

# AUSTRALIAN NATIVE PLANTS SOCIETY

## CANBERRA REGION (INC)



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Cover: *Dianella revoluta* with brown anthers, Sutton Hill TSR;

Photo: Jeanette Jeffrey

## Journal articles

The Journal is a forum for the exchange of members' and others' views and experiences of gardening with, propagating and conserving Australian plants.

All contributions, however short, are welcome and may be accompanied by photographs or drawings. The editor reserves the right without exception to edit all articles and include or omit images as appropriate.

Submit photographs as either electronic files, such as JPEGs, or prints. Set your digital camera to take high resolution photos. Please send JPEGs separately and not embedded in a document. If photos are too large to email, copy onto a CD or USB drive and send it by post. Please enclose a stamped, self-addressed envelope if you would like your prints returned. If you have any queries please contact the editor.

The deadline dates for submissions are 1 February (for March edition), 1 May (June), 1 August (September) and 1 November (December).

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## President's Report to the 2017 Annual General Meeting



The Australian Native Plants Society Canberra region (ANPS) has 286 memberships and taking into account some are family memberships, we have over 300 actual members. Each year, we lose and gain a few members so the number stays about the same.

At the May Members' Meeting, a special meeting was held to consider changes to our Constitution. The changes were unanimously approved by the members present at the meeting, namely changing ANPS' financial year to 1 July to 30 June and the membership year to 1 January to 31 December.

Throughout this year, many members have volunteered to run the society and organise activities and events.

Bob and Jean, Leslie, Linda, Roger, Warwick and Shirley have organised a program of nine monthly weekend field trips from the alpine areas in NSW, the south coast, the Blue Mountains to central west NSW.

Rosemary with dedicated event supporter, Jan and assisted by a team of volunteers continued their

weeds education activities and ran two Weed Swaps each on the north and south sides. This year the team handed out about 2500 ANPS member grown native plants in exchange for environmental weeds.

Bill organised the monthly Tuesday Daily Activity Group's activities. Members visited a number of private gardens, viewed the National Gallery of Australia's early Australian Landscape art collection, and had a special visit to a local Australian native plant nursery.

The Wednesday Walkers gave our members the opportunity to visit, learn about and record our local flora. The group organisers and leaders included Brigitta, Jeanette and Linda, the post-walk report writer Jo, and Gail put the Walk Report, photos and plant list on our website.

Nola and the Propagation Group gave our members the opportunity to learn about and practise propagating and to grow plants for our two sales. The group also maintained all our propagation facilities. We have shadehouses in Cook (minder Phil) and Queanbeyan (minder Ian) and we have the use of Peter Woodbury's in Googong

(minder Peter). We have hotbeds in Queanbeyan and Cook, minder Lyndal and Phil, respectively. And Jan maintains a constant supply of cutting bee materials.

Merren and our Plant Label Database team continued to research, describe and add plants to this very valuable asset — this list is also the basis for our book *Australian Plants for Canberra region gardens and other cool climate areas*.

Murray has continued to provide us with members' meeting Book Sales. The sales of our book *Australian Plants for Canberra region gardens and other cool climate areas* have gone very well. After an initial 2000 copy print in 2015 and a 2000 copy reprint in 2016, we will consider another reprint in 2018. The book is available at various outlets in Canberra and in addition this year we sold 126 copies at our Plant Sales.

Greg has continued to develop and maintain our IT facilities including our website, email addresses and the email *Bulletin* list and has provided valuable IT assistance to members. Led by Bill, we have begun a review and redesign of our website and associated applications to take full advantage of such a valuable asset.

Our other valuable asset is our membership database and this year

Ros welcomed our new members and maintained the database.

Our *Journal* editor, Gail and her backup Alison, produced four quarterly editions and *Bulletin* editor, Anthony, put out 11 monthly editions. Winifred and the Collation group packed up and sent out hard copies of the *Bulletin*, *Journal* and the *Australian Plants* magazine.

Our Plant Sales Coordinators, Ben and John together with the Sales organising team and many volunteers put on our successful Autumn and Spring Sales. The team produced plant labels, set out plants, provided advice, took money, and cleaned up at the end of the sale.

The Autumn Sale had 13,300 plants with 10,600 sold and 63 members volunteered over two days. The Spring Sale had 12,000 plants with 11,000 sold and 60 members helped over two days

Anne promoted our Plant Sales, especially to reach out to potential new customers, with her communication and media strategy and activities (including road signs) to inform a range of media outlets of our Sales. Alison and Naomi updated our Facebook site to also promote our sales. Many new buyers said that road signs and Facebook was how they found out about the sales.

And our sales would have been very much smaller without our member growers — Annabelle and Anthony,

Ben, Bill, Damian, Iris, John, John and Masumi, Katie, Linda, Naomi and Darren, the two Pauls and the two Phils.

Our 11 monthly members' meetings depend on our speaker organiser, Alison, who arranged presentations on garden design, plant conservation and conservation and environmental projects, specific flora and travels in the Australian landscape. Our meeting raffle relies on plant organiser Jenny and our propagation group and member growers who provided the plant prizes and all of you who bought tickets. Once again special thanks go to Peter, our before and after the meetings gate minder and our supper organiser.

Geoff is our Conservation Officer who wrote a number of submissions on our behalf. Geoff also represented us at the biannual ANPSA teleconferences, and together with Bill and Rosemary represented us at Conservation Council ACT. Brigitta continued to keep us informed on Australian Native Plants Society Australia (ANPSA) Study Group news.

ANPS had a 10-person Council this year: Alison, Ben, Bill, Geoff, Greg, John, Peter, Phil, Ros and me. We held 11 monthly meetings and did our best to keep the Society working and on track. Council has completed its review of the Plant Label Data-

base and Standards Committee and implemented a number of changes.

Council has awarded Life Membership to Roger Farrow, thus acknowledging his long term and broad range contribution to ANPS and to its aims and values.

This year Council has decided:

- To donate all the money collected from the past year's members' meeting raffle plus an additional amount to make it up to \$2000 to the Canberra Nature Map Project to support the Weed Location App, a component of the Project.
  - To donate \$10,000 to the Australian Flora Foundation (AFF) and have given our support to two grant applications — one on alpine daisies and another on myrtle rust. We have donated to the AFF previously.
- AFF fosters research into the biology and cultivation of Australian Plants and donations and government grants are distributed by the Foundation to approved research projects.
- To donate \$25,000 towards the building of a 'Terra Australia Garden' at the National Arboretum. The total cost is expected to be \$150,000.

ANPS Council saw this as a unique opportunity to promote Australian native plants to the



large number of visitors to the Arboretum and to educate and showcase how Australian native plants can be used in the everyday garden.

To date APS Victoria has donated \$20,000, ANPS Qld \$10,000 and APS NSW \$3000 (they are concentrating on supporting the Burrendong Arboretum).

The 'Terra Australia Garden' is one of seven gardens spread along a hillside from the main Visitor's Centre. ANPSA gained National Arboretum support to have one of these gardens be a wholly native ANPSA garden featuring attractive modern cultivars and hybrids of Australian native plants.

- To form a partnership with the Capital Region Landkeepers Trust and signed a Memorandum of Understanding (MOU) to establish jointly funded

scholarships and fellowships. Under the MOU, ANPS has donated an initial payment of \$10,000.

The Capital Region Landkeepers Trust aims to contribute to the management of this region's landscape by investing in people and projects.

- To donate \$2,000 to STEP. We have given financial support to STEP previously.
- To donate copies of our book *Australian Plants for Canberra region gardens and other cool climate areas* to all Carwoola Community members affected by the February Carwoola Fires.

Thank you to all of you who volunteer, participate and support the Society by being members. It has been another successful year.

*Lucinda Royston, President*  
9 November 2017



*Grevillea iaspicula*, Wee Jasper;  
Photo: Jeanette Jeffrey

## ANPSA 2018 Conference – Hobart

### Grass Roots to Mountain Tops

The next Australian Native Plants Society (ANPSA) Conference starts on Monday 15<sup>th</sup> January 2018 in Hobart. If you haven't booked yet, please do so well before the closing date, 15 December 2017.

There are also still spaces on the 'Alpine to Rainforest Tour'.

The Conference will be opened by Her Excellency Professor the Honourable Kate Warner, AC, Governor of Tasmania, who will also host a reception at Government House on Monday evening.

Wrest Point is a beautiful setting for the conference and we will be centred on the Boardwalk overlooking the Derwent River with the talks next door in the Wellington Room. The speaker program will occupy half a day with excursions on the other half.

After lunch at Wrest Point on Monday to Thursday and before lunch on Friday all participants will board buses and rotate around all five excursion sites, including the Royal Tasmanian Botanical Gardens, Mt Wellington, Inverawe Native Gardens, Kingston Wetlands, Tasmanian Bushland Garden and

the Lauderdale salt marshes with garden visits en route some days.

The AJ Swaby address will be delivered on Tuesday night by James Wood speaking about 'The Seed Bank Story'. The Conference Dinner is on Thursday.

The keynote speaker on Monday 15<sup>th</sup> January is Professor Jamie Kirkpatrick presenting 'Alpine Vegetation of Tasmania'.

Members who have already booked and are partaking in tours that include visits to Tasmania's national parks, for example Bruny Island and the Rainforest and Alpine Tour, need to purchase parks passes. These are \$12 per day per person, or \$30 for a pass valid for eight weeks. Passes will be available on the buses.

For more information about the conference, please visit [anpsa.org.au/conference2018](http://anpsa.org.au/conference2018) or email [asgapjan18@gmail.com](mailto:asgapjan18@gmail.com). And if you are considering attending ANPSA 2018, book accommodation as soon as you can. January is a spectacular but very busy time in Hobart.





## Wet and Frosty Foliage

Our garden after rain with the morning sun

Words by Ros Walcott  
Photos by Ben Walcott

One of the best pieces of advice I can give to those designing a garden is put your most interesting foliage nearest the paths so that you can enjoy it in every season. Great foliage is always pleasing, no matter what the weather or time of day or year.



*Eucalyptus gunnii*

Australian natives have marvellous foliage. The variety of shapes and display of colours is breathtaking. One of my particular garden pleasures is to walk around in the early morning or after rain to admire the beauties of wet or icy foliage.

**‘that unearthly clear shining after rain’ Colour, Dorothea McKellar**  
Eucalypt leaves have a special

relationship with rain and ice. Drops sit on leaves like jewels or drop along the margins like a necklace. See *Eucalyptus gunnii* (left) showing drops sitting on foliage and depending along the margins.

*Eucalyptus gregsoniana* has teardrop ice crystals at the end of each leaf and around the developing buds



*Eucalyptus gregsoniana*

(Ben’s hands were freezing as he took this shot and I heard a few complaints about cruelty to photographers.)



*Myoporum floribundum*

*Myoporum floribundum* has distinctive foliage in any weather, but is particularly attractive with droplets hanging from its fringe of fine leaves.

*Acacia cognata* ‘Lime Magik’ has fine, pendent, lime-yellow foliage which shows up well in the rain. *Hakea pachyphylla* has fine dark green leaves which give an overall array of



*Acacia cognata* ‘Lime Magik’

droplets. *Xanthorrhoea australis* or Grass Tree has a spray of fine green foliage which displays a pleasing arrangement of drops.

*Callistemon viminalis* ‘Hannah Ray’ has blunt drooping foliage which also shows off raindrops. *Acacia covenyi* or Bluebush is prized for its silver-grey foliage which contrasts nicely with the yellow of the flowerbuds. (see next page)



*Callistemon viminalis* ‘Hannah Ray’





*Acacia covenyi*

Even short leaves like those of *Correa 'Barossa Gold'* look more attractive in the rain.

*Callistemon ptyoides* has fine dark green leaves which suspend plenty of drops. Best of all in the rain, and our gardener John's favourite, is *Casuarina cunninghamii*, with fine linear foliage which seems to hold the raindrops captive in the light.

*Grevillea insignis* or Wax Grevillea has distinguished 'holly-like' blue grey foliage, very prickly and always attractively veined with the sun shining through it. Here it not only has raindrops, but also wet spider webs to add to the show. Overall sheen added to eucalypt leaves also increases their beauty, see *Eucalyptus citriodora*.

The buds of *Eremophila maculata* hold water. *Ricincarpus tuberculatus* 'Bridal Star' or Wedding Bush has delicate dark green linear foliage with red stems. *Eucalyptus pyriformis* or Pear-fruited Mallee cradles raindrops on its leaves.



*Correa 'Barossa Gold'*



*Callistemon ptyoides*



*Grevillea insignis*



*Eucalyptus citriodora*



*Eremophila maculata*



*Ricincarpus tuberculatus*



*Eucalyptus pyriformis*



*Acacia blayana*

*Grevillea 'Elegance'* has thin, elegant dark green foliage which always looks terrific, but is particularly showy in rain.

Some foliage is amazingly shiny and looks even better in the rain. *Pandorea 'Mt. Macedon'*, and *Coatesia paniculata* have shiny foliage at any time, but it is enhanced by rain. *Acacia blayana* has elegant foliage, but with rain and buds becomes a feast for the eyes.

A version of this article first appeared in the Garden Design Study Group Newsletter No 100 November 2017

# Life Membership Dr Roger Farrow

## Precis of Nomination of Dr Roger Farrow for Honorary Life Membership of the Australian Native Plants Society Canberra Region Inc

Roger has had a long-standing involvement with our group since joining in 2002, holding the management positions of President and Vice-President as well as accepting a variety of roles which required forward planning, researching and regular availability over many years.

When summarising Roger's commitment there seem to be at least two main strands. There is Roger as the convenor of monthly field trips for 10 years and taking on the responsibility of coordinating the Wednesday walks.

These regular and more practical experiences — over the years many trips and excursions indeed — were always educational, raising awareness and encouraging participants to advance their own botanical knowledge of native plants. Roger generously shared

— and still does — his personal knowledge and identification skills. Apart from fostering cohesion within the local ANPS group these activities also stimulate and promote interest in native flora as it may apply in horticulture and our home gardens.

Wherever possible Roger followed up by writing articles for the *ANPS Journal*, regularly providing reports with high quality images on the website and giving talks at ANPS meetings.

As entomologist Roger brought valuable qualities such as professional knowledge and scientific expertise to ANPS. Therefore the other component in Roger's contribution to ANPS reflects this background.

As a result he has developed material that meets a high botanical standard and has considerably raised the profile of the local ANPS group.

This includes his collaboration with other organisations and authors in publications such as the *Field*



Roger Farrow with his partner Christine Kendrick (lt) and Brigitta Wimmer (rt) after receiving his award

*Guide to the Native Trees of the ACT* (published by the National Parks Association of the ACT Inc) and the new book *Orchids of the Southern Tablelands* that ANPS has agreed to financially support.

He is also currently reviewing the *Four Wildflower Walks in the Perisher Region of the Kosciuszko National Park* to incorporate new and relevant details and species. Additionally, Roger was instrumental in developing the plant profile on the locally occurring Pomaderris, a wide-spread but difficult to identify species that we often encounter in the field.

This summary doesn't adequately convey the research, field investigations and continued determination that Roger needed to successfully guide programs and conclude projects over many years.

We have cited some fairly prominent and obvious examples of Roger's input. However, in many cases the

benefits are interwoven and much broader.

In using his network of scientific sources and/or relevant government authorities to exchange or disseminate botanical information we must recognise the value of access to material that may not have been available or not easily accessible to us nor previously in the public sphere.

He has given us a forum for obtaining botanical information on native flora as well as its potential use, the possibility of informal discussions and raised the general awareness of the importance of native flora, its habitat and Australian natural bushland.

His continued input into advancing the aims and objectives of ANPS has been greatly appreciated by many members. We are therefore extremely pleased that Council has decided to award Roger Farrow an Honorary Life Membership of ANPS Canberra Region.

## Nominated by:

Brigitta Wimmer, Ros Cornish, Linda Spinaze, Jo Walker, Shirley and Warwick Daniels.  
June 2017

*Council approved the nomination and has since awarded life membership to Dr Roger Farrow\_ed.*



# Trees

Words and photos: Masumi Robertson unless otherwise stated

The ANPS Canberra plant label database describes trees as tall single stemmed woody plants, over six metres high. Some multi-stemmed mallees are also trees.

Trees form a canopy for gardens and often provide the main focus points. In contrast to plants in other classes, we usually have space for only a few trees, or even just one in smaller gardens. Being canopy plants, they provide protection from frosts for plants under them, thus they are often planted first in a bare block. Here are 10 hardy plants selected from the many hardy trees in our book.

## Acacia floribunda



A number of wattle species are small to medium trees, which are quick growing and fix nitrogen in the soil. The other side of quick growing is that these plants are often short lived, from 10 to 20 years.

Our surviving *A. floribunda* plants have been severely pruned every few years to rejuvenate them. This also keeps the plants a manageable size and producing lots of flowers. This technique may not work for all wattles, but we have been successful with several species (*A. boomanii*, *A. bubida*, *A. fimbriata* and *A. floribunda*). Without pruning, *A. floribunda* grew into a tree with an interesting trunk.



*Acacia floribunda* displaying an interesting trunk

## Acacia pycnantha



Photo: Martin Butterfield

This wattle is the Australian floral emblem, the golden wattle. Its golden ball flowers beautifully contrast the green foliage. Although the plant is said to grow to 10 m high, it is usually a much smaller tree, often a large shrub.

## Banksia integrifolia



One of the largest Banksias in our database, growing to 10 m in height. It occurs along the east coast from southern Victoria to Queensland, so it is best to plant a selection from a cooler area. Our tree is over 20 years old and despite being planted in an exposed, hard clay, full sun and hard frost site, it has grown slowly over the years. It is also pruned constantly by parrots.

In a more favourable site, especially with more water, it is long flowering from autumn to winter, decorated by many yellow flowers.

Another tree Banksia is *B. serrata*, but ours is a much branched shrub less than two metres high after 15 years. In contrast, Barbara's *B. serrata* grew to about 10 m in height.

## Callitris oblonga





The smallest *Callitris* in our database with a common name, pygmy cypress pine. If you have a small space, but want a native conifer, this plant will fit the bill. It is an upright and tidy tree 3–5 m high.

One of ours is in full sun, so it is remaining more compact and shorter than the second one in part shade with a more open habit. It does not have showy flowers, but its blue green leaves are attractive all year round. If you have more space, the local species, *C. endlicheri* is very hardy.

### ***Eucalyptus cinerea***



There are a number of local *Eucalyptus* species to choose from. This one is a mid-size tree, used extensively in landscaping around Canberra. Its grey-green leaves are attractive and are used in floral arrangements. It has relatively large white flowers followed by larger fruits, which are favoured by Gang gang cockatoos in our garden.

### ***Eucalyptus macrorhyncha***



A local eucalypt with furry, fissured bark, red stringybark is a medium sized tree 15 to 20 m high. Our trees flower in November to December, covering the ground below with white stamens in good flowering years. Its brown bark is favoured by tree creepers.

### ***Eucalyptus pauciflora***

A medium tree to 15 m high, it can withstand the cold, growing in the snow in its native habitat in the mountains. In addition to the attractive white bark, often coloured in reds and browns, the newer branches are bright red, a beautiful contrast to the dark green leaves. Around Canberra, the Snow Gum Heritage Site in the Aranda Bushland frost hollow contains the last remnant of these trees.

Other snow gum species which once were subspecies of *E. pauciflora* include: *E. gregsoniana*, *E. lacrimans*, and *E. niphophila*. Worth trying is a small snow gum cultivar *E. p.* 'Little Snowman'.



*Eucalyptus pauciflora*

### ***Eucalyptus pulverulenta***



Another small eucalypt with silver-grey leaves and large white flowers. It can grow with a single trunk, or if coppiced when young, grow as a mallee. The silver foliage is particularly attractive.

We do not have this plant in our garden, but it is a feature front garden plant for a friend of ours. Similar to *E. cinerea*, the branches are used in floral arrangements.

### ***Eucalyptus rossii***







*Eucalyptus rossii*

Scribbly gum is a large gum tree to 25 m high. It has a beautiful white trunk which is marked with scribbles. This is a dominant tree species on Black Mountain. Another local white trunked gum tree is

*E. manifera*, brittle gum. Both of these species can have scribbles, but *E. rossii* is the tree with “wrinkles under the armpits”. These and other large gum trees are suitable for large city blocks and rural properties.

### **Melaleuca linariifolia**

This paperbark is a showy small tree to eight metres high. You may have seen the beautiful specimen across the lawn from the ANBG café. It can form a dense screen in a sunny spot and while it flowers best in a moist site, it can survive periods of dry. The masses of white flowers attract many insects, which in turn attract birds.



*Melaleuca linariifolia*

## Vibration pollen collection at flowers of Native Lasiandra, *Melastoma affine* (Melastomataceae) and the Darwin hypothesis

Words and photos by Roger Farrow

The native lasiandra, *Melastoma affine* (Melastomataceae), is a common pioneer shrub of the wet tropics and subtropics and is a volunteer in my garden in the Daintree where we spend our winters.

It is distinguished by its attractive mauve flowers that are present for much of the year. It has been confused with *M. malabathricum* but the latter has longer sepals and fewer flowers in the terminal clusters. *M. affine* is common throughout south-east Asia from where it probably colonised northern Australia, possibly at the peak of the last ice age when a land bridge to Papua/New Guinea existed.

The nectarless flower is unusual in that it has two types of stamens (heteranthy): one central set of five with pale filaments each terminating in conspicuous yellow anthers and a second, outer set consisting of

curved pink filaments branching from yellow forked structures and terminating in purple, cap-like anthers (1).

Both types of anther release pollen through apical pores (poricidal anthers) when stimulated by thoracic vibration from a visiting bee, the so called **buzz pollination** mechanism. In most plants, the anthers split longitudinally to expose the pollen for collection. In *Melastoma* a simple style projects between the outer stamens.



1. Flower of *M. affine* showing two types of stamens with poricidal anthers and the stigma & style (ctr rt)



Individual plants are self-compatible but the individual flowers are not (autogamy) and require pollen transfer between flowers by a carrier to ensure fertilisation. Although the central anthers are yellow, the pollen grains contained inside are white.

Solitary bees visit these flowers to collect pollen to provision their larvae with food at their nests. The pollen is usually packed in baskets of bristles (scopae) on the bee's legs or on the underside of the abdomen for transport but in hairless bees it is stored in the crop.

There is no guarantee that any of the collected pollen will land on the stigma of another flower to ensure cross-pollination, unless some loose pollen on the bee vector is deposited on the stigma when the bee brushes against it.

Most bees are particularly attracted to the yellow of the central anthers because this colour is thought to indicate a good pollen source, but it is not clear what attracts them to land on the purple outer anthers.

Over a two-week period, I recorded four different solitary bee species collecting pollen from *Melastoma* flowers at the edge of rainforest at two places in the Daintree: one at Cape Tribulation, at the Dubuji picnic, and one at Diwan in the garden at my property (2).

No honeybees were seen on the flowers although they are present in low numbers in the area. They are not buzz pollinators. One blue-banded bee, *Amegilla cingulata*, was seen flying around the flowers of the *Melastoma* but not landing. I also saw several weevils, *Baris* sp., and

a bush cricket nymph, *Caedicia* sp., feeding on the central anthers.

The first species observed was *Palaeorhiza disrupta*, a wasp-like, hairless, short-tongued bee in the plasterer bee family (Colletidae: Hylaeinae). It stores pollen in its crop and constructs its nests in natural holes in stems and twigs. This species is endemic to tropical North Queensland and is thought to have arrived here from Asia via the land bridge at the peak of the last ice age.

The etymology of the genus means 'ancient root' from the Latin and the species was originally thought to be the ancestor of the modern bees but molecular studies suggest that Colletidae are a later derived group, although *Palaeorhiza* would be ancestral within this group. This species was observed moving rapidly between the two types of anther and extracting pollen (3a, 3b) at both Dubiji and Diwan.



2. *Lasioglossum* sp. (lt) and *Palaeorhiza disrupta* (rt) collecting pollen at Diwan. Note the white pollen contained in the basket of the hind leg of the *Lasioglossum*. The *Palaeorhiza* stores pollen in its crop.



3a. *Palaeorhiza disrupta* collecting pollen at the central anthers. The forked structures are at the join between the two sections of the outer filaments. The stigma and style extends to the left. One of the outer anther caps and terminal pore is shown at the bottom of the picture.



3b. *P. disrupta* collecting pollen from an outer anther

The second bee observed on *Melastoma* in my garden at Diwan was *Mellitidia tomentifera*, a ground-nesting, short-tongued, solitary bee in the family Halictidae, that has only been reported from the Cairns region.

Again, it was observed moving rapidly between the two types of anthers collecting pollen (4a, 4b). The pollen is stored for transport between bristles (scopae) on the hind legs and some supplementary bristles on the side of the thorax. This bee was also seen visiting other flowers in the garden, notably *Cuphea* sp (exotic).



4a. *Mellitidia tomentifera* collecting pollen from the central anthers



4b. *M. tomentifera* extracting pollen from the outer anthers and inducing pollen discharge. The stigma is to the right of the bee.

The third and commonest bee observed at Diwan was a species of *Lasioglossum* (*Chilalictus*) also in the family Halictidae. This small bee invariably landed on the outer rather than the central anthers (5a) and spent most of its time on the former collecting pollen. It was obviously successful at this task as it could be seen transferring pollen to its scopae on the hind legs. This bee is also suspected of being a destructive pollen collector, biting into the closed anthers that then release a cloud of pollen (5b).



5a *Lasioglossum* (*Chilalictus*) sp. attempting to extract pollen from the terminal pore of the anther. The stigma and style are at top right.



5b. Pollen cloud emitted from an anther bitten into by the *Lasioglossum* bee.

The fourth bee seen on the flowers at Diwan is possibly a species of *Homalictus*, a small, ground nesting bee in the family Halictidae but it was not observed buzz pollinating (6).



6 ? *Homalictus* approaching anthers

The central anthers are often depleted of pollen by not only bees but by other insects feeding destructively on the anthers, including grasshopper nymphs and weevils (7a,b), shown here in my garden. The weevils were very mobile flying from flower to flower and could be involved in cross pollination although pollen grains were not seen on their smooth bodies.



7a. Juvenile bush cricket (?*Caedicia* sp) feeding destructively on the central anthers



7b. Weevil, *Baris* sp., feeding on the central anthers

In a study of *Melastoma* pollination undertaken in the Paluma area near Townsville by Gross (1993) eight species of bee visitor were identified, of which only four: two blue-bandeds (*Amegilla* spp.), one carpenter (*Xylocopa* sp.), and one *Nomia* were involved in pollen transfer between the outer stamens and stigma, by buzz pollination.

The large bees in the genera *Xylocopa* and *Amegilla* were not observed visiting *Melastoma* in the Daintree during the observation period but may be more active at other times of the year.

While I was not able to view the ejection of pollen from the terminal pores of the outer anthers during buzz pollination, several studies have confirmed that the bees are sprayed with pollen in response to the vibration of the thorax and wing muscles. This has been mimicked with a tuning fork (Wee 2014).

It has also been shown that this pollen, rather than the pollen from



the central anthers, is involved in transfer to the stigma and cross-fertilisation because some is placed out of grooming reach of the bees involved (Luo et al 2008). It is not clear what is attracting bees to the outer anthers where no pollen is visible unless there are odour or nectar attractants involved.

Charles Darwin was the first to discuss the contradiction between the supply of pollen as an attractant and food for flower-visiting insects and the need to ensure that some pollen was used in fertilisation.

He proposed that there could be a 'division of labour' among stamens between those providing food and those providing pollen for reproduction, the situation found in *Melastoma*. The function of the two kinds of stamens in members of the Melastomataceae was recognised as early as 1882 by Henry Forbes (Forbes 1882), coincidentally the year of Darwin's death.

Other Melastomataceae, including native plants in the genera *Medinella* and *Osbeckia* and exotics including *Dissotis* (Spanish shawl) from Mexico and *Tibouchina* from Central and South America (both introduced garden plants in Australia) also have dimorphic stamens, presumably with the same function, but pollen collection has not been studied in these species, as far as I am aware.

Other native members of this family in the genera *Memecylon* (poor flower), *Otanthra* (bush strawberries) (8) and *Pternandra* (cursed shade) have only one type of porocidal anther.



8. Flower of bush strawberries, *Otanthra bracteata*, showing poricidal anthers on each side of a central pistil

Although insects are often described as pollinators, they are fundamentally pollen harvesters and feeders or are attracted to flowers by other attractants such as nectar, scent and other chemical odours. They are not altruistic pollinators *per se* and the act of pollination occurs as a result of often chance contacts between pollen-covered parts of an insect and the stigma.

The complex behavioural interactions and morphological adaptations between flowering plants and their insect visitors, one of which is described here, are often described in terms of co-evolution but I believe it is better interpreted as a mutual exploitation, as suggested by Westerkamp (1996).

I would like to thank my colleague Michael Batley for identifying the bees and for helpful discussions on buzz pollination, bee biology and evolution.

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*Chrysocephalum apiculatum* (foreground) and *Acacia melanoxylon* (mid range)

Words and Photos: Linda Spinaze

On the 27th September, the ANPS Wednesday Walkers spent the morning and early afternoon perambulating around the Kathner

Street Nature Trail, with an extension along the Centennial Trail to admire and have lunch by the new anniversary seat.





Chough sitting on a nest in the tree tops

The day was warm and sunny, and we had clear views of the Brindabellas and also a clear view of the chough sitting on the nest.

Due to the very hot Saturday last weekend, many plants had suddenly burst into flower. Most amazing was the *Eucalyptus polyanthemos* (Red Box) trees. Some of these trees had almost disappeared behind a haze of cream flowers.

And the *Lissanthe strigosa* subsp. *subulata* were thick with white blooms, with one specimen displaying beautiful pink flowers.



*Lissanthe strigosa* subsp. *subulata* white



*Eucalyptus polyanthamus* in flower



*Lissanthe strigosa* subsp. *subulata* pink





*Eucalyptus nortonii*

Also noticable were the *Eucalytus nortonii* that had vibrant enamel-red branchlets.

Some plants were obviously distressed by the long, dry winter conditions, especially the *Cheilanthes* ferns, the *Dodonaea viscosa* ssp *angustissima* and the *Indigofera adesmiifolia*. On the other hand, the *Indigofera australis* looked green and healthy, as did the patch of *Pomederris angustifolia*.

A bearded dragon totally ignored our efforts to photograph him warming himself up on a rock after the winter cold.

There was prolonged discussion amongst some of us regarding the identity of the *Acacia doratoxylon* —



*Indigofera australis*



Bearded dragon

or was it *A. floribunda* or *A. longifolia*? Our different sources seemed to be in conflict. Hopefully the Australian National Botanic Gardens plant identification person will be able to make some sense of our samples.



*Erodium crinitum*



# *Leucopogon fraseri* revisited at Tilembeya

Words and photos by Roger Farrow

In the September edition of the *Journal* in 2008 (Vol 15 No 7) I wrote a short article on the discovery of *Leucopogon fraseri* flowering in secondary native grassland on my property "Tilembeya", south of Queanbeyan in the Tinderry Range foothills at 850m altitude.

As I pointed out in that article, this is not an uncommon species in our area but it is often overlooked when not in flower because of its small size and dwarf habit.

At the time I made the mistake of fencing it off from the impact of heavy grazing pressure from kangaroos because this allowed native grasses to take off and smother the plants, so the following year I removed the enclosure.

This year the combination of a dry winter and increased kangaroo grazing has meant that much of the grassland is as short as a bowling green except in areas of *Poa* tussock. Therefore, I investigated how my patch of *L. fraseri* was holding up and what insects were pollinating the flowers that appear in late September–early October.

Nine years after the first observations I found that this dwarf shrub still occupies the same area of approximately 25 m<sup>2</sup> so it is clearly a resilient plant. It was also flowering well and obviously resistant to heavy kangaroo grazing pressure. I also conducted a more thorough search of similar grassland habitat across my property without finding any other populations.



*Leucopogon fraseri* habitat patch at Tilembeya. Not much to see here!

Now to the flower visitors. The only insects that I saw on the flowers were feral European honeybees, *Apis mellifera*, and instead of flying from flower to flower, they were crawling across the plants to access the low-growing flowers.

I was hoping to see native bees at the flowers and to check further I swept a



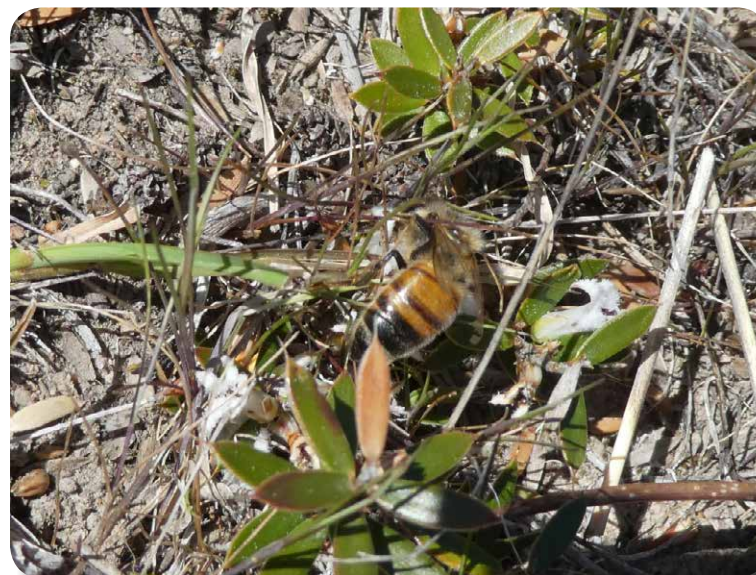
Close up of plants that are up to 5 cm in height

net across the ground over the flowers and that picked up only honeybees. However, it does demonstrate the enhanced abilities of honeybees to detect such a small patch of insignificant flowers such as these.

Why the honeybees bother with such a small food source is a puzzle when there is an orchard about 40 metres away where the flowering fruit trees are presently humming with thousands of feral honeybees.

I did observe large numbers of native bees in the genera *Exoneura* and *Lasioglossum* feeding at flowering shrubs, including *Leucopogon fletcheri*, on a rocky hillside nearby, but the bare open grassland, where the *fraseri* is found, may not be an attractive foraging area for native bees.

I have never seen the plant producing fruit and it is more likely that it relies on vegetative reproduction to spread through its suckering habit.



A feral honeybee collecting nectar and pollen from *L. fraseri*



## Wednesday Walk to Mount Aggie Brindabella National Park



View from the top of Mount Aggie

Words: Jo Walker  
Photos: Brigitta Wimmer

[In November the Wednesday Walkers] met at Weston and travelled via the Cotter Road to Brindabella Road which took us up into the mountains along a winding route. Our first stop, for morning tea, was at Bull's Head where several tall *Pimelea pauciflora* were decorated with lots of tiny yellow flowers.

Much more noticeable were the *Daviesia mimosoides* (Bitter Pea) growing all along the banks of decomposing sedimentary rocks that bordered the roadside. At the lower end of the road, where our journey began, they were already



*Daviesia mimosoides*

forming seed-pods. But higher along the winding road their stems were heavy with clusters of yellow and brown perfumed flowers. Further up, another pea plant, *Bossiaea foliosa*, replaced the *Daviesia* with



*Bossiaea foliosa*

an equally outstanding display of bright golden flowers.

Adding some contrast were several large *Olearia lirata* bushes, their clouds of white flowers noticeable amongst the tall eucalypts. Some *Pomaderris aspera* were flowering and patches of bright pink at ground level indicated the presence of *Tetratheca bauerifolia*.

There were some *Grevilleas* too — *Grevillea oxyantha* and *G. diminuta* had very few flowers on them, but further up the road a few stands of the grey-foliaged *G. lanigera* were showing their pink and cream flowers.



*Olearia lirata*



*Tetratheca bauerifolia*



*Grevillea diminuta*



*Grevillea lanigera*





Panoramic view from Mount Aggie

We finally reached the Mount Aggie carpark and started our walk along the track to Mount Aggie through what had been a forest of Alpine Ash (*Eucalyptus delegatensis*) and Snow Gums (*E. pauciflora*) before the 2003 fires.

Alpine Ash is a fire-sensitive species and this area was burnt in that catastrophe so most of the tree re-growth seemed to consist of Snow Gums. Many of the original large old trees that were killed by the fire have fallen to the ground after succumbing to the strong winds experienced at that altitude.

Beneath the *Eucalyptus pauciflora*, the understorey was mostly brilliant yellow *Bossiaea foliosa*, although we did find one cream variant growing amongst the more gaudy surroundings.

There were a few other shrubs beside the upward-leading trail. The tallest were a few *Acacia melanoxylon* (Blackwood Wattles), with the lower vegetation consisting of *Persoonia subvelutina* (Velvety Geebung), *Coprosma hirtella* and *Lomatia myricoides*. A little further

on, we came to an open rocky area a little way below the peak where there were a few *Oxylobium ellipticum* and, in places, a fairly dense understorey of *Leucopogon fletcheri*, some of them still flowering.



*Leucopogon fletcheri*



*Leucochrysum alpinum*

In the more open areas, the robust mountain form of *Leucochrysum albicans* were flowering. Some flowers had not yet opened and appeared as dark maroon buds amongst the more advanced yellow-centred white flowers fringed with maroon.

There were delicate green clumps of *Rhodanthe anthemoides* scattered amongst them, but they had a week or two ahead of them before flowering time. And, spread across the ground at the edge of this area were patches of *Goodenia hederacea* var. *alpina* showing a few golden flowers.

By this time we could see the peak of Mount Aggie and made our way up there for lunch. The peak consists of upturned flaky grey slate-like sedimentary rock forming a foreground of dark jagged edges pointing up to the sky against a backdrop of distant hills stretching across the horizon.

There were lots more *Leucochrysum albicans* and *Rhodanthe anthemoides* there along with a few *Tetratheca bauerifolia*. Scattered amongst the rocks, there were *Pelargonium australe* with one or two of them bearing a few pale pink flowers.

And, it was a suitable habitat (exposed rocky areas at high altitudes) for *Leionema lamprophyllum* which we found in profusion amongst the highest



*Leionema lamprophyllum*

outcrops. A few were still showing some white flowers amongst their small and shiny dark green leaves, but most were developing a dense load of dark red seed capsules.

It was one of those places that makes you reluctant to leave, but we finally turned towards home with our memories of so many beautiful plants amongst the magnificent scenery of the mountains.



*Microseris lanceolata*



# Study Group Notes

By Brigitta Wimmer, Study Group  
Liaison Officer, ANPS Canberra Region

## Acacia Study Group

Newsletter 138, September 2017

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- From Members and Readers
- Don Perrin
- Common Names of Acacias
- More on *Acacia phasmoides*
- *Acacia gunnii*
- *Acacia amblygona*
- Acacias in Namibia 2016/17
- Acacias in the News
- Seed Bank
- Study Group Membership
- Wattles and Hay Fever Information Sheet

## Correa Study Group

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- Shirley's Progressive Pruning
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- Correa Crawl Photos
- My Experience Growing Correas
- How Have Your Correas Been?
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## Dryandra Study Group

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- Highs and lows of a short Dryandra trip
- Verge clearing and native plants (Notes from the editor)
- Senseless destruction
- Dryandra type location destroyed
- Letter from the Netherlands
- A short history of the Cranbourne Dryandra plantings

## Eucalyptus Study Group

Newsletter 69, July 2017

- Eucalypts in the Melton Botanic Garden
- Abstract — Designing food and habitat trees for urban koalas: identifying short ecotypes of *Corymbia intermedia*
- Abstract — Genetic structuring in the spotted gum complex (genus *Corymbia*, section *Politaria*)
- Deciphering the underground chemical dialogues between *Eucalytus grandis* and fungi
- Abstract — Phylogenomics of the green ash eucalypts (Myrtaceae): a tale of reticulate evolution and misidentification
- Eucalyptus oil distilling a major local industry by 1890s Part 1
- Highlands History: Eucalyptus oil industry Part 2

- Abstract — Floral morphology of *Eucalyptus leucoxylon* (Myrtaceae) facilitates pollination by lorikeet (Aves: Psittacidae) tongues
- The curious relationship between the Cadaghi tree and native stingless bees
- Abstract — Designing food and habitat trees for urban koalas: tree height, foliage palatability and clonal propagation of *Eucalyptus kabiana*
- Species profile: *Eucalyptus kabiana*, Euclid
- In search of Australia's biggest tree: How you can help identify giant plants

## Fern Study Group

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- Program for the Sydney Region
- Excursions and General Report
  - Fern Meeting at Arafura Street, April 2017
  - Fern Outing to Brisbane Koala Bushland
  - Brisbane Daytime Group excursion to Mt Mee, Feb 2017
  - SEQ Fern Study Group Meeting, Oct 2016
  - Gold Coast Regional Botanic Gardens, June 2017
  - SEQ Excursion to Binna Burra (Tullawallal Circuit), May 2017
  - Excursion to Tenison Woods area, Brisbane Forst Park

- Financial Statement
- ANPSA Fern Study Group Fees 2017–2018

## Garden Design Study Group

Newsletter 100, November 2017

- Leader's Comments
- One Hundred Newsletters
- Correspondence
- Meehan Native Cottage Garden, Qld
- Wet and Frosty Foliage, Canberra
- Nicky Zanen, Vic
- GDSGQ Meeting Notes
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## Grevillea Study Group

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## Isopogon & Petrophile Study Group

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- Plant profile — *P. anceps*
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- WA study trip October 2017
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- Cutting success at the Banksia Farm
- What a pearler — *Isopogon formosus* 'Pink Sparkler'
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## Hakea Genera Study Group

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*Kunzea parvifolia*, Wanniasa Hills;  
Photo: Gail Ritchie Knight

## Australian Native Plants Society, Canberra Region Inc.

The aims of the Society are to foster the recognition, conservation and cultivation of Australian native plants.

Meetings are held at 8 pm on the second Thursday of each month, February to December, in Canberra. Visitors are always welcome.

Day and weekend field trips to locations of outstanding botanical interest are organised on a regular basis.

The Society publishes a Bulletin in all months except January, and this quarterly Journal in March, June, September and December.

Website: [nativeplants-canberra.asn.au](http://nativeplants-canberra.asn.au)

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Full membership including Bulletin, Journal and Australian Plants — \$50 (\$33\*)

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\* Concession rates apply to pensioners (Centrelink), full-time students and unemployed.

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**Back cover:** *Bossiaea foliosa* & Wed Walkers, Mt Aggie, Brindabella National Park; Photo: Brigitta Wimmer



