



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.

CALENDAR

APS Northern Beaches meeting Thursday May 4, 2023 at Stony Range Botanic Garden, Dee Why.

7.15 pm. **Lesser plant family. Ranunculaceae - Jane.**

7.30 pm. **Presentation - Harry Loots. 'Plants hidden in the clouds'.** Harry will speak about the alpine plants of the Central Highlands of Tasmania. He took many photos on his most recent walks along the Overland Track between Cradle Mountain and Lake St Clair in 2022 & 2023. See p. 5. Supper. **Lindy & Harry.**

Saturday May 20, 2023 APSNSW Gathering & ACM hosted by **APS Central Coast.** Registration essential with Anne Gray 0466 309 181 or annepsgray@optushome.com.au. See more details p. 5. Car share possible.

Many thanks to Jan Carnes, Penny Hunstead, Deborah Bonham, Russell Beardmore and Harry Loots for their invaluable contributions.

Please send stories, photos (as attachments) etc for Caley to **Jane March** march@ozemail.com.au

MARCH WALK ON THE ELVINA TRACK.

Jan Carnes



Assembly. Pic. Russell Beardmore.

Saturday 15th of April saw a group of 16 adults and one child enjoy the Elvina Track walk in Kuringai National Park. It was a superb autumn day - perfect for a walk and viewing the native bush, especially as the day before had seen some heavy rain. On the first section we saw in flower a *Persoonia pinifolia*, the pine-leaved Persoonia and the prettiest of this genus. Also *Grevillea buxifolia* and *Grevillea sericea*, *Banksia ericifolia* with its flower spikes looking like red-tipped torches and the paler yellow flowers of *Acacia ilicifolia*. The *Banksia serrata* on this flat track are quite tall, having nothing to compete against for light, except for the occasional scribbly gum.



Grevillea buxifolia Pic. Harry Loots



Grevillea sericea Pic. HL

The pea family was well represented with *Bossiaea heterophylla*, *Pultenaea ferruginea* and *Dillwynia sericea* ssp. *rudis* (thank you Russell for solving the puzzle!) *Epacris pulchella* dominated the lower storey with *Platysace linearifolia*, *Actinotus minor* and the very dainty *Hemigenia purpurea*. For me the plant of the day was *Banksia oblongifolia*. The contrast of the silvery, blue-

green immature flower spikes with the soft tan of the new leaf growth had me sourcing a plant immediately the walk and lunch were over!



Bossiaea heterophylla Pic. HL



Epacris pulchella Pic. RB



Banksia oblongifolia Pic. RB



Hemigenia purpurea Pic. RB

As we headed down a side track to get to the aboriginal rock carvings, the ground became swampy. Here was *Leptospermum squarrosum* with its pale pink and or/white blossoms.

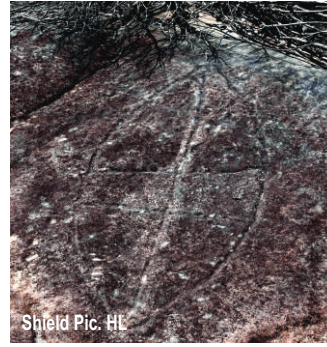


Leptospermum squarrosum Pic. Deborah Bonham



Leptospermum squarrosum Pic. RB

Onto the magnificent rock platform – pitted and tessellated by the weather. The Great Emu in the Sky (as it is known, being a depiction of the dark nebulae crossing the Milky Way) was easy to make out. Not so the Daramulum figure. We had many guesses from a spouting whale to a jellyfish! Further on were carvings of shields and fish. The platform has small islands of tough vegetation including *Darwinia fascicularis*, *Baeckea brevifolia* and large sheets of emerald green moss. We saw a *Lambertia Formosa* with a single flower.



Shield Pic. HL



Darwinia fascicularis Pic. HL

Back on the main track, the ditches were filled with species of *Drosera* – sundews, and as the track started to descend we saw *Hakea gibbosa*, *Petrophile pulchella*, *Calytrix tetragona*, *Allocasuarina dystilla*, *Angophora hispida* and *Eucalyptus heterophylla*.



Baeckea imbricata Pic. HL



Calytrix tetragona Pic. RB

The track (or fire trail) has recently been graded so was very easily accessible. One of our group continued down the steep section to Elvina Bay on Pittwater while 9 of us retired to a very pleasant lunch at The Shed Restaurant in Akuna Bay.



Elvina track Pic. DB

HUNTSMAN SPIDERS

Speaker: Helen Smith

Report Penny Hunstead

At our meeting in April, we were treated to the most fascinating presentation on Huntsman Spiders. Our speaker was Helen Smith, an arachnologist with the Australian Museum Research Institute, Sydney.



Huntsman. Mike Gray. Australian Museum.

Helen's presentation was illustrated with many images of the various species of Huntsman spiders. She explained that an understanding of the nature of these arachnids, helps to take away the fear of them. The natural reaction of most people to the sudden appearance of a Huntsman is surprise or fear, because of their scuttling type of movement and the fact that most spiders can bite.

Huntsman spiders belong to the family Sparassidae. They are large and long-legged, mostly grey or brown, sometimes with banded legs. Many species have rather flattened bodies, adapted for living in narrow spaces, i.e. in rock crevices or under bark. This is aided by their hairy legs, which, instead of bending vertically in relation to the body, have the joints twisted so that they spread out forwards and laterally in crab-like fashion. However, a few species have a burrow, with a cap. There are 143 species in Australia, of which 12 are found in the Sydney region. Helen's projected images included species in the genera *Heteropoda*, *Delena*, *Isopoda*, *Halconia*, *Pediana* and there were descriptions four other genera.

Baby spiders hatch from an egg, after two weeks to a month in development. A mother Huntsman is protective of her young, but she can be cannibalistic to other species of Huntsman. Adults have a lifespan of about two years, but those kept as pets are recorded as living for five years.

In the Sydney region there are two subfamilies (*Heteropodinae* and *Deleninae*), containing nine genera. All the species are fast and active predators and although their main prey is insects, they have been recorded as catching animals many times their size, e.g. mice, lizards and toads and pygmy possums! Their common tendency to suddenly appear from a hiding place and to scuttle rapidly across a surface, horizontal or vertical is more frightening than the fear of their bite. The vibration of a car is known to bring a Huntsman out of hiding and often on to the windscreen! Although usually fairly solitary, dozens of members of the social species, *Delena cancerides*, can be seen sitting together under bark or rocks.

Like all arthropods, Huntsman spiders undergo moults. The process usually takes less than ten minutes and occurs all through the animal's life. We saw fascinating images of the moulting process with several species of this spider.

Although these spiders are efficient hunters, they are predated by many other animals, such as birds, small mammals, spider wasps, mermithid worms and a pathogenic fungus. We were presented with macabre images of the death of Huntsman spiders, from parasitizing wasps,



Dr Helen Smith pic. Anne Musser

worms growing inside the spider's body and white fungal mycelium and hyphae growing out of the spider's joints. The story of the mermithid worm's ability to colonise the spider and make it seek liquid for the worm's next life was told to us by Helen. A detailed description can be found under the title "The Worm, the Spider and the Coffee Cup...ABC website. (1995).

Helen's instructions on how to catch...and release...a Huntsman.. were as follows. Slowly place a large clear container over the spider and slip a firm sheet of plastic or similar, along the surface on which the spider is sitting. Slow movement is of the essence! Then, please release in the garden and don't kill.

Helen's presentation gave us an insight into the world of the Huntsman. I am sure that we all had a less fearful attitude toward these spiders and a respect for them as important members of the ecosystems in which they live.



Huntsman spider Stuart Humphreys, Australian Museum.

HOYA ON SHOW

Jane March.



The one constant in my back yard is the trusty *Hoya australis*.

It blooms flamboyantly, though for a brief time, meanwhile playing host to many critters attracted by its perfume or to prey on others so enticed.



One amazing characteristic is its seed pod production. Up to six months after flowering a bean-like pod grows and eventually disperses its cloud of parachuting seeds.



PLANTAGINACEAE

Presentation by Lorna Scott at the April meeting.

Plantaginaceae .

Annual or perennial herbs.

Leaves all in a basal rosette or rarely opposite or alternate on erect branching stems; simple, entire or pinnately lobed, often with \pm parallel veins.

Inflorescences spikes or heads or rarely flowers solitary. Flowers small, actinomorphic, bisexual [or unisexual and then plants mostly monoecious], commonly 4-merous. Sepals imbricate, free or \pm fused. Corolla tubular, 4-lobed; green or white or purplish. Stamens 4 [or rarely 1 or 2], alternating with the corolla lobes; filaments fused towards the base with corolla; anthers 2-locular, dehiscent by longitudinal slits. Ovary superior, of 2 carpels, 1- or 2-locular or up to 4-locular by the growth of false septa; placentation axile or basal or free-central; style simple.

Fruit a circumsciss capsule or a hard nut; seeds 1–6.

Distribution and occurrence: World: 101 genera, c. 1900 species, cosmopolitan but mostly in temperate regions. Australia: 26 genera, 148 species, all States. (Source NSW Flora Online)

A single genus in Australia – *Plantago*.

Local species.

Plantago debilis – Slender Plantain.

A small herb found in moist forests on sandstone and shale. Common in Northern Sydney. Pic. J R Hoskings. RBG



Plantago gaudichaudii – Cumb

A small plant with slender erect leaves found on clay soils on the Cumberland Plain. Photo L. von Richter



Plantago bispida – Coastal Plantain

Low dense herb found rocky sea-coasts.

Plantago varia – Cumb

Similar to *P. Gaudichaudii* as been seen in Richmond.

Nature.com article noted nutritional value of *Plantago* seeds.

'Plants of the genus *Plantago* occur widely throughout the world. Traditionally, all parts of the plant are used but the seeds have particular importance as they produce a gel-like coating of mucilage upon wetting which has many folk food and medicinal uses. For example, seeds of Australian *Plantago* species were pounded into a flour by Aboriginal and Torres Strait Islander peoples and combined with water to make a porridge thickened by the sticky mucilage. Early British settlers also noted the palatability of Australian native *Plantago* seeds, exploiting the jelly-like mucilage to prepare sweetened desserts similar to sago pudding.'

APS NSW AGM & GATHERING - HOSTED BY CENTRAL COAST



Saturday May 20, 2023 9:30AM - 3:30 PM

Various venues including Phillip House 21 Old Mt. Penang Rd Kariong NSW 2250

PROGRAM:
9.30 - 11.30am

Either:

An easy bush stroll.

Meet at the large metal gates at the end of Portelli Ave., Kariong and stroll into Brisbane Water National Park. There are NO toilets on this walk.

Or

Visit Olga Blacha & Jonathan Steed's Wholesale Production Nursery, Sustainable Natives, 94 Keighley Avenue, Somersby. Turn Right from 99 Keighley Avenue and continue 300m down laneway until you see the sign then turn right. For more information visit <https://sustainable natives.com.au/>

12.00 - 1.00pm - BYO lunch to eat in the courtyard, hall or picnic on the grass (depending on weather) at Phillip House (toilets here of course).

Food can be purchased at the Waterfall Café, Mt. Penang Gardens, Parklands Road, Kariong (toilets here) or Kariong Kakes (sic) (sandwiches, pies, cakes), Shop 5, 4-8 Mitchell Drive, Kariong, open from 8 am to 2 pm, Kariong Kakes is near the Ampol Service Station (toilets at Ampol but have to ask for key).

1 - 3.30pm - Phillip House, 21 Old Mt. Penang Rd, Kariong NSW 2250
Members: \$5 entry fee, Non-members: \$10, which covers afternoon tea, hall hire and other associated costs. Payable on entry.

1 - 1.30pm - APS NSW Annual General Meeting

Agenda and Minutes from 2022

Annual report

Election of officers

1.45 - 2.30pm - Achieving a New Civic Australian Style Garden. Olga Blacha

2.30pm Afternoon tea provided by the Central Coast District Group, APS NSW.

PLEASE CONTACT ANNE GRAY TO INDICATE YOUR ATTENDANCE AND WHETHER OPEN TO CAR SHARE. Anne Gray - 0466 309 181 or annepsgray@optushome.com.au

MAY MEETING PRESENTATION: PLANTS HIDDEN IN THE CLOUDS.

Thursday May 4, 2023, Stony Range Botanic Garden, Dee Why.



Harry crossing the button grass plains, 2023. Photo L. Monson.

Harry Loots will speak about the alpine plants of the Central Highlands of Tasmania. He took many photos on his most recent walks along the Overland Track between Cradle Mountain and Lake St Clair in 2022 & 2023.

Harry is a long-time member of the society and Treasurer of APS NSW. Bushwalking since his teens fostered his interest in growing Australian plants.



ANPSA BIENNIAL CONFERENCE 'GARDENS FOR LIFE' VICTORIA

30 September - 4 October 2024

Melbourne Convention and Exhibition Centre

The next ANPSA conference will be hosted by **APS Victoria**.

During the conference we will hear about all types of gardens and their impact on our life and the life of our world. We will visit spectacular gardens during the in-conference excursions including the world renowned Australian Garden at Cranbourne. Pre and post conference tours to Gippsland, the South West and the Grampians will be offered.

If you are interested in the conference, please go to the website (apsvic.org.au) and register your interest.

TOURS

The tours will visit some of Victoria's best scenic areas and spectacular displays of wildflowers. We are offering each tour pre and post conference.

Conference attendees will have the opportunity to choose up to two out of the three tours. Each tour will visit areas of wildflowers in natural bushland, public and private gardens.

This is an opportunity of a lifetime as some of the gardens are only available through these tours.

Each tour will be accompanied by experts.

The pre conference tours are from Monday 23 September to Saturday 28 September 2024 and post conference from Saturday 5 October to Thursday 10 October 2024. Each tour covers 6 days.



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ATTENTION PLANT KILLERS: NEW RESEARCH SHOWS YOUR PLANTS COULD BE SILENTLY SCREAMING AT YOU

The Conversation March 31, 2023, Alice Hayward, Molecular Biologist, The University of Queensland

If you're like me, you've managed to kill even the hardiest of indoor plants (yes, despite a doctorate in plant biology). But imagine a world where your plants actually told you exactly when they needed watering. This thought, as it turns out, may not be so silly after all.

You might be familiar with the growing body of work that provides evidence for plants being able to sense sounds around them. Now, new research suggests they can also generate airborne sounds in response to stress (such as from drought, or being cut).

A team led by experts at Tel Aviv University has shown tomato and tobacco plants, among others, not only make sounds, but do so loudly enough for other creatures to hear. Their findings, published today in the journal *Cell*, are helping us tune into the rich acoustic world of plants – one that plays out all round us, yet never quite within human earshot.

Plants can listen, but now they can talk!

Plants are “sessile” organisms. They can't run away from stressors such as herbivores or drought. Instead, they've evolved complex biochemical responses and the ability to dynamically alter their growth (and regrow body parts) in response to environmental signals including light, gravity, temperature, touch, and volatile chemicals produced by surrounding organisms. These signals help them maximise their growth and reproductive success, prepare for and resist stress, and form mutually beneficial relationships with other organisms such as fungi and bacteria.

In 2019, researchers showed the buzzing of bees can cause plants to produce sweeter nectar. Others have shown white noise played to *Arabidopsis*, a flowering plant in the mustard family, can trigger a drought response.

Now, a team led by Lilach Hadany, who also led the aforementioned bee-nectar study, has recorded airborne sounds produced by tomato and tobacco plants, and five other species (grapevine, henbit deadnettle, pincushion cactus, maize and wheat). These sounds were ultrasonic, in the range of 20-100 kilohertz, and therefore can't be detected by human ears.

Stressed plants chatter more

To carry out their research, the team placed microphones 10cm from plant stems that were either exposed to drought (less than 5% soil moisture) or had been severed near the soil. They then compared the recorded sounds to those of unstressed plants, as well as empty pots, and found stressed plants emitted significantly more sounds than unstressed plants. In a cool addition to their paper, they also included a soundbite of a recording, downsampled to an audible range and sped up. The result is a distinguishable “pop” sound.

The number of pops increased as drought stress increased (before starting to decline as the plant dried up). Moreover, the sounds could be detected from a distance of 3-5 metres – suggesting potential for long-range communication.

But what actually causes these sounds?

While this remains unconfirmed, the team's findings suggest that “cavitation” may be at least partially responsible for the sounds. Cavitation is the process through which air bubbles expand and burst inside a plant's water-conducting tissue, or “xylem”. This explanation makes sense if we consider that drought stress and cutting will both alter the water dynamics in a plant stem.

Regardless of the mechanism, it seems the sounds produced by stressed plants were informative. Using machine learning algorithms, the researchers could distinguish not only which species produced the sound, but also what type of stress it was suffering from. The number of pops increased as drought stress increased (before starting to decline as the plant dried up). Moreover, the sounds could be detected from a distance of 3-5 metres – suggesting potential for long-range communication.

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We now have the first research evidence that plants can make airborne sounds, heard up to a few metres away. Shutterstock

It remains to be seen whether and how these sound signals might be involved in plant-to-plant communication or plant-to-environment communication. The research has so far failed to detect any sounds from the woody stems of woody species (which includes many tree species), although they could detect sounds from non-woody parts of a grapevine (a woody species).

What could it mean for ecology, and us?

It's tempting to speculate these airborne sounds could help plants communicate their stress more widely. Could this form of communication help plants, and perhaps wider ecosystems, adapt better to change?

Or perhaps the sounds are used by other organisms to detect a plant's health status. Moths, for example, hear within the ultrasonic range and lay their eggs on leaves, as the researchers point out.

Then there's the question of whether such findings could help with future food production. The global demand for food will only rise. Tailoring water use to target individual plants or sections of field making the most “noise” could help us more sustainably intensify production and minimise waste.

For me personally, if someone could give a microphone to my neglected veggie patch and have the notifications sent to my phone, that would be much appreciated!