

CALEYI



NORTHERN BEACHES GROUP
austplants.com.au/Northern-Beaches



August 2018

Australian Plants Society Northern Beaches Group
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Next Meeting: 7.15 pm Thursday August 2, 2018

at Stony Range Botanic Garden, Dee Why.

Presentation: David Seymour, introduction to the Katanda Bushland Sanctuary at Ingleside.

Supper: Anne & Russell.

Coming Up:

Sunday August 19 APS Northern Beaches 11.30 am visit Conny's regeneration area at Belrose. Penny will email details.

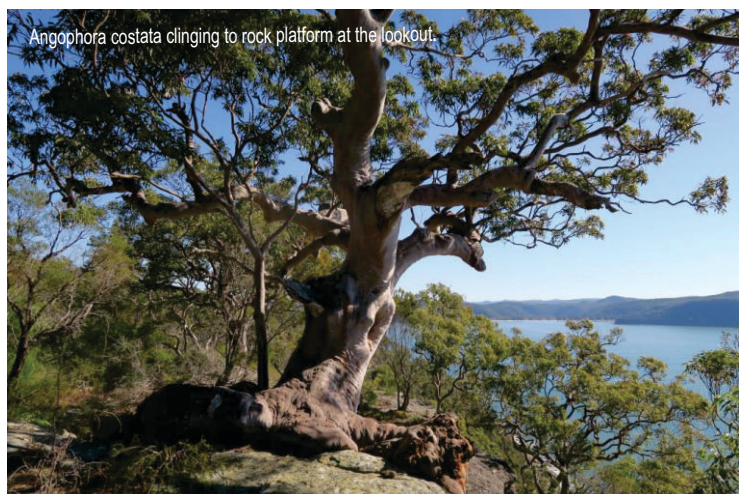
Sunday September 9 Stony Range Spring Festival. Set up Saturday September 8. Full details page 3.

From the Editor

Thankyou Penny and Richard for the wonderful Koolewong walk article and David for the report of Bob Jones' great presentation at the July meeting. Please send your stories, photographs etc that other members would enjoy to me at march@ozemail.com.au

THE KOOLEWONG WALK – Ku-ring-gai Chase National Park – Sat. 14th July 2018

Penny Hunstead with photography by Richard Hunstead



The Koolewong Walk has some interesting aspects. It is one of Ku-ring-gai Chase's shortest walks, one of the easiest walks and its lookout rivals that of West Head's, for panorama.

On a sunny morning, five of our group, Jan, Jennifer, Pam, Penny and Richard set off from the Resolute picnic area. As the walk is only 800m long and has an easy gradient, we were able to enjoy it at a leisurely pace.

At the start and highest point of the walk, there was Eucalyptus, Angophora and Casuarina forest. A feature of walks is that one notices everything differently, on the way back. So it was only on the way back that we were aware of the great height of the forest trees and the great girth of two Syncarpia. The most abundant shrub species in the forest area were *Astrotricha floccosa* and *Dodonaea triquetra* and *Acacia ulicifolia*. *Lomandra filiformis* ssp. *filiformis* was the dominant ground cover.





Persoonia linearis



Eriostemon australasius



Hibbertia

Halfway along the walk the tree canopy opened to woodland. Here the species included *Eriostemon australasius*, *Caustis flexuosa*, *Woolsia pungens*, *Persoonia linearis*, *Leptospermum laevigatum*, *Banksia serrata* and *Xanthorrhoea* spp. There were notably fewer species than seen on most other walks. On the large rock outcrops the super-hardy *Leucopogon microphyllus* occupied small depressions and cracks in the rock.

The disappointing lack of flowers was compensated for by the magnificent view at the end of the walk. We thought that the view, looking north over Broken Bay to Patonga and Lion Island and up the coast, was as breath-taking as that from the West Head Lookout. Without the crowds of people, too!



Sometimes we see wildlife on our walks and on this return trip from the lookout, we were delighted with the sight of a red-tailed black cockatoo.

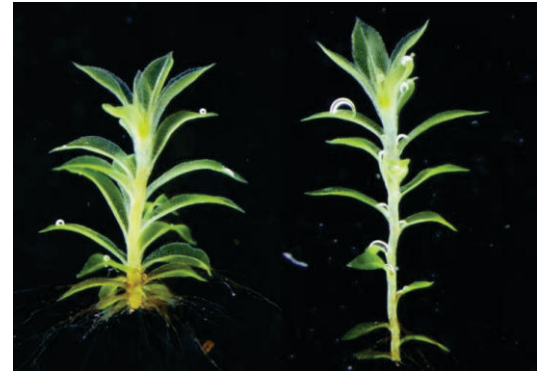
Lunch at Flower Power in Terry Hills was as pleasant as our last visit there.

THE ORIGIN OF FLOWER MAKING GENES

Sciencedaily.com January 10, 2018 National Institutes of Natural Sciences

Summary:

A research team has revealed that the MADS-box genes control sperm motility and cell division and elongation of the stem of gametophores, using the moss *Physcomitrella patens*. A moss *Physcomitrella patens* in which six MADS-box genes are disrupted (right) forms a more elongated shoot than the normal moss does (left). This results in the prohibition of water uptake from the base to the top.



Credit: Koshimizu & Hasebe

Flowering plants have evolved from plants without flowers. It is known that the function of several genes, called MADS-box genes, creates shapes peculiar to flowers such as stamens, pistils, and petals. Although plants that do not produce flowers, such as mosses, ferns, and green algae are also known to have the MADS-box genes. However, it was not well understood how the MADS-box genes work in plants without flowers until now. In order to understand the mechanism of flower evolution, it is necessary to understand how the MADS-box genes work in plants without flowers.

A research team led by Professor Mitsuyasu Hasebe of the National Institute for Basic Biology revealed that the MADS-box genes control sperm motility and cell division and elongation of the stem of gametophores, using the moss *Physcomitrella patens*. Graduate student Shizuka Koshimizu of the research team said, "There are six MADS-box genes in *Physcomitrella patens*, and we analyzed their functions using moss in which we broke those six genes. In moss which lost the function of all MADS-box genes, sperm flagella hardly moved. Moreover, in the stem, the increase of the length prevented water supply to the tip, in which sperm swim for fertilization. The MADS-box genes are critical for fertilization in two ways: providing enough water for sperm swimming and producing movable flagella."

Professor Hasebe said, "Both the gametophore and sperm flagella have been lost in the process of evolution as the flowering plants adapted to the dry environment on land. Based on this, it is likely that the MADS-box genes that worked in the gametophore and sperm flagella became unnecessary, and that the flower might have evolved by reusing them for other functions. It is interesting that genetic regulatory networks of development are different between different lineages in plants, although they are relatively conserved in animals"

These research results were published in *Nature Plants* on January 3rd. This research was conducted as a collaborative research project by the National Institute for Basic Biology, SOKENDAI (the Graduate University for Advanced Studies), Kanazawa University, Tokyo Institute of Technology, Miyagi University, and The University of Tokyo.

Journal Reference:

Shizuka Koshimizu, Rumiko Kofuji, Yuko Sasaki-Sekimoto, Masahide Kikkawa, Mie Shimojima, Hiroyuki Ohta, Shuji Shigenobu, Yukiko Kabeya, Yuji Hiwatashi, Yosuke Tamada, Takashi Murata, Mitsuyasu Hasebe. *Physcomitrella* MADS-box genes regulate water supply and sperm movement for fertilization. *Nature Plants*, 2018; 4 (1): 36 DOI:

Celebrate Spring with
STONY RANGE BOTANIC
GARDEN
&
AUSTRALIAN PLANTS
SOCIETY



STONY RANGE BOTANIC GARDEN SPRING FESTIVAL

'Bush Dreaming'

SUNDAY SEPTEMBER 9

9am-4pm

10.30am Official opening

Children's activities

Face painting, craft, native animals

Exhibitions – native bees, photography,
sculpture, music.

Sausage sizzle, Coffee Shop - home made cakes.

Guided walks



SALE OF NATIVE PLANTS

Cultivation advice from members of
Stony Range Botanic Garden &
Australian Plants Society Northern
Beaches Group.

Stony Range Botanic Garden
810 Pittwater Rd, Dee Why stonysrange@gmail.com

TOP-SECRET PLANTATION OF 'DINOSAUR TREE' WOLLEMI PINE FLOURISHING

thenewdaily.com.au June 25, 2018 Rachel Eddie



A supplied image of a Wollemi Pine in a top-secret location. Photo: NSW Office of Environment and Heritage

A top-secret plantation of the critically endangered “dinosaur tree” Wollemi pine is flourishing, the New South Wales government says.

The 200-million-year-old pine was presumed extinct and only known in fossils before it was discovered in remote canyons of the Blue Mountains in 1994.

An “insurance plantation” of 191 of the pines was planted in 2012 to secure its survival, in case disease or fire tore through the remaining 100 trees in the wild. “The top-secret insurance population is now naturally producing cones and seeds, marking an exciting new step towards securing the survival of this ancient iconic plant,” Environment Minister Gabrielle Upton said in a statement on Monday. “It’s one of the world’s oldest and rarest plants from the time of the dinosaurs.” She said only four strands of the rare pine were growing in the canyons, making this a “real win for the environment”.



Sir David Attenborough planting a Wollemi pine at Kew Gardens, London 2005. Pic: Getty

Cathy Offord – principal research scientist at the Royal Botanic Garden Sydney, who has been studying the pine since its discovery – said the insurance plantation was doing better than those in the wild. “Some 83 per cent of the insurance Wollemi pines are surviving and have increased in size by up to 37 per cent, making them mature enough to produce potentially viable seed much earlier than expected,” Dr Offord said. “We’ve now collected around 60 viable seeds, which are being used to find the best way for them to grow on their own.”

Heidi Zimmer, a senior scientist at the Office of Environment and Heritage, said the production of cones “means we’ve got the science right”. “There is now a strong possibility that this insurance population may become self-sustaining,” Dr Zimmer said.

The government funded the plantation using \$200,000 from its Saving Our Species program. The insurance plantation site was chosen to be some distance from the wild population to reduce the risk of disease or fire impacting both populations.



Wollemi pines were presumed extinct until they were discovered in remote canyons of the Blue Mountains in 1994. Photo: AAP

The plantation is a collaboration between the department, the Royal Botanic Garden Sydney, National Parks and Wildlife Service, Melbourne University and Western Sydney University.

David Noble, a national parks officer, discovered the Wollemi pine in 1994. The pine, or a very similar relative, was previously only known from fossils, explaining the term “dinosaur tree”.

It’s thought to have evolved 200 million years ago.

THE PLAN TO SAVE ONE OF AUSTRALIA'S RAREST PLANTS

Canberra Times July 25, 2018 Blake Foden



Booderee National Park acting botanic gardens curator Stig Pedersen with a banksia vincentia. Photo: Corinne Le Gall

Only four are known to exist in the wild, making the Banksia vincentia one of Australia’s rarest plants.

But conservationists in Canberra and on the NSW South Coast hope its critically endangered status will soon be a thing of the past as they work to drastically boost the flowering plant’s numbers and secure its future.

The species is only found in the wild near the small South Coast town of Vincentia, but new seed orchards are now being constructed to protect and propagate the plants at Booderee National Park at Jervis Bay and the Australian National Botanic Gardens in Canberra.

Booderee National Park acting botanic gardens curator Stig Pedersen said he hoped to propagate at least 800 *Banksia vincentia* plants in the Booderee orchard by 2020.

Mr Pedersen said no decisions had been made yet about how many of those would then be reintroduced into the wild, or whether they would be reintroduced in the same area as the four surviving plants.

"It will take a few years before they mature and set seed," he said. "By autumn 2020, we hope to have the bulk of the orchard established, but reintroducing [the plants] to the wild is a few years away."



There are only four known *Banksia vincentia* plants left in the wild.
Photo: Corinne Le Gall

Importantly for the plant's prospects of survival, Mr Pedersen said the plants being propagated at Booderee contained eight different variations of genetic material.

While the Booderee program features an in-ground orchard, the Australian National Botanic Garden is cultivating 45 of the plants above the ground.

Each *Banksia vincentia* has its own 60 centimetre by 60 centimetre container, designed to maximise their chances of producing seeds.

"[The containers] are effectively concrete pipes used by industry for drainage and other purposes," Australian National Botanic Gardens living collections curator David Taylor said.

"We're getting the plants off the ground as an extra insurance policy to give them the best possible shot and try to prevent issues we might have with pests, soil, poor drainage and things like that."

Jacki Koppman and Suellen Harris discovered the *Banksia vincentia* 10 years ago, and only 14 of the plants were ever found.

A deadly mixture of bushfire and a soil-borne disease reduced the count to just four, leading to the critically endangered plant's listing as a priority species in the federal government's threatened species strategy.

Threatened species commissioner Dr Sally Box praised the new seed orchard programs. "The work being done to secure the future of the *Banksia vincentia* is important for us all [because] it means we're holding onto a part of what makes our country so unique," Dr Box said.

'CATASTROPHE' AS FRANCE'S BIRD POPULATION COLLAPSES DUE TO PESTICIDES

theguardian.com March 21, 2018 Agence France-Presse



Sales of pesticides in France have climbed steadily. Photo: Alain Jocard/AFP/Getty Images

Bird populations across the French countryside have fallen by a third over the last decade and a half, researchers have said. Dozens of species have seen their numbers decline, in some cases by two-thirds, the scientists said in a pair of studies – one national in scope and the other covering a large agricultural region in central France.

"The situation is catastrophic," said Benoit Fontaine, a conservation biologist at France's National Museum of Natural History and co-author of one of the studies. "Our countryside is in the process of becoming a veritable desert," he said in a communique released by the National Centre for Scientific Research (CNRS), which also contributed to the findings.

The common white throat, the ortolan bunting, the Eurasian skylark and other once-ubiquitous species have all fallen off by at least a third, according a detailed, annual census initiated at the start of the century. Amigratory song bird, the meadow pipit, has declined by nearly 70%.

The museum described the pace and extent of the wipe-out as "a level approaching an ecological catastrophe". The primary culprit, researchers speculate, is the intensive use of pesticides on vast tracts of monoculture crops, especially wheat and corn. The problem is not that birds are being poisoned, but that the insects on which they depend for food have disappeared. "There are hardly any insects left, that's the number one problem," said Vincent Bretagnolle, a CNRS ecologist at the Centre for Biological Studies in Chize.

Recent research, he noted, has uncovered similar trends across Europe, estimating that flying insects have declined by 80%, and bird populations has dropped by more than 400m in 30 years.

Despite a government plan to cut pesticide use in half by 2020, sales in France have climbed steadily, reaching more than 75,000 tonnes of active ingredient in 2014, according to European Union figures. "What is really alarming, is that all the birds in an agricultural setting are declining at the same speed, even 'generalist' birds," which also thrive in other settings such as wooded areas, said Bretagnolle. "That shows that the overall quality of the agricultural eco-system is deteriorating."

Figures from the national survey – which relies on a network of hundreds of volunteer ornithologists – indicate the die-off gathered pace in 2016 and 2017. Drivers of the drop in bird populations extend beyond the depletion of their main food source, the scientists said.

Shrinking woodlands, the absence of the once common practice of letting fields lie fallow and especially rapidly expanding expanses of mono-crops have each played a role. "If the situation is not yet irreversible, all the actors in the agriculture sector must work together to change their practices," Fontaine said.

CITIZEN SCIENTIST TRACKS SMALL MARSUPIALS.

David Drage

The speaker at our meeting on the 5th July 2018 was Bob Jones. Bob is a local Independent Volunteer Citizen Science Researcher, and he spoke about his project 'Marsupial Pollinators in Ku-ring-gai' which he has worked on in recent years. The main aims of this work (as well as that with WildThings NSW and Ku-ring-gai Municipal Council) are as follows;

1. To improve our understanding of the location and abundance of Eastern Pygmy Possums (EPP) *Cercatus nanas*, and their habitat preferences.
2. Provide nesting boxes for EPPs where natural tree hollows are scarce.
3. To engage and inform the authorities and the community of the value of biodiversity conservation through better management of habitat, development and bushland practices such as control burns.



To monitor the activities of these very small, nocturnal animals, Bob and his fellow volunteers positioned a number of wildlife cameras in several flora communities including Duffy's Forest, Coastal Sandstone Heath-Mallee, *Darwinia biflora* (bonsai) Heathland and Coastal Upland Swamp. We were treated to informative but delightful videos recorded by the cameras of EPPs feeding and climbing about their favourite plant species such as *Banksia*; *ericifolia*, *serrata*, *spinulosa* and *marginata*.



Other favoured species are *Persoonia levis*, *Corymbia gummifera*, *Angophora hispida* and any available *Grevilleas*. The number of EPPs observed (up to 2016) is quite low 39 individuals at 28 sites but, this is not surprising as there are a limited number of cameras available that can only be deployed in one place at a time.

Other small creatures caught on camera were the Brown antechinus, *Antechinus stuartii*, (carnivorous) and the New Holland Mouse, *Pseudomys novaehollandiae* (a rodent).

The nest box programme is showing some success. Several designs are being used with access holes 2 – 3cm diameter which excludes almost everything apart from EPPs. This work is continuing.

EPPs do have natural predators such as Rosenberg's goanna *Varanus rosenbergi* and two local owl species, the barking owl *Ninox connivens* and the powerful owl *Ninox strenua*. One would think that an EPP would be a very small mouthful for any of these.

However, the biggest threats to EPP populations come from human activities. EPPs preferred habitat is flat shrubby heathland. This is precisely where humans like to clear the land and build houses, ovals and recreation/education facilities. Transport corridors are mostly constructed on flatter ridgetops. 'Controlled' burns of the bush are carried out to protect these installations. The result is that in many areas only isolated patches of suitable EPP habitat remain without interconnecting corridors. The users of official BMX bike trails often go 'off trail' and cause damage to surrounding bush. More control of these trails is required.

Domestic, as well as feral, cats are a big threat to native wildlife of all kinds. Keeping cats in at night and visible with a coloured 'scrunchie' and audible with a bell would help to keep the threat down.

All of these threats pointed to by Bob Jones are applicable to all types of bushland and native fauna nationally. Constant pressure on all levels of government from concerned members of the community would, hopefully, result in some gains for our precious natural environment.



There is a lot more work to be done on this project yet by Bob Jones and his fellow volunteers to fully assess the situation of EPPs in Ku-ring-gai. I am full of admiration for their efforts. Citizen scientists are contributing to information gathering and finding solutions to problems more and more in a variety of fields. It requires a big contribution in time and effort but must be very rewarding when progress is seen to be made.

APS NORTH SHORE GROUP WALKS AND TALKS PROGRAMME 2018 AT THE KU-RING-GAI WILDFLOWER GARDEN

420 Mona Vale Road, St Ives

Learn about our wonderful native plants. No booking needed.

Caley Centre at 9.45 am for a 10.00 am fee of \$5 pp, \$2 APS members.

All talks have an ID focus. No prior knowledge required.

All walks are easy. For the walks please wear a hat, have suitable footwear and bring water. Sunscreen and insect repellent a good idea.

SPRING TERM

July 30 Monday Banksias, Grevilleas, Hakeas (Proteaceae Family)

Aug 6 Monday The Wattles (Acacia Family)

Aug 13 Monday Boronias, Waxflowers etc. (Rutaceae Family)

Aug 20 Monday Heath Plants (Ericaceae Family)

Aug 27 Monday The Peas (Fabaceae Family)

Sept 3 Monday Bird Walk (8.30 am start)

Sept 10 Monday Rainforest

Sept 17 Monday Waratahs, Woody Pears etc. (Proteaceae Family)

Sept 24 Monday (Walk Only) Longer Walk (Bring lunch - ends 2 pm)

PEACOCK SPIDER MAN DISCOVERS DAZZLING NEW SPECIES WHILE SEARCHING FOR THE 'HOKEY POKEY'

ABC Science July 21, 2018 Nick Kilvert



When the beat drops: *Maratus unicus* knows how to bust a move. (Flickr: Jurgen Otto)

On a trip trudging through the wet and cold of southern Western Australia last year, Jurgen Otto rediscovered a dancing spider dubbed the Hokey Pokey.

And in the process, he stumbled across a species never before classified.

Along with his colleague David Knowles, Dr Otto has discovered most of the 70 known species of peacock spider — and he loves them.

It's because, he says, they're more like dogs or cats, or people, than spiders. "They're very charming animals. They've got these big eyes, and it's very easy to like them ... I've often compared them to puppies and kittens."

"They're curious, they get excited, they push themselves up on their legs to see better, they crouch down and hide. "They're not like a grasshopper or something that just doesn't show any [emotion], they're more like us than other invertebrates."

What it's all about

Some 23 years ago, Mr Knowles found a peacock spider that danced with more energy and style than he'd seen before.

He nicknamed it the Hokey Pokey spider, and jotted down roughly where he found it near Walpole in southern Western Australia.

When Dr Otto and Mr Knowles went to look for it in 2015, Mr Knowles wasn't sure they were even searching in the right place, and there was no sign of the Hokey Pokey.

The same thing happened when they went out in 2016, Dr Otto says. "The habitat seemed to have changed in that time.

"I got to the point where I said no, I don't think we'll find this spider anymore."

With hope fading, in 2017 Dr Otto took one last solo journey out to where he roughly thought Mr Knowles had once seen the dancing spider.

On the way, his rental car broke down, delaying his arrival and eating up precious time. When he did finally get there, the weather was overcast and still.

"In the end it was lucky I was delayed [because] I arrived at the destination in the perfect weather," he says.

"When I first saw the display I really thought this, for me was the most interesting of the peacock spider displays I had seen, and I'd seen quite a few now."

In a paper published this week in the journal *Pekhamia*, Dr Otto and his colleague David Hill officially gave a name to the Hokey Pokey: *Maratus tortus*, with "tortus" being Latin for "twisted".

But *Maratus tortus* isn't the only spider Dr Otto has naming rights to this week. On his quest to find the Hokey Pokey, he discovered another species which, because of his partial colour blindness, he wasn't initially too excited about.

"To me it looked very similar to ones I'd previously found," he says. "But when I photographed it and posted some pictures online people absolutely raved about it, so I knew I'd found something quite exciting."



Dr Otto couldn't recognise the unique colours of *Maratus unicus* at first. (Flickr: Jurgen Otto)

Similar to *Maratus tortus*, the newly named *Maratus unicus* male raises his arms and moves his colourful torso in a complex dance when trying to convince a female to mate.

Unlike with some other spiders, Dr Otto says he's never seen a female eat the male, and the dances are usually successful. And it's this complex behaviour that holds the most interest for him. "It's more than just colours for me, it's the way they behave, the dances."

'Very affectionate' head patting common in peacock spiders



You'd dance too if you looked this good. *Maratus unicus* in full flight. (Flickr: Jurgen Otto)

Dr Otto believes that nearly all the species of peacock spider have now been discovered, but for now his love of discovery motivates him to keep searching.

"I have another trip this year. On my return from Europe I'll stop over and have another look for 10 days," he says. "Basically I've become the peacock spider man, and therefore I keep going and trying to document them all. It's become my responsibility in a way — my mission."

He's put together a website in his spare time with photos documenting each of the species. And although many of the spiders' moves are still a mystery, he says there's one thing they all have in common.

"Once the male ... is convinced that the female is interested in mating with him ... he just approaches her, he reaches over her head with his front legs and touches her gently.

"That's always quite interesting to me. It seems very affectionate."

For video clips go to <http://www.abc.net.au/news/science/2018-07-21/new-peacock-spiders-discovered/10007422>