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Cover: *Banksia grandis* shoots; Photo: Glenn Pure

## 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 electronic files, such as JPEGs. 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. Contact the editor for postage details. Please enclose a stamped, self-addressed envelope if you would like your prints returned. If you have any queries please contact the editor.

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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

*By Ben Walcott*

I would like to thank all those volunteers who came to help setup the plant sale on Friday and the sale on Saturday in March. Everything went smoothly and we had a very successful sale. We had about 12,500 plants on the ground and 85% of them were sold which is a very good result for an autumn sale.

Thanks particularly to Linda Tabe who is the new Plant Sale Coordinator and to Anne Campbell who did the publicity for the sale. Anne has been doing plant sale publicity for us for many years and this is her last sale. Many thanks to her for all her dedication.

Thanks also to the propagation group who produced a large number of plants so that the income from their sale exceeded our income from the member growers. After all the expenses, the profit from the sale was about \$20,000 which helps keep our membership dues low and allows us to support the Society's activities and other organisations.

For example, Council at its April meeting agreed to donate \$3,000 to the Canberra Nature Map, a project we have previously supported, so that they can continue to expand their operation.

In the past, we have received a few copies of the journals of the other regional societies. These have been useful for our Journal editor and extra

ones have been available to members. At the recent Conference in Tasmania last year, it was agreed that over time regional societies would distribute their journal electronically rather than in printed form.

Tasmania, Victoria and Western Australia have already stopped sending us paper copies and now send us electronic files. These journals will be loaded into the Members Area of our website under 'Journals' so that all members can read them.

Council at the April meeting agreed that we will follow that example. We will send our Journal out electronically asking regions to put it into their members areas and we also will put it up on our Website in the Members Area. I suspect that in the future, we won't be printing Journals but rather will have a Journal section in the website where articles are posted.

At present, we do send an electronic copy of our Journal to Melbourne CIT who run a service called 'Informit'. This service allows subscribers, including students and faculty, access to the articles and also sells articles to non-subscribers. We receive a modest royalty from these sales but it does show that the articles in our Journal do get read and are useful to the public.

## Meritorious Service Awards

By Ben Walcott

Several years ago, Bill Willis suggested that Council acknowledge members who have freely given exceptional support, practical service and commitment to the life of ANPS. The concept was that members could nominate candidates to Council who would make the final determination. Candidates would have to satisfy one or several of a set of criteria:

- Undertaking a leadership role in pursuit of the objects of the Society
- Regularly attending, assisting and supporting the Society's good works and activities in a selfless manner
- representing ANPS in the discussion and exchange of ideas on the horticulture of Australian native plants including their cultivated varieties
- Improving and promoting Australian native plants as garden subjects
- Observing, promoting and supporting the preservation and conservation of Australian native plants and their habitats
- encouraging interest by members and others in propagating, planting and supplying Australian native plants to the general public
- recording faithfully all information received by the Society on the horticulture of Australian native plants and to publishing such information from time to time
- promoting the research and study of Australian native plants



Ben Walcott with Jenny Campbell and Anne Campbell after receiving their meritorious awards; Photo: Lucinda Royston

- sponsoring or engaging in scientific research on Australian native plants.

At our members meeting in May, Council announced the first two of these awards, one to Anne Campbell and the other to Jenny Campbell.

*The award was presented to Anne recognising her very valuable contribution to ANPS especially in managing the promotion and publicising of the society's bi-annual plant sales thus ensuring their success.*

*The award was presented to Jenny recognising her very valuable contributions to ANPS and in particular for her years of organising the raffle plants and serving on the gate for plant sales.*

The winners were presented with a certificate of the award and a gift voucher for a book from Murray's table. Many thanks to both of them for their dedicated service to ANPS.

## Resupinate or non-resupinate That is the Question



*Lobelia purpurescens*, Blood root

Text and photos by Roger Farrow

**Resupinate:** derived from the Latin **resupinus**, meaning inversion of parts (Oxford dictionary). Its use is first recorded in the 17th century, but nowadays it is only used in a botanical context and refers to flowers and leaves in which the petiole or pedicel is twisted during development so that the flower or leaf is rotated by 180°. The rotation may be clockwise or anti-clockwise.

A **non-resupinate** leaf or flower is one in which no rotation occurs. Resupination is confined to zygomorphic (asymmetric) flowers. Most examples of resupination of flowers are seen in the orchids, lobelias

and isotomes. Unless plant groups contain both non-resupinate and resupinate forms it is difficult to detect.

### Orchids

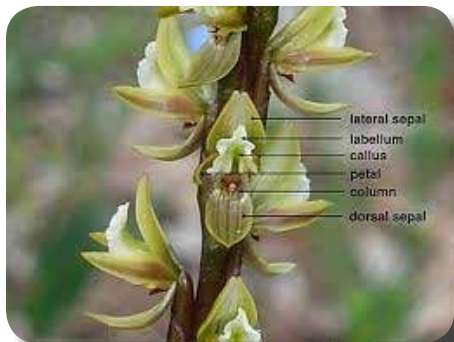
Orchids have three petals and three sepals. One petal is modified to form the labellum and is typically quite different from the other two. At the start of flower development the labellum occupies dorsal or **adaxial** position. During development it may either maintain its dorsal position (**non-resupinate**) or rotate to a ventral or **abaxial** position (**resupinate**).

In some non-resupinate orchids, the labellum stands up vertically on the top of the open flower above the column

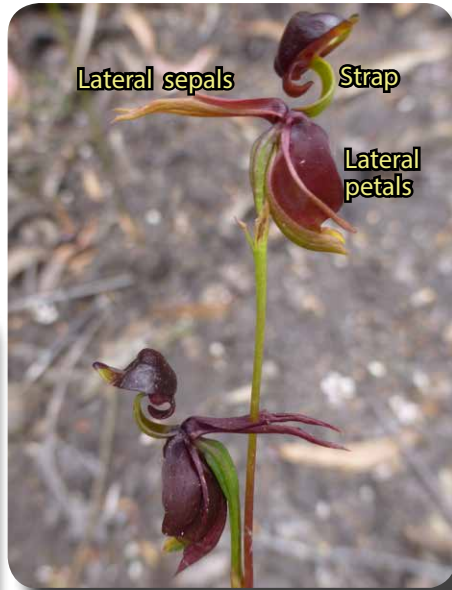
whereas in others it may bend (but not twist) by up to 180°. A minority of orchids are non-resupinate and includes those in the genera *Prasophyllum*, *Caleana*, *Corunastylis* (*Genoplesium*), *Cryptostylis*, *Gastrodia* and *Thynninorchis* that occur in our area.



*Prasophyllum retroflexum*, Congested leek orchid, Long Plain



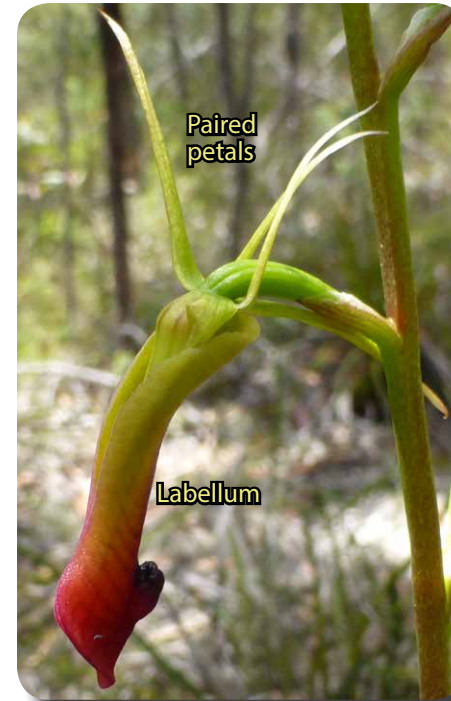
*Prasophyllum* flower, from internet



*Caleana major*, Flying duck orchid, Old Wool Trail



*Corunastylis* (*Genoplesium*) *superba*, Pink midge orchid, Mongarlowe showing bristly labellum under the fleshy lateral sepals.



*Cryptostylis subulata*, Cow orchid, Nerriga



*Cryptostylis subulata* with labellum lifted; Photo: Leo Davis

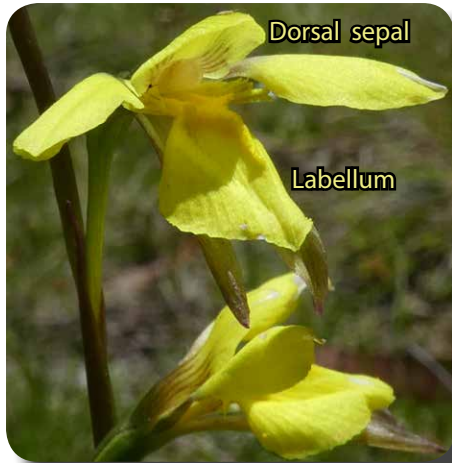
As you can see from the first picture of the Cow orchid [above], it appears that the labellum is below the sepals and paired petals, suggesting a resupinate posture, although the back of the labellum is facing forwards.

When the labellum is lifted, as shown in the second picture, the column is revealed with the dorsal sepal below and is clearly non-resupinate.

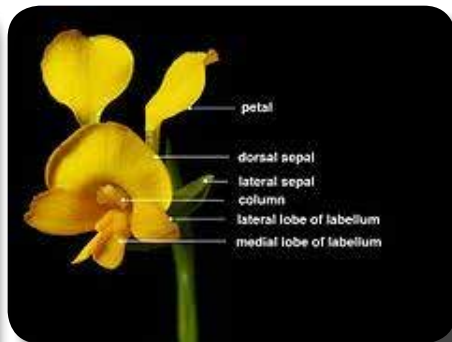
What has happened is that the labellum has bent downwards on its peduncle by about 180° during development. This is termed an **inverted, non-resupinate** flower.

Most local orchids are **resupinate** with the labellum in an abaxial position, that is, at the bottom of the flower. Resupinate genera include *Diuris*, *Caladenia*, *Calochilus*, *Glossodia* and *Thelymitra* and many others.

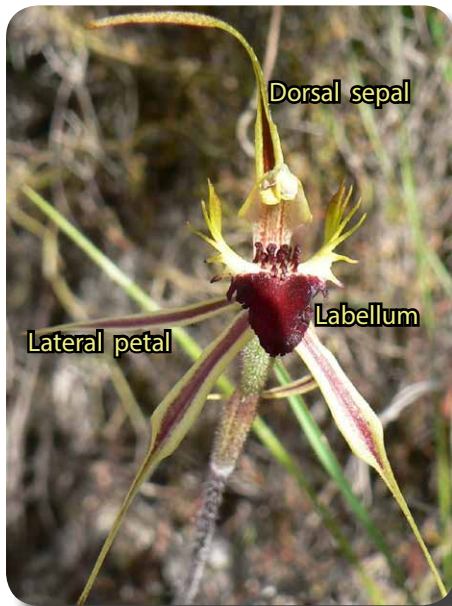
In the moth orchids, *Diuris* spp, the large labellum forms a landing place for pollinators, such as bees. In other species, the labellum is highly modified as a sexual deceiver and tricks male wasps into pseudo-copulation facilitating the transfer of the pollinia.



Highland golden moths, *Diuris monticola*,  
Top Tinderry



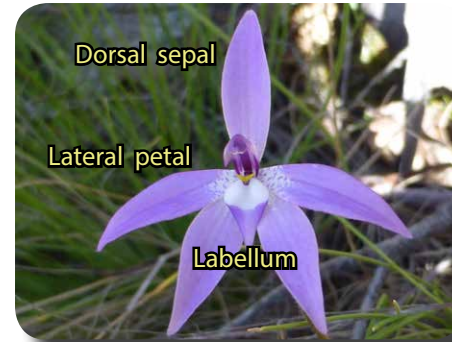
Buttercup doubletail, *Diuris aequalis*,  
(from internet)



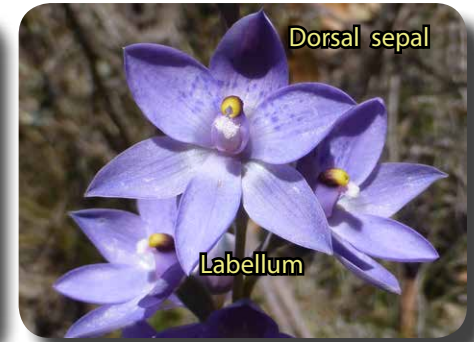
Spider orchid, *Caladenia (Arachnorchis) atrovespa*,  
Cypress Pine Look out



Purple beard orchid, *Calochilus platyichilus*,  
Nerriga



Large wax lip orchid, *Glossodia major*, Bendora



Sun orchid, *Thelymitra ixioides*, Cumberland Trail,  
showing 3 outer sepals and 3 inner petals

### Lobelias and Isotomes

The family Lobeliaceae (*Lobelia*, *Isotoma*, *Pratia* spp) has now been moved as a sub-family into the Campanulaceae (*Wahlenbergia* spp). The former are distinguished from the latter by their zygomorphic (asymmetric) flowers. Species in the genus *Pratia* have been reclassified as *Lobelia* spp.

The five petals are arranged with three lower and two upper petals that are often reduced (see title picture). The central lower petal is sometimes larger than the others suggesting that the flowers have a **resupinate** origin. The anthers and stigma are fused into a column-like structure similar to that observed in orchids. Nectar guides are present on the three lower petals, directing pollinators towards the column.



Waxy lobelia, *Lobelia dentata*, Chalet Rd

# Foliage in the Garden

*Text and photos by Ben Walcott*

In the northeast of the US where I have spent much of my life, for almost half the year there is no foliage in the garden. Only the conifers have any green foliage and that is often very sombre or covered in snow and ice. Trees and bushes are sculptural skeletons of their summer green. To garden in Australia, therefore, is a new experience with foliage year-round giving form and texture to a garden.

When we design a garden, we often think mainly of the flowers and how they will go together, and we don't think very much about the foliage. In most cases, the flowers are fleeting and it is the foliage that is the dominant feature of the plant throughout the year.

When we promote plants, for example at the plant sales or on our website, we always show the flowers and don't really emphasise the foliage and how it will look in the garden. We are almost conditioned to focus on the flowers and not the plant as a form and colour.

However, when looking at a garden, large or small, it is the form and colour of the foliage that is the dominant feature. Form to some extent can be manipulated by pruning but colour and texture are properties of the plants. How they are combined in a garden determines its character and appeal.

Planting in groups of 3–5 plants of the same type can emphasise certain textures and colours that can contrast with other plants.



Swamp isotome, *Isotoma fluviatilis*, Gigerline



Rock isotome, *Isotoma axillaris*, Flinders Ranges



Bluebell, *Wahlenbergia* sp, Duck Flat TSR  
Actinomorphic flower

I would like to thank Jean Egan for introducing me to the mysteries of supination and checking my labels to the orchid bits.



*Banksia robur*  
shoots; Photo:  
Glenn Pure



A group of *Correa glabra* 'Winter Glow'

In the previous photo there are a number of large *Correa glabra* 'Winter Glow' (or *Correa* 'Coliban River' as it is sometimes called) growing along a path in our garden

with *Acacia covenyi* and its silver-green foliage projecting above. The *Correas* are clipped every two years or so to keep them dense.



Another example [left] is a hedge of *Callistemon subulatus* 'Brogo Overflow' on the left with *Eremophila glabra* ssp *albicans* on the near right and further along *Grevillea* 'Molonglo'. The *Callistemon* hedge has been recently clipped but will soon produce soft new shoots in spring. The result will be several masses of different greens and forms.

Callistemon hedge



Tree fern and Lomandra

A group of *Lomandra* 'Tanika' under *Dicksonia antartica* with several *Grevillea* 'Lady O' in the background creates another interesting foliage contrast. While the *Grevillea* does flower most of the

year, it is really the difference in form and texture of the *Lomandra* leaves and tree fern fronds above that make it interesting with the dense green backdrop of the *Grevillea*.



*Acacia falcata*

In this case [above], a tall blue green *Acacia falcata* contrasts with *Grevillea* 'Poorinda Queen' on the right, *Leptospermum* 'Fantasia' on the left and behind, *Allocasuarina torulosa*. The acacia stands out both because of its columnar form and its foliage colour and therefore provide an interesting contrast within this group. The new growth of the *Acacia* is very attractive, so planting it close to a path is an advantage as it lets you see the foliage.

At a lower level, growing two plants that have very different foliage so that they intertwine or are closely adjacent with each other can produce interesting and attractive results. For example, in this case *Eremophila* 'Kalbarri Carpet' is growing under and twining through the lower branches of *Banksia* 'Yellow Wing'.

The *Eremophila* [left] with its soft grey leaves provides an interesting contrast to the stiff green foliage of the *Banksia* when neither is in bloom. The *Eremophila* does well growing under these conditions and adds interest to the *Banksia* which is the larger shrub whose foliage and flowers are higher up.



*Eremophila* and *Banksia*

Some plants have interesting foliage and form by themselves. This *Eremophila* 'Hello Cocky' [next page] is a relatively small plant (60 X 60 cm) with an upright habit. It is a very neat bush whose



*Eremophila* 'Hello Cocky'

foliage is of interest year-round. It makes an excellent plant along a path or in a small area. It does have yellow flowers in the spring/summer but, it is the form and colour of the foliage that are the major attraction.



*Angophora hispida* new growth

Finally, individual stems and leaves can be interesting with often the new growth being highly coloured.

For example, the new shoots of *Angophora hispida* are almost flower like in their colouration.



*Melaleuca decussata* dwarf new growth

While the new shoots of *Melaleuca decussata* dwarf have very red stems with small green leaves.

Finally, how the light interacts with foliage can provide interesting effects. For example, *Grevillea insignis* leaves are interesting all ways but when the sun shines through them, they are spectacular.



*Grevillea insignis* leaves



*Grevillea insignis* leaves in light

Many Hakeas such as *Hakea* 'Pinball' and *Hakea* 'Stockdale Sensation' both have leaves that look fantastic when the light shines through them. Again, to enjoy the benefits of these effects, the plants need to be accessible in the sun along a path.



*Hakea* 'Pinball' leaf



*Hakea* 'Stockdale Sensation' leaf

To conclude, foliage is a very important aspect of any garden and should be considered carefully when choosing and placing plants.

## ANPSA News



By Riitta Boevink,  
President, ANPSA

Nineteen people joined the ANPSA Council teleconference on the 14<sup>th</sup> of May. Each time the time differences bring home the vastness of Australia as a country. As the member societies are autonomous bodies allowing for differences, these meetings of delegates and elected office bearers are an opportunity to share information and find common ground.

Our next meeting will be the Biennial meeting associated with the conference in Albany. It looks to be a well attended event as at the time of the

teleconference 250 registrations had been received. An important feature of the conference is the handing out of the Australian Plants Awards. This year the Award recipients are Professor Kingsley Dixon, who was nominated for the professional category by the Wildflower Society of WA, and Glenn Leiper nominated by the Native Plants Queensland for the amateur category. More extensive publicity will take place closer to the conference.

The main practical role of ANPSA is to support the Study Groups. Jane Fountain as the ANPSA Study Group coordinator provided us with a report of the current state of the Study Groups.



There are currently 17 active Study Groups. Sadly the Boronia SG and the rainforest SG have been closed. Good news is that the Goodeniaceae SG has been restarted with Royce Raleigh as the leader and Maree Goods as the newsletter editor. Their first excellent newsletter has come out. Nicole Maher is the SG liaison officer for New South Wales.

The ANPSA website is an excellent resource of information including Study Group newsletters. Nicky Zanen, our publicity officer, has reminded us that the Australian Plants was first published in December 1959 — 60 years ago. a copy of that edition is on the website.

We all appreciate the excellent work of our webmaster Brian Walters. He reports that there is now an online archive of newsletters produced by 44 current and closed Study Groups. The archives can be accessed from the general SG page:

<http://anpsa.org.au/study.html>

The online image database for the Eremophila Study Group now has over 160 Eremophila species. A dedicated website for the newly activated Goodeniaceae SG has been set up:

<http://anpsa.org.au/goodeniaceaeSG>

There is ongoing discussion on the future management of the ANPSA website as succession planning is necessary to ensure smooth continuity should Brian become unable to manage. The likely outcome eventually will be engaging a commercial firm to manage the website. At the same time it would be wonderful for someone to volunteer to work with Brian and learn the ropes. Even if a commercial firm is engaged, a

person with knowledge of the society and plants will be needed to guide and instruct on the contents.

Our conservation officer Eddy Wajon has continued to lobby actively in relation to the expansion of the Jandakot airport with commercial development into a reserve. Another issue of national importance is the insidious spread of Myrtle Rust. Eddie is keeping us informed of the attempts by government authorities to develop a management plan in a nationally coordinated way.

The NSW government's anti-environmental legislation protecting feral Brumby horses in the Australian Alps has been another issue. Chris Long, APS Victoria President has also sent a letter to the NSW Minister for the Environment. Eddie reported that in WA damage to roadside vegetation by local council clearing practises is continuing.

The inevitable shift to distributing journals/newsletters electronically is slowly happening. NSW delegates informed us that the NSW journal is now only available digitally to the members. Libraries get paper copies, but statutory bodies prefer digital versions.

ANPSA public officer John Carter is stepping down from his position as he is moving out of the ACT. A new public officer who is a resident of Canberra will need to be appointed at the beginning of 2020. We will also be looking to fill the position of the publicity officer with a new candidate as Nicky Zanen will be stepping down after the Albany conference. Nicky deserves recognition for her contribution over the years.

## ACRA, PBR and the Vexed Issue of Cultivar Registration

*Lyndal Thorburn  
Leader, Eremophila Study Group*

This article started as an attempt to sort out in my own mind the issues around ANPSA's withdrawal from ACRA (the Australian Cultivar Registration Authority) in January 2018, and what (if anything) it means for registering cultivars of our Eremophilas.

While information on ACRA and Plant Breeder's Rights (PBR) is available online, it isn't easy to weigh up the pros and cons of both systems and see the way forward. Hence, this article seeks to explain the two registration systems and discusses issues that may affect the Study Group and cultivar registration.

Read on to discover more, and please send your views to the editor so we can have a wider discussion.

### ACRA

#### What is ACRA?

ACRA was formed in 1962. At that time it was based in Melbourne and the ACRA committee comprised members of the Society for Growing Australian Plants (SGAP) and representatives of herbaria in Sydney and Melbourne. The Australian National Botanic Gardens (ANBG) joined ACRA in 1970 at the

instigation of John Wrigley. Then, in 1973, other botanic gardens in SA, WA and the Federation of Australian Nurserymen also joined.

In 1974, the Authority moved to Canberra and ANBG provided limited staff support, with an employee being given a small amount of time each week to manage ACRA business and be official Registrar. Previous registrars (ANBG staff) have included Geoff Butler and Ben Wallace and the current Registrar is Paul Carmen.

By the mid-1970s had representatives from

- ANPS (Federal)
- Botanic Garden and State Herbarium, Adelaide
- Royal Botanic Gardens and National Herbarium, Melbourne
- Kings Park and Botanic Garden, Perth
- Royal Botanic Gardens and National Herbarium, Sydney
- Federation of Australian Nurserymen's Associations
- Australian National Botanic Gardens, Canberra
- Royal Botanic Gardens, Hobart
- Townsville Botanic Gardens
- Darwin Botanic Gardens.

After operating informally for several years, ACRA was incorporated as an association in the ACT in 1989 (Association number A01593). It is staffed by volunteers and its website is hosted by the ANBG, although it remains a separate association (hence, details of its operations are not provided in the ANBG annual report). ANBG staff support continued until a few years ago — since then the current Registrar has been working on ACRA business voluntarily.

In 2015, ANPSA appointed Neil Marriott (Victoria) and Anthony O'Halloran (NSW) as its two representatives to the ACRA Board. Merren Sloan (ACT), a former ANPSA representative, was appointed by the Registrar to be the Secretary. ANPSA also supported ACRA by paying for its two Board representatives to fly to Canberra for the annual Board meeting.

In 2018, ANPSA decided at its Biennial Conference to withdraw from ACRA [see later section]. When ANPSA withdrew its support, Neil Marriott (previously an ANPSA nominee) was appointed to the Board by APS Victoria. Anthony O'Halloran resigned from the Board (note that the information about ACRA membership on their website is now out of date).

ACRA reports that it is developing a new website, which its Registrar says will be under its direct control and may speed finalisation of registrations. This is planned for launch in June or July 2019.

### ACRA's role

The objectives and purposes of ACRA are:

- to register, in accordance with the International Code of Nomenclature for Cultivated Plants, names of cultivars of Australian native plants
- to record the names of all cultivars of Australian native plants and hybrids between Australian and exotic plants (excluding *Rhododendron* and *Orchidaceae*)
- to encourage the horticultural development of the Australian flora
- to assess and describe cultivars submitted for registration
- to cooperate with other organisations and individuals engaged in activities compatible with these objectives
- to maintain a register, together with correspondence files, herbarium specimens, photographic collections and any other necessary information on cultivars or groups defined above
- to publish information on Australian plant cultivars.

Under the International Code for Nomenclature of Cultivated Plants (ICNCP), ACRA is the "International Registration Authority for Australian plant genera excluding those covered by other authorities". This includes all endemic genera and all predominantly Australian genera.

ACRA also registers all Australian varieties accepted by the Australian Plant Breeders Rights Office (see below). There are also some species that belong to genera that are not predominantly Australian and for which

ACRA has accepted registrations eg for *Helichrysum*, *Syzygium* and *Microlaena*.

### Australian Plant Names Index (APNI)

ACRA ensures that new cultivars registered by ACRA are listed on APNI. The APNI is the standard dataset for names for all Australian plants and includes, but is not limited to, cultivar names. APNI is recognised by Australian herbaria as the primary reference for published plant names and distinguishes names in current use, their synonyms, and names invalidly published.

APNI is online and has a search function but information needs to be entered exactly for the search to be successful eg a search for *Aurea* or *Carmine Star* without the quotes gets a nil result — the quotes and/or full species name is required to find these registered cultivars.

There are hundreds of native plant names in APNI, eg 243 named cultivated *Anigozanthos* (compared to 27 ACRA-registered cultivars), 81 *Banksia* compared to 11 ACRA-registered; 77 *Boronia* compared to 10 ACRA-registered and 58 *Xerochrysum* compared to 8 ACRA-registered, as at June 2017. As at January 2018, there were 33 cultivated *Eremophila* in APNI.

The APNI's entries do not provide any detailed information on each plant name. Rather, it provides links to third party mentions of these names (including to ACRA and PBR entries). Links to commercial sources may be to advertisements by breeders (in which case there is little information), or to ACRA or PBR registrations (in which case information about origins is available).

### Getting a cultivar registered

Applicants for registration with ACRA submit a form which contains all the information necessary to develop a profile for each variety/cultivar for registration

The form asks for the following information:

- Study group name, if from ANPS
- Name of applicant
- Details of the origin, if known, of the cultivar
- Details of the 'introducer' of the cultivar (the introducer is person who distributes the cultivar through a plant nursery)
- Name requested (Genus, species and cultivar name)
- Reason for choice of name
- Origin of the cultivar, as far as this is known
- Description (foliage details, colour, height etc)
- Comparators (so the cultivar can be compared to known varieties)
- Uniformity (if maintained by seed)
- Cultivation details
- Photographs

Fresh samples large enough to create a herbarium specimen are also submitted. This specimen is lodged with the Centre for Australian National Biodiversity Research, which has allocated Herbarium space for the ACRA specimen collection.

Applications from Study Groups are accepted by ACRA without reference to the relevant Study Group leader and ACRA communicates only with the applicant in determining whether a new

cultivar should be registered and what name should be used.

ACRA charges \$99 to \$110 per application to cover some of the costs of storing and processing herbarium specimens. Fees have, to date, been waived for ANPSA Study Groups. ACRA has announced that, despite ANPSA's withdrawal from the ACRA Board, it will continue to waive the application fees for Study Groups until the end of 2020.

### Operation of ACRA

ACRA operates virtually and the Board meets annually, although decisions can be taken during the year.

The ACRA Board assesses the application, examines the supplied material, ensures the name has not been applied to a different cultivar, and if it meets ICNCP requirements, accepts the cultivar for registration.

Business is conducted by email, and in ideal circumstances can be completed in about a month — 'ideal' meaning that all the required information is submitted at the time of application, thus enabling the Board to make a determination as to whether the sample fulfils the criteria for listing.

Once accepted, a cultivar is given a registration number, and the name and description are added to the ACRA database, which is online, public and searchable. The database lists and describes all registered cultivars of Australian native plants, provides photos and describes the unique features that led to registration.

### ACRA-registered Eremophila

Since its formation, ACRA has registered more than 1800 cultivars. Of these, 11 are Eremophilas, as follows:

- *Eremophila* 'Aurea'
- *Eremophila* 'Beryl's Blue'
- *Eremophila* 'Beryl's Gem'
- *Eremophila* 'Beryl's Lipstick'
- *Eremophila* 'Carmine Star'
- *Eremophila* 'Magic Carpet'
- *Eremophila* 'Meringur Midnight'
- *Eremophila* 'Nullarbor Nymph'
- *Eremophila* 'Piccaninny Dawn'
- *Eremophila* 'Pink Pantha'
- *Eremophila* 'Summertime Blue'

Apart from the yellow 'Aurea' and red 'Carmine Star' forms of *E. maculata*, these are all believed to be hybrids. At least five more cultivar applications are currently being considered.

Formerly, registered cultivars could have the letters 'cv' added after the species name, eg *Eremophila* Pink Pantha cv. This practice is no longer current.

### Impacts of ACRA Registration

According to ACRA, registration confers the benefits of:

- providing fixity to the cultivar name selected by the applicant
- recording the source and history of the cultivar
- preserving a sample of the cultivar as a herbarium specimen and for reference
- providing a method for promotion of the cultivar through publication in the horticultural industry magazine *Hort Journal Australia*. While details

of registered cultivars are published in the horticultural journal as a public record,\* the journal is not searchable; however the same information is available on the ACRA website, which can be searched.

There is no time limit on ACRA registration — once registered, a cultivar remains registered for all time. Its publicly recognised approach and searchable online database enables Study Group members, the general public and the nursery trade to research new varieties and to standardise names given to these for general sale.

It should be noted that ACRA registration does not provide any legal rights over ownership of plant material and does not prevent third parties (ie people or organisations other than the applicant) from propagating or selling the cultivar.

### Plant Breeders' Rights (PBR)

There is no financial benefit for registering a cultivar through ACRA, as ACRA registration does not grant 'ownership' of a cultivar in the common use of the term.

To gain financial benefit, plant breeders must apply to IP Australia to gain exclusive control over the propagating material (including seed, cuttings, divisions, tissue culture) and harvested material (cut flowers, fruit, foliage) of a new plant variety under the Plant Breeders' Rights (PBR) scheme. All

new plant varieties (whether native or not) are eligible for registration under PBR, providing they maintain stable characteristics when they are bred. Once PBR registration has been awarded, it lasts for up to 25 years for trees or vines and 20 years for other species.

A PBR application costs \$345, examination fees are from \$1,000 to \$1,600, the certification fee is \$345 and annual fees are also \$345. Time limits apply throughout the registration process, bringing PBR into alignment with similar processes that apply to other Australian intellectual property.

Plants which are registered under PBR are recorded in a separate database managed by IP Australia but are not included in the ACRA cultivar list. Details of their registration, including key distinguishing features, the results of comparative trials and differences from other named varieties are published in IP Australia's quarterly *Plant Varieties Journal* (PVJ). This is also not directly searchable, but IP Australia does provide an online search function at [http://pericles.ipaustralia.gov.au/pbr\\_db/](http://pericles.ipaustralia.gov.au/pbr_db/) — for each variety there is a link to a Word document that replicates what is published in PVJ.

ACRA examines all native plant PBR applications for IP Australia for a fee. In 2014 it examined and provided reports on 45 such applications.

A PBR application can be submitted by either the original breeder† of the

\* For example, Oct-17 *Hort Jnl* describes *Eremophila* 'Beryl's Gem', Mar-17 describes *Eremophila* 'Meringur Midnight' and Jun-18 describes *Eremophila* 'Pink Pantha'

† A breeder under the PBR Act is the person who discovers or breeds the plant — hence something discovered in the wild can be covered by PBR. The 'discoverer'

new variety, the owner of that variety or the agent of one or both of these. Hence, commercial nurseries can license new varieties from those who have bred them, and then apply for PBR of that variety. This approach enables the original breeder or licensor to keep control over it by charging for the plant labels that accompany the propagated plants when they leave the wholesale nursery. An audit of the label sales can therefore be used to determine the licensing fee payable to the plant owner/discoverer. It takes some time, however, to recoup the PBR fees from label sales as the breeder typically receives only a few cents or tens of cents per plant.

There is a grace period, through which a breeder or licensee can sell a plant for up to a year<sup>‡</sup> and still apply for PBR rights. This grace period enables commercial growers to test the popularity of a plant before going to the expense of a PBR application.

Applications must use a 'qualified person' (QP), who is an expert in a particular plant group, accredited by IP Australia to certify applications. QPs, who are horticultural industry consultants, oversee comparative growing trials and help the originator to provide evidence that the new variety is distinct, uniform and stable. This trial must be paid for by the applicant for

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can be defined as the first person to file for PBR protection, as long as that person has found it directly — a person who finds out about a new variety from a third person cannot apply for PBR.

‡ There are longer grace periods available for fruit trees and species sold overseas

the PBR rights. The qualified person for *Eremophila* (and many other native species), as listed on the PBR website, is a Mr Rodney Parsons.

The scale of operations required to recoup the various fees charged for PBR usually means that a commercial nursery needs to be involved, hence the inclusion of commercial growers in the PBR applications granted for *Eremophila* above. These nurseries will have agreements with the breeder through which they gain exclusive rights to sell the plants that are protected by PBR and recoup the application costs.

Annual fees of \$345 must be paid to maintain registration. There are five *Eremophila* varieties with current PBR registration:

- *E. glabra* x *maculata* Ruby Red (Orange Valley Nursery)
- *E. nivea* Blue Velvet (Humphris Nursery)
- *E. nivea* x *E. densifolia* ssp. *pubiflora* Beryl's Blue (Humphris nursery) — though note that ACRA records the same plant as a cross of *E. nivea* x *E. caerulea*.
- *E. glabra* Kalbarri Red (Lulfitz Investments)
- *E. glabra* EREM1 (Ozbreed Pty Ltd) (this looks like a red form of Kalbarri Carpet)

As with all intellectual property in Australia (and overseas), if a third party (ie someone other than the breeder or licensee) breaches ownership, it is up to the owner to pursue a remedy — so any owner of PBR'd material would need to identify the breach (that is, someone else selling the same variety), take

action to prevent them, and then claim part of the profits or income from the illegal sales. This takes time and money and only larger organisations would have the necessary resources.

Growers often place the letters *pbr* after the name of a PBR registered variety to indicate their ownership or control over of the original material.

## Alternatives to PBR and ACRA

Making money out of PBR depends on a system of selling labels approved by the owner/licensee. However, plant labels can be sold this way whether or not the plant has been PBR'd. Some have said that the nursery trade is moving away from PBR and is using the sale-per-label approach to charge for new varieties, even though they have no IP rights over these. The new arrangement between the ESG and Native Plant Wholesalers is one such example.

When working outside both PBR and ACRA there is no need to prove that the new variety is any different from other varieties or the 'type' plant. This can lead to the same plant being sold in successive years under different names, resulting in confusion amongst the general public and some frustration amongst those of us trying to sort out one variety from another.

A good example of this is *E. alternifolia* x *E. maculata* which is sold as *E. Wild Berry*, *E. Magenta Dream* and *E. Blue Thunder* by different nurseries. These nurseries often put the quotes around the new name, in the same manner as ACRA does for a registered cultivar, further adding to confusion about the status of the name.

## Why Did ANPSA withdraw from ACRA?

The papers presented at the 2018 Biennial ANPSA conference and ANPSA papers summarising that discussion cite a number of reasons for ANPSA's withdrawal from ACRA:

- Member regions of ANPSA had been concerned about the value of ACRA as it is currently administered for many years, and the issue has been discussed by delegates at several previous biennial meetings.
- ANPSA felt that ACRA was not serving the nursery trade nor the gardening public. It has little support within the nursery trade and is not used by them according to ANPSA's representative on the ACRA board.
- Few cultivars are on the ACRA list for many native plant genera and few (5–15) are added each year. Most 'varieties' available in retail nurseries are not listed in ACRA. The addition of <15 cultivars per year by ACRA is not keeping up with the hundreds of new 'varieties' being sold to the public each year by the nursery trade.
- Significant funds were given by member regions to ACRA for a program to update the list in ACRA from published sources. The updates went into the Australian Plant Name Index (APNI) with no links to any details on the plant.<sup>§</sup>
- ANPSA paid significant amounts

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§ ACRA states that these funds were to record and cross reference all published names (including name variants and synonyms) of Australian native plant cultivars — whether registered or not — in APNI.

of money to fund travel of its two representatives to the annual Board meeting, which only meets for half a day.

- There was concern about the ANBG's lack of support for ACRA. Discussions between Ben Walcott (then ANPSA President) reported at the time that the Executive Director of the Australian National Botanic Gardens (Dr Judy West) and Curator of the Australian National Herbarium (Brendan Lepschi) showed little interest in or support of ACRA. The Herbarium was willing to store the specimens produced by ACRA but Ben also reported that they said they were of little value to them. Subsequently, Judy West discussed ACRA with the directors of other botanic gardens and found variable levels of support for ACRA.

## The future

Given the changes in ANPSA's relationship with ACRA, Study Groups need to consider how (or if) they are going to register cultivars, and how to address the growing chasm between registered native plant names and those varieties released by the nursery industry. Our concern in particular is that nurseries are releasing new varieties that have no proven horticultural improvements or physical differences when compared to varieties already on the market and are confusing the general public.

However, ACRA remains, at present, the only low- or no-cost method of registering cultivars. While it is being bypassed by the nursery industry, it is the only public database available.

Given many Study Groups charge no fees, potential removal of the fee waiver will have a negative effect on these groups if they want to register cultivars through ACRA. In my view, the absence of IP control over the ACRA cultivars is neither here nor there, given that our main aim is not to make money on these varieties.

It is tempting to suggest that Study Groups should explore whether using PBR is financially viable and can result in any net return (or at least, break-even). A Study Group would have to underwrite up-front costs, including those of commercial comparative trials.

However, as applications must be submitted by the breeder (or their commercial partner), and a breeder must be the person who discovered or bred the new cultivar, Study Groups may not legally be able to submit PBR applications. The breeder, as defined, could license the variety to the Study Group, but as we are not legal entities the licensee would need to be with ANPSA, which would then be liable for all application costs unless they, in turn, do a deal with a commercial grower prior to the PBR application. This would give ANPSA a burden it is unlikely to want to accept.

If reducing confusion is our primary aim, ESG could submit applications to ACRA to register cultivars which are already in common use from nursery industry eg *E. glabra* Silver Spread which is for sale but is not covered by PBR (and is likely simply to be *E. glabra* ssp. *elegans*).

This approach relies on speedy action by ACRA, which in turn means we need to be certain we have submitted

all components of the application and do not delay the review process. The question is whether we can keep up with the speed of release by the many commercial nurseries growing *Eremophila*.

There is no clear answer here. Study Group members' views are sought on these key questions:

- Should ESG continue to submit applications to ACRA and how (if at all) do we prioritise these?
- Is it worth trying to gain cultivar status via ACRA for some of the more common varieties that are sold widely — eg *E. maculata* x *E. racemosa* 'Fairy Floss'. I have submitted an application for this, to learn the process and see how long it takes.
- Should ESG play a role in standardising some widely sold varieties with multiple names (eg *E. alternifolia* x *E. maculata*) by applying for recognition of one name through ACRA?
- If we do act as suggested in 2 and 3 above, should we prioritise emerging varieties or existing varieties, and if the latter which ones?
- If ACRA does not extend its fee waiver beyond 2020, should ESG use its funds to pay for ACRA cultivar registrations?
- Should the ESG work more closely with the nursery industry on naming, and how might this be achieved?
- How can the ESG help the general public distinguish between varieties that have new horticultural potential and those that have no new benefits?

There are more questions than answers here but in the interests of public discussion the views on these and other issues are invited from Study Group members.

## Sources

ACRA: <https://www.anbg.gov.au/acra/>

PBR: <https://www.ipaustralia.gov.au/plant-breeders-rights>

*Clarification of Plant Breeding Issues Under the Plant Breeder's Rights Act 1994*, <https://www.anbg.gov.au/breeders/plant-breeders-rights-act-report.pdf>

Papers submitted to ANPSA Biennial Conference in January 2018 and subsequent summary documents

## Acknowledgements

Ben Walcott, Russell Wait, Ken Warnes and Paul Carmen all answered questions prior to my starting to draft this article and then provided comments on ensuing drafts. Comments on this final version have been received from Ben Walcott, Russell Wait and Ken Warnes.

*Reprinted from the Eremophila Study Group Newsletter 123, May 2019*



*E. Summertime Blue*; Photo: Lyndal Thorburn



*Eremophila Beryl's Blue*; photo Russell Wait



*E. Picaninny Dawn*; Photo: Lyndal Thorburn



*E. Nullarbor Nymph*; Photo: Kevin Sparrow



*E. Pink Pantha*; Photo: Russell Wait



*Banksia speciosa*;  
Photo: Glenn Pure



Bitterbush plants at the Australian National Botanic Gardens

### Pollination Biology of Eastern Bitter Bush, *Adriana tomentosa* var *tomentosa*, and the puzzle of the extra-floral nectaries

*Text and photos by Roger Farrow*

The Eastern Bitterbush, *Adriana tomentosa* var *tomentosa*, is widely distributed across eastern Australia, mostly along watercourse margins. Local populations can be seen at Cotter Flats. Bitterbush belongs to the family Euphorbiaceae and, like many species in that family, it is monoecious with separate male (Adrians) and female plants (Adrianas) and inconspicuous flowers.

The male inflorescences take the form of long spikes of flowers held well above the plant. The male flowers consist of small greenish tepals and large bunches of anthers producing abundant pollen whereas the solitary female flowers are

small, axillary and have large 3–5 lobed reddish stigma.

These characters are suggestive of wind pollination. At the base of the petioles of the leaves and the pedicels of the flowers, there are conspicuous, bulbous pairs of extra-floral nectaries.



Spike of male flowers with dense bunches of anthers



Bitter bush at Cotter

There is a healthy cluster of Bitterbush plants of both sexes in the Australian National Botanic Gardens above the rockery (see title picture). These were in flower during early March and I photographed the behaviour of insect visitors to these plants on two occasions for periods of about an hour.



Male Flowers. The only visitors observed were exotic honeybee workers (*Apis mellifera*) collecting the abundant pollen.



Solitary forked stigmas and ovaries of female flowers



Female flowers. No pollen-transporting visitors to the actual stigma were seen, confirming that the Bitterbush is wind pollinated. Insects were visiting the extra-floral nectaries, seen at the base of the pedicels.



Extra-floral nectaries at base of petiole, derived from paired stipules

Extra-floral nectaries. Large numbers of different insect species were seen visiting nectaries on both male and female bushes.



Honeybee feeding at extra floral nectary (EFN) of a female plant



Honeybee feeding at EFN of a male plant. Note the *Adriana* pollen contained in the basket on the hind leg.



Mud dauber wasp, *Sceliphron laetum*, feeding at an EFN



Crabonid wasp testing EFN with antennae prior to feeding



Thynnine flower wasps, male feeding at EFN. The female below is attached in copulation and will also feed on EFN



Black mud dauber wasp, *Pison* sp., feeding at EFN on a male inflorescence

## Theories on the function of extra-floral nectaries

1. To attract nectar-feeding predatory insects that collect insect herbivore prey feeding on the plant. Predatory wasps and ants generally carry the prey back to their nests to feed their offspring. Ant exclusion experiments have shown this to be true in some plants. However, in other situations, ants encourage the build-up of sap-feeding bugs that debilitate the host plant and encourage sooty moulds to develop. The ants 'farm' the sap-feeders, keep predators away and harvest the surplus sugary exudates.

2. To act as a decoy to prevent the ants raiding the actual flowers for their nectar or to discourage ants from farming sap-feeding bugs.

Among the insects visiting these Bitterbush, the females of the two species of mud-dauber wasp provision their nests with spiders, whereas the flower wasp females do not collect above-ground prey but burrow underground for scarab larvae that they parasitise.

Female crabonid wasps capture a wide range of different insect prey, depending on species, and carry the prey to their nests but I did not see any predators capturing prey. No ants were seen visiting the nectaries. My colleague Tim Leach also photographed a hairy flower wasp (unidentified species of Scoliidae) visiting the same Bitter bush

but again these wasps do not collect plant-feeding prey.

The leaves of the wild populations of Bitter bush at the Cotter are attacked by the adults and larvae of a flea beetle, *Hyphalticoda* sp., often to the point of complete defoliation in some years. The Bitter bush in the gardens showed no signs of any feeding damage. They are well watered and show no signs of moisture stress that would be a frequent occurrence in wild populations and could lower the resistance of the latter to insect herbivory.



*Hyphalticoda* Flea beetle feeding on Bitter bush at the Cotter

These observations bring us no nearer to understanding the function of extra-floral nectaries in a wind-pollinated plant and only reinforce the complexities of insect-plant interactions and the difficulties of establishing causal relationships.

I would like to thank my friend Kim Pullen for identifying the crabonid wasps and their prey.

# Neonicotinoid Pesticides

## To use or not to use that is the question

*From the Council*

The Council of the Australian Native Plants Society Canberra Region Inc (ANPSC) recently received correspondence requesting that ANPSC not use neonicotinoid pesticides due to their suspected/potential impacts on bees and other pollinators.

Council obviously has no role in instructing anyone on pesticide use, but did decide it was an issue that members may be interested in, and that we should at least provide the opportunity to alert membership to some of the various views on the use of neonicotinoid pesticides and their potential overall environmental impacts.

Neonicotinoids have been available commercially since about the mid-1980s and their use is growing. They come in various brand names but can contain any of the following chemicals — Acetamiprid, Thiamethoxam, Clothianidin, Dinotefuran, Imidacloprid, Nitenpyram or Thiacloprid. Imidacloprid is one of the commoner forms.

They have proved highly efficient systemic, neuro-active pesticides for a wide range of insects affecting

horticultural and agricultural crops. They are said to be highly residual in soils, to the point of identifiable presence some years (and crops) after initial application. They are used for seed treatment, foliar spraying, soil spraying, surface granule application, soil drenches and stem inoculation.

A widespread bee colony collapse event in 2007 brought a focus on neonicotinoids, as they are fully systemic and are found in pollen and nectar. A global survey, including taking honey samples for analysis, apparently found residual neonicotinoids in three-quarters of these honey samples.

This raised various issues: the potential for further decline or loss of pollinating species (especially bees), potential impacts on soil microorganisms and food chains and concerns about waterway contamination, as well as human food security if their use is curtailed.

The European Commission placed a two-year moratorium on neonicotinoid use in 2013 and extended the ban earlier this year to the outdoor use of neonicotinoids. They are still permitted in enclosed growing spaces. The USA has also placed restrictions on their use.



In the ACT, some tree pests (eg Elm Leaf Beetle) are being managed using neonicotinoids, and domestic products are also available.

It was decided that the ANPS Council should provide some links which contain various views and information on neonicotinoids. Equally, a search on the word 'neonicotinoid' associated with 'impacts' or 'benefits' will provide very much more!

## Links

A newspaper article which provides an insight into the arguments of both sides of the debate:

<https://www.theguardian.com/sustainable-business/2015/mar/19/pr-battle-neonicotinoids-declining-bee-colonies-food-security>

An article by the Soil Association with their view of the spread of neonicotinoids through the British countryside and its effects on wildlife of all sorts:

<https://www.soilassociation.org/media/6964/ban-neonics-infographic.pdf>

A paper analysing all available neonicotinoid bee data as at 2012  
*Neonicotinoids in bees: a review on concentrations, side-effects and risk assessment:*

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3338325/>

*The Guardian* article on EU agreement on total ban of neonicotinoid pesticides:

<https://www.theguardian.com/environment/2018/apr/27/eu-agrees-total-ban-on-bee-harming-pesticides>

*Science Magazine* article on European Union expanding ban of three neonicotinoid pesticides:

<https://www.sciencemag.org/news/2018/04/european-union-expands-ban-three-neonicotinoid-pesticides>

Australian Pesticide and Veterinary Medicines Authority (APVMA) articles on neonicotinoids in Australia:

<https://apvma.gov.au/search/google/neonicotinoid>



*Banksia speciosa*;  
Photo: Glenn Pure



View from The Horn, Mt Buffalo

*Text by John Murphy*  
*Photos by Clare Murphy*

During the first week of December 2018, Bill Dowling and I took our wives and a group of friends on a botanical tour of the areas around Mt Buffalo, Falls Creek, Anglers Rest and Mt Hotham in north-eastern Victoria. This trip was to celebrate the release of the 2nd edition of our book *Plants of the Victorian High Country*.

On our first evening, the 12 of us gathered in the community hall in Harrietville, a small town at the foot of Mt Hotham and Mt Feathertop. Here, Bill gave a PowerPoint presentation to us and interested members of the local community, based on the photos of

local plants that he had taken over the last 10 years while we were researching material for our book.

The following day we travelled in convoy to Mt Buffalo. Each vehicle had a CB radio which was invaluable as it is often difficult to stop and pull over on the narrow, winding mountain roads. Our plant-hunting centred around Lake Catani just beyond the heritage-listed Buffalo Chalet.

A local guide, Clyde O'Donnell, helped us with identifying plants, as well as providing historical information about the Aboriginal and European connections with Mt Buffalo. The margin of the lake is a boggy, alpine herbfield while the surrounding higher

ground consists of a heathy, sub-alpine community beneath open snow gum woodland.

We were hoping to see fairies' aprons (*Utricularia dichotoma*) close to the lake shore but unfortunately they were one or two months away from flowering. Two species of mint-bush (*Prostanthera rotundifolia* and *P. cuneata*) were flowering profusely on the more exposed, rocky sites.

Close to the walking track and the access road we saw a wide variety of plants in flower, including mountain baeckea (*Baeckea utilis*) cascading down rocks, two species of everlasting daisies (*Coronidium scorpioides* and *Chrysocephalum semipapposum*), two orchid species (*Caladenia alpina* and *Chiloglottis valida*) in the damper areas, two grevilleas (*Grevillea victoriae* and *Grevillea australis*), mountain needle-wood (*Hakea lissosperma*), alpine boronia (*Boronia algida*), mountain pepper (*Tasmannia xerophila*), tall rice-flower (*Pimelea ligustrina*), ivy-leaf goodenia (*Goodenia hederacea*), leafy bossiaea (*Bossiaea distichoclada*), pink bells (*Tetratechea spp.*), forest phebalium (*Phebalium squamulosum*) and two beautiful white-flowering heaths (*Epacris paludosa* and *E. gunnii*).

Next morning we followed Dungey's Track from near Freeburgh, travelling beside Snowy Creek, then up over Simmond's Gap and down to Mount Beauty in the Kiewa Valley. Dungey's Track is an old logging track which was used to transport alpine ash (*Eucalyptus delegatensis*) from the Kiewa Valley to sawmills in north-eastern Victoria.



*Epacris paludosa*, Swamp heath



*Prostanthera rotundifolia*, Round-leaf mint-bush

There are two or three creek crossings along this track, so a 4WD vehicle is recommended.

As we drove alongside the creek we saw medium-sized trees of Victorian Christmas Bush (*Prostanthera lasianthos*) covered in masses of white flowers, as well as many ground-covering specimens of white and yellow buttercups (*Ranunculus spp.*), and occasional specimens of native storkbill (*Pelargonium australe*) and prickly starwort (*Stellaria pungens*).

In the drier areas on the upper side of the road in the creek valley we identified trigger plant (*Stylidium armeria*), spiny-headed mat-rush (*Lomandra longifolia*) and we saw one specimen of slender stackhousia (*Stackhousia viminea*), and several fringe lilies (*Thysanotus spp.*).

As we headed up over Simmond's Gap we stopped a couple of times on wider sections of the road to look at the wildflowers around us.

We saw isolated patches of the beautiful blue-flowering native flax (*Linum marginale*), as well as pink bells (*Tetratechea spp.*), common rice-flower (*Pimelea humilis*), grey Guinea-flower (*Hibbertia obtusifolia*), handsome flat-pea (*Platylobium montanum*),



*Linum marginale*, Native flax

three species of daisy bushes (*Cassinia longifolia*, *C. aculeata* and *Olearia argophylla*), Derwent speedwell (*Veronica derwentiana*) and a donkey orchid (*Diuris spp.*).



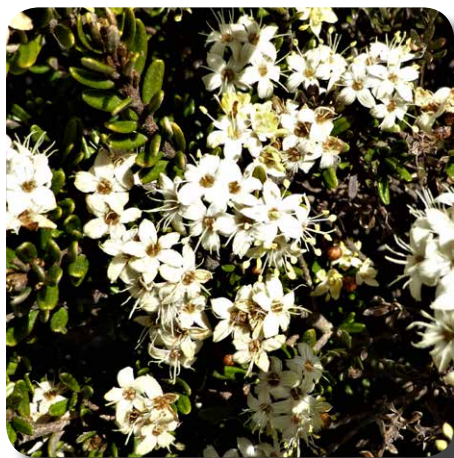
*Prostanthera lasianthos*, Victorian Christmas-bush



*Veronica derwentiana*, Derwent speedwell

After lunch at Mt Beauty, we travelled up to Falls Creek and on towards Pretty Valley Reservoir on the Bogong High Plains. Just before the reservoir there is a wildflower 'hot spot' close to Ruined Castle, which is an outcrop of hexagonal columns of basalt. The Bogong High Plains themselves consist of a series of low hills capped with basalt overlying high-grade metamorphic rocks such as gneisses and schists.

At Ruined Castle the group divided into pairs and used our book to identify as many plants as possible within an hour. Amongst the carpet of brilliant purple-flowering mountain hovea (*Hovea montana*), we saw flowers of alpine rice-flower (*Pimelea alpina*), alpine grevillea (*Grevillea australis*), Victorian buttercup (*Ranunculus victoriensis*), forest phebalium (*Phebalium squamulosum*), twin-flower knawel (*Scleranthus biflorus*), brachyscome daisies (*Brachyscome spp*), swamp heath (*Epacris paludosa*), prickly starwort (*Stellaria pungens*) and silver ewartia (*Ewartia nubigena*).



*Phebalium squamulosum*, Forest phebalium

That evening we travelled across the Bogong High Plains and down into the Mitta Mitta Valley where we stayed at Paynes Hut, which provides five-star accommodation in an isolated area near Anglers Rest. Omeo and Albury are both about two hours away in opposite directions. Paynes Hut was built by the owners Graham and Tess Payne who were formerly builders and chefs in Melbourne; it is surrounded by a beautiful garden landscaped, planted and maintained by Tess.

Next morning we were fortunate to have a conducted tour of nearby Mittagundi Outdoor Education School which was established 30 years ago by Ian Stapleton, a former teacher at Timbertop, the outdoor campus of Geelong Grammar. The school is owned by a Trust and offers 10-day courses to students from throughout Australia.

After a leisurely lunch back at Paynes Hut, we travelled about 20 km to stay overnight at a farm called The Willows in the Bundara Valley near Anglers Rest. Flowers seen in the Mitta Mitta Valley area included specimens of the yellow bulbine lily (*Bulbine bulbosa*), mauve climbing glycine (*Glycine clandestina*), common woodruff (*Asperula conferta*), bidgee-widgee (*Acaena novae-zelandiae*) and handsome flat-pea (*Platylobium montanum*).

Gorse bitter-pea (*Daviesia ulicifolia*) was common, as was the small-fruited hakea (*Hakea microcarpa*) with its distinctively-shaped fruits, grey guinea flower (*Hibbertia obtusifolia*) with its bright yellow flowers, violet kunzea (*Kunzea parvifolia*) and the blue flax lily (*Dianella tasmanica*).



*Hakea microcarpa*, Small-fruited hakea



*Kunzea parvifolia*, Violet kunzea

We also saw several daisy species, ranging from herbs such as billy buttons (*Craspedia spp*) to low woody shrubs of common cassinia (*Cassinia aculeata*) and trees of blanket leaf (*Bedfordia arborescens*).

On our final day, before returning to Harrietville, we travelled via Omeo to Mt Hotham. Here we fanned out over the wind-swept slopes of the summit hoping to find mountain celery (*Aciphylla glacialis*) in flower, but we were too late — it had already flowered.

The same applied to alpine orites (*Orites lancifolius*), a member of the Proteaceae family. All we could see on these spreading, low-growing plants were boat-shaped, leathery fruits interspersed among the thick leathery leaves. On the other hand, we were too early to see the flowers of yellow kunzea (*Kunzea muelleri*), though the buds on the plants were close to bursting.

However we did see masses of the white-pink flowers of thick eyebright (*Euphrasia crassiuscula*) as well as



*Daviesia ulicifolia*, Gorse bitter-pea

purple-flowering mountain hovea (*Hovea montana*), the distinctive yellow star-like flowers of alpine starbush (*Asterolasia trymalioides*), two species of *Pimelea* (*Pimelea axiflora* and *P. alpina*), pale pink *Caladenia* orchids (*Caladenia alpina*), silver snow daisies (*Celmisia* spp), snow beard-heath (*Acrothamnus montanus*) with its distinctive white- and green-striped leaves, the yellow-flowering ivy-leaf goodenia (*Goodenia hederaceae*) and alpine grevillea (*Grevillea australis*) with its small creamy-white, heavily-perfumed flowers.



*Westringia senifolia*, Alpine westringia

A few kilometres further down the Mt Hotham-Harrietville road we stopped for lunch at Baldy Hollow Lookout. Here we saw a spectacular mixed display of low-growing alpine westringia (*Westringia senifolia*), pink alpine boronia (*Boronia algida*) and alpine rice-flower (*Pimelea alpina*).



*Boronia algida*, Alpine boronia

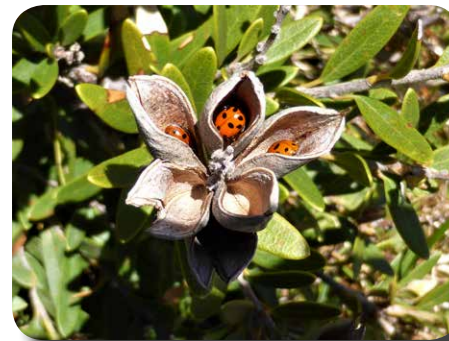
Also present were mountain pepper (*Tasmannia xerophila*), gorse bitter-pea (*Daviesia ulicifolia*), ivy-leaf goodenia (*Goodenia hederaceae*), brachyscome daisies (*Brachyscome* spp), soft cranesbill (*Geranium potentilloides*), and mountain violet (*Viola betonicifolia*). We think we saw a specimen of Bogong daisy bush (*Olearia frostii*) too, but it had finished flowering, making accurate identification difficult.

## References

Descriptions of most plants can be found in *Plants of the Victorian High Country* by John Murphy and Bill Dowling, 2nd edition, CSIRO Publishing. HEMA MAP *High Country Victoria* shows the roads and tracks travelled.



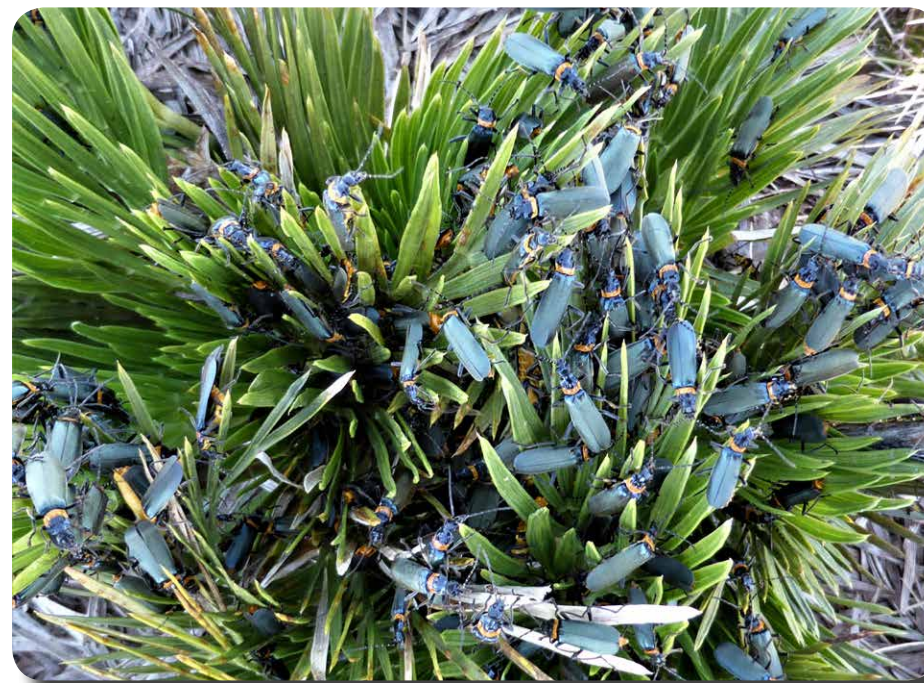
*Pimelea alpina*, Alpine rice-flower



Ladybirds in the seed follicles of *Orites lancifolius*, Alpine orites



*Asterolasia trymalioides*, Alpine starbush



Beetles on *Aciphylla glacialis*, mountain celery



*Cardamine lilacina* Molonglo Gorge

*Text and photos by Roger Farrow*

According to the 2017 Census of the Vascular Plants of the ACT (2017), produced by the National Herbarium, there are 904 native flowering plant species (Magnoliopsida) recorded from the ACT.

If grasses, sedges and rushes are excluded this equates to 736 species. In the photographic guides to the flowering plants of the ACT, that also exclude grasses, sedges and rushes, there are 445 native species in Betty and Don Wood's book (excluding eucalypts) and

350 in Meredith Cosgrove's book, although more species are listed here without images. This amounts to nearly 300 unaccounted species in the ACT.

Pictures of all the orchids of the ACT are found in David Jones's guide, covering 119 species, a proportion of which are found in the above guides leaving just under 200 species. Images of local plant species have also been progressively added through Canberra Nature Map and other web sites and include some of the 'missing' species. Each year records of species new to the ACT are also added.

The Wednesday Walkers (WW) Group of the Society have recorded and photographed many of the species missing from the field guides, my so-called 'forgotten plants'. Some are quite common and are frequently encountered, whereas others are rare and, of course, some we have never seen although we have searched for some of those in their recorded locations.

This article discusses some of the reasons why these species have been overlooked. I am starting with the cases of *Pomaderris prunifolia* and *Cassinia monticola*.

### **Pomaderris prunifolia**

When Ros Cornish and I were compiling records of our local Pomaderris for our Plant Profile project, I found a record of *P. prunifolia* in Namadgi National Park from the Atlas of Living Australia.

A specimen of this plant was collected by the late Ted Moore in 1954 on the bank of the Gudgenby

River near the Boboyan Road Crossing. A group of us from the WWs searched the area on two occasions without success and I explored the riverbanks for about 500m downstream from the crossing in February 2019, as *P. prunifolia* is mostly found in this habitat, also without success.

Ted was a very experienced plant collector so the plant and place are not in doubt and either the plants he sampled have become extinct or they exist outside our limited search area and he walked further downstream than we have explored.

The valley is very rugged and exploration across large granite boulders is slow and hazardous. Our group has found *P. prunifolia* growing on the banks of Mountain Creek at Top Crossing about 10 km north of the ACT border and it may yet be found in the ACT, in one of the remote valleys draining the eastern flanks of the Brindabella Range.



Approximate location of Ted Moore's record of *Pomaderris prunifolia*, on the Gudgenby River



View of river at the pin, February 2019



*P. prunifolia* on the bank of Mountain Creek, 50m north of Top Crossing



Diagnostic leaf of *prunifolia* with deep recessed veins and hairy incised margins

### ***Cassinia monticola***

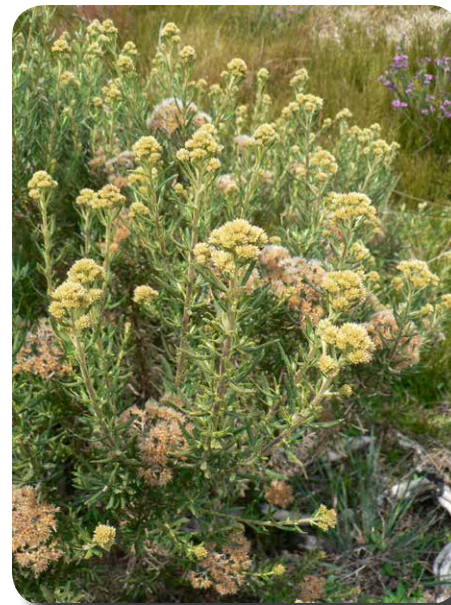
Three years after the catastrophic January bush fires in the ACT, the Wednesday Walkers visited Ginini swamp in December 2006 after the Mt Ginini road was reopened. Jo, Ros and I saw an unusual daisy bush standing out in the burnt ground in the Flats that I recognised as *Cassinia monticola*, as it is common in Kosciuszko National Park. We took a specimen to deposit in the herbarium and found it was a new record for the ACT.

We returned in 2013 and in 2018 but could not find the plant and it is assumed to be extinct. It was not seen before the fires in 2002 although we did not necessarily visit the same spot.

On the summit of Mt Ginini, near the border track, there is a large specimen of *C. monticola* that is technically in New South Wales by about five metres. The same species was seen there in 2006 by Betty Wood and could be the same plant. It is surprising that *C. monticola* has not been recorded from more southerly locations along



ANPS members, Jo Walker (L) and Ros Cornish discovering *Cassinia monticola* at Ginini Flats in December 2006. Note fire damage



*C. monticola* at Ginini Flats in 2006

the Brindabella Range, such as Mt Bimberi, and it may yet be found in one of the Flats in the Range.

Both species illustrate an important factor in the temporal dynamics of plants, that is, the natural cycle of propagation, reproduction and death and possible local extinction if the species does not reproduce.

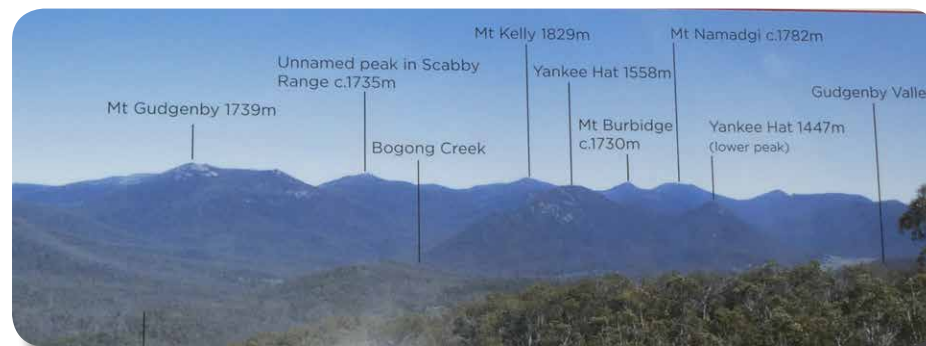


*C. monticola* in the foreground at Mt Ginini (NSW) in 2018

### **Reasons why some plants are missing from our current image-based guides**

#### **Remoteness and difficulty of access to find and photograph the species**

Several plant species are restricted to the peaks and ridges of remote parts of the southern ACT. The trails leading to these areas are not accessible to public vehicles and many of the peaks such as such Bimberi, Mt Scabby, and many others involve long, hard walks, sometimes overnight. Below is the view of the central Brindabella Range from the Yerrabi Lookout.





Shining Westringia, *Westringia lucida* (Lamiaceae). Restricted to montane woodland in the remote Scabby Range in the ACT (my picture from Toolong Range)

### Small and easily overlooked



A sneezewort, *Centipeda elatinoidea* (Asteraceae). Widespread in damp places



Dwarf beard heath, *Leucopogon fraseri*, (Ericaceae). Widespread in grassland and heaths



Grass cushion, *Isoetopsis graminifolia* (Asteraceae). Widespread in grassland



Thyme mitrewort, *Mitrasacme serpyllifolia* (Loganiaceae). Localised in grassland and heath

### Large and overlooked



Eastern bitterbush, *Adriana tomentosa* (Euphorbiaceae), monoecious, a female plant. Localised at Cotter River flats



*Adriana tomentosa* Female flowers



*Adriana tomentosa* Male flowers



Alpine starbush, *Asterolasia trymalioides* (Rutaceae). Uncommon on granite outcrops, such as Booroomba Rocks



Alpine starbush, *Asterolasia trymalioides*



Alpine grevillella, *Grevillea australis* (Proteaceae). Common in montane swamps and flats such as Ginini and Snowy Flats



*G. australis* foliage with its endemic bellid weevil, *Pachyura australis*, Ginini Flats



Brindabella grevillella, *Grevillea victoriaea* subsp *brindabella* (Proteaceae), formerly *G. victoriae*. Rare, northern Brindabella Range, just outside the ACT



Snow gentian, *Gentianella muelleriana* subsp *jingensis* formerly *Chionogentias muelleriana* subsp *alpestris*. Restricted to the grassland in the northern Brindabella Range, eg Mt Ginini

## Recently described species



Royalla daisy, *Brachyscome willisii* (Asteraceae), formerly *Brachyscome* sp aff. *formosa*. Grassy box woodland, SE ACT (Williamsdale)



Sticky daisy bush, *Cassinia hewsoniae* (Astereaceae), formerly *C. uncatata*. Grassy box woodland, northern ACT (Mulligans Flat)



*Scleranthus fasciculatus* (Caryophyllaceae) formerly *Scleranthus* sp 'loose'. Widespread



Rusty daisy bush, *Olearia brevipedunculata* (Asteraceae) formerly *Olearia phlogopappa* subsp. *subrepandra*. Montane woodland, eg Mt Ginini

## Similar looking species

### Illustrated

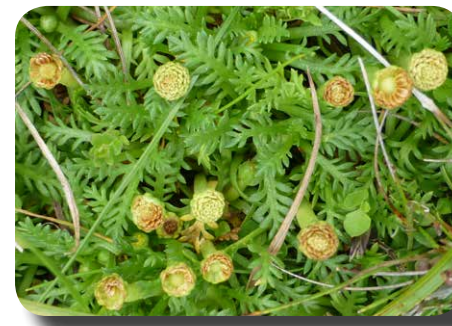


Smooth solenogyne, *Solenogyne dominii* (Asteraceae). Common and widespread in grassy woodland

### Missing



Hairy solenogyne, *Solenogyne gunnii* (Asteraceae). Local in grassy woodland



Alpine cotula, *Cotula alpina* (Asteraceae). Common and widespread in damp places



*Leptinella filicula* (Asteraceae). Local in damp places in montane forest. Distinguished from *Cotula* by bare capitulum



## Illustrated



Slender veronica, *Veronica gracilis* (Plantaginaceae)  
Common in damp grassy woodland and bogs



Stinking pennywort, *Hydrocotyle laxiflora*  
(Araliaceae). Common and widespread in  
woodland

## Rare (Edge of Range)



Australian senna, *Senna aciphylla*  
(Caesalpiniaceae). West-facing slopes of the  
Murrumbidgee valley, eg Kambah pool

## Missing



Slender veronica, *Veronica subtilis* (Plantaginaceae).  
Common in damp grassy woodland and bogs.  
Distinguished from *gracilis* by filiform leaves



Pennywort, *Hydrocotyle siphthorpioides*  
(Araliaceae). There are five similar-looking  
pennyworts locally, mostly growing in wet areas,  
often in running water, and difficult to separate  
without flowers



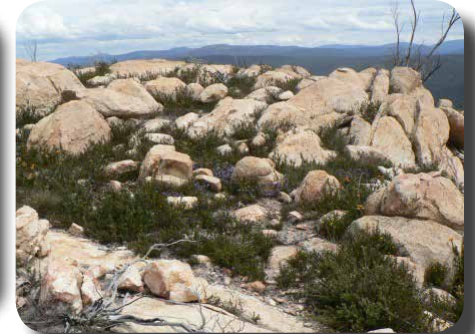
*Pomaderris costata* (Rutaceae). Known only in the  
ACT from the side of Bendora road but common in  
Tallaganda NP to the east



Dusty Miller, *Spyridium parviflorum* (Rhamnaceae).  
Rare along water courses in north-west ACT and  
along Murrumbidgee in Gigerline Nature Reserve.



Cascade daisy bush, *Ozothamnus secundiflorus*  
(Asteraceae). Rare in ranges, this specimen  
was growing on the roadside at Mt Ginini and  
destroyed by slashing in 2018.



*Dampiera fusca* (Goodeniaceae) at Booroomba  
Rocks post-fire in 2006, 3rd season of growth.  
(This species is recorded in the Wood's guide)



*Dampiera fusca* (Goodeniaceae) at Booroomba  
Rocks

## Fire dependent boom and bust cycles

The local vegetation is fire tolerant and some species are reliant on intermittent fires to open up the vegetation cover and induce germination. The plants grow and produce seed before being out-competed by regenerating shrubs.

This seed bank persists until the next major fire possibly decades away. Such short-lived plants may not be seen until there is a fire when they reappear in their millions for three or four seasons and then disappear again.

Other species that respond in this way, to a lesser extent, are wild parsnip, *Trachymene composita* (formerly *T. anisocarpa*), and tufted blue lily (a misnomer since the local lilies are white), *Thelionema caespitosum*, that grows among rocks in montane heaths.

## Right Time and Place

Some plants have a short flowering period and unless they are seen at this time, often opportunistically, they may not be recognisable in their vegetative state during the rest of the year.

The Wednesday Walkers have visited Molonglo Gorge on at least three occasions but only on the last did we see the *Cardamine lilacina* in flower.



*Cardamine lilacina*

Another plant that the Wednesday Walkers have never seen in the ACT is mountain cress, *Drabastrum alpestre*, that has been photographed in flower at Cotter Rocks which we have visited

on a number of occasions. It has a short flowering period in spring and its basal rosette is scarcely visible during the rest of the year.

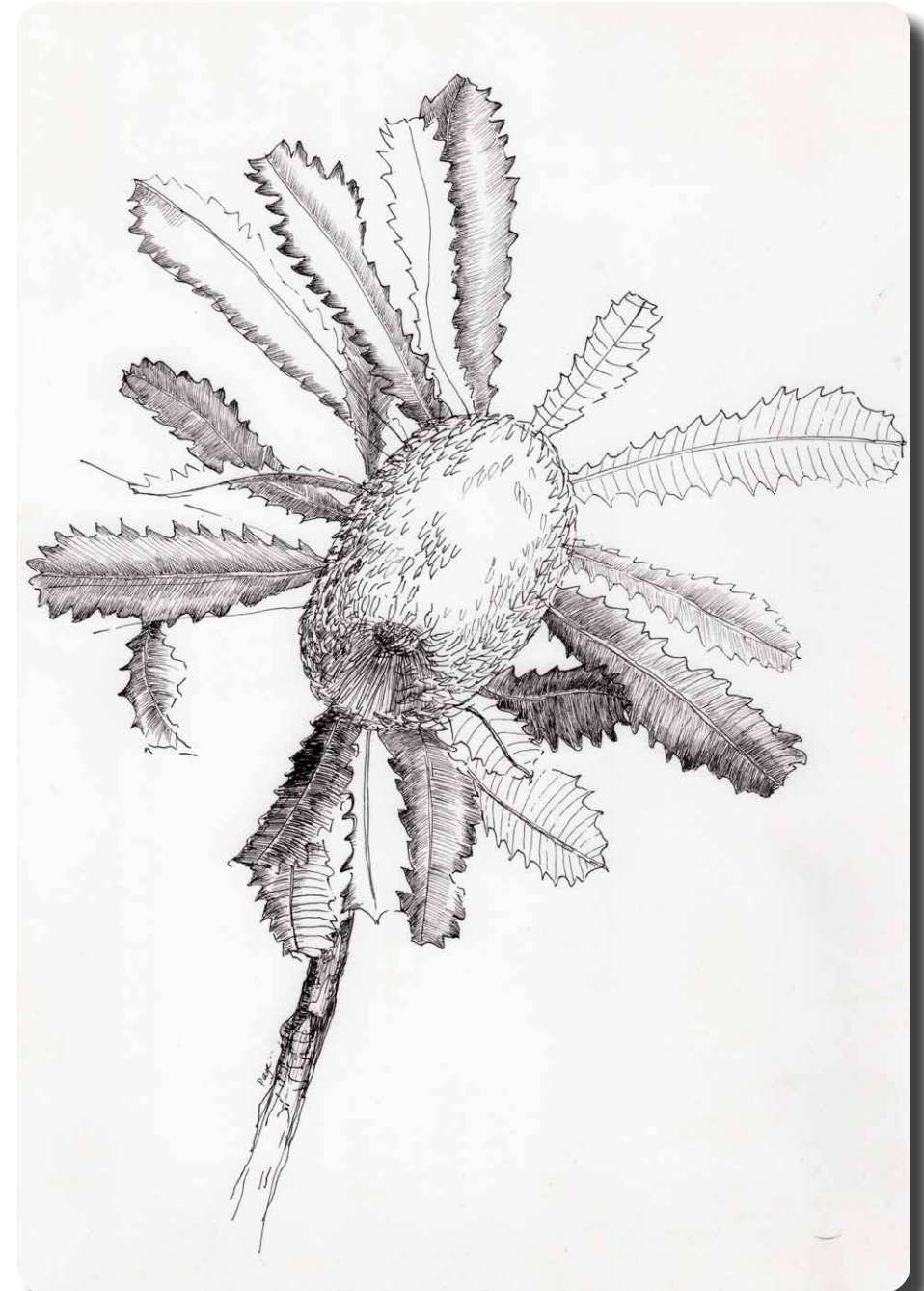


Mountain cress, *Drabastrum alpestre* (Brassicaceae).  
(My picture from a rocky outcrop, Snowy Plains)

This short introduction to some overlooked plants growing in the ACT has covered just 27 species. More species will be covered by family in forthcoming editions of our journal.



*Styphelia triflora*, Munghorn Gap Nature Reserve, Mudgee Field Trip; Photo: Gail Ritchie Knight



*Banksia serrata*; Drawing: Lesley Page

# Study Group Notes

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

## Acacia Study Group

Newsletter 144 April 2019

- From the Leader
- Welcome
- From Members and Readers
- Les Pedley 1930–2018
- New Species — *Acacia corusca*
- *Acacia chinchillensis*
- *Acacia triptera*
- *Kangaroo* — A Novel by D H Lawrence
- Australian Acacias species make very good weeds
- Books
- Seed Bank
- Study Group Membership

## Dryandra Study Group

Newsletter 76 February 2019

- *Dryandra bipinnatifida* in Cultivation
- *Dryandra lindleyana* in Denmark
- Fire and Biodiversity
- An Unusual *Dryandra brownii*
- Dryandra Reccie Trip 30th July to 3rd August 2018

Addendum: Draft Itinerary for pre-conference trip

## Eremophila Study Group

Newsletter 123 May 1029

- Letter from the Editor

- Field Trip in 2020
- What's New in the Study Group
- Feature species — *Eremophila polyclada*
- ACRA, PBR and the Vexed Issue of Cultivar Registration
- ESG Field Trip — Queensland, 2020
- ANPSA Biennial Conference, Albany, 2019
- Know your Eremophila — *E. glabra* Roseworthy
- New cultivar — *E. Meringur* Isaac
- Eremophilas for windbreaks
- The Eremophila Phytochemical Database
- Website Image Database
- Finding Eremophila Books
- From Your Letters
- Parafilm
- Next Newsletter themes
- Corrigenda
- About the Study Group

## Fern Study Group

Newsletter 142 February 2019

- Program for South-east Queensland Region
- Program for the Sydney Region
- Excursion and General Reports
- ANPSA Fern Study Group Membership
- Fern Study Group newsletters on AboutFerns.org

## Garden Design Study Group

Newsletter 107 May 2019

- About the Newsletter & Themes
- The Editor Comments
- Native Plants Queensland — Wildflower Spectacle
- Extracts from Past Newsletters
- Light Brings a Garden to Life
- Sun and Shade
- Sunshine and Shadow
- Modify the Temperature of a House
- The Procession of Light and Shade through the Days and Seasons
- Dry Rainforest section of my Garden
- From Light to Dark
- Sunshine & Shadow as a Design Tool
- Garden in Full Northwest Sun
- Sunshine & Shadow as a Design Tool
- Sunshine & Shadow @ British National Gallery
- Membership Matters

## Goodeniaceae Study Group

Newsletter April 2019

- Study Group Expectations
- Funding for Goodeniaceae Study Group
- My Interest in Goodeniaceae
- Distribution of Surplus from 12th FJC Rogers Seminar 2018
- Dr Kelly Shepherd's Proposal for funding which was put to the 12th FJC Rogers Seminar Committee
- Lechenaultias we used to grow
- Darwin's letters
- Emails from members
- Leaf Cutting Results from Members
- Propagating Two Goodenia species from Seed and Some Marvellous Possibilities!

- Goodeniaceae starring on the NSW South Coast
- Goodeniaceae in a Garden on the Wimmera Plains

## Grevillea Study Group

Newsletter 112 February 2019

- Editorials
- Activities
- In the Wild
- In your Garden
- Grevillea News
- Seed Bank
- Financials

## Hakea Study Group

Newsletter 69 February 2019

- Leaders Letter
- Hakea Crawl continued
- Photographing Hakea Seedlings
- Seed Bank
- Finance and Membership
- The story of *Hakea victoriae*
- Notes from Members
- In my Garden

## Hakea Study Group

Newsletter 70 June 2019

- Letter from the Leader
- 2018 visit to Western Australia
- Members Report — *Hakea orthorrhyncha* and other Hakeas in the Garden
- Vale Max Ewer
- From members — *Hakea eriantha* and *Hakea aculeata*
- Financial
- Photos of Hakea seedlings and Hakea species

## Isopogon and Petrophile Study Group

Newsletter 24 April 2019

- Editorial — The Petrophile Issue
- How do you say it??
- Distribution
- Characteristics
- History of the genus
- Petrophile naming
- Petrophile and Abbé Michel Gandoger
- Solving the mystery of eastern petrophiles
- How to grow petrophiles
- How to propagate petrophiles
- Aulax trials
- A splash of red
- Natural hybrids
- Fire ecology
- Conservation issues

- The top petrophiles
- Where to buy petrophiles
- In the press
- Financial report

## Waratah and Flannel Flower Study Group

Newsletter 17 June 2019

- Maria writes
- Flannel Flowers as weeds
- From the members
- Leadlight windows Central
- Maria's crazy trials
- *Actinotus forsythii* propagation
- Willian d'Avigdor's trial
- *Actinotus paddisonii*
- Checklist of *Telopea* species and varieties
- Checklist of *Actinotus* species and varieties



*Banksia speciosa*; Drawing: Lesley Page

## 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 7.30pm 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: [nativeplantscbr.com.au](http://nativeplantscbr.com.au)

### Membership Fees

Single or family memberships are the same price.

Basic membership including Bulletin and Journal — \$35 (\$18\*)

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

Life member subscribing to Australian Plants — \$15

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

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**Back cover:** *Celmisia* sp; View of Mt Stilwell from Charlotte Pass: Photo: Roger Farrow



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