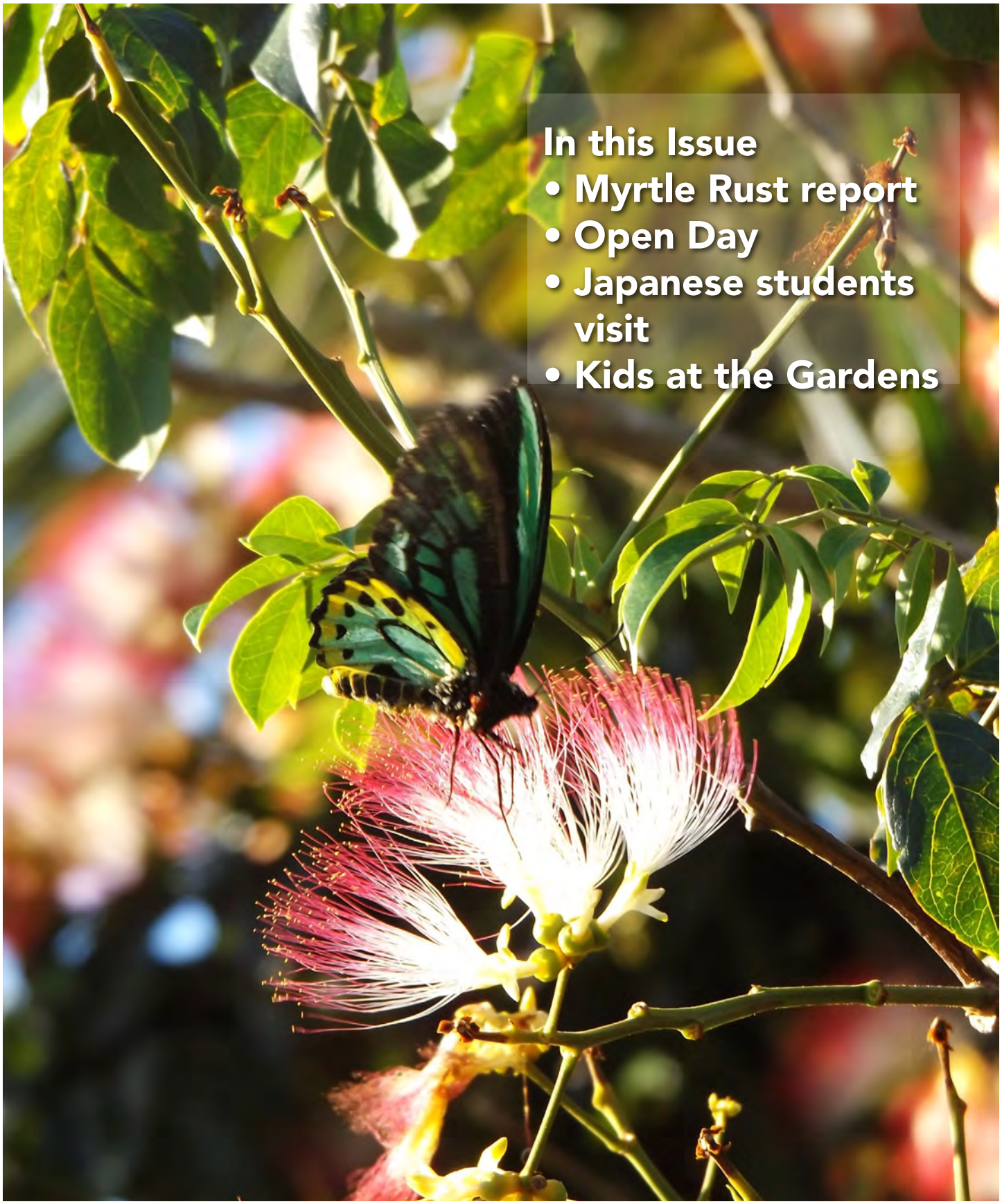
GARDENS GAZETTE

August 2023

Newsletter for Friends of the Lismore Rainforest Botanic Gardens Inc

FRIENDS OF THE
LISMORE
RAINFOREST BOTANIC
GARDENS



In this Issue

- Myrtle Rust report
- Open Day
- Japanese students visit
- Kids at the Gardens

MEET THE FLRBG COMMITTEE

Executive

President – **Tracey Whitby**

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Vice President – **Hazel Bridgett**

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Curator – **Peter Gould**

Nursery Manager – **Jenny Wilson**

Member & Newsletter Editor – **Marie Matthews – 0428 895261**

Contact Information

For General Information call: **0450 596 705**

Find us on the web at – friendslrbg.com.au

Find us on Facebook: facebook.com/FLRBG

Friends of Lismore Rainforest Botanic Gardens
PO Box 1327
LISMORE NSW 2480

Cover photo: ***Archidendron grandiflorum*** **Pink Lace Flower with Richmond Birdwing Butterfly**
Photo: Robert Porritt

FLRBG GREETING CARDS

ON SALE WHILE STOCKS LAST! ONLY **$15 A SET OF 12**!

12 beautiful full colour cards featuring photos, taken by the Friends of Lismore Rainforest Botanic Gardens, of local plants and animals. Cards have been left blank for to write your own message. Our card set makes a perfect and thoughtful gift too!

To purchase a set, send an email: publicity@friendslrbg.com.au

Card 1: *Red Browed Firetail* Photo: **Phil Jarman**
Card 2: *Melastoma flower* Photo: **FLRBG**

ACKNOWLEDGEMENTS

We would like to acknowledge those who are supporting us financially and/or with their knowledge, skills and experience.

Andrew and **Jeni Binns**,
Janelle Saffin,
Jenny Dowell,
Mavourneen Kennedy,
Southern Cross Uni,
Waste Facility staff,
Paul Boxsell LCC Sign Shop,
Ginger Blue Graphic Design,
Fair Dinkum Constructions,
Bruce Jobson Plumbing,
Limpinwood Gardens Nursery,
RBG at **Mt Annan**,
Ben De Nardi Paper Plans,
Firewheel Nursery,
Burringbar Rainforest Nursery,
Hugh & Nan Nicholson,
Accurate Tree Solutions,
Wild Dog Dingo Services,
Richmond Sand, Gravel & Landscaping,
Don Granatelli Architect,
Peter Lucena Engineer,
Lismore Garden Centre,
Newton Denny Chapelle Surveyors,
Lismore City Printery,
Suvira McDonald,
Geoff McGrath Landscaping,
Golden Grove Naturals,
L J Hooker Alstonville
Peter Gow Electrical
Susan Oliver Graphic Design
and all who have supported us in any way including some who have requested to remain anonymous.

We couldn't do it without you –

THANK YOU!

PRESIDENT'S MESSAGE

Kids activities, World Environment Day Photo: Tracey Whitby

While our plants continue to thrive at the Gardens, the Friends have been working very hard to maintain and manage specialty gardens, which have been attracting more visitors this year after several quiet years.

The *Sensory Garden*'s new rock garden has taken shape and plans for its entrance and renovated pathways are in full swing. The entrance to *Palm Gully* has been given a facelift, hopefully enticing more visitors to enter this beautiful area. The new bridge at the top of the *Rainforest Walk* is almost complete and more plantings in the research areas are looking healthy. The driveway into carpark two has been concreted to ensure less damage from runoff during future large rain events.

We have some very busy sub-committees working behind the scenes and reporting to the committee. We hope this will help us to plan well for the next five to ten years and continue to find funding and financial support for more power and irrigation to the site. This would enable us to provide greater reliability for the plants coping with climate change and to cater for more visitors at special events at the Gardens. We welcome anyone with ideas and experience in managing creative and cultural events at a venue like ours to contact the committee on **0450 596 705** or to email me at publicity@friendslrbg.com.au

Our Open Day in May was a well-earned celebration of 20 years of enjoyment and work since the Official Opening of the Gardens in 2013. **Aunty Thelma James** did a welcome to country, the Mayor of Lismore, **Steve Krieg**, attended and spoke about the beauty of the Gardens and, **Jenny Dowell**, who was mayor at the 2013 opening also addressed the crowd. A news team from NBN TV helped spread the word about the special occasion. Our wonderful guides provided eight guided walks and children's activities throughout the day.

The Friends' education and guiding teams are enjoying reconnecting with the public. School and pre-schools are coming to experience excursions in nature. *World Environment Day* in June was a great success with over one hundred students attending from our local primary schools. *Story Time*, organised by the Lismore Library, has become a regular exciting opportunity each month for youngsters and their carers to enjoy walks, stories, and craft activities, immersing in the natural surroundings.

And as always special thanks to all the volunteers who keep coming and work so hard at the Gardens helping it develop into a truly beautiful place in nature.

Tracey Whitby
publicity@friendslrbg.com.au
FLRBG August 2023

Cutting cake Open Day in May – front from left – Rose Hand, Tracey Whitby, Aunty Thelma James, Geoff Walker and Jenny Dowell, current mayor Steve Kreig, Uncle Mick Roberts behind.
Photo: Marie Matthews

LIAISON WITH COUNCIL

The Friends meet regularly with the Lismore City Council Liaison Committee. **Kevin Trustrum**, our Council liaison person for many years resigned in April. He was very supportive of the Gardens over many years. We wish him well in his new post.

The committee is now **Vicki Currie** (Acting Business Manager Commercial Services), with **Stefanie Stanley** (Acting Program Manager Commercial Services), **Matt Palmer** (Waste Operations Coordinator), **Damian Butler** (LCC Gardener), **Tracey Whitby** (President FLRBG), **Peter Gould** (Curator) and **Ros Little** (Wednesday Work Co-ordinator).

These meetings have been a great support for the Friends and the communication between the two organisations continues to flow smoothly. Topics for discussion recently included the research study areas of the Gardens, the emergency evacuation and first aid procedures, the preliminary concepts for the new entrance gate, power and water supply to the Gardens, soil testing and feral animal control and the FLRBG Maintenance Schedule and Guidelines.

WALKING THE HOOP PINE TRACK

The *Hoop Pine Forest* at our Gardens is a favourite of mine. Most visitors amble along its shaded paths to enjoy its coolness and its serenity.

One special area, just before the top, is '*The Sunken Garden*'. In the early days it was a small disused quarry completely devoid of trees but it was hoped that one day it would indeed be full of lush rainforest plants and so was give the name of Sunken Garden. Volunteer **Neil Walker** has spent many hours, over many years developing this space. His staghorns and other epiphytes are flourishing in this cool area as are the palms, ferns and other rainforest plants.

That old quarry is now a truly beautiful Sunken Garden – an extra bonus for walking the path. But, as well, there is the *Stoney Labyrinth* at the top which is a beautiful place for a quiet meditative walk and then, just a little way along the track there is a *large steel bell*.

This bell was cast in 1893 in Sheffield UK and came here via Mudgee and Dunoon. Children… and adults… delight in ringing its clapper. I often wonder how far across the city our bell's doleful tone is heard. Certainly we hear it up at our Nursery at the far western end of the site.

Geoff Walker, Nursery volunteer and very long term Friend of LRBG

Bell In Hoop Pine Forest
Photo: Marie Matthews

GARDENS AND RELIGION

Religion has been one of the prime reasons for making enclosed outdoor space and it seems likely that sacred landscapes were venerated and sacred gardens made long before religious buildings were considered.

Link: https://www.gardenvisit.com/history_theory/asian_gardens_overview_design_history

Image by wirestock on Freepik

TREE PROFILE – Peter Gould

Akania bidwillii - The fruit is a capsule containing 1 or 2 dull-red seeds

Turnipwood is a small, slender tree reaching a maximum 25 metres in height in forest situation with a diameter of 45cm.

It grows in Subtropical and Warm Temperate Rainforest from Camden Haven south of Port Macquarie, NSW to the Blackall Range in Queensland. Its name comes from the supposedly foul odour it releases when cut, resembling the smell of turnips.

Leaves

The distinctive, pinnately compound leaves grow up to 75cm long and can have from 8 to 32 lanceolate leaflets each 10 to 28cm long and 2 to 4cm wide. The margins of leaflets are regularly spinose toothed, the upper surface is dark green and glossy and the underside is paler and dull. Leaflets are opposite and there is no terminal leaflet.

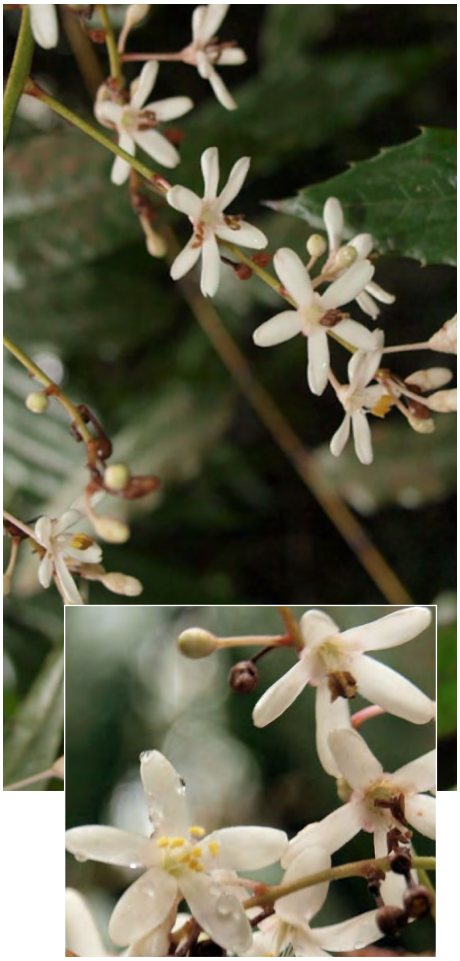
Flowers

Fragrant, white or pink flowers appear in panicles in spring. The calyx is 3-4 mm long and the corolla is 8-12mm long.

Fruit

The fruit is a capsule more or less ovoid to pyriform and 20–30 mm long containing 1 or 2 dull-red; seeds 10–12 mm long, yellow, hanging outside capsule on a thread at maturity.

Link: https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Akania~bidwillii



Akania bidwillii - flowers
Inset: close up of flower

References:

Floyd, A.G. 1990, Australian rainforests in Floyd, A.G. 1990, Rainforests in New South Wales (Vol2), Surrey Beatty and Sons, Chipping Norton, NSW

Harden, G., McDonald, B. and Williams, J. 2006, Rainforest Tree and Shrubs: A field guide to their identification, Gwen Harden Publishing, Nambucca Heads, NSW

AKANIA BIDWILLII

Common Name: TURNIPWOOD

Family: *AKANIACEAE*

Akania bidwillii - the distinctive toothed leaves are glossy above, grayish below

In the Garden?

Akania bidwillii is a beautiful slender tree to 8m in a garden situation where it has easy access to sunlight. It can be slow and difficult to establish and is frost tender when young. It is best in a moist, shady situation with well drained loamy soil.

Link to: Burringbar Rainforest Nursery

Bidwill, John Carne

Akania bidwillii was named after **John Carne Bidwill**, an English Botanist who arrived in New South Wales in September 1838. He also visited New Zealand and Moreton Bay.

After returning to England he came back to Sydney in 1844, and was first director of the Sydney Botanic Gardens and Government Botanist in 1847. He became Commissioner of Crown Lands, Wide Bay, Queensland (then N.S.W.) from 1848. He collected extensively, and published the first account of the Bunya Pine (*Araucaria bidwillii*). He sent many living plants and seeds to various gardens in England, including Kew, and advised William Macarthur, among others, on the introduction of plants to the colony of New South Wales. He was also an accomplished plant hybridiser.

Extracted from: A.E.Orchard (1999) A History of Systematic Botany in Australia, in Flora of Australia Vol.1, 2nd ed., ABRS.

Link: https://www.anbg.gov.au/biography/bidwill-john.html

STORY TIME AT THE GARDENS

Early this year FLRBG received a special request from **Roz Roden** – Librarian Richmond Tweed Regional Library – offering to organise a regular **Story Time** for young children at the Botanic Gardens on the second Thursday each month at 10.30am.

The children have taken part in observational games through walks, craft activities, songs and rhymes, and of course listening to wonderful stories. All stories connect to nature as do following activities. For example, a story about trees then a visit to the *Hoop Pine Forest* to touch and feel. Or a story about seeds then a visit to the *Nursery*.

The youngsters loved to plant seeds and will return to see their seedling later in the year, knowing that one day it will be planted in our Gardens. They also planted some seeds to take some home in their handmade pots. Another story was about Frogs followed by a visit to see the *Frog House* in the *Frog Pond*. **Naidoc Week** was very special with a visit from **Aunty Thelma James** sharing some stories.

The *Cool Cubby* in the eucalypt forest is always a popular attraction and it is a great opportunity for parents and carers to meet others. *Story Time* is free. If you wish to attend Story Time please arrive at LRBG about 10 am to park in the first carpark, then gather at the Cool Cubby near the Visitors Centre.

Please wear hats, sunscreen and covered shoes for walking. You might also like to take a picnic or snack to enjoy in the picnic area afterwards. There is ample shelter if the weather is bit inclement.

So let your friends, family and neighbours know. Next session Thursday 7 September 2023

Margaret Hildebrand and **Tracey Whitby,** FLRBG Educators

Youngsters listening to stories in Story Time at the Gardens. Photo with permission from Lismore City Council

Several years ago I attended one of the pre-school visits to our Rainforest Botanic Gardens. When I greeted a 4 year-old with adorable brown eyes and wearing a bucket hat, she questioned me, "Are there wolves in that black forest?" I assured her there were not. The small 4-year old was still apprehensive. She asked about witches as she held my hand tightly and eyed the dark bush ahead.

Again I assured her that there were none, and that she would love the forest's stillness and coolness; that on a hot day the rainforest is resting and quiet; that even the birds are still.

Sadly I did not meet up again with 'big brown eyes' so will never know her response to the 'black forest'!

Geoff Walker, Nursery Volunteer

NORFOLK ISLAND PINE

Captain Cook was reputedly the first European to sight Norfolk Island Pines *Araucaria excelsa* in 1774 and he ordered seedlings to be collected and planted along the Australian coast – he believed they would be perfect for ship's masts.

This pine has been since planted in many towns along the coast. **Elizabeth Macquarie** planted one in the *Royal Botanic Gardens Sydney* in 1816, the famous *Wishing Tree.*

Over the years the Norfolk Pine has become one of the most popular street trees planted in coastal towns and villages. The Hoop Pine – *Acaucaria cunninghamii* – our local pine – was not documented till 1820s.

Link: https://www.bigscrubrainforest.org/street-tree-rivalry-norfolk-island-pine-versus-hoop-pine/

Top: Japanese exchange students having Lunch on Educational Centre verandah Inset: Students moving into the Hoop Pine forest. Right top: Japanese exchange students at the Rice Garden and at Palm Gully Lookout
Photo: Tracey Whitby

VISITORS FROM OUR SISTER CITY IN JAPAN

In the past month we have had two lots of visitors from our sister city in Japan, **Yamato Takada**. In early July, two delegates from the town and more recently, a group of high school exchange students.

The very first visit of *Yamato Delegates* to the Gardens was in 2013, when two of our volunteers, **Rose Hand** and **Geoff Walker**, showed the visitors around and organised the planting of a special tree beside the entrance path. That tree is now 10 metres tall and our recent visitors were really keen to see it.

The delegates were very interested to see the rainforest and thoroughly enjoyed hours wandering through the Gardens with volunteers and now Life Member, **Rose Hand**. **Elisabeth Olivieri**, Lismore City Council's Community Engagement Officer, accompanied them on the walk.

The group of five students with their teacher, were here for a ten-day homestay. At the Gardens, students were shown our national flower, the wattle - fortunately in flower this month, and were interested in the importance of the rainforest and its biodiversity. The *Native Rice Garden* was particularly surprising for the students … and they were very impressed by the number of birds they saw.

Tracey Whitby

He who **plants** a tree, ***loves others*** beside himself.

Anonymous

NEW LOOK AT SENSORY GARDEN

Those who have not been to the Gardens recently will see a major change in the newly designed and welcoming *Sensory Garden*, which invites visitors to linger a little longer before progressing to the regenerated areas of *Useful Plants*, *Rainforest* and *Hoop Pine* walks.

In early 2022 the Garden suffered serious damage to its paths and one of the raised gardens from the flood rains. As we worked on ideas to repair damage and replant some areas it became apparent that, apart from the water damage, the intentions of the original planners had been somewhat subverted over the years. This was especially obvious after we came across a file full of old designs and planting recommendations for this garden.

Some trees, which had been injudiciously placed, were now taking much of the light and many of the new plants were not thriving. So it was time to go back to the drawing board, removing the largest trees and replanting to provide a wide variety appealing to all the senses... sight, touch, smell and sound.

With a huge load of donated hard material, a new rock garden finally emerged from the collapsed raised garden resulting from last year's floods, topped by a wide stone birdbath and garlanded with ferns, interesting ground covers and perfumed native plants.

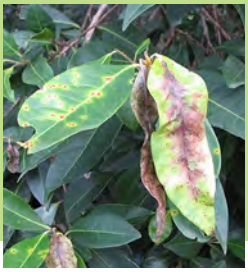
The result is a generously open approach leading to the *Solar Clock* and the observation platform, which is now dressed with newly painted benches and table, with large pots showcasing native herbs. It will soon also have a shade cloth covering, making it ideal as a summer picnic site or for simple relaxation and conversation. There is still some work to be done on the paths but we are nearly there.

Diana Sharpe & Rosemary Blakeney

Top: Diana and Rosemaryat work in the Sensory Garden. Below: planting out new Rock Garden Photo: Marie Matthews

Left: Peter and Florence studying instructions regarding building the new Quarantine Shade House and right: Don and John checking the plans Photo: Hazel Bridgett

Myrtle Rust is a disease caused by the exotic fungus *Austropuccinia psidii* (formerly *Puccinia psidii*, initially identified as *Uredo rangelii*). Overseas there are known to be several strains of *P. psidii*. At this stage Australia has only one strain. Myrtle Rust threatens trees and shrubs in the Myrtaceae family of plants which includes Australian natives like bottle brush (*Callistemon spp.*), tea tree (*Melaleuca spp.*) and eucalypts (*Eucalyptus spp.*, *Angophora spp.*, and *Corymbia spp.*). The disease can cause deformed leaves, heavy defoliation of branches, reduced fertility, die back, stunted growth, and plant death.



Native Guava leaf affected by Myrtle Rust. Online image: Rod Fenshaw

REPORT FROM CURATOR

I attended the **Australasian Myrtle Rust Conference** at Sydney University in June. There were 95 attendees from Australia and New Zealand and a keynote speaker from the USA. I built some new contacts and renewed, and deepened, some others. One of particular interest was **Dr Benjamin Schwessinger** from ANU who is researching remote monitoring of Myrtle Rust using commercially available equipment. I'm looking to have a monitor set up at LRBG but it's very expensive and we need to find finance from the Commonwealth.

On other matters,I have been in contact with **Mark Dunphy** at *Firewheel Nursery*. He is arranging for us to get at least one *Nightcap Oak Eidothea hardeniana* - a very rare plant. A meeting to be held in August with **Mary McDermott, Judy Blood**, myself and new volunteer **Simon Dilworth** re the new data base.

I have just started working on a booklet on the *Rare and Threatened plants at LRBG*. I'm planning to use only our original photos, descriptions of plants and drivers of rarity. It's very early days, I'm currently working out the contents, and any help with this would be much appreciated. Fencing of extended *Rare and Threatened Garden* area should be completed in very near future and erection of small quarantine shadehouse is currently underway.

Dr Amelia Martyn-Yenson formerly co-ordinator of the Australian Network for Plant Conservation *Rhodomyrtus metacollection* visited the Gardens recently with her family. She was particularly impressed with our R&T collection.

Peter Gould LRBG Curator

The recordings of the Australasian Myrtle Rust Conference are now available on the Australian Network for Plant Conservation YouTube channel:

Link: https://www.youtube.com/playlist?list=PLuPMH5OJZz0ECW5mA5wyx2v8C4SzjTsco

Peter Gould with other attendees at Myrtle Rust Conference

AUSTRALASIAN MYRTLE RUST CONFERENCE – WHERE TO FROM HERE?

Myrtle Rust threatens an estimated 350 Australian plants, killing new growth, buds and flowers, meaning severely impacted species can no longer reproduce. Worst affected species will disappear from the wild. Myrtle Rust is having such a devastating impact on some native plants, that scientists, community groups and First Nations groups in Australia and Aoatearoa-New Zealand are working together to devise an Australasian response. In June 2023 over 100 experts from around the globe met in Sydney to share knowledge in the inaugural *Australasian Myrtle Rust Conference*, supported by the *Australian Network for Plant Conservation*.

Held at the University of Sydney from 21st to 23rd June this conference brought together researchers, indigenous people, government and Botanic Gardens staff to discuss, and build on, the latest research and conservation practices in the ongoing work to counter the devastating impacts of Myrtle Rust. I was there representing the *Lismore Rainforest Botanic Gardens* and was able to make some new contacts and reconnect with some established ones.

There was some good news. Here are a few examples:

- **Rebecca Degnan** and **Dr Anne Sawyer** reported some substantial progress in the development of an RNA vaccine by the University of Queensland;
- **Dr Stephanie Chen** of the Royal Sydney Botanic Gardens and the University of NSW reported finding some 17% of 58 *Rhodamnia rubescens* genes showed high resistance to Myrtle Rust and another 40% showed some degree of resistance. With proper management, this means this Critically Endangered species may have a brighter future in the wild than previously thought;
- A newly developed model of the genome of *Austropuccina psidii* (the fungus responsible for Myrtle Rust) is now available to all researchers;
- **Dr Ben Schwessinger** of the ANU has been working with industry to develop an automated, remote sensing system to detect the presence of Myrtle Rust, and expressed an interest in cooperation with LRBG to enable quantative measurement of the fungus;
- Guest speaker **Dr Richard Sniezko** (US Department of Agriculture Forest Service), who has a long history in breeding North American trees for disease resistance, laid out how White Pine Blister Rust has been successfully controlled in the US.

But the bad news can't be understated. There is a growing number of species showing signs of rapid decline due to Myrtle Rust and its geographic range continues to grow. Further funding and long-term plans are needed to effectively respond to the ecological crisis that Myrtle Rust's arrival here has created.

Peter Gould LRBG Curator

UPDATE ON INFRASTRUCTURE PROJECTS

Recently, the February 2022 flood recovery used many contractor and volunteer hours, and expenditure on materials. We are very grateful for our small business flood recovery grant from Service NSW which has provided the funds required for this work. The road connecting two car parks has been sealed, repairs of damage to *Sensory Garden* paths and raised garden are almost completed. Damage to other paths and roads has been completed. A 2,000 litre tank has been installed beside the newly opened Visitors Centre office. Meanwhile the approaches to the bridge in *Fern Gully* are almost completed and the new fence and quarantine shade house for the *Rare and Threatened Species Garden* is underway.

The 'big ticket' items that remain to be funded are:

- a three door garage to function as a storage shed and workshop,
- a much needed electric runabout to transport equipment and materials
- and the installation of a 200,000L water tank at the highest point of the western end of the gardens to give the Gardens and the Nursery a backup water supply.

We are also working on setting up an irrigation system in the rainforest - currently in the design phase.

The FLRBG/LCC Liaison committee has been discussing improvements to the power supply to the Gardens. Currently there are no power points or lights in the Gardens beyond the Visitor's Centre which has a limited load line. Any additional power supply will require full power connection, extensive trenching and/or installation of stand alone solar power systems.

Hazel Bridgett
FLRBG Projects Manager

Decking for approaches completed Fern Gully bridge. Photo: Marie Mathews
Repairing road damage from March 2022 Rain Event. Photo: Tracey Whitby

GUIDED WALK IN THE LISMORE RAINFOREST BOTANIC GARDENS – SUNDAY 27TH AUGUST – 2PM

Phil will take you on an informative walk through the Gardens which are currently showing off their spring beauty.

Enjoy a unique experience of the flowering plants through the *Sensory Garden*, the *Rainforest Walk*, the *Nursery*, *Palm Gully*, *Hoop Pine Forest* and *Wilson's Park Species Garden*.

Meet at the **Visitor's Centre** at **1.45pm** for a **2pm** start for a one-hour walk. $5 per adult, children free entry. No card facilities, sorry. Wear a hat and sturdy shoes, then enjoy afternoon tea in the Visitor's Centre, after the walk.

Booking essential: Email publicity@friendslrbg.com.au or text **0450 596 705**.

Guided walks are planned on last Sunday of each month right up till Christmas. Details will be available on our Facebook page and by email to members. Groups who wish to be shown around the Gardens at other times should contact us and special arrangements can be made.

Guided walk group at Visitors Centre. Photo Tracey Whitby

GUIDES REFRESHER WORKSHOP
SUNDAY 27 AUGUST – 9AM TILL 3.30PM AT THE GARDENS

Subjects covered include *Rare and Threated Species, Butterflies, Nursery and Propagation*, and *Guiding in the Rainforest.* Please contact Tracey to book a place. Email publicity@friendslrbg.com.au or text 0450 596 705

COMMEMORATIVE GARDEN

Some years ago the committee agreed to the concept of a *Commemorative Garden* at the Western end of the *Sensory Garden* which would be planted with the local botanical equivalents of plants used as food or medicine by military in times of conflict or occupation overseas. It was proposed that this be combined with a pavilion with an undercroft, taking advantage of the slope at that end of the garden which backs on to a gully. It was also suggested that it might be possible to obtain funding from the **Department of Veterans' Affairs** and support was subsequently obtained from the **Far North Coast Legacy Club** to the idea.

A concept design was drawn up by one of the Friends, Lismore architect **Don Granatelli** drew it up with engineering specifications by **Peter Lucena** and a DA was approved by Lismore City Council. With the support of Council and Far North Coast Legacy grant funding has been sought but to date has been unsuccessful. However, as the concept included the development of a native rice display which had received funding by a donation, it was agreed to proceed with constructing the pillars to support the pavilion so that the *Rice Garden* could be completed and plantings commence.

The Committee has since reduced size of planned pavilion to fit in better with ongoing development of the Sensory Garden. It will be a smaller covered gazebo using the four north west pillars and will be built by the FLRBG construction and maintenance team when time permits.

Then to find plants most suitable for theme of this garden. Initial research was conducted with the help of the war memorial library in Canberra and focussed on stories from former Australians in Japanese POW camps. The diaries of '**Weary Dunlop**' were also consulted as was a NZ War Department publication about survival foods in the South Pacific. The research generated an initial list of local species of relevance and planting commenced. It includes a Corkwood - *Duboisia myopoirodes* - which has its own story as a source of Scopolamine used by the navy during the WW2 for sea sickness and some eye problems. It is already planted and growing well. The research continues. Some of the plants are in the ground. Recently this has included plantings reflective of veterans' organisations beginning with the *Legacy Flame Grevillea* (pictured) and will include the '*ANZAC' Grevillea* and *Westringia* (Coastal Rosemary) to border the new concrete drive which is adjacent to this area.

Hazel Bridgett Project Manager

Cutting Blady Grass for food and essential Vitamin B in Changi POW camp WW2. Image Australian War Memorial with permission

Top: Original drawings of the Commemorative Garden and Anzac Grevillea planting. Photo Hazel Bridget

THE EARLIEST BOTANIC GARDENS

The earliest botanic Gardens evolved in Europe from physic gardens growing medicinal herbs, usually attached to universities or societies of apothecaries. By the end of 18th century the economic potential of plant introduction and acclimatisation became an important aspect of their role. During 19th century gardening became a popular leisure activity and the scientific and economic role blended with the aesthetic one, reflecting a love of the exotic. Botanic Gardens also had a significant role in the education of the common man.

From Botanic Gardens of Australia book by Leslie Lockwood, Jan Wilson, Murray Fagg, New Holland Publishers Sydney 2001

Superb Blue Wren, Red Browed Finch, Photo Phil Jarman and Alstonville Community preschool receiving plants Photo: FLRBG
Right: Rosemary & Pauline at work ,in the Nursery, Photo: Marie Matthews

BIRD VISITORS TO OUR NURSERY

It seems that we are heading towards drier weather for possibly the next 5 years, and my mind turns to the effect this may have on many of our plants in the Gardens as well as the many insects, reptiles, mammals, and birds that have made their homes there temporarily, or maybe more permanently.

With the drier weather we've had lately we have noticed an influx of little birds in and around the nursery. We can see they are sourcing water from the automatic watering system on the fence where there is a very slow but reliable leak. They can stand on the wire fence and feel safe from attack by bigger birds as there are plants providing screening, and a solid roof over their heads. They line up and take turns to drink from the drips.

We were leaving fresh water in a dish every week, but the crows used to come over from the Waste Facility with stale bread and meat, and used the drinking water to moisten their foodstuffs. So we discontinued that system.

Recently there was a little scrub wren trapped in the shade-house which we encouraged to find its way out after a mild panic (by the bird that is). Mixed groups of tiny birds often turn up, Finches, Wrens, and others… possibly Pardalotes. They add another layer of enjoyment to working in the Nursery!

As well as providing plants specifically for planting in the Botanic Gardens, we sell plants to the public to be used for small gardens or bigger projects, and this week a few are going out to the Alstonville Preschool. So, it's very rewarding to know that we are influencing the growing of indigenous plants as well as educating the very young to have knowledge of their own local flora. The Nursery is open from 9.30 till noon each Wednesday or by arrangement.

After our very successful Open Day sale in May, plantings in the Gardens and sales to the public our stock of young plants is getting very low. Currently we are potting up our most recent seed sproutings. However, as we move into Spring, we will be looking for more seed from plants in the Gardens, and further afield, to build up a wide variety of new plants. Seeds should be in brown paper bags clearly labelled and showing species and details of exactly where and when they were collected. If identification is not confident then a leaf or flower from the plants (in a separate bag), or a close up photo, should help one of our plant people to confirm identification.

We always need more volunteers to work in the nursery. It is a truly fascinating area to work, to learn about propagating and of course meet other like-minded folk.

Jenny Wilson, FLRBG Nursery Manager

A VERY BRIEF HISTORY OF BIG SCRUB AND KOALAS

In the very early years of our geological history Australia was part of Gondwana which was situated close to the south pole where at that time a warm tropical current allowed a lush rainforest to thrive. 400 million years ago (mya) the Flinders Ranges were forming and the Darling River was carrying sediments to the east coast of Australia, which was still attached to Gondwana. 300 mya the New Zealand plate crushed into eastern Australia forcing the birth of the Great Diving Range, pushing up sediments. 240 mya lineages of present day Sub Tropical Rainforest began to develop. 150 mya ancestral Hoop Pines had their beginnings. 50 mya species of Koalas and other marsupials appeared. At 40 mya Australia disconnected. The widening rift between the Australian continent and Gondwana changed the course of the warm current so it now circled Antarctica. This resulted in creating a drier Australia. Over time rainforest areas shrank to just a few high wet areas east of the Great Dividing Range. The drying out of Australia supported the spread of Eucalyptus suitable for Koalas and other marsupials.

At 26 mya tough erosion resistant Rhyolite erupted and formed the Wollumbin Tweed shield volcano. 23 mya softer basalt flows build the volcano to 2000m, and over time erosion carved 1000m from the lava flows. Hard Rhyolite on some drier hills supported dry rainforest Hoop Pines and Eucalypts, and so the Koala. Softer Basalt eroded to rich red soil supporting Sub tropical Rainforest on Alstonville plateau, some Wollongbar slopes and Booyong Corndale flats which form this southern section of the Big Scrub. Hard rocky hills like Goonellabah and Skyline Drive, which have eucalyptus and koalas, are like islands in the Big Scrub.

Phil Jarmin - FLRBG & Friends of the Koala volunteer, information extracted from Big Scrub Landcare and Geological sites of NSW and NPWS

EUCALYPTS, KOALAS AND RAINFOREST

In the 1970s and 80s, macadamia growers planted many kilometres of windbreak trees, primarily **Tallowood** (*Eucalyptus microcorys*), one of the koala's primary food trees. This created favourable corridors across farmland within the Big Scrub area. At the same time, the then NSW Forestry Commission promoted eucalypt plantings to landholders in the Big Scrub, further attracting koalas. Neither the koala nor Eucalypt species originally occurred in the Big Scrub Rainforest.

In the early 2000s macadamia plantation management undertook wholesale removal of the Tallowwood windbreaks from the now mature macadamia plantations. Their removal left the vast majority of koalas isolated in the few remaining eucalypt stands with no corridors to allow safe movement. This problem is causing inbreeding, stress and poor health in these isolated populations. Some Koala/carbon sequestration plantings have been composed of close to 100% eucalypt species.

A solution could be to replicate the function of the original eucalypt windbreaks of macadamia plantations. That is to plant continuous narrow corridors, even one tree wide, of eucalypts to allow the movement of koalas through the Big Scrub. These corridors will need to be strategic and run towards the areas of quality habitat and avoid areas of denser human population and busy roads.

Extracted from article on Big Scrub Rainforest Conservancy website. See full article:

Link: https://www.bigscrubrainforest.org/koalas-in-the-big-scrub-a-conservation-dilemma/

Young koala on fence near Visitors Centre, View of the Eucalypt forest, Photos: Marie Matthews

Our Gardens are situated at the south western edge of the Big Scrub – where Rainforest meets Sclerophyll forest. We have a small area of mixed Eucalypts adjacent to the Visitors Centre which were planted back in the 1990s – before the Gardens had started – as a food harvesting site for Koalas temporarily living at the Koala Rescue site adjacent to the University. These days it acts as a corridor between areas of true koala country south and west of our site.

Map of possible Big Scrub area. Image from Rous Water & Big Scrub Rainforest Landcare Group

POLLUTION AND THE LONDON PLANE

In the 19th Century, due to the smog that resulted from the pollution of the Industrial Revolution, many tree species were dying in the city of London. All trees absorb gases through lenticels, tiny pores on their trunks which allow air to reach the wood inside. Because their pores became blocked by smog particles many trees could not survive. But the **London Plane Trees** (*Platanus x acerifolia*) did survive and were planted in big numbers across London.

What sets Plane Trees (and some other species like Birch) apart is the rapid rate at which fresh bark grows beneath the outer layer. This means that trees can quickly shed their outer layer of bark, which is laden with pollutants. It is this shedding process that gives the trunks of Plane Tree its ability to 'breathe' in a smoggy environment and, incidentally, its mottled appearance.

However, Plane Trees do emit isoprene, which combines with nitrous oxide in car exhaust emissions to produce harmful ozone. Luckily, this only reaches dangerous levels in temperatures above 30°C which, till very recently, have been rare in the UK.

Link: https://www.sciencefocus.com/planet-earth/do-london-plane-trees-actually-absorb-pollution-into-their-bark/

Link: https://www.newscientist.com/lastword/mg22630161-700-gimme-the-plane-truth/

Photo: London Plane Tree close up of leaves and seed heads

Photo: London Plane Tree TV Screen shot 'Antiques Roadshow' ABC TV July 2023

MYSTERIOUS ACMOPYLE SAHNIANA

Acmopyle sahnianam Drautabua, is one of the world's most primitive plants. Fossil records show that the members of the genus *Acmopyle* existed on Gondwana in the Cretaceous period, before the land mass of Gondwana broke apart to form the major landmasses of the Southern Hemisphere: the Antarctica, South America and Australia, more than 100 million years ago.

Drautabua is a gymnosperm belonging to the family *Podocarpaceae*, and a member of the Pine family. It has been found only in a small number of sites in Fiji on the main island Viti Levu – always high in the mountains on exposed sites. The name Drautabua, originates from the shape of its leaflets which resemble the tooth of a whale - *tabua* in the Fijian language. (Tuiwawa 1999).

The occurrence of this plant in Fiji is a mystery. Particularly interesting is the fact that *Acmopyle pancheri*, a species that occurs on New Caledonia and the *Acmopyle masonii* found in South Island of NZ - both of which are Gondwanaland relics - are not closely related to Drautabua. However, two extinct species that once occurred in South East Australia and Tasmania have been identified as *Acmopyle sahiana*. This suggests that Viti Levu could once have been connected to Gondwana. However, geological evidence has shown that that it is a truly oceanic island. So how this plant comes to be growing only on this one island in Fiji remains unknown, and its rarity makes its current conservation drive a top priority.

Adapted from information from Nunia Thomas-Moko MSc, Director, Nature Fiji-Mareqeti Viti. support@naturefiji.org website NatureFiji.org

Link: https://www.tandfonline.com/doi/pdf/10.1080/03014223.1997.9517543

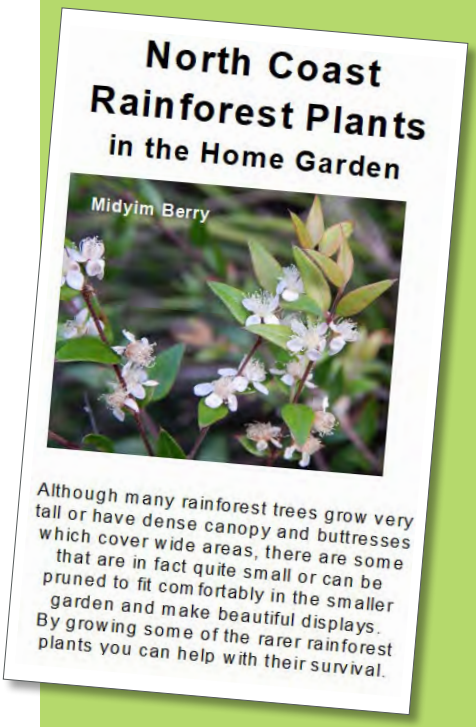
NatureFiji MareqetiViti

Acmopyle sahniana leaf online Botanic Gardens Edinburgh. Photographer P. Fargon

BROCHURES ON LINE

Our printed brochures of rainforest plants in the home garden, edible plants, grasses, vines and plants to attract butterflies, are all now available on our website:

Click on the Newsletter tab on our website: friendslrbg.com.au



‘THE FOREST MAKER’

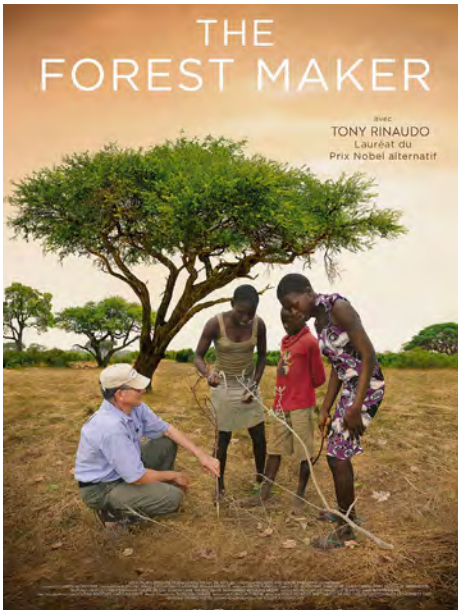
When he first visited Niger in the early 1980s Australian agronomist **Tony Rinauldo** was shocked by the damage to the land that had resulted from tree clearing and intensive agriculture which had been inherited from the colonial era. He has since been working with the local people to fight against the advance of the desert in Niger and other African countries.

His initial tree plantings did not thrive, but in time he came to realise that what he thought were sprawling shrubs growing randomly across the land, were in fact trees – growing from remnant roots of mature, local trees which had been felled many years before, and had since been continually browsed by animals.

He developed a system of pruning each ‘bush’ to maximum of 5 upward growing shoots with an occasional subsequent prune till plants were above browsing height. Local farmers got involved, and they worked at pruning and keeping animals away. This was not dense forest but rather open country with the trees providing shaded areas and some protection from wind and the shade from the trees slowed down evaporation, as well as improving working conditions for the farm workers. A drone survey in recent years indicates that in Niger alone, five million hectares of land with over 200 million trees have been restored in this way.

Link: https://www.sbs.com.au/ondemand/movie/the-forest-maker/2188955203566

Link: https://www.worldvision.com.au/global-issues/work-we-do/poverty/forest-maker



Photos: Movie poster and stills from movie The Forest Maker, Patra Spanou

The “forest maker” brings hope to millions with farmer managed natural regeneration.

HIGH ALTITUDE TREES IN SCOTLAND

Scotland's hilltops were once a landscape full of woodlands. These woods are believed to have occupied altitudes to 600m (1,968ft) or more, above extensive lowland forests and below a mosaic of scattered shrubs higher up.

The decline began around Neolithic times, with trees being cleared for agriculture or felled for use as building materials and charcoal. There was a further loss of trees in the 18th Century as large-scale hill sheep farming and increasing deer densities resulted in overgrazing. These days there are very few altitudinal trees left in Scotland and what little remains are restricted to inaccessible cliff ledges and ravines.

Researcher **Sarah Watts** PhD from the University of Stirling's Global Change Ecology research group, is among those collecting information on where trees are taking root, as part of her work on mountain woodland restoration.

"When we are talking about altitudes above 900m that is very extreme for a tree to grow," she says, “but trees have been found at heights of more than 1,000m (3,281ft) on some of Scotland's highest peaks”. She says that there needs to be a balance between sustainable grazing of large herbivores and tree regeneration. Mountain woodlands support insects and birdlife and help stabilise soil on steep slopes, reducing down-stream flooding and offering shelter to animals – all hugely important for mitigating the impacts of more extreme weather due to climate change.

Link: https://www.bbc.com/news/uk-scotland-highlands-islands-61994030

Link: https://www.nts.org.uk/stories/how-high-can-a-tree-grow

SCIENTIFIC UNDERSTANDING OF PLANTS

Over countless millennia Aboriginal and Torres Strait Islander people have observed, interacted with and experimented with plants to harness their vast potential for nutrition, medicine and technologies. Our capacity to scientifically understand plants and develop often complex processes to support their cultivation and use has been pivotal in our ability to survive and thrive as the oldest living culture in the world.

Zena Cumpston, Barkandji woman, from Western New South Wales

Link: https://pursuit.unimelb.edu.au/articles/illuminating-indigenous-culture-through-plants

Zena Cumpston
Photo: Sarah Fisher/ University of Melbourne

BANKS & BOTANIC GARDENS

Sir Joseph Banks was the first, though unofficial director of the Royal Botanic Gardens in Kew, and was instrumental in establishing key botanic gardens in the British colonies, promoting both their scientific role and their economic benefits in transferring and acclimatising plants. Only two botanic gardens were established in Australia during Banks' lifetime, those at Sydney and Hobart. Following Banks' death in 1820 both the Kew Gardens and those in the colonies went into decline.
The birth of the Victorian era in 1837 and the appointment of **Sir William Hooker** as the first real Director of Kew Gardens in 1841 saw a steady rise in both the concept of Empire and the role of botanic gardens.

Link: https://www.anbg.gov.au/botanic-gardens/history-botanic-gardens-in-aust.html

SNAPSHOT OF THE GARDEN

From top left to right: Palm Gully looking great, Photo: Marie Matthews.
Phaius australis Swamp Orchid, Photo: Tracey Whitby.
Simon from Dingo Excavators at work on Sensory Garden paths. Susan and Andrew in Palm Gully.
Theodora, Susan, Damian and Judy weeding. Scaevola flower looking beautiful in Sensory Garden,
Photo: Marie Matthews. Beige frilled fungi on log Hoop Pine.