

CALEYI



NORTHERN BEACHES GROUP

austplants.com.au/northern-beaches

April 2024

Australian Plants Society Northern Beaches
northernbeaches@austplants.com.au

President	Dr Conny Harris 0432 643 295
Vice-President	Russell Beardmore 0404 023 223
Secretary	Pamela Dawes 0419 036 800
Minutes Secretary	Eleanor Eakins 0413 759 819
Treasurer	Lindy Monson 9953 7498
Regional Delegate	Harry Loots 9953 7498
Librarian	Jennifer McLean 9970 6528
Membership Officer	Jan Carnes 0416 101 327
Talk Co-ordinator	Penny Hunstead 0415 613 870
Walk Co-ordinator	Anne Gray 0466 309 181
Catering Officer	Georgine Jakobi 9981 7471
Newsletter Editor	Jane March 0407 220 380

APS Northern Beaches Group acknowledges the Traditional Owners of the land on which our activities take place. We pay our respects to Elders past, present and emerging, and recognise the continuing connection to lands, waters and communities.

APS Northern Beaches Group Meeting
Thursday 4, 2024 at Stony Range Regional Botanic Garden, Dee Why.
7.15 pm Lesser Plant Family Stackhousiaceae: Anne
7.30 pm Presentation James Indsto "Orchids which mimic pea plants, to increase their chances of pollination"
Supper - Penny & Jan

APS Northern Beaches Wednesday April 17, 2024 visit Cicada Glen Nursery, Ingleside.
Anne Gray will email full details closer to the date

2024 ANPSA BIENNIAL CONFERENCE 'GARDENS FOR LIFE', VICTORIA
30 September - 4 October 2024 Full updated details including fees for tours P.7

Many thanks for the wonderful contributions to CaleyI this month go to Conny Harris, Penny Hunstead, Anne Gray, Pamela Dawes, and Beth Gower.

Please email stories, photos (as attachments please) etc for CaleyI to march@ozemail.com.au

MOLLYMOOK/ ULLADULLA DISCOVERIES

Conny Harris

I had the pleasure to stay at Mollymook and walking on the coastline and local bushtracks.

I photographed some of the plants. It was very interesting. Most of the bush was burned in the big fires 3 years ago and the regrowing bush was beautiful and biodiverse, whereas the non burned patches were very thick old scrub, with hardly any flowers.

Insects and birds were also attracted to the new growth and it really demonstrated that some of the Australian bush really needs fire occasionally or regularly.

Known & unknowns

Here are four recognised specimens.



Sprengelia incarnate



Thysanotus tuberosus



Scaevola ramosissima



Tricoryne elatior

Can you identify those in the 'Mystery' group?



?1



?2



?3



?4

Remember the prize for solving the mystery photo's ID will probably be a highly priced unicorn stamp or something desirable like that!

Happy Easter and lots of success at the egg hunt.

Conny

GUIDED WALK AT THE MACQUARIE UNIVERSITY ARBORETUM



On a beautiful Autumn day 15 members were welcomed to the Macquarie University Arboretum by Sam Newton. Full report next month. Pic. Anne Gray. More photos welcome.

Show and Tell Plants

At the 7th March meeting of APS Northern Beach group.
Penny Hunstead

Having no plants worthy of a Show and Tell presentation, in my own garden, I decided to find a couple, at my local plant nursery.

Flower Power Warriewood had a surprisingly good selection of uncommon species of Australian native plants. I spent some time looking up the details of those I considered choosing for the meeting. Finally, I decided on *Hakea brownii* (Fam. Proteaceace) and *Spyridium coactilifolium*, (Fam. Rhamnaceae) native to Western Australia and South Australia, respectively.



Hakea brownii is a medium sized shrub, to approx. 2m. in height, found growing in sand, to sandy-loam in the Western Australian wheatbelt region. It has an inflorescence of 6-10 small orangey-brown perfumed flowers clustered in the leaf axils. The woody fruit is egg-shaped with one end tapering to a beak. Neither the flowers, nor the fruit were present on the specimen that I bought. It was on the basis of the unusual leaves, that I made my purchase. The mature leaves are very tough, Ginkgo-like in shape, with toothed edges and sage green in colour. Like many Hakeas, the new leaves are russet-brown. The conservation status of this species is "Not Threatened".

I chose this plant on the basis of its unusual leaves and ability to be grown in a pot, on my deck as a bit of a conversation piece. I look forward to seeing the flowers, one day!

Spyridium coactilifolium is a small shrub, to 1.5m. in height, found growing in sandy soils on rocky sea cliffs in low shrubland and in low open woodland in the Waitpinga Scrub, near Victor Harbour, South Australia. I chose this species for the unusual inflorescence. This consists of a densely compact head of up to 15 flowers, surrounded by 4-5 white, velvety floral leaves, that resemble petals. Leaves are small, furry and rusty-coloured. The fruit is a 2.5mm brown capsule. The conservation status is "Vulnerable".

I chose this plant on the basis of its unusual flowers, which, now growing in a pot on my deck, exhibit positive heliotropism. This plant could be grown in a pot on a sea-facing windy position and like the Hakea, could be a bit of a conversation piece, with its pretty and unusual inflorescence.

MEMBERS PROFILE - Beth Gower



Beth at Centennial Park - many years ago.

My earliest memory of the great outdoors is of Centennial Park in Sydney: we lived opposite the Park so this was my go-to playground as a young child. I was also privileged to spend holidays in the Royal National Park, the Blue Mountains, and beach holidays at Ulladulla. 'The bush' was very much a part of my early life: the smell of boronia after rain, making devils from the seed pods of *Lambertia formosa*, massed displays of *Blandfordia grandiflora* at Christmas time, exploring rock pools....

My interests later in life stemmed from these earlier experiences, however animals predominated. I graduated from **Sydney University in Zoology and Biochemistry** and while employed in **Medical Research at RPA Hospital** I researched evolutionary aspects of blood – leading to a **Masters** on Port Jackson shark blood and a **PhD** on salt-water crocodile blood.

Plants came later. While teaching as a specialist science teacher I was struck by the under-utilisation of school grounds which led me to a **Master of Horticulture** with a thesis on **Schoolscaping**. I still despair that outdoor activities are not mandated in the curriculum for all subjects – please get children out of that classroom.

Having dipped my toes into horticulture, I enjoyed time as a **Community Education Officer** at the **RBG** – mainly at the wonderful **Mount Annan BG**. I was the Sydney Coordinator for **Australia's Open Garden Scheme**, was **Program and Publicity Coordinator** for the **Friends of**



A view of the Burragorang Valley from Beth's home.

the RBG, editor of the **AIH monthly E-Newsletter**, and a founding member of the **Collectors' Plant Fair**. Currently I am working with an architect designing native gardens for new houses.

However, my biggest connection to native plants was living for 20 years in a remote part of the Burragorang Valley south of Sydney. A huge infestation of serrated tussock in the Valley needed addressing so as **Project Manager** for the local **Landcare Group** I oversaw collection and propagation of locally collected seed, and planting of tubestock. But that is another big story....

Now I am based in Sydney, the **Australian Plants Society** activities are an imperative part of my life: a big thank you to all who contribute their time and expertise to this organisation.



Beth and granddaughter Chloe - at the Opera recently



Shutterstock

LARGE OLD TREES ARE VITAL FOR AUSTRALIAN BIRDS. Their long branches and hollows can't be replaced by saplings.

The Conversation March 14, 2024. Alex Holland, Researcher at Deep Design Lab and PhD Candidate, Melbourne School of Design, University of Melbourne. Jason Thompson, Associate Professor, Faculty of Medicine and Melbourne School of Design, University of Melbourne. Philip Gibbons, Professor, Australian National University. Stanislav Roudavski, Founder of Deep Design Lab and Senior Lecturer in Digital Architectural Design, University of Melbourne

When we make roads, houses or farmland, we often find large old trees in the way. Our response is often to lop off offending branches or even cut the tree down.

This is a bad idea. The more we learn about large old trees, the more we realise their fundamental importance to birds, mammals, insects, plants and other inhabitants. More than 300 species of Australian birds and mammals need large old trees to live.

Why focus on mature trees? It's because they have many features that younger trees simply don't have: cracks, hollows, dead branches, peeling bark and large quantities of nectar and seeds. The limbs and leaves that fall on the ground make excellent homes for many small creatures.

Our new research sheds light on the importance of such grand old trees for birds. We used lidar (scanning using lasers) to map small, medium and large tree crowns in unprecedented detail. On average, we found large old trees had 383 metres of the horizontal or dead branches preferred by birds, while medium trees had very little and young trees none. Some old trees had almost 2 kilometres of branches.



You can see this large old tree's complex canopy, developed through centuries of growth and chance events. Author provided

Why are branches so important?

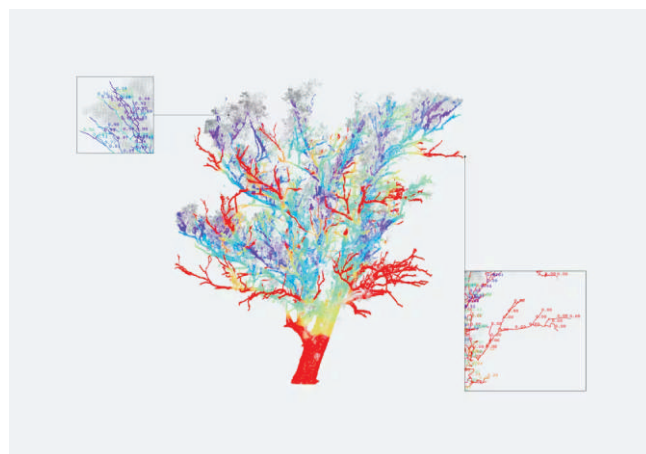
If we think of long, overhanging branches, chances are we may think "threat". Some large trees can drop limbs without warning, although some arborists have pointed out the threat is overstated. To reduce the risk, councils and land managers may remove the limbs of large old trees. But if you cut down a 300-year-old river red gum, you can't simply replace

it with a sapling of the same species. It will take centuries for the sapling to take up the same ecological role as its predecessor.

In our research, we mapped more than 100,000 branches from many millions of laser samples and recorded how birds use branches through years of field observations. When we spot a bird using a branch, we can safely infer the bird has chosen it for a reason, whether resting, socialising, feeding, hunting or nesting.

What our data shows is that not all branches are equal. Birds find it easier to perch on horizontal or slightly inclined branches. Branches with few or no leaves offer clear vantage points for birds to land, hunt or see predators. You may have noticed crows and currawongs choosing dead branches for these reasons.

As trees mature, their branches begin to grow horizontally. Some branches may die due to lightning strikes, fire, wind damage, or attacks by insects or fungi, while the rest of the tree continues living. These long-term patterns of growth, decay and random events are necessary to produce the horizontal and dead branches prized by birds. For a large eucalypt, that process can take up to 200 years.



Birds have strong branch preferences. Lower numbers and red tints indicate exposed branches likely to offer clearer vantage points for birds. Author provided

Mapping the canopy with lasers

Until recently, it's been hard to map the tree canopy. Traditional methods rely on researchers visually assessing this vital habitat. But we know eye observations don't do well at capturing parts of trees such as branches.

That's where lidar comes in. Lidar sends out laser pulses, which bounce back when they hit objects. By recording the time taken for the light to return, we can build very detailed three-dimensional models. It's a little like echolocation, but using light rather than sound.

This laser-scanning technology has been used in the jungles of Central America to find the ruins of lost Mayan cities. But it can do much more. In forests, lidar is now increasingly used to estimate how dense the tree cover is, and how variable. This useful data feeds into how we assess a forest's ability to store carbon, how much timber is present, and the current fire risk. We can even use it to spot animal pathways.

To get the canopy detail we wanted, we used lidar on the ground rather than from the air, and processed the data with algorithms that can recognise and describe about 90% of branches in even the largest trees.

We mapped trees in an area near Canberra. We chose this area because it represents the plight of temperate eucalypt woodlands, which have shrunk by up to 99% since European colonisation.

Features of trees

Trees as seen by algorithms. Here, lower numbers show more exposed branches, leaves are in green and connected branches in red with yellow indicating horizontal branches. Author provided

What should we do?

The very things that make branches good real estate for birds can make them seem dangerous or aesthetically displeasing to us. We tend to cut dead or long, horizontal branches and leave the living or more upright ones. But for birds, this is a disaster as many cannot live without such branches.

Young trees are no substitutes for their older counterparts. Planting saplings or installing nest boxes cannot replicate the ecological value of large, mature trees.

We can live alongside large old trees. To reduce the chance of injury or worse from falling limbs, we could use exclusion zones, add artificial supports for branches, and install devices to catch or redirect falling limbs. We can also look at emergency solutions such as prosthetic hollows on younger trees or even artificial replicas of old trees.



This dead tree has been kept intact in an urban park for use by wildlife, with landscape features designed to minimise the risk of injury to humans. Author provided

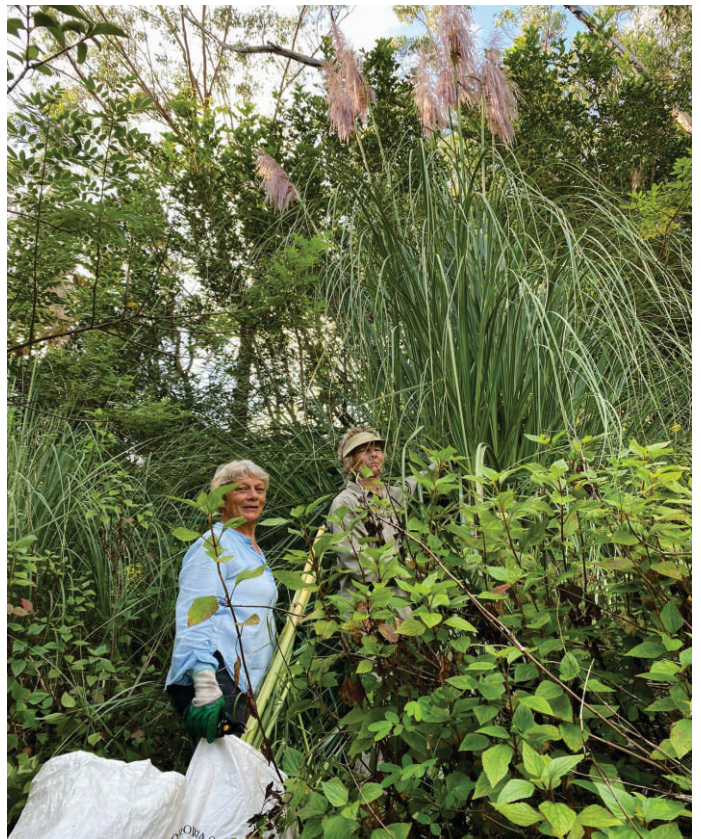
We should preserve these trees wherever we can and aim to keep them intact with their complex crowns and dead branum trees to make sure there will be old trches. We should also make sure there is a pipeline of young and mediees in the future.

APS NORTHERN BEACHES APRIL ACTIVITY

APS Northern Beaches visit **Cicada Glen Nursery**, 1 Chiltern Road, Ingleside, **Wednesday April 17, 2024 at 10.30 am.**

Please register by Monday April 15 to Anne's email only: annepsgray@optushome.com.au

PAMPAS GRASS CHALLENGE



Pam & Conny pic Rodney Smee.

Pampus grass is a huge problem in Sydney bushland. In a 2 hour stint we collected 80 stalks, where each stalk contains a 1 million seeds. Now is the best time to bag the seeds before they are released. Those seeds remain active for decades, so the potential for Pampus domination is very real.

Having seen that reality in North Island New Zealand, bush regenerators are trying to control this weed. Pam Dawes

A STINKY WALK AT NORTH HEAD...REVEALED ITS SECRET

Conny Harris



Bridal Veil Stinkhorn *Phallus indusiatus*.

The cap is covered with a greenish-brown spore-containing slime, which attracts flies and other insects that eat the spores and disperse them.



Details of a silicified fern fossil. Image credit: Geoff Thompson/Queensland Museum

A BOTANICAL POMPEII: WE FOUND SPECTACULAR AUSTRALIAN PLANT FOSSILS FROM 30 MILLION YEARS AGO

The Conversation February 21, 2024. Andrew Rozefelds, Adj. Ass. Professor Central Queensland University and Principal Curator Geosciences, Queensland Museum.

The Australian continent is now geologically stable. But volcanic rocks, lava flows and a contemporary landscape dotted with extinct volcanoes show this wasn't always the case.

Between 40 and 20 million years ago – during the Eocene to Miocene epochs – there was widespread volcano activity across eastern Australia. In places such as western Victoria and the Atherton Tablelands in Queensland, it was even more recent.

Erupting volcanoes can have devastating consequences for human settlements, as we know from Pompeii in Italy, which was buried by ash when Mount Vesuvius erupted in 79 CE. But ash falls and lava flows can also entomb entire forests, or at least many of the plants within them.

Our studies of these rare and unique plant time capsules are revealing exquisitely preserved fossil floras and new insights into Australia's botanical history. This new work is published in the journal *Gondwana Research*.



This is what volcanoes can do to landscapes – super-heated gasses from the 2011–12 eruption of Puyehue-Cordon Caulle Volcano in Argentina killed the forest. After ten years, the forest has started to regrow. Image credit: Andrew Rozefelds

Remarkable preservation

The most common volcanic rocks are basalts. The rich red soils derived from them are among the most fertile in Australia. But the rocks in which fossils occur are buried under basalts or other volcanic rock, and are called silcretes – the name indicates their origins are from silica-rich groundwaters. Silica is the major constituent of sand, & familiar to most of us as quartz.

What makes the silcrete plant fossils so fascinating is the superfine preservation of plant material. This includes fine roots and root nodules, uncurling fern fronds and their underground stems, the soft outer bark of wood, feeding traces and frass (powdery droppings) of insects, and even the delicate tissues and anatomy of fruits and seeds.



The foliage of a *Pteridium* fern, preserved in silcrete in exceptional detail. Image credit: Geoff Thompson/Queensland Museum

For this fine preservation to occur, first there needs to be a rapid burial, like that from a volcanic eruption. Then, there has to be an abundant source of silica — a condition met when the volcanic rocks began to weather.

The process where silica infills and preserves plant structures is referred to as “silicification” or “permineralisation”. When plant material is buried, it provides acidic conditions that are ideal for this to happen. And the process need not take millions of years. Overseas studies of plants in hot springs or undertaken in the laboratory have shown that some types of silica will quickly infiltrate wood and plant tissues.



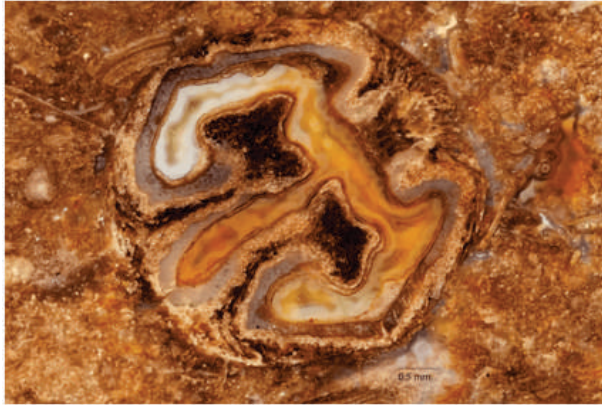
This is a cross-section of the stem (rhizome) of a silicified fern, showing its characteristic anatomy. Image credit: Geoff Thompson/Queensland Museum

Why are these plant fossils significant?

Because of their rapid entombment by the volcanoes, we can be sure the plants were in situ (that is, their original location) and were actively growing. This means we can gain detailed information about the make-up of these past plant communities. In other areas where plant fossils might accumulate – such as river deltas – we can never be sure how far the bits of plants were carried, and whether they were from different types of vegetation.

Silicification not only preserves plants, but also leaf litter on the forest floor and even the underlying soil containing roots and root nodules. The fossil plants that are preserved at different sites varies, indicating the presence of distinct plant communities.

The abundance of seeds and fruits at one site near Capella, in central Queensland, even indicated to us that the local volcanic eruptions are likely to have occurred in summer or early autumn during the fruiting season.



This cross-section of a silicified native grape seed shows its complex internal structure which is typical of seeds of this family. Image credit: Geoff Thompson/Queensland Museum

The extraordinary preservation of these fossils allows us to compare them with modern plants. In turn, this means we can accurately identify them. The ferns include fronds and underground stems (rhizomes) of the familiar bracken fern (*Pteridium*). We have also found the distinctive seeds and lianas of the grape family (*Vitaceae*), along with evidence of insect damage in the wood. Two sites also had evidence of palms.

While there have been few previous studies on silcrete plants, we have revealed new insights into the history of the modern Australian flora.



A modern bracken fern found in Queensland – the clear successor of the ferns found in the silcrete rocks. Image credit: Shutterstock

Volcanoes shaped plant communities

Volcanic activity both destroys and modifies existing plant communities. It also provides new substrates for plants to colonise. Several sites contained ferns – this may be because they are among the first living plants to colonise new volcanic terrains via their tiny wind-borne spores. For instance, it has been documented that bracken ferns were pioneer plants of the barren cone of the famous Krakatoa volcano after its eruption in 1883. But the diversity of seeds and fruits at another site suggests that an existing forest was buried by volcanic activity.

Researchers have suggested that the key factors responsible for the evolution of the Australian fauna and flora during the Cenozoic period (the last 66 million years) were predominantly climate and environmental change. It happened, in part, due to the movement of the Australian continental plate northwards. But the broad-scale volcano activity that occurred in eastern Australia during the Cenozoic has rarely been invoked as a key driver of such changes.

So remarkably preserved, the silcrete plant fossils are now providing startling new insights into the history of some groups of Australian plants and the vegetation types in which they grew.



30 September - 4 October 2024

VENUE

The Round is a Performing arts and cultural centre in Nunawading, 379 - 399 Whitehorse Rd, Nunawading Victoria 3131. Nunawading is a suburb of Melbourne, 18km east of the CBD.

Website: <https://www.theround.com.au/> Phone: (03) 9262 6555.

The Round, a beautiful venue set in extensive parkland was a stand-out, it ticked all the boxes. It was built, a \$78 million project undertaken by the City of Whitehorse, over the last few years and opened in October 2023. It wasn't in existence when we were first selecting a venue. It has many versatile spaces eminently suitable for presentations, several airy light-filled spaces for our social gatherings in addition to outdoor spaces for relaxing with heaps of car-parking.

Transport

This venue is equidistant from two well-served metropolitan railway stations of Nunawading and Mitcham. Both a 15 minute walk to The Round. There is also an extensive network of buses into the area. It is a few kilometers south of exits from the M3 freeway.

Accommodation

There is a large choice of reasonably priced accommodation available to attendees from many AirBnBs to Hotel/Motels. There is also a selection of Caravan Parks available. All these caravan parks have powered sites and onsite cabins:

Important Dates

After recent meetings with ASN Events we have the following key dates:

- December, 2023 - ANPSA 2024 Biennial Conference Website,
- **Mid February 2024 - Early bird registration for the ANPSA 2024 Biennial Conference. The conference itself will cost \$650 or \$585 early bird registration for the 5 days including 3 days of lectures and 2 days of excursions.**

- **February 2024 - Bookings open for pre & post Conference Tours.**

Tour fees

Pre conference tours 23-28 Sept. Post conference tours 5-10 Oct.

Wimmera Grampians \$1,800 (Single person supplement \$394)

Great Ocean Road Otways \$2,380 (Single supplement \$763)

Gippsland Wilsons Promontory \$2,060 (Single supplement \$525)

- **1 July 2024 - closing of early bird registration** for the ANPSA 2024 Biennial Conference. (Bookings will still be taken but at full regular price)

- **31 July 2024 - closing of bookings for pre and post tours.**

Conference Tours

The Spring 2023 edition of Australian Plants is the 'ANPSA Conference 2024 Tour Edition'.

We look forward to seeing you there and invite you to register your interest through the website <https://apsvic.org.au/anpsa-biennial-conference-2024/>

TO REGISTER YOUR INTEREST

Email: anpsaconference@apsvic.org.au

<https://apsvic.org.au/anpsa-biennial-conference-2024>