CALGAROO

A journey into nature

September 2023

***Eucalyptus parramattensis* - Calgaroo**

Newsletter of the Parramatta and Hills District Group

Australian Plants Society NSW Ltd

Our vision: inspiring people to admire, grow and conserve native plants

WHAT'S ON IN 2023

13 September Wednesday:	Propagation
23 September Saturday:	2 pm - Members' meeting at Gumnut Hall, Gumnut Place Cherrybrook. Speaker Mick Roderick 'The Critically Endangered Regent Honeyeater and the Superhero Plant Saving the Day' See Page 2
11 October Wednesday:	Propagation
28 October Saturday:	Bushwalk Vineyard Creek Dundas. Leader Jennifer Farrer
8 November Wednesday:	Propagation
25 November Saturday:	Members' meeting and end-of-year celebration
6 December Wednesday:	Propagation

If you'd like to come to our propagation days at Bidjiwong Community Nursery and haven't been before, you can get details from Lesley Waite - phone 0438 628 483

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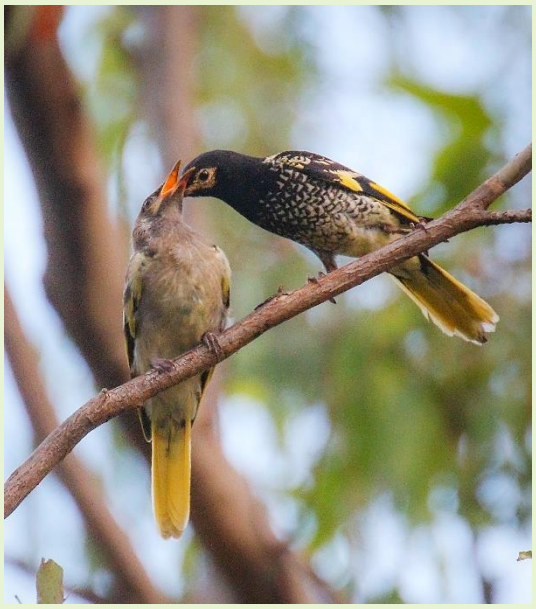
Meeting Saturday 23 September 2 pm to 4 pm.

Jennifer Farrer

The speaker at our meeting on 23 September at 2 pm will be Mick Roderick from Birds Australia who will be speaking about ***'The Critically Endangered Regent Honeyeater and the Superhero Plant Saving the Day'***

Mick Roderick is the Woodland Bird Program Manager at BirdLife Australia - Australia's largest bird conservation and research organization. In this role, he manages a suite of projects aiming to protect and recover threatened woodland birds, especially the critically endangered Regent Honeyeater, which will also be the focus of his talk. Mick is based in Newcastle and is the Vice President of the Hunter Bird Observers Club, and organises pelagic birdwatching trips out to the continental shelf to see seabirds. But Mick isn't only obsessed with birds; he is a passionate ecologist with a particular interest in Sydney sandstone flora.



The meeting will be held at Gumnut Hall, Gumnut Place Cherrybrook. Visitors are welcome.

We'll have plants for sale too from our propagation group's efforts at Bidjiwong Community Nursery.

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Boongala Native Gardens open days

Malcolm and Jenny Johnston's wonderful garden at 76 Pitt Town Road Kenthurst will be open:

Friday, Saturday, Sunday and Monday, 10am to 4pm
From Friday 1st September to Monday 9th October, 2023

A guided rainforest tour is available at 11am and 1.30pm daily.
Entry to gardens - Adults $5.00, Children Free
Rainforest and Bush Tucker Tour - Adults $5.00, Children Free
There'll be a wide range of native plants for sale.

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Grevillea Study Group visits Mt Annan Botanic Garden

Thank you to Christine Guthrie for these notes

On Saturday 29th July members of the Grevillea Study Group (including several Parra/Hills members) met at Mt Annan Botanic Garden. The meeting opened at 9.30 am with a welcome to members and visitors by Peter Olde, and by Peter Cuneo, who worked for 34 years with the horticulture team and the seed bank. The meeting was held in the Botany staff room.

Preceding the meeting, Peter Cuneo led an inspection of the herbarium building. It's constructed of rammed earth walls 45 cm thick, and is in the shape of a modified waratah seed pod. It can house 3 million specimens in five large rooms. There is a Botanical Identification Service, and volunteers assist with mounting specimens. To date 1.1 million specimens have been digitized, reducing the number of loan requests. Peter Olde showed us his well-equipped office. This is where he works whenever he can get there.

Following the meeting, Ryan Newett showed us around the nursery precinct. The nursery grows and supplies plants to the horticultural team for display and the natural areas, and to the science team. It also does contract growing particularly for government departments and private contractors involved in conservation projects. We also saw the extensive Grevillea collection in pots, used for propagation and research.

Peter Cuneo then gave us a tour of the seed bank, including the seed processing room, drying room, seed storage area and tissue culture area.

Lunch was at the Visitor's Centre, followed by a tour of some of the display gardens. Many members showed an interest in volunteering to mount specimens. There are also opportunities for volunteers to work in the gardens and with the Friends at propagating. The sale of plants helps the Botanic Garden fund its operations.

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Lantana removal at Sydney Olympic Park

From Sydney Olympic Park website

For over a decade, Sydney Olympic Park has been removing mature stands of Lantana in natural areas in a staged approach.

Each stage involved the removal of mature stands in an area, with only woody stems (free of seeds) retained in piles. As these piles decompose and attract a variety of insects, many native animals that depend on insects as part of their diet benefit. The areas were then replanted with native shrubs and groundcovers.

The following stage of Lantana removal was only implemented after the previous plantings had matured to form a dense shrub layer. This staged approach ensured that native wildlife such as woodland birds that depend on dense vegetation always had suitable habitat available.

Mature stand of Lantana recently removed.

Only woody stems have been retained in piles, with native plantings to follow.

Is that the end of Lantana in the Park?
Although mature stands of Lantana have been removed from natural areas of Sydney Olympic Park, ongoing management is required. Birds that feed on Lantana elsewhere and visit the Park will re-introduce this weed of national significance. Regular weed sweeps must continue to prevent any sprouting seedlings from reaching maturity.

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'The more you engage with nature, the more you appreciate it; and the more you appreciate it, the more likely you are to want to protect it'
- Costa Georgiadis

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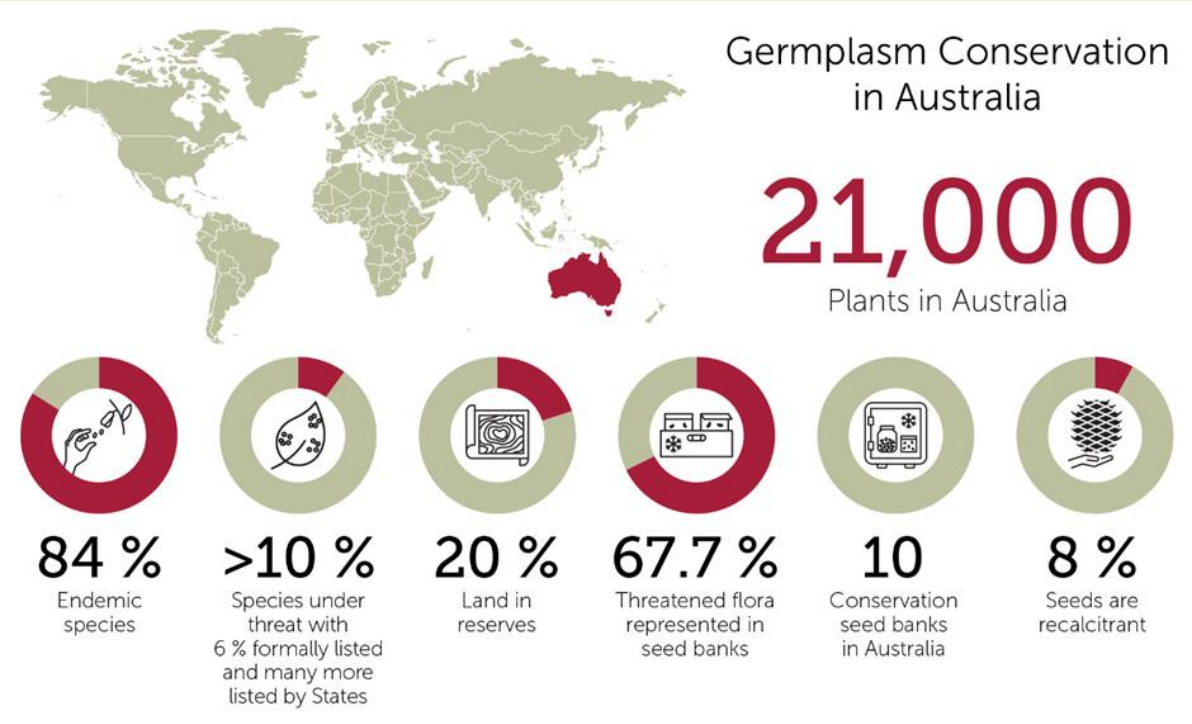
Your go-to guidelines for germination, propagation, and *ex situ* conservation of Australia's national plant treasures

Amelia Martyn Yenson*
This article is from the July 2023 edition of *Research Matters*, newsletter of the Australian Flora Foundation.

Germplasm conservation in Australia: What is it and why is it needed?
You would be well aware that Australia is home to more than 21,000 plant species, many of which occur nowhere else. Our national plant treasures face a multitude of threats, and more than 10% of Australian plant species are currently listed as threatened. Conservation of plant material *ex situ* (off-site) provides plant material and research opportunities to better understand and restore *in situ* populations and landscapes. The plant material – known as germplasm – is stored as seeds in conservation seed banks, as 'living plant' collections in botanic gardens and nurseries, as tiny shoots grown in tissue culture, as fern spores and fungal filaments, and even as cryo-stored seeds or plant parts ready to be reinvigorated many years after storage. The figure below illustrates the scale of plant germplasm conservation in Australia.

Anyone working to propagate, grow and conserve native plants outside of their natural habitats now has access to up-to-date research and evidence-based guidelines in the new third edition of 'Plant Germplasm Conservation in Australia'. The book is written as a guide for a range of users, including conservation agencies, scientists, nursery and seed bank staff,

students, volunteers, restoration practitioners and anyone else interested in applied plant/seed biology.



The Australian Network for Plant Conservation and the Australian Seed Bank Partnership joined forces with the restoration and agriculture sectors, botanic gardens, CSIRO, and universities from Australia and overseas to produce the publication, which was generously funded by The Ian Potter Foundation. It was released during the Australasian Seed Science Conference in 2021 by Prof. Tim Entwisle and was downloaded more than 700 times in the year following publication.

Revision and launch of the Germplasm Guidelines, third edition

Dr Paul Smith, Secretary General of Botanic Gardens Conservation International, who wrote the foreword, says the new guidelines are timely: "*The emergence of new pests and diseases, such as Myrtle Rust, the increasing frequency and intensity of bushfires, and recurring extreme weather trends and events are not just confined to Australia. They are a worldwide phenomenon. This gives added urgency to our mission to conserve and manage plants for future generations. Fortunately, we continue to learn from what does and doesn't work and – crucially – to share that learning through publications like this.*"

Contents of the Germplasm Guidelines

The Germplasm Guidelines, as they are commonly known, focus on *ex situ* collections of common and threatened plant species, which are often housed in botanic gardens. The first two chapters cover the 'why' and 'how' of *ex situ* conservation, including a handy decision-making guide and the key considerations for planning. This edition includes new chapters to ensure good genetic representation in *ex situ* collections, an overview of nursery practice (including must-read sections on propagation techniques), how to identify species with seeds that are 'exceptional' or difficult to store, handling of orchid seeds and mycorrhizae (symbiotic fungi), storage of non-seed plants such as ferns, conservation of carnivorous and parasitic plants, and the use of *ex situ* collections.

Updated chapters on seed collection, cleaning and storage, and germination and dormancy will be valuable background reading and a source of practical guidance for students and researchers working with seed collections. Boxes highlight reminders about sampling considerations for experimental work, principles of germination testing, and the design and analysis of seed experiments.

The guidelines include 50 case studies showcasing *ex situ* conservation in action, particularly in Australia and New Zealand.

The Germplasm Guidelines are available for free download or ordering of print copies: https://www.anpc.asn.au/plant-germplasm/

Sharing the Germplasm Guidelines

The revision of the Germplasm Guidelines created an opportunity to capture video footage, host webinars on a wide range of plant conservation themes, and share knowledge through capacity-building events, including an Australian Academy of Science Fenner Conference on the Environment.

Evaluation of the Guidelines' impact indicates that the new edition is influencing practical conservation activities, as well as provoking conversations on best practice within and between organisations. A wide range of audiences was reached through traditional outputs and capacity-building events (see figure). Through webinars and conference presentations, we estimate the Guidelines has reached over 1,500 people in more than 40 countries with key messages around planning and managing *ex situ* conservation collections.

Video content includes:

- Plant Treasures: showcasing the *ex situ* conservation of Australia's national plant treasures.
- Assessing seed storage behaviour: hallmarks of non-orthodox seeds and alternatives to seed banking (filmed at The Australian PlantBank).
- The role of the nursery and living collections in *ex situ* conservation (filmed at the Cranbourne Gardens of the Royal Botanic Gardens Victoria).
- Using *ex situ* collections of Australian native species: Translocation and other end uses (filmed at Kings Park and Botanic Garden).
- Techniques including cutting propagation, collection and processing of fern spores and using differential scanning calorimetry to identify freezing-sensitive seeds (filmed at the Cranbourne Gardens of the Royal Botanic Gardens Victoria, the Australian National Botanic Gardens, and The Australian PlantBank, respectively).

These videos can be accessed via the ANPC YouTube channel and viewing the playlist 'Plant Germplasm Conservation in Australia' (https://www.youtube.com/c/AnpcAsnAu).

A resource page has been created that includes all available content, including videos, webinar recordings, a selection of case studies, links to the Fenner Conference, a downloadable poster and slide desk (for use in conference packs or teaching), and background on the revision process.

Acknowledgements

Sincere thanks to the Germplasm Guidelines steering committee, editors and ANPC staff for their input to this project, including Cathy Offord, Patricia Meagher, Tony Auld, David Bush, David Coates, Lucy Commander, Lydia Guja, Sally Norton, Bob Makinson, Rebecca Stanley,

Neville Walsh, Damian Wrigley, Linda Broadhurst, Jo Lynch, and Christine Fernance. We acknowledge the input of 78 contributors for writing chapters and case studies, and additional subject matter experts who provided peer-review for the third edition of 'Plant Germplasm Conservation in Australia'.

Useful links

Please consider sharing the Germplasm Guidelines resource page with anyone you think may benefit.

- For more information about the Australian Network for Plant Conservation: www.anpc.asn.au
- For more information about the Australian Seed Bank Partnership: www.seedpartnership.org.au

***About the author**

Amelia Martyn Yenson is the Acting National Coordinator for the Australian Seed Bank Partnership and the former Project Manager of the Australian Network for Plant Conservation. She can be contacted at the following email address: coordinator@seedpartnership.org.au

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The feral flying under the radar

Why we need to rethink European honeybees

Amy-Marie Gilpin, Research Fellow, Ecology, Western Sydney University
James B. Dorey, Adjunct Lecturer, Flinders University
Katja Hogendoorn, Research Fellow, University of Adelaide
Kit Prendergast, Native Bee Ecologist, Curtin University

From *The Conversation*, 26 July 2023

Feral honeybee foraging on native *Boronia ledifolia* in the World Heritage-listed Blue Mountains National Park. Amy-Marie Gilpin

Australia's national parks, botanic gardens, wild places and green spaces are swarming with an invasive pest that is largely flying under the radar. This is yet another form of livestock that escaped from captivity and is left to roam free.

Contrary to popular opinion, in Australia, feral colonies of the invasive European honeybee (*Apis mellifera*) are not "wild", threatened with extinction or "good" for the Australian environment. The truth is feral honeybees compete with native animals for food and habitat, disrupt native pollination systems and pose a serious biosecurity threat to our honey and pollination industries.

As ecologists working across Australia, we are acutely aware of the damage being done by invasive species. There is rarely a simple, single solution. But we need to move feral bees out of the "too hard" basket.

The arrival and spread of the parasitic *Varroa* mite in New South Wales threatens to decimate honeybee colonies. So now is the time to rethink our relationship with the beloved European honeybee and target the ferals.

What makes a hive feral?

European honeybees turn feral when a managed hive produces a "swarm". This is a mass of bees that leaves the hive seeking a new nest. The swarm ultimately settles, either in a natural hollow or artificial structure such as a nesting box. With up to 150 hives per square kilometre, Australia has among the highest feral honey bee densities in the world. In NSW, feral honeybees are listed as a "key threatening process", but they lack such recognition elsewhere.

Feral honeybees have successfully invaded most land-based ecosystems across Australia, including woodlands, rainforests, mangrove-salt marsh, alpine and arid ecosystems.

They can efficiently harvest large volumes of nectar and pollen from native plants that would otherwise provide food for native animals, including birds, mammals and flower-visiting insects such as native bees. Their foraging activities alter seed production and reduce the genetic diversity of native plants while also pollinating weeds.

Unfortunately, feral honeybees are now the most common visitors to many native flowering plants.

Are feral bees useful in agriculture?

Feral honeybees can pollinate crops. But they compete with managed hives for nectar and pollen. They can also be a reservoir of honeybee pests and diseases such as the *Varroa* mite, which ultimately threaten crop production. That's because many farms rely on honeybees from commercial hives to pollinate their crops.

So reducing feral honeybee density would benefit both honey production and the crop pollination industry, which is worth A$14 billion annually.

Improved management of feral honeybees would not only help to limit the biosecurity threat, but increase the availability of pollen and nectar for managed hives. It would also increase demand for managed honeybee pollination services for pollinator-dependent crops.

What are our current options?

Tackling this issue will not be straightforward, due to the sheer extent of feral colony infestation and limited tools at the disposal of land managers.

If the current parasitic *Varroa* mite infestation in NSW spins out of control, it may reduce the number of feral hives, with benefits for the environment. Fewer feral hives would be good for the honey industry too.

Targeted strategies to remove feral colonies on a small scale do exist and are being applied in the *Varroa* mite emergency response. This includes the deployment of poison (fipronil) bait stations in areas exposed to the mite.
While this method seems to be effective, the extreme toxicity of fipronil to honeybees limits its use to areas that do not contain managed hives. In addition, the possible effects on non-target, native animals that feed on the bait, or poisoned hive remains, are still unstudied and require careful investigation.

Where feral hives can be accessed, they can be physically removed. But in many ecosystems feral colonies are high up in trees, in difficult-to-access terrain. That, and their overwhelming numbers, makes removal impractical.

Another problem with hive removal is rapid recolonisation by uncontrolled swarming from managed hives and feral hives at the edges of the extermination area.
Taken together, there are currently no realistic options for the targeted large-scale removal of feral colonies across Australia's vast natural ecosystems.

Where to now?
For too long, feral honeybees have had free reign over Australia's natural environment. Given the substantial and known threats they pose to natural systems and industry, the time has come to develop effective and practical control measures.

Not only do we need to improve current strategies, we desperately need to develop new ones. One promising example is the use of traps to catch bee swarms, and such work is underway in Victoria's Macedon Ranges. However, this might be prohibitively expensive at larger scales. Existing strategies for other animals may be a good starting place. For example, the practice of using pheromones to capture cane toad tadpoles might be applied to drones (male bees) and swarms.

Once strategies are developed, we can model a combination of approaches to uncover the best one for each case. Developing sustainable control measures should be a priority right now and should result in a win-win for industry, biosecurity and native ecosystems.

If there is something to learn from the latest *Varroa* incursion, it is that we cannot ignore the risks feral honeybees pose any longer. We don't know how to control them in Australia yet, but it is for lack of trying.

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Photo of new housing development in Western Sydney.

There's no trees, there's dark roofs, and dark roads.
Dark colours attract and retain heat from the sun. We learned this in primary school.

I don't know why this is allowed to happen!

‘Nectar of Life’

Dawson’s burrowing bee (*Amegilla dawsoni*) Kennedy Range, Western Australia

Against the backdrop of the Kennedy Range, Western Australia, a Dawson’s burrowing bee sips nectar from the flower of a native bluebell. Water is scarce in this arid region, and for these bees, nectar may be the only source of the precious resource.

Judges’ comments: The photographer has given a great sense of place with the inclusion of environment behind the enormous bee. The image has extraordinary detail, beautiful lighting and great use of colour saturation.

For other winners in the 2023 Australian Geographic Nature Photographer of the Year, click here.

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I hesitated to include the next item in Calgaroo. I asked myself – is there enough connection with native plants? There is some connection – our national colours, green and gold, come from the wattle. And there’s mention of waratahs. And, also, did you know that the Sutherland APS Group cancelled its regular August meeting because the Matildas were playing? Anyway, here goes . . .

Green and Gold Malaria

by Rupert McCall

The day would soon arrive when I could not ignore the rash.
I was obviously ill and so I called on Doctor Nash.
This standard consultation would adjudicate my fate.
I walked into his surgery and gave it to him straight:
`Doc, I wonder if you might explain this allergy of mine,
I get these pins and needles running up and down my spine.
From there, across my body, it will suddenly extend -
My neck will feel a shiver and the hairs will stand on end.
And then there is the symptom that only a man can fear -
A choking in the throat, and the crying of a tear.'

Well, the Doctor scratched his melon with a rather worried look.
His furrowed brow suggested that the news to come was crook.
`What is it Doc?' I motioned. `Have I got a rare disease?
I'm man enough to cop it sweet, so give it to me, please.'
`I'm not too sure,' he answered, in a puzzled kind of way.
`You've got some kind of fever, but it's hard for me to say.
When is it that you feel this most peculiar condition?'
I thought for just a moment, then I gave him my position:

`I get it when I'm standing in an Anzac Day parade,
And I get it when the anthem of our native land is played,
And I get it when Meninga makes a Kiwi-crunching run,
And when Border grits his teeth to score a really gutsy ton.
I got it back in '91 when Farr-Jones held the Cup,
And I got it when Japan was stormed by Better Loosen Up.
I get it when Banjo takes me down the Snowy River,
And Matilda sends me waltzing with a billy-boiling shiver.
It hit me hard when Sydney was awarded the Games,
And I get it when I see our farmers fighting for their names.
It flattened me when Bertrand raised the boxing kangaroo,
And when Perkins smashed the record, well, the rashes were true blue.
So tell me, Doc,' I questioned. `Am I really gonna die?'

He broke into a smile before he looked me in the eye.
As he fumbled with his stethoscope and pushed it out of reach,
He wiped away a tear and then he gave me this stirring speech:

`From the beaches here in Queensland to the sweeping shores of Broome,
On the Harbour banks of Sydney where the waratah's in bloom.
From Uluru at sunset to the Mighty Tasman Sea,
In the Adelaide cathedrals, at the roaring MCG.
From the Great Australian Bight up to the Gulf of Carpentaria,
The medical profession call it "Green and Gold Malaria".

But forget about the text books, son, the truth I shouldn't hide.
The rash that you've contracted here is "good old Aussie pride".
I'm afraid that you were born with it and one thing is for sure -
You'll die with it, young man, because we haven't found a cure.'

* * * * * *

So, you love trees.

Well, they love each other too!

WINTER TONES AND TEXTURES - *From Wild Blue Mountains*

There's much to be observed and enjoyed in Blue Mountains bushland, even during winter when many plants are preparing for a late winter to spring flowering.

Seen recently in bushland from Medlow Bath to Mount Victoria were:

- Yellow crustose lichen on eucalypt bark
- Banksia segment dropped by a cockatoo
- Insect gall on a eucalypt leaf
- Scribbly Gum Moth tracks on eucalypt bark
- Honeycomb surface on orange bracket fungus
- Sunshine Wattle (Acacia terminalis)
- Purple fungal pattern on eucalypt leaf
- Neatly packed Waratah seeds about to drop
- Colourful border on eucalypt leaf.

Walk at Paulls Road South Maroota – 26 August 2023

Jennifer Farrer

What a wonderful afternoon we had! Seven of us met for a picnic lunch at the South Maroota Community Reserve and a further six members met us to start the walk.

This may have been the shortest walk our Group has ever done in terms of distance walked but certainly not in terms of species encountered. In two hours and 400 metres, we recorded sighting 54 different species. Almost from the very start of the walk, we encountered plants that were not familiar to us and which required a lot of consulting of various resources to make definite identifications. The jury is still out on the exact species of some of the plants we saw.

Paulls Road is a well-known flora diversity hotspot and our experience has certainly confirmed this. As mentioned in the publicity for the walk several threatened species grow there. On Saturday we all saw several plants of *Grevillea parviflora var supplicans* growing beside the path. This low-growing spreading plant with small yellowish flowers has only been recorded growing at Berrilee, Glenorie, Arcadia and South Maroota. Another threatened species is *Micromyrtus blakelyi.* Several of us saw and photographed this plant but it was only after Ricki Nash got home and keyed out the specimen, she had taken that she realised what it was. See James Indsto's photo below.

As well as the new species, we saw plenty of familiar flowers including many *Grevillea buxifolia* and *Gompholobium grandiflorum* and some early flowering orchids such *Thelmitra ixioides* and *Caladenia catenata.* A complete list of the species sighted will be on our website.

If you decide to go out to South Maroota and check out this amazing walk for yourself, walk along the fire trail at the end of Paulls Road and after a short distance take the right-hand trail.

Many thanks to James Indsto for these wonderful photos:

Acacia brownii

Boronia floribunda

Boronia ledifolia

Bossiaea obcordata

Daviesia corymbosa

Dillwynia elegans

Gompholobium grandiflorum

Grevillea buxifolia

Grevillea parviflora

Grevillea speciosa

Hybanthus vernonii

Leucopogon lanceolatus

Leucopogon microphyllus

Micromyrtus blakelyi

Brachyloma daphnoides

Viminaria juncea ?

Lomandra multiflora

Thelymitra ixioides

Share your stories . . .

Your contributions to *Calgaroo* are always welcome.

If you have interesting observations of plants in the garden or the bush, photos, or any other news, please send them to me at itcox@bigpond.com for the next edition.

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In the spirit of reconciliation, we acknowledge the Traditional Custodians of our Country, the people of the Dharug Nation, whose cultures and customs have nurtured, and continue to nurture, this land since time immemorial. We honour and celebrate the spiritual, cultural and customary connections of Traditional Owners to Country and the biodiversity that forms part of that Country.

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Australian Plants SOCIETY NSW

Parramatta and Hills District Group

SECRETARY: *Jennifer Farrer apsparrahills@gmail.com 0407 456 577*

EDITOR: *Ian Cox itcox@bigpond.com*

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