



**Spring 2016**  
**Vol 28 No 228**

**\$6.<sup>50</sup>**

# Australian Plants



## Contents

|                                                                          |                    |     |
|--------------------------------------------------------------------------|--------------------|-----|
| Editorial                                                                | John Aitken        | 291 |
| Growing Australian native bush food                                      | Narelle Happ       | 292 |
| Searching for those elusive terrestrial orchids                          | Margaret Bradhurst | 300 |
| Australian native plants for green walls                                 | Robbie Renu        | 306 |
| Australia's flora moving overseas                                        | Lawrie Smith AM    | 311 |
| Bellenden Ker, Queensland<br>– four days on Australia's wettest mountain | Stuart Worboys     | 325 |

Front and back cover: Australian Canyon, Taft Garden, Santa Barbara, USA  
Photo by Lawrie Smith

## Australian Plants articles

*Australian Plants* is published quarterly to promote knowledge of Australian plants.

Editors: John Aitken and Merle Thompson

Layout: Lachlan McLaine

Contributions and offers to produce an issue are welcome. Please contact:

John Aitken and Merle Thompson  
Editors, 'Australian Plants'  
PO Box 5026, Old Toongabbie NSW 2146  
E-mail [office@austplants.com.au](mailto:office@austplants.com.au)

**All published materials are copyright, as directed, by the authors and photographers.  
Permission to reprint material must be obtained from the copyright holder.**

Opinions expressed in this publication are those of the authors and may not represent  
official policy of the Australian Plants Society NSW Ltd

*Australian Plants* No. 228 Issue of Volume 28, which comprises issues 222–229.  
Published quarterly and available nationally in 3000 copies by the Australian  
Plants Society NSW Ltd

© Australian Plants Society NSW Ltd 2016 ABN 87002680408 ISSN 0005-0008

Printed by Elect Printing, Fyshwick, ACT Print post approved 100009857

## Editorial

This issue of *Australian Plants* contains a mixture of articles, which will hopefully wet the appetite and encourage our readers to enquire more about each of the areas discussed.

Narelle Happ, a garden designer and horticulturalist who specialises in native gardens and permaculture design, discusses her passion for growing Australian native bush food. Narelle reviews a number of bush tucker plants she has successfully grown in her garden and their use both as attractive garden plants and as sources of food.

Interested in terrestrial orchids but have experienced difficulties in locating them in their natural environments? In her article on *Searching for those elusive native terrestrial orchids*, Margaret Bradhurst reveals where to look for those elusive plants, what to look for and how to identify them. Margaret has an enormous passion for terrestrial orchids and accompanying her on a walk through the bush reveals that terrestrial orchids are not as elusive as first imagined.

Tired of looking at featureless grey concrete and glass city buildings, brick walls and boring fences? Robbie Renu's article challenges us to consider how to beautify a drab wall or other vertical surface by the use of vertical gardens. Robbie discusses the basic elements of vertical gardens and identifies a number of Australian native plants which are readily adaptable to the harsh conditions experienced in growing plants on vertical walls.

For many Australians travelling overseas, it is often a thrill to discover one or more of our native plants happily growing in the countries they visit. Lawrie Smith has travelled overseas extensively and has encountered many Australian native plants in his travels which he shares with us in his article on expat Australian plants. Lawrie's article is enhanced by many beautiful pictures of the plants he has encountered in his travels.

Ever thought about the effect of climate change on the distribution of Australia flora? In his article, Stuart Worboys describes his experiences, as a member of a party, to Mt. Bellenden Ker, Queensland, to survey endemic mountain top flora species. It is imperative that scientists have an accurate record of the distribution and ecology of Australia flora if they are to gain an insight into the effect of global warming on the abundance and distribution of these plants.

The photographs in each article were taken by the authors unless otherwise indicated.



## Growing Australian native bush food

Narelle Happ

*Narelle is a garden designer and horticulturalist who specialises in native gardens and permaculture design.*

Aboriginal people depended on knowledge of plants and animals for their survival. Thanks to their knowledge and with a huge increase in popularity of native bush food, we are now finding and enjoying a huge variety of bush foods. Plant cultivation means we can now grow them in our own gardens.

The beauty of growing native bush food is their hardiness to our climate. Good drainage and some attention to feeding and watering, particularly as they establish, will produce a strong, productive plant.

My enthusiasm for growing edible Australian native plants came about with my passion for growing an edible garden. Passionate about native plants I soon discovered many species that could be used in the garden not only from a garden design perspective but also as an edible species.

Once I started to research the possibilities, I was delighted to find such a huge range of edible native plants which have an extensive edible and medicinal history.

Edible natives can be used in many ways in the garden from groundcovers, understory plants, shrubs, hedges, canopy trees and even in pots.

A lot of the edible species are rainforest species so are quite happy in a shady position in the garden, always a tricky area for gardeners.

When considering a groundcover I would suggest the following two plants.

*Mentha saturioides*, Native Mint. This dense carpet of foliage will blind out any weeds in the garden while providing aromatic foliage that can be used fresh or dried as a tea or used in cooking. The small white flowers that cover



The fruit of *Citrus australasica*, the Finger Lime, has become very popular and is mainly used as a garnish for seafood and the pulp is used for processing into sauces, jams and jellies.



*Mentha saturioides*.

Photo: [www.prosperitywithnature.com.au](http://www.prosperitywithnature.com.au)

the plant in spring make this a stand out amongst other brighter coloured plants and, unlike exotic mint, can grow in full sun to part shade and doesn't have problems with rust. A prune every six months keeps the plant in check while providing a dense habit.

*Tetragonia tetragonioides*, Warrigal Greens, is a hardy groundcover which will grow just about anywhere. Uses of the leaves of this groundcover include blanching and using in a pesto. The blanching removes oxalic acid in the leaves and the water should be discarded. Younger leaves are sweeter while older leaves tend to be more bitter. Use as you would spinach. Small yellow flowers occur in spring.

Small shrubs and understory native plants give a layered look to the garden while providing habitat for small birds. Edible native plants are perfect for these situations and there are many to choose from.



*Tetragonia tetragonioides*, Warrigal Greens. The plant is also indigineous to Argentina, Chile, Japan and New Zealand. Photos: John Aitken





One of my favourites is *Austromyrtus dulcis* or Midyim Berry, which is a small shrub that only grows to a height of 50 cm. It is one of the only native bush foods to retain its original name, albeit being, Midgin-goora-nooran. Originating from South East Queensland, these small shrubs grow really well in a part shade position and even do well under eucalyptus trees. The small berries are produced over summer and have a sweet taste that I find quite hard to describe. The burgundy new growth makes a statement in the garden all year round.

*Austromyrtus tenuifolia* has much smaller leaves and grows to 1 metre. *Austromyrtus* 'Copper Tops', which is a cross between *A. dulcis* and *A. tenuifolia*, has the most prolific fruit and is named for its foliage colour.

*Melastoma affine* or Blue Tongue is a popular small shrub for children as it gets its common name from the fruit. Once ripe the fruit stains the tongue blue for a couple of hours after eating. This small shrub likes a shaded position and enjoys a bit of extra moisture in the soil. It will certainly let you know if it is dry as the foliage will droop and will soon regain its vigour once watered. With purple and occasionally white flowers, this is an attractive shrub for enjoying spring flowers.



Fruit of *Austromyrtus dulcis*



*Melastoma affine* Photo: Carlo Taliana

Edible shrub favourites include *Atriplex nummularia*, Old Man Saltbush, *Citrus australasica*, Finger Lime and *Rubus parvifolius*, Native Raspberry.

*Atriplex nummularia* is a favourite shrub of mine, not only for its culinary uses but also for its light grey foliage. It is a bushy shrub, growing to one metre, which enjoys a well-drained sunny position in the garden.

It needs to be pruned in early spring and autumn to maintain a bushy habit. The prunings can be then dried and used in cooking dishes such as bread, frittata, pastas and meat dishes. It is also delicious ground and used in a dukka along with lemon myrtle, bush tomato and roasted macadamias.



*Atriplex nummularia* is also an ideal ornamental garden plant.  
Photo: D. Blumer. [www.bgpa.wa.gov.au](http://www.bgpa.wa.gov.au)

Fruit of *Citrus australasica*

*Citrus australasica*, the Finger Lime, has been enjoying popularity in restaurants throughout Australia and the fruit are now sold in fruit markets nationally. It is an easy plant to grow and will take full sun if irrigated regularly, but equally enjoys a shady position. Mulch the plant well and feed it four times a year with organic fertilisers such as compost, cow manure, worm castings and the like. Fruiting occurs from April to June but varieties such as 'Judy's Everlasting' sees fruit occurring all year round. It is used in cooking seafood or salads or refreshing used in a fruit salad.



*Rubus parvifolius*, the native raspberry, is one of my favourite native berries due to its sweet flavour and its long fruiting time. During the fruiting months from August to December, the three shrubs I grow provide me with a bowl of berries each day.





I grow them in a raised bed to contain them and to make it easier to net from hungry birds. They can be espaliered along a fence for easier harvest and are happy in a full sun to part shade position. I usually provide extra water to my plants during their flowering and fruiting time, which results in a sweeter fruit.

Aboriginal people often used a decoction, made by boiling the fruit to form a concentrated liquor, for treatment of diarrhoea and in modern day they are often used as a tea to treat flu and morning sickness.



*Rubus rosifolius*, another variety of native raspberry which grows along the east coast of Australia. It is a better yielding fruit plant, which, like *Rubus parvifolia*, is also indigenous to China, Japan, Korea, Vietnam. Photo: Mark Abell

Larger shrubs and trees that are easy to grow and harvest in the edible garden are *Acacia longifolia* ssp. *sophorae*, the Coastal Wattle, *Ficus coronata*, the Sandpaper Fig, and *Backhousia citriodora*.

*Acacia sophorae* is a local wattle to the east coast and one of the industry standard edible wattles. The wattleseed is collected when dry and roasted and ground for use in baking, desserts and drinks. A favourite is wattleseed damper and it also tastes delicious in ice-cream. *A. sophorae* is a scrambling wattle to two metres high and produces beautiful yellow blooms in late winter. Harvesting is done by placing a tarpaulin under the tree and gently hitting with a stick. The seed pods and seed fall to the ground to be gathered up and stored until



*Acacia sophorae* is a prostrate shrub when growing on exposed coastal dunes but may grow as a large shrub to 2–3 metres in height (sometimes taller) in more sheltered locations. Photo: Mark Abell

processed. The first settlers used wattleseed as a coffee substitute and once you smell its aromatic fragrance, you will see why.

*Ficus coronata* was used as a sweet fruit but the leaves were also used as a sandpaper, hence its name. Most native figs are edible, but not all are palatable. *F. coronata* is a larger tree but if pruned regularly can be kept to a two metre height as a shrub which makes harvesting fruit easier.



Fruit of *Ficus coronata*,  
Sandpaper fig





*Backhousia citriodora*, the Lemon-scented Myrtle. Photo: Brian Walters

*Backhousia citriodora*, the Lemon-scented Myrtle, is such a fabulous plant. Not only does it make a beautiful specimen tree but it can also be grown as a hedge and is also happy growing in a large pot. The leaves of *B. citriodora* can be used fresh or dried as a tea, ground and used in baking, and if a branch is hung in the shower when you have a cold, is good for clearing your head. *B. citriodora* is often used in cosmetics such as soap and facial creams and the oil is also used widely. In the same family *B. myrtifolia*, the Cinnamon Myrtle, is used for its dried leaves as are *B. angustifolia*, the Curry Myrtle and *B. anistata*, the Aniseed Myrtle, which was also used as a flavouring.

The first commercialised use of *B. citriodora* was recorded as being during World War 2 when the soft drink company Tarax used the leaves to flavour lemonade.

Don't be restricted by the small size of your land, balcony or even indoor garden as most of the native bush foods grow happily in pots.

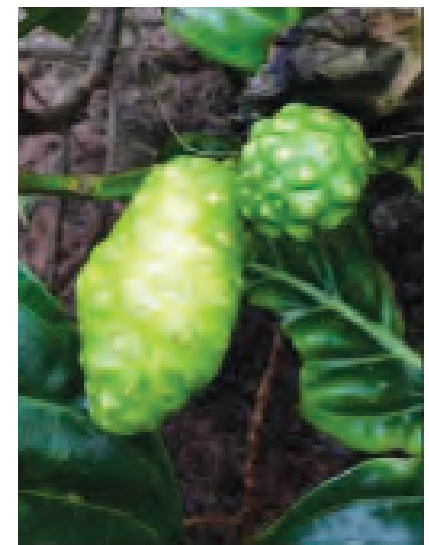
Indoors – try the *Linospadix monostachys*, the Walking Stick Palm. A slow growing palm with edible droops of fruit for most of the year. Often referred to as nature's tic-tacs.

Balcony – make sure to use the best quality native potting mix available and always mulch the top of your pots. Any of the species mentioned and available can be grown in a pot. Regular watering and feeding is essential but even a large rainforest tree can be planted in a pot which restricts its size while still making edible fruit and foliage available.

The plants listed here are just a few of the many varieties available. No matter what climate or conditions in your garden, there is a huge range to choose from, including those that are happy to be grown in pots. Research your area and find out what grows well and you will reap the benefits of creating an edible native habitat.



*Linospadix monostachys*. Above: Long and slender flowering spike. Photo: John Aitken;  
Above right: Droops or infructescence of red fruit.  
Photo: Omnia on Flickr



Right: The fruit of *Morinda citrifolia*, the Cheesetree, Magnetic Island, Queensland. A not so inviting bush tucker due to its rancid cheesy smell.  
Photo: Alix Goodwin





## Searching for those elusive native terrestrial orchids

Margaret Bradhurst

*Margaret has been a member of the Sutherland Group of the Australian Plant Society NSW for many years and has had a life-long interest in native orchids.*

Orchids are the largest plant group on earth with the number of identified species worldwide being over 30,000. Of these about 1700 species are found in Australia and approximately 80% of these are terrestrial orchids (that is they grow in the ground).

After flowering and the dispersal of seeds, most terrestrial orchids wither and die away. The plants then remain in a dormant state underground throughout the summer months, living off the nutrients stored in their tubers (tuberoids). After autumn rains, they re-sprout, the leaves reappear followed by the flowering stem and eventually the flowers. So, it can be seen that an orchid spends very little time in flower. Most of the time it is either in leaf form or underground.

### Where to look for terrestrial orchids

Terrestrial orchids can be found in a variety of habitats including heathland, grassland, on sandstone rock platforms and 'slabs', in open forest, rainforest margins, coastal dunes and swamps. In other words, just about anywhere! Try looking in the leaf litter and surrounding vegetation along the edges of bush tracks as orchids like the extra light



A rock platform where orchids were found in moss and under shrubs.

and disturbance that a track provides. A surprising number of orchids can still be found in local bushland reserves.

### Look for their leaves

Spotting orchids in the bush can be difficult at the best of times and often it is just a matter of being in the right place at the right time, but I find that in some cases being able to recognize their leaves often leads to finding orchids in flower.

### Orchids that form colonies

The above is particularly so with the orchids that form colonies. *Acianthus*, *Corybas* and *Cyrtostylis* orchids are good examples. They have rounded to heart-shaped leaves about 20–30 mm across that sit close to the ground. The flowers of these genera are often small and dull coloured and are not always easy to see amongst the leaf litter.



*Acianthus fornicatus* flowers with their leaves



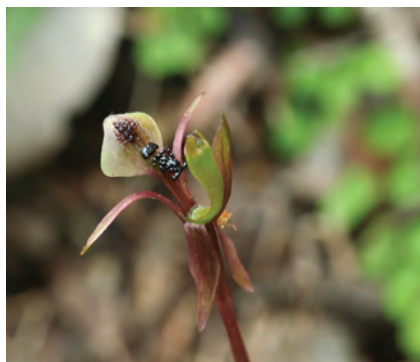
A colony of *Corybas pruinosus*. Their tiny flowers are only 1 or 2 cm tall.





The *Chiloglottis* (Wasp and Ant orchids) form colonies too and have pairs of leaves at the base of the plant. These are often easier to see than their brownish stems and flowers. In some years *Chiloglottis* colonies do not produce any flowers at all.

Some *Pterostylis* (Greenhood) orchids also form quite large colonies and it is often easier to spot a green rosette of leaves than the green flower.



*Chiloglottis formicifera* (*Myrmechila formicifera*)



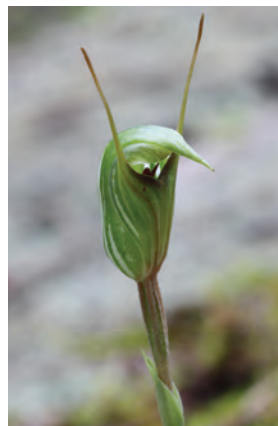
*Chiloglottis trapeziformis* (*Myrmechila trapeziformis*)



*Chiloglottis* leaves



*Pterostylis concinna* (*Taurantha concinna*) Rosettes and flower



## Orchids and Fire

It is worth looking for orchids in areas where a recent bushfire has been through, as many orchids are stimulated into flowering by fire. Even though they have not flowered for several years, the occurrence of fire will often result in spectacular massed flowerings (provided the new shoots have not been eaten by grazing animals)! *Pyrorchis nigricans* (Red Beak Orchid) is a good example of this. Between fires they usually only appear as a colony of ground hugging leaves (commonly known as Elephants Ears).



*Pyrorchis nigricans*



*Glossodia major*

*Glossodia major* (Large Wax-lip Orchid) also responds well after bushfire. While there might be one or two in flower in normal years, following a bushfire there could be many more.

*Burnettia elliptica* (Lizard Orchid) is another orchid which needs fire to stimulate it into flowering. Flowers are white inside and striped reddish-brown on the outside making them difficult to see against the blackened soil unless they are fully open. Found growing in shrubby peaty swamps it is one of the most elusive terrestrial orchids.

### Some orchids have grass-like leaves

A large number of orchids have leaves which are grass-like and hard to spot, but fortunately most of these have colourful flowers. The bright yellow of the *Diuris* (Donkey Orchids) stands out well and makes them easy to see. *Thelymitra* (Sun Orchids) and *Calochilus* (Beard Orchids) both have a similar single leaf about 25 cm long, the latter being more triangular in cross-section. As the name suggests Sun Orchids need a warm sunny day for them to open their flowers fully. So look for them early in the day as by mid-afternoon they are starting to close up.





*Diuris aurea*



*Calochilus campestris*



*Thelymitra pauciflora*

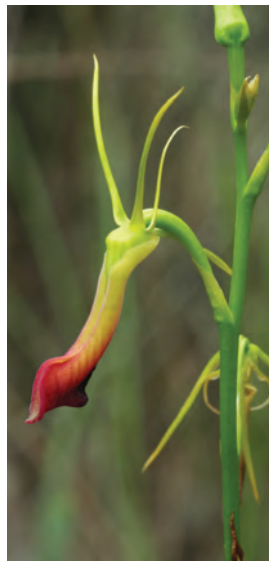
Most *Cryptostylis* (Tongue) orchids form small colonies and are among the few terrestrial orchids which have evergreen leaves. They are in flower during the summer months from November to February.



*Cryptostylis erecta*



A *Cryptostylis* leaf



*Cryptostylis subulata*

### Some leafless orchids

Another summer flowering genus is the leafless *Dipodium* (Hyacinth) orchid. The bright pink flowers are easy to spot at that time of the year when not very much else is in bloom in the bush. They grow in open forest usually in association with eucalypts.

*Erythrorchis cassythoides* (Climbing Orchid) is another leafless orchid. It climbs up the trunks of trees (usually *Eucalytus* or *Angophora*) and can grow up to 5 metres in height, but it is usually a lot less. The pale yellowish flowers hang in small bunches. It reaches its southern limit in southern Sydney.

Of course not all orchids flower every year as a lot depends on seasonal conditions, but by training your eyes to recognize both the leaves and the flowers of an orchid, you will have every chance of finding some of those elusive terrestrial orchids



*Dipodium variegatum*



*Erythrorchis cassythoides*

Photos: All photos were taken by the author.





## Australian native plants for green walls

Robbie Renu is a Registered Horticulturist specialising in green roofs and green walls. He has over twenty-five years' experience working with native plants, including professional experience in garden design and maintenance, including managing the Cornucopia Nursery Project in Sydney.

Robbie has completed a Specialist Certificate in Green Roofs and Green Walls at the University of Melbourne, and understands first hand the contribution green roofs make to the urban environment.

Nature has created green walls and it's from nature that we get our inspiration. Many southern facing sandstone walls all over the eastern side of Australia are covered with ferns, such as, *Gleichana* (Coral fern), *Adiantum* (Maidenhair Fern), and *Todea barbara* (King Fern). Many forest figs, on the high branches, have native orchids, such as, *Denbrobiums*, *Sarcochillis* and fern species such as *Microsorium* and *Pyrrosia* (Rock fern), growing on them. They look magnificent. We now have opportunities to enhance our urban cities of high rise buildings and flat roof tops and make our cities sustainable, by using them as the basis for green space. Green infrastructure increases ecosystem functions in our cities, making them more visually pleasing and more livable.

### What are the functions of green walls?

Green walls are an opportunity for the promotion of our beautiful, unusual and adaptive native plants species. A celebration of the complexities and uniqueness of the natural world in our bush land. The Sydney bioregion has an amazing range of species easily out numbering all



The world's tallest vertical garden designed by French botanist, Patrick Blanc on the facade of One Central Park building, Sydney, NSW. Photo: Mark Abell

of Europe. What better way to showcase these species than the use of green walls, providing a connection to green spaces and natural beauty, while enhancing biodiversity and preserving rare species in our urban environments. This connection is also a way to educate the next generation on the importance of sustaining current native species and its benefit to our people and cities. Health and wellbeing can also be enhanced through the use of green spaces such as green walls and roofs. Connection with green spaces make us feel good, purifying the air around us and promoting good mental health in the community.



Greenwall with flowering native plants and ferns



The collection of water in a green roof or wall slows down the rate of storm water discharge. Many cities can be crippled with flash flooding and essential services halted, therefore storm water retention is a positive aspect that can be introduced by green walls and roofs.

As cities become bigger they get noisier and congested with more traffic and people. Overhead aircraft make conversation impossible to hear. The insulating nature of plants and the greenwall systems itself will help to absorb this noise. A quieter environment makes people more productive and lessens the factors that escalate stress and sickness. A building will have energy saving aspects with the insulation of a green wall or roof, protecting the building from heat, therefore reducing the cost of cooling.

Food production on a roof or wall again brings closer the connection we have with the very source of our nutrition and health. This connection is being lost at the fast food mall or urban feedlot where food is churned out and does not reflect the product produced in the paddock, or ground.

Patrick Blanc, a French botanist, started the green wall movement in Europe with a system of growing plants that was inspired by an interest in terrariums. Patrick's green walls are a work of art, showcasing the function and beauty of green spaces in our urban dwellings.

Patrick's green walls have migrated to Australia, and examples can be seen at the One Central Park Building, located in Broadway, Sydney.



Some of the Australian native plants, growing on the vertical walls of One Central Park between two layers of geotextile matting.  
Photo: Mark Abell

Utilising a felt wall design, the plants are planted into a felt material, irrigated and fertilised. This is great for regions with low evaporation rates and where water is abundant. Other systems have pots on a wall approach or a vegetative bag combining the felt and a potting media. When extra media is applied to a system it reduces the risk of an irrigation failure or temperature stress. The type of green wall system will determine the plants that are suitable on the green wall or rooftop. It is important to get the right plants on the wall and roof, species that are able to cope with the medium used, and the local environment.

It is important to stress that Australia's low moisture and high temperatures are a major hurdle to the success of green infrastructure. To overcome the challenges of the Australian environment, the vegetative bag, green wall designs allow for a larger volume of growing media to be accessed and a greater chance of survival.



Our native plants have adapted themselves to these conditions and have developed strategies and adaptations to survive. Fleshy thickened leaves are able to store water; this is a characteristic of succulence in leaf morphology (*Dendrobiums*). The roots of many local native plants have adaptations to store water, for example fleshy roots or water storing bulbs (*Bulbine* and *Arthropodium*). Dormancy is a characteristic in dry land species where the plant shuts down until adequate moisture is available and resprouting is a mechanism for recovery after drought.

Another category for plant selection is flowers, as a green installment has to present well, and be aesthetically pleasing for those working and living within the area/building.

*Trachymene* (Native Parsnip)  
and *Bulbine* (Golden lily)  
flowering on a green wall.





Meadow gardens in Europe are making a name for themselves and are showcased at garden festivals. Many local native meadow species include a mix of flowering and grass like plants, excellent choices for a green wall. Ferns are very successful on green walls sometimes too successful, and can take over. They are an excellent choice for a wall located in shade, and can be used on the lower part of a green wall where there is abundant moisture.

Bringing diversity to a garden is a great way to enjoy the many visitors that migrate from day to day or season to season. It's the pollinators that are in decline due to climatic changes and chemical pollution. Pollinators need flowers to attract them, they are an important aspect of green wall development and ecosystem functions. Native meadow plants that I have found valuable are *Trachymene incisa* (Native Parsnip), *Brunoniella* (Blue Trumpet), *Wahlenbergia* (Native Bluebells) and *Dicopogon* (Chocolate Lily).



Every green space is different due to location and climate and it is essential that species be trialed to determine the right plants for your green wall or roof. Don't be afraid to try different species out as you might be surprised at their ability to thrive in differing conditions. It is an exciting time to be working in the field of our Australian native plants as they are well suited to the challenges of integrating nature with infrastructure.

*Chorizema diversifolium* would make a stunning addition to any vertical garden. Photo: Mark Abell.

## Australia's flora moving around the world

*Lawrie Smith AM. Lawrie is a landscape architect, Past President of ANPSA and a member of this Society for more than 40 years. He has a passion for using and promoting Australian native plants through the numerous significant projects, botanic gardens and major parklands, primarily in Australia but also in the UK and Japan, for which he has been responsible.*

Our Australian flora has been a player on the international stage since the age of exploration in the 17<sup>th</sup> and 18<sup>th</sup> Centuries when the Dutch, British, French and other European nations discovered, collected and transported new plant species from around the world back to Europe. The emigration of Australian species began initially to Europe but now spans across all continents.

In Britain these imported plants were researched and planted often in local estate gardens where the landed gentry of the day always wanted to include rare and unknown species in their extensive gardens; the unique flora of Australia was among those in demand. Consequently finding mature specimens of Australian plants in the public and private gardens of Europe today is not unusual.

### Emigrant eucalypts

Perhaps the Australian genus with the most worldwide impact is the *Eucalyptus*, often introduced to a new continent for its speed of growth, timber quality and the range of species suited to a variety of climatic zones. It would not be surprising to know that there are now far more eucalypts growing throughout the world than remain in Australia!

The countries of Europe, particularly those around the Mediterranean, have a significant component



An emigrant eucalypt in Italy



of *Eucalyptus* species established in their cities and countryside. Surprisingly, on the upper slopes of the Rock of Gibraltar there are many mature *Eucalyptus* specimens. Similarly on Greece's rocky coastal headlands and islands eucalypts thrive where local tree species cannot. In many Greek village streets and squares eucalypts are used for shade. Their normal tall open form is modified by a regular program of lopping large trunks and branches back to 'hat racks'. The trees respond rapidly with dense epicormal branching to create suitable shady canopies.



A modified *Eucalyptus camaldulensis* in Greece.

## Subscriptions to *Australian Plants*

*Australian Plants* may be received by membership or subscription.

**Membership:** Contact the Secretary of the following Societies: Canberra, New South Wales, South Australia, Tasmania and Western Australia.

**Annual subscription:** \$27.50 (AU\$45.00 overseas) including postage to your address.

**Contact:** Subscription Officer PO Box 3066 Bowenfels NSW 2790;  
Email: merleaps@bigpond.com; Fax: 02 6351 2384

**Binders:** To fit the holes drilled \$6.50. **Packaging and postage in Australia** is \$9.00 for 1–2 binders. For 3+ issues P&P advised on order.

**Past Issues:** Recently published single issues are \$5.00 plus \$2.00 postage in Australia for 1–3 issues. For 3+ issues P&P advised on order.

**Australian Plants Reference:** Index to volumes 1–18, \$16.50 + \$9.00 p&p in Australia. Currently on special @ \$5.00 + p & p.

**Bound Volumes:** Past issues available. Currently on special @ \$10.00 + p & p. Contact the Australian Plants Society NSW Ltd  
PO Box 5026 Old Toongabbie NSW 2146  
Phone (02) 9631 4085 or Email office@austplants.com.au

**Mail Order Book Services:** Contact Society Secretaries for information on services available.

## Note to subscribers

Please refer to the envelope in which you receive your journal. This will show the date of expiry of your subscription and your subscriber number – a 5-digit number shown above your name.

**Use the form on the following page to renew your subscription if it is due. Include your subscriber number, especially if you are paying by credit card as this number is used instead of your name for security reasons when processing your payment.**

**Do not use this form if you are a member of the Canberra, NSW, South Australia, Tasmania or WA societies (as listed on page 3 of this insert) and you receive the *Australian Plants* journal as part of your membership or if you pay your subscription via SGAP Queensland.**

Payment by Direct Deposit.

Commonwealth Bank of Australia (CBA)

Account Name – Australian Plants Society NSW Ltd

**BSB: 062 217 Account No: 0090 7163**

**It is essential that the depositor can be identified.**

**WE REQUIRE THAT YOU RECORD YOUR SUBSCRIBER NUMBER AND YOUR SURNAME ON THE DEPOSIT SLIP.**

New subscribers should record their surname and send a completed form noting the date of deposit.



## Australian Plants journal subscription

NEW ☐ RENEWAL ☐ GIFT ☐

Rate WITHIN AUSTRALIA is \$27.50; OVERSEAS rate is AU\$45.00.

Your subscription will cover four issues commencing with the next issue or from the end of your current subscription.

**Please refer to notes on previous page before completing this form.**

Name

Address

State  Postcode

Telephone ( )  Fax ( )

Email  Subscriber number

### Method of payment: please tick

I enclose Cheque ☐ Money order ☐ for AU\$

Cheques should be made out to the Australian Plants Society (NSW).

Overseas cheques, unless in Australian dollars and drawn on an Australian bank account, will NOT be accepted due to the high bank fees.

**OR**

Please charge my: Mastercard ☐ Visa ☐ Amount:

PLEASE PRINT ALL DETAILS VERY CLEARLY

Card Number:

Card Holder's Name:

Expiry Date:  Amount:

CVV/CSC:  (The last three digits printed on the signature panel on your card)

Card Holder's Signature:

The completed form should be either:

Posted to: Australian Plants  
PO Box 3066 BOWENFELS, NSW, 2790

OR Faxed to: Australian Plants (02) 6351 2384

## Australian Native Plants Society (Australia) and member society contacts

### Australian Native Plants Society (Australia) Inc. (ANPSA)

President: Ben Walcott  
Secretary: John Carter: PO Box 187 Deakin West, ACT 2600  
Email: [executive@anpsa.org.au](mailto:executive@anpsa.org.au)  
Website: <http://anpsa.org.au>

### Australian Plants Society NSW Ltd

President: John Aitken  
Secretary: Heather Miles  
PO Box 5026, Old Toongabbie NSW 2146 Tel. (02) 9631 4085.  
Email: [office@austplants.com.au](mailto:office@austplants.com.au)  
Website: [www.austplants.com.au](http://www.austplants.com.au)

### The Australian Native Plants Society, Canberra Region Inc.

President: Lucinda Royston  
Email: [president@nativeplants-canberra.asn.au](mailto:president@nativeplants-canberra.asn.au)  
Secretary: Jenny Jeffery  
Email: [secretary@nativeplants-canberra.asn.au](mailto:secretary@nativeplants-canberra.asn.au)  
Website: [nativeplants-canberra.asn.au](http://nativeplants-canberra.asn.au)

### Native Plants Queensland

President: Ian McMaster  
Secretary: Paul Taylor: PO Box 586 Fortitude Valley QLD 4006  
Email: [secretary@npq.org.au](mailto:secretary@npq.org.au) Website: [www.npq.org.au](http://www.npq.org.au)

### Australian Plants Society, S.A. Region Inc.

President: Russell Dahms E-mail: [president@australianplantssa.asn.au](mailto:president@australianplantssa.asn.au)  
Secretary: Ms Ali Ben Kahn, PO Box 304, Unley, SA 5061.  
Tel. (08) 8388 3004 (h) Email: [secretary@australianplantssa.asn.au](mailto:secretary@australianplantssa.asn.au)  
Email: [secretary@australianplantssa.asn.au](mailto:secretary@australianplantssa.asn.au)  
Website: [www.australianplantssa.asn.au](http://www.australianplantssa.asn.au)

### Australian Plants Society Tasmania Inc.

President: Dick Burns  
Email: [dburnsplantsman@bigpond.com](mailto:dburnsplantsman@bigpond.com)  
Secretary: Mary Slattery, PO Box 3035 Ulverstone 7315  
Website: [www.apstas.org.au](http://www.apstas.org.au)

### Top End Native Plants Society

President: David Liddle E-mail: [topendnativeplantsociety@hotmail.com](mailto:topendnativeplantsociety@hotmail.com)  
Secretary: Ingrid Nadjaran: PO Box 135 Palmerston NT 0831  
Website: [www.topendnativeplants.org.au](http://www.topendnativeplants.org.au)

### Australian Plants Society Victoria Inc.

President: Greg Brown Email: [president@apsvic.org.au](mailto:president@apsvic.org.au)  
Secretary: Helen van Riet PO Box 357 Hawthorn Vic 3122  
Email: [apsvicsecretary@gmail.com](mailto:apsvicsecretary@gmail.com) Website: [www.apsvic.org.au](http://www.apsvic.org.au)

### Wildflower Society of Western Australia Inc.

Vice president: Geoff Corrick  
Secretary: Kerry Smith, PO Box 519 Floreat WA 6014.  
Office: Perry House, 167 Perry Lakes Drive  
Tel. / Fax: (08) 9383 7979 Email: [wildflowers@ozemail.com.au](mailto:wildflowers@ozemail.com.au)  
Website: <http://members.ozemail.com.au/~wildflowers/>

Spring 2016 insert — Page 3



**The Australian Flora Foundation fosters scientific research into Australia's flora.**

It provides funding each year for a number of projects for original research into the biology and cultivation of Australian native plants.

While the grants are not usually large, they are often vital in enabling such projects to be undertaken. Many of the researchers are young honours or postgraduate students, and their success with an Australian Flora Foundation grant often stimulates their interest in researching Australia's unique and diverse plants throughout their careers.

This work is only made possible by the generous support of donors and benefactors.

Because of lack of funds, several worthwhile projects can't be approved each year. With more money, more and larger projects could be undertaken.

100% of donations to the Australian Flora Foundation's Research Fund is spent on research.

If you'd like to help, you could send: a cheque for \$33.00 to become a member of the Australian Flora Foundation, and/or a tax deductible donation for research, together with your name, address and email to:

Treasurer  
Australian Flora Foundation  
PO Box 846  
Willoughby NSW 2068



Then to add insult to injury, the lower trunks are annually white washed at the same time as the adjacent buildings in the villages. Quite remarkable but somehow aesthetically appropriate for a Greek island streetscape, as shown in the photograph below.



During the Cultural Revolution in China, the natural vegetation was largely felled to fuel the industrial furnaces. This deforestation was subsequently rectified by using eucalypts in extensive plantations and as lengthy avenues along highways.

In the USA *Eucalyptus* forests were planted in many areas to provide timber sleepers for the expanding railway network, but they were soon found to be too hard and heavy. Now the *Eucalyptus* trees have become naturalized in many regions, most notably in California.



*Eucalyptus camaldulensis* provide a beautiful frame for a bull ring in Malaga, Spain

### Australian trees add landscape diversity

Other Australian tree species are used to add diversity or sometimes to make a significant landscape statement through their unique form, foliage and flowers. Two species stand out among many.



In Kunming China, the 'city of eternal spring', two long and wide boulevards dissect the city centre and are enhanced by a twin avenue of *Grevillea robusta*. Unlike their usual irregular form in Australia, here they are regular and almost identical. The Institute of Botany explained they were cloned from selected specimens to ensure the avenue would be uniform and dramatic.

An avenue of *Grevillea robusta*, Kunming, China



*Xanthostemon chrysanthus*, Singapore

In Singapore, one of the major boulevards is lined with *Xanthostemon chrysanthus* or Golden Penda providing a dense, dark green avenue of shade along its considerable length, which is transformed in a blaze of gold when the canopy is covered by massed flowers in season.



The *Macadamia* cannot be overlooked due to the successful way this delicious nut has been exported, developed and mass planted in Hawaii. Although orchards are not immediately as obvious as avenues along roadways, this Australian plant is internationally significant due to its economic importance.

*Macadamia integrifolia*  
Photo: Brian Walters





## Moreton Bay Fig Trees

The Spanish island city of Cadiz, just west of Gibraltar, surprises with an avenue of huge Moreton Bay Figs along the Atlantic Ocean promenade. The species was identified as *Ficus macrocarpa* ssp *columnaris*, endemic to Lord Howe Island. These majestic specimens provide much needed shade in this hot dry Mediterranean climate as well as withstanding the consistent winds blowing from the ocean. Researching how these specimens first came to Cadiz would be informative.



*Ficus macrocarpa* ssp *columnaris*, Moreton Bay Fig, Cadiz, Spain

Another majestic Moreton Bay Fig, *Ficus macrocarpa*, planted over 150 years ago in the village of Pahi, North Island New Zealand, has a height of 26 metres and a canopy span of 50 meters with a trunk girth of 15 metres. An intricate complex of buttress and prop roots support the spreading branches as can be seen in the photograph below. Perhaps the rich volcanic thermally heated soils are responsible for this significant growth?



## Bottlebrushes by the sea and river

Various *Callistemon* specimens thrive throughout the Mediterranean coastal areas growing naturally or responding well to formative pruning.



Some of the best specimens are found in the Greek town of Katakolon on the Peloponnese peninsula. The village streets and harbour promenade support several avenues and hedges of *Callistemon* species all displaying massed flower brushes of a quality and size rarely seen in Australia – including *Callistemon citrinus*, C. 'Eureka' and C. *viminalis*.

*Callistemon citrinus*, Katakolon Greece





Surprisingly in the village of Da Nang in Vietnam, *Callistemon viminalis* is used as a shade tree along the riverbank walkways, where the naturally weeping habit effectively compliments the local character of the traditional houses and river craft.

### United Arab Emirates

Australian plants are used to advantage in the United Arab Emirates taking advantage of similar climatic conditions. The new mega cities of Abu Dhabi and Dubai with their inexhaustible supplies of money and desalinated water are able to modify the desert conditions to allow optimum plant establishment, even when temperatures rise above 50 degrees centigrade. Here we find the ubiquitous *Eucalyptus* as well as *Casuarina cunninghamiana*, *Terminalia catappa*, *Hibiscus tiliaceus*, *Cupaniopsis anacardioides*, *Scaevola taccada*, *Cordia subcordata* and many others.



*Terminalia catappa*, Dubai, United Arab Emirates



*Brachychiton populneus*, the Kurrajong, Italy

### Other Australian trees

The water wise values of *Brachychiton* species are well understood internationally as evidenced by the extensive use of the family for shade, shelter and flower colour in streets and squares in many locations in the drier regions of the world. *Brachychiton rupestre*, *B. australis*, *B. acerifolium*, *B. discolor* have all been observed in Spain, Greece, Italy and USA.





*Melaleuca quinquenervia*, Hong Kong

The Queensland Umbrella Tree, *Schefflera actinophylla*, is used worldwide as an indoor potted plant in many public premises but less often in an external situation. In Malaga, Spain the strong aesthetic form and shiny dark green foliage provides a distinctive feature in the streetscape.

The dense urban conurbation of Hong Kong has limited room between the tower blocks for greenery, but good use is made of *Melaleuca quinquenervia*, *Grevillea robusta* and *Terminalia catappa*.

### Australian Shrubs and Covers



*Scaevola albida* cultivars are much respected for their brilliant mauve flower display, particularly in Copenhagen and other northern European cities, where they are used to advantage in large urban planters and as matting ground covers..

*Scaevola albida*, Copenhagen Denmark

Unfortunately this plant is not used to the same extent in Australian streetscapes.

Paper Daisy *Xerochrysum* cultivars are also used extensively throughout Europe and a large display was seen in Stockholm with more in Tromsø, Norway a city located 300 kilometers north of the Arctic Circle. Obviously the short summer of constant 24 hour sunshine for 60 days stimulates their growth and flowering potential



*Xerochrysum bracteatum*, London UK

*Carpobrotus glaucescens* cascading among rocks and over walls is regularly seen in massed display along the foreshore promenades of Spain, France, Italy and the Greek islands.



*Westringia fruticosa* also thrives in these coastal situations and merges imperceptibly with the local native herbs such as Rosemary and Sage, not really looking like an invading species.

*Carpobrotus glaucescens*, Mykonis, Greece





## Gardens – public and private

There are collections of Australian native plants in many of the botanic gardens of Europe, many in glasshouse culture and others in outdoor situations in more benign climates. Of these the 'Orto Botanico' in Palermo, Sicily has a memorable collection of Australian plants, established for more than 150 years, as evidenced by the mature sizes of some of the specimens of *Melaleuca linariifolia*, *Melaleuca acuminata*,



*Melaleuca linariifolia*, Palermo, Sicily

and also *Hymenosporum flavum*, *Bursaria spinescens*, *Pittosporum undulatum*, *Doryanthes excelsa* and *Lepidozamia perofskyana*.

A number of private collections overseas research and celebrate the horticultural values of Australia's flora.

One of the more scientifically significant is located in eastern Holland where overseas Australian Plants Society (APS) members Liesbeth and Bert Uijtewaal have developed an extensive rural garden displaying an enviable collection of the Proteaceae family and other Australian species. The garden incorporates a large glasshouse to house the most significant species and another to overwinter the more sensitive species when temperatures plunge below zero.

In California, the Taft Garden at Ojai has been planned and organised by another expatriate APS member Jo O'Connell who has an Australian Plant Nursery near Los Angeles. This extensive 45 hectare garden primarily displays the Mediterranean flora of Australia, South Africa, and California in three separate canyons within the rugged foothills of the coastal mountain range. You will rarely see our plants in more robust health and vigour than here in this spectacular location! The Taft Garden is featured on the covers of this issue of *Australian Plants*.

## Summary

Accelerating technological advances together with the ease of international travel means the world is rapidly shrinking and becoming more homogenous. Consequently, it is a matter of concern to many people that the unique physical and cultural qualities that once visually distinguished nation from nation or city from city are being challenged.

This visual character called 'sense of place' was once largely established through using a regions own distinctive vegetation in townscape, but today in many places worldwide this component of many cities is being diluted or sometimes largely replaced with plants sourced from other world regions. So as an international traveller, it is conceivably possible to feel that you have arrived in the same place you have just left only a few hours ago!

Australia offers the world an amazing and unique botanic and horticultural resource that is already appreciated and utilized abroad – regrettably acceptance of our native species in amenity horticulture is still limited in their homeland. This is the dilemma and the important challenge that we need to continue to address if we are to preserve this unique botanic characteristic of Australia.





Inside Liesbeth and Bert Uijtewaal's glasshouse, Holland.



Liesbeth and Bert Uijtewaal's banksia garden, Holland

## Bellenden Ker, Queensland – four days on Australia's wettest mountain

*Stuart Worboys. Stuart is newsletter editor for Native Plants Queensland Cairns Branch, and Technical Officer with the Australian Tropical Herbarium, a joint venture between CSIRO, James Cook University and the Queensland State Government. This expedition was made possible by grants from the Australian Rhododendron Society and the Ian Potter Foundation.*

The predicted increase in temperatures caused by climate change means warmer average temperatures. With warmer averages come more very hot days, and fewer cool nights. For the wildlife of the Wet Tropics region of far north Queensland, the increased number of extremely hot days will have the greatest impact. Bats and small birds die in large numbers because of their inability to cope with high temperatures, and with increased frequency of extreme temperature events, there is little time for animal populations to recover in between. What can plants do to cope with climate change? Like animals, they have three options – adapt, move or die. Many plant species are already “pre-adapted” – they have innate characteristics that enable them to cope with the greater extremes that will come with climate change: lower humidity, longer droughts and more frequent fires. They will potentially pass these characteristics on to their offspring and they will adapt. Other plants, particularly those with wind-blown or animal dispersed seeds, might establish populations in more southerly locales, or at higher altitudes. But some plants, including some of the Wet Tropics' most iconic species, are in deep trouble.

Recently, researchers from the Australian Tropical Herbarium modelled the fate of endemic Wet Tropics mountain top flora species under future climates. They calculated the range of temperature and rainfall these species currently exist in – their climate niche – and predicted where in the landscape those climate niches would be in 20, 40 and 60 years from now. It was expected that these niches would occur at increasingly higher elevations as the world warms. Theoretically, this is a problem for plants that currently survive only on islands in the sky – the cool, wet mountain tops of the Wet Tropics World Heritage Area. Indeed, the modelling predicted that warmer average temperatures will push many of these plants off the top of the mountains, and into extinction.

To follow up this modelling, the Australian Tropical Herbarium has developed a survey program targeting about 30 endemic mountain top flora species to improve our knowledge of their distribution and ecology. The goals are simple, but the logistical challenges are considerable as it requires feet on the ground in the least explored and most rugged





parts of the Wet Tropics World Heritage Area. Research sites include Mt Bartle Frere, Thornton Peak and the rarely visited eastern face of the Carbine Tableland. One peak of particular interest is Mt Bellenden Ker, Queensland's second highest mountain at 1582 m.

### Day 1 – 38 mm in the previous 24 hours

The problem with field work is you can't plan for the weather. With multiple people and organisations involved, we set our dates for the driest month of the dry season, made our sacrifices to the weather gods, and hoped for the best.

The television and radio signals for far north Queensland are transmitted from Mt Bellenden Ker, with equipment housed in a three storey high shed known as the Bellenden Ker Top Station. Next to the Top Station is a weather station which holds the record as Australia's wettest place, receiving an average of eight metres of rain annually, peaking at over twelve metres in 2000. During a cyclone in 1979, 1140 mm of rain fell in a 24 hour period.

Our expedition crew was Dan Macleod, a member of the Australian Rhododendron Society, David Meagher, a scientific editor and moss expert, and Darren Crayn and me from the Australian Tropical Herbarium.



On arriving at the foot of Mt Bellenden Ker, the peak of Queensland's second highest mountain was not there – just an endless, featureless roof of grey-white contrasting against the dark dark green of the mountain's everwet forests.

We were greeted by the Broadcast Australia site management crew who kindly allow researchers to use the Top Station as a base. At the top of the mountain, we unloaded our gear while Ian from Broadcast Australia checked the instruments – 38 mm in the rain gauge and 12°C.

Bellenden Ker Top Station shrouded in mist



Lost in the mist – Bellenden Ker Top Station. David Meagher and Darren Crayn searching for a path along Bellenden Ker's northern ridge.



Our first target was an established research plot, just a few metres to the south of the facility. Previous botanists had identified and tagged about 200 trees comprising 24 species, quite a modest species count for the Wet Tropics, but including six mountain flora species that were the target of our study. We ran a transect through the plot, counting seedlings (a measure of whether plants are regenerating at a site), while David Meagher compiled a moss species list.

That night, outside the wind hummed in the transmission tower's guy cables, and rain pattered on the iron, but inside all was convivial, warm, dry and leech free.

### Day 2 – 74 mm in the previous 24 hours

Tuesday dawned overcast, windy and drizzly. Our ambitious plans for remote camping were abandoned, but opportunities for exploration and data gathering remained closer to home. In the morning we followed the path of the cable car downhill. Recent pruning along the cable car alignment allowed for easy specimen collection, including one rare mountain flora find – a tiny mistletoe called *Korthalsella grayi*. On the rocks along the way we spotted another one of our survey targets – *Peperomia hunteriana*.



*Blechnum cartilagineum*. Photo: Ashley Field



*Leptospermum wooroonooran*  
– the iconic tree of the Wet  
Tropics high granite mountains

In the afternoon, we set out north along the Broadcast Australia access track. The forest along the main ridge is dominated by two iconic species from the mountain, *Leptospermum wooroonooran* (mountain tea tree) and *Dracophyllum sayeri*. Although found elsewhere, it is on Bellenden Ker that *Leptospermum wooroonooran* reaches its greatest development, up to 8 m with sprawling trunks sometimes a metre across. Its broad, dense, dome-shaped crowns dominate the canopy on exposed ridgelines. Its fine leaves hiss in the constant wind and the rough bark of its branches is draped with bryophytes and tiny *Bulbophyllum* orchids. The dangling masses of liverworts and mosses in the canopy of these trees rake the moisture from passing low cloud, contributing significantly to the precipitation in these forests, even on days when the rain gauges would read next to nothing.

*Dracophyllum sayeri*, another of our target mountain flora species, is a member of a genus widespread in New Zealand, south-eastern



Australia and the south-western Pacific. However, its only known Queensland locality is the Wet Tropics. It is a dicot masquerading as a monocot, with its long, narrowly triangular, twisted, strap-like leaves with parallel venation looking like so many little bromeliads attached to a great wooden candelabra. Its flowers are honey-scented, and borne in tight pale pink bunches tipped by sharply pointed leaves.

Several other target mountain flora species, including a native cinnamon (*Cinnamomum propinquum*), an unnamed pepper berry (*Tasmannia* sp.



*Dracophyllum sayeri*.



Nectar filled flowers of *Dracophyllum sayeri*.



*Dracophyllum sayeri* in fruit. Photo: Ashley Field





Bellenden Ker) and the mountain mallet wood (*Uromyrtus metrosideros*), were quite common and kept us busy taking records of their distribution. On the steep downhill slide towards the coast, most of these dropped out, to be replaced by more common and widespread plants. At 1380 m elevation, the target species had disappeared altogether.

### Day 3 – no reading

The Broadcast Australia maintenance crew had no reason to access the mountain on Wednesday, so we have no official rainfall record. The rain gauges, however, were still gathering the constant drizzle.

The day's goal was to push as far north as possible along the mountain's main ridge. This ridge extends roughly six kilometres northwards from the transmission facility before dropping down into the coastal lowlands.

The northern peaks on Bellenden Ker's main ridge were visited by several early explorers, where a number of plant specimens were collected that have not been since. Right from the beginning of European settlement, the mountain exerted a strong attraction to European scientists. Accounts of their explorations are often dramatic, and full of violence against, or ignorant dismissal of, Indigenous people. Bellenden Ker was long thought to be the region's highest mountain, and (not unreasonably) likely to contain a diverse and unusual flora. Victoria's colonial botanist, Ferdinand von Mueller, visited northern Australia in 1855. When he saw the rugged outline of Mt Bellenden Ker he speculated that a species of *Rhododendron* would be found there.

The first recorded ascent was by Robert Johnstone, Cardwell's police chief, in 1874, followed by W.A. Sayer and Alexander Davidson in 1884. Sayer's discovery of *Rhododendron* on the mountain confirmed



*Rhododendron lochia*, Mt. Bellenden Ker, described from specimens collected by Sayer and Davidson in 1884

Mueller's suspicions. In his account of its discovery, as reported in Sayer, W. A. (1888) First Ascent of Mount Bellenden Ker. *Victorian Naturalist* 4: 37-44, Sayer states:

*The top of the range is razor-backed, and on travelling along the range beyond the spur by which we ascended, I could not see the sides, they being, if anything, hanging over. We tumbled rocks over, but could not hear them fall. It was here that I observed the Rhodendron Lochae growing, and asked the Kanaka to get it; but he remarked, "S'pose I fall, I no see daylight anymore; I go bung altogether."*

A description of Sayer's ascent to Mt. Bellenden Ker, a report of which can be found at [www.biodiversitylibrary.org/item/94972#page/47/mode/1up](http://www.biodiversitylibrary.org/item/94972#page/47/mode/1up) makes interesting reading.

Other botanical explorers followed, invariably using a route from the north or east. However, once the cable car was constructed, exploration of the mountain largely concentrated around the Top Station. By pushing along the northern ridge, we hoped to find flora species not collected on Bellenden Ker for a century.

The walk to the highest point on the mountain, the Centre Peak, starts on the established access track. Just north of where the track turns east, the mountain reaches its highest point in an anticlimactic little rock sticking out of the dirt in the middle of the dripping forest. Loose rocks, steep muddy slopes and low branches made for slow walking. Leeches were mercifully few – perhaps it was just too cold. An unexpected travel hazard was the trimmed tree ferns. Each cut stem produces a big ball of dripping slime, which leaves a revolting residue when it slaps against your face.



Fork in the trail – turn right to exit, or continue straight ahead to the northern ridge.





The ridge took us through stands of mountain tea tree draped with a rich red liverwort, *Pleurozia*. On deeper soils the canopy was dominated by stout *Eleaocarpus ferruginiflorus* and *Myrsine oreophila* up to 12 metres tall. At a low knoll, we finally discovered our priority target species, *Rhododendron lochiaie*, this one with a small bunch of gently curving scarlet bell flowers. After stopping to admire and make a small collection, we pushed on. Our one kilometre walk took us four hours.



Bracket fungi supporting a little rainforest garden.

#### Day 4 – 152 mm in the previous 48 hours

Thursday's surveys took us west, down a steep, rarely traversed ridge. At first, the thick bush looked impenetrable, but we kept on, and found the way not so bad. We were surprised to find flagging tape marking the ridge – at least two different colours indicating we were far from the first to pass this way. *Dracophyllum* was common, frequently with flowers or clusters of dark pink fruits. A rose silky oak, *Placospermum coriaceum*, grew right next to our path, defying the textbooks that state it is only found up to 1200 m. Further down this ridge we came across *Agathis atropurpurea* (black kauri), recorded only a few times before on Bellenden Ker.

We were out of time and had achieved all that we could given the conditions but we weren't empty handed. My notebooks had precise locality and elevation records of 211 mountain flora plants from 17 species, which will improve the accuracy of future climate niche modelling. Among our scientific collections we had the first flowering herbarium specimen of *Rhododendron lochiaie* to be collected on Mt

Bellenden Ker in 130 years. But the true glory, however, must go to David Meagher who reports 29 liverwort and 12 moss species newly recorded for the mountain, including four species new to science, five new to Australia, and four Australian species never before recorded in the tropics.

Our next expedition will take us to the Main Coast Range, a 1200–1300 m high ridge that extends north from Mossman Gorge, about 75 km northwest of Cairns. Like Bellenden Ker's north-south ridge, it is difficult, rugged, everwet and poorly explored, but unlike Bellenden Ker it is part of a much larger plateau, the Carbine Tableland. We hope to find a diversity of mountain flora far in excess of what we found on Mt Bellenden Ker.



Early departure due to the non-stop rain.



