaves? Who starts the breakdown process? This is the responsibility largely of the insects. Many insects may be involved: termites,

cockroaches, some grass hoppers; some beetles and many moths feed on the dry leaf litter. In the case of the moths it is the grub or larval stage which breaks down the leaf litter.

Of the moths several groups are involved. The ghost moths, already mentioned, feed on moist litter and tend to eat whole leaves.

Have you ever had the bone dry leaves on the forest floor scrunch under your feet in summer? These leaves are the greatest challenge to insects to break down but moths in the families Pyralidae, Erebidae, Tortricidae, Depressariidae, Lecithoceridae and Oecophoridae, all play a part. Feeding may occur at night when there is some dampness from dew. Nor is the dryness of the litter the only challenge. Many dead leaves are full of oils, phenols, tannins and other noxious chemicals. The moth larvae have to be able to survive and thrive on this uninviting food.

Let's forget the others and concentrate on the family Oecophoridae or mallee moths. Not that they have any particular affinity for mallee as plants or communities but it is at least an Australian name. With about 6,000 world species of mallee moths, of which over 5,000 are Australian, we have not only the lion's share but also the leopard's and tiger's as well. As Australia dried out in



Paul Zborowski



Ian Common



Paul Zborowski



Marianne Horak

Top photo: Leaves on a fallen branch, skeletonised by moths. Bottom from left: *Oxythecta* sp; *Garrha* sp. larva in case made of dead leaves; *Zon*



the Miocene the eucalypts, grasses and acacias came to dominate many plant communities and the mallee moths came with them. Many hundreds of species feed on each of these plant groups. The mallee moths are quite small, usually between one and three centimetres in wingspan. They come in an absolutely bewildering variety of colours and patterns. Beware of anyone who claims to identify them from photos; they underestimate the complexity and diversity.

Some take the plant friendship further. *Heliocausta* larvae tie green gum leaves together and feed within the shelter so formed until half grown when they cut the petioles, float to the ground and continue to feed on the desiccating leaves on the ground. Others spend all their lives in the leaf litter making silken tunnels (species of *Coesyra* for example), or tying leaves together, or making neat cases of dead leaves which they cart around (species of *Garrha*). Oecophorid means house bearing in Greek. There are hundreds, perhaps thousands, of species of mallee moths which feed in the leaf litter and break it down.

Then there are some that are more specialised. What is a koala scat but neatly packaged eucalypt leaves? The scat moths, *Telanepsia*, feed in possum and koala scats. *Oxythecta* feed on grass gift wrapped by wombats,

wallabies, and kangaroos. *Ioptera* feed on kangaroo, pademelon and tree kangaroo deposits and *Scatocresis* feed within possum scats but live in the soil beneath the scats.

In the absence of all these insects Australian dry leaf litter would build up, as it does in California, but here there is a balance. At least there is a balance if nature is let be.

Think for a little on the unwisdom of deliberately burning and wiping out all the fauna that breaks down leaf litter with the intent of reducing the amount of litter, or as the incendiaries call it, 'fuel load'. This is but one of the many aspects of prescribed burning that has not been adequately researched. What about the huge loss of nutrients through smoke and run off? What about the natural selection for rapid-growing weed species through frequent burning? What about the extinction of plants and animals from a too frequent burning regime?

These brief questions are sufficient here, but a great many others come to mind. Books need to be researched and written about these and other aspects of the biology of leaf litter and the impact of burning.

Ted Edwards AO is an ANBG Guide and Honorary Fellow at CSIRO. He has published extensively on the classification and biology of Australian moths.



Peter Marriott



Paul Zborowski



Paul Zborowski



hopetala quadripustulella; *Telanepsia stockeri*; *G. pudica*; *Hoplomorpha abalienella*; *G. zonospila*.

Garden Shorts

Stories from the past

Do you have stories and images of the Gardens from throughout the decades that you would be willing to share? Did you get married in the Gardens? Have you spent time with family and friends?

As part of the Gardens 45th Anniversary celebrations this year, we have been running a campaign requesting stories of significant times with family and friends and images from the past. We know many of the Friends are likely to have a collection of gems deeply hidden in boxes. With the 45th anniversary still fresh in our minds, we would like to collect these memories in the lead-up to the Gardens 50th. To submit stories and images or for further information, contact sabrina.sonntag@environment.gov.au.



Black Mountain proposed site for the Gardens taken 1935.



The pond below the cafe in 1970.

Alan Munns

The Gardens' 45th birthday



Graham Brown

The Gardens hosted a Community Day as the highlight of celebrations for the Gardens' 45th anniversary. There was a range of activities for kids at the Community Day including spying for birds, dipping for bugs and collecting insects with our field scientists. Visitors also potted up daisies, made their own bee hotels to take home and participated in the family scavenger hunt. Flora Explorer 'Ride up-Walk Down' tours took visitors to some of the Gardens' newer developments such as the Red Centre and Australian Daisy Gardens.

Celebrations also included a retrospective photography exhibition showcasing the evolution of three of our popular gardens, and horticultural talks by Gardens experts in the Cafe.

Originally known as the Canberra Botanic Gardens, the Australian National Botanic Gardens was officially opened by Prime Minister John Gorton on 20 October 1970.



David Cox



Graham Brown



Barbara Podger

One of the horticultural talks was a demonstration by the Gardens' arborists.

	<p>The Australian National Botanic Gardens</p> <h2>2016 Calendar</h2> <p>on sale now for \$12.00 (less your Friends's 10% discount)</p> <p>at the Botanical Bookshop www.botanicalbookshop.com.au</p> <p>Photography by Kira Dowling</p>
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Summer Sounds

We are delighted to welcome Maliganis Edwards Johnson as our new Principal Partner of Summer Sounds Concert Series 2016. Their support has enabled the Gardens to attract some fabulous acts while still maintaining the low entry fee of \$5 per adult.

We also welcome Mix 106.3 as our new Media Partner who will be actively promoting the concerts and thank Icon Water which is continuing as Supporting Partner. The popular Summer Sounds Concert Series will run each Saturday and Sunday night from 16 January until 7 February (see page 17 for program). It is with the generous support from our sponsors that the Gardens can continue to present such events for the Canberra Community.

We are on Instagram

Share your images of the Gardens and build our gallery showcasing the beauty of the Gardens through the photo sharing social media platform, Instagram. Make sure to tag all of your images @anbgalive and they will show up automatically under the Gardens profile images.

Conservation of rare daisy

The Large-fruited Groundsel, *Senecio macrocarpus*, has received a boost to its chances of survival in NSW, with a new planting at McLeods Creek Nature Reserve.

The Gardens successfully grew forty plants from seed collected from only a few wild plants in response to a request from the Office of Environment and Heritage (OEH) NSW.

The plants were planted by OEH and Gardens staff in mid-September, not far from the only known NSW wild population.



Large-fruited Groundsel plants are already beginning to flower

Sabrina Sonntag

Alpine Garden for Roger Good

Few people in Australia knew more about the ecology of our alpine wetlands than alpine ecologist Roger Good who died in October. At the time of his death he was working at the Gardens on an alpine seed germination and climate change program.

The Gardens has opened a fund in honour of Roger for the development of the Alpine Garden. Online donations made through to December 2015 or later donations using a form from the Gardens website will be directed towards this fund.

We thank the following people who have donated towards the Alpine Garden:

Di Lockie and Peter Mellor
Marjorie Sullivan and Philip Hughes
Arthur and Edith White
Helena Mills
Anna Deeble
Andrew and Seonae Lockie
Lucy Sutherland
Lorraine Hardwick
Andy Turner
Nicola Webb
Sandra van Graver
Trevor, Jenny and Garry Vogler
Bruno and Jill Yvanovich
Professor David Keith
John and Nerida Dunn
Neil and Jenny Drake
Friends of the ANBG
Classic Constructions
Lindsay and Lurline Hardy
Nigel and Stephanie Robbins
Murray Darling Wetlands Working Group
Alistair Henschman
Jill and John Nichols
Fenner School of Environment and Society, ANU

Along with many anonymous donors

Maliganis Edwards Johnson is proud to be the Presenting Partner of the Summer Sounds Concert Series 2016

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Friends Briefs

Aboriginal Trail



HM RAWSON

Come and explore the new Aboriginal Plant Use Trail. Signs for the Trail are now in place and there is a map on the Gardens' web site and available from the Visitor Centre.



Botanic Art Groups

The BAG members have had opportunities to exhibit their work, not only in our Art In the Gardens With Friends Exhibition earlier in the year, but also in the Canberra Botanical and the Wildlife And Botanical Art Exhibitions during Floriade. More recently a botanical art exhibition was held by the Australian Native Plant Society in conjunction with their Biennial Conference.

Our 2015 Exhibition showcased the high standard our members have achieved through meetings and classes run in the Gardens. Plans are underway for the 9th Art In The Gardens With Friends from 19 March until 17 April 2016.

We must thank the members who have organised classes run by BAG. They have been well attended and have encouraged both new and existing members to experiment and gain new skills, as well as raise funds for the Friends.

Botanic art is popular and appreciated by the wider community. The Artists Society is holding its annual Summer School in January and many members are looking forward to attending the workshops by Leonie Norton, a respected tutor who is well known to us.

The Botanical Art Groups are a means for members, not only to paint and draw at the Gardens, but to extend their knowledge of native plants, to network with other artists and the Garden's staff, to extend their knowledge and skills. Painting is one way of enhancing the great pleasure the Gardens bring to the artists and the viewers. New members are always welcome.

Helen Jensma



Plant Science Group

Technical Talks have covered biodiversity research for Parks Australia; How Kangaroo Grass will manage in a climate changed environment; sedges threatened by mining in WA; and our virtual herbarium.

Several meetings have been held with ANBG Management to discuss projects in the Bushland Precinct. These involve collation of information about the area and potential survey work (flora, weeds) to complement the Master Plan for this area, particularly for a path connecting the ANBG to the Arboretum. This will be an opportunity for Group members. A small subcommittee has been established comprising David Coutts, Kristiane Herrmann, Linda Beveridge and Anne Campbell. If you would like to join the Group, please email:

plantscience@friendsanbg.org.au.

Anne Campbell

Breakfast with the Birds



Ann Eldridge

What a wonderful way to start the day—breakfast is not just for the birds! Friends and visitors joined in the early morning activities in the Gardens. What a treat!

The Tawny Frogmouth nesting pair were spotted, despite their camouflage. Bower Birds were heard calling and the male displayed his iridescent chest. Other nesting activity was evident, with Magpies in the apartment tree (a big eucalypt near the Crosbie Morrison centre), Red Wattlebird nests with babies and Crimson Rosellas and Galahs in hollows. Some lucky people managed to catch sight of the Spotted Pardalote flying out of its tunnel nest in a bank. There were Eastern Yellow Robins perched on sides of trees and lots of honeyeaters along the main path. The Gang Gangs drank from the waterfall in the rock garden and explored holes in trees.

It has been lovely to listen to the voices of favourite birds in the early morning. Breakfast at Floresco was a welcome conclusion to a very enjoyable morning. Thank you Gardens, leaders, assistants, bird watchers and Floresco for sharing the splendour.

Jonette McDonnell

Photographic



Graham Brown chatting to other Friends outside Photographic Group tent at Gardens' Community Day

Group

Recent Group activities include participation in both the 25th anniversary of the Friends, and the Community Day in celebration of the 45th Anniversary of the Gardens. The Committee has prepared a Policies and Procedures document for the Group and initiated the first formal elections which were held at their October meeting. Speakers included PG Members Bob Hay, who spoke about photographing plants in black and white, and Paul Zbrowski, who gave insights into photographing insects. An extensive survey was distributed and has provided information for new initiatives for 2016, including hosting workshops, field trips and new ideas for specialised speakers.

Brenda Runnegar



Brenda Runnegar

Concert volunteers

Would you like to help out at the Concerts? We need assistance collecting entry money, and driving the electric vehicle. This summer we are not offering a Drinks Table and drinks will be sold by another provider. To make rostering easier, we are trialling an online system. From 1 December, you can access the roster online, via the Friends website: www.friendsanbg.org.au. Please try it out! If you cannot access the online version, please phone Barbara on 6247 7188.

Eureka prize entry



Seeds of *Gonocarpus micranthus* in John Fitz Gerald's entry 'Which seed is the best average' in the New Scientist Eureka Prize for Science Photography. Seeds are extremely variable and it is often difficult to identify 'average' individuals. It is important to quantify averages because many seed traits like size, shape and mass are integral to understanding seed survival in soil and seedling survival after germination.

Twilight Dinner

The 2016 Twilight Dinner will be held in Autumn - details in next issue of Fronds.

Friends Briefs

Growing Friends

Growing Friends have been participating in a number of activities in the Gardens. To help celebrate the 25th anniversary of the Friends, a group was on duty at the shade house and igloo to talk to visitors. They seemed impressed with the new set-up and the information available. Growing Friends also participated in the Community Day on assisting people with potting up daisies to take away with them.

Another successful sale was held on 14 November and included a selection of *Brachyscome*, *Correa*, *Crowea*, *Leptospermum*, *Olearia*, and *Senecio*. A featured plant was *Grevillea* 'Red Wings'.



Murray Fagg

The spring plant sale was sold out just after 9.30 am—in cool, very light drizzle. Sales went exceedingly well.

Feel welcome to join our monthly meeting on the first Saturday of each month at 9.00 am in spring and summer and 9.30 in autumn and winter in the Joseph Banks Building. We also have a working bee on the third Tuesday of each month.

Yvonne Robinson



Pam Rooney

Damp plant sale in November

Guides

After a quiet winter when there were fewer visitors in the Gardens, the Guides have been very busy with walks and Flora tours during spring.

In September, 22 Guides went to Sydney for the 16th Conference of Voluntary Guides in Botanic Gardens. As well as a variety of walks around the Royal Botanic Gardens and visits to Mount Annan and Mount Tomah Botanic Gardens, we attended many talks and workshops on topics such as: how to make a Cabbage Tree Hat; identifying fruits of Australian native plants; learning more about the Wollemi pine; the history of the Royal Botanic Gardens; Cycads; management of plant diseases and pest fauna; Aboriginal plant use; and so much more. Meeting and sharing experiences with other Guides and seeing different guiding practice all added to the learning.

In late November, 25 Guides will be showing the Gardens to participants in the national Australian Native Plants Society conference, which is being held in Canberra this year. We will be providing five extra tours each day as well as our regular tours. We are looking forward to chatting with so many knowledgeable visitors from all around Australia

Christianna Cobbold

Book sale

Discerning buyers snapped up some other great bargains at the Plant Sale. These were books that had been donated to the Friends, deaccessioned from the ANBG Library collection, from members downsizing their libraries, or bequeathed to the Friends. More than \$1,200 was raised at the spring sale, after \$1,700 was raised in the sale last autumn. The Friends plan to hold another book sale in conjunction with the next plant sale in April. Books are on a wide range of flora related topics. If you have any relevant books you would like to see rehomed, please phone Ian on 0418 460 616

New summer menu



Try Floresco's new summer menu! Our favourite: Superfood Salad with added grilled chicken!



where
friends
meet to eat

**Open every day (except Christmas)
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What's on at the Gardens

December - April 2016

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. Exhibitions in the Visitor Centre are open from 9.30 am to 4.30 pm.

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

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.



Presented by Maliganis Edwards Johnson

Great concert atmosphere with local and national performers

Weekends Saturday 16 January to Sunday 7 February, 5.30 – 7.30 pm
nominal donation \$5 adults, \$2 card concessions, children free

Saturday 16 January - Amber Nichols

finalist in 2015 The Voice competition, supported by Micky Sulit

Sunday 17 January - Lulu Swing a Manouche

Latin acoustic Jazz

Saturday 23 January – Big Boss Groove

Big band party sounds

Sunday 24 January Australia Day Concert finishing at 8pm

Franklyn B Paverty supported by Humbug

Toe tappin bush ballads and Irish jigs

Saturday 30 January – Annie & the Armadillos

Jazz and blues

Sunday 31 January - Belle Whyte

Indigenous singer/song writer

Saturday 6 February – Justine Clarke

ABC actor & singer/songwriter

performing a repertoire for both children and jazz enthusiasts

Sunday 7 February – Young Monks

Indie Pop & Triple J Unearthed band

Presenting Partner



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Supporting Partner





Bush Magic Story Time

Friday 4 December 10–11 am and first Friday every month

Come along to enjoy the Gardens with some specially themed stories and crafts. \$5 per child. Suitable for pre-schoolers. Follow the signs from the Cafe bridge.

December – Bush Christmas

February – Waterhole stories

March – Dinosaurs

Eat Local Friday Farmers' Market Every Friday 2.30–sunset

Chemical free produce directly from the growers and makers.

EXHIBITION

Visitor Centre Gallery

Interface Exhibition

Until Sunday 6 December

An exhibition of sketches and sculpture by Natalie Maras, with a special focus on biological soil crusts that reveal intimate observations of natural life.

Saturday 5 December 8.30–11.30 Weeding for Black Mountain

Meet: Caswell Drive. See the balloons. Check Friends website for changes. Friends ANBG and Black Mountain removing woody weeds. Please email your name and phone number to friendsofblackmountain@gmail.com or phone Linda 0437 298 711 or Jean 62511601 so there is enough morning tea.

Saturday 2 January 8.30 to 11.30

Saturday 6 February 8.30 to 11.30

Saturday 5 March, 8.30 to 11.30

Saturday 2 April, 8.30 to 11.30

Saturday 7 May, 9.00 to 12.00

EXHIBITION

Visitor Centre Gallery

Living Australia Exhibition

Wed 9 Dec – Sunday 17 Jan

Belconnen Artists' Network feature naturalistic art, design extraction as well as interpretive styles. Art techniques include paintings, sculpture, photography, encaustic, appliqué and felt designs.



Delicious AfterDARK Tours

Friday 15 & 29 January, 12th February, 4 & 11 March at 7 pm

An exquisite evening of fine wine, delicious food and unique ambience. \$75 per person not suitable for under 18.

Bookings: anbg.gov.au

IMB Sunset Cinema

Until 19 Dec every Wed, Thurs, Fri and Sat night at 7 pm

Enjoy latest release feature films in the beautiful garden surrounds.

SNAKES ALIVE!



18-24 January

10.00 am – 4.00 pm weekdays,

10 am - 6 pm weekends

Crosbie Morrison Building,

Live displays and feeding demonstrations of snakes, lizards, frogs, turtles, crocodiles and local threatened fish.

\$6 adult, \$5 conc. \$3 child.

EXHIBITION

Visitor Centre Gallery

The Craig Edwards Aboriginal Art Collection

Wed 20 Jan – Sunday 14 Feb

An array of Indigenous Artworks presented by Maliganis Edwards Johnson, sponsors of the ANBG Summer Sounds Concert Series 2016.

Thursday 4 February 12.30 pm Cedric Bryant 'Eliminating chemicals in your garden, for health and safety.'

Cedric Bryant, horticultural consultant and garden writer for 'City News', will talk about effective ways to eliminate chemical use in your garden.

Thursday 11 February 12.30pm Professor Adrian Gibbs 'Viruses of Australian plants: what, where and when?'

Adrian, a virologist at ANU since 1966, will describe some viruses of local crop, weed and native plants.

EXHIBITION

Visitor Centre Gallery

Black Mountain Nature Reserve: a special place

Wed 17 Feb – Tuesday 15 Mar

An exhibition by the Friends of Black Mountain featuring beautiful images and interpretative text about the natural and cultural heritage of Black Mountain.



Thursday 18 February 12.30pm
Dr Joanne Daly 'Australia's Agricultural Future'.

Joanne, a member of the CSIRO Executive in agribusiness, recently chaired a report on Australia's agricultural future. The report outlines how farm output can be optimised by driving innovation through a strong research base.

Thursday 25 February 12.30pm
Dr Julian Reid 'Diversity gradients in bird communities of the lower Cooper Creek, South Australia'.

Julian, Visiting Fellow, Fenner School, ANU, will describe ground-breaking research on the special and temporal distribution of arid region birds.

Thursday 3 March 12.30pm
Dr Rosemary Purdie 'Plants of the Simpson Desert; collecting by camel.'



Rosemary Purdie

Rosemary, Honorary Associate at the Australian National Herbarium, will share some of the challenges and insights from collecting plants on camel supported treks.

Luminous Botanicus



'Night Moods'
Special Enlighten Event

Fridays 4 & 11 March – full price tickets only \$25

Saturdays 5 & 12 March- family nights with child tickets available \$25 adults \$20 conc \$15 child.

Luminous Botanicus will take visitors on a 'room by room' sound & lighting experience exploring our iconic Australian landscapes. Rejuvenate and refresh as you pass through the rainforest, meander through the giant ancient conifers to the waterfall garden, delight in the 'dancing daisies', chill in the Eucalypt 'lounge' before drifting to the Red Centre. Ticket price includes wine or gelato, with cold bar, street food stalls and live entertainment in the Eucalypt 'lounge'.

VISITING LECTURER

Wednesday 9 March 12.30pm
Dr Christina Walters 'How seed science might save the world: a perspective on seed banking from USDA'

Dr Walters is Research Leader in Plant Germplasm Preservation Research at the National Center for Genetic Resources Preservation in the United States. Christina is best known for her innovative studies of seed physiology and its application to conservation of genetic resources for diverse plant species. Learn how the life of seeds can be maximised and how this is important for the long-term future of food and agriculture.

Thursday 10 March 12.30pm
Dr Martin Fortescue 'The breeding biology of the Little Penguin on Bowen Island, Jervis Bay.'

Martin, until recently the Booderee National Park Resource Manager, will present his long-term study of the influence of climatic changes on the breeding success of the Little Penguin colony on Bowen Island.



Thursday 17 March 12.30pm
Dr Paul Oliver 'Biologists in the mist: discovery in New Guinea's Foja Mountains.'

Paul, Postdoctoral Research Fellow, ANU, will discuss his participation in a multinational biodiversity research expedition to this remote, poorly explored, mountain range.

Saturday 19 March 8.30 am
ANPS plant sale

In southern carparks ANBG



Dr Christina Walters with cryoviat.

EXHIBITION

Visitor Centre Gallery



Sat 19 Mar – Sunday 17 April
Friends' Preview Fri 18, 1 to 4.30

Detailed paintings and drawings of Australian native plants by members of the Friends Botanic Art Groups.

Wed 23 to Thurs 31 March Eucalypt Festival

In conjunction with National Eucalypt Day on Wednesday 23 March. Supported by the Dahl Trust

National Eucalypt Day is a new initiative by the Bjarne K Dahl Trust to continue in the quest to raise awareness of eucalypts and celebrate the important place that they hold in the hearts and lives of Australians.

Thursday 24 March 12.30pm
Stuart Pittendrigh 'Solving botanic puzzles: the selection, planning, production and placement of plants for Barangaroo Reserve.'

Stuart, landscape architect, will describe how a passenger -ship terminal has been turned into a headland park.

Thursday 31 March 12.30pm
Des Cannon 'Bees: Why we need them and they need us.'

Des, President of the Australian Beekeeper Federation, will discuss the role of bees, including the Australian stingless native bees, in pollination of agricultural crops and native flora.

Thursday 7 April 12.30pm
Gerard Early 'Birdlife Australia'

Gerard, President of Birdlife Australia, will discuss the contributions of dedicated researchers and citizen scientists to science-based conservation.



Brenda Rummegar

Saturday 9 April, 8.30

Growing Friends plant sale. Crosbie Morrison car park.

Thursday 14 April 12.30pm
Dr John de Majnik 'Latest research and development for the wildflower industry of Australia'

John, Senior Program Manager for RIRDC, will give a broad-ranging talk on the latest research and development for Australian wildflowers.

Friends' Benefits

As a Friend you are entitled to:

Three issues of *Fronde* a year
Three hour 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
Plant Science 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 interesting reading.



The Botanical Bookshop

www.botanicalbookshop.com.au

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