

Autumn 2023
Vol 32 No 254

Australian Plants

\$6.⁵⁰

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Cover: Mount Ossa (foreground) with Mount Hyperion and Mount Massif.
Cradle Mountain–Lake St. Clair National Park, Tasmania. Photo by Harry Loots.

Australian Plants articles

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

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Australian Plants No. 254 Issue of Volume 32, which comprises issues 254–261.
Published quarterly and available nationally in 3500 copies by the Australian
Plants Society NSW Ltd

© Australian Plants Society NSW Ltd 2023 ABN 87002680408 ISSN 0005-0008

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

Editorial

Merle Thompson OAM

Some years ago the Australian Plants Society NSW had a motto which encouraged people to appreciate Australian plants, to learn about them, grow them and conserve them. In this issue we uphold this four-fold approach to Australian plants. As is the case with *Australian Plants* generally, all the articles encourage the reader to appreciate and learn about our wonderful flora.

We have four articles in which the authors write about areas of Australia which are special to them. These articles encourage us to appreciate the flora of the area and to learn about the relationship between the plants and their habitats. It is in natural areas that we can appreciate plants for their own special nature and learn about why they grow where they grow. This idea is even more apparent as the areas are so diverse. Two of the articles relate to the arid areas of Central Australia. These articles are reprinted with permission from the newsletter of the Alice Springs Australian Plants Society. A visitor from New South Wales writes about the highlands of Tasmania, an area which has captivated him, and a Queenslander writes of a very special area within sub-tropical Queensland.

For most of us this appreciation of natural areas and the plant species within them leads to a desire to conserve the areas and their species.

From a growing perspective, Brian Roach writes of one plant which has become special to him. He reflects on the natural habitat of this plant and the restoration of the area after disturbance and also touches on the science of genetics.

Most plants in nature and in some processes of cultivation rely on pollination. How much do we understand about the pollination process and pollinators? We start with an article by Maree McCarthy which was a learning experience for me. She introduces us to the fascinating topic of pollinators. There is so much more we need to understand about pollinators in relation to both conservation and growing of Australian plants.

Do you know what pollinates your favourite plants? Do you understand what Maree calls the love affairs between plants and insects? And the special relationships between some insects such as some caterpillars with ants? Plants need insects to survive, insects need plants to survive and some insects need other insects.

What a wonderful thing is biodiversity and the intricacies of relationships within the natural world.

Insects: Gifts of the Gods

Maree McCarthy of *Nature's Magic Garden Designs*.

Maree's qualifications include a degree in Environmental Science. She has been a Horticulturist for over 30 years specialising in native garden design and conducts workshops on native garden design, frog, dragonfly and pollinator habitat gardens, birdscaping and permaculture. She is also Secretary of the Newcastle Group of APS NSW.

"The place we call 'Australia' is often described as 'unique' or 'antipodean'. It is a large and unusual island with a unique and primordial history. Maree has always had a love of 'Nature' but wondered what the difference between native and introduced 'Nature' meant. Maree shares why 'Native Nature' – particularly in Australia – is so important."

In the world of native plants, there's a secret love affair going on. It's a match made in Nature, and it's between plants and insects...the unsung heroes...And there are Quintillions of insects (10 with 18 zeros after it!)



Photo: Maree McCarthy

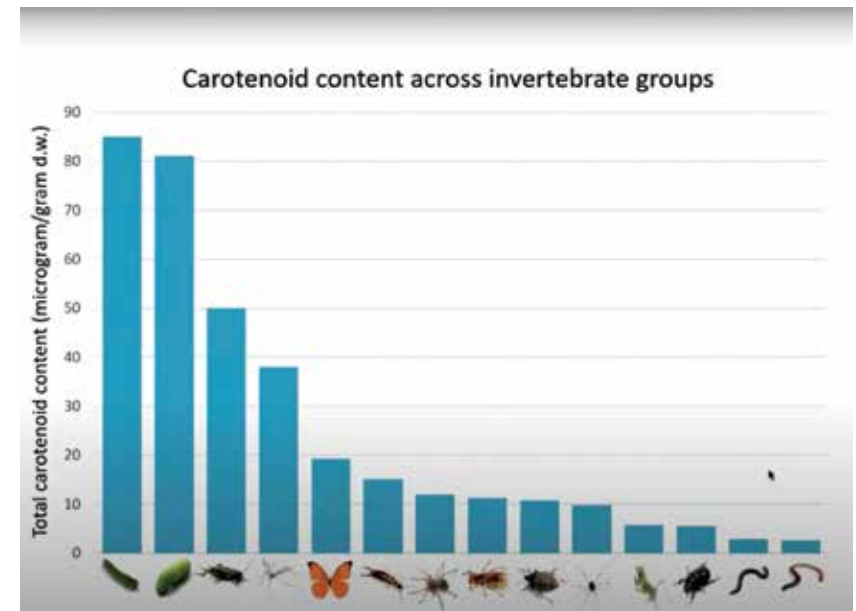
You see, insects are the main pollinators of many plants. In terms of human food production, the 105 most widely planted crops globally that benefit from insect pollination have greater than US\$800 billion gross economic value! (Radar et al, 2020)

They might not be as flashy as birds, but they get the job done. And plants know it. They've evolved many ways to be attractive and accommodating to the insects, such as unique shapes, colours, and scents. Like an insect dating app, but for plants.

In fact, every single insect has a purpose within the functioning of native ecosystems. Caterpillars – young insects – are like little organic fertilizer factories. Caterpillars munch on leaves and poop out nutrient-rich frass which both prunes and helps native plants grow strong and healthy. Like little gifts from the caterpillar gods.

Caterpillars can also have a deal going with certain ants who protect them by carrying them down their nests to stay safe during the day and bring them out at night and watch over them. In return for their shepherding services, the ants receive sweet exudations from the caterpillars.

Plants such as many Acacia species love the protection these ants give them against the larger herbivores too and so allow these types of herbivorous insects to lay eggs on them!



And here's where things get interesting! Insects don't just offer their pollination, fertilising, pruning and plant protection services. In fact, they offer many other services as well! Those plump little caterpillars are chock full of fats, lipids, proteins... and carotenoids – crucial baby food

for nesting birds – and they need a LOT of caterpillars to feed their hungry babies – like 1000s to raise one clutch of chicks!

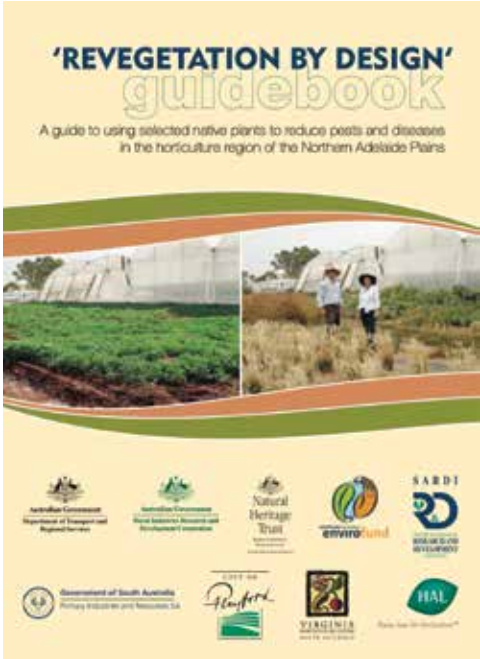
Carotenoids, a crucial nutrient for nesting birds, are much higher in caterpillars! (Tallamy, 2020)

And here is the key... One of the most critical benefits of native plants is their ability to support local wildlife – with insects as the key underlying component in the intricate webs of biodiversity. You see, because of the complicated love affairs plants and insects have had over 140 millions of years of isolated evolution in the giant island called Australia, the natives here need each other intimately! As a general rule, native herbivorous insects cannot raise their young on non-native plants. And even then, they are very particular about which native plant they can use.

An interesting study looked at numbers of herbivorous insect species that could live on invasive plants in the US and found that there were always far more insects on the native plants than non-natives. In the book, *Bringing Nature Home* by US entomologist Prof Doug Tallamy, data is included for Australia's *Melaleuca quinquenervia* (Broad-leaved Paperbark Tree) and the herbivorous insects it hosts here and overseas. It is fascinating that even after 120 years of trying to evolve in the US, it can still only host 8 herbivorous insects. Yet in its homeland, Australia – 409 species!

Native plants can be so good at maintaining healthy ecosystems and farmers have capitalised on this concept. A case study of commercial lettuce crops that had native plants (a local Saltbush) added all around the crop, resulted in a reduction in spraying by 95% because the natives hosted the insect predators for the thrip problem! And the native plants also suppressed weeds!

(*Revegetation by Design*’ Guidebook, Primary Ind & Resources, SA). This story was aired on ‘Gardening Australia’ and was considered very promising financially and ecologically!



The West Australian Museum is tracking feral honey bee hive locations found in the field. Some staggering feral honey bee results so far :
Up to 6 hives in one tree and about 175 hives in 3 to 4 kms of creek line.
At another site, 218 hives were recorded in a 1 km stretch of creek line.

museum.wa.gov.au/explore/online-exhibitions/cockatoo-care/feral-bees

HOSTING CAPACITY OF ALIEN PLANTS INTRODUCED TO NORTH AMERICA				
Plant Species	Herbivores Supported in Homeland	Herbivores Supported in North America	Years Since Introduction to North America	Reference
<i>Clematis vitalba</i>	40 species	1 species	100	Macfarlane & van den Ende 1995
<i>Eucalyptus stellulata</i>	48 species	1 species	100	Morrow & La Marche 1978
<i>Melaleuca quinquenervia</i>	409 species	8 species	120	Costello et al. 1995
<i>Opuntia ficus-indica</i>	16 species	0 species	250	Annecke & Moran 1978
<i>Phragmites australis</i>	170 species	5 species	300+	Tewksbury et al. 2002

Chart showing number of herbivorous insects hosted on invasive plants in US. *Bringing Nature Home*, (2007) p.235

In contrast, non-natives can have negative ecological impacts. They are often ill-fitted into the uniquely evolved environments such as is found in Australia. They can outcompete native species for resources. For example, the non-native European Honey Bee which, like goats, often escapes into the bush causing harm, such as taking over our precious hollows. Australian fauna are far more dependent on hollows than other countries! We don't have Wood Peckers to make hollows!

Plant growers could consider themselves not just as producers of food or flowers, but as insect producers. This means our gardens are not just pretty with lots of flowers, they also hold many treasures with the insects they host!

Sometimes these treasures are well hidden! This demonstrates their long evolution of intimate relationships with the Australian environment! (Spot the Moth amongst the Gum leaves!! ;-)



So, the next time you see an insect hanging around a native plant, know that it's not just a random encounter. It's a love story in the making. The plant is saying, "Hey, baby, come on over here and pollinate me." And the insect is saying, "Oh yeah!"



Yellow-headed Snail Parasitic Blowfly – *Amenia imperialis*. Their large larvae are thought to be parasites of land snails.



Choose native plants, not only because they can be really pretty, but for how they can host insects, enhance the food web they support, and increase the life saving wildlife diversity in your landscape.



Photo by Maree McCarthy: Orange Hawk Moth (*Coequosa australasiae*) hosted by Australian Gum Trees.

It's a beautiful relationship! And it's one that we can all appreciate. So, the next time you're planting in your garden, think about the special relationship between native plants and native insects. Think about the caterpillars that love those natives. Who knows, you might just find yourself falling in love with insects too. Ah! Entomology – the study of bird food! Just don't tell the birds.

They can be a jealous bunch.

References/Resources

iNaturalist Australia – a great site to upload photos and record sightings for citizen science
inaturalist.ala.org.au/

Moth Tracker – record your Bogong Moth sighting – SWIFFT
State Wide Integrated Flora and Fauna Teams, mothtracker.swiff.net.au

Native Vegetation and Pest Control www.ausvegvic.com.au/pdf/Vegenotes_VG06024_Native_Vegetation_Pest_Control.pdf

Planting native vegetation for beneficial insects and improving farm integrated pest management through biodiversity www.ppwcm.vic.gov.au/wp-content/uploads/2017/09/Insectariums-Case-study-AUGUST-2018.pdf

Radar, R., Cunningham, S.A., Howlett, B.G., and Inouye, D.W., *Non-Bee Insects as Visitors and Pollinators of Crops: Biology, Ecology, and Management* (Jan 2020) www.annualreviews.org/doi/10.1146/annurev-ento-011019-025055

Revegetation by Design: A guide to using selected native plants to reduce pests and diseases in the horticultural region of the Northern Adelaide Plains – ausveg.com.au/app/data/technical-insights/docs/reveg_by_design_guidebook.pdf

Tallamy, D.W., (2007), *Bringing Nature Home*, Timber Press. US.

Tallamy, D.W., (2020), *Nature's Best Hope*, www.greycountyfarmmasterygardeners.com/natures-best-hope

Wild Pollinator Count wildpollinatorcount.com



The colours of this native Praying Mantis match the Blueberry Ash with which it evolved!

Ceratopetalum gummiferum 'Johanna's Christmas'

Brian Roach

Brian has been a member of SGAP/APS NSW (North Shore) for nearly 50 years and for much of that time has operated a small, 'backyard' native plant nursery from his home at Westleigh in north-western Sydney (westleighnativeplants@gmail.com). With his wife Carol, their garden was open under the former Open Garden Scheme on three occasions and it has featured on ABC TV's Gardening Australia several times. Brian is a retired barrister/Crown Prosecutor and he has been guest speaker with APS groups and general garden clubs on over 150 occasions.

It was forty years ago, in 1983 that a work colleague and native plant enthusiastic, Jim Semmler, came to my home at Westleigh in north-western Sydney proffering a potted plant. He asked if I would like a dwarf form of the NSW Christmas Bush. While I hadn't heard of such a form, like any self-respecting gardener I grabbed it out of his hand before he had a chance to change his mind.

Over the next fifteen years or so I not only grew this plant but also propagated a limited number by cutting, also planting most of them in our garden. They proved to be 'dwarf' as Jim had claimed, growing to around 1.5m on our shallow soils over Hawkesbury sandstone. Clearly, they were different to the type specimen of the NSW Christmas Bush – *Ceratopetalum gummiferum* which grows as a small tree to around 6m on a single trunk.

In the late 1990s, as a member of the North Shore Group of the Australian Plants Society I mentioned to another member, Helen Moody, who was a well-known horticultural journalist that I had such a plant. She was quick to tell me there was no such thing. I managed to convince her to the point that she said she would make inquiries in the industry and get back to me.

A couple of monthly meetings later she said her inquiries had supported her view that no such dwarf form of the NSW Christmas Bush existed. She went on to say that if I had such a thing, I should do something about it.

So it was that in January, 2001 I lodged an application for registration of this cultivar with the Australian Cultivar Registration Authority (ACRA), giving it the name *Ceratopetalum Johanna's Christmas*. Ultimately, in January, 2004 that registration became official – ACRA 902.

In the process of seeking registration, and not knowing the origin of the plant I received from Jim nearly twenty years earlier, I said it came about as a 'chance seedling'.



8 December 2022

It wasn't until 10 September, 2007 that I learnt the true origin of the plant.

On that day I had the Bateau Bay garden club come to our home at Westleigh for a garden visit. In the process of pointing out many of the plants in the garden, I mentioned the several specimens of this dwarf form of the NSW Christmas Bush. A long and lanky member of the group sidled up to me and said 'I can't believe you've got this' indicating *Ceratopetalum Johanna's Christmas*. He went on to tell me his name was Don Blaxell and as a senior officer at Sydney Botanic Gardens he had found this dwarf form up at Evans Head in northern NSW in 1969. He said he led a group from SBG who had a brief to determine the northern-most distribution of the NSW Christmas Bush and also to

compile a report recommending the establishment of flora reserves to the NSW Government.

Don also told me that some cutting material was collected from this dwarf form and taken back to SBG for propagation. He went on to say that some time later, staff from SBG went back to the site to collect more cutting material. However a rutile mining operation had begun and nothing was left to be collected. He also told me he completed an official record of his finding and that record can be viewed on the Australian Virtual Herbarium.as Occurrence Record NSW 578884: Preserved specimen of *Ceratopetalum gummiferum* – Christmas bush (NSW) recorded on 1969-02-06. Also noted is Collector Blaxell D.F. The GPS coordinates was also recorded along with the notation of Locality – Evans Head, c.2miles S of Evans River.

Not surprisingly, Don asked me how I came by the plant. I told him the story and said I would contact Jim and ask just how he originally got the plant he had given to me over twenty years earlier.

A few days later, I spoke to Jim who lived at Avoca on the Central Coast and he informed me he had bought two plants from a 'backyard' nursery on the Central Coast and had given me one and unfortunately the one he kept had died. He went on to say the vendor had ceased business and left the area. I contacted Don by phone shortly after and gave him this information. All was then revealed!

Don told me that a particular employee at SBG had looked after the cutting material that had been collected and had produced a number of plants. He told me the employee had resigned from SBG and guess what, the few plants that had been propagated simply disappeared. He went on to say the former employee lived on the Central Coast.

Needless to say, I spoke to Don and expressed my concern about having unwittingly received property which had previously been stolen and which I had registered as a 'chance seedling' and which I had been propagating and selling on a small scale to my financial advantage. Don very graciously said that so far as he knew, I ended up with the only plant to survive from his collection in February, 1969 and had it not been for my involvement, this dwarf form of the NSW Christmas Bush would have been lost forever.

In the course of my discussions with Don, one intriguing contradiction came to my notice. While the official Herbarium registration noted that only three plants were seen at the time of discovery, Don actually told me it was the 'dominant' plant in the area. I have not quizzed Don about that.

About a year before the Bateau Bay garden club visit, the ABC TV show 'Gardening Australia' filmed a segment in our garden at Westleigh with Angus Stewart as the presenter. I told Angus about '*Johanna's Christmas*' and in particular I said I was not very successful in propagating the plant in commercial numbers. Angus was at that time working with the large propagation business, Ramm Botanicals and he suggested I could give him a few plants with a view to trialling propagation by tissue culture. I gave around six potted plants to Angus for that purpose.

From time to time after that I heard from Angus who continued to tell me that the attempts to propagate the plant by tissue culture were unsuccessful. In due course, Angus left Ramm Botanicals and headed off to Tassie.

The plants continued to flourish in my garden without loss and put on a magnificent display with the white flowers around October followed by brilliant colouring of the bracts or sepals around Christmas.



Christmas 2022

In early 2012 I was contacted by Geoff Cooke, then the managing director of Ramm Botanicals who told me that propagation in significant numbers by cutting was then proceeding. Shortly after, we entered into a commercial agreement under which we received a modest royalty from Ramm Botanicals on the basis of sales. Until October, 2016, 54,500 plants were put out into the industry accompanied by a Ramm designed, double-page label which was produced by Norwood. On several occasions during Ramm's involvement over four and a half years, I went to their premises on the Central Coast and saw the very large number of plants in large pots which were used as mother stock. It came as no surprise then in October, 2016 when the new managing director contacted me to say that Ramm Botanicals wished to withdraw from our agreement because, although sales had been very successful, the mother stock was simply taking up too much room at the expense of other lines. In severing our arrangement, the rights to the Norwood label were assigned to me and since then I have received again, a modest royalty from the sale of the labels.

Over the past five years or so, I have continued to propagate the plant by cutting from the 9 or 10 plants in my garden along with one in the garden of Margaret and Peter Olde at Oakdale. Early in the piece I was contacted by two wholesale nurseries who sought 5,000 tubes a year. To say the least, I have not been able to fulfill these requests although something in the order of 5,500 tubes have been supplied to Parkland Nursery near Taree. The resulting plants have been exclusively supplied to Bunnings which is a disappointment to me. Recently I had discussions with Harvest Native Nursery on Mona Vale Road, Terry Hills and am now supplying them with cutting material for distribution as seen fit. I continue to propagate the plant myself in relatively small numbers for sale. To state the obvious, propagation must be by cutting in order to guarantee the dwarfing quality of the plant.

Around mid-2021 my wife, Carol and I travelled up to Evans Head with a view to exploring the area in which Don made his discovery in 1969. We were armed with the GPS coordinates as recorded by Don in his registration along with his general description which was also recorded. Don had also previously told me that the particular location was in the area of Chinaman's Beach at the southern end of the town of Evans Head. It quickly became apparent there was an inconsistency in the defining of the location. The general description stated the finding was around two miles south of the Evans River while the GPS coordinates, with the assistance of my mobile phone put the location north of the Evans River. Also, Chinaman's Beach is on the southern side of the

river. No doubt the accuracy of GPS coordinates in 1969 could not measure up with today's technology and the description of around two miles south of the Evans River had to be the more reliable.

Starting from the carpark at Chinaman's Beach, my wife and I explored the area and while an abundance of wonderful plants was seen, all impacted by the wind and salt spray in that coastal heathland, no NSW Christmas Bush of any description was found.

Another opportunity to explore the area arose in June last year when I was invited as guest speaker at the Narrabri garden club. Needless to say, my presentation was on *Johanna's Christmas*. Carol and I then headed over to the coast and once at Evans Head we decided to pop into the Information Centre to see if any expert in the local flora was known. Hey Presto! We met up with Richard Gates who knew the plants of the area like nobody else.

After our initial discussions, Richard took us along a sandy track heading south from Chinaman's Beach through typical coastal heath. After about 300m we came to a junction and Richard pointed out two plants.....



Photo taken by Richard Gates

Yes, that's one plant with the other off to the right. *Ceratopetalum gummiferum* around 2.5m high and 6m wide. It was truly mind-blowing!

As the photo attests, I was quick to collect some cutting material and the sixty or so cuttings I put down a few days later have resulted in only three plants that are doing well as at April, 2023.

So around fifty years after the rutile mining operation in the area, the local flora is looking great. As I understand the process, before the mining commences, the top layer of sand is put aside and when the mining is finished, it is returned to the area. Presumably these two plants arose as seedlings when that was done.

But how do environmental conditions such a wind and salt spray not only cause affected plants to take on a low or prostrate habit but more particularly, how does the genetics of an affected plant change so that plants subsequently propagated by cutting retain the parent plant characteristics? I certainly know that to be the case with *Ceratopetalum Johanna's Christmas*.

In recent times I have discussed this particular issue with several scientists including a good friend, Laurie McGowan who is a former Principal of Richmond TAFE along with Wendy Grimm and Sue Fredrickson, both members of North Shore APS. They agree it is all about epigenetics, but they also agree that nobody in the scientific world has an understanding of the process. As it happened, the fellow who pointed out the two 'dwarf' plants to me last year is also a scientist and he has floated the idea of commissioning a DNA analysis of the type specimen of *Ceratopetalum gummiferum* along with *Johanna's Christmas* and the two plants up at Evans Head. Whether that idea bears fruit remains to be seen.



Potted Johanna's
Christmas
28 December 2019

Plants hidden in the clouds

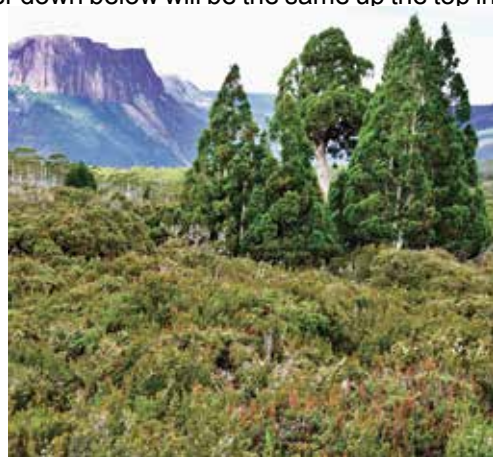
Harry Loots

Harry has been an APS (NSW) member for over 30 years after he joined Harbourside Group and was its President for many years. He is now a member of Northern Beaches Group and has been the Treasurer of APS (NSW) since 2015.

Tasmania's alpine terrain had spun its magic during my first walk. In January 1995 I walked along the Overland Track in Tasmania's Central Highlands where the dramatic landscapes and ancient plants stimulated a desire to experience more. In 1996, 1997, 1998, 1999, 2000 and 2001 my partner, Lindy, and I pursued our quest to experience Tasmania's various wilderness walks.

Each walk of seven to ten days in weather conditions varying from heatwave to snow and rain was a total immersion in nature. Many a time we saw no one else for days feeling we were the only ones in a pristine garden of Eden. Some parts of the South West seem primordial although closer examination will reveal that they are not untouched. I fell in love with the plants and wanted to know more. At the age of 73 in 2022 I again walked the 67 hilly kilometres between Cradle Mountain and Lake St Clair. Under a 20 kilo pack I returned in 2023 to slowly walk and frequently stop to examine the earth to discover what grows along one of the most popular multiday walks in Australia.

A long walk and climb are required to appreciate the alpine plants growing in the Central Highlands. While the weather can sometimes be warm and sunny, it is just as likely to be freezing, raining or snowing. Unprepared walkers have died of hypothermia. It's easy to get caught out imagining that the weather down below will be the same up the top in the mountains. The scenery will be breathtaking if the weather is fine. However, during inclement weather there will be nothing but a white-out even two metres off the track. Track markers are closely spaced and necessary when there is zero visibility.



Richea scoparia and Pencil Pines,
Athrotaxis cupressoides
Cathedral Mountain backdrop.

The jagged black stone cliffs shaped like organ pipes are breathtaking. However, an exceptional alpine vegetation is found downhill from the large boulders that have rolled from almost vertical rock faces. Only plants that can survive the high winds, freezing temperatures and constantly wet rocks and soil grow on the high plateaus. Shallow lakes, pools and running water are a dominant feature.

Here the low-growing Cushion Plants exist. Appearing as a mosaic complex of centimetre high cushion heath, their mix of greens and whites form into fascinating abstract patterns. I pity the 'Tiger walkers' who rush past these wonders of nature.

The solid to touch cushion complex consists of *Donatia novae-zelandiae* (dark green), *Abrotanella forsteroides* (dark green), *Dracophyllum minium* and *Mitrasacme archeri* (light green leaves). In the past Cushion Plants below Cradle Mountain and in the Walls of Jerusalem acted as stepping stones for walkers. Fortunately, these extremely slow-growing plants are now protected with duck board tracks taking walkers on a better path.



Mosaic cushion heath: *Donatia novae-zelandiae* (dark green), *Abrotanella forsteroides* (dark green), *Dracophyllum minium*, *Mitrasacme archeri* (light green leaves), *Drosera arcturi*.

Most Tasmanian walkers have experienced the peat bogs called the Button Grass Plains that are not limited to alpine areas. The moors are flat plains with extremely poor drainage featuring the iconic grass tufts with spherical seed heads. Over thousands of years deep peat beds have developed

Before the advent of raised wooden paths tracks became deep black sloshy pools where it was not uncommon to sink down to the knees. On these plains only Button Grass, *Gymnoschoenus sphaerocephalus*, grows. (Pictured right)



The alpine Eucalyptus, commonly called the Snow Gum, *Eucalyptus coccifera*, above the Button Grass Plains requires better drainage. The pink, grey and white trunks of the Snow Peppermint is found on rocks above the moor.

At the height of summer after a wet season the low-growing prickly heath shrub *Scoparia*, *Richea scoparia*, may be a mass of pink, white, red and orange flowers. It must be a harsh location with strong freezing winds over long periods for *Scoparia* to thrive.



Eucalyptus coccifera (Tasmanian Snow Gum)



Richea scoparia

The Pencil Pine, *Athrotaxis cupressoides*, is the most truly wonderful and shapely tree of the Tasmanian alpine region. It only grows at high altitudes along creek lines. The Pencil Pine is not restricted to one area but rarely is found as the small forest growing in the Walls of Jerusalem. This tree is highly susceptible to the soil fungus *Phytophthora* that has killed some significant stands. On the Pine Forest Moor, at Lake Wills and Lake Windermere the pines grow in the tannin-stained creek and the lake waters. In the Walls of Jerusalem area Pencil Pines were felled to build a hut. Fortunately, elsewhere other timber has been used as a construction material.



Above: Ancient *Athrotaxis cupressoides* (Pencil Pine) in front of Barn Bluff.

Coming off the windswept Button Grass Plains the track enters a complex green room. After periods of swampy Button Grass the path suddenly climbs into a low rainforest on a protected hill side such as at Waterfall Valley, Windermere and Pine Valley Moor. Walkers are surrounded by moss and lichen-enveloped deciduous Beech, *Nothofagus gunni*, called 'tanglefoot' for good reason. The walk now requires more concentration to navigate through rocks and branches.

The dense forest that also has taller Snow Gums eventually graduates into other species such as tall giant Grass Trees, *Richea pandanifolia* and *Baeckea gunniana*.

At Waterfall Valley near the old hut there is a not to be missed ancient *Olearia pinifolia*. Beneath the *R. pandanifolia*, alpine coral-fern, *Gleichenia alpina*, and large moss mounds give way to Button Grass on the anaerobic peat.



Richea pandanifolia on *Gleichenia alpina* in front of Pencil Pine, *Athrotaxis cupressoides*.



A luminous moss next to a waterfall in Waterfall Valley. It is *Schistostega pennata*, a luminous moss that glows in very dim conditions.

When descending from the high plateau into the dank, mossy rainforest valleys the Overland Track deteriorates into a confusion of exposed slippery rambling roots. Ancient forests of King Billy Pine, *Athrotaxis selaginoides*, and Myrtle Beech, *Nothofagus cunninghamii*, block the light as they reach for the sky. Fallen leaves on the forest floor identify these giants whose crowns reach to 25 metres.



Above: The Fungus, Beech Orange, *Cyttaria gunni*, which only fruits on *Nothofagus cunninghamii*.



Left: An ancient Myrtle Beech *Nothofagus cunninghamii*.

I was reminded of Norfolk Island Pine leaves when looking at King Billy Pine leaves. Enormous survivors from a past millennium are up to 1,000 years old. King Billy Pine has a fine timber and was used in the construction of the Du Cane Hut and Old Pelion Huts but fortunately the inaccessibility of the rainforests on the Overland has saved them from logging. Mantled in moss, fungi-riddled giant rotting logs brought down in a gale are impressive horizontal reminders of the titan's girth and length. Also on the forest floor in February are white petals dropped when the Leatherwood, *Eucryphia lucida*, flowers. These rainforest trees produce the prized Tasmanian honey.



King Billy Pine, *Athrotaxis selaginoides*. The species is primarily associated with the *Athrotaxis selaginoides*-*Nothofagus gunnii* short rainforest. Some are up to 1,000 years old and the tallest are around 25 metres

Escaping the rainforest after descending the Du Cane Gap the Overland becomes gentler, passing through a Eucalyptus forest. In the rich moist soils at the head of the Narcissus River towering Alpine Ash, *Eucalyptus delegatensis*, commonly reach 50 metres and occasionally 90 metres. It was necessary to lie on my back to see their crowns.

The magic of this area is also available to the less able. It's not necessary to walk very far to see the variety of tall timbers. All shades of green indicating a multitude of species on the lower slopes of Mount Olympus are better appreciated from the water on the ferry ride along the length of Lake St Clair. It's also possible to drive to Cynthia Bay, wander through a comprehensive description of the park, its creatures and plants at the visitors' centre and catch the ferry without much physical effort.



A large Pencil Pine growing on one of Lake Will's beaches.



A very large Pencil Pine trunk on the side of Lake Will.

Rocket remains for the boys and native plants for the girls

Connie Spencer

Photos: Barb Gilfedder and Connie Spencer

Connie Spencer and Barb Gilfedder have lived in the Northern Territory for over 50 years. Over the years they have gone on many excursions to find and enjoy native plants across arid central Australia. Connie gave a presentation to the local group entitled "Rockets".

Rockets – a strange topic for an Australian Plants Society Alice Springs meeting, you might say!

However, searching for rocket remains was our reason for being on station properties North East of Alice Springs from 2003 to 2010 and a chance to see country and plants we wouldn't otherwise have seen.

My husband, Stan, has long been interested in ELDO (European Launcher Development Organisation) which launched rockets from the Woomera Rocket Range in the 1960s with the aim of getting a satellite into orbit. The launches were in stages with the first being the British Blue Streak, the second being French, the third German and the fourth an Italian satellite. Some would say a "recipe for disaster". They never did get a satellite into orbit! From 1964 to 1970 there were 10 test flights with the later flights being fired in a northerly direction. It was the remains of these flights that we, along with Barb and Jim Gilfedder, Pat and Allan Weeks, Jenny Purdie and Steve Sinclair were in search of.

The following is a selection of my favourite plants and a few rocket remains.



Macgregoria racemigra (Desert Snow)



Stylidium desertorum (Desert Triggerplant)



Eremophila cordatisepala



Isotoma luticola



Diplopeltis stuartii



Jim, Stan & Pat with rocket remains.



Stan with a nose cone.



Acacia validinerva (Blue Wattle)



Goodenia vilmorinae
(Purple Hand-flower)



Halgania cyanea (Blue Halganina)



More rocket remains including (right) ELDO 01 at Manners Creek.

A ramble to a favourite sand dune

Suzanne Lollback

Suzanne has always been interested in native plants and spends many hours wandering around the bush finding and photographing flowers and plants. Currently living in Alice Springs in the NT, she is the president of the Australian Plants Society Alice Springs and edits their newsletter. She is also one of the authors of 'Native Plants Hassans Walls Lithgow', a book that features 390 plants in full colour that can be found on the Reserve and in the surrounding Lithgow, Upper Blue Mountains and Newnes Plateau NSW areas. The book is currently being updated with edition two available by the end of June.

Photos by Bec Duncum, Suzanne Lollback

I have been travelling along a road leading south east from Alice Springs on and off over a number of years. The road in many places travels through limestone-based country. On one occasion in 2022 I realised that there were a number of Desert Oak trees not far from the road. My immediate thought was: 'Why is a Desert Oak growing here, it needs relatively deep sand and a water table for its roots to tap into, certainly not limestone?'

I decided to stop and was greeted with a magnificent, very tall and healthy Desert Oak, and a small, somewhat uninteresting-looking sand dune covered in a mix of grasses. I decided to stretch my legs and walk to the top of the dune.



Allocasuarina decaiseana (Desert Oak)

If I recall rightly, it took me an hour to walk the 100m or so to the base of the dune, let alone to the top! Along the way I found a fabulous array of plants that I thought would not be this close to Alice Springs, let alone in an area I thought would have a limestone base, such as on the hill on the other side of the road.

Wanting to share the find with others, I organised a trip for Plant Society members and on Sunday 14 August, some 18 members spent two hours exploring the sand dune and sandstone outcrop behind the dune. Apart from the magnificent *Allocasuarina decaiseana* (Desert Oak) there were ancient *Newcastelia spondiotricha* (Sandhill Sage) bushes, the unusual *Adriana tomentosa* var. *hookeri*, and intriguing small shrubs and herbs. In March this year we returned to the dune and again thoroughly enjoyed the visit.



The view from the top of a hill showing habitat for plants that like growing on limestone.



The March 2023 excursion explorers at the base of a sand dune.



Acacia ligulata (Umbrella Bush)



Heliotropium pachyphyllum (Heliotropium)



Goodenia glabra (Smooth Goodenia)



Eremophila willsii subsp. *willsii* (Sandhill Native Fuchsia)



Newcastelia spondiotricha (Sandhill Sage) growing along the top and sides of the sand dune.





Isotropis wheeleri (Wheelers Lamb Poison)



Pomax ammophila



Cullen pallidum



Leichhardtia australis (syn: *Marsdenia australis*) Bush Banana



Grevillea juncifolia
(Honeysuckle Grevillea)



Adriana tomentosa var. *hookeri* female flower.



Adriana tomentosa var. *hookeri* male flower and buds.



Left: Fruit from the female plant.

Above: distinctive leaf shape.
Common Name: Adriana, Mallee Bitter-bush,
Waterbush.



Growing to about 1.5m high, Adriana is a distinctive species that stands out amongst other plants on sand dunes and plains because of its habit and colour. It also has male and female flowers on different plants (dioecious). The leaves are sometimes 3-lobed.

Plants found on sandstone



Stenopetalum decipiens (Hill Thread-petal)



Prostanthera striatifolia (Striped Mint-bush)



Above: *Chrysocephalum pterochaetum* (Perennial Sunray)
Left: An interesting *Eremophila* that may be a variation or hybrid of *E. willsii*.

Plants found on limestone



Young and mature *Anemocarpa saxatilis* (Hill Sunray)



Limestone area: In the surrounding area and just across the road from the sand dune the country consists of limestone hills. It is remarkable what grows on these hills, compared to what grows on the sand plain and dune country. In general, many of the species are different. Here are some examples of limestone-loving species.



Anemocarpa saxatilis (Hill Sunray)



Ptilotus clementii



Scaevola ovalifolia (Bushy Fanflower)



Zygophyllum tesquorum



Heliotropium pleiopterum

Exploring the Glass House Mountains

Glenn Leiper

Glenn Leiper (68) is co-author of the S-E Qld native plant field guide "Mangroves to Mountains". For 40 years, he's had a passion for searching out and photographing the region's plants. He's a member of Native Plants Qld, in which he was previously the Conservation Officer and is currently Botanical Advisor. Montane flora is a particular interest of his, although his days of scaling mountains are unfortunately drawing to a close. In 2019 Glenn received the Australian Plants Award (Amateur Category)."

As a young boy in the back seat of the old Holden (with caravan in tow) travelling north from Brisbane to our family's annual summer holiday destination at Caloundra on the Sunshine Coast, there were two places we passed that always captured my attention. One was the odorous creek at Landsborough where Dad would say, "C'mon, wind the windows down so we can get the smell," and Mum would immediately reply, "No, don't you dare ... keep them up!" It was years later I found out this odour was from the Smell-of-the-Bush (*Mallotus laoxyloides*) thicket growing amongst the creek's rainforest vegetation.

The other location I looked forward to was when we were passing by the imposing monolithic Mt Tibrogargan, towering over the then two-lane Bruce Highway. Dad would always comment on the ape-like appearance of the eastern escarpment, with its seemingly hunched-over shoulders and glowering face, and my sister and I would have a brief truce from pillow fighting in the back as we gazed up at the dark mountain.

To add to my interest in this mountain, my great uncle, to me as big and imposing as a mountain himself, with hands as large as hands of cavendish



Mt Tibrogargan is bordered on some sides by farms of fruit trees and pineapples.



View of the Glass House Mts from Mary Cairncross Park at Maleny.

bananas, visiting from the USA, sat me on his knee and had me enthralled with his stories about his days working on building the railway line past Mt Tibrogargan. "Did you know little fella, that I climbed that mountain one morning and guess what I found on the very top? A wagon wheel! Now, how did that darned thing get up there?" Of course, I took this hook, line and sinker, but my interest in this mountain was piqued. One day, I told myself, I'd climb that mountain and find that wagon wheel.

I'm guessing just about every family passing that mountain in those days before the highway was re-routed, would slow down, gaze up at the ape-like face looking down, and tell similarly outlandish and fanciful stories.

Mt Tibrogargan is one of between 11 and 13 (depending on what source of information you read) craggy volcanic peaks and hills constituting the Glass House Mountains, towering over the surrounding coastal plains in the Sunshine Coast hinterland. That section of the old Bruce Highway has now been renamed the Steve Irwin Way, passing the popular tourist destination of the late Steve Irwin's Australia Zoo, about an hour's drive north of Brisbane.

This collection of dramatically upright, sometimes spire-like peaks was formed by volcanic intrusions of erosion-resistant trachytes and rhyolites through the surrounding sandstone rocks around 26 million years ago. On some peaks, vertical columns of the central core of the volcanic plugs are revealed.

The peaks range in height from the tallest, Mt Beerwah (556m), Mt Coonowrin (377m) and Mt Tibrogargan (364m) to the lower hills of Wildhorse Mountain (123m) and Mt Elimbah (109m). Many of the peaks are protected within the Glass House Mountains National Park, although the small Rupari Hill, with highly significant endemic flora, is partially privately owned and has been decimated on its flat summit by wholesale clearing for a reserve with various towers such as NBN.

Most of the peaks' names indicate a long association with First Nations People, who have significant cultural and spiritual connections to the area. The name "Glass House Mountains" was bestowed upon the mountains by Lt James Cook in May 1770 as they reminded him of the glass furnaces in his home county of Yorkshire.

These days, some of the peaks are popular destinations for mountain climbers and bushwalkers, and increasingly, to the dismay and frustration I'm sure of the emergency rescue workers and volunteers, an ever-increasing daily procession of amateur photographers eager for the latest Instagram or Snapchat "selfie". Hardly a week goes by these days without another rescue from one of the precipitous cliffs of totally unprepared and inexperienced climbers stranded in late afternoon on a sheer cliff or rock outcrop. Deaths have occurred, unfortunately, on some of the peaks and for this reason, Mt Coonowrin with its sheer cliffs and dangerously steep "track", was closed in 1999. The massive Mt Beerwah has also been closed at times because of rock falls and potential cave collapses.



Mts Beerwah & Coonowrin viewed from near Mt Ngungun.

But this doesn't seem to stop the "selfie" seekers. When I visited Mt Beerwah recently, the steady procession of mostly young people eager for photo opportunities to post online, was a shock. Many were so unprepared, without shoes, water and hats, but with a head full of fanciful thoughts about their supposedly pleasant stroll to the summit and that targeted photo opportunity. We witnessed a couple of bare-footed English tourists in singlets and shorts (this was on a blisteringly hot summer's day) start their ascent over the steep bare rock slabs but within an hour were back down with painful cut and blistered feet and many tears. Another tourist had no knowledge of the safe way of descending the steep



The steep rock-slab slope at the base of Mt Beerwah.

slope and commenced a rapid rock-hopping descent which ended in a dramatic cascade of tumbles, rolls and slides amidst a shower of rocks and dust, culminating in a face-plant on a rock-slab. Fortunately, it only ended in cuts and bruises, but could have been so much worse. *

The increasing numbers of climbers, hikers and tourists has exacerbated the erosion of the steep tracks on these popular mountains, to the point that some sections are quite dangerous.

I was with a small group of plant photographers that day, exploring around the base of the mountain, and we talked to many of these unprepared tourists about having the correct clothes and gear, but our advice was ignored by all, and off they went. To see the mountain being used and abused by so many ignorant people with a narcissistic aim, is such a shame and I hope in time there's less of a demand for this life-risking activity. Wouldn't it be wonderful if these areas were "selfie-free zones"?

A few of the mountains have more permanent track surfaces, such as Wildhorse Mountain, Mt Beerburum and Mt Ngungun, and are not only wonderful walks but also provide excellent views of the countryside and the other mountains jutting up from the landscape. From a botanical perspective too, they provide interesting glimpses into the plant diversity

and endemism of the Glass House Mountains flora. There's also a wonderful 4.6km circuit track around Mt Tibrogargan, through the local heath and eucalypt forest vegetation communities, with some views, that is worth walking. One late spring day, I walked to the summit of Mt Beerburum where I was entertained for an hour by the hill-topping activities of a variety of predominantly male butterflies with a couple actually "buzzing" me as if I was a threat to their insect virility.

The Glass House Mountains, because of their acidic trachyte and rhyolite geology, and their isolation from similar vegetation communities for so long, are home to many endemic plant species, with a few only found on one or two of the peaks. Following is a brief overview of some of the interesting and significant flora of these peaks.

A stroll up the concrete driveway-width path to the covered tourist-friendly rotunda on the summit of Wildhorse Mountain, will reveal some of the common heath flora of the area, including Short Hickory Wattle (*Acacia aulacocarpa*), Wallum Prickly Moses (*Acacia hubbardiana*), Dagger-leaved Tea Tree (*Leptospermum microcarpum*), Sunshine Coast Mountain Tea Tree (*L. oreophilum*), Twiggy Cryptandra (*Cryptandra propinqua*), Twiggy Isotropis (*Isotropis filicaulis*), Glass House Mts Hop Bush (*Dodonaea rupicola*) and the local form of Sticky-leaved Coleus (*Coleus graveolens*) dominating the bare rocky pavements below the rotunda.

The slightly more strenuous track to the summit of Mt Ngungun near the township of Glass House Mountains, winds initially through eucalypt forest with some understorey Woody Pear trees (*Xylomelum salicinum*) and Mountain Hickory Wattle (*Acacia falciformis*), then slowly meandering uphill until a staircase-like rocky slope is reached.



Mt Ngungun's rocky ridge summit.



Wallum Prickly Moses (*Acacia hubbardiana*)



Short Hickory Wattle (*Acacia aulacocarpa*)



Glass House Mts Hop Bush (*Dodonaea rupicola*)



Dagger-leaved Tea Tree (*Leptospermum microcarpum*) is common on the Glass House Mts



Sunshine Coast Mountain Tea Tree (*Leptospermum oreophilum*)



Waterfall Coleus (*Coleus torrenicola*)



Woody Pear (*Xylomelum salicinum*) flower and fruit



Once above this, you'll find a wide variety of montane heath species often in dense thickets such as Tall Firebush (*Seringia hillii*), *Leptospermum microcarpum*, Glass House Mts Myrtle (*Triplarina volcanica* subsp. *volcanica*), Fringe Myrtle (*Calytrix tetragona*), Glass House Mts Waxflower (*Philotheca glasshousiensis*), Glass House Mts Raspwort (*Gonocarpus effusus*), Brush Kurrajong (*Commersonia fraseri*) and clumps of Mountain Mat Rush (*Lomandra confertifolia* subsp. *confertifolia*) on the exposed rocky slopes and ridgetop. From the summit, there are tremendous views to the other peaks. Once over the ridgetop-summit, you can see a large football field-sized flattish shelf area below which is easy to walk down to. Here are thickets of Glass House Mts Tea Tree (*Leptospermum luehmannii*) that shed their bark seasonally revealing a smooth mosaic of glowing greens, orange-browns and steel grey colours. A groundcover layer of Resurrection Grass (*Micraira subulifolia*) blankets the ground in parts and is lush green in wetter seasons but will brown off when dry, coming back quickly after good rains.



Glass House Mts Tea Trees (*Leptospermum luehmannii*) at the base of the steep lower slope of Mt Beerwah



Leptospermum luehmannii flower



Tall Firebush (*Seringia hillii*)



Glass House Mts Myrtle (*Triplarina volcanica*)



Glass House Mts Waxflower (*Philotheca glasshousiensis*)



Brush Kurrajong (*Commersonia fraseri*)

On the lower slopes of Mt Tibrogargan, on some sheer rockfaces, is the quite pretty and unusual Glass House Mts Pseudanthus (*Pseudanthus ligulatus* subsp. *volcanicus*), somehow surviving in vertical rock fissures. To see most of the rest of the significant plants on this peak though, you need to scale the exposed and very challenging slopes, with the western side being the usual approach for the keen able-bodied people wishing to attempt this. I did the climb twice in my younger years and was fortunate to have rock climbers on my first trip to assist, especially on the dangerous descent. The second time I wasn't so fortunate and swore I'd never return! On the sparsely vegetated rocky slopes are stunted spindly mallee-like Mt Beerwah Red Gum (*Eucalyptus kabiana*) trees, and when you arrive at the flattish summit, you encounter some dense heath.



Mt Beerwah Red Gum (*Eucalyptus kabiana*)

Here are specimens of Mountain Banksia (*Banksia conferta*) with flower spikes up to 20cm long, much longer than the spikes of the same species at Lamington National Park and Mt Barney close to the NSW border. The odour of the flowers I recall was particularly strong too, almost like a stale mousey smell. Also here are Glass House Mts Westringia (*Westringia grandifolia*) and Mt Beerwah She Oak (*Allocasuarina filidens*).

While I'm on the subject of dangerous and more challenging peaks to scale, I'll have to mention Mt Beerwah, the tallest of the peaks. Once again, I climbed this peak a couple of times in my younger years, and while nowhere as dangerous back then as Mt Tibrogargan, with the

increased erosion now, it would have to be more difficult. The initial huge steep rock slabs at the commencement of the climb are some of the more difficult sections and probably turn off some day tripping tourists, or at least should warn them of what's to come. But obviously not enough! On Mt Beerwah, you can find Mountain Paperbark (*Melaleuca groveana*), Needle-leaved Beard Heath (*Styphelia rupicola*), *Allocasuarina filidens*, Mountain Reed Grass (*Arundinella montana*), *Eucalyptus kabiana* and many others.

Coochin Hills, a double-peaked low mountain, is home to the critically endangered Coochin Hills Grevillea (*Grevillea hodgei*), named in recognition of the late Merv Hodge, who was the founding leader of the SGAP Grevillea Study Group, originator of many Grevillea hybrids including Grevillea "Superb" and worked for many years to bring many Grevillea species into cultivation.

The nearby Rupari Hill has a smaller area but with a mix of interesting and significant species, such as *Acacia hubbardiana*, Waterfall Coleus (*Coleus torrenticola*), Plunkett Mallee (*Eucalyptus curtisii*), Glass House Mts Rusty Petals (*Lasiopetalum* sp. *Coochin Hills*), *Grevillea*



Mountain Paperbark (*Melaleuca groveana*)



Coochin Hills Grevillea (*Grevillea hodgei*)



Mountain Mint Bush (*Prostanthera scutellarioides*)



Glass House Mts Rusty Petals (*Lasiopetalum* sp. *Coochin Hills*)

hodgei, *Calytrix tetragona*, Short-leaved Beard Heath (*Styphelia recurvisepalus*), *Triplarina volcanica* subsp. *volcanica* and Mountain Mint Bush (*Prostanthera scutellarioides*).

There are other small peaks that can be explored, most without any defined tracks, and these will often have some of the previously mentioned species, although the uncommon Leafy Hop Bush (*Dodonaea multijuga*) has been found on at least one of these other peaks and Shiny-leaved Grevillea (*Grevillea humilis* subsp. *lucens*) has been found around the lower slopes of a couple of peaks such as Mt Tunbubudla, also known as The Twins.

If you're travelling in the region, it's worth a visit to one of the lookouts to get a view of the Glass House Mountains. The best view is available at nearby Mary Cairncross Park at Maleny on the Blackall Range, where you can look down from the range over the lower country and see all of the Glass House Mountains jutting up from the coastal plain. Another easily approachable lookout is the Glass House Mts Lookout on the Glass House Woodford Road, and the other one which requires a little bit of walking is from the rotunda on Wildhorse Mountain, beside the Bruce Highway.

While we all know of the visual and cultural significance of the Glass House Mountains, the unique and highly significant flora of the region usually gets overlooked. If you're in the region in the future, put aside a day or two to visit this interesting district and its plants. It should be an eye-opener. However, I'm sorry to disappoint you with the revelation that there are no wagon wheels on the top of Mt Tibrogargan.

* It should be noted that Mt Beerwah and Mt Tibrogargan are culturally significant and hold sacred values to the local Jinibara and Kabi Kabi people who request visitors do not climb the mountains.

Editor's Note

The entry in Cook's journal read:

'These hills lay but a little way inland and not far from each other, they are very remarkable on account of their singular form of elevation, which very much resemble glass houses which occasioned my giving them that name...' (Thursday, 17 May 1770)



Glass House furnaces, Lemington, UK, photo Newcastle Library



Gardens for Life

Australian Plants Society Victoria (APS Vic) will host the biennial national conference of the Australian Native Plants Society (Australia) (ANPSA) on 30 September to 4 October 2024.

The theme for the conference is *Gardens for Life*. It will be held at the Melbourne Conference and Exhibition Centre in Docklands. The garden theme for the conference fits well with the public gardens in and around Melbourne that we will be visiting. Holding the conference in Melbourne also simplifies travel for interstate & international attendees.

Venue

The Melbourne Conference and Exhibition Centre is well set up to host our conference. It is a central venue with ready access to public transport, hotel and Air BnB accommodation options within walking distance and access to all that inner Melbourne has to offer for dining and free time. There are also plenty of parking opportunities, if so desired, although we would recommend public transport given the range of options available.

It is also becoming apparent that the CBDs within large cities all around the world are adapting to the lasting effects of the COVID pandemic on work life practice. People are working at home more and for CBDs to survive they must pivot to becoming entertainment and living areas. This transformation is taking place within the Melbourne CBD.

Formal bookings for the Conference and Tours are expected to open in early 2024.

For more details visit apsvic.org.au/anpsa-biennial-conference-2024/

To register your interest and receive updates about the conference interest at apsvic.org.au/anpsa-biennial-conference-2024

Contact Details: Email: anpsa@apsvic.org.au

Proposed pre and post conference tours include:



The Melbourne Conference and Exhibition Centre in Docklands.



The Grampians and Wimmera.



The Great Ocean Road and Otways.



Gippsland and Wilsons Promontory Tour.

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Website: anpsa.org.au

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