FLRBG

August 2022

Newsletter of the Friends of Lismore Rainforest Botanic Gardens Inc.



President's Message

The Friends were philosophical when, after our first newsletter for 2022 went out in February, the Big Scrub Day planned for February 28th was cancelled. Watching the huge weather system move south from Brisbane made the decision very easy. However by the 29th, Lismore was in shock with over 650 ml of rain falling and drowning our city.

It was devastating to watch many of our volunteers, as well as their friends and families, lose their homes and possessions. The community support network assisted many to recover with rapid action and ongoing kindness and generosity.

When at last we were allowed back into the Gardens, we saw that our rainforest had handled the extra rain very well. However, many of our paths were badly damaged. Relief grants and willing workers enabled us to repair them quite quickly, but a second flood in March and continual rain until May, saw further damage and the cancellation of our Open Day in May as well.

In May, however, we received from the Australian Association of Friends of Botanic Gardens the **Handbury Award** given to a member group for exceptional contributions to an Australian Botanic Garden.(see p.3). It was a great boost to morale.

An Open Day, celebrating the **20**th **Anniversary of our first planting** in 2002, is planned for 21st August. It has given us a focus and also an opportunity to remember what has been achieved and how much more we would like to do. On that day from 9am till lunch time we hope to share many memories and take pride in our unique and beautiful Gardens.



Massive subsidence to Sensorv Garden entrance road after the flood rains this year

Six of our volunteers will be the centre of attention on the Open Day, receiving Life Memberships. Between them all, they notch up well over 130 years of commitment, hard physical work, planning, creative ideas and inspiration. These wonderful mentors, who continue to give so much of their vision, time and expertise to the Gardens, have taught me so much.

Denis Mathews is the catalyst behind the design of the labyrinth and the solar clock, a long-time Secretary, overseeing membership and the printing and sale of books at the Gardens. Marie Matthews, as well as holding almost all executive positions on the committee over many years, is still editing this newsletter, designs many of the educational maps and signs and, ten years ago, saw the beauty of the Hoop Pine Forest and opened it up as an important part of the Gardens, planning paths and features. Her pet project currently is Room 5 of the rainforest. Jan de Nardi, has been actively involved since just after our first planting and was president for many years. Being an experienced botanist she has brought a wealth of knowledge about plants, enjoys

teaching volunteers about botany and, more recently, Manager of the Nursery. **Hazel Bridgett**, is also a long-time very active member of the committee, including 3 years as president. She is the powerhouse behind construction in the Gardens. The latest bridges, amenities, sheds, office, and soon a pergola, highlight Hazel's expertise in grant writing and organising major works projects.

Have a chat to Geoff Walker, who has been continually involved with the Gardens since they were just a dream, and you will feel the passion and vision he continues to bring - a wonderful mentor and still working in the Nursery each week. Geoff received Life Membership several years ago, and will be included in the special presentations. Rose Hand, who ran our first nursery in her own back yard in 2007, and continued as Nursery Manager till 2019, is also a Life Member. Our new nursery at the Gardens will be named in her honour at 10 am on the Open Day. It hasn't been an easy year but the camaraderie, hard work and good will of our volunteers has made it both possible and enjoyable. Thanks to you all. **Tracey Whitby**

President@friendslrbg.com.au

Plant Profile

from Peter Gould

Ackama paniculosa (Syn. Caldcluvia paniculosa) Common Name: Rose-leaf Marara, Soft Corkwood Family CUNONIACEAE

Roseleaf Marara is a medium to large sized tree found in Subtropical, Wet Temperate and Cool Temperate Rainforests, often as a pioneer on margins, but also persisting as a canopy tree. Floyd records one tree in the Border Ranges National Park reaching 40 metres in height with a diameter of 90cm.

Leaves

The leaves are compound with 3, 5 or 7 elliptic to oblanceolate leaflets, 7 to 20cm long. The leaf margins are regularly toothed and almost hairless with some soft hairs on the underside. There are prominent, hairy domatia.

Flowers:

Numerous flowers appear in early summer, growing in terminal pannicles. They are white, becoming red with age. The flowers are long lasting and have been used in floristry.

Fruit:

The fruit is a globose capsule 2-3mm long, reddish in colour and occurring in large numbers in terminal pannicles.

Bark:

The bark is fawn and deeply fissured, hence the common name "Soft Corkwood".



Image Ackama paniculosa from The Royal Botanic Gardens and Domain Trust

References:

PlantNET New South Wales Flora online https://plantnet.rbgsyd.nsw.gov.au/cgibin/NSWfl.pl?page=nswfl&lvl=sp&name=Acka ma~paniculosa

Harden, G., McDonald, B. and Williams, J. 2006, *Rainforest trees and shrubs; a field guide to their identification,* Gwen Harden Publishing, Nambucca Heads, NSW. Floyd, A.G. 1990, *Australian rainforests in New South Wales*, Surrey Beatty and sons, Chipping Norton, NSW.



Ackama paniculosa in flower Photo T M. Tame The Royal Botanic Gardens and Domain Trust

Saving Nightcap Oak

The Nightcap Oak *Eidothea hardeniana* is part of the unique rainforest ecosystem which established when Australia was still connected to Asia, Antarctica and South America about 40 million years ago. As Australia moved north over millennia the climate warmed, and the Nightcap Oak is now found only in a tiny pocket north-east of Lismore. It is now classified as Critically Endangered.



Nightcap Oak Eidothea hardeniana Flickr image

National Parks and Wildlife Service threatened species officer Justin Mallee says that they are racing against the clock to conserve and protect the trees. "The plight of the Nightcap Oak tree is similar to that of the Wollemi Pine, but it's the lesser known of the two," he said.

More than 500 seeds were collected from the few remaining trees for propagation in a specialist nursery. The seeds are very difficult to propagate but now 50 seedlings have been successfully grown and 20 of these are being planted in four secret sites in the Nightcap, and nearby Mount Jerusalem, national parks, with the rest to be planted in the coming months. The selection of the new sites has been based on their long-term climate resilience which involved exploring parts of the rainforest to see where would be suitable for the trees to grow, examining rain patterns, light availability and soil condition. In doing so, scientists are speeding up a migration process that would usually occur over centuries. "We're learning as we go along with this type of work and the Nightcap Oak is just one of the species we are working on." Mallee said.

www.environment.nsw.gov.au/news/newferal-free-rewilding-site-for-new-south-wales www.smh.com.au/environment/conservation/e ndangered-oak

Update on Infrastructure Projects at Gardens



Steel structure of Fern Gully bridge waiting in Council work site – Hazel's shadow in foreground taking photo!!

The high level bridge to span upper Fern Gully is nearing completion. Fortunately the steel structure had been galvanised so survived the inundation by flood water at the Council's workshop site on Bangalow Road. The construction of the foundations, led by our volunteer builder Will Evans, was held up by the wet weather and the Lismore flood. Will lost his home and vehicles and also has had (non-life threatening) health problems. The next steps are to finalise the concrete pour into the formwork and then manage the transport of the steel components to the site for installation. The bridge approaches and decking will then be undertaken by our volunteer construction team. New volunteers always welcome to this team.

The office extension to the Visitors' Centre is also nearing completion. The concrete pad has been poured and BT Sheds are hoping to commence the build this month. After that Peter Gow Electrics will do the wiring for lights and power points and the construction and maintenance team volunteers will complete the fit out. We are all looking forward to the day when we can finally move our archives, library, supplies, battery chargers and educational materials out of our homes - and the Visitors' Centre so that it can remain open for visitors during opening hours.

An application has been submitted for a grant for a new three bay shed

and workshop to replace the small steel shed near the gate to the waste admin block. We should know whether or not our application has been successful by the end of the year.

Another project, which is the subject of a grant application, is for the manufacture of almost 400 personalised pavers for the commemorative garden by a team of local ceramicists. The artwork on the pavers will be requested from the community to commemorate the working lives of returned servicemen who served their communities in civilian life in a variety of roles including as volunteers for Legacy. The garden has already been planted with some of the plants that have local equivalents of plants in the South Pacific and SE Asia which were used as food or medicine during times of conflict and includes the established native rice garden. The proposed path will lead to a gazebo which will be built by the volunteer construction and maintenance team. Former Junior Legatee and local architect, Don Granatelli, drew the original concept plans for this development.

There are other planned projects including a new boardwalk across the gully that runs between Rooms 5 and 6 to replace the concrete causeway which was lost in the floods, and a music cubby in the rainforest. And much more.

Hazel Bridgett Projects Manager

Handbury Award

From 29 April to 1 May I represented the Friends of Lismore Rainforest Botanic Gardens at this year's biennial conference, of the Australian Association of the Friends of Botanic Gardens held at Eurobodalla Regional Botanic Garden. The theme was '*Thriving Together – Resilience and Renewal in a Changing World*'.

As I walked in to register, I wondered if I, with no formal knowledge of horticulture or botanics etc, was the right representative,. However, by the end of the conference I was very pleased to have attended and picked up many ideas to share with our Friends.



However, the most exciting aspect was at the Welcome to Walbunja Country and then the **Presentation of the Handbury Awards!!!** And the Friends of LRBG – Wednesday Work Group was announced as the Category 2 recipient - "For outstanding contribution by collective volunteer endeavour contributing to major works to LRBG thus enhancing the environment and the community."

I was then called upon to receive the award. This was a total surprise to me as, prior to attending I hadn't been aware that we had submitted a nomination.

My personal congratulations to the Wednesday Work Group volunteers past and present - for all the enormous tasks they have undertaken over the years with such enthusiasm and good humour. It is great to be counted amongst you. *Susan Fitzpatrick Membership Secretary*

What has happened at the Gardens since our 10th birthday in 2012

2012

Extension of Sunny Slope Planting of flowering shrubs; LCC start building Environment Education Centre (EEC), with toilets and conference room to which Gardens will have access. Jan de Nardi is President

2013

EEC completed with wheelchair accessible ramp entrance; Gardens officially opened; walking tracks through Uncommon Plants and Useful Plants Gardens. Pat Offord takes over as president. Dry spring and summer watering teams keep plants alive. Extension of water pipe, plus six extra taps. Detailed plan for Sensory Garden. 2014

Website and Facebook page established; shelter built over barbecue; Ros Little takes over from Rose Hand as Works Organiser; builder Will Evans starts our volunteer building team; Nursery team starts running plant sales to public; Education Team set up - groups of preschool and primary school children visiting Gardens; windbreak of Lillipillis planted in Sensory Garden, open shade trees along eastern side. Very generous donation from Andrew and Jeni Binns enable development of Sensory Garden. Peter Bundock takes over as president.

2015

Sealed paths, shelter and two raised gardens in Sensory Garden... and some initial planting. Four wooden benches installed; Japanese visitors from, sister town of Yamato Takata; Marie Matthews takes over as president; Watering roster needed hot dry spring; courses run in working with local native plant fibre; FLRBG planning workshop. Mosaic Path opened in Sensory Garden

2016

Walking track built in Hoop Pine Forest with stony labyrinth at summit; Special Open Day to officially open the track; Main gardens planted in Sensory Garden; Red Hump Bridge built at entrance to Wilson Park Garden;. Visit from Costa Georgiadis from ABC Gardening Show. Tree audit started by Peter Gould; new shade house for FLRBG nursery temporarily erected at Rose Hand's home; southern slope Anniversary Path planted with rf trees.

2017

New Tool shed built adjacent to Car park 2; Viewing Platform built in Sensory Garden; new sealed path from EEC to car park 1; acquired motorised wheelbarrow; Commemorative Garden platform foundation laid; threat of loss of basic funding from LCC overcome after serious lobbying - unanimously approved by Council; Flood slows down progress on building projects; Cool Cubby and Propagation Shed underway; serious work done on Erosion Control in creeks; our arrangement with Council moved us from Waste Facility to Civic Pride; Guiding workshop with Botanic Gardens consultant; Tree audit completed; long dry period brought back watering teams; officially opened Visitors Centre;

2018

Nursery shade house moved to Gardens site, with surrounding fence; Jan de Nardi takes over as Nursery manager; Potting Shed completed and officially opened in December; Weeding team working overtime after all the earlier rain; Native Rice Garden with linking path to Sensory Garden completed; Solar Clock built in Sensory Garden; almost 2000 school and preschool children visit; we ran very successful Guide Training programme; Hazel Bridgett takes over as president; Guided walks start on Last Sunday of each month; MOU with LCC renewed; Palm Gully is officially opened.

2019

Planning for Botanic Endeavour 250 event underway; fire in Waste Facility green waste heap – Gardens closed for several weeks; Former management committee president Lionel Phelps dies; LCC General manager Shelley Oldham visits; Gardens arrangement with Council reverts back to Waste Facility from Civic Pride; boardwalk constructed in Room 5; additional water lines and taps in Hoop Pine Forest; extreme heat and smoke from bushfires restrict activity at Gardens; watering team very busy; Rain in late December eases drought condition

2020

Covid19 pandemic happens; lockdowns result in Gardens closed for many weeks and, later, activities strictly limited; Past President, Secretary and long term Curator Pat Offord resigns; Open Day in August within Covid regulations; Amenities Block at Visitors Centre officially opened; Banks (Endeavour) Walk opened and interpretative education wheels launched; Handbury Award for donors Andrew and Jeni Binns also Pat Offord for long term work at Gardens; Covid restrictions reduced but still limiting activity at Gardens;

2021

Covid lockdown ends, and later restrictions eased; building of high level footbridge in Fern Gully underway; old acacias removed and area replanted; our second successful Guide Training Course; Open Day in May unveiling Binns sign in Sensory Garden; Curatorial & weeding advisory group (CWAG) formed; New constitution accepted by committee; Tracey Whitby takes over as president.

2022 so far

Covid restrictions eventually lifted; Record floods in March virtually destroy Lismore CBD and surrounds but damage at Gardens limited to roads and paths – plants OK; erosion in creeks minimal but building work slowed including bridge Fern Gully - but main steel ready to install; new planting done in Sensory Garden and along Anniversary Path and Stained Glass/old fence posts sculpture installed; limited children's groups return ; Uncommon Plants Garden extended; FLRBG Office under construction adjacent to Visitors Centre; 20th Birthday celebrations planned at Open Day 21 August.



Just a few of the many achivements at the Gardens in the last 10 years

Women plant collectors of Richmond Valley update

In August 2021 I wrote an article for the Newsletter regarding my Doctor of Visual Arts' research into the Richmond Valley women who collected plant specimens for Ferdinand von Mueller in the second half of the 1800s. Their specimens were an important contribution to Australia's first herbarium, now the National Herbarium of Victoria.

My findings were the inspiration for a series of artworks that were to be exhibited in *Re-collect*, a solo exhibition at Lismore Regional Gallery in June/July this year. Sadly, because of the recent catastrophic flood, this did not happen.



Colours of the flower of Dampiera stricta Blue Dampiera

Two things have happened since, firstly the exhibition will now be shown at Grafton Regional Gallery, from 29 October to 11 December 2022, which is wonderful. Secondly, I widened the geographical scope of my research to include more women throughout Australia, in the hope of showing *Re-collect* at other regional galleries in NSW.

The Grafton exhibition will comprise a range of media including drawing, embroidery, photography, and plants, presented as both pressed and wet specimens. Many of the plants have been collected at the Lismore Rainforest Botanic Gardens, under generous guidance from Peter Gould, whose expertise has been invaluable. Support has also come from Peter Mouatt and Heidi Lunn at the Southern Cross Plant Science Herbarium, who have allowed me to photograph the plants with their dissecting and compound microscopes.

The type specimens collected by some of the women throughout Australia will be represented in a series of white pen drawings on tracing paper. They replicate the way each woman laid out her specimen before drying, as a way of bringing back her actions and thought process. One of the most time-consuming works has been a series of small embroideries, each one representing a single species. When plant specimens are pressed, they generally lose their colour. For me this loss of colour signifies the absence of these women in Australian botany. I have researched the colours of the flowers, buds and fruit in specimens collected by women in New South Wales, then matched them with embroidery thread colours, which are stitched into perforated card, echoing a technique once fashionable in the Victorian era.

The ladies who collected in the Richmond Valley, Miss Annie Edwards, Mrs Mary Hodgkinson and her daughter Virginia, will still have a strong presence in *Re-collect*, alongside Miss Brundoch, Miss Annie Murray, Miss Edith Thornton, and Mrs Mary Wilcox, who collected in the Clarence district. *Lyndal Phelps*

New Myrtaceae beds

Planting out the Rare and Threatened Myrtaceae beds was immensely satisfying after a year of collecting and nurturing seedlings and caring for advanced plants in pots. Preparing the new beds has taken a while but it was all a wonderful case of everyone pitching in to make it work. And the plants are all doing so well. Quarantine signs have since been installed to discourage visitors from accidentally contaminating the area.

All Myrtaceae are affected by Myrtle Rust but *Rhodomyrtus psidioides* Native Guava and *Rhodamnia rubescens* Scrub Turpentine are are critically threatened by this fungal disease. We are involved with the Australian network for Plant Conservation (ANPC) project to save these species.



We are also participating in the New South Wales State Recovery Plan for *Davidsonia jerseyana* Bailey (Davidson's Plum) . This small tree is classified as endangered and is found only in the Tweed and Brunswick River catchments of the north coast of NSW. The Davidson plum project will most likely require new beds, similar to the Myrtaceae. A second area like this would also give us the opportunity to be involved in future species rescue projects.

Judy Blood Curator



Macadamia tree

In a recent Rural Breakfast programme on ABC RN, recorded in the Amamor Forest near Gympie, macadamia grower and researcher Ian McConachie pointed out a small, spindly, chest high macadamia tree.



Ian McConachie with 42+ year old tree

It was situated in dense shade in the rainforest. He first located this tree in 1979 and it has got any bigger in the intervening period. That was, presumably, because it was waiting for a break in the canopy so it could receive light and grow.

The oldest known European-planted macadamia tree has been growing in Brisbane's Botanic Gardens since 1858 and still bears a healthy crop of nuts. Radiocarbon dating of the trees is now being used to discover their longevity. Even a small plant could potentially be hundreds of years old. *https://amp.abc.net.au/article/101276254*



Macadamia Nut Public Domain image

Temperate Rainforest in Scotland endangered

In past times temperate rainforest covered large areas along the west coasts of Europe, and the UK. It thrived in areas referred to as the 'Hyper-oceanic' zones – where there was high rainfall, relatively mild winters and warm but not too hot summers. These temperate rainforests are also found in other isolated pockets around the world where conditions are right, including Tasmania. It is the moisture-laden Gulf Stream from the Atlantic Ocean that helped create these conditions in Scotland and other parts of the UK.

This Temperate Rainforest is sometimes referred to as Atlantic Woodland or Celtic Rainforest. As well as supporting the growth of trees such as Ancient Oak, Ash, Birch, Hazel and Scots Pine it also sustains rare fungi and ferns and some of the world's rarest liverworts and lichens and also a great variety of wildlife. Scotland has retained the largest amount of this rainforest in the UK.

However, only 2% of this original woodland cover now remains and much of it is in small isolated patches. It is "as important as tropical rainforest, but even rarer", a Woodland Trust report explained and the "sheer abundance and diversity of species" found there makes it internationally important. However, many of the trees in the remaining pockets of woodland are old and they are not regenerating. This is a result of isolation, overgrazing of the too big population of deer, the intrusion of plantations of non-native pine which can create

year-round shade and needle litter and invasive non-native weeds, *Rhododendron ponticum being* particularly aggressive and difficult to control.

A report by the UK Woodland Trust in 2021 found that just seven per cent of the remaining UK native forests could be described as being in a good ecological condition, with "one of our most precious habitats" – Scotland's rainforest – under particular threat. Adapted by Marie Matthews from reports in Scotsman News & Woodland Trust UK www.scotsman.com/news/. https://www.woodlandtrust.org.uk;

... and what lives this Scottish rainforest?

- Spring flowers, such as bluebells, wood anemone and primroses
- Migrant songbirds including redstart, tree pipit and wood warbler
- Woodland birds, such as buzzards, great spotted woodpeckers and jays



- Deer and badger and the rarer red squirrel, wild cat and pine marten
- Hundreds of insects including threatened chequered skipper butterfly
- Great variety of soil microorganisms which inhabit the forest floor. https://forestryandland.gov.scot/

Brand new set of greeting cards



ONLY \$20 A SET OF 12!

Just arrived from the printer.

They are beautiful!! 12 different photos of flowering plants and local native animals, All taken by Friends of LRBG

Wilson Nature Reserve Landcare

Wilson Nature Reserve was created in March 1993. It covers an area of 27 hectares and is the only significant remaining example of Dry Rainforest (*Auracaria drypetes suballiance*) which was once typical of the area around Lismore.

Tucked into a south facing slope and bordering on Wyrallah Road, this beautiful forest can be easily missed when driving past.



Wilson Park Landcare Group in their rainforest

The Reserve is home to a number of threatened flora and fauna species that are vulnerable to the increasing threat of invasive species – domestic cats, dogs and foxes - and also from nearby residential development.

Last year a group of local residents familiar with the Reserve and aware of its dire need for protection, set about forming a Landcare group. The group's intention to undertake bush regeneration faced a significant number of hurdles that needed to be navigated, not least of which has been the need for a formal agreement with the National Parks and Wildlife Service, under whose jurisdiction the Reserve is held. Then of course there were the Covid restrictions, not to mention the flood and ongoing wet weather conditions.

However, by happy coincidence and without knowledge of the other, simultaneous to the Wilson Nature Reserve Landcare group forming, the NPWS was busy creating a new position for a Volunteer Group Coordinator whilst also updating the Reserve's Management Plan. It was as though the planets were aligning!

Now, several months since the group formed, a Memorandum of Understanding has been developed and signed between the Landcare group and NPWS and our long awaited bush regen activities have commenced. The group meets monthly under the direction of the newly appointed NPWS Volunteer Group Coordinator, Emma Goodwin. If anyone would like to join the Wilson Nature Reserve Landcare group, their coordinator Louise Lichfield can be contacted via email at louiselitchfield@bigpond.com. There is also a Facebook page called Friends of Wilson Nature Reserve, which is open to the public. Louise Litchfield

The "Green Newspaper" was invented by the publisher of the famous Japanese daily, The Mainichi Shimbunsha. Published for "Greenery Day" on May 4, 2016, the special edition dedicated to environmental news was printed on 100% biodegradable paper with plant-based ink, and embedded with seeds that, when planted, would grow into flowers to attract butterflies and other pollinators, or herbs to eat. The publisher instructed people to tear the discarded newspaper into small pieces, plant the shreds in soil, and then water the container as they would any plant.

www.oneearth.org/the-newspaper-that-gives-back-to-the-earthliterally/

Safe pesticide to control Varroa Mite

A research team at University of Sydney, led by Professor Joel Mackay, is working on a project to develop a world-first hormone-based pesticide which is safe for honey bees but fatal to Varroa mite.



Varrao mites on adult Honey Bee Image: Vita Gallery

The researchers hope to make molecules that interfere with the interaction between the hormone Ecdysone and its receptor. Ecdysone controls most aspects of the development and physiology reproduction behaviour in these organisms. The shape of the Ecdysone receptor is subtly different in each of the orders of insects, mites and spiders etc. The team is working at exploiting those differences and making molecules that will hit the ecdysone receptor of the Varroa mite, but not the ecdysone receptor of the Honey bee or other animals including native bees. However, it would be effective against another destructive pest in bee hives, the small hive beetle.

The research project, has been underway for a year, but it could be two to three years before the product is ready for commercialisation. La Trobe University, the Walter and Eliza Hall Institute and Hort Innovation are also contributing to the project. Information from article by Kim Honan ABC Rural and press release from Hort Innovation www.abc.net.au/news/rural/2022-07-25/varroamite-pesticide-research, www.horticulture.com.au



Using Water Crystals when planting trees

Using water crystals or hydrogels are an effective way to increase survival and growth rates of young plants. They can replace the need to water at planting, though watering in is preferred in addition to the hydrogel. In a time where planting rates are increasing and climate is becoming more unpredictable, water crystals are a great tool for maximising success.

1 Fully hydrate before use

The hydrogel must be fully hydrated before use, which can take up to 30 minutes. To ensure this is the case keep adding water and mixing till water is sitting unabsorbed on the surface.

2 What can I mix with hydrogels?

Some hydrogels come mixed with mycorrhizal spores and slow release fertilizers though they are not common. Most people buy pure hydrogel and customise it by adding their own fertilisers - slow-release fertilizers such as Nutricote are significantly better than liquid fertilizers such as Aquasol.

3 How much do I use?

When planting a 50mm or 70mm tube people have used anything between a small handful and half a bucket of hydrogel. We have not found any data on the optimal amount, though 300mm to 600mm is commonly used.

4 Where should I place the crystals?

This is critical to the hydrogels' effectiveness. Do not mix it into the soil or put it in the bottom of the hole with soil on top. It is important to place the hydrogel in direct contact with the root zone of the planted tree. On a dry site or in a dry season completely surrounding the root ball is desirable, while in a wet year it is best to keep it all to one side to allow some of the root ball to drain.

Extracted from article 'Fact or Fiction: Do water crystals work?' by Mark Dunphy and Joe Harvey Jones www.bigscrubrainforest.org/fact-orfiction-do-water-crystals-work/

Science Saving Rainforest Update



Tony Parkes, President of Australian Association of Bush Regenerators recently reported on the 'Science Saving Rainforest' programme.

This innovative project applies the latest genome science to the development of a living seed bank to produce seed with optimal genetic diversity for use in the restoration of Australia's critically endangered lowland subtropical rainforest. The approach used in this unique project has a worldwide application.

Genetic diversity is a key indicator of species fitness and includes a species' capacity to survive and reproduce in the short term, and to adapt to changing conditions such as climate change in the long term.

The program has been expanded from a total of 23 species to now incorporate 60 species – 30 key



canopy and other structural species and 30 threatened species - in the plantation. Covid and the floods have hampered progress with leaf collection, but we will have completed collection for 30 of the species by September. These will go for DNA sequencing and genome analysis to establish up to 20 target individuals or populations from across the range of each species that represent the optimal mix of genetic diversity to avoid inbreeding, adapt to climate change and provide resilience to new diseases and insect predators. Propagules will then be collected from each target and propagated to provide planting stock for the plantation near Wollongbar. From Big Scrub Landcare www.bigscrubrainforest.org/wpcontent/uploads/2020/04/SCIENCE-SAVING-RAINFORESTS-BOOKLET Image Big Scrub website

Tasmania carbon negative

Scientists from the Australian National University and Griffith University have come to that conclusion after analysing the national greenhouse gas inventories of all Australian states. Professor Mackey said that there was big change in Tasmania's forest management around 2011 and 2012 which resulted in a significant and ongoing reduction in native forest logging in Tasmania ... 'that's when we saw this big change in the greenhouse gas inventory reports' from Tasmania.

https://www.abc.net.au/news/2022-05-03/tascarbon-negative-emission-levels-credited-tostopping-logging/101032008

temperature. The effect may be con-

siderable in a few centuries.

Banksia integrifolia

Coastal Banksia *Banksia integrifolia* was first recorded by Joseph Banks and Daniel Solander at Botany Bay when they arrived on the Endeavour in 1770. But it can be found right along Australia's east coast from Victoria to Central Queensland growing in sandy soils, with poor soil nutrition, usually in slightly protected sites which help them cope with exposure to salt and wind.



Banksia integrifolia flower Public Domain image Dreamstime

Its large pale green bottle brush type flower is followed by fruit spikes, or cones, which can look almost sinister, especially when wasps have caused gall formation. Maybe this is what led May Gibbs to cast them as the baddies in her Gumnut Baby stories!

An interesting feature of this plant is its Proteoid root system - also known as Cluster Roots - clusters of closely spaced short lateral rootlets. Fine hairs forming on the rootlets give the whole root system a large surface area making it very efficient in the absorption of nitrogen (N) and phosphorus (P), as well as water, in low-nutrient soils. It also helps in preventing erosion, thus aiding regeneration in coastal situations.

Coastal Banksia is an ideal plant to grow in a home garden. It requires little maintenance. Its bright flower spikes appear throughout most of the year and, because they are rich in nectar, attract small mammals, birds and beneficial insects.

References: The Conversation.com. Article by Gregory Moore, Melbourne University, published 12 June, 2020.

Aussie Ground Care Guide for Coastal banksia.Google searchIrene Gallagher

Burying a Fig Tree

In the novel 'The Island of Missing Trees' by Elif Shafak a Common Flg Tree – *Ficus carica* – is buried in winter to protect it from the intense cold. Evidently this is a common practice of immigrants who move from Mediterranean climates to countries with very cold winters. The objective of burying the tree is to keep it in the dark and protect it from the freeze/thaw cycles that happen in such climates, which can kill the tree. Keeping it at a relatively constant temperature, even if frozen, will protect it from damage.

Once all the leaves have dropped in late autumn the branches are tied up close to the main trunk. A trench is dug beside the tree large enough for it to take its complete length and breadth. The tree is then pushed over gently into the trench - some of the lesser roots may break or need to be cut but the main roots are preserved. The tree is then covered with a porous material such as a tarpaulin... if plastic, breathing slits are cut. Finally the roots are covered with the loose soil dug from the hole and the whole burial site covered with a thick layer of fallen leaves. The leaves are weighed down with hay bales or tyres to stop them blowing away. When spring arrives the tree is unburied and gently pushed back to upright position and it grows on as normal.

Maybe not very relevant in this part of the world... but interesting! https://www.instructables.com/Bury-a-Fig-Tree/;

https://www.foodgardenlife.com/grow-figsblog/2012/5/1/



Strangler fig covering old stone building Cambodia Image Chris Bergen

Koalas and the flood



The 2022 flooding events impacted six of seven Eucalyptus plantations in this area. Including Wyrallah Road, which was one of the worst hit. Many of the koalas which regularly pass through the Gardens come through this area. Since the end of March, the plantation maintenance team have worked to clear flood debris and ensure access is possible for the leaf harvesters to collect food for the koalas in care. We saw one Koala on our site immediately after the flood but there have been very few since then.



Dave, Michael and Grahame working with Simon Griffith from Wild Dingo Services on flood damage, and also installing water piping.

Early history of Eucalypts

French magistrate Charles Brutelle used the term "eucalyptus" to describe the hard-covered flower buds of a plant collected from Bruny Island on James Cook's third voyage. He called the new species *Eucalyptus obliqua*, now commonly known as messmate, which grows throughout south-east Australia.

The genus Eucalyptus, was the first of the three main groups used to describe eucalypts, based on the shape of their flowers and fruits. The second group is Angophora, which includes about 12 species from eastern Australia and the third group is Corymbia. These three eucalypt groups grew to dominate our continent. But where did they come from?

The oldest-known fossils are impressions of fruits, flowers and leaves that were sandwiched between layers of volcanic sediment 52 million years ago at the edge of a lake in what is now Patagonia, which was once connected to Antarctica and Australia as part of Gondwana. So could these trees, or their ancestors, have lived in Antarctica before the continents split? So far none have been found among the fossil plant species from Antarctica. Fossil evidence of Eucalypts in Australia is very patchy, mostly from sediments that are younger than 30 million years.

DNA studies are now starting to fill in the gaps about how different species are related.

Extracted from article by Genelle Weule ABC Science Posted 31 July 2022 www.abc.net.au/news/science/2022-07-31/eucalyptus-native-trees-evolutiondominate-australia-landscape/101229092



Th Aztecs fed large populations with floating gardens in swamp land *FB*

Passive Rewilding in UK

More than half the trees in two new woodlands in lowland England have been planted not by landowners, or machines but by Jays. Former fields rapidly turned into native forest using natural regeneration, meeting ambitious woodland creation targets. During "passive rewilding", Thrushes spread seeds of bramble, blackthorn and hawthorn, and this scrub then provided natural thorny tree "guards" for oaks that grew from acorns buried in the ground by the Jays. A study reported by the journal *Plos One* followed the fate of two fields. One was a nature reserve in Cambridgeshire, former grassland, and it was left alone in 1996; and the second was a barley field, which was abandoned in 1961. After just 24 years, the grassland area, known as "the new wilderness", had grown into a young wood with 132 live trees per hectare, 57% of which were oaks. After 59 years, the barley field, called "the old wilderness", resembled a mature woodland, with 390 trees per hectare of which 52% were oaks. In both cases, Jays were the likeliest source of the oak trees, typically carrying acorns to cache for the winter... much further than wood mice and grey squirrels.

https://amp.theguardian.com/environment/2021/jun/16/half-the-trees-in-two-new-english-woodlands-planted-by-jays-study-finds

Insect & bird populations

A report in 'Science' on Deutsche Welle – Germany's international broadcaster indicates that the number of flying insects in Germany has declined by 76 percent over the past 27 years. There are 15 percent fewer birds than just twelve years ago. The figures come from two different studies both of which suggest that there is a close link between the decline in insects and that of birds.

"Almost all affected bird species feed their young ones with insects," says NABU ornithologist, Lars Lachman.

The insect study conducted by the Krefeld Entomological Society, is based on data from the total weightmass of flying insects caught in special traps since 1989. Volunteer entomologists installed the traps in 63 different protected habitats in the German states of North Rhine-Westphalia, Rhineland Palatinate, and Brandenburg. They included heathland, pastures and fallow land. 'The study shows that the decline is not just limited to certain areas, but a broader problem', Josef Settele of the Helmholtz-Center for Environmental Research in Halle said. He was not involved in the study but says its methodologically sound. As a result, he believes there are clear signs of a possible massive extinction of insects. www.dw.com/en/insect-and-bird-populationsdeclining-dramatically-in-germany/a-41030897

Jay Garrulus glandarius



After the floods

One of the many jobs to do after the recent floods was the removal an old fence post screen and also a paved entrance area at the Sensory Garden This was to enable the contractor to come in with his machine and re-level the area after the severe subsidence. Here Susan and Florence are working at getting the old posts out of the ground. It wasn't easy!



Is it really twenty years?

Geoff Walker



Some of the volunteers at first planting 2002

Is it really twenty years since the first planting in the Gardens? Actually it is 25 years since we commenced clearing the site.

Way back then the offered paddock was full of lantana, camphor laurel seedlings and even an old rusting car.

The site included two small quarries, an experimental planting of Hoop Pine trees and a mixed Eucalyptus forest for local koalas. It had been a farm paddock and was then an adjunct to the Lismore Tip. It had no reticulated water, no toilets and only a dirt track to what now is Car Park 1.

There we spread our picnic rugs and started years of preparation. Our northern fence line was discovered but so covered in dense Lantana in parts that we couldn't reach the Hoop Pine Forest. At the western end we discovered Fern Gully Creek and we used a dry weather grassy track upwards to what now is the Nursery. Through our mattocking downwards towards Wyrallah Road we discovered Grandis Creek and a clearing that is now Car Park 2.

On a Sunday in August 2002 seventy adults and children did our first planting of rainforest trees along on the left hand side of the entrance road from Wyrallah Road.

We had enthusiastic day-dreams about a weekly pop-up cafe for Sunday afternoon visitors, a stone walled visitors' centre and an allweather path up through the Western paddock to the highest point above Gundarimba Road where there were first class views all round. We didn't achieve these dreams but we have achieved so many other things.

Now it is time to say HAPPY BIRTHDAY . We hope all of our Friends of the Gardens will join us on Sunday morning 21st August from 9.00 a.m. We owe so much to the Friends - they thoroughly deserved the recent Handbury Award!



Wednesday group celebrating receipt of the Handbury Award May 2022

Acknowledgements

We would like to acknowledge those who are supporting us financially and/or with their knowledge, skills and experience. Andrew and Jeni Binns, Janelle Saffin, Mavourneen Kennedy, Southern Cross Uni, Waste Facility staff, Paul Boxsell LCC Sign Shop, and local firms Ginger Blue Graphic Design, B & T Sheds. Ben De Nardi Paper Plans. Firewheel Nursery, Burringbar Rainforest Nursery, Hugh & Nan Nicholson, Accurate Tree Solutions, Wild Dog Dingo Services, Richmond Sand, Gravel & Landscaping, Don Granatelli Architect, Peter Lucena Engineer, Lismore Garden Centre, Newton Denny Chapelle Surveyors, Lismore City Printery, Suvira McDonald, Geoff McGrath Landscaping, Golden Grove Naturals, L J Hooker Alstonville and all who have supported us in any way including some who have requested to remain anonymous. We are grateful to you all - we couldn't do it without you.

FLRBG Committee

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See separate file for REPRINT of EARLY HISTORY OF THE GARDENS

Open Day Sunday 21 August Start 9am

Naming Rose Hand Nursery 10am Life Membership Presentations 10.30 + Cutting Anniversary Cake Guided Walks from 9.30 to 12noon Book walks by email publicity@ friendslrbg.com.au Meet at Visitors Centre See flyer below for further details

OPEN DAY LISMORE RAINFOREST BOTANIC GARDENS Sunday 21st August

Celebrating the 20th Anniversary of the first plantings in 2002 and presenting Life Memberships to some very special volunteers

Guided walks - Cake & Coffee - Card & book sales - Educational displays -Self-guided walks

Native plant nursery is open till 9.30 am till 12pm

Lots of beautiful local rainforest plants for sale and great advice from Nursery volunteers

NB We do NOT have card facilities so you will need cash – small notes and gold coins!

PROGRAMME

Gate opens 9 am

10 am Official naming of the Rose Hand Nursery AT THE NURSERY

10.30 am AT THE VISITOR'S CENTRE Presentation of Honorary Life Memberships and cutting of the 20th Anniversary Cake

11 am Demonstration of amazing strength of single leaf of Settlers Twine REGERERERE Gymnostachys anceps – AT VISITORS CENTRE

OPEN DAY GUIDED WALKS

Bookings essential by emailing publicity@friendslrbg.com.au (Please give a contact number and say which walk(s) and time you'd like to do).

EACH WALK TAKES ONE HOUR NB Some walk times overlap Numbers limited Gold coin donation

9.30am USEFUL PLANTS GARDEN – Andreas 10.30 THE GARDENS REGENERATION – Mari Jo 11.00 NATIVE BEES AS POLLINATORS - Graeme 11.30 HOOP PINE FOREST - Marama 12.00 pm WILSON'S PARK SPECIES GARDEN - Tim 12.00pm USEFUL PLANTS GARDEN - Ken 12.30 ENCOUNTERS 2020 GARDEN – Tracey Meet at Visitor's Centre 10 mins before walk please. Wear sturdy shoes and hat.

