

CALEYI



NORTHERN BEACHES GROUP September 2017



President

Dr Conny Harris (02) 9451 3231

Vice-President

David Drage (02) 9949 5179

Joint Secretaries

Julia Tomkinson (02) 9949 5179

Penny Hunstead (02) 9999 1847

Treasurer

Lindy Monson (02) 9953 7498

Regional Delegate

Harry Loots (02) 9953 7498

Librarian

Jennifer McLean (02) 9970 6528

Talks Co-ordinator

Estelle Burrows (02) 9451 7404

Walks Co-ordinator

Penny Hunstead (02) 9999 1847

Catering Officer

Georgine Jakobi (02) 9981 7471

Editor

Jane March 0407 220 380

march@ozemail.com.au

Next Meeting: 7.15 pm Thursday September 7 at Stony Range Botanic Garden, Dee Why.

Presentation: Richard & Penny Hunstead. The fascinating flora (and stunning scenery) of Uluru and Kata Tjuta with photographs taken in May this year.

Supper: Georgine & Roger

Coming Up:

2017 Stony Range Spring Festival Sunday September 10, 2017 with set-up on Saturday September 9.

2017 APS NSW Quarterly Meeting hosted by **APS North Shore Group** on Saturday November 18, 2017 at Ku-ring-gai Wildflower Garden, 420 Mona Vale Rd, St Ives. Guest speaker Bronwen Roy will be speaking about native bees. Be sure to write this date in your diaries & calendars.

From the Editor

Please continue to send me interesting reports or photographs that the members would enjoy.

OUTING TO IVANHOE GARDENS SUNDAY AUGUST 20.

Russell Beardmore

Manly's Ivanhoe Gardens was the venue for our walk on 20 August.. It was a



cold morning but nine braved the weather. The Park is currently the subject of a Master Plan prepared by Northern Beaches Council that looks at possibilities for re-development of the Gardens. David and Julia have an interest in the plan through their membership of a support group. Before we set out on the walk, David introduced the plan - much of it it seems quite reasonable but there is a concern that its full implementation might result in the loss of some established trees.

Some background - Ivanhoe Park Botanic Gardens (to give it its full name) lies up the hill behind Manly Oval. The park was first developed in the early 1870's and was dedicated a public park managed by Manly Council in 1887. The area included what is now Manly Oval, the tennis courts and the bowling greens. It is hard to know what the early "natural" vegetation may have been but there is a natural small creek through the area suggesting the site may have supported



some rainforest trees. Over the years it is clear that many trees have been planted and (as Penny pointed out) the majority of these are Australian natives creating a substantial canopy cover over much of the area.



We commenced the walk from the lowest part of the Gardens, just behind the Oval. I think all of us who had not visited the garden before were impressed with the overall "feel" of the place - the huge old figs (*Ficus macrophylla* and *F. rubiginopsa*), the lovely tree ferns (*Cyathea australis* and *C. cooperi*), the mighty hoop pines (*Araucaria cunninghamii*) and the



many palms including bangalow (*Archontophoenix cunninghamiana*) and kentia (*Howea forsteriana*). And as we went up the path there were many pleasant views as we looked down through the trees. Apart from the trees, there were few native plants to be seen although recent efforts have been made made to establish native plantings in a small raised



area bordering Sydney Road. Unfortunately the efforts have not been



particularly successful partly because of choice of plants and not helped by the shade and lack of water - the site was bone dry. This area is shown in the master plan as a "native bush area", a good idea but perhaps ambitious. The extensive understory and garden bed planting is mostly exotic with lots of Cliveas, *Aspedistra*, *Ctenanthe* and so on.



As we approached the top section of the Garden, Harry told us that the route for the old tram line that ran from The Spit to Manly passed through the western and northern fringe of the park. The tram line was opened in 1911 and closed (I think) in 1939. The last part of the walk took us along a section of the tramway.



After an interesting walk we were happy to adjourn to the Ivanhoe Hotel (originally located within the Park) for lunch accompanied by a well earned drink.

Russell appreciates the great help given by Penny in plant identification.

WE FINALLY KNOW WHAT THE SINGLE ANCESTOR OF ALL MODERN FLOWERS LOOKED LIKE

Abc.net.au August 4, 2017 Nick Grimm



Scientists have identified the genetic features common to modern flowers to determine what the first flower looked like. (Hervé Sauquet & Jürg Schönenberger (Nature.com))

Flowers have long held the fascination of humans, but in evolutionary terms they are a relatively recent arrival, first bursting into bloom between 140 and 250 million years ago.

European botanists have now determined what the single ancestor of all modern flowers looked like using the largest dataset of features from living flowers ever assembled. According to the research, the flower was bisexual — meaning it had both male and female flower parts in the middle.

Hervé Sauquet from France's Université Paris-Sud was one of the authors of an academic paper behind the discovery. "It was a highly imperfect flower; I find it rather attractive," Dr Sauquet said.

The news has excited botanists around the world, and particularly here in Australia, where Dr Sauquet will arrive next month to start working at Sydney's Botanic Gardens.

Marco Duretto, manager of plant diversity at the gardens near the city's CBD, said the final discovery is an exciting prospect. "This first flower is the origin of all those [350,000 species of] flowers we know now," Dr Duretto said. "This is actually very, very exciting because a lot of people have done a lot of work, mainly in Europe but also North America, trying to work out what the first flower possibly looked like."

Humans and flowers: it's love and evolution

The allure of flowers is not surprising, given they are responsible for propagating much of the organic life on the planet.

Even flowers that smell like death are popular, like the rare and notorious "corpse flower" that blooms just once every few years, bringing with it the stench of rotting flesh. Visitors to Adelaide's Botanic Gardens were treated to the scent earlier this year, and crowds have been gathering at Edinburgh's Royal Botanic Gardens in the hope of witnessing another.



The rare "corpse flower" blooms once every few years. (ABC News: Isabel Dayman)

"It is a bit like waiting for a baby. You don't know exactly when that's going to happen," senior horticulturist Sadie Barber said.

Some questions remain about the first flower — such as how it was coloured and how it was pollinated. Dr Duretto said the origin of flowers was one of the great mysteries of science, and we probably know more about the origin of the moon than we do the origin of flowers.

"Flowers actually were critical in the evolution of what we've got now in our world, including us," Dr Duretto said



An Australian agency plans to pull the plug on a long-term ecological monitoring program in the stunning Simpson Desert. Aaron Greenville

AUSTRALIA TO AXE SUPPORT FOR LONG-TERM ECOLOGY SITES

Sciencemag.com August. 11, 2017 John Pickrell,

SYDNEY, AUSTRALIA—The Simpson Desert of central Australia is as starkly beautiful as it is ecologically entrancing. Ranks of rusty red sand dunes run unbroken for hundreds of kilometers. During rare years with sustained downpours, moist swales are carpeted with spiky spinifex grasses that take on the appearance of fields of golden wheat. Desert ecosystems dominated by spinifex or *Triodia* grasses cover about 70% of Australia, but the only long-term experiment for studying them is set in a section of the desert in western Queensland—and that research site is now in jeopardy.

Launched in 1990, the study has shown that heavy rains cause flushes of vegetation and seeds that lead to booms of insects, small marsupials, and rodents. Outback pools draw immense swarms of parakeets called budgerigars. That explosion of life attracts feral foxes and cats, which have had a role in the extinction of 27 species and subspecies of mammals in Australia since European colonization in 1788. The invasive species ravage the native ones, which may spend many years hunkered down in scrubby woodland refugia until fresh downpours start the cycle again.

If you monitored the desert's fauna for just a few years at a time you'd miss that dynamic, says Glenda Wardle, an ecologist at the University of Sydney here. "Long-term research in the Simpson Desert has provided fundamental insights into the ecology of outback Australia" and crucial information for protecting endangered species and other natural resources, says Wardle, co-leader of the Simpson Desert Mammal Monitoring project.

But such studies are now slated for the chopping block. A body funded by Australia's federal government plans to stop funding all 12 sites in Australia's Long Term Ecological Research Network (LTERN), including the 8000-square-kilometer Simpson Desert site, at the end of this year. In a letter in today's issue of *Science*, Wardle and 68 co-authors decry the decision as "totally out of step with international trends and national imperatives." She and leaders of the other projects are now scrambling to find other sources of funding before their coffers run dry.

LTERN's demise could have major consequences, supporters say. "In a country like Australia, which is facing huge challenges with climate change, with expanding populations, with major pressures on its water supplies and land area—we're not going to be able to predict anything

about the status of our environmental assets,” says David Lindenmayer, LTERN’s science director, lead signatory of the letter, and an ecologist at the Australian National University in Canberra. Barring an 11th hour reprieve, some sites will surely have to shut down, he predicts. “That’s a catastrophic loss because it means we have no real ability to take a health reading on the country.”

LTERN covers more than 1100 long-term field plots in ecosystems including alpine grasslands, tall wet forests, temperate woodlands, heathlands, tropical savannas, rainforests, and deserts. Some sites are globally unique, including Victoria state’s forests of mountain ash trees (*Eucalyptus regnans*), the world’s tallest flowering plants. Each of the 12 networks of plots started as discrete university-run projects that in 2012 were gathered under the government’s Terrestrial Ecosystem Research Network (TERN) in Brisbane. But budget cuts and new government guidelines on funding priorities have forced TERN to terminate the AUS\$900,000 program, says TERN Director Beryl Morris. TERN will continue to fund a handful of long-term sites that are not part of LTERN, including the Warra tall gum forests of Tasmania.

To illustrate LTERN’s value, scientists rattle off a number of major findings. In 2010, for example, studies centered on Kakadu National Park south of Darwin, Australia, revealed a population collapse of small marsupials and mammals. The cause, says network co-leader Jeremy Russell-Smith of Charles Darwin University in Casuarina, Australia, appears to have been more frequent fires, which created more open ground and allowed feral cats to decimate native species. “People assumed [that ecosystem] was pretty intact,” he says. “That view is totally incorrect, but you need long-term monitoring to show that.”

LTERN’s closure would have international implications, says David Keith, an ecologist at the University of New South Wales here who manages studies at three sites. Of 80 ecological communities listed as threatened by the Australian government, only 24 are monitored, and LTERN studies account for the longest and most reliable data sets. “Their discontinuation will substantially weaken Australia’s ... ability to report on progress to meet international targets agreed to under the Convention on Biological Diversity,” he says.

Lindenmayer and others are making a last-ditch bid to find new pots of money to stabilize LTERN—and, if they’re lucky, expand the network to major ecosystem types currently lacking long-term monitoring. “I am hopeful,” says Keith, “that a phoenix will rise from the ashes.”



The flavours of the Australian bush are creeping into our backyards and kitchens. Image CSIRO

YOUR GUIDE TO EDIBLE AUSTRALIAN FLORA

.australiangeographic.com.au August 01, 2017 Kathy Riley

This may just save you from poisoning yourself.

THANKS TO indigenous bush-cooking initiatives, increased success with commercial crops and publicity from high-profile chefs, a range of Australian bush herbs and spices is trickling into our gardens, nurseries and supermarkets.

While Australia’s indigenous peoples have long enjoyed the flavours and nutritional benefits of native plants, many Australians have yet to sample



STONY RANGE BOTANIC GARDEN
‘Wild Things’
SPRING FESTIVAL

SUNDAY SEPTEMBER 10
 9am-4pm

10.30am Official opening Northern Beaches Council administrator Dick Persson
 Acknowledgement of country Susan Moylan-Coombs

SALE OF NATIVE PLANTS
 Cultivation advice from **Stony Range Botanic Garden volunteers**
 & members of **Australian Plants Society Northern Beaches Group.**

Children’s activities, treasure hunt, face painting,
native animals.

Exhibitions - bees, frogs, flower photography, sculpture, music
Guided walks - insects, rain forest.
Sausage sizzle, Coffee Shop & home made cakes.

Stony Range Regional Botanic Garden
810 Pittwater Rd, Dee Why

For more information contact 9949 3225 stonyrange@gmail.com

the smorgasbord on offer. In some cases, the flavours imparted by native plants aren’t far removed from introduced ingredients, and can therefore be used in many of the same dishes.

Aniseed myrtle, lemon myrtle, mountain pepper and river mint are just a few of the species whose common names hint at similarities to more familiar flavours. Other native foods, such as wattlesseed, are becoming increasingly popular in gourmet dishes, where unique flavours are sought after and celebrated.

The plants themselves also make attractive and low-maintenance additions to backyards. Some, such as acacia, and lemon and aniseed myrtle, are already popular garden plants. Others, like saltbush, are surprising gardeners with their versatility and beauty.

Bush Tomato (desert raisin), *Solanum centrale*



Bush Tomato (desert raisin) *Solanum centrale* (Image Credit: Anne Hayes)

A word of warning: there are more than 100 *Solanum* species in Australia, but only a half-dozen are edible — and the unripe fruits of these are toxic.

This is a small, arid-zone shrub whose ripe fruits have a savoury, robust flavour similar to sun-dried tomatoes. It is most often dried and ground into a spice for use in casseroles, curries and salsas.

Lemon Ironbark *Eucalyptus staigeriana*

Originating in northern Queensland, this 6m tree with small, grey-green leaves imparts an uplifting citrus flavour with rosemary overtones. It can be used in sweet and savoury dishes and herbal teas, or mixed with mountain pepper for a lemon-pepper sprinkle. The quality of its oil also makes it an ideal candidate for aromatherapy and perfumery.



Eucalyptus staigeriana (Image Credit: Anne Hayes)

River mint *Mentha australis*

This small perennial herb has scented leaves and diminutive, white and lilac flowers. It's an adaptable and low-maintenance plant and its leaves can be used in much the same way as its exotic counterparts. Aboriginal people used the leaves to treat coughs, colds and stomach ailments. It's named for its natural occurrence in shady areas near rivers and creeks.



River mint, *Mentha australis* (Image Credit: Anne Hayes)

Aniseed myrtle *Anetholea anisata* (also *Syzygium anisatum*)

The leaves of this subtropical rainforest plant can be harvested year-round. When dried and milled, they impart a sweet liquorice flavour similar to star anise, and can be used in many of the same foods — such as cakes, biscuits, sauces and curries. Its purple flushes of growth, aromatic white flowers and ease of maintenance make it a popular garden tree.



Aniseed myrtle, *Anetholea anisata* (Image Credit: Anne Hayes)

Cinnamon myrtle *Backhousia myrtifolia*

This myrtle produces leaves infused with a cinnamon flavour that can be used in sweet and savoury dishes and herbal teas. It belongs to the Myrtaceae, which includes the popular lemon myrtle and aniseed myrtle. Growing to a height of 7m, it's a good candidate for the home garden: hardy, low maintenance and adaptable with masses of striking, star-shaped flowers.



Cinnamon myrtle, *Backhousia myrtifolia*. (Image Credit: Anne Hayes)

Mountain pepper *Tasmannia lanceolata*

The leaves and berries of mountain pepper were popular among British settlers, who discovered it performed just as well as traditional pepper in dishes. The leaves are usually dried and then milled or ground; the berries, known as pepper-berries, are dried and crumbled or ground. This medium-sized tree occurs naturally in Tasmania and the wet forests of south-eastern Australia.



Mountain pepper, *Tasmannia lanceolata* (Image Credit: Anne Hayes)

Wattleseed *Acacia victoriae*

Grown in Africa since the 1990s to help sustain drought-stricken communities, many acacias produce a seed that can be roasted, ground and added to flour to bake breads and cakes. Its nutty taste, reminiscent of hazelnuts, has made it a popular addition to ice-cream, coffee and cheesecake. Several acacia species are used in cooking; however, *Acacia victoriae* (or elegant wattle) is widely recognised as the industry standard.



Wattleseed, *Acacia victoriae* (Image credit: Anne Hayes)

Saltbush *Atriplex nummularia*

This plant's ability to thrive in arid environments has imbued its leaves with a saltiness that lends itself to flavouring roast lamb, seafood, vegetable dishes, casseroles and stews. Saltbush is a hardy plant that requires little watering, and its silvery-grey foliage and pink new growth make it a distinctive, useful and low-maintenance addition to Australian gardens.



Saltbush, *Atriplex nummularia* (Image Credit: Anne Hayes)

ENVIRONMENTALISTS FIGHT TO BRING RARE PLANT BOMADERRY ZIERIA BACK FROM BRINK OF EXTINCTION

ABC Illawarra 26 Jun 2017 Jessica Clifford

Researchers and environmentalists are in a race against time to bring a rare plant back from the brink of extinction.

The Bomaderry Zieria is native only to the town of Bomaderry on the NSW south coast, and is not found anywhere else in the world.

The shrub is small and delicate, covered in clover-like leaves and velvety hairs. It also produces small, pinkish-white flowers during winter and spring. It has been monitored by researchers for the past 20 years.



Photo: The Bomaderry Zieria is found only in one town on the NSW South Coast and at botanic gardens. (Supplied: M.Fagg/Australian National Botanic Gardens)

They have found that since 1997 the population of the plant has declined 60 per cent.

Increasing plant population in the wild

Cuttings have been taken during the past few years and grown in special greenhouse conditions at botanic gardens in Canberra, Wollongong and the Shoalhaven.

Earlier this year, 300 cuttings were reintroduced to a nature reserve in Bomaderry to try and increase the plant population.

Office of Environment and Heritage (OEH) senior threatened species officer, Kylie Coutts-McClelland, said the first post-planting observation took place last week. She said she was concerned about the variation in how the plants were responding to being relocated back into their natural habitat.

"It may just be the initial shock of being planted out, but we'll track their progress for at least the next three years," Ms Coutts-McClelland said.

"We are looking at whether we can increase the survival rates of plants we re-introduce from botanic gardens' collections into the wild through additional watering and fencing to protect against browsers such as wallabies."



Photo: A newly planted Bomaderry Zieria, fenced off to help protect it from grazing animals. (Supplied: Office of Environment and Heritage)

Hard battle ahead for species

In the course of their research on the rare shrub, researchers have also discovered the plant appears to have lost its ability to reproduce.

While other plants, including other closely related zierias, normally seed at certain times of the year, this one no longer does.

There is no explanation as to why this might be the case, but it makes the replanting of the unusual species all the more important.

The Bomaderry Zieria is one of many endangered species being cared for as part of the NSW Government's Saving Our Species program.

The program sets out actions required to save specific plants and animals from extinction.

Shoalhaven City Council is working with the OEH and volunteers to try and get more Bomaderry Zierias growing.

Shoalhaven council Bushcare coordinator Alasdair Stratton said they would probably lose some of the newly planted zierias.

"They're being planted into a pretty harsh environment and they've been sitting in a nursery for the last five or six years," Mr Stratton said.

"They're going to be getting watered and closely monitored by us and OEH.

"It's not just about us replacing the wild population, it's just an experiment to see if we can actually get these plants that have been sitting in the nursery established."

The newly planted shrubs will continue to be monitored for another couple of years as part of the program to see whether it is possible for them to survive in the wild.



Clouds over the Amazon. Antisana/Alamy Stock Photo

TREES IN THE AMAZON MAKE THEIR OWN RAIN

Sciencemag.org Aug. 4, 2017 Ilima Loomis

The Amazon rainforest is home to strange weather. One peculiarity is that rains begin 2 to 3 months before seasonal winds start to bring in moist air from the ocean. Now, researchers say they have finally figured out where this early moisture comes from: the trees themselves.

The study provides concrete data for something scientists had theorized for a long time, says Michael Keller, a forest ecologist and research scientist for the U.S. Forest Service based in Pasadena, California, who was not involved with the work. The evidence the team provides, he says, is "the smoking gun."

Previous research showed early accumulation of moisture in the atmosphere over the Amazon, but scientists weren't sure why. "All you can see is the water vapor, but you don't know where it comes from," says Rong Fu, a climate scientist at the University of California, Los Angeles. Satellite data showed that the increase coincided with a "greening" of the rainforest, or an increase in fresh leaves, leading researchers to suspect the moisture might be water vapor released during photosynthesis. In a process called transpiration, plants release water vapor from small pores on the underside of their leaves.

Fu thought it was possible that plants were releasing enough moisture to build low-level clouds over the Amazon. But she needed to explicitly connect the moisture to the tropical forest.

So Fu and her colleagues observed water vapor over the Amazon with NASA's Aura satellite, a spacecraft dedicated to studying the chemistry of Earth's atmosphere. Moisture that evaporates from the ocean tends to be lighter than water vapor released into the atmosphere by plants. That's because during evaporation, water molecules containing deuterium, a heavy isotope of hydrogen made of one proton and one neutron, get left behind in the ocean. By contrast, in transpiration, plants simply suck water out of the soil and push it into the air without changing its isotopic composition.

Aura found that the early moisture accumulating over the rainforest was high in deuterium—"too high to be explained by water vapor from the ocean," Fu says. What's more, the deuterium content was highest at the end of the Amazon's dry season, during the "greening" period when photosynthesis was strongest.

The tree-induced rain clouds could have other domino effects on the weather. As those clouds release rain, they warm the atmosphere, causing air to rise and triggering circulation. Fu and colleagues believe that this circulation is large enough that it triggers the shift in wind patterns that will bring in more moisture from the ocean, they report in the Proceedings of the National Academy of Sciences.

Scientists have studied the connection between trees and rain in the Amazon before. A 2012 study found that plants help "seed" the atmosphere for rain by releasing tiny salt particles. But the new study strongly supports the idea that plants play an important role in triggering the rainy season, says Scott Saleska, an ecologist at the University of Arizona in Tucson, who was not involved with the work. The deuterium provides a clear "fingerprint" for what plants contribute to the process, he says.

The findings also address a long-standing debate about the role plants play in weather, says Saleska, suggesting that they are more than just "passive recipients," and that they instead can play an active role in regulating rainfall. If that's true in the Amazon, Saleska says, climate scientists will need to take into account practices like deforestation when predicting regional changes in weather patterns. And curbing deforestation will be an important step for people to take in preventing drought.

Next, Fu will be studying rainforests in the Congo, to see whether the same process is happening.

A SEASONAL FAVOURITE



Philotheca myoporoides subsp. *myoporoides*. Pic Ed.