CALEYI

Australian Plants SOCIETY NSW

NORTHERN BEACHES GROUP

austplants.com.au/northern-beaches

September 2023

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

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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 September 7, 2023 at Stony Range Botanic Garden, Pittwater Rd, Dee Why.
7.15 pm. Lesser plant family. Polygalaceae - Pamela Dawes.
7.30 pm Presentation. Brian Roach - Ceratopetalum Johanna's Christmas - story of the dwarf plant's development.
Supper.Jan & Penny.

9 am Saturday September 9, 2023
Set-Up for Stony Range Spring Festival
9 am Sunday September 10, 2023
STONY RANGE SPRING FESTIVAL
All members please spare an hour or two to help on these days. Call Jane to discuss how you can fit into the schedule 0407 220 380.

Many thanks to Russell Beardmore and Anne Gray for their great contributions to this edition of Caleyi. Please email stories, photos (as attachments please) etc for Caleyi to march@ozemail.com.au

THE HEATH TRACK, ALLAMBIE HEIGHTS - SATURDAY 19 AUGUST. Anne Gray


Lookout moment. JM.

Seven members met at the Allambie Heights Tennis Courts at the start of the Heath Track. It was a cool but sunny day and the wetter parts of the track had dried up slightly.


Epacris longiflora. RH


Hibbertia cystiflora. AG


Phebalium squamulosum. RH


Bauera rubioides. JM

We were soon immersed in a vast array of native plants. *Epacris longiflora, Hibbertia cystiflora, Phebalium squamulosum, Bauera rubioides, Darwinnia*

fascicularis, Boronia ledifolia, Dillwynia retorta and *Dillwynia tenufolia* were all spotted early in the walk.


Darwinia fascularis. HL


Boronia ledifolia. RH


Dillwynia retorta. AG

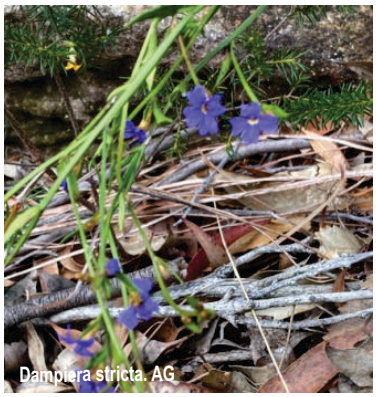

Dillwynia tenuifolia. AG

There was much discussion about the difference between *Leucopogun microphyllus* which only bears a few flowers at the end of it's branchlets and Epacris microphylla which has flowers that extend along the upper branches between crowded sharp pointed leaves. The *Epacris microphylla* were very conspicuous throughout the walk and putting on a stunning show.


Leucopogun microphyllus. RH


Epacris microphylla. RH

We paused at the rock platform for a group photo and to enjoy the view over Manly Dam and out to the ocean. As we moved around the rock platform and started to wend our way back, other plants identified were *Woolsia pungens, Leptospermum squamulosum, Zieria laevigatum, Banksias ericifolia, serrata and oblongifolia, Grevilleas speciosa* and *buxifolia, Dampiera stricta, Eucalyptus paniculata, Corymbia gummifera, Bossiaea scolopendria, Acacias terminalis, ulicifolia* and *longifolia, Pultenaea stipularis* and *Lambertia formosa.*


Dampiera stricta. AG


Acacia ulicifolia. AG

After our walk we enjoyed a very convivial lunch at Bubala in Allambie Heights.

Anne Gray

SANTALACEAE

Lesser native plant family presentation by Russell Beardmore at the August meeting.

All members of the Santalaceae family are parasites. Often referred to as the Sandalwood family; includes Ballart, Currant-bush, Golden Mistletoe, Jointed Mistletoe, Quandong, Sour-bush, Austral Toad-flax.

The best known are Sandalwood

Australian Sandalwood (*S. Spicatum*) and Indian Sandalwood *(S. Album*) are both grown commercially in Australia, mainly WA.

Wordwide – about 400 species in 30 genera.
Australia – about 46 species in 10 genera.
Local – 3 species in 3 genera

Species occurring locally

Exocarpus cupressiformis (Cherry Ballart) = an attractive shrub to a few metres, drooping branches. Hard green fruit grown on swollen red stalks – edible.
Pic. M.Fagg.

Leptomeria acida – shrub to about 2 metres, spindlyleafless branches.
Pic. Don Wood, Plantnet.

Omphacomeria acerba – shrub to about 1.5 metres – wiry leafless branches.
Pic. M. Fagg Atlas of Australia

The small fruit of all species are edible, the latter two, as the species names suggest, sour. The fruit of Leptomeria are rich in vitamin C.

The predatory beetle *Eurylychnus blagravei*. Nick Porch.

MORE THAN 60 BILLION LEAF LITTER INVERTEBRATES DIED IN THE BLACK SUMMER FIRES. HERE'S WHAT THAT DID TO ECOSYSTEMS

The Conversation June 8, 2023 Heloise Gibb, La Trobe University, Nick Porch, Deakin University.

The Black Summer megafires engulfing south-eastern Australia in 2019–2020 were so intense they burned habitats rarely exposed to fire, such as southern warm temperate rainforest.

These rainforests range from East Gippsland in Victoria up to just south of Sydney. Usually, they stay moist enough to prevent major fires. But in that unprecedented summer of fire, 80,000 hectares burned. Our new research estimates more than 60 billion invertebrates in the soil and leaf litter died too.

While our hearts went out to the burned koalas and kangaroos, this was a silent tragedy. These tiny creatures are enormously important in ecosystems. They eat dead leaves, create rich soil, and provide a key food source for bandicoots and lyrebirds. Many species have very small ranges, putting them at real risk of decline or even extinction from fire.

As renowned naturalist E. O. Wilson once said, invertebrates are the “the little things that run the world”. But because they are small and out of sight, we still underestimate their significance in ecosystems and their contribution to Australia's biodiversity. They're all but forgotten when ecological disasters strike.

Temperate rainforests such as those in East Gippsland are not used to intense fire. Joshua Grubb.

How did we find out how many invertebrates died?

In warm temperate rainforests, there's a layer of moist leaf litter which is home to an abundance of ancient lifeforms. These include the macroinvertebrates big enough to see with the naked eye, such as velvet worms, snails, land hoppers, millipedes, slaters and beetles.

Many of these groups include species with very small ranges, putting them at particular risk from bushfire and other changes to their environments.

The fires incinerated much of the leaf litter and its inhabitants. To find out the toll on these creatures, a year after the fires we set out to collect leaf litter samples from 52 temperate rainforest sites ranging from Buchan in East Gippsland, Victoria, to Nowra in New South Wales, across the lands of the Kurnai, Bidawal and Yuin people. Then we compared sites subject to medium and high severity fires with those that had escaped the fire.

Common macroinvertebrates of these rainforests include velvet worms, snails, slaters, beetles, millipedes and land hoppers (clockwise from left) Nick Porch.

Back in the lab, we ran the samples through Tullgren funnels, which sort leaves from creatures, then counted the macroinvertebrates. We excluded the tiny springtails and mites, which are hugely abundant mesoinvertebrates. We found every hectare of unburnt rainforest had 2.5 million litter macroinvertebrates, while severely burnt forests had a quarter as many.

We used Tullgren funnels to sort leaf litter fron its inhabitants. Heloise Gibb.

If we look at all temperate rainforest burned at different severities across the south-east that means 60 billion tiny deaths. But of all the forest that burned during that summer, rainforests made up only about 1%. The total loss might be closer to 6 trillion individuals. Then to get to truly extraordinary numbers, we can include mites and springtails which account for around 95% of individual invertebrates. That would give us an estimate of 120 trillion.

Why are these tiny creatures so important?

Invertebrates account for fully 99% of all animal species and most of the weight of animals on the planet. Renowned Australian scientist Baron Robert May is famously quoted as saying “to a good approximation, all species are insects”. Even now, an estimated 70% of all Australian invertebrate species remain undescribed. Many will go extinct before we have time to document them.

Although we know little of the ecology of most invertebrate species, collectively we know they play crucial roles in ecosystems. Losing this rich food source is likely to slow the recovery of key ecosystem engineers such as lyrebirds and bandicoots, which turn over large volumes of dirt in search of them.

When we try to replant forests without invertebrates, many plants and trees struggle. That's why conservationists are using leaf litter

transplants to move vital invertebrates from healthy forests to new ones.
These critters are a vital way nutrients cycle through our forests by breaking down leaves and other organic matter. Globally, they're directly responsible for converting about 40% of all leaf litter into soil. By turning over leaves or shredding them into pieces, they make it possible for microbes to help decompose organic matter. Without this work, leaf litter would begin to pile up, setting the scene for more fires.

Springtails and mites are by far the most abundant invertebrates in leaf litter, with thousands in an average square metre. On the right is a predatory snout mite (Bdellidae) feeding on a purple springtail (Collembola). Nick Porch.

When we lose billions or trillions of invertebrates, we may see the area become more susceptible to future fires.

More frequent fires means slower decomposition, which means leaf litter builds up more rapidly. This might be a direct effect of the loss of invertebrates due to fire.

We found the most damaging fires were those where almost all of the canopy was burned. These intense treetop fires killed off three to four times as many invertebrates as fires where only half of the canopy burned.

That's good news, as it suggests species can tolerate fires, as long as some litter habitat is left. Recovery efforts should focus on the sites where the most canopy burned.

In the wake of fires, rainforest species risk getting pushed out by surrounding eucalyptus trees, which are better at tolerating fire – and encourage more fires by dropping large volumes of litter.
You might think bugs can easily bounce back as the rainforest regrows. But recolonisation doesn't always happen. Land hoppers, millipedes and isopods (slaters) can be extremely abundant in leaf litter, but none of them can fly to a new location. The dry forest between two sheltered rainforest gullies is so hostile to invertebrates like land hoppers that they can die in minutes when removed from their moist homes.

What can we do?
The future holds more fire, as the world heats up. How can we protect these vital invertebrates? One method is to make their habitats better connected wherever possible. Another is to rewild with minibeasts, seeding severely burnt sites with healthy litter invertebrates from nearby unburnt rainforests.

While we can calculate the numbers of individuals lost to fire, we don't know much about whether the fires caused extinctions because many species are still unknown to science.

We can no longer overlook these minibeasts and the vital roles they play in ecosystems. We would miss them if they were gone.

APS NORTHERN BEACHES CALENDAR NOTES

Thursday September 7 APS Northern Beaches meeting
Stony Range Botanic Garden, Dee Why,
Presentation: Brian Roach. The history and developments of the dwarf form of the NSW Christmas Bush - Ceratopetalum Johanna's Christmas.

Saturday September 9 Set-Up for SR Festival.
Please bring flowers for the specimen board
Sunday September 10 Stony Range Festival.
Helpers needed for plant advice, sell coffee, cakes and raffle tickets.

Saturday September 16 APSNSW GTG Corrimal.

Thursday October 5 APS Northern Beaches meeting
Show & Tell. Committee Meeting.

Thursday November APS Northern Beaches meeting
Presentation "Creating a frog-friendly garden". Gracie Liu

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.

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.

STONY RANGE SPRING FESTIVAL

Stony Range Regional Botanic Garden is an oasis of Australian native plants located at Dee Why in the heart of the Northern Beaches.

Sunday 10 September

9 am - 3 pm

Stony Range Regional Botanic Garden

SALE OF NATIVE PLANTS

Take advantage of expert cultivation advice from Stony Range Botanic Garden volunteers & members of Australian Plants Society Northern Beaches Group.

FUN FOR CHILDREN

Treasure hunts, face painting, Australian Wildlife.

FUN FOR ALL

Live music, Display of prints by renowned Australian bird artist Lars Knudsen

Sausage sizzle, Coffee Shop, Home made cakes.

Stony Range Regional Botanic Garden

810 Pittwater Rd, Dee Why **stonyrange@gmail.com**