

## President's Message

It has been a very busy six months at the Gardens with a lot of work being done all over the site. Our gardener Damian keeps an eagle eye on all the trees and understory plants... working at keeping them growing well and keeping us informed about them. Meanwhile our wonderful band of volunteers get on with construction projects and the ongoing planting, weeding, mulching and watering and the million and one other jobs that go to keep a Botanic Garden functioning well. Considering that we have only 5 three hours sessions each month in the main Gardens and 4 sessions in the Nursery is it amazing what is achieved by this great group of volunteers.

Also special thanks to our LCC Liaison people – Anton Nguyen and Angie Brace. They helped us move into the new arrangement with Council and have continued to be very supportive. As also has been our Councillor, Vanessa Ekins.

Since the beginning of March. The **raised beds in the Sensory Garden have been completely refurbished.** Loads of recycled plant material from the Waste Facility, slow release fertiliser, soil wetter and lots of mulch have been poured into the beds. Some unsuccessful earlier plantings were removed and many small colourful shrubs and ground covers have taken their place - with some flowering already.

**We turfed a patch of lawn** near the viewing platform with native local grass and also installed it in the Solar Clock area. It was instant transformation in both areas!

**Signs have gone up** in Rice Garden, Visitors Centre and directional signs in Car Park 1.



*Solar Clock in Sensory Garden  
officially opened on May*

### **Electricity connection to the Visitors Centre** has happened.

With only one circuit there is limited use for the time being but we can turn on the lights and make coffee etc. It is not a large building but it is big enough for small groups to gather. Also to put up displays about the plants, animals and people of our Gardens.

**Ros and Florence** have returned after their hip and ankle problems. It was so good to have them back – they are such key people in the running of the Wednesday Work Group... and the running of the Gardens generally.

Work on a walkway and **small viewing platform in the quarry** at the western end of the gardens started in February. It has been slow work on a difficult site but we are almost there. The **Solar Clock** in the Sensory Garden was also built this year. See stories about both these projects later in the newsletter.

We have installed **steps in the Uncommon Plants Garden** linking the terraces. This will enable people to walk through this beautiful collection of local rainforest trees in a continuous loop. Grahame has

been responsible for getting this work done.

In May-June we ran our **first Guide Training course** - three consecutive Saturdays after an earlier introductory session. We ended up with 13 graduates and they were such a wonderful group - interested and enthusiastic!

A **Master Agreement with Southern Cross University** was signed last month. This will give us a formal connection with the University and enable a Herbarium of our plants to be gradually built up on their site.

We have just received a very generous **donation from Andrew and Jeni Binns!** They have been constant benefactors of the Gardens since 2014 when their first donations enabled us to put sealed paths into the Sensory Garden.

**Our AGM is on 15 September.** This will be the end of my term as President but I still plan to be very involved at the Gardens. Our Treasurer has also resigned so we are looking for someone to take over the job of bookkeeping for us.

Thanks to all – you are a great team to work with.

**Marie Matthews**

## It's Wattle time and our Gardens



A variety of Wattles in flowers in our Wattle Grove

It's Wattle time and our Gardens are growing one of the tallest in the world!

Three years ago 1st Clunes Girl Guides Company planted our second Acacia Grove adjacent to the NW side of The Visitors' Centre and now the yellow blooms are making a beautiful display.

Wattles are national symbols in Australia and improve our soils with nitrogen. Many servicemen on overseas duties have been delighted to find acacias blooming in many foreign countries. The World has over 1000 different species of which NSW boasts over 200 different kinds. Acacias are more prevalent in climates drier than our Far North Coast although about fifteen species can be planted here.

Our Botanic Gardens boast one of the tallest wattles in the World, *Acacia bakerii*. It can grow to forty metres. This local identity is in our first Acacia Grove, between the Education Centre and the Useful Plants Garden. Our specimen presently exceeds eight metres in height. It is not as spectacular in blossom as the well-known Cootamundra, Queensland or the Sydney Golden Wattles. You can't win them all.

Over the years, in voluntary work-parties, Guides, Scouts and other informal groups have planted many local native trees and shrubs within our expanding botanic gardens. We hope they plant many more .

**Geoff Walker**

### Marblewood

#### *Acacia bakeri*

This acacia grows to 40m. Its natural range extends from the Brunswick River NSW to the Maryborough district, Qld. It normally occurs in lowland subtropical rainforest and rainforest margins, in volcanic and alluvial soil. The 'leaves' are really phyllodes, not true leaves but flattened petioles, with 3-4 thickened parallel veins. Unlike most members of this species this tree is long lived and can be grown from cuttings. Also its seeds do not need fire to germinate and in fact have been found to sprout while pods are still on the tree. Its timber is yellowish, hard and close-grained and is decoratively marked. It is suitable for flooring, cabinet work and tool handles and is commonly referred to as Hickory in the timber industry. Because of extensive clearing of rainforests in the last century the species is considered vulnerable.



Leaves of *Acacia bakeri*

#### References:

*Australian Rainforest Plants IV* Nan & Hugh Nicholson 1994 publ. Terania Rainforest Publications The Channon  
Floyd, A.G., *Rainforest Trees of Mainland South-eastern Australia, 2012 pub., SGAP(Qld Region) Logan River*  
<http://worldwidewattle.com/>  
<http://plantnet.rbgsyd.nsw.gov.au>

### Bolwarra *Eupomatia laurina*

*Eupomatia laurina* - Bolwarra or Copper Laurel - is sometimes called Native Guava is a small tree or shrub growing 3 to 5 metres found in eastern Australia as far south as Nowra NSW. It belongs to the ancient plant family EUPOMATIACEAE of the Australasian region. It is a primitive member of the first flowering plants of Gondwana. The genus contains only two other species *E. bennettii*, and *E. barbata*. They grow as a part of the understorey in rainforest or humid Eucalypt forests.

Bolwarra is the aboriginal name for the Native Guava

*E. laurina* has glossy leaves, bright green in summer, coppery tinge in winter and spring. The branches bear a beautiful pale creamy white flower about 25mm in diameter. It is heavily scented and lasts for only one day.



The flowers are pollinated by a tiny weevil. They have no true petals, instead they have petal-like staminodes which are 8-12mm long. The fruit ripens in winter and is globose to urn shaped, yellow-brown when ripe containing an edible sweet aromatic jelly like pulp. The bark of the trunk of this tree was used by local Aborigines for making fishing line. This plant likes a semi-shaded site with adequate water and plenty of mulch. It can be pruned to shape and is also successful grown in a pot

#### References

*Australian Rainforest Plants II* by Nan & Hugh Nicholson 1991 pub. Terania Rainforest Publishing The Channon 2480  
<http://plantnet.rbgsyd.nsw.gov.au>

**Mike Fuloon**

## Gift of Native Orchids

Earlier in the year Jim Rankin from Casino offered us part of his father Eric's wonderful collection of native orchids. He wanted them to be cared for after his father's death. Eric was a forester from Casino - the longest serving staffer of State Forests of NSW. He was also a dedicated orchid grower. His entire back yard was a green house, filled with orchids. He gave regular presentations to the Orchid Society about bush orchids about which he was extremely knowledgeable. We are very grateful for this donation.



In November Lismore City Council's **Feel Blue Touch Green** project will be holding a special event at the Gardens. Just being in the presence of living plants, be it private garden or wilderness, has been proven to be of benefit to health - physical, emotional, mental and spiritual. Details of this day are still being finalized and will be made available on our Facebook and Web pages closer to the date.

## Life was buzzing at the Gardens recently



*Trainees Guides participating in an exercise at the Gardens in May*

Winter is usually a serene and Restful time at the Lismore Rainforest Botanic Gardens, but recently things were definitely buzzing. For **World Environment Day the Gardens** welcomed over 200 primary school students who participated in guided walks of the gardens.

A group of thirteen people attended our first **Guide Training Course** - a three day workshop - giving them the knowledge and skills to lead guided tours, which currently take place every last Sunday of the month. The workshops included aboriginal perspectives with the help of Thelma James and Mick Roberts; also information about the history and objectives of the gardens, basic botany and the features of a good guided walk. Eight Friends of the Gardens are currently mentoring

the new guides and helping them prepare a walk based on their favourite part of the Gardens.

The recent **Australian and New Zealand Botanic Gardens Open Day** celebrated the fifth birthday of the Gardens since its official opening in May 2013. The Friends and many visitors saw the opening of the solar clock, designed by Denis Matthews and Don Woodley. The nursery team sold many native plants and Tim Roberts enthused children with his botanical art. Other children's activities included the use of the digital microscope and potting a plant to take home. Clunes Primary School set up a delicious morning tea stall, and a guided walk of the Hoop Pine Forest was very popular. The key message of the Open Day was Botanic Gardens Conserving Plants. Our Lives Depend Upon It.

*From Tracey Whitby*

**Our Hoop Pine Forest**  
Photo Vanessa Tallon



## Replacement Planting

This autumn our Curator, Pat Offord, has organised and supervised a lot of replacement, (and some new), planting throughout the Gardens. This has involved much searching for the trees we needed - some are quite rare. Most of the volunteers have participated in the planting, and in ensuring the trees are mulched and regularly watered. Now Peter Gould, who really knows his rainforest trees, will start another tree audit. This is essential if we are to keep the records of our collection up to date!

## Species profile...

### *Rhodamnia rubescens* Scrub Turpentine

Peter Gould

Familv MYRTACEAE

*Rhodamnia rubescens* is a small to medium sized tree growing to a maximum 25 m tall with a trunk diameter up to 85cm.

The bark is reddish brown and fissured. Young stems are densely covered with fine hairs.

Leaves are simple, opposite, ovate to elliptic in shape and deeply three veined from the base, the upper surface is green and slightly hairy while the lower surface is lighter and moderately to densely hairy. Numerous, distinct oil dots can be seen when the leaf is held up to the light.

The small white flowers appear from winter to spring. It often flowers profusely attracting swarms of both native and European bees.

The fruit is a globose berry 5-8 mm in diameter, red at first, turning black as it ripens. It is an important food source for several species of birds who act as seed dispersers.

#### **Distribution:**

Scrub Turpentine is a widespread tree of warmer rainforests, mostly found in coastal districts, north from Bateman's Bay in NSW to Gympie in



*The distinctive red brown fissured bark with patches of lichen*



*Foliage (Source photos P. Gould)*

Qld. It is often seen growing in open situations in paddocks.

The timber is mid brown in colour, fine grained and easily worked but I am not aware of it ever having been used commercially.

Unfortunately, Scrub Turpentine is one of the species most seriously affected by the introduced Myrtle Rust.

#### **References:**

Floyd, A.G. 1990, *Australian Rainforests in New South Wales, Vol's 1 & 2*, Surrey Beatty & Sons, Sydney NSW.

Floyd, A.G. 2008, *Rainforest trees of mainland south-eastern Australia*, Terania Rainforest Publishing, Lismore, NSW.

Harden, G.J. (ed) 1993, *Flora of New South Wales, Vol 2*, New South Wales University Press, Kensington, NSW.

Harden, G., McDonald, B. and Williams, J. 2006, *Rainforest trees and shrubs: a field guide to their identification*, Gwen Harden Publishing, Nambucca Heads, NSW.

PlantNet

<http://plantnet.rbgsyd.nsw.gov.au>



*Myrtle Rust damage. This Scrub Turpentine tree on my property at Terania Creek has suffered more than 90% defoliation since Myrtle Rust reached the area.*

## MYRTACEAE

The MYRTACEAE family is made up of 140 genera and 3,000 species mainly found in tropical and temperate regions of Australia, South America and Malesia. Australia has some 1400 species.

They include the iconic Eucalyptus, Corymbea, Angophora, Syzygium, Melaleuca, Callistemon and Leptospermum.

## Myrtle Rust... threat to MYRTACEAE family

Myrtle Rust is an introduced fungal infection caused by the exotic fungus *Austropuccinia psidii*. It is a declared Exotic Plant Pest and is recognized as a key biosecurity threat to Australia with the potential to cause major losses to both flora and fauna.

### The History

Originating in South and Central America, it was first described on guava trees in Brazil in 1884. By 1912 it was found to have infected plantings of *Eucalyptus citriodora* in that country. Epidemics have occurred on allspice in Jamaica (1934), on *Melaleuca quinquenervia* in Florida (1997) and on *Metrosideros polymorpha* in Hawaii (2005). It was reported from Japan in 2009 and China in 2011.

It was initially detected in Australia in a nursery on the NSW central coast on 22 April 2010. It has spread rapidly and is now established along the east coast of Australia from Bateman's Bay in southern NSW to the Daintree in north Queensland. It is not known how myrtle rust entered Australia.

### Spreads easily

Myrtle Rust spores can be spread easily via contaminated clothing, hair, skin and personal items, equipment, infected plant material, as well as by insect and animal movement and wind dispersal. These characteristics make it extremely difficult to control and impossible to eradicate from the natural environment.

In December 2010 a meeting of state and federal government agencies with responsibility for biodiversity concluded that it was not possible to eradicate Myrtle Rust from Australia, that it was now naturalized, and that the focus should shift from attempted eradication to management and limiting its spread.

### Native Plant Susceptibility

A survey from April 2016, found about 350 native species had shown

some degree of susceptibility to myrtle rust. The disease can cause deformed leaves, heavy defoliation of branches, reduced fertility, dieback, stunted growth, and plant death.

Symptoms vary between hosts and may consist of round lesions up to 1 cm in diameter, purple to brown in colour, which show on both leaf surfaces. The fungus produces bright yellow asexual spores and dark red-brown sexual spores often found together in pustules. Lesions turn dark brown to grey with age. The disease affects only young shoots, flowers, fruits and leaves; causing curling, buckling and distortion of tissues. Heavy infection causes shoot defoliation, repeated infections reduce vigour and can eventually kill plants.

### Control

Control of myrtle rust will depend on good hygiene, spraying with fungicides, natural plant resistance, and breeding of resistant strains. Glasshouse studies in Australia have identified some susceptible and tolerant species but only a few totally resistant native plants.

A survey of several natural stands of two rainforest trees Scrub Turpentine (*Rhodamnia rubescens*) and Native Guava (*Rhodomyrtus psidoides*) carried out after 4 years exposure to Myrtle Rust found high levels of damage to immature leaves, shoots and tree crowns. Scrub Turpentine showed severe crown thinning with an average 76% crown transparency while Native



*Myrtle Rust on leaves of Scrub Turpentine*

Guava showed 95% crown transparency. Both species had very high levels of tree mortality. More than 50% of the Native Guava trees had died and 12% of the Scrub Turpentines. Though on two of the sites studied Scrub Turpentine mortality was greater than 50%.

The ecological impacts of Myrtle Rust are as yet unclear but the potential for drastic reductions in the populations of significant bird, insect and mammal food trees could have major adverse effects on Australian biodiversity.

Peter Gould

*The spores of Myrtle Rust are dispersed by wind, rain-splash, animals and humans. Infection requires conditions of high relative humidity greater than 70%, or a 6 to 8 hour period of leaf wetness, during low light or darkness. The optimum temperature for infection is 15-25°C, but the range may be wider. Lesions appear after 5-7 days and spores are produced up to 14 days or more after infection. Spores probably survive for a week under field conditions. Studies conducted in Brazil on Eucalyptus showed infection was favoured by a microclimate found from ground level up to a height of four metres.*

### References:

- Harden, G.J. (ed) 1993, *Flora of New South Wales, Vol 2*, New South Wales University Press, Kensington, NSW.
- Minchinton, E.J., Smith, D., Hamley, K. and Donald, C. 2014, *Myrtle Rust in Australia*, Acta Hort. 1055, 89-90 DOI: 10.17660/ActaHortic.2014.1055.19  
<http://plantnet.rbg Syd.nsw.gov.au/>  
<https://doi.org/10.17660/ActaHortic.2014.1055.19>  
<http://www.environment.gov.au/biodiversity/invasive-species/diseases-fungi-and-parasites/myrtle-rust>  
<https://www.dpi.nsw.gov.au/biosecurity/plant/established-plant-pests-and-diseases/myrtle-rust>  
<http://www.environment.nsw.gov.au/pestsweeds/20110683myrtlerustmp.htm>  
<http://www.planthealthaustralia.com.au/national-programs/myrtle-rust/>

# Attracting butterflies to your rainforest garden

There are many native rainforest plants that you can plant in your garden, even in a small suburban garden, to attract an array of beautiful native butterflies. It is such a joy, especially for children, to watch the cycle from egg to caterpillar, then chrysalis and finally the emergence of a butterfly!

One of the most spectacular butterflies in the Northern Rivers is the **Richmond Birdwing Butterfly** (*Ornithoptera richmondia*). This strikingly beautiful large butterfly was once numerous in this region but is now listed as vulnerable in NSW as a result of clearing its rainforest habitat and the spread of the exotic Dutchman's Pipe (*Aristolochia elegans*) plant. The Richmond Birdwing Butterfly lays eggs on this plant mistaking it for the native Birdwing Butterfly Vine (*Paristolochia praevenosa*) but the caterpillars die as they can't eat the leaves of the introduced Dutchman's Pipe.

By planting the Birdwing Butterfly Vine you can help bring back the Richmond Birdwing Butterfly. The vine will grow up a tree or trellis and can grow into large vine. It has small pink tubular flowers with a bright yellow centre. It is important to remove Dutchman's Pipe plants if you have them in your garden.



**Eastern Dusk Flat**

Another beautiful plant for your garden is the Bolwarra (*Eupomatia laurina*), or native guava. This primitive flowering tropical rainforest plant is descended from Gondwana species and has large sweetly scented white flowers and pleasant edible fruit. It is the host plant for the **Eastern Dusk Flat**

(*Chaetocneme beata*), a pretty butterfly with striking red eyes. The Bolwarra is a spreading shrub up to 5 metres tall. It grows in moist soils in sun or shade and can even be grown in a large container.

The **Jezebel Nymph** (*Mynes geoffroyi*) is one of my favourite butterflies, with bright red and yellow markings on black wings. One of its host trees is the notorious common local rainforest Stinging Tree (*Dendrocnide excelsa*). This is not one for the home garden as, apart from being a very large tree, its leaves can inflict a painful sting if brushed against.

Fortunately the Jezebel Nymph can also breed on the Native Mulberry (*Pipturus argenteus*) tree, which is related to the stinging tree but is completely safe to touch. The Native Mulberry is a fast growing attractive hardy shrub to small tree and its fruit will attract birds as well as the Jezebel Nymph to your garden.

If you are looking for a plant with fragrant flowers that open at night consider planting the **Brush Caper Berry** (*Caparis arborea*). This hardy shrub grows to 5 metres and has spiny stems that provide shelter for small birds. It has a sweet edible fruit and its common names of wild or native pomegranate, lime and orange suggest that it is highly valued for the palatability of the fruit. This plant will attract the Caper White (*Belenois java*) butterfly which migrates east across the ranges in large numbers in early summer and will provide a beautiful show fluttering around your Brush Caper Berry plant while laying its eggs on the leaves.

A plant that should be in every garden is the native Finger Lime (*Citrus australasica*). This is the host plant for the **Dainty Swallowtail** (*Papilio anactus*) butterfly, distinctive for the beautiful intricate black and white patterning on its wings highlighted by a row of bright red spots. This butterfly has adapted



**Common Grass Yellow Butterfly just out of chrysalis & ready to fly within minutes**

to laying its eggs on exotic citrus species such as mandarin and orange trees, but the caterpillars are much more visible to predators on the large leaves of these trees so it is important to make sure the native Finger Lime continues to be available as a host plant. The spectacular fruit of the Finger Lime, that releases bubbles of intense citrus in your mouth, is an additional reason to grow this plant. It is a slow growing shrub and needs moist, well- drained soil.

You can find out more about these plants and other butterfly attracting plants at the Gardens. There is a short, easy walk with information signage about butterflies behind the Visitor's Centre. You can also pick up a leaflet from inside the Visitor's Centre with more information about attracting butterflies to your rainforest garden to get you started on your delightful butterfly plant journey.

**Linda Wirf**

## References:

Jordan, F & Schwencke, H, 2005 'Create more Butterflies', Earthling Enterprises, Brisbane  
Ford, Trevor 2012 'Butterflies of Coastal SEQ' Funded by Sunshine Coast, Moreton Bay, Brisbane City, Redland City & Gold Coast City Councils



## AAFBG Conference in Benalla

*Florence Treverrow*

In April I attended the biannual conference of the Association of Australian Friends of Botanic Gardens groups held in Benalla, near Wangaratta in Victoria.

There was a wide range of groups represented and it was interesting to gain some insight into difference in roles between Friends groups in smaller gardens, such as Lismore, compared to that in the large city and regional gardens. In Lismore, the Friends Group is in charge of the majority of decisions whereas in the larger gardens Friends groups often have very little input into management decisions, may not be able to play an active role in maintaining plant collections and may be seen to be primarily fundraisers.

On the other hand, some of the Friends groups were quite diversified with botanical artists, botanical fabricators and photography sections in addition to keen gardeners.

The first presentation was by Dr Lucy Southerland, Director of Adelaide Botanic Garden and State Herbarium, who spoke about keeping botanic gardens relevant to the community. I was inspired by this talk to investigate the possibility of a second pedestrian entrance to the Gardens via an extension of Barham Street. However, that plan does not appear practicable at this stage.

Chris Russel from Cranbourne talked about the problems of a

botanic gardens in the midst of urbanisation and the need to liaise with local developers and council to have special rules about garden plants and pets. They also try to keep open wildlife corridors so that plants and animals don't become genetically isolated.

Excursions included a walk around the very well established Benalla Botanic Gardens and a tree planting, a visit to a school kitchen garden and a visit to the nearby Winton Wetlands. Unfortunately, there was no water in the wetlands and many of the attendees spoke of how they were suffering from a lack of water in the area; a situation which has only got worse since then it seems.

All in all it was worth while attending the conference and I would urge anyone who can make it to attend the next one in Brisbane in 2020. The event will be themed to coincide with the Botanic Endeavour commemoration of the work of Banks and Solander.



## Congratulations Marie

Just a long note to thank Marie for her time as President. She, in company with our generous benefactors, Andrew and Jeni Binns, and building on the solid foundations of our earlier presidents, has encouraged so much to happen.

The changes are particularly heart-warming to those of us who remember the early days of lantana, crofton weed and the never-ending ferny asparagus and camphor laurels. The times before the Sensory Gardens or asphalt paths, Nursery, Visitors Centre, Labryinth, Solar Clock and lately the Old Quarry. My favourite times involved Marie with the work gangs led by Ros, Florence, Tracey Will and Don, and Grahame. Marie has encouraged the solid growth of the regular schools' visits led by Margaret and her team, and the development of the Guide Training Course.

Those of us who turn up each week to do our bit, can quite easily overlook the incredible growth that has happened. My recent absence reminded me of the changes and the ever-expanding growth of the plants and trees.

Thank you Marie, It has been an exhilarating period at the Gardens.

**Geoff Walker**

## Managing a dry spring at the Gardens

As the drought encroaches on the far north coast of NSW with the increasing likelihood of an El Nino event developing, it's a great time to reassess the strategies employed in looking after a local rainforest garden.

It's **time to water and mulch** your garden. Set up drip irrigation, and water overnight. For ferneries, set up micromist units and apply coco peat to any ferns set up in less than ideal microclimates.

**Fertilize your plants.** Many rainforest plants appreciate fertilisers and nothing beats Lismore's own certified organic compost (BIOcycle), which you can purchase from the weighbridge at the Lismore Recycling & Recovery Centre from \$35 per cubic metre (for more information phone 1300 87 83 87).

If you need to mow **put the mower on as high** a level as possible – this will encourage better recovery on dewy nights and after a bit of rainfall.

**Don't clear groundcovers** back to bare dirt with mattocks, rakes and hoes. Groundcovers are living mulch and you might also damage the feeder roots of your precious rainforest plants!!!

**Don't open things up too much.** Wait for the rainier seasons if you plan on pruning things back – and always prune just above the collar/node on an angle so the plant can heal over as quickly as possible.

**Potable water is an essential survival requirement for most of our native wildlife.** Provide several water options for wildlife rather than having one water source. If you stick with one only this can be a bottleneck for vulnerable species that have to compete with more aggressive competitors and predators. Shallow dishes for insects like pollinating flies, beetles, native bees, butterflies etc. can be as small



*Damian in atypical pose in rainforest one recent wet Wednesday morning*

as a plant water tray. Ground level water trays could help reptiles and native molluscs. Whilst bird baths are generally better off well above shoulder height due to roaming domestic cats etc.

**Vegetation loss on the east coast of Australia** is causally linked to reductions in rainfall in the western parts of QLD, NSW and Victoria (For more information see recent contribution by Professor Caroline Sullivan at this web site:

<http://www.scu.edu.au/engage/news/2018/forests-form-buffer-against-water-crisis-findings-of-new-international-report.php>

Forests not only provide water vapour via transpiration, but they can also provide the habitat requirements for biological lifeforms like *Pseudomonas syringae* (a globally distributed bacteria) that form the seed of an ice crystal (ice nuclei) which goes on to form that stuff we call rain. Think about restoring more land back to health with bush regeneration or reclamation and help fight the water crisis!

*Damian Butler, LRBG Gardener*

## Plan to map the Big Scrub genome

*Extract from interview with Dr. Tony Parkes of Big Scrub Landcare with ABC North Coast interviewer Kim Honan in November 2017*

"... there is concern (that) there is not enough diversity in the rainforest species being planted. The biodiversity in the planting stock which you buy from nurseries is too low and it's likely to inbreed. It won't have the diversity to sustain itself with climate change against pathogens and new diseases", Dr Parkes said.

But Big Scrub Landcare is hoping to get a project off the ground which would apply DNA for rainforest restoration. The plan would be...

"...to use select trees from across the range of individual species to pick those that have the best biodiversity," he said.

"Then we will plant 20 of the selected trees of each, say, 20 species - the most important ones to start with. We'll get cuttings from those, we'll grow them out in a nursery.

"Then we'll set up something like a macadamia plantation to generate seed on a continuing basis which, with 20 trees of each species, we'll mix and we'll make available to nurseries and landholders.

"That should help restore the biodiversity - because there are so few remnants, not all of the species occur in each one. Even in the natural remnants collectively there's a lack of biodiversity for some species.

"It's like doing the human genome, it's exactly the same thing, but for different species of trees."

*ABC North Coast by Kim Honan  
22 Nov 2017, 11:28am*

### Guided Walks

26 August Sensory Garden  
30 September Useful Plants Garden  
28 October Wilson Park Garden  
25 November Main Rainforest  
Walks over the holiday period to be advised.



# Human Sundial Officially Open

'Facere et docere' is an old Latin motto. It means 'to do and to teach' and some cynics claim that those who can, do and those who can't, teach, but the creation of our human sundial showed that we have people in our team of volunteers who can cope with the theory and the practice!

It was January last year when we first became aware of the existence of **Analemmatic Sundials** – one in Bathurst and another St Peters in Sydney. A little bit of searching on the internet revealed just what would be involved in constructing one and what calculations needed to be made for our particular site. And I was thrilled to discover we had in our FLRBG team the enthusiasm, willingness and the necessary skills to put the theory into practice.

**Time by the sun is rarely the same as time by the clock.** There needed to be some way of adjusting for the difference so that our clock would tell the correct clock time. Our figure of eight date scale is calculated to make this correction. We are also 3 degrees east of the meridian on which our standard time is set. To allow for this our hours markers are repositioned accordingly.

Stand on the correct date with back to the sun and your shadow will tell the time. When we are in



*Don Woodley cutting the ribbon to officially open the Solar Clock*

Daylight Saving time we will need to add an hour to the time as shown on our sun dial.

We planned to make our date scale from brass as we had seen elsewhere with other sundials, but despite the range of skills in our team no one had the skill to weld brass. Eventually Dean, from local firm Readings Engineering Services suggested that we have our **figure-of-eight cut from stainless steel** on their computer controlled laser cutter. We needed a few trials to get the dates correct to feed into the computer but we were soon satisfied that the steel could be cut correctly.

Meanwhile Don with John, Nick, Grahame and whoever happened to be around at the time, including an Envite Work for the Dole team, a retaining wall was installed and the site was levelled.

When our team came to lay the concrete slab for the date scale they had just 13 items to embed in the concrete – the analemma and the date name for each month. This was not as simple as expected but

Don and Will, ably assisted by other team members succeeded in completing that part of the job. All that remained was to tidy up the site and position the hour stones.

We had a lot of discussion about **what material we would use to mark the hours** – solid wooden posts, basalt stones, sand stones? Eventually we settled on sandstone, acquired from a local quarry.

And then the turf was laid and we were nearly finished. Numbers had to be attached to the hour stones. We had a small problem there - we could buy all the digits we needed except for one number two. For the opening day we attached a non-matching two and nobody noticed! The correct one arrived early in the following week.

The morning of Sunday 27 May - BGANZ Open Day for all botanical gardens in Australia and New Zealand – the weather was grey and cloudy – not very good for displaying a clock that needed the sun to work! However, the cloud gradually dispersed and when **Don cut the ribbon** for us just after 10am the sun broke through showing that **the sundial was indeed telling the correct time.** That astounded many of the people present who hadn't expected such accuracy – and it was very satisfying for us.

All in all a successful and very rewarding project which is giving a lot of enjoyment to us and to our visitors.

**Denis Matthews**



*Will & Don encouraging the analemma to settle into the concrete*



*The area around the Cool Cubby doesn't always look like this but one Saturday in May a young family arrived just before lunch and set it up for their daughter's fourth birthday. The little girl evidently had been to the Gardens many times and chose to have her birthday celebrated at the Cool Cubby as it was her favourite place! By 2pm the successful party was over and the cubby was back to its usual 'cool' self.*



Spring is a lovely time to visit our Botanic Gardens.

Already we have eight school groups booked in to visit on excursion this school term. Usually Schools and Early Childhood Centres book a bus to visit the LCC Materials Recovery Centre with Barbara Jensen (LCC Waste Education Officer) then, to take a guided walk in the Botanic Gardens before their picnic lunch.

FLRBG volunteer Children's Education team (Tracey, Graeme, Linda and Margaret) select a particular area of our Gardens according to the schools current studies – offering a walk first, then activities to learn more about plants. Activities are set up on picnic rugs and are designed to appeal to different age levels and learning

styles. These are offered to encourage children to connect to and enjoy nature and its beauty.

The Children's Education Team are an enthusiastic group. All have previous experience working with children and all have been involved in the guide training offered by FLRBG. The team are constantly developing new activities and creating new walk trails.

Most recently a **Butterfly Walk** has been established along the Wilson Trail behind the Visitors Centre. This particular area of the Botanic Gardens features the plants that are found in the Wilson Park Nature Reserve – a small remnant of the original Big Scrub that is situated along Wyrallah Rd, Lismore. Signs that refer to butterflies that need a particular plant to survive are featured along the walk. A wander and discussion about these features help children learn about the biodiversity and interdependence of plants, animals, birds and insects.

In the same area near the Visitors Centre, the well-established **Eucalypt trees support our regular visiting Koalas**. So we always keep a lookout for the Koalas as well as the

Brush Turkeys. A large turkey nest can be seen along the Wilson Path too.

Our **Cool Cubby**, which was established in the Eucalypt Forest last year, is also a special feature to explore. It is designed to help children understand our human place in the Eco System.

In the Eucalypt forest, picnic tables and a BBQ welcome visitors to stay, play and enjoy our Gardens.

Visiting the Gardens is a free, outdoor adventure for all the family. So why not bring a picnic, children and enjoy a quiet time in the Gardens or challenge the whole family to take a walk. The walk through the Hoop Pines to the top of the hill to explore the Labyrinth there could be your next challenge!

## FLRBG projects planned

At present we are fine tuning our budget and general plans for the coming year.... and beyond. We are applying for grants for several projects.

The first priority is a second **toilet block adjacent to the Visitors Centre** at the first car park. Another is the completion of **the Viewing Platform in the Commemorative Garden** at the western end of the Sensory Garden.

We are investigating the possibility of putting a **car park in the grassy area to the left of our main entrance and sealing the drive** to the Visitors Centre.

**Sealing the western end of the Anniversary Path** is also on our list – that would give us a sealed circuit from the Education Centre (EEC) to the Sensory Garden and then towards the Useful Palnts Garden and around to the Education Shelter near the EEC.

We have a quote to install tanks on the hill at the western end of the site for an **emergency water supply** for the nursery and to a lesser extent other parts of the Gardens. We are also investigating putting a **footbridge over the creek** at the western end of the Rainforest Walk. A donation has been offered for this job.

And these are only the biggish things! While we have funds to do one or two of those projects we are hanging off till we see results of our grant applications before making final decisions.

## Geoff had a dream

Many, many years ago our long term volunteer Geoff Walker had a dream that the old quarry above the nursery could be turned into a lovely tropical garden filled with palms and ferns with a viewing deck so visitors could immerse themselves in the forest.

It is fortunate for Geoff that he is held in such high regard because this is not a dream that he kept to himself or only mentioned occasionally. Anyone Geoff showed around the Gardens got to hear all about it and if you were lucky enough to be a fellow volunteer you heard about it many times. However, Geoff saved his most intense efforts for the workday organisers, previously Rose and now Ros.

Nevertheless, despite Geoff's best efforts, including getting some windbreak plants in the ground and plant lists made up, the quarry makeover remained a dream. Finally, in July 2016 the committee decided to put the quarry upgrade on the 'to do' list for the year and a donation was received to cover the cost. Unfortunately, this was the year we also had to move the nursery and our builders had to make a deck for the pond, a new tool shed and a shed for the nursery. In addition, we had a lot of rain so the building work took much longer than expected and we had to put a lot of effort into erosion control. To save Geoff from the pit of despair, Marie asked me to mark out where the deck would be in the quarry so it looked as though something was happening - but that was done February 2017 ....

After an agonising wait and a trip to Ballina and Lennox Head with Marie and me to check out viewing platforms, Geoff's dream was finally - at long last- at the top of the 'to do' list. Will drew up the plans for the deck and started building and the Envite team put in some steps.

And then - the anticipation all got too much for Geoff - no more waiting! Despite pleas to wait until the deck was finished, one day in May Geoff rounded up the Wednesday volunteers and got them all into the quarry planting



*Geoff with Neil Walker testing the brand new structure*

out the Bangalow and Cabbage Palms.

The deck is now all but finished and we are getting some seats so visitors can sit and relax and admire the view. We will be planting a lot more ferns and palms in the next couple of years and the area will be a great asset to the Gardens.

So thanks for keeping the dream alive Geoff - now, please, can we talk about something else!

☺ Florence Treverrow

### ARTS VS SCIENCE

#### at Lismore Quad

Saturday 18 AUGUST from 10 am

**Friends of the Lismore Rainforest Botanic Gardens will have a NATIVE PLANT STALL and cards and books for sale. Lots of helpful advice from the Friends to start your spring garden.**



## Bush Lollies

'We kids call them bush lollies,' said the bright-eyed Koori girl as she walked through my Richmond Hill native garden. The 8-year old was eating the sweet fruits, shaped like tiny speckled birds' eggs of the Midgenberry – *Austromyrtus dulcis*, a hardy local shrub which grows to around 1 metre. Later I stood chest-deep amongst a dense hedge of this plant on the Evans Head wetlands. I was impressed and thereafter trimmed my hedge when the fruiting was finished.



In the Botanic Gardens, we have these Midgenberries in the Sensory Garden and near the Outdoor Classroom adjacent to the Education Centre. At Caroon Retirement Village there is a Midgenberry hedge near my unit. It needs regular moisture and annual feeding and is pruned each year after fruiting and always looks good. This shrub, with its tiny lanceolate leaves and attractive flowers and fruit, is worth planting in local sunny soils. Unpruned it will gradually fill a space of about 2 m square.

*Geoff Walker*

## At the Nursery



At lot has been happening at the Nursery. New members on the team, a new work bench, lots of plants, a very successful sale in May and **another sale coming up on Saturday 18 August at Art v Science Event in the Lismore Quad**

**Friends of Lismore Rainforest  
Botanic Gardens Inc**

# AGM

**Visitors Centre at Gardens**

**Saturday 15 September  
at 9.15am**

**All Welcome**

## CONTACTS

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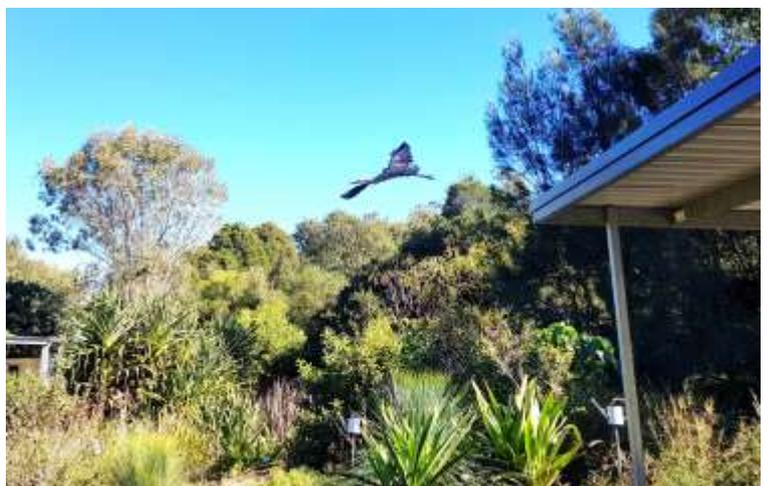
## Thanks to Sponsors

We would like acknowledge Andrew and Jeni Binns and local firms Ginger Blue Graphic Design, Reading Engineering, Swan Bay Quarry, Wardell Turf Farm, and all who have supported us during the year We are very grateful to you and to all who help financially or in other ways at the Gardens, including some who have requested to remain anonymous.

**Special Thanks to the LCC Staff  
at the Waste Facility who  
although no longer officially  
connected with the Gardens  
give occasional help and  
support when needed**



*Wednesday Work morning in May....*



*and a regular visitor the White Necked Heron flying over the Gardens*