

President's Message

This is my first message in what one of my Christmas correspondents described as a 'dream job'! I think I reflect the thoughts of all the committee and the 'Friends' in thanking my predecessor Marie **Matthews** for her hard work and significant achievements over the last few years. Marie has agreed to take on the role of Treasurer now the committee has appointed a bookkeeper to prepare the routine monthly and end of financial year reports. Marie also publishes the **Newsletter** and designs most of the signage in the gardens and the brochures and is planning a new brochure about wheelchair accessibility.

November saw the completion and official opening of **Palm Gully** by long time friend of the LRBG and committee member **Geoff Walker**. The building of the viewing platform, steps and hand rails was a long and sometimes lonely task for **Will Evans**, one of the volunteers on the building team. The next job for the building team is the long awaited amenities block at the visitor's centre which will be a more sociable task; we expect much interest in the build from visitor's and volunteers.

Following the opening many of the visitors at the opening of **Palm Gully** joined with the volunteers for a substantial morning tea/early lunch in the air-conditioned comfort of the Education Centre.

Our new guides have become invaluable members of our volunteer team and many also participate in workdays in addition to conducting guided walks. Our Publicity Officer, **Tracey Whitby**, has prepared a programme of guided walks to be held on the last day of



Jan de Nardi, Jenny Dowell, Geoff Walker and Lenore Phelps trying out the new Palm Gully lookout platform at the official opening

each month (see programme on page 11). Tracey has also produced a 2019 calendar and a new set of cards. (see page 12).

Planning for the **amenities block** has commenced with drawings completed by **Ben De Nardi**. The project is awaiting a final site plan and a quote from the plumber, both of which are required for the Development Application to Lismore City Council.

The team of Architect **Don Granatelli**, Structural engineer **Peter Lucena** and surveyor **Tony Denny** are assisting the committee with the design and costing of a **new bridge** to span upper fern gully where the hard path comes to an abrupt end at the Western end of the Rainforest Walk. This project also requires DA approval and may require additional funding to supplement the donation already received for the project. The building team will build the foundations and the decking but the steel or aluminium span and rails

will require fabrication. Construction of the bridge will facilitate improved access to the Western end of the LRBG and further plantings in the gully and on this high point of the Gardens. There are also plans for further picnic spaces in this area.

Further in the Newsletter there is a report on progress to date in planning for the **Botanic Endeavour 250 – 2020 event**, the LRBG is one of the featured botanic gardens during this event.

As I write, the LRBG, like much of Australia, is experiencing very hot and dry conditions and most workdays are spent watering. Additionally many hours are spent by volunteers on other days of the week keeping moisture up to the plants... and to the local wildlife, including the insects. The committee is currently working on ideas to better prepare the Gardens for future long dry spells.

Hazel Bridgett

Species profile... *Neolitsea dealbata*

White Bolly Gum

Family LAURACEAE

Description:

Neolitsea dealbata is a shrub or small tree growing to a maximum height of 12 m with a trunk diameter up to 25cm.

Leaves are simple, mostly elliptic to obovate in shape, 8 to 20cm long and always three veined. The leaf base is tapered and the apex is acuminate. The upper surface is glossy, dark green and generally hairless while the lower surface is pale grey or white with a waxy coating and crooked to straight brown hairs particularly along the veins. The petiole is hairy and 0.7 to 2.4 cm long. The distinctive new growth is softly limp, hairy and fawn in colour.

The small, fairly inconspicuous, yellow flowers appear from winter to spring.

The fruit is a globose drupe 9 to 11mm long. It is black when ripe and is an important food source for several species of birds. This makes it an excellent replacement for the exotic Camphor Laurel.

The bark is light grey in colour with numerous small nodules.

Distribution:

It is a common plant found in Subtropical, Warm Temperate and Dry Rainforests north from Mt Keira, Wollongong to North East Queensland.

Timber:

The tree is too small to be a commercial species and I am not aware of any uses for the timber.

Birds and Butterflies:

White Bolly Gum is one of a number of native Laurels that are important bird foods. It is also a food plant for caterpillars of the Blue Triangle Butterfly (*Graphium sarpedon*).

Propagation:

Propagation is by seed which germinates readily with no special treatment required.



Bark of tree



Foliage of White Bolly Gum

Text and photos from Peter Gould

Sources:

1. Floyd, A.G. 1990, Australian Rainforests in New South Wales, Vol's 1& 2, Surrey Beatty & Sons, Sydney NSW.
2. Floyd, A.G. 2008, Rainforest trees of mainland south-eastern Australia, Terania Rainforest Publishing, Lismore, NSW.
3. Harden, G.J. (ed) 1993, Flora of New South Wales, Vol 1, New South Wales University Press, Kensington, NSW.
4. Harden, G., McDonald, B. and Williams, J. 2006, Rainforest trees and shrubs: a field guide to their identification, Gwen Harden Publishing, Nambucca Heads, NSW.
5. <http://plantnet.rbgsyd.nsw.gov.au/>
6. <http://noosanativeplants.com.au/plants/355/neolitsea-dealbata>



Leaves showing contrast between upper and lower surfaces. Also note soft new shoots



According to a 1994 report by Cooper & Cooper the fruit of the White Bolly Gum is eaten by Cassowaries, Fruit Pigeons and most other frugivorous birds. One of its common names is the Pigeon Berry Tree because of its attraction to these birds.

Photo John Gordon Canberra Ornithologist Group

Guides' Educational and Bee-bee-cue

On 19 January we had an educational session with our Gardens guides and a few other interested people. It was to have been the splitting of a native bee hive. But that Saturday was one of the hottest days of this summer so it was decided to change our initial plan and move into the air-conditioned comfort of the Education Centre.

Our bees, *Stergula carbonaria*, do not cope well when it gets very hot. They can die if the temperature reaches 40 degrees C. So our bee man, Peter Swain, decided it would be very risky to put the added stress on them of splitting the hive so instead did a dry run with an empty bee box to show how to set up and how to split a hive.

Peter gave a very interesting, informative and practical talk about keeping native stingless social bees and there was lots of interest and questioning from the floor. After the educational part of the afternoon we had a scrumptious bee-bee-cue prepared by Graeme and Tracey. And a taste of native bee honey... beautiful!

It was really enjoyable afternoon all round and so good to touch base again with the guides – old and new - and get started for 2019.



Guides Graeme, Kerry and Ken cooking for our Bee-bee-cue

Plans for Guides for this coming year

We have decided to stay with one regular walk on the last Sunday of each month. But we are allotting a second person to each walk – partly for moral support, partly to help cope if we get a big group of people (as happened when 25 visitors came for Geoff's final walk for 2018), and partly as a back up in case the guide for the day is unable to attend.

Other walks will be available for groups or individuals by arrangement.

Our Sunday walks are free but we do appreciate a gold coin donation!

There could be a cost for special group walks – depending on just what the group wants to do at the Gardens. That will be sorted out at time of booking. Booking for group walks needs to be made one month ahead.

Tracey has drawn up a guided walks programme for the first half of this year. It can be found on page 11.

Contact for further information:
publicity@friendslrbg.com.au
Phone 0450 596705

Plant ID Educational in September

In September Jan De Nardi ran an educational for our guides and other interested members on plant identification. Equipped with many copies of *Tree & Shrubs in Rainforests of NSW and Southern Queensland* by Williams, Harden and McDonald, and a varied collection of our rainforest plant material this very enthusiastic group got to work with lots of practical hands on identification. With a well qualified, experienced and informed tutor they added a lot to their knowledge of our local RF plants.



Native Bees: Effective Pollinators with Medicinal Benefits

With commercial honey bee populations (*Apis mellifera*) under potential threat worldwide from the varroa mite, diseases, insecticides and climate change, finding out more about the role of native bees has become a priority. Research on Australia's native bees has shed light on how local species perform a unique role as first-line pollinators of native flora; make a valuable contribution to the productivity of selected agricultural crops; and yield small quantities of high quality medicinal honey.

Australia's estimated 2,000 species of native bees show a huge diversity of size, colour, shape, and social organisation. Only 11 species of native bees are regarded as 'social' – they are stingless, forming nests that produce and store honey, with caste structures and perennial colonies similar to the common honey bee.

The man-made hives installed at LRGB are populated with the species *Tetragonula carbonaria*, a stingless, social bee species well suited to the Northern Rivers climate. The hives at LRGB provide a secure habitat and help ensure that our wide variety of native plants are visited by the right kinds of pollinators.



The inside of one of the Gardens' hives showing the spiral propolis

Pollination Efficiency

While research on native bee pollination is limited, a study of the native plant *Melastoma affine* (common name: 'Blue Tongue') revealed that the flower has a reproductive structure best suited to native bees. Reproductive 'fitness' is reduced when the flower is exposed to honey bees¹.



Macadamia farmers have also discovered that pollination efficiency and yield are improved where native bees are present. Other studies suggest that native bees may have a pollination advantage over honey bees for mangoes, blueberries and strawberries².

Medicinal Properties of 'Sugarbag'

The honey yield (known as 'sugarbag') from a native bee hive is modest - around 1 kilo per year for *T. carbonaria*, compared to 20-30 kilos per year for common honey bees. The flavour is quite unique though, often described as 'sweet with a citrus tang'.

The sugarbag from *T. carbonaria* has a unique chemical profile with antioxidant properties and higher overall antimicrobial properties than manuka honey - a 'medical grade' honey produced by *A. mellifera* utilising antimicrobial agents from

*Leptospermum nectar*³. Sugarbag contains its own distinct active components (flavonoids) that inhibit microbial growth. These components are thought to come from the unique composition of the resin used to build the 'pots' that store the sugarbag honey.

Aboriginal people have been harvesting sugarbag for thousands of years and regard it highly as both a bush food and as a medicine. Sugarbag was used for improved digestion, for mouth ulcers as well as being used as an anti-bacterial straight onto cuts, burns or grazes. Today medical grade honey from *A. mellifera* is being used in modern medicine to treat wounds and burns based on detailed research to support its antimicrobial action. There could be a similar role in the future for sugarbag from stingless native bees⁴. Research is continuing. *Tim Heard's Sugarbag Website address - <https://sugarbag.net/>*

References

1. Gross, C. L., & Mackay, D. (1998). "Honeybees reduce fitness in the pioneer shrub *Melastoma affine*"; *Biological Conservation*, 86(2), 169-178.
2. Tim Heard (2016). "The Australian Native Bee Book".
3. Dr Tanya Latty, ABC online article: <https://www.abc.net.au/news/science/2019-01-29/merits-of-native-bees-can-they-save-us/10749696>
4. Boorn, K. L., Khor, Y. Y., Sweetman, E., Tan, F., Heard, T. A., & Hammer, K. A. (2010). "Antimicrobial activity of honey from the stingless bee *Trigona carbonaria*"; *Journal of applied microbiology*, 108(5), 1534-1543.

Graeme Patterson

INSECT POPULATIONS DECLINING AT ALARMING RATE WORLD WIDE

According to a report in The Guardian 10 February 2019 "If insect species losses cannot be halted, this will have catastrophic consequences for both the planet's ecosystems and for the survival of mankind." This is a direct quote from Francisco Sánchez-Bayo, from the University of Sydney, one of the authors of a recent review on this subject. More than 40% of insect species are declining and a third are endangered, the analysis found. The rate of extinction is eight times faster than that of mammals, birds and reptiles. The total mass of insects is falling by a precipitous 2.5% a year suggesting they could vanish within a century. Intensive agriculture is the main driver of the decline, particularly the heavy use of pesticides. Urbanisation and climate change are also significant.

www.theguardian.com/environment/2019/feb/10/plummeting-insect-numbers-threaten-collapse-of-nature?CMP=share_btn_link

40th Anniversary of Terania Creek Protest

In 1979 Terania Creek became the focus of a landmark environmental protest where people formed a human shield to protect an environmental wonder. The protest represented the first time the presence of protesters challenged the government's authority over forests and succeeded in stopping a logging operation.

The Terania Creek Protest made headlines all around Australia. David Kemp, a keen amateur photographer, had recently arrived in this area and was captivated by the beauty of the Terania forest, but appalled at the possibility of it being lost. He was determined to join the protest with his young family.

His photographs and those of other exhibitors are a big part of an exhibition starting mid February at Lismore Art Gallery. They are among the few surviving images and artifacts from this historic event and act as a time capsule for remembering it.

This exhibition will include photographs by David Kemp, archival material (such as signs and banners) and music generated to protect the rainforest at Terania Creek.

FLRBG Connection

Lismore Rainforest Botanic Gardens have a special link to this protest. Laurie and Irma Chelsworth, parents of Nan Nicholson, were involved in the protest events and later became very involved in the establishment

of our Gardens. Laurie had the dream of a Botanic Garden in this area and was the original chairman of the Botanic Gardens Steering Committee. Sadly he died before our first planting in 2002. Two Brush Box trees were planted in honour of Laurie and Irma in 2009 at the main entrance to the Gardens.

Below is extract of speech by Laurie Chelsworth at an undated Botanic Gardens Steering Committee meeting in Lismore in mid 1990s

"I thought rainforest gardens would be particularly appropriate for this district as it is in about the middle of the range of where rainforests occur from Cape York to Tasmania. We should therefore have the best chance of growing a good selection of species from the entire range.

..... the Steering Committee took my very limited vision of a Botanic Gardens and expanded it enormously. The vision now is an entire rainforest eco-system where people can see all the life of a rainforest, not just the trees.... It is a bold and ambitious concept. But we believe it is something that will really put Lismore on the map and attract visitors from all over Australia and overseas. The benefits to be gained by all sections of the community are incalculable."

Rainforest Awareness in Australia

Up until the 1960s rainforests were not seen as being especially authentic or indigenous compared to eucalypt forests. Clearing them was justified on the grounds that it was profitable and the remaining cleared soil was seen as good farming land. Even in scientific circles the Australian rainforests were regarded as a recent and invasive element of the Southeast Asian flora. The late Len Webb was called as an expert witness at the Terania Protest hearing and it was his work in the 1960s and 70s which contributed greatly to revealing that Australian rainforests were not just a spill over from Malaysian forests, but were indigenous and more ancient than the Australian sclerophyll flora. The focus of the Terania Protest was the logging of Brush Box which was seen as foreign to the rainforest. However, Len Webb's research showed that Brush Box was a bridge between the sclerophyll vegetation and the rainforest.

From NR Echo, NPANSW website & ABC Radio National 2009



One of the David Kemp photos to be included in the upcoming exhibition.

Image with permission Lismore Art Gallery

Terania Creek Protest Exhibition

Lismore Art Gallery

15 February to 7 April

Official Opening at 6pm Friday 15 February

Special Terania Creek Protest floor talks:

MICHAEL MURPHY AND DAVID KEMP

11.00am Thurs 21 Feb 2019

HUGH NICHOLSON

11.00am Sat 2 Mar 2019

Brush Box

Lophostemon confertus

Hardy Australian native rainforest hardwood tree found on forest edges in southern Queensland and northern NSW. It is an excellent feature tree creating cool shaded areas. Produces unusual white flowers – with five fringed petals often high in the tree canopy, and is a natural haven for wildlife. It is fast growing, best in full sun or a partly shaded location in almost any soil type. It is suited to street planting. Brush Box grows to 15m in the open, taller in rainforest setting. The attractive timber is used for flooring, cladding and bridge building. Colour of timber varies from greyish pink to reddish brown.

1. <http://plantnet.rbgsyd.nsw.gov.au/>
2. *Australian Rainforest Plants 2* by N & H Nicholson

Fig Trees are Number One... from Geoff Walker

'Fig Trees survived the mass extinction that saw off the dinosaurs and have been one of nature's driving forces ever since.' And 'Fig trees feed more bird and mammal species than any other fruit'. Quotes from Mike Shanahan in his book *Ladders to Heaven*.

Australia has 42 different species of figs and Lismore Rainforest Botanic Gardens has most of those indigenous to this area. Some of the more advanced ones can be found around Car Park Two.

Biologist Steve Elliott has been planting figs in degraded forests to attract wildlife and to split open the rock walls of spent open-cut mines in Thailand. He believes that figs will eventually fracture rock faces and encourage the return of other rainforest species. Our Gardens have a massive ficus above the Palm Gully. Its roots are binding the cliff-face and slowing erosion.

The biologist is trialling the use of drones to deliver a hydrating gel containing ficus seeds to steep remote locations in degraded lands. He says there is ample evidence of ficus roots splitting concrete and rock as fig trees grow from seed dropped in fissures. In the Lismore Gardens there are strangler figs growing from seeds deposited high in the canopy. Their roots are descending to the soil and so the eventual death of the host tree is set in motion. One seedling in Palm Gully, growing in a rock fissure, could in time, split its host rock. This feature of fig tree root needs to be taken into account when planting fig trees in suburbia.

Fig pollination

A fig is not actually a fruit; it is a cluster of many flowers and seeds contained inside a bulbous stem. Because of this unusual arrangement, the seeds - technically the ovaries of the fig- require a specialized pollinator. Elliot reports that each of the 730 species of fig trees in the World



A strangler fig taking over its host tree at Rocky Creek Dam

have a specific tiny wasp about 2mms long, and the plant and insect are dependent on each other for survival and reproduction. Genetic studies indicate that this remarkable co-dependency goes back at least 80 million years.

The female wasp which has already mated with a wingless male leaves the fruit where she was born and flies to another fig of the identical species. She is guided to such figs by their release of a special chemical. She burrows into the new green fruit, losing wings and antennae on the way. After the queen has laid her eggs, she dies and is digested by the fig, providing nourishment. Once eggs hatch, male and female wasps mate. Then the males make a tunnel to the fig's exterior thus creating an opening for the females to exit. And the female searches for an unripe fig and so the life cycle starts all over again.

Sources:

1. 'Figs on a Roll' published in the New Scientist December 2016 pp 68-69
2. *Ladders to Heaven* by Mike Shanahan pub 2016 by Unbound
3. <http://www.bbc.com/earth/story/20160429-a-tale-of-loyalty-and-betrayal-starring-figs-and-wasps>

Indigenous use Sandpaper Fig

Ficus coronata

Historically many groups of indigenous people from mainland Australia ate the fruit of the Sandpaper. Some were eaten raw and others were beaten to make a paste and then mixed with honey and water.

In bush medicine the sandpaper fig leaves were used in conjunction with stinking passion flower to relieve insect bites. The rough texture of the leaves would be used to rub the skin until it bled, and then the passion flower would be applied. The leaves of the Sandpaper Fig were also used as a cure for ringworm infections. The skin would again be rubbed raw with the leaves and the milky sap applied. This sap was additionally useful for treating wounds.

Indigenous people used the rough sandpaper texture of the leaves to finish off their tools and polish their wooden boomerangs and spears. Straight branches were used for fire starter sticks and string could also be made from the bark. It provides food, medicine, fire and tools: a wonderful all-rounder in the Australian plant pantheon



Ficus coronata fruit

Photo www.anbg.gov.au

Sources:

1. *Extracted from article in 'The Conversation' 23 May 2018*
2. <http://theconversation.com/sandpaper-figs-make-food-fire-medicine-and-a-cosy-home-for-wasps-96404>

Azolla pinnata ... more than just a floating fern

Azolla pinnata, an aquatic fern that floats on the surface of slow moving fresh water, is a relative of an ancient plant that recent research indicates may have changed the world's climate, and has the potential for many uses today.



It can be found growing on dams and ponds in many parts of Australia including this area. It grows at great speed in favorable conditions and is able to double its biomass in two to three days. The leaves are in a symbiotic relationship with a bacteria called *Anabaena azollae*, which allows the fern to grow in low nitrogen habitats, as the bacteria fixes nitrogen from the atmosphere. The relationship it has with the bacteria is unique. It is the only known plant in which a bacterial symbiont that is passed to successive generations during the plant's reproduction. Over time, many of the bacteria's genes have been lost or transferred to the nucleus in *Azolla*'s cells, so the bacteria cannot survive independently of the *Azolla*.

As a result the nitrogen fixing abilities of *Azolla* are amazing, allowing it to draw down as much as 1 tonne of nitrogen per acre per year. This is matched by its ability to draw down 6 tonnes of carbon per acre per year. The main limit to its

growth is usually the availability of phosphorus, carbon and sulphur.

It is theorized that *Azolla* caused, or at least heavily assisted, in transforming the climate of the planet around 49 million years ago. It is suspected that the fern took advantage of a Geological event during the early Eocene, when the world's configuration caused the Arctic Sea to be almost entirely cut off from the wider oceans. Thus the *Azolla* got to grow in a mostly land-locked sea at the North Pole, experiencing Arctic summers with 24 hours of daylight, and winters with 24 hours of darkness, but with much warmer temperatures than those seen today. Being cut off, the water did not receive deep water currents, which would have led to a stratified water column - as occurs in the Black Sea - so mixing and aerating the water. As a result the sea's bottom waters became anoxic, killing all bottom-dwelling organisms. High temperatures and winds also assisted, leading to high evaporation of the sea, increasing its water density. An increasing rainfall, caused rivers to discharge large volumes of freshwater into the sea, which resulted in a layer of surface freshwater extending out from the land.

Azolla is thought to have grown on this layer of fresh water. The water would also have been rich in minerals washed down from the land, which would further aid the growth of the plant. This growth was also supported by high concentrations of carbon dioxide present in the atmosphere at this time.

It is believed that as the floating mats of *Azolla* became waterlogged or as storms fragmented them, the plants died and sank to the sea floor and lay undisturbed due to the anoxic environment. The remains of *Azolla* were then gradually buried by fine sediments or the remains of plankton and other organisms. Being incorporated into the sediment would have resulted in drawdown of carbon dioxide. This process was repeated again and again, gradually forming the thousands of *Azolla* beds seen in cores that have been extracted in recent times.

Growing for around a million years in a basin 4M km² in area, *Azolla* would have sequestered enough carbon to cause an 80% drop in CO₂ in the atmosphere. This drop initiated the switch from a greenhouse to the current icehouse Earth. And for perhaps the first time in its history the planet had ice caps at both of its poles.

However, to have any geological impact in permanently drawing down CO₂, causing such climate change, the plants needed to be buried and rendered inaccessible to decomposing organisms. Such an anoxic environment at the bottom of the Arctic basin created these conditions. There is recent evidence to confirm that this was the situation.

It has been shown that the *Azolla* event coincides precisely with a catastrophic decline in carbon dioxide levels in the atmosphere, which fell from 3500 ppm in the early Eocene to 650 ppm during this time, and lasted for about 1 million years.

**Adapted from article by Wayne Hyke
References for this article on page 12**

*Current research is focused on the development of *Azolla* to produce a range of biofuels due to its rapid growth rate. It has been trialed in space exploration providing food and oxygen. Furthermore, studies have shown the usefulness of *Azolla* in remediation of environmental pollutants, as the plant has the ability to absorb some of heavy metal pollution from contaminated water. The plant also has 25-30% protein and can be added to animal feed or possibly used as food for human consumption. Rice farmers sometimes keep this plant in their paddies because it generates valuable nitrogen via its symbiotic cyanobacteria.*

The Bell at the top of the Hoop Pine Forest



The Bell, in position and ready to be rung

When we moved to Dunoon in 1980 the big old cast steel church bell came too. It had been hanging on the brick wall of a handball court at the Catholic School at Mudgee as long as anyone could remember but there were people who regarded it as a nuisance especially the nuns in the nearby convent. Young people would take delight in ringing that bell at all hours.

Denis was principal of that school in the mid 70s. On one occasion he was with parish priest (school manager) and a visiting architect and as they walked past the bell the priest asked what they were to do with the bell. The architect suggested selling it for scrap. Denis offered to buy it for scrap and the priest said he could have it, gratis.

When Denis left the school at the end of 1978 no further action had been taken on the bell but at the beginning of the next school year the acting principal had the bell removed from the wall and rang Denis to let him know it was ready to be collected.

When the bell arrived in Dunoon it lay neglected for several years. At one stage a chicken made a nest under it. But when a steel fabricator set up shop in Dunoon in we had him build a new steel tripod to support the bell so that it could

be seen and occasionally rung. It made a beautiful mellow sound.

When the Friends of the Gardens embarked on the establishment of a Sensory Garden, we wondered about moving the bell to that area of Gardens. It would certainly stimulate the

sense hearing! However, it took time to get around to doing anything about it. Eventually it was decided that the Hoop Pine Forest would be a better site - at the top near the Labyrinth.

In November last year it was transported to the Gardens by a local bee keeper using his hive lifting equipment (this bell is very heavy!) There, it was transferred to our trusty power barrow and Nick and John took it up to the top. It was a combined effort to get the bell off the barrow and into position – including Hazel videoing the whole process. But it happened and without any great drama.

And there it stands in a clearing amongst the Hoop Pines, ready to be rung by visitors and volunteers. The sound carries to the main Gardens area and it is delightful! Like a distant church bell in a village.

We found information about the bell on the internet. It was cast in 1893 using a system patented by Vickers and Sons in Sheffield, UK. It has been recorded in a data base of Vickers steel bells maintained by George (Bellringer) Dawson, in the UK. Initially we had it listed as being in private hands in Dunoon NSW. However, the recent move to LRBG has now been recorded.

It was only after the move that Denis decided to search the Mudgee

Guardian for information on the bell. To his amazement he found a reference to the fact that a bell had been hung in the tower of St Mary's Church Mudgee early in 1899, but within three months the damaged bell was replaced.

Denis has recently been in touch with the editor of the Mudgee Guardian to see if he can follow up the story from that end. He... the editor not Denis!... has already offered to go up into the tower and inspect the current bell there. If that bell is another Vickers steel bell to replace the damaged original then we have the full story. If not then that theory is shot to pieces and we need to think again.

PS. Info received on 12 February indicates that the current bell in the church tower in Mudgee is bronze and was cast in Dublin and that the first bell in that tower was installed in the early 1880s. So why our bell was in Mudgee is still a mystery.

Denis & Marie Matthews



Getting it there...photos Hazel Bridgett

Feel Blue, Touch Green



On 20 November Lismore City Council's Feel Blue, Touch Green (FBTG) team ran a special day at the Gardens. The whole day was spent outdoors, with time as a group in our Sit and Ponder log circle in the Hoop Pine Forest, working at preparing bee hotel using fallen tree branches, bamboo and other natural materials, and going for a walk in the Gardens. Lunch was an outside picnic cum barbecue and they even made tea using a small enclosed fire / thermos with dry twigs for fuel to boil the water. The principle behind this whole project is that 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. Our Botanic Gardens is one of the sites in the Lismore area nominated for such activities. Response from those who attended was positive and the answers to what they enjoyed most during the day included:

- The bush walk
- Making a bee hotel
- Visiting Hoop Pine forest
- Getting away from everyday life for a while and taking time out to rejuvenate my mind
- Spending time in nature with people I know and new friends/ enjoying the amazing work the FLRBG have done – fabulous

Information from Vanessa Tallon LCC

Children's experience of the Environment

While November/December is a relatively quiet time for our Children's groups at the Gardens we have had quite a mix of visiting groups over the last six months. Preschoolers, Infants and Primary School and a couple groups of High School students - some with learning disabilities, some wanting some volunteer work experience. They are all different and all very rewarding in their own way.

I recently attended the Northern Rivers Group of Environmental Educators meeting (NRGEE) – it is a group that encourages young people to build their knowledge of, and take action towards, their local critically endangered ecological community of the Big Scrub Rainforest. They have accepted a request from the NSW state group to host a professional development workshop regarding Best Practice and 'Take me Outside' campaign - an overseas program.

THE CONFERENCE WILL HAPPEN ON THURSDAY, FEBRUARY 21ST, in the LCC Environment Education Centre adjacent Botanic Gardens.

I'll be excited to attend and hope to have an opportunity to encourage visitors to explore LRBG. *At time of going to print this conference is already booked out!*



Margaret Hildebrand

Hidden talents

The Friends have many talents, well used in the work parties. John Ford, one of our most ardent volunteers, let slip that he is an experienced water diviner. So he was asked if he could find the mains water pipe across the road east of the Sensory Gardens as Florence Treverrow and I are preparing a map of the existing pipelines. Not only did John oblige - and succeed in finding the pipe - but he taught several cynical Friends how to divine, using his brass rods. Out came the cameras for this just had to be recorded. Thank you John for now we know where to dig (gingerly). One day, soon we hope, a new line will be added through the Wilson Park Species Garden east of the Red Bridge.



And here is a photo to prove the event. John, in yellow shirt, with Denis and me watching.. amazed... as the rods swing out as he reaches the vicinity of the pipe! Could we plan a guides walk for the Friends on water divining??

Geoff Walker

New website

For some time Marie Matthews has been wanting to update the website and make it easier to modify. Late last year ACE Community College had a course on using Wordpress for websites. After consultation with Versacom, our hosting service, it was decided that Tracey Whitby and I would do the course and the new website we created would be transferred to the old domain name when we finished.

The course went well and Tracey and I set to work on the new website. I focused on the history and garden plan sections. This required me to find photos and try to work out what happened when. I got rather side tracked and ended up sorting through a lot of old material in the office (in the EEC).

So far I have managed to write the early years history and find the photos to show how each area of the Gardens developed. If any members have photos or other material that might help with this it would be appreciated if we could borrow and copy any relevant material. One date I have not yet discovered is when it was decided to limit plants in the Gardens to those indigenous to an area within 200kms of Lismore.

The upgraded web site should be up by the time this newsletter goes out. There is still more to add but any feedback on what we have done so far would be good.

Florence Treverrow



Very early photo at the Gardens. Fern Gully Crossing February 2006

Big Scrub Environment Day

This event was to have been at Rocky Creek Dam but the weather that week in October was very wet so the site was moved to Lismore City Hall. However, the Bird Walk and a walk focussing on Rare and Threatened local rainforest plants, were moved to our gardens. It was a great day for us with people coming to the Gardens who had never been before and some who didn't even know it existed! The Rare and Threatened walk in our Uncommon Plants Garden attracted a very big group led by Justin Mallee and Di Brown from the Office of Environment and Heritage. They gave excellent presentations about the search for the rarer rainforest plants.



Justin Malley with some of our visitors on Big Scrub Day....

Open Day

Botanic Gardens Open Day was in July and our main activity that day was a guided walk in the vicinity of the Wilson Park Species Garden focussing on the butterflies of this area and the plants to which they are attracted. It was an excellent walk led by new guide Linda Wirf. It was well illustrated with our new Butterfly signs and very well researched and presented by Linda. We all learned a lot!

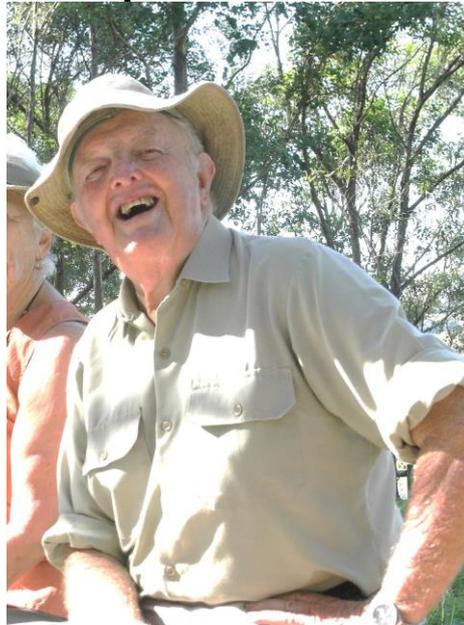


...and some of those who came on the Guided Walk on our Open Day.

The Passing of Lionel Phelps

The Friends of the Lismore Rainforest Botanic Gardens were well represented at the funeral of Lionel Phelps who was one of the foundation members of our Gardens. And I was privileged to deliver a eulogy on behalf of the Friends at the funeral.

Lionel was one of the pioneer Sunday gang in the nineties who cleared a weed-infested paddock of camphor laurels and lantana, leading to our first plantings. He led the team that rock-armoured the lower banks of Grandis Creek Crossing adjacent to Car Park Two. He was the Chairman of the Botanic Gardens Advisory Committee to Lismore City Council before it became the FLRBG-LCC Liaison Committee. He regularly participated at our work days, was an excellent worker and, with his great negotiating and planning skills, was a much valued member when dealing with any organisational matters. With a background of Australian flora, Lionel and his wife Lenore belonged to the Australian Plant Society and planted hundreds of native trees at his home at Richmond Hill. He was the Director



Lionel at work at the Gardens early 2000s

of Education (North Coast) for many years and became the Chancellor of Southern Cross University. He worked tirelessly for the advancement of Aboriginal education within the University. He tried unsuccessfully to organise the purchase of the farm of the Pollard Family adjacent to the Gardens and its donation to the Botanic Gardens. This would have expanded the Gardens northwards to the Wilson Nature Reserve. Alas it didn't happen.

We are delighted that Lenore wishes to retain links with the Friends.
Geoff Walker

As from our AGM on 16 September the new FLRBG executive is:

Hazel Bridgett President
Leanne Davis Vice President
Florence Treverrow Secretary
Marie Matthews Treasurer

Our Committee is:

Pat Offord
Jan de Nardi
Ros Little
Tracey Whitby
Margaret Hildebrand
Geoff Walker
Neil Walker
Epona Winter

Contacts:

P: 0450 596705
E: Secretary@friendslrbg.com.au
FB: www.facebook.com/FLRBG
Website: www.friendslrbg.com.au



Another very important new team member is Christine Kremser. Our bookkeeper. While the treasurer pays the bills and keeps an eye on the expenditure, Christine enters all the info into our online accounting programme and produces statements for each meeting. Wonderful!

TIMETABLE OF GUIDED WALKS AT GARDENS February – July 2019

Date of Walk	Name of Guides	Topic & Area of Garden
24 February	Tara Price & Phil Jarman	Medicinal weeds talk
24 March	Marilyn Smith & Tracey Whitby	Wilson Park Species Garden
28 April	Ken Wilson & Graeme Patterson	Useful Plants Garden
6 May	Phil Jarman	Hoop Pine Walk
Botanic Gardens	Geoff Walker	Rainforest Walk
OPEN DAY	Jenny Wilson/Jan de Nardi	Nursery Tour
	Linda Wirf	Butterfly Walk
30 June	Wal Davies & Peter Stace? <i>- forester involved in pines planting</i>	Hoop Pine Forest Walk
28 July	Aine with Phil Jarman	Sensory Garden

Available guides and area for walk may change but we will keep you informed and further details of each walk will be given in the weeks preceding the actual walk.

Tracey Whitby



Botanic Endeavour 250 event in 2020



Tracey, Delta and Geoff at Tallow Beach meeting

The Maritime Authority is organising a series of events to mark the voyage of Captain James Cook and botanists Joseph Banks and Daniel Solander up Australia's east coast in 1770. Our Gardens is listed as one of the participating organisations. Our date is Friday 15 May 2020 is when the replica Endeavour is scheduled to pass Byron Bay.

Education Officer from the Byron Bay National Parks Office, Lee Middleton, and Delta Kay from the Arakwal Aboriginal Corporation, met with four of us in December at their Tallow Beach office. There was some interesting discussion. Bank's journal mentions sighting Aboriginal people walking along the beach carrying palm fronds. He comments that they don't seem to notice their ship! However, fires were lit all along the coast as the boat moved north. Lee gave us some maps and information about the 2020 replica Endeavour ship route. We also inspected their botanical resources/banners which are very impressive.

Lee and Delta are interested in making a visual plant wheel of 8-10 important flora found in their park. This would be a 3 part wheel with fruit, flowers and leaf pictures to identify the plants. They have requested our support re information about the plants. We

have most of the plants on their banners in our Gardens. I have rung Maritime Authority at Museum in Sydney, Peter Rout, and he was very supportive of us putting in for a grant to pay for the design and printing of the wheel which we could both use repeatedly in the future. Peter suggested a partnership would be more likely to secure a grant. Grants open in January and close March.

Delta is making a poster calendar of Arakwal seasons with plants and animal links and has funding for this. She says there is already a Ngulingah calendar available at the Jalli Land Council in Tamar St Ballina. <http://www.jalilands.com.au/calendar.html>

So we are doing some brain storming at present re what else we might do in our participation in this event. If you have any ideas please let us know.

Tracey Whitby

NEW RANGE OF FLRBG GREETING CARDS

6 for \$10

Previous batch

12 for \$5

Limited number of 2019

Calendars reduced price \$5

Contact Tracey :

Publicity@friendslrbg.com.au

Thanks to Sponsors

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, Mavourneen Kennedy, Southern Cross Uni and local firms Ginger Blue Graphic Design, Readings Engineering, Swan Bay Quarry, Wardell Turf Farm, Versacom, Trenches McKenzie & Cox Solicitors, and all who have supported us in any way including some who have requested to remain anonymous. We are very grateful to you all - we couldn't do it without you.



Special Thanks to our LCC Liaison people Angie Brace and Anton Nguyen, and the LCC Staff at the Waste Facility and other Council departments who willingly give us their help and support as needed

Sources for 'Azolla... not just a floating fern' Page 6

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