

CALEYI



NORTHERN BEACHES GROUP austplants.com.au/northern-beaches

July 2021

Australian Plants Society Northern Beaches
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CALENDAR

Thursday July 1, 2021 APS Northern Beaches Meeting at Stony Range Regional Botanic Garden, Dee Why.

7.15 pm Lesser plant family Loranthaceae (Mistletoes). **David Drage**

7.30 pm Show & Tell. Please bring your specimens, photos and stories to share with the other members.

8.30 pm Committee meeting.

Supper. Only tea & coffee. Please bring your cup.

Saturday July 17, 2021 10.30 am APS Northern Beaches Group walk Challenger Trail at West Head. The track is 1.5km one way and classed as an easy walk with a few loose stones in places. There's an abundance of flowers to identify. Towards the end of the walk is a rocky outcrop with views over Broken Bay. Anne will email details later. 12.30pm Lunch at a nearby café. Please make sure to register for either/both.

Sunday September 12, 2021 Stony Range 60th Anniversary Celebration.

Many thanks to our exceptional contributors - Jennifer McLean, Peter Jeremy and Russell Beardmore.

Editor march@ozemail.com.au 0407 220 380

VISIT TO HARVEST SEEDS & NATIVE PLANTS NURSERY

Jennifer McLean

The weather forecast was for showers, strong SSW winds and a temperature of 12 degrees C. Should we cancel our outing? But it might not be so bad. By 10 am the forecast was a reality.



Undaunted, a group of fourteen, APS members and Stony Range volunteers gather at Marina's Harvest Seeds Nursery for a tour of the nursery and expert instruction on propagation methods of Australian native plants. The way the professionals do it. Ever cheerful Marina, sends us off to the propagation shed with Nancy, her friend and colleague of 20 plus years, expert in much that is botanical. The shed is long and narrow with a stainless-steel workbench down one side.

We all crowd in glad of the gas heater provided for our benefit. All the equipment is to hand. Clean, tidy and sharp. A mound of propagating medium which is a mix of coarse river sand, perlite and vermiculite is ready for use.



Nancy has two trays of recently prepared and planted cuttings and a tray of striking medium to show us. Taking up a stem of *Thryptomene saxicola* she demonstrates the preparation of the cutting, reducing it to a 100 mm piece with multiple nodes a few millimetres from the base and, because in this instance the leaves are so tiny, 3 short branchlets of leaves at the top. It is then dipped in the rooting hormone and inserted into a small hole in the striking medium.

Would anyone like to have a practice she asks? Several people take pieces of plant material and clippers to fashion a cutting under Nancy's watchful instruction.



Concentration on the babes. Pic Ed.

Lexie, Marina's young and dedicated protégé, offers advice about aspects of the propagation process. Someone asks her about raising Flannel Flower from seed. She's not the expert here she says but tells us that the seed is raised on a bed of river sand and that it's not necessary to use smoke water for *Actinotus helianthii* but that it is for *Actinotus forsythii*, the pink flannel flower.

We leave the warm shed to go into the polytunnel to see the trays of prepared cuttings and seed trays on the heat mats which extend the propagation season into the

winter months. Thousands of cuttings and seedlings at different stages of development. Twenty or thirty trays of seedlings, *Acacia* species for example, on consignment for a major development. Overhead sprayers keep the trays at the optimum moisture level. Once a sturdy root system and healthy green foliage has established, usually 4 to 6 weeks later for cuttings, the plants are transferred into tubes of a premium native plant potting mix. Naturally cuttings of some species take longer to reach potting stage. The establishment of viable seedlings of different species varies widely with some seeds taking up to 12 months just to germinate.



Serious discussion. Pic Ed.

We progress, dodging as best we can, the continuously dripping rain, and move into the next polytunnel to where the potted plants, Marina's "babies", are growing on. They'll stay here until their roots show at the bottom of the tubes. Once Marina

is satisfied that they are strong and healthy plants they are ready for sale. Large numbers of them, which have been raised on consignment, are used for remediation or regeneration at large construction sites, such as new road works. Some are transferred to larger pots to become showy plants used by landscapers to create instant gardens for impatient clients.

The remainder are outside, on long rows of benches, hundreds of different species of tubestock ready and waiting for sale; to us and other discerning lovers of Australian flora. Healthy and carefully raised, *Eucalypts*, *Acacias*, *Callistemons*, *Prostantheras*, *Westringias*, *Leptospermums*, trees, shrubs, climbers, groundcovers and grasses. Too many to name, just choose a Genus or look for a species and in most instances one will find a representative.

All of those present are passionate native plant enthusiasts, eager to learn the art of raising new plants for us, our friends, our gardens and others to enjoy, and we thoroughly appreciated our lessons, thanks to Marina, Nancy and Lexie.



Morning tea. Pic Ed.

But we had not just lessons, there was also the pleasure of sitting around a long table in Marina's warm office having morning tea and chatting together; and the miserable weather failed to spoil our day.



Thryptomene saxicola cuttings with rooting solution. pic: Peter Jeremy

The propagating mix is:
 1 part coarse river sand
 2 parts medium perlite
 2 parts medium vermiculite
 using Clonex

Cuttings after 6 weeks.



Lexie w 6 week old babes. Pic PJ



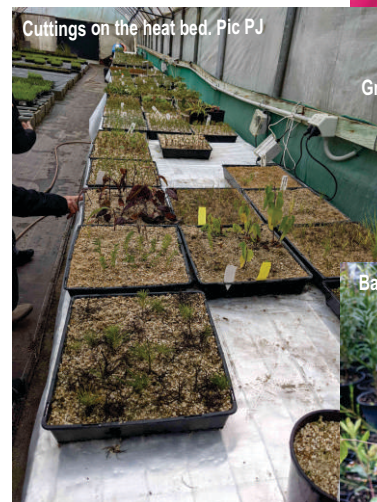
Root development from coir plugs. Pic PJ

Boronia and Epacris do better in coir plugs

They pot on into a commercial premium native potting mix from Grange Growing Solutions.



Growing on plants that were bought. Pic PJ



Cuttings on the heat bed. Pic PJ

Heat bed keeps the trays at 20°C



Banksia plagiocarpa has really striking red new growth. Pic PJ

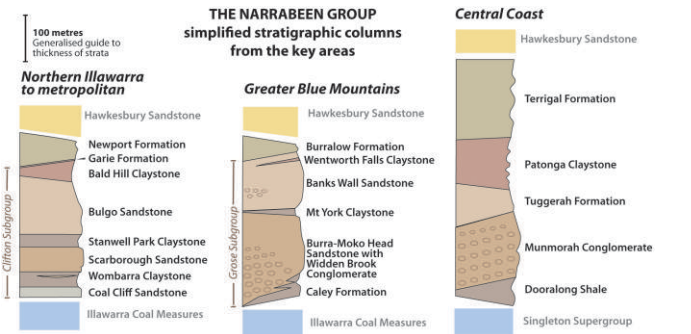
Many thanks to Peter Jeremy for pics, Anne Gray for organizing and Anzac biscuits, Jennifer McLean for words and blueberry muffins. Ed.

TALK BY JOHN MARTYN 3 JUNE 2021 – “ROCKS AND TREES’

Russell Beardmore



Supported by a series of wonderful photographs and illustrations, John took us on a “journey” through the geological make-up of the rocks of the Sydney Basin, with particular focus on the Northern Beaches. The picture is complex and not easily grasped in a 45 minute talk. Equally, it is not easy to summarise John's talk. In what follows, I have been able to draw on John's excellent book “Rocks and Trees”. Stony Range library holds a copy of the book – it is well worth browsing.



The rocks of the Sydney Basin are comprised of around eight distinct sedimentary layers known as the Narrabeen Group (see chart). Sandstones predominate with sections of claystones, laminates, other conglomerates etc. The upper layer is known as the Hawkesbury Sandstone. This layer was formed about 235 million years ago and is up to 280m thick. This layer becomes very visible in the rocks of the headlands from North Head to Dee Why. The rock is made up of sand grains in which quartz is the dominant mineral. Phosphate levels are low. The soils derived from these rocks are sandy, free draining and nutrient poor. From Long Reef north to Barrenjoey, the exposed rocks are part of older Narrabeen group formations. The soils derived from them generally have higher nutrient levels than the Hawkesbury sandstone soils.

The rocks give rise to the soils which support the plant communities. Hence the poor soils of the southern headlands and Ku-ring-gai National Park are dominated by low-growing heathlands. Taller trees tend to be confined to gullies and smaller areas where local factors have influenced nutrient levels and micro-climate. In some areas inland from the Coast, notably Duffy's Forest, shale “lenses” occur within the sandstones. These lenses give rise to richer soils which can support larger tree growth. Likewise, the older rocks north from Long Reef give rise to richer soils which can support significant tree growth.



Scientists propose urgent \$824m mission to document Australia's undiscovered plants and animals

The Guardian June 2, 2021 Graham Readfearn

Climate crisis makes mammoth task of recording all of Australia's species over the next 25 years critical, academy says



Economic research commissioned by the Australian Academy of Science argues every dollar spent on recording Australia's plants and animals could deliver up to \$35 in benefits. Photograph: John Moore/Getty Images

Australia needs to embark on an urgent mission to formally document more than half a million undiscovered plants and animals before they are lost to science and the planet.

The Australian Academy of Science says some \$824m will be needed over the next 25 years to complete a mammoth task becoming more urgent as the climate crisis puts more species at risk of extinction.

Economic research commissioned by the academy and released today argues every dollar spent on the taxonomy mission could deliver between \$4 and \$35 in benefits.

Australia is estimated to have 750,000 different species of plants, animals and insects, but about 70% are either undiscovered or have not been formally described in the scientific literature. The academy's proposal would see all of Australia's species properly documented and recorded over the next 25 years.

The Deloitte Access Economics report says such a mission could deliver between \$3.7bn and \$28.9bn in economic returns over the next 25 years.

Economic benefits include the discovery of new drugs, improvements to biosecurity with invasive species easier to identify, and new crops developed from hybridisation of newly discovered species.

Associate Prof Kevin Thiele, director of the academy's Taxonomy Australia organisation, said: "Every species that is lost – especially those lost before we even find them – is a lost opportunity. "If we don't even know what 70% of the species are, how can we answer the question of whether we're conserving biodiversity or not?"

Taxonomy is the field of science that finds, documents and then describes new species and is a foundation for understanding the natural world and conserving it.

Thiele said so little was known about Australia's biodiversity that at current rates it would take 400 years to describe all the species that scientists think are on land, in rivers and oceans, and in the air. Thiele, who is a plant specialist, said he was currently working on about 20 new species.

But he said scientific advancements in genetics and machine learning had created an opportunity to massively scale-up the field of taxonomy

and expand the pipeline of the discovery of new species.

"Now is the first time in history that we can do this," he said. "But as well, there is enormous need because [of] climate change and all the other stresses [on the natural world]."

The \$824m the academy's report says is needed, includes money to double the workforce of taxonomists and provide funds for research and field operations.

Thiele said it would need a collaborative effort from state and commonwealth government agencies, philanthropists and industry to gather enough funds. He said funding of that size was "not out of the ordinary", with space missions and particle physics projects costing many times more.

The Deloitte report says: "Climate change, including rapid onset disasters such as the bushfires experienced in the summer of 2019-20, is accelerating the extinction of species from the planet. Many species will disappear without ever having been known to humankind."

Research published in the journal PLOS Biology has found a large backlog and taxonomic uncertainties in almost 300 snakes and lizards. Dr Jane Melville, the lead author and senior curator of terrestrial vertebrates at Museums Victoria, said many species had been described in science a century ago. In reality, some of those described species were likely an umbrella of several distinct animals.

Some 24 "species" needed urgent taxonomic research, Melville said, as there was a likelihood that those classifications contained distinct species that were already threatened with extinction.

In 2019, Melville's research found that a lizard species – the grassland earless dragon – was in fact four different species, and one isolated around Melbourne and Geelong may already have disappeared.

Prof Tim Entwisle, the director of Royal Botanic Gardens Victoria and president of the International Association of Botanic Gardens, said: "As a plant scientist and head of a botanic garden, I'm very aware that being able to identify and name a plant unlocks a vast array of benefits to that plant and to us.

"We need to discover and classify life on Earth so that species can survive in a changing world, so that we can control weeds and diseases, and so that we can develop new pharmaceuticals and agricultural crops. "It's time we took this Cinderella of sciences (taxonomy) seriously."

Queensland's chief scientist, Prof Hugh Possingham, said the report showed the benefits of using economics to support conservation. "The economic thinking in these papers helps us to understand biodiversity and manage Australia's rich natural heritage far more efficiently; plus, it shows the enormous benefits to Australia of increased investment in science and science-informed actions."

A spokesman for the federal environment minister, Sussan Ley, said the government was "already working towards a comprehensive understanding of Australia's biological diversity".

More than \$56m had been invested across the Australian Biological Resources Study's (ABRS) National Taxonomy Research Grant Program, Parks Australia's Annual Bush Blitz and the Centre for Australian National Biodiversity Research, which he said provides Australia's funding and support for taxonomy and systematics research.

Parks Australia's Bush Blitz had led to the discovery of more than 1,780 species new to science since its inception in 2010.

Over the past decade ABRS had facilitated the revision of approximately 2,016 taxa and the description of 1,106 new taxa, "adding significantly to our knowledge and understanding of Australia's flora and fauna". The spokesman added: "The department will continue to consider a range of science based strategies in this area."

BUSHCARE VOLUNTEERS CONTINUE HARRY'S LEGACY AT CURLY

Northern Beaches Council June 6, 2021



Members of the Carrington Bushcare Group, Curl Curl were recognised at the Regional Bushcare and Landcare Awards.

South Curl Curl boardwalk is a popular spot for walkers. While the ocean vistas are stunning, glance landward and you will also notice the beautiful bushland that clings to the cliffs along the foreshore.

The boardwalk was recently renamed after the late Harry Elliffe, a volunteer who tirelessly tended the vegetation for over 30 years.

So it is fitting that Harry's legacy lives on, with the Carrington Bushcare Group recently receiving a Highly Commended Award at the Regional Bushcare and Landcare Awards for their work at this location, now known as Harry Elliffe Way.



Russell and Jan Beardmore were there to receive the award on behalf of the entire Bushcare group who continue to dedicate countless hours to improving the site.

A particular thank you also goes to Russell for all his work over the last ten years collecting and propagating local native seeds used in revegetation.

Interested in becoming a Bushcare volunteer? Whether you have a green thumb or not, our volunteer team would be delighted to see you at one of their sites.

The Northern Beaches has close to 60 Bushcare sites, so there is sure to be a site near you. Check out our website for details.

Bushcare groups usually meet monthly for 2 to 3 hours to work in their local bushland reserves. Most groups meet on weekends, however there are also groups that meet throughout the week.

Tools are provided or you can bring your own, and one of our experienced supervisors will provide new volunteers the necessary training and guidance in bush regeneration techniques and plant identification.

MYSTERIOUS SPINIFEX GRASS RINGS OF THE AUSTRALIAN OUTBACK MAY BE CAUSED BY MICROBES

ABC Science May 16, 2021 Len Gordon



Spinifex grasses start out growing in a round hummock, but as they grow, the centre dies off to form a ring. (Getty: Ken Griffiths)

Scientists may have solved the mystery of how Australia's spinifex grass got its hole.

The iconic spiky spinifex plant provides shelter for native species in the heat of the day and is used for tools, fibre and food by Indigenous Australians.

But it also grows in mysterious rings.

The plant starts out as a dome then, as it gets older, the centre dies off while the outside continues to expand, giving it its distinctive ring shape.

What causes these stunning patterns to form has long puzzled scientists.

No-one has been able to come up with a convincing explanation about what's going on, said Angela Moles, an ecologist from the University of New South Wales. "People have been looking at this. We don't actually know what it is," Professor Moles said.

But now, Professor Moles believes she knows the answer: microbes.

"These unseen, under appreciated microbes in the dirt can cause really major differences," said Professor Moles, co-author of the research published in the Australian Journal of Botany.

"There's been all this focus on the beneficial happy things that microbes do for plants, [but there are] microbes that are not out with good intentions, that are making life harder for the plants." How do they know it was microbes?

In the past, scientists have thought the dieback may have been caused by a lack of nutrients in the centre, termite activity, or a lack of water in the arid environment. "When people see rings in the arid land, they tend to think, 'Oh, it must be to do with water limitation'," Professor Moles said.

But when Professor Moles heard about a similar ring-shaped grass that grew in swampy ground, she thought: "That's it. It's the same as what's happening with the spinifex." The ring-shaped pattern in the swampy grass was caused by microbes in the soil.

To find out if the same thing could happen in an arid environment, Professor Moles and her colleague, PhD candidate Neil Ross, planted seedlings in soil samples collected around spinifex rings in Central Australia.

The idea was that harmful soil pathogens would build up in the centre of the ring, making it hard for new seedlings to grow and replace those that had died off.

They found the seedlings grew a lot better in the soil from the outside of the rings when compared to the soil from the inside, which reflects the growth patterns we see in its natural setting.

Then to see if it was microbes in the soil, rather than nutrients or other effects, they sterilised a second set of these soil samples, and grew seedlings in them too.

Seedlings grown in the sterilised soil also grew far better than the live soil from the centre of the hummock, backing up their hypothesis that the microbes were the culprit. To find out if the same thing could happen in an arid environment, Professor Moles and her colleague, PhD candidate Neil Ross, planted seedlings in soil samples collected around spinifex rings in Central Australia.

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"We showed it is the microbes that are stopping the grasses from recruiting on the inside," she said.

However, when grown in the soil from the outside of the hummock, seedlings fared better in the live soil than the sterilised soil.

Professor Moles believes this may be a case of the beneficial microbes outweighing the negative ones on the outside of the rings. It would be interesting to "tease apart the effects of the good guys and the bad guys," she noted.

So is the mystery solved?

However, this may not be the end of the spinifex ring mystery, according to Todd Erickson, a restoration ecologist from the University of Western Australia, who was not involved in the study.

One of the issues he pointed out was that there was only a small difference between the number of seedlings that sprouted in the live versus the sterilised soil.

"It's a great study in that sense, saying what could have potentially been happening. But it does definitely need some follow up, in-depth, detailed work," Dr Erickson said.

Both Dr Moles and Dr Erickson agreed this was just a first step in the research, and further research would need to involve a detailed genetic assessment of the soil microbial community.

Knowing what types of microbes there are, and how many of them, would really help confirm or deny the microbial theory.

Dr Erickson said the complex nature of ecosystems meant there were many overlapping and interacting factors, such as other bugs, water, and changes in climate, that make it very difficult to nail down one particular cause.

"These are all the unanswered questions," Dr Erickson said.



An aerial photograph showing the hexagonal pattern created by "fairy circles" near Newman in Western Australia. (Supplied: Kevin Sanders)

Spinifex rings are not the only mystery in the Australian outback scientists are trying to solve.

Dr Erickson also studies another phenomenon known as "fairy circles". Fairy circles are large, barren circles of land seen in grasslands that can be up to 15 metres across.

So how do you spot the difference?

Unlike spinifex rings, fairy circles are not individual plants.

"When looked at the paddock scale, there's a paddock of spinifex, but in perfectly regular hexagonal patterns there are these red, bare dirt patches," Dr Erickson said.

The cause of fairy rings is also up for debate.

"It's a massive battle between the two main theories ... that termites created it ... and plants self-organised based off limitations on water supply," he said.



STONY RANGE 60TH ANNIVERSARY CELEBRATION

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



**Sunday 12 September
9 am - 3 pm**

Stony Range Regional Botanic Garden

Fun for children

face painting, treasure hunts, native animals

Fun for all

live music, native bees, guided walks



**Sausage sizzle, Coffee Shop, Home made
cakes.**



SALE OF NATIVE PLANTS

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

**Stony Range Regional Botanic Garden
810 Pittwater Rd, Dee Why stonyrange@gmail.com**