

# CALEYI



## NORTHERN BEACHES GROUP

[austplants.com.au/northern-beaches](http://austplants.com.au/northern-beaches)



September/October 2019

**Australian Plants Society Northern Beaches**  
[northernbeaches@austplants.com.au](mailto:northernbeaches@austplants.com.au)

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### CALENDAR

**APS Northern Beaches meeting Thursday September 5, 2019** at Stony Range Botanic Garden, Dee Why.

**7.15 pm Plant family - Roger Starling.**

**7.30 pm Presentation: Show & Tell.** Please bring your samples and stories to share.

**Supper: Anne & Jennifer**

**Stony Range Spring Festival Sunday September 8.**

Set-up Saturday 7 from 9 am please bring flower samples from your garden for the specimen board.

**APS Northern Beaches meeting Thursday October 3, 2019** at Stony Range Botanic Garden, Dee Why.

**7. pm Committee Meeting**

**7.30 pm Plant family - Anne Gray.**

**7.45 pm Presentation: Dan Clark, APS NSW Conservation Officer.**

**Supper: Pam & Russell**

**APS Northern Beaches Group visit Jennifer's garden in Ingleside Saturday October 19, 2019.** Anne will email details later.

**APS NSW Quarterly Saturday November 16** hosted by APS Northern Beaches Group at Warriewood.

## EUCALYPTS

The presentation at our meeting on Thursday 1st August was by Conny Harris. Her topic was "Eucalypts = Gum trees. Identifying local indigenous species".

The genus, Eucalyptus has been of special interest to Conny, even before she arrived in Australia. She remembers seeing images of "big eucalypts" in a museum in Bremen, Germany, where she lived. The statement under the eucalypt image stated, "there is only one genus of trees in this country"!

Since 1999, Conny has been passionately involved in Australian native plant education and in bush regeneration. She founded the Garigal Landcare Group in 2001 and is the leader of monthly bushwalks in the local bushland.

Conny showed images of a number of local Eucalyptus species, pointing out how the first identifier of a species is the bark on the trunk. On the basis of the smooth or rough bark, eucalypts can be categorised as gums, stringybarks, mahoganies, peppermints, boxes, bloodwoods or ironbarks. The species that Conny presented for examination, by image, leaf and fruit specimen, included *Eucalyptus saligna*, *E. pilularis*, *E. gummifera*, *E. piperita*, *E. robusta*, *E. punctata* and *E. sieberi*. We were shown how to identify a species from the fruit, based on the fruit's structures, such as valves, operculum and disc. We saw a wide diversity of fruit sizes and shapes!



*Eucalyptus saligna* - Sydney Blue Gum, pic. Murray Fagg.

We were given a short history of the early interest of English and French botanists in the eucalypts. In 1770 Banks and Solander collected specimens of *Eucalyptus gummifera* and in 1777 the botanist David Nelson collected a eucalypt species from Bruny Island, (southern Tasmania). Nelson's specimen was taken to the British Museum, where the French botanist, Charles-Louis L'Heritier named it *Eucalyptus obliqua*. L'Heritier gave the species the name from the Greek words "eu" (meaning "well") and calyptos ("covered"), referring to the structure of the flower bud.

Climate change researchers have estimated that 43% of the 800 + species of eucalypts, in Australia, would be adversely affected by a three degree centigrade climate warming. The predictions are that even the local species, presented by Conny, will show the effects of the present climate changes, within the next 50 years.

Penny Hunstead

## CASUARINACEAE



*Casuarina cunninghamiana*. pic. gardenson line.com.au

At our August meeting Jan Carnes gave a presentation on Casuarinaceae noting that in this family, worldwide, there are 90 species in 4 genera. In Australia there are 66 species in 3 genera. In the Sydney region there are 11 species in 2 genera. Casuarina is from the Malay word Kasuari meaning the foliage resembles the drooping feathers of a cassowary bird. It has winged seeds that are pale and dull and cone bracteole extending well beyond the cone body. The Allocasuarina has dark brown shiny seeds and cones that have thick woody bracteole extending slightly beyond the cone. The hard wood is strongly cross grained and has been useful for such items from canoes, shingles and fences to cabinetwork and parquetry. These trees are well adapted to hot dry conditions and because of rapid growth outcompetes and displaces native vegetation by dense coverage and thick litter accumulation, which has an allelopathic (growth inhibiting) effect on other plants. There is an insect gall that mimics the shape of the fruiting cone caused by the larvae of the insect, Hemiptera, which can appear on all species.

Casuarinaceae has 2 more genera being Ceuthostoma and Gymnostoma. There is one Gymnostoma species in Australia being *G. australianum* or Daintree Pine.

Estelle Burrows

### SATURDAY 16 NOVEMBER – APS NSW QUARTERLY GATHERING

Keep the date free. **APS Northern Beaches Group** will be hosting our final gathering of the year at Warriewood.

The venue is the **Angophora Room** at the **Nelson Heather Centre**, 5 Jacksons Rd, Warriewood.



Warriewood wetlands. pic. Richard Hunstead

Two walks are planned in the Warriewood Wetlands area.

## HOW PLANTS DECIDE BETWEEN GROWTH OR DEFENSE

sciencedaily.com August 27, 2019 Leibniz Institute of Plant Genetics & Crop Plant Research

Grow or defend yourself -- a decision plants need to make on a daily basis, due to their inability to do both simultaneously. For a long time, it was thought that the reason for the growth-defence trade-off might be a question of energy resources. When a plant is defending itself against pathogens, energy could simply be limited for the plant to be growing at the same time, and vice versa. A recent paper published in *Cell Reports* shines a new light on the poorly understood mechanisms of the trade-off, clarifying that the actual underlying reasons is the incompatibility of the molecular pathways regulating plant growth and defence.

In addition to the observed trade-off, growth and defence need seemingly contradicting requirements. Growth is a process which often necessitates the loosening of the cell wall so that the cells have space to expand. Defence, in many cases calls for a tightening of the cell wall. In this way, the cells form a more solid barricade which is harder to penetrate for pathogens. Within their paper the researchers show that the growth-related transcriptional regulator HBI1 (Homolog of Bee2 Interacting with IBH 1) controls both processes within plants.

By differentially leveraging the expression of NADPH oxidases (NOXs) and peroxidases (POXs), HBI1 regulates ROS homeostasis within the apoplast (the space in between the cell walls of the plant). When plants need to grow, HBI1 is active and configures apoplastic ROS levels that support growth by activating specific NOX genes and repressing specific POX genes. In case of pathogen attack, HBI1 needs to be deactivated, resulting in increased apoplastic ROS levels through the activation of a NOX gene and several POX genes that represses growth but increase disease resistance within the plant.

Due to the contrasting nature of the two processes -- both being regulated by the same transcription factor whilst requiring conflicting ROS levels -- the researchers showed that the growth-defence trade-off is caused by the incompatibility of the pathways, and not by limited energy resources.

The project, which had started four years ago as a Bachelor thesis, was carried out in Aachen. Due to a recent move of the group supervisor, Dr. Schippers, to the Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) in Gatersleben, the project was partially evaluated and written up at the Gaterslebener Institute. Dr. Schippers let us know: "With our current findings, we are starting to understand one of the mechanisms behind the growth-defence trade-off. This understanding is crucial if we want to improve plant biomass production without risking impairment of their ability to defend against pathogens."

Dr. Schippers' "Seed Development" research group at the IPK will continue to investigate the different pathways within plant seeds. Dr. Schippers: "As it stands, there are more than 70 peroxidases and 10 NADPH oxidases within plants and we don't exactly know what they are doing. They are of particular interest to me, as peroxidases and oxidases have similar effects within plants and animals. This indicates that their functional conservation predates that of hormones, as hormone signalling pathways evolved specific pathways in plants and humans. We aim to fully untangle these pathways at the cellular level -- so that one day, we can reveal their regulation and function during the development of plants."

## STAMP DESIGNS BEAR FRUIT

australiapostcollectables.com.au July 30 2019



**Celebrate Spring with**  
**STONY RANGE BOTANIC**  
**GARDEN**  
**&**  
**AUSTRALIAN PLANTS**  
**SOCIETY**



# **STONY RANGE BOTANIC GARDEN SPRING FESTIVAL**

**'Back to the Bush'**

**SUNDAY SEPTEMBER 8**

**9am-3pm**

**10 am Official opening**

## **Children's activities**

**Face painting, craft, treasure hunt, native animals**

**Exhibitions – native bees, photography,  
sculpture, live 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](mailto:stonysrange@gmail.com)**

## SOUTHERN HIGHLAND BUSH EXCURSION

By Harry Loots

Thoughts of the Southern Highlands of NSW bring to mind country estates and towns such as Bowral that exude wealth and genteel country living. The replication of a very English countryside with conifers, elms and roses and large ornate country houses running horses is prevalent. Recently vineyards and whisky distilleries have appeared. The high altitude and cooler weather fit this culture from another world.

In the frigid beginning of August the APS Blue Mountains group ventured to the high country to discover the extant native vegetation. We were not disappointed for although this area has been farmed for nearly 170 years this has occurred on the most fertile land leaving the agriculturally barren sandstone country and hills to the bush.

It was interesting to come across evidence of long-vanished industries whose location is now wilderness. In the late 19th century Mittagong was an important industrial centre. Iron was mined and smelted by Mittagong's Fitzroy Iron Works that burned coal mined by the Mittagong Coal Mining Company at the Box Vale Colliery in the Nattai River Gorge.



The Box Vale track along an old railway embankment.

We walked along the abandoned train line route running from the Nattai Gorge to Mittagong where it joined the main southern line. This is now a walking track out to the Nattai Gorge Lookout. A few of the Blue Mountains group walked the 4.4 km mostly flat path through cuttings, over embankments and through an 84 metre long tunnel. This easy walk passes through dry sclerophyll forest, which has returned to the trackside. Trees include Messmate (*Eucalyptus obliqua*), Mountain Ash (*Eucalyptus regnans*), Ironbark (*Eucalyptus crebra*), Stringybark (*Eucalyptus oblonga*) and other gums. Ferns and *Dracophyllum secundum* grow in the deep cuttings. From the Lookout we viewed the deep rugged Nattai River Gorge wilderness, its olive green continuing west to the horizon and the Kanangra-Boyd National Park in the Blue Mountains. This walk has long been a favourite with APS members. Halfway along the track we were surprised to find a plaque fixed to a table stating, "Angus Wilson Corner, Australian Plants Society Southern Highlands 2006".

Another narrow gauge railway once ran west from Mittagong to the oil shale mine at Joadja where the Australian Kerosene Oil and Mineral Co produced kerosene. Because of a lack of local labour miners and their families were brought to Australia from Scotland. By the 1870s Joadja was home to approximately 1,200 people. Joadja is now a ghost town set in a beautiful Eucalyptus dominated landscape. A spectacular sandstone escarpment with Eucalyptus forests gives way to the Wingecarribee River gorge, which cuts into the High Range. Despite the previous mining and industry the gorge has returned to a pristine native bush where modern houses are located on isolated bush blocks.

Between Mittagong and Bowral the extinct volcano Mount Gibraltar, at 863 metres, provided the group with district and town views. Between



A *Eucalyptus fastigata* growing in the skeletal but rich soil atop Mount Gibraltar

1886 and 1986 Mount Gibraltar's Trachyte or micro-syenite rock was quarried for building stone used on many important Sydney buildings such as the Queen Victoria Building. Bowral Trachyte, known for its durability, was freighted to Sydney by rail. *Eucalyptus fastigata* (Brown Barrel) occurs on Mt Gibraltar's heavy red soils although it does not grow as tall as on Mount Tomah where it reaches up to 50 metres. The quarrying operations created the abyss below the Bowral Lookout where re-vegetation and pieces of abandoned equipment can be seen.



A *Eucalyptus* leaf at Fitzroy Falls.

Robertson to the east of Bowral was once a thriving dairy district sustained on rich rainforest soils. Fertile basaltic soils had previously supported the Yarra-wa Brush which at an altitude of 750 metres was a cool temperate rainforest thriving on high rainfall and heavy mists. There are still 5 hectares of remnant rainforest in the Robertson Nature Reserve



A vine, fern and moss in the Temperate Rainforest of what was the Yarra-wa Brush now the Robertson Nature Reserve.

with a canopy of sassafras, featherwood, coachwood and possum wood producing the dark conditions for ferns, mosses, fungi and vines to grow. While it was only a short walk through the rainforest we were still able to appreciate a complex ecosystem.

A visit to Fitzroy Falls topped off the Blue Mountains group excursion. Located on the eastern edge of the Southern Highlands near Kangaroo Valley, Fitzroy Falls is a major tourist attraction. We marvelled at the



The cliff walls at Fitzroy Falls.

water falling 80 metres and the Morton National Park gorge, the Yarrunga Valley wilderness beyond. The 4 km return walk along the escarpment's west rim offered many opportunities to view the precipitous cliffs and vegetation. There was a surprising variety of sandstone vegetation ecosystems to be appreciated as we walked from one lookout to the next, from a copse of *Lambertia formosa* to groves of Casuarinas, Hakeas, Acacias or Persoonias. Along the wet cliff rim and under rock ledges



Acacia terminalis at Fitzroy Falls.

there were many different ferns. As the early evening fell an increasing number of small finches darted about the heath.

Thank you Jim Plummer and the Blue Mountains group for inviting Lindy and me to a weekend surveying this interesting area. The excursion provided a fascinating insight about the early industry and local biome before farming.

All photographs Harry Loots.

## WINNERS OF THE AUSTRALIAN PLANTS AWARD 2019

Riitta Boevink

Every two years two medals are given in association with the ANPSA Biennial Conference, one in professional and one in amateur category. The "amateur" is not intended to signify less valued or amateurish. On the contrary, the recipients invariably are people, who have unstintingly given their time and made significant contribution in the area of their interest and expertise.



pic:Curtin.edu.au

This year's winner in the professional category is Professor Kingsley Dixon from Western Australia. He is a John Curtin Distinguished Professor in the Faculty of Science and Engineering in the School of Molecular and Life Sciences. The title of John Curtin Distinguished Professor is Curtin University's highest honour for academic staff. Professor Dixon has a long list of memberships and positions held in organizations, both international and local. These include being a foundation member of Cambridge Coastcare and long serving committee member.

His research has resulted in WA being recognised as an international hub in mining environmental science. His enthusiasm for working with the mining industry in WA to promote excellence through science in minesite rehabilitation is most recently demonstrated by leadership of the \$5.3M BHB Billiton sponsored Restoration seed bank initiative, Directorship of the ARC Center for Mining Restoration and recipient of the Golden Gecko Awards for Environmental Excellence.

He has published 319 scientific works, including eight books. He has received numerous awards, including the Linnean Medal for Botany in 2013.

Professor Dixon's achievements include participation in the team at UWA and Murdoch University in the breakthrough discovery of the chemical in smoke responsible for germination of many Australian plants. His international profile in seed science and biology is world class and demonstrates how seed can be used to optimise restoration benefits that have resulted in broad suite of industry and research support amounting to 25 industry and 16 nationally competitive grants.

The winner in the amateur category is Glenn Leiper from Queensland. He has made an outstanding contribution to the study, propagation and conservation of Australian native plants, with emphasis on plants indigenous to the South east region of Queensland. Glenn began his career as a primary school teacher culminating in his appointment as the teacher in charge, then principal of the Jacobs Well Environmental Education Center in the early 1980s. Since his retirement he has been able to focus on his passion for native plants. Together with co-authors Jan Glazenbrook, Denis Cox, and Kerry Rathie, Glenn has produced a comprehensive and user-friendly field guide to the native plants of South East Queensland, 'Mangroves to Mountains'. The second edition, containing 200 species additional to the original, was released in 2017. As well as being a field guide, Mangroves to Mountains is a record of the native flora of the region, featuring Glenn's spectacular photographs. Over 25 000 copies have been sold, reflecting its popularity with native plant enthusiasts.



pic:mangroves-to-mountains.com

One of Glenn's greatest achievements is the rediscovery and passionate protection of the thought-to-be -extinct Angle-Stemmed Myrtle (*Gossia gonoclada*). Charles Stuart first discovered *Gossia gonoclada* in Mogill in the 1850s. It was thought to have gone extinct in the 1880s. Glenn Leiper and Janet Hauser rediscovered the species in December 1986, stimulating interest in searching for more populations. Glenn also discovered populations of *Gossia gonoclada* at an area now known as Murray's Reserve. Glenn then went on to advocate for Murray's Reserve to be purchased by Logan City Council in the 1990s. Glenn has also made significant contributions to the development of botanic gardens in Queensland. He has collected and donated over 100 rare and threatened species to the Brisbane Botanic Gardens.

Glenn maintains strong links with the local community through his work with Environmental Services Officers from the Logan City Council. Glenn joined SGAP QLD (Society for Growing Australian Plants, Queensland Region)-now called Native Plants Queensland- in the early 1980s. He is currently a Regional Councillor and the Conservation Officer. He joined the Logan River Branch in 2005 and has made a significant contribution, serving as secretary from 2011 to 2017. He frequently provides articles to the quarterly NPQ journal, always illustrated with numerous photographs.

## APS GET-TOGETHER NEWCASTLE AUGUST 2019.

APS Newcastle Group must be congratulated on hosting a most enjoyable weekend in August.

The many members were welcomed to the Hunter Regional Botanic Gardens by Newcastle APS President Mark Abell and introduced to the 'Endemic Flora' by Stephen Bell. Exploration of the HRBG included the Herbarium, Orchid House and many areas dedicated to particular species.



Julia & Mark in the Orchid House. pic: Ed.

We were mobilised during the weekend to visit a number of other sites of native plant treasures in the area. Those included the Morna Point Walk at Boat Harbour, the Awabakal Nature Reserve at Dudley and the Glenrock Scout Centre at Whiebridge. The latter being tended by 2018 ABC Gardener of the Year John Le Messurier. The final visit on Sunday was to the wonderful Hunter Wetlands Centre at Hexham for lunch, more explorations and the always popular plant sales.

Here are a few memories of the visit.



HRBC Mountain. Pic: David Drage



One of the beautiful Grevilleas pic: David



Rhododendron viriosum. pic: David



Lagunaria Patersonia. pic: David



Awabakal Nature Reserve pic: Ed.

## 2019 NSW Environment, Energy and Science (DPIE) Eureka Prize for Environmental Research

Blue Carbon Horizons Team, University of Wollongong; Macquarie University; and ANSTO

Coastal wetlands are efficient natural systems in the trapping of carbon dioxide. The Blue Carbon Horizons Team has shown that the capacity of coastal wetlands to store carbon will substantially increase with sea level rise, providing a counter to global warming. Working alongside government, the team's research is being used to protect and restore coastal ecosystems.

### A NATURAL APPROACH

[magazine.uow.edu.au/](http://magazine.uow.edu.au/)

Growing up on the south coast of New South Wales close to the pristine, protected setting of Jervis Bay and the Shoalhaven River instilled in Dr Kerrylee Rogers a passion for coastal environments.

Rogers' research focuses on harnessing the natural capacity of estuaries and coastal wetlands to adapt to climate-change induced sea-level rise and prevent further change through sequestering carbon from the atmosphere within living plant biomass and sediments.



Her research to date offers a surprising opportunity. It indicates that the overall vulnerability of coastal wetlands may be overstated, and if the inherent capacity of estuaries and coastal wetlands to adapt is encouraged, sea-level rise may provide prospects to increase carbon sequestration and actually mitigate climate change. The key is how we, as a society, support these ecosystems to adapt.

Rogers' work in this area has attracted much interest, illustrated by her research record with 35 peer-reviewed journal articles, over 733 citations, 16 book chapters and one book. It has attracted funding from nationally competitive grant rounds as well as the National Climate Change Adaptation Research Facility and NSW Environmental Trust, among others. In 2016 she was invited to collaborate with colleagues as a Visiting Fellow at the United States Geological Survey, Wetlands and Aquatic Research Center in Lafayette, Louisiana, and contributed to workshops on carbon accounting convened by the Intergovernmental Panel on Climate Change.

After completing her PhD at UOW in 2005, Rogers returned to part-time work in 2006 as an environmental scientist within the NSW Government, which she balanced with raising her young children. Four-years later, she became the first part-time, contract-based employee to be appointed to the merit-based Research Scientist classification in that organisation, and in 2011 was awarded the Department of Environment, Climate Change and Water Scientific Services Division Woman of the Year for her work on the water requirements of plants and animals in the Murray-Darling Basin.

Returning to UOW in 2012 to undertake part-time work with Professor Colin Woodroffe researching climate change adaptation, Rogers quickly forged her own path and in 2013 was awarded an Australian Research Council Future Fellowship. Currently, she leads a Global Challenges project, Blue Carbon Futures, integrating research across four faculties focussed on the implementation of blue carbon as an effective mechanism for mitigating climate change.

Conducting fieldwork as part of her inquiries continues to connect Rogers with her research as well as with her childhood growing up in the Shoalhaven, providing ongoing motivation to develop an evidence base for softer strategies to mitigate climate change in coastal regions.



pic: David



*Eriostemon australasius*. pic: Ed.



*Pterostylis curia*. pic: David



View from The Bluff. pic: Ed.