
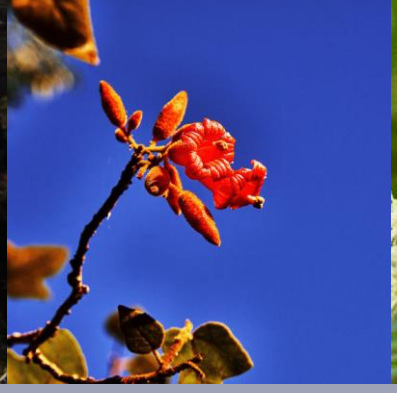


Friends of Maroochy Regional Bushland Botanic Gardens Inc.

NEWSLETTER

Jun 2023 Volume 27 Issue 2

PRESIDENT'S AGM REPORT 22-23

Lynn Vlismas

It has been another busy year of diverse activities for the Friends at the Gardens and we have all been very successful in continuing to enjoy ourselves whilst achieving the usual resounding results in:

- funding of Gardens projects ($160,000 worth of donations over 3 years),
- constructing new trails, paths, sculptures, arbours, and crafting events and exhibitions
- undertaking ongoing sculpture maintenance
- checking irrigation efficiency and required maintenance
- planning extra plants to be propagated for replacement in the Gardens and additional plants for sale at various public events
- organising event and exhibition sponsorship and supervision
- making local wildlife a focus for locals
- garden maintenance and new garden planting
- providing themed guided walks
- seeking grants for new projects
- assisting with Masterplan project planning
- picking up the baton for the Australian Friends of Botanic Gardens 2024 Conference

It is important, at this time of year, to bring our role at the Gardens into an overall context, and to judge our progress in meeting those implied goals - because we cannot forget that our major role is 'to support Council' in establishing 'a world class' Regional Botanic Garden - "a place that holds documented collections of living plants for the purposes of scientific research, conservation, display and education" (ref. Australian National Botanic Gardens "What is a botanic gardens?")

For some time, the Friends have been asking questions such as:
How well is our Garden going in planning for what should be included within the MRBBG Plant Collection; are we able to source and conserve rare, endangered and vulnerable plant species; and wouldn't it make sense to have a Curator to determine these and other Botanic Garden matters as we

Friends of MRBBG Inc.

Our Mission:
'To support the establishment and development of a unique world-class Bushland Botanic Gardens for the Sunshine Coast'.

Our Vision for the Gardens:
'To experience the harmony between people and the living environment'.

Our Vision for the Friends:
'To establish a vibrant and responsive Friends organization known for enthusiasm, participation and initiative'.

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start to work toward establishing a new collection of plants within all the new Masterplan projects now being designed?

It's over 25 years since Council decided the Sunshine Coast needed a Botanic Garden to display our unique and diverse plant forms; but in its current form the Gardens can only be judged to have reached the status of a well maintained Bushland Park.

Perhaps the Friends work in supporting the Council at the Gardens has been too helpful in giving the illusion that we have created a Botanic Garden purely by maintaining the Garden areas in such a neat and tidy manner with just a small range of horticultural plantings and by engaging with the public so invitingly with a range of semi-educational and recreational activities.

In the same 25+ year timeframe there has been no wide-ranging or representative Sunshine Coast Plant Collection established by a Curator well versed in our local species - or all the other pre-requisites of a Botanic Garden being funded and staffed by Council each year for plant conservation, display, research, education and Collection review and management. Without these factors being adequately addressed we cannot say that we will have helped create a 'Botanic Garden' which could be accredited as such.

None of what I'm pointing out is a criticism of Council's Natural Areas Team's efforts, it will take a whole-of-Council approach to succeed.

During this past year the Friends group has made considerable effort to engage with various Councillors; the Environment, Liveability and Sustainability department; and members of the Council Executive to raise the profile and needs of the Gardens; but there has been no new level of increased interest being taken by Council in MRBBG as a result of this, or any indication of additional funding or staffing that will help to make the Gardens an authoritative Regional Botanic Garden for the future.

The MRBBG Masterplan 2018 has set down a vision which is firmly rooted in working toward achieving a real Botanic Garden status, but as yet there have been no Council-wide goals or objectives set from this document. A Strategic Plan that encompasses all aspects of the operation of the Botanic Garden now needs to be put in place and implemented.

In the meantime, while we wait for these matters to be addressed, the Friends have been doing their best to make the Gardens continue to appeal to an ever-increasing number of locals and visitors by:

PUBLIC ENGAGEMENT - holding a round of 4 public talks titled "Backyards to Biosphere" in response to our newly awarded UNESCO Biosphere status for the Sunshine Coast;
- providing regular well researched theme based walks on Bush Food, Art in Nature, Pollinators and Koala Food trees, along with walks illustrating Gondwana plants and Inspirational Plants and People on Earth Day and BGANZ Botanic Garden Day;
- arranging a self-guided walk for the Wildflower Festival with a simultaneous photographic exhibition of "Wild Flowers of the Gardens" at the A&E;
- Continuing to promote the benefits of membership of the Friends at the Gardens during the Nambour Garden Expo;
- It is unfortunate that the Visitor Information Group has fallen into permanent abeyance due to the lack of a suitable central location that would naturally draw visitors toward it.
- It was hoped that the Arrivals Area project near the Lagoon would provide an appropriate location but this has not eventuated as the project has now shifted emphasis and may eventually involve the proposal of a new focal point for visitors arriving at the Gardens;
- mounting a "Wallace and Darwin: Two Minds One Theory" educational exhibition.

PROMOTING AND LEARNING FROM OTHER EDUCATIONAL AND COMMUNITY GROUPS
- Funding a yearly University of the Sunshine Coast Postgraduate scholarship with Matthew Mooney being this year's recipient focus-sing on post bushfire recovery of threatened plant species in sub-tropical rainforests.
- Publishing a Faunawatch monthly 'Birds and Insects of the Gardens' survey
- Promoting the new environmental group 'Backyards for Biodiversity' and other plant and wildlife groups as part of the Friends Backyards to Biosphere talk series
- Joining with the AAFBG Friends groups to learn from their experiences
- Planning for a Friends AAFBG Conference 2024 at MRBBG - the theme being 'The Challenge of Change'

SUPPORTING COUNCIL BY
- providing weeding, planting, mulching and propagation services; new path construction and maintenance; refinishing and reconstruction of timber work; cleaning and maintenance of sculptures; mapping and maintenance of irrigation system; guiding and event planning; and project planning feedback
- funding exhibition frames, planning and sponsoring prizes, and supervising gallery space for the WildHeArt Children's Art Prize
- joining Council's Eastern Tall Gums Reserve Bushcare programme
- advocating for additional Council funding and skilled staff with Councillors Suarez, Natoli, Johnston,

Baberowski and Group Executive member Warren Bunker.

COUNCIL/ FRIENDS COLLABORATIVE PROJECTS
- Working group input into the Arrival Area planning
- January 2023 school holiday Koala Discovery Walk
- Working group input into the Gardens Visual Identity and Wayfinding Strategy
- Working group input into the Richmond Birdwing and local butterflies Garden design
- Friends alternative concept for traffic flow and Arrival location at the Gardens
- Mount Coot-tha Botanic Garden Trip for Guides and Herbarium experiences
- Working Group planning for a "Gondwana" Garden
- Promotional video for the Gardens funded by Cr. Natoli
- Breaking news is that the Birdwing and Butterfly Garden project has started construction this month last month with site establishment and site contouring. Council will also be funding the site works, irrigation and path access. Plants, seats, interpretation, may require Friends funding.

FRIENDS INITIATED/FUNDED PROJECTS
- Completion of Western Tall Gums Trail for opening to public access
- new Eastern Tall Gums Trail - successful Grant Funding
- First Stage Richmond Birdwing Trail Artwork installation
- and aren't the colours being projected by the Dichroic Glass wings exceptional at the moment helped by the slanting rays of the winter sunlight?
- AAFBG Conference August 2024
- Additional Creek Walk Path construction
- Marquee establishment for promoting the Friends as part of the Buderim Australia Day celebrations

As always this work continues to take an extraordinary amount of behind the scenes organisation, planning and effort to maintain our increasingly high standards.

A great deal of the impetus for many of the new projects and events we organise and assist with each year comes from our stalwart and always cheerfully positive Committee members - Malcolm Cox, Vice President; Bob Ducrou, Secretary; Ray Dale, Site Manager; Gary Andrews, Treasurer; Paul Horne, Guide extraordinaire; John McCabe, Trailblazer; Everard Kloots, Project Planner. Thank you one and all.

Thank you to all of our members who continue to renew their membership, or have become new members; and to all our members who come regularly to support the Gardens and what the Council and Friends aim to achieve each year.

A heartfelt thank you to all the Council's Natural Areas team at the Gardens for their ongoing support of the Friends at the Gardens - Adam Connell - Manager Environmental Operations, SCC; Kurt Martin - Recreational Trails Activation Officer, SCC; Michael Gilles - Environmental Visitor Centre Officer, SCC; Rob King - Senior Horticulturalist, MRBBG, SCC; Renee Fletcher - Environmental Education Officer, Natural Areas Team; Cathy Money - Education Support Officer; Liz Capelin - Education Support Officer; Mandy Botterell - Guides Co-ordinator; Janine Bedros - Volunteer Co-ordinator; Josiah - Trainee/ graduate horticulturalist; Anthony - Trainee horticulturalist.

We could all so easily achieve much more of a lasting legacy for the Coast and its future - the Biosphere, the environment, sustainability, climate change, and biodiversity, and tourism and the economy with only a relatively minor amount of additional Council funding for ongoing Botanic Garden projects - but nothing meaningful will be able to be achieved without a knowledgeable full time Curator being appointed to contribute to the ongoing Masterplan works - and perhaps then we can all feel more confident that we are on the correct path for creating a Botanic Garden with its own unique Sunshine Coast character and requisite expertise.

VALE AILSA ZINNS, (Life Member)

Ailsa Zinns passed away recently, leaving a legacy of fond memories and significant contributions to the Friends and the Gardens. Founding and early members will recall her generous, lively personality and sharp, strong mind.

Ailsa (rt) with Debra Ducrou during a Gardens visit in 2019. (Image: Greg Miller)

Ailsa was one of those characters who deserve to be considered 'larger than life' probably larger than her own recollections revealed. She was mentioned in a 1970 newsletter of the '99's' (a U.S. group established to support female pilots): '*NORM and FRAN GRANT had the pleasure of entertaining AILSA and JOE ZINNS on route from Australia to the U.S. Ailsa was one of the Australian 99's to fly the 1967 race.*' In her working life in

the Northern Territory, Ailsa set up the government accounting service in Alice Springs, and was later (on her retirement in 1985 due to a traffic accident) highly praised for the success and value of that service.

As just one indication of the extent of her public generosity, in 2015 she was awarded the Clive Berghofer Humanitarian Award for her considerable contributions to the Queensland Institute of Medical Research. She also supported the USC 'Giving Day'.

Ailsa's practical activities at MRBBG included plant propagation, from 1996 to 2005. She was awarded Honorary Life Membership in 2011, and her financial donations included a significant contribution to the development of the Rain Garden.

Phytoremediation

Wendy Johnston

Certain plants are better at removing contaminants than others. Plants used for phytoremediation must be able to tolerate the types and concentrations of contaminants present. They also must be able to grow and survive in the local climate. Depth of contamination is another factor. Small plants like ferns and grasses have been used where contamination is shallow. Because tree roots grow deeper, trees such as poplars and willows are used for hydraulic control or to clean up deeper soil contamination and contaminated groundwater.

Certain plants are able to remove or break down harmful chemicals from the ground when their roots take in water and nutrients from the contaminated soil, sediment, or groundwater. Plants can help clean up contaminants as deep as their roots can reach using natural processes to:

- Store the contaminants in the roots, stems, or leaves.
- Convert them to less harmful chemicals within the plant or, more commonly, the root zone.
- Convert them to vapours, which are released into the air.
- Sorb (stick) contaminants onto their roots where very small organisms called "microbes" (such as bacteria) that live in the soil break down the sorbed contaminants to less harmful chemicals.

What could be greener than using plants to clean up polluted soil? **Phytoremediation**, the use of green plants to repair unhealthy soil, has sparked the curiosity of scientists and plant lovers for decades. Plants can do things that people can't, like pull pollutants out of soil while leaving the soil in place.

Even soil with contaminants in it is still a living, breathing ecosystem special to the landscape where it evolved. And, the amount of soil on earth is limited. It takes **several hundred years to form one inch of topsoil**. In addition, throwing away tons of topsoil creates a lot of waste! If we can pull the contaminants out, the soil can continue supporting life. We minimize the waste we create during clean-up. This process of using plants to pull contaminants out of soil is known as **phytoextraction**.

When we want to pull contaminants out of soil, we turn to superhero plants known as "hyper accumulators." These special plants take up pollutants and store the toxins in their leaves. About 450 hyper accumulators are known to exist. They can accumulate arsenic, nickel, cadmium, and other metals.

Imagine if I could survive having 10,000 times the lethal dose of arsenic in my body. That's what one arsenic hyper accumulator, the brake fern (*Pteris vittata)*, can do. This fern is found living in ancient mining sites in China. These locations contain large amounts of arsenic, lead, copper, and zinc. When arsenic is stored in the fern leaves, we can easily harvest this biomass to remove pollution from soil. Of course, the metals are so concentrated in the biomass that it becomes hazardous waste. But the biomass waste from these plants is smaller than if we had removed all the soil.

Phytoextraction has some limitations. Scientists are working to determine how this great plant capability can be practical for human use. For example, even though the brake fern can remove large amounts of arsenic, it would still take decades to fully clean up moderately polluted soil. While the 5-foot tall brake fern is large for a fern, even more biomass is needed to speed up remediation.

Researchers, including me, are looking at other ways to increase arsenic uptake in the brake fern. This might include supplying the fern with fertilizers. Or we might partner the fern with symbiotic fungi or bacteria to make the arsenic in the soil more available for fern roots to take up.

Phytoextraction is also limited to the root zone, but this is not necessarily a deal breaker. Much contamination, like fallout from metal smelters or dust blowing from mining operations, is on the soil surface. Finally, beware the invasive plant: hyper accumulators can be tough survivalists. We wouldn't want to plant a hyper accumulator, only to have it get loose and take over an ecosystem.

A nickel hyper accumulator (*Alyssum murale*) did just that. It was planted in southern Oregon as a commercial venture to extract nickel from soil. However, it wasn't managed properly and is now an invasive, noxious weed in the botanically-rich area.[1]

Beyond hyper accumulators, other more common plants can help remediate soil. Poplar trees (*Populus ssp.*) can

absorb and help degrade a variety of organic carbon pollutants like TNT and other explosives. Poplars release compounds from their roots that break down chlorinated solvents, and can host microbes in their roots that help break down other compounds. These fast-growing trees can also be planted to absorb landfill chemicals. Crucially, poplar trees are much larger than the brake fern, tipping the biomass balance towards faster clean-up.

Because ferns were around since the age of dinosaurs, they have survived for hundreds of millions of years relatively unchanged. This requires a powerful ability to withstand cataclysmic climate change and survive. The toxins of volcanic eruptions and the cold of ice ages did not make them extinct like so many other plants we know today only by their fossil record.

One of the most important phytoremediation ferns is the Chinese break fern, *Pteris vittata*. It has been deemed a hyper-accumulator, which are rare plants with a much greater ability to take up heavy metals and other toxins from soil. This break fern is highly successful at extracting a specific toxin, arsenic. It can draw up arsenic at a rate seventeen times greater than that of other phytoremediation plants.

FROM CONTAMINATION TO BEAUTIFICATION : FERNS REMOVE ARSENIC FROM SOIL
Arsenic is a chemical element that has the symbol As. Arsenic is widely distributed in nature and is associated with the ores of metals such as gold, lead, and copper. Arsenic also enters the environment through human activities, as arsenic is often used in pesticides, dyes, and chemical weapons. The arsenic compound chromated copper arsenate (CCA) has also been used as a wood preservative. At high doses, arsenic is a poison to humans and other animals which can cause death, and at lower doses over a longer time, it can also cause cancer. Arsenic contamination of soil and water is therefore an environmental health issue.

In 2001, University of Florida researcher Lena Ma discovered that the Chinese brake fern (Pteris vittata) grows well in arsenic-contaminated soil. This plant accumulates large amounts of arsenic in its fronds, the portion of the fern that is above ground. This discovery led to the idea that brake fern could help clean up arsenic-contaminated soil. The use of plants to clean up contaminated soil and water is called **phytoremediatio**n.

Phytoremediation offers an environmentally-friendly and cost-effective method to remove arsenic from contaminated soil. In addition to brake fern, other plants have been found to be useful in phytoremediation. Sunflowers were very effective at removing radioactive materials from the water near the site the 1986 nuclear-power-plant disaster at Chernobyl, Ukraine. Poplar trees are also useful in removing a wide range of pollutants from soil and have been used widely for this purpose.

The Delprat Garden has been growing for over three years and is a collaboration between the University of Newcastle, UTS Phytolab and Landcom. There is a pumping vegie patch, a wildflower meadow, and groves of ornamental trees. The team here are researching and trialling many common plant species we would find in our home gardens for their phytoremediation capabilities. Phytoremediation is the process of using plants to remove heavy metals and pollutants from soils.

Environmental Scientist Dr Megan Murray has been conducting much of the tests on the plants, with exciting results. “Sunflowers are a wonder plant at absorbing heavy metals.” They draw up lots of lead, manganese and zinc but keep it locked in the root zone, meaning the above ground parts like pollen that bees harvest or seeds that we eat, are safe to eat. Being fast growers “you can actually see quite a big change in your soil pollution levels, plus you have the confidence of knowing that you’re not going to be increasing any risks for biodiversity that’s engaging with your garden.”

Lots of Australian natives are also in the trial, from eucalypts to grasses and climbers. There is little data yet to understand their phytoremediation abilities and tolerance of heavy metals, however so far kangaroo grass is a least thriving on the site!

Another area of study is what to do with waste plant materials generated by the site. Currently they are contained away from the soil in compost bins to reduce the mass of waste, but there is still some contaminated waste left behind. The team say this is an exciting next area of research and hope more scientists along with local and state governments can get on board with finding a solution.

Naming Melastomas, Part 1: The white form

Malcolm Cox

As interest in gardening for wildlife/backyards for biodiversity continues to gain momentum, it’s important for our sense of place and responsibility for our natural areas, to recognise naturally-occurring local variants. Though a species like *Melastoma malabathricum var. malabathricum* (Native Lasiandra or Blue Tongue) may have a wide tropical-to-subtropical distribution in Australia, the white form appears to belong to our region. Traded as *Melastoma malabathricum* ‘Alba’, the white form is not a registered cultivar

***M. malabathricum* 'Alba' with tasty orange fruit and a grateful visitor, a Blue-banded Bee (Image: M Cox)**.

Where and when it was first noticed and collected could be a single anecdote, or it could be a puzzle with many parts. Either way, at this stage we can be proud to grow this form anywhere from our Botanic Gardens to our parks and backyards and claim it as a 'true local'. Bees, bugs and even birds also love it. It flowers most of the year round, likes damp spots, handles some shade and the fruits taste better than the mauve-flowered form which stains your tongue.

John Birbeck [horticulturist, field ecologist, SCC Principal Environment and Landscape Officer (retired), and currently President of Backyards for Biodiversity SEQ and all-round expert naturalist], recounts for us his experience with this form going back two decades:
"I first collected Melastoma malabathricum 'Alba' in private property on the shores of Ewen Maddock Dam, it comprised a small population of white flowering plants (no standard mauve coloured flowering plants present), these plants were subsequently drowned as the dam refilled.
The collection date (year) was around 2003, I collected cuttings off several plants and provided this material to Fairhill Nursery, we agreed to name the white form as (Melastoma "Alessandra" - Melastoma affine White form) on the sales label. The name was selected after my youngest daughter Alessandra, five at the time, who happened to spot the plants at the same time as myself.

This plant was marketed under this label for many years, only recently being identified as Melastoma malabathricum 'Alba'; who knows, these plants may have come from a separate population?? I have grown Melastoma "Alessandra" in my garden since the original collection of the early 2000's, it has proven to be a long lived and a reliable flowering plant, I presently have 3 plants in our garden at Black Mountain." [J Birbeck, pers comm, 2023]

Sometimes a common name for a plant might be less confusing than its 'unique' scientific name, and our *Melastoma* is an intriguing example of this. We've all accepted that the name of our Native Lasiandra, aka Blue Tongue, was displaced in gardens and parks by an exotic look-alike with seven nerves instead of five. Even in our Botanic Garden we've had to replace some ring-ins that were planted by mistake. See them at MRBBG: below the A&E Centre, or beside the lawn just across the Lagoon and past the toilets.

What should we call those ring-ins? And what happened to *M. affine*?? Let's examine the names more closely in Part 2, in a future issue.

Trees and Lightning

Neil Rankin

When an Arborist was required to check the route of our new track through the Tall Gums Environmental Reserve over 60 dead or dying trees were tagged to be removed as possible dangers to walkers. The largest of these was a blackbutt, *Eucalyptus pilularis,* which had been struck by lightning (shown in the photo). Not only this tree but 5 nearby trees were also dead, presumably from the same lightning strike.

Blackbutt hit by lightning

When lightning hits a tree it will most likely be the tallest tree. Lightning bolts can carry as much as 300 million volts and 30,000 amps, which is quite dangerous!. The electricity in the strike is carried through wet bark and the

outer layer of living cells in the trunk. The extreme high temperature instantly vaporises any moisture causing in the bark and the wood to explode open. In the photo you can see path the lightning took down the bark. The tree will be severely damaged by the strike and will usually die as a result of fungi and other insect pests penetrating through the wound, if it has not been effectively girdled by the strike.

The tree stump can now be viewed from the track and it is clear that termites were already busy as the centre is decayed over a diameter of about 20cm. Trees such as this and most of the others in the Reserve have grown very quickly over the past 60 or so years once the browsing animals were removed. This rapid growth leaves trees very susceptible to insect and fungal attack as the wood is very open, unlike the dense hard stuff that would be produced if the tree had been slowly fighting its way up through established forest.

A Brief History of Macadamias

Malcolm Cox

Macadamia *integrifolia*
Family: Proteaceae

Queensland or Bauple/Bopple Nut named for its northern most habitat Mount Bauple (Fraser Coast Region, near Tiaro). It comes from the Aboriginal word Baphal (Budjilla people, Fraser Island). Indigenous Australians ate and traded Macadamias across Queensland and Northern NSW.

Botanist Ferdinand von Mueller identified and classified the Macadamia Tree in 1857. Mueller was a highly respected Director of The Melbourne Botanic Garden (1857-1873). He named the Macadamia in honour of his friend John Macadam. John Macadam was a Scottish/Australian Chemist, Medical Teacher and Politician. He was Secretary of The Burke & Wills Expedition. Macadam died at sea aged 38 on a trip from Australia to New Zealand. He fractured his ribs during a storm and the extent of his injury was fatal.

Macadamia or Queensland nut

The first Macadamia specimens were collected by the explorer Ludwig Leichardt in 1843 on private land at Mooloo in the Gympie Region. A sugar plantation manager, William Purvis introduced macadamia nuts to Hawaii in the late 1800s. Hawaii began to sell Macadamia nuts commercially in 1934.

Macadamia flower

In the 1970s, Ian McConachie (a young food scientist) travelled to Hawaii to learn how to grow Macadamias commercially in Australia. There are now 700 growers across three states producing about 50,000 tonnes a year, 70% of which is exported to more than 40 countries.

Ian has spent the past 50 years tramping around in the rainforest on the hunt for wild Macadamia trees. He said finding a wild Macadamia is like finding gold. His search is for the living gene bank that exists within the last remaining trees. 90% of Macadamia trees in the wild have been lost since European settlement.

Macadamia jansenii , the wild Macadamia was discovered in 1983 by Ray Jansen, a sugarcane farmer and amateur Botanist. The species was named after him

in 1992. Currently there are less than 200 known trees in the wild growing in Bulburin National Park near Miriam Vale.

The history of the nut's domestication means that crops under cultivation largely have lost genetic diversity. A lack of genetic variability leaves plants vulnerable to emerging pests, disease and natural disaster, bushfires for example and climate change.
Macadamia *jansenii* is as rare as the Wollemi Pine. In order to save the wild Macadamia trees a nursery housing 38 saplings out of a planned 640 can be found near Bundaberg.

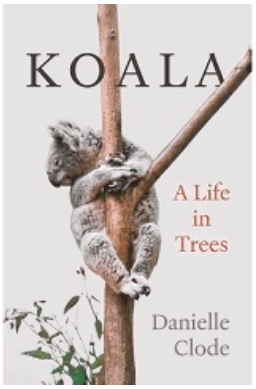
To promote conservation there is a "Walk with Wild Macadamias" Project in the Amamoor State Forest called The Amama Macadamia Walk. The Macadamia Walk is part of the Fig Tree circuit. There is information about this walk in the day use area.

The oldest known Macadamia Tree which is still healthy and producing nuts is the Walter Hill Tree planted in 1858 in Brisbane City Botanic Garden. (Walter Hill was the first curator of the Botanic Garden (1819-1904).

Book Review

Paul Horne

"**Koala, A Life in Trees**" Danielle Clode
Published Black Inc., 2022 paperback



Despite their iconic status and celebrity, koalas remain something of a mystery. Often affectionate in captivity, they seek out human assistance when in need of water or care yet can also be fierce and belligerent. They are beloved worldwide and feature in popular children's stories, but are also plagued by sexually transmitted diseases and maligned for a lack of intelligence. Their diet consists solely of leaves that are full of toxins. In some states they are threatened with extinction, while in others they are dying from overpopulation.

Fuelled by her biologist's background and deep curiosity, Danielle Clode delves into the world of koalas to discover what's behind the sweet face on thousands of postcards. From their megafaunal ancestors to the disastrous effects of colonisation, from remarkable conservation success in the 1920s to the devastating bushfires of 2019-2020, Clode tells the story of koalas and their complex relationship with humans. Sharing the latest scientific insights and myth-busting facts, all woven through Clode's award-winning storytelling, Koala takes readers up into the trees to reveal the truth about this extraordinary animal and what must be done to ensure its survival.

Clode gives an immersive, entertaining journey into the hidden life of the koala, revealing what life is really like up in the trees. She is a master at popularising science and makes the complex understandable. This is an book that focuses not only on the koala, but is really an impassioned and informed plea for the conservation of Australia's flora, fauna, and wild places.

I will again put my copy in the Friend's library for those who might want to read this most interesting book.

Koalas love some Gums at Maroochy Botanic Gardens

Tony Ireland

The Friends of Maroochy Botanic Gardens have been interested in koalas for many years, ever since the Maroochy Shire council purchased the land in 1996, and the newly formed Friends began their hard labour of gardens development soon after. Koalas were spotted infrequently, but welcomed joyfully.

In 2015, the Friends with assistance from the Sunshine Council, organised a koala activity, searching many parts of the gardens where we suspected koalas were living. This bought us into closer contact with the Detection Dog team from the University of the Sunshine Coast (USC) and with koala researchers from the University of Queensland (UQ). Earlier, UQ koala researchers had captured a young female koala, and noticing she was suffering from chlamydia disease, had her admitted to the Australia Zoo Wildlife Hospital. On recovery several months later, Lizzy Koala (named by the Friends) was released back in the gardens, wearing a tracking collar fitted by the UQ researchers.

Lizzy with her tracking collar

Council loaned the Friends a tracking antenna, and soon the Friends were locating Lizzy Koala every week or so. Over the next four years we were able to regularly map where she was, and if we knew she was close to the developed areas of the gardens we were able to take Friends and gardens visitors out to locate her. It was a big adventure, especially for the small number of visitors who were able to see a koala “in the wild”. We were able to record her territory, as well as favourite tree species for feeding (Tallow-wood *Eucalyptus microcorys,* Qld Blue Gum *Eucalyptus tereticornis* and occasionally Blackbutt *Eucalyptus pilularis)* and resting (almost any tree species) as well as daylight activity.

Tony with TAFE students tracking Lizzy

Late 2019 bought an end to our tracking activity when Lizzy broke the weak link on her collar, and lost it. That coincided with some university research in NSW that concluded that tracking collars were not beneficial to koalas, so the collar was not reinstated. Since then, Lizzy (and other koalas) have been sighted very occasionally at the gardens.

Friends volunteering suffered through 2020 and 2021 (Covid restrictions), but early in 2022, the “2022 Great Koala Search” was planned and implemented. It was jointly planned between the Sunshine Coast Council, USC Detection Dogs for Conservation team and the Friends of Maroochy BG. Using a drone at night, and a detection dog the next morning, it was very thorough and successful, with **fourteen** different koalas located across the 170ha of bushland at the gardens and adjacent council owned reserves. Scats (droppings) from all koalas were collected for later analysis at USC. What we all learned from the exercise made it very worthwhile, despite the expense and effort required.

Drone used for night thermos tracking

For further information and a short video and press release with details of the 2022 Great Koala Search, please view Council's video on You tube vide: https://www.youtube.com/watch?v=8FnwuobGQas

and Council’s press release: https://oursc.com.au/community/drones-and-dogs-team-up-in-sunshine-coast-koala-conservation-project

Interesting articles from “Bush Hands”

Tony Ireland

The recent 'Bush Hands' from council (May 2023) had two very interesting articles: - **'Amazing discovery: Cordyceps fungi traps trapdoor spider**', and a news

story about an **osprey pair nest needing upgrading** in Wurtulla. (https://www.sunshinecoast.qld.gov.au/news/high-flying-couple-welcomes-new-skyhome).

Dodder "The Plant That Smells"

Paul Horne

Dodder or dodder laurel (*Cassytha pubescence*) is widespread along the east coast of Australia, not extending into arid regions, from south-east Queensland into the eastern half of NSW, Victoria and into south-eastern South Australia.

Climbing dodder Laurel

Dodder is a **hemi-parasitic vine** species, in the Laurel family. A hemi-parasitic plant derives some or all of its nutritional requirements from another living plant.

Dodder leaves have been reduced to scales and photosynthesis is achieved through chlorophyll contained within the plants climbing stems. These stems also produce small suckers (**haustoria**) which penetrate the host plant's stems or leaves as it climbs. The haustoria attacks the host's xylem and/or phloem and also attaches the dodder to the host plant. The haustoria absorb nutrients from the plant similar to roots of other plants.

Its small flowers (2-4 mm long) are cream to white in colour with five pointed petals. They are borne in small dense clusters containing about five flowers. It flowers from spring to summer. The small globular green or yellow fruit capsules (3-4 mm across) which are produced contain up to four seeds.

When the seeds germinate, Dodder seedlings have the ability to "smell out" a host plant by detecting certain chemicals within the soil that the host plant has released. The plant grows toward the host plant then attach them self to the host. Host attachment must occur within the first 6 weeks after germination for the dodder to survival. After attachment, the dodder climbs the host and after producing haustoria into the host tissue, its root system is no longer required and dies.

The small fruit is edible and the plant may be the host plant for the common dusky blue butterfly.

Botanic Garden Day/Seasol Plant Challenge

Malcolm Cox

Friends took on two challenges for the annual BGANZ*Botanic Garden Day on 28 May. The first was the Seasol Plant Challenge, for which our photographer Greg put together a 'short' video, assisted by Deb along with other Friends as well as family. Greg documented the story of the Richmond Birdwing Butterfly Vine *Pararistolochia praevenosa*, including our ongoing work with Council on the Birdwing Arbour. We cannot thank and congratulate him enough, but we all can at least view the result - here's our website link: https://www.friendsofmaroochybotanicgardens.org.au/bganz-plant-challenge .
There's a lot of inspiring great competition, but a prize would be nice too!

Greg with the Richmond Birdwing Butterfly vine
(Image: Greg Miller Photography)

To fit the BG Day theme for 2023 'Celebrating Inspirational Plants and People' Elaine undertook a guided walk that was booked out well in advance. Fifteen guests were treated to stories about local plants and pioneers connected to them, like *Macadamia integrifolia* and Walter Hill. Meanwhile, the feedback from a couple of participants speaks for itself:

- *Elaine does great walks - well researched, interesting, generous, enthusiastic, very clear, a bit quirky. She's very engaging and I see other participants respond really well to that.*
- *The beautiful mix of old and emerging and people and nature and light and space. Very "pure".*

Elaine made our BG Day a special success with a new themed walk.

International Earth Day walk 2023

Helen Latham

For this year's International Earth Day on 22 April, the Friends hosted a guided walk in keeping with the international theme of "investing in our future" and Council's sub-theme of "Gondwana Garden – keeping the future cool with ancient plants."

A "geological deep-time" overview of plate tectonics and continental drift showed how the single landmass Pangea split into two super continents (Laurasia and Gondwana) before Australia split from Gondwana as an island and evolutionary ark to develop its own unique flora and fauna through long waves of climate change.

The walk then outlined the evolution of ancient land plants, how rain forests developed and the importance of habitat protection and expansion as critical investments in the earth's and our joint future.

Focused on the Mossy Log, Fern Glade and adjacent causeway area, the walk explored plant progression from non-flowering gymnosperms (algae through lichens, fungi, mosses, ferns, cycads, conifers and Glossopteris) to angiosperms (palms and other flowering plants).
It explained the gradual evolution of plant reproduction methods from water-borne spores to fruit-enclosed seeds; and the increasingly sophisticated methods of attracting pollinators in a more diverse and competitive plant kingdom.

After acknowledging how 500 million years of ecosystems evolution has been severely compromised or destroyed in the past 250 years, the walk concluded with a thoughtful discussion about what actions we can take to conserve and use Australia's resilient Gondwana species to help "keep the future cool."

In the context of climate actions (and the need to reduce emissions and land clearing):

- protect Australia's remaining forests - especially rainforests which are home to our most iconic remnant Gondwana species
- undertake re-wilding programs – forest and other ecosystem revegetation to link fragmented remnants, increase their viability and provide fauna with habitat corridors and extra time to adapt to the pace of change
- plant Gondwana-descendant plants in our parks and gardens to improve urban "lungs"
- push governments for "rights of nature" legislation to provide a voice for nature and support people who champion that voice

In the context of "cool" as stylish, excellent, unique etc :

- use Gondwana plants in landscaping projects because of their architectural forms, interesting aesthetics, beauty and unique Australian character
- use and protect their cultural significance – indigenous (food and festival), and non-indigenous (specimen trees in old parks and cemeteries, and interpretation of traditional crafts and construction uses)

What's Happening on Site

Ray Dale – MRBBG Site Volunteer Co-Ordinator

As we enter autumn the weather pattern remains unchanged with occasional showers and sometimes a deluge. The lagoon remains full ably assisted by a three day deluge in early May registering 120mm which also bought a strong flow down Mountain Creek.
Unfortunately you only have to break the surface to see the rain hasn't penetrated very deeply at all which is why the Council staff assisted by the Friends volunteers are devoting a lot of time to the irrigation system laying out a schematic detail and investigating better methods of distribution.

Will the weeds ever stop growing

As mentioned in the last newsletter the volunteer numbers are back to normal and the Council have added a few more to the Thursday group of gardeners. Volunteering seems to be waning following Covid and the Friends are no different to other organizations who all seem to be on the lookout for people wanting to give back to the community. The Friends encourage all members who want to volunteer in the gardens to contact the Sunshine Coast Council through their volunteer website. For those who don't want to go through the process there are other ways to assist such as events and even committee positions do not require an induction so please feel free to ask. If you want to volunteer then please scan the QR Code attached and this will take you directly to the SCC Volunteer Website.

The volunteer gardeners have as always been busy keeping weeds at bay over the summer and early autumn months with areas such as the Sculpture Garden and The Whipbird looking a treat.

The maintenance crews have those ongoing tasks to keep them busy such as oiling, irrigation and path maintenance. A little extra volunteer work after Easter with a very narrow path of destruction bringing down trees and blocking access to the maintenance shed. The Council has since bought in arborists and cleared the site of potential hazards. Tree removal is bitter- sweet within the gardens as we hate to see them go but have to realize the potential public hazard.

Now onto winter with those crisp early morning starts a touch of early morning fog and all those bird calls echoing throughout the gardens.

Friends' Events

Open Management Meetings
2nd Thu, 1pm @ Friends Shed
Jun 08
Jul 13
Aug 10

Bushcare
2nd Sat, 8am (subject to weather)
Jun 10
Jul 08
Aug 12

Fauna Watch Survey
2nd Wed, 8am
Jun 14
Jul 12
Aug 09

Welcome to our new Friends: Sally Piper; Leigh Smith and Trinh Le

Information

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Membership:
A form is available on our Website, or use this link to download - Membership Application Form

A member of