



# The Geebung Gazette

Newsletter of the Friends of the North Coast Regional Botanic Garden Inc.  
Website [www.coffsbotanicgarden.com.au](http://www.coffsbotanicgarden.com.au) Facebook: Coffs Botanic Garden

Editor: Eve Colley

Summer 2019/2020

## *From the Editor...*

The Geebung Gazette newsletter is one of the “voices” of the Botanic Garden in Coffs Harbour designed to inform our readers: Friends, other Botanic Gardens, Councillors and both state and Federal Governments about our activities, new works in progress and projects proposed or wished for in the near future, as well as being a tool for education about plants and the environment that are such important parts of our Australian heritage.

I always welcome articles from Friends and readers with an interesting titbit for us. Please contact me at: [eventime@inet.net.au](mailto:eventime@inet.net.au) if you have an item of interest to share with us all. Picture, story, plant or particular habitat – my co-editor, Jan Whittle, and I love them all!

Our Facebook page is doing brilliantly thanks to the diligence of Eileen Ryden and Trevor Harragon. They also appreciate feedback so take a look and send the link to all your friends. We love having visitors!

The website is a great source of information about what is available to see and do at the Garden. Jan Whittle is soon to hand over the website reins to Vincent Leveridge, who is keen to update maps and events and who I am sure has many interesting ideas for change up his sleeve!

2Air FM Radio now has weekly gardening spots every Thursday at 9.40 am thanks to Friend Rita O’Keeffe. If you are interested in participating in this program – a favourite spot in the botanic garden or an interesting plant or flower - please contact me... and listen in!

***Now, this issue contains a couple of articles, which ask questions or may be controversial. Your comments and feedback would be greatly appreciated – please keep these brief and succinct.***

Our volunteer Friends’ contributions and sheer hard yakka bring in much needed money from shops, cafe, function room hire and events to make this a regional botanic garden that Coffs Harbour can really brag about! **Come join us!** Our eager beavers who guide and work in the Garden are greatly cherished, however we also need people in the shop and cafe and folk who are happy to work with printers and computers, publicity and even help organise events. ***Or become part of the planning and join the Committee in future.***

The Friends are very proud that we assisted with piping in recycled water several years ago to keep the Garden green and lush without having to ration town water during a drought. And our beautifully maintained Waterwise Garden is a rich source of information about home garden survival in drought conditions.



## ***A Dilemma – posed by Barry Kemp***

Many Australians still regard “the bush” as undeveloped wasteland. We occasionally get the comment “when are you going to develop the rest of the Garden?” (i.e. bulldoze that nasty bush!). Some of our early citizens already held a different view of “the bush” and for many visitors, even some locals, our garden is their first experience of relatively undisturbed native flora and fauna.

Australia’s most famous botanist is Ferdinand von Mueller, who was so highly regarded in his lifetime that he was awarded a barony, two knighthoods and many other prestigious accolades. He was a great proponent of the study and preservation of the Australian flora, but these were different times and, paradoxically, he was also an active member of the Victorian Acclimatization Society, responsible for the introduction of starlings, sparrows, Sambar deer, European Carp and many other pests.

Luckily many of their introductions failed to survive, but it is well known that on his travels in untracked regions, von Mueller carried blackberry seeds in his pocket, to spread around.

***Also, many plants now seen as serious weeds were introduced during his tenure as Director of Melbourne’s Royal Botanic Gardens. I’m sure if he was alive today he would regret this.***

The recent newsletter article about the African Tulip tree and its toxicity to native bees prompted me to bring up the subject of whether one of the aims of a botanic garden (to show what can be grown in a climatic region) should be tempered by the need to show what can be safely grown while avoiding things which should not be grown.

This gets tricky, because at the time of planting, there may be no reason to suspect a future problem. However, once a problem appears, or becomes known, a botanic garden should take the lead, remove an offending plant, no matter how visually attractive, and publicise the reason.

There are several trees of various sizes whose future in the garden needs to be carefully considered. These include some Australian plants from other regions which are showing signs of becoming weedy, in spite of being well outside their normal climatic zone, ***and climate change may exacerbate the problem.***

A regular “environmental audit” and a review of the aims of the garden would not go amiss.

***Barry Kemp***

## **Guiding in the Garden.**

***The Garden guides meet every third Thursday in the month at 10 am near the cafe at the front entrance. The next meeting will be on Thursday, February 20th. Topic: History of the Garden.***

All are very welcome to come and learn about the Garden, an Kaye, our Guiding co-ordinator, would love to have more guides to call upon to take visitors through the Garden.

The monthly walks are very relaxed, and involve exchanging information and notes about plants in a particular section. No specialist knowledge is needed, just a love of plants and the environment, as well as a delight in our Botanic Garden and the natural world.

We learn from sharing experiences and acquired knowledge, and we all enjoy a good chat about plants and Gardens.

***So come and watch the changing face of the Garden as the seasons pass.***

Visitors may request a guided tour, and this must be done in advance by emailing: [kayestannard52@gmail.com](mailto:kayestannard52@gmail.com).

A people mover is available for those a little less frisky: this must also be booked in advance. **Call Jo: 0412340259**

A trained guide will take the visitors through the Garden or to particular areas of interest.

Our people mover drivers are also trained and knowledgeable.

### \ *Bride in Distress – a Knight in Shining Armour!*



With the bushfires raging in November, and the National Parks closed to the public, a bride had to very quickly change her wedding venue from her chosen location in Bongil Bongil National Park.

What to do?

An anguished call to the Botanic Garden front desk brought her the Garden “Knight in Shining Armour” - our very own Rick Ackland, who was setting up the Gardens for the Heart and Soul Foundation fundraiser. Not only did he take them around to our various Garden wedding locations (they chose the American section with the new pavilion), he also drove the Garden equivalent of the wedding Silver Rolls Royce in the form of the people mover, and, in true knightly fashion, chauffeured the wedding party to the venue.

Well done and thanks, Rick!

The American Pavilion and gardens. Pictures: Eve Colley)



### ***PROTECT OUR FORESTS!***

### ***Rivers on the Ground need Rivers in the Sky.***

I wrote the following article **before** the bushfires that have devastated so much of Australia over the New Year period. It is even more vital now to understand how much we need to try to preserve our remaining forests and replant our native bushland. My heart is crying for the loss of wilderness and creatures that are so unique to our country.

A decade ago, Gerard Moss, a bush pilot, was commissioned to track the low-level jet, or “**flying river**”: the moisture laden South American concentrated air flow. In a plane specially equipped to collect water vapour, he flew from north-east to south west over the Amazon rainforest, then east to Sao Paulo, Brazil. Isotopic analysis revealed that **most of the water collected was generated by the rainforest.**

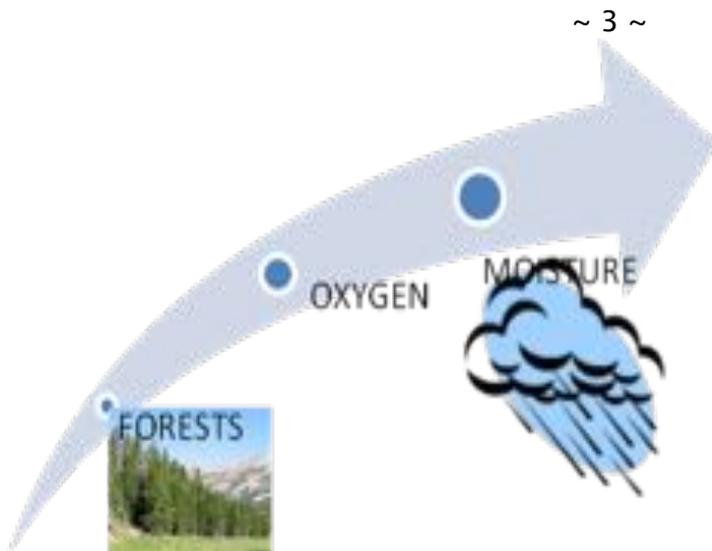
His data also showed that the jet carried enough water **in a day** to supply the 20 million inhabitants of Sao Paulo for 4 months. Yet in 2015, Sao Paulo nearly ran out of water. What on earth has gone wrong?

Another researcher, Dominick Spracklen, analysed meteorological data to determine if there was a relationship between rainfall and the amount of forest the air had passed over during the previous 10 days. Across most of the tropics from the Amazon to the Congo and Borneo, air coming from forests delivered **more than twice** as much rain as air that passed over de-forested areas.

These “flying rivers” traverse the globe and influence rainfall over huge distances. We now understand better how **forests** play a key role in supplying and maintaining them. Where it was thought that rainforests exist because of high rainfall, it was not understood that this is because the forests in fact **generate** that rainfall.

**Deforestation means a loss of moisture, and as in many countries, Australia has found to its horror these vital supplies have steadily decreased.**

The sad irony is that clearing forests to make way for more agriculture reduces rainfall, not just in the rainforest, but for 1000's of kilometres downwind, and ultimately will make farming untenable over even larger areas.



The world is now more aware of the devastating effects of deforestation on the carbon cycle, an important factor contributing to the warming of our one and only home planet.

*We seem to have overlooked, to our detriment, how this same deforestation has drastically reduced the rainfall.*

An Australian example: over the past 50 years some 130,000 square kilometres of forest along the western coast south of Perth has been replaced by wheat fields. There has correspondingly been a **20% decline** in rainfall inland which has parched the reservoirs that supply Perth. There has also been extensive logging along the East Coast of Australia – is this why we have increasingly horrific droughts inland? And bushfires?

***Sheer logic demands that it is vital to tackle the causes of problems not just the consequences when it is often too late. We need to protect our forests, and the creatures that live there, not destroy them.***

Old growth and heritage forests are vital assets harbouring myriad lifeforms from tiny bugs, reptiles, ground mammals to koalas and tree kangaroos. The recent bushfires should be a wake-up call for action: we must have a moratorium on logging; we need to plant more trees, not just in depleted forests but also on arable land. Housing developments do not belong in forested areas or valuable habitat land; wildlife benefits from tree/forest corridors and linked copses.

Of course, Australia must also be robustly and actively involved on the world stage to encourage other countries to stop clear felling in rainforests. Is it too much to ask people and governments to **work together** to save this beautiful world we live in? This is not a time for dithering and dodging the complex problems that affect the climate of the world today.

I personally would much prefer to hug a tree than try to console people who have lost loved ones or homes to bush fires or drought. And I would hope very much that the trees I hug are full of wildlife big and small who can continue to thrive in the forest!

**Eve Colley**

**Acknowledgement:** Article “Rivers in the Sky” written by Fred Pearce on p.40 of New Scientist 2/11/2019 Issue number 3254 is the prime source of this article. Interested? I can email the article to you: [eventime@iinet.net.au](mailto:eventime@iinet.net.au)



**And it is not just “Flying Rivers” that need trees!**

The “lungs of our planet” are in desperate need of help. Our dwindling forests are frankly overwhelmed, and it is a lot to ask of them to process so much of the powerful greenhouse gases that humans produce.

**We invite our readers to visit one of the “lungs” of Coffs Harbour: our beautiful Botanic Garden. Sniff the air, admire our trees, and stroll through our rainforest – specially planted by the Friends when the Garden was**

still a gleam in Coffs Harbour's eye! The nature trail will take you through the wilder part of the garden where small creatures abound. Fresh air and cool resting spots – what more could you ask for?

*Eve Colley (I am solely responsible for the content and opinions in this article)*

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## **A Lady who will be greatly missed – Jan Moran.**

For those who don't know, Jan Moran has resigned from the Friends to move house and discover pastures new. Jan has been the “go-to” person for many years, and no challenge has been too big. In building up the Display room hire and keeping the roster she has also been instrumental in introducing new folk to an important amenity at the Garden as well as bringing in funds that are put to good use in building and maintenance of our Botanic Garden.

Most people have been touched by Jan's cheerfulness and energy and willingness to jump in and help with so many aspects of the Friends' activities.

It strikes me that some individuals take over many roles, and when they leave, their boots are hard to fill. ***Maybe every important position needs an understudy as well as a principal to ensure smooth sailing.***

If you are interested in becoming involved with the running of the Friends please talk with our information officers to be referred to the appropriate contact. There are plenty of niches that need to be filled.



Jan Moran in a favourite role as people mover driver.

***We wish you well Jan!***

**Pat and Guy Coenen** are also retiring from their positions at the Garden after 15 years. Both have been cheerful workers in the shop and Guy has happily driven the people mover for weddings and on event days during that time. Their smiling faces and the familiar sight of Guy in his smart cap driving the people mover will be greatly missed.

***Stay in touch, Pat and Guy!***

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## ***Passing by the ages... A Pause in our carpark!***

One of the functions of a botanic garden is education, and one of the best places for this, at first sight, appears to be not in our garden at all, and is usually hurried past – the area between the carpark and the gates.

***Apart from being aesthetically pleasing, almost the full history of plant evolution is represented there.***

Some very early kinds of plants were not “planted” there; they appeared because conditions were suitable. The most basic is some kinds of **algae** - a “catch-all” name for some very different life forms. The best known to us would be the kelp washed up on the beach, but other forms are seen as a green or black smear on various surfaces, including concrete, or on the bark of trees.

More advanced in the evolutionary sense are the **mosses**, which appear when the minute propagation units known as spores find a moist place to develop after floating in the wind. A big problem for mosses is that, although they can draw up water and nutrients from soil, this has to pass from cell to cell through the cell walls, a slow process which limits the plant's height. The “giant moss” in the hills reaches about 15 cm, but that's about it.

**Ferns** (well represented here) solved this problem by developing a **vascular system**, a bit like ours, but carrying sap, not blood. This means that they can cope with much drier conditions by rapidly replacing lost moisture. But, like mosses, they have a 2-stage life cycle and the first stage, minute and easily overlooked, must not dry out and are very vulnerable, so most naturally occurring ferns are restricted to moist, shady areas, or cracks in rocks.

The next big advance was the **seed plants**. Seeds compressed the embryo development process and can be described as dormant plants which are distributed in various ways and will await suitable conditions in order to “germinate”. An early branch of the first seed plants is a group called **Gymnosperms**, which have their seeds protected by spirally-arranged scales, which spread to release the seeds when mature (think of a pine cone).

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Amongst the earliest of gymnosperms were the **cycads**, (represented here by local *Lepidozamia*), sometimes referred to as “dinosaur plants” to excite the interest of schoolchildren. Herbivorous dinosaurs munched on them before grasses evolved. Cycads have male and female plants, the latter producing very large seeds. Pollination is said to be by beetles. Pine trees (conifers, the other branch of the gymnosperms) are absent from these beds, but there are some in the garden. Pine trees are wind-pollinated and vast quantities of pollen are released into the air. There are local native ones which could be planted here.

*Lepidozamia peroffskyana* with beetles on the front right cone.



Finally, the **flowering plants**, technically **Angiosperms**, which have an enclosure called an ovary where the seeds are protected until they mature. The ovary becomes some sort of fruit for dispersal of the seeds.

Palms, grass-trees, Eucalyptus and Persoonia (geebung- the floral emblem of the Garden, pictured) are here, representing the flowering plants, the latest chapter in the long story of plant evolution.

**Barry Kemp** (Pictures Eve Colley)

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.... And here is one of the ferns: ***Asplenium australasicum* (Birds Nest Fern)**

The use of the Birds Nest Fern in the native garden can be one to create a focal point. Although needing shade or semi-shade, it has a beautiful growth habit with the fronds coming from a central growth point and can give an immediate feel of the rainforest environment. But to achieve this result you must know that as an epiphytic fern, it tends to need a host. While it can be grown in a bed or pot, it usually is found growing on another plant – in a fork, consequently its name, or along branches.



This came home to me recently as I was walking out of the Garden. Adjacent to the pathway, near the hydrangeas, is a narrow pathway that within metres takes you across a small bridge. I was interested to see what recent repairs had been carried out but, before reaching it was one of those rare moments that occasionally take your breath away. In the craggy bark of a *Eucalyptus robusta* (Swamp Mahogany) were a mass of young Birds Nest Ferns. (**See left**).

The obvious questions were why here ... and why now? The first question was practically obvious. That craggy bark is the obvious place for the spores of this particular fern to get caught in. The next question depends

a little on luck however. Why now? It has been a particularly dry year but near to this mature tree is a sprinkler that periodically is used to keep nearby ferns in their best condition. Thus, with some artificial help this may well be a regular occurrence.

However, they may not grow to maturity. The chances of being able to grow to a reasonable size, while so precariously located on the side of a tree, are remote. The fissures in the Swamp Mahogany bark will not be sufficient to allow the required moisture to keep the plant alive. Gradually, as the summer gets hotter the bark will dry out and the plant die.

If you have such a situation in your own garden, these small ferns can be pricked off and transplanted to a home with the required moisture and shade and you can take them on to maturity.

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This is not the only place they will grow this way in the Garden. The *Cycas circinalis* (Fern Palm) (**See right**) that grows nearby has quite a smooth, but fissured trunk and they have grown on one side quite near the ground moisture but on the other, in an area that also gets an artificial watering.



While at the Garden entrance, before the main gate on the left is a male *Lepidozamia peroffskyana* (Scaly Zamia or Pineapple Cycad) (**See left**). In the crown grows a mature Birds Nest Fern.



*peroffskyana* is covered with tiny ferns. (**See left**) These I have seen last barely a few months before the summer heat will kill them. But what a display! Look for them next spring.

Whenever we have a reasonably moist year, the spores fall from the mature fern and for a few months the side of the

**Rob Watt: Pictures and story**

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**And now... A report from our Acting Curator Rick Ackland.**

Once again it has been a very busy and productive few months. The volunteer numbers continue to grow, and with new people comes new experience and life skills to complement our team here in the Botanic Garden.

The PDA area has been a focus in October with a seat and the foundations for the hanging basket tree and floral display being constructed. Our water feature is back; up and running at last! The small waterfall/pond leak has been elusive with a couple of failed attempts to fix it before we triumphed, then unfortunately the pump failed before we came back on again. The big pond is the next target with a waterfall planned for the eastern end in March ready for our open day in May.

**The Botanist walk** is coming along well with the paths laid and garden beds to be landscaped ready for planting by March. This project is a Maritime Museum Grant/ Friends/ Council funded works to improve our collection of NSW and QLD plantings, as well as to tell the story of how these plants were collected and given their botanical name. ***Various botanists who played major roles in this process will be featured: from Joseph Banks and Daniel Solander to our home town favourite Alex Floyd. Part of the story to be told will be how the indigenous community used local plants in their day to day lives.***

In the Sensory Garden the roses are starting to put on a splendid display. Yes, they are back and doing well. Over 50 new standard roses are blooming and are well worth the walk to the back area to see. We will be expanding in the winter to the last rose bed that is presently growing lavender. Some of the conifers that have significant die back in the centre of the grass will be replaced with tall rose weepers.

At last a bit of moisture from the sky! We have recycled water for irrigation but nothing is as good as a bit of rain. The work load will increase, as with the rain comes the weeds, caterpillars, aphid, scale and (Aaah!) the list goes on.

It is great to see the Facebook page doing so well. I enjoy seeing the Garden through others' eyes. Some of the photos are spectacular. Seeing all these stunning places in the garden should encourage people to make a visit.

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There has been some good feedback on how well the gardens look. It is such a team effort to keep things as good as they do. Thank you, staff and volunteers, it is fantastic to work with such a coherent and enthusiastic team.

***Rick Ackland, Acting Curator***

### ***Critter Corner: The Eastern water Dragon: *Intellagama lesueurii lesueurii*.***

While the Christmas party was in full swing this December, Glenis Hunter and Jan Whittle discovered a couple of water dragons facing off on the water's edge in the Prime Display Area pool.

Named for Charles-Alexandre Lesueur, this is the largest water dragon in Australia. Being territorial, males will fight interlopers with puffed throats and gaping mouths (the original genus was *Physignathus*, meaning puffed cheeks).

Their breeding season extends from September through January when they become fiercely territorial as seen in the photograph.



Their range extends from Cape York to southern NSW, and fossils of identified water dragons from Riversleigh in Queensland date back 20 million years.

They are appealing little chaps, but will bite if provoked or are in territorial mode, and will chase you if they think they can mug you for food (personal experience while fishing!).

***Eve Colley. (Picture: Jan Whittle.)***

***Bush fire news:***

**The Eurobodalla Regional Botanic Garden** in northern Mogo was damaged by the Clyde Mountain fire during the New Year bushfires. The extensive damage has yet to be fully assessed, and the Garden is closed to public and volunteers until further notice. Fortunately, the recently constructed and renovated Visitor Centre/herbarium/cafe/education hub survived, having been built to high fire standards with bushfires in mind. We send our very best wishes to our Eurobodalla Friends, and hope to hear that damage is reparable.

**The Heritage listed Blue Mountains Botanic Garden in Mount Tomah** was also severely affected with extensive damage to one quarter of the Gardens in the fires. Fortunately, their Living Collection & structures survived, however as of the date of this publication the damage has not been fully assessed.

Meanwhile hailstones as large as golf balls struck the Australian National Botanic Gardens in Canberra causing extensive damage and forcing their closure until further notice. These Gardens also report a horrendous toll to wildlife in the area including bats and many birds, possums and gliders.

Multiple dust storms have also hit the Inland botanic gardens in Mildura with high winds and gritty dust whipped up to damage trees and plants. It is not known how much long term damage has been caused as a result of these fearsome storms.

This summer season has started catastrophically for so many animals and plants as well as humans. This is definitely a wake-up call to tackle the problems of living in a world of higher temperatures and extreme climatic conditions.

***May 20/20 hindsight be turned to 20/20 vision in this politically charged year.***