



Friends of Maroochy Regional Bushland Botanic Gardens Inc.

NEWSLETTER

Dec 2021 Volume 25 Issue 4

From the President

Lynn Vlismas

Many of us would have been looking overseas to Glasgow recently to get a clearer indication of the sort of world we may be living in within the next 30 years. Reading between the lines, the message would seem to be – we can't just rely on one part of society to solve large issues such as climate change. Instead, answers have to come from all parts of government, business and society generally.

That message could also translate into our sphere of interest as well – the future of botanic gardens.

According to Dr. Lucy A. Sutherland, Director of the Botanic Gardens and State Herbarium of South Australia, there are two large agendas starting to play out in botanic gardens as we look to their future over the next 30 years with "their key areas of science, conservation collections development and management, and knowledge management and interpretation".

She goes on to explain these two large agendas as:

•The global biodiversity conservation agenda.

Elizabeth Mrema, Executive Secretary of the Convention of Biological Diversity says: "Everyone is needed in the new global push to protect nature" to achieve the vision of "living in harmony with nature by 2050".

This year saw the start of the United Nations Decade on Ecosystem Restoration for the protection and revival of ecosystems around the world for the benefit of people and nature around the world.

It is heartening to see that MRBBG plays a role in both of these areas of biological diversity and ecosystem restoration currently within the Garden area - in the cultivated garden areas, and the adjacent conservation area and nature reserve. Valuable habitat regeneration is also happening through the bushcare programme in replanting degraded areas of native vegetation for local wildlife. One particular instance of this is the connection Council has made with Barung Landcare who are growing compatible *Allocasuarina* species to provide more food sources for the Glossy Black Cockatoo, and these will be planted at the adjacent nature reserve.

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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Our Supporters

Nambour Print & Copy

6 Price St, Nambour

5441 4622

nambourprint@bigpond.com



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In the future there could be a further amplification of the role MRBBG currently plays in conservation through the reinforcement of the current “oasis of green” MRBBG footprint with the addition of “green corridor” linkages and connections to larger natural areas through Land for Wildlife initiatives, and this will help in replenishing the long term biodiversity of existing flora and fauna species.

●**The diversity and inclusivity agenda.**

“Developing their social role going forward will require botanic gardens to rethink and refine their purposes and to renegotiate their relationship to, and role within society”- (Dr Lucy A. Sutherland). This would mean that botanic gardens will need to re-evaluate their services and judge how “responsive and relevant they are to the needs of their communities and (that these services) are developed in partnership with them”.

There will be many opportunities for discussion within the Sunshine Coast community as the Maroochy Bushland Botanic Garden evolves over the next 10 years in particular, when the future direction will be set during the planning, development and implementation of the new Masterplan projects and with their commensurate range of services to be offered for the evolving needs of the community. The Friends will continue to play a valuable role in providing a link between Community and Council.

It has been another full and productive year at the Gardens and I wish to thank you all for your continuing support throughout the year.

May you have a joyous and fulfilling New Year!

The Making of a Botanic Garden **(celebrating 20 years)**

Lynn Vlismas

The Maroochy Regional Bushland Botanic Garden that we know and love has not always looked the way it does today. Some of our best known and most iconic garden areas have undergone quite a change over time.

The Friends of MRBBG would love to reveal to you how this transition has been achieved over a 25 year realisation period through collaboration between the Sunshine Coast community, the Council (both Maroochy and Sunshine Coast) and The Friends of the Garden and that we are now about to celebrate the 20 year anniversary of the opening of the Botanic Garden on the 1st December 2001.



Infinity pool and sculpture 2006



Infinity pool and sculpture 2021

A Friends Photographic Exhibition, will open on Wednesday 1st December 2021 in the Arts and Ecology Centre to show the breadth of the vision required for the MRBBG to go from a former timber getting, then cattle and crop farm, to what is now a place for everyone to be surrounded by some of our unique Australian flora and fauna. This unique flora and fauna is shown throughout by both our natural bushland and manicured garden settings.

The exhibition will be open from 10am to 1pm Monday to Saturday, and will close on Wednesday 22nd December.

Prepare to be amazed.

Fern Profile: *Sticherus flabellatus* Shiny Fan Fern

Wendy Johnson

Family: *Gleicheniaceae*

Genus: *Sticherus* from the Greek *stichos* (row), in reference to the sori in a single row each side of the midrib.

Species: *flabellatus* from the Latin *flabellatus* (fan-shaped), in reference to the shape of the frond.



This terrestrial fern grows to a height of 2.5m and forms a dense thicket. It grows in moist gullies, cuttings and along creek banks

Pinnules are arranged at about 45° to the midrib. The yellow sori (see below) are in a single row each side of the midrib. The spore turns from green to bright yellow but by that time it is no longer viable.



A beautiful dense thicket of Shiny Fan Ferns *Sticherus flabellatus* at Maroochy Regional Bushland Botanic Garden is on the Mountain Creek bank down by the Davidson's plum leaf sculpture.



Thicket of Shiny Fan Ferns MRBBG

Why Trees are Amazing

Neil Rankin

When I first came to the MRBBG, after having lived for 17 years in Darwin, I was immediately taken by the size and beauty of the Flooded Gums *Eucalyptus grandis* in the Ephemeral Wetland area. These majestic creatures grow from tiny seeds, (more than 500 of them in one gram!) and can increase in height by up to 7 meters in one year in plantations. Eventually they can grow to become the second tallest of Australia's Eucalypts, weighing around 8 to 10 tonnes after 60 years or so. But where does all this wood come from?



Flooded Gum (centre) MRBBG

The answer is from water, carbon dioxide and a few minerals extracted from the soil, in a process that scientists have not yet managed to duplicate. Photosynthesis.

Water is one of the simplest but most important molecules on our planet. Just two small hydrogen atoms joined to one oxygen atom. Scientists have experimented over many years to try to separate the hydrogen atoms from the oxygen atom in a water molecule and have so far succeeded only by using huge amounts of electrical energy. Yet our trees (and all green plants) do this every time the sun shines, courtesy of chlorophyll, a green molecule in their leaves. This molecule splits water into hydrogen and oxygen. Other enzymes in the leaf join the hydrogen to carbon dioxide (from the air) to make simple sugars. All the "stuff" that make up wood comes from

combining these simple sugar molecules with minerals absorbed from the soil. Amazing. The oxygen we breathe all comes as a by-product from this water splitting process so we have a lot to thank trees for. And even more amazing is that the “recipes” for doing all this chemical wizardry is carried in the DNA code in the nucleus of each tiny seed.

Flooded Gums are grown in plantations around the world, over half a million hectares worldwide, with over 80,000 hectares in Uruguay, for example. The timber is used for house framing, quality furniture, outdoor furniture and many other purposes as well as providing pulpwood for fine, high quality papers.

So when you look at one of these magnificent trees have a think about all the wonderful processes that go on day and night to create such magnificent and useful organisms.

Photo: Greg Miller

Leaves and Water

Neil Rankin

Imagine being a leaf high up at the top of one of our Flooded Gums (*Eucalyptus grandis*) on a hot day. The temperature in the sun must be well over 35 and sometimes over 40° C. At these high temperatures the enzymes that enable the process of photosynthesis begin to break down, so it's not going to be good for the plant. No photosynthesis means no food (sugars) is being manufactured!



Fortunately our trees have many ways of controlling the internal temperature of their leaves so that it seldom rises above or falls below about 21° C, the optimum temperature for photosynthesis. Scientists have found that regardless of where plants live, tropics, tundra or temperate regions, they still manage to keep their leaves close to this temperature. How can they do this?

There are several mechanisms at work, different ones dominate in different species. The most important ones for our Flooded Gums are evaporative cooling, reflection of sunlight and reduction in exposure to radiant energy. Leaves have tiny openings called stomata that allow them to absorb carbon dioxide, (CO₂) from the air. However water will escape through these openings and it does so in gaseous form. As water changes state from the liquid in the leaves to water vapour it absorbs heat from the leaf, thus cooling it just like sweating does for us. A large flooded gum will lose around 200 litres of water per day through its leaves so the cooling effect is considerable. An experiment with *Eucalyptus parramattensis* trees showed that at temperatures above 40° C photosynthesis closed down but the leaves kept transpiring, so some cooling was still being achieved.

Most Eucalyptus species have leaves that reflect a lot of the incoming radiation from the sun and this helps them to keep cool. The leaves of the flooded gums are dark glossy green above and more silvery below to reflect light, and the canopy tends to be spread, though open giving some shade to leaves lower down.

For all the water that Flooded Gums use it has been shown that per litre of water absorbed they produce 4 times the amount of biomass than crops like bananas, coffee or cotton, so they make an excellent carbon sink. Or put another way, if we were to be planting crops to absorb CO₂ from the atmosphere we should be planting lots of Eucalypts!!!

Book Review

Paul Horne

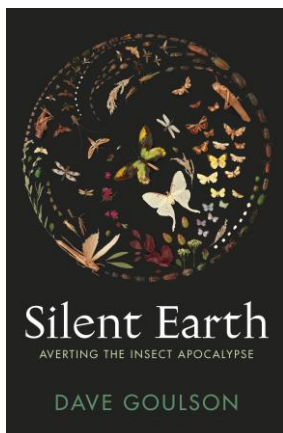
“Silent Earth, Averting the Insect Apocalypse”

by Dave Goulson, Published by Jonathon Cape 2021, paperback

“Silent Earth” is one of those interesting books that you read and it changes the way you view the world. It is an eye-opening view of the insect world and how essential they are for life as we know it. Our modern world simply cannot function without them. A well-functioning ecosystem is exemplified by its insect fauna. Think of pollination of all fruit flowers, decomposition within soil and as a food source for our many birds and fish, just for starters.

Dave Goulson is Professor of Biology at the University of Sussex, England and specializing in the ecology and conservation of insects, particularly bumblebees. He uses his lifelong research to show the shocking decline of insect populations worldwide, especially bees and bumblebees, in only the last few decades. It is

estimated that total insect numbers have declined in abundance by 75 per cent in the last 50 years.



This book is similar in impact to *Silent Spring* written by Rachel Carson back in 1963. Carson warned then of the terrible chemical damage we were doing to our planet and Goulson reveals how this chemical damage is still going on. This chemical damage, along with major loss in habitat and food supply due to monoculture farming, has led to the catastrophic consequences for most insect numbers.

Goulson argues for major changes in government environmental policies, agriculture practises and home gardening behaviour. This very readable book is for all those who are interested in trying to protect and conserve our natural environment.

I will put my copy in the Friends library for those who might want to read it and find out more.

A moth too easily missed!

Malcolm Cox.

Something odd appeared on the sample of blackwood (*Acacia melanoxylon*) I was keeping to take to the Gardens for an interpretive display. Weeks after I collected it from a fallen dead tree, I noticed something sticking out of the side.

This story might have been different if black cockatoos had paid a visit while the blackwood was still standing and torn it apart to make a meal of the large grub inside. This was the larval stage of a giant wood moth (*Endoxyla* sp - literally meaning 'inside wood'), and it had been living in that old blackwood for a couple of years.

...



Larva case left in tree trunk.

They feed in the same way that the larvae of scribbly gum moths (*Ogmograptis*) by burrowing around under eucalypt bark so as to re-visit previously-damaged tissue. The tree makes this tissue even tastier and nutritious in trying to repair itself, this is known as callus. The *Endoxyla* larva works on a much larger scale, feeding under the bark before emerging as adults.



Larva damage within blackwood.

(Image: M Cox)



Giant wood moth larva

(Image: Qld Museum)

Females are large, some over 25 grams in weight with wingspans over 15 centimetres, but more common than we may notice. Mating is aided by releasing strong pheromones that attract the much-smaller males. Many thousands of eggs are laid in cavities in tree bark, tiny caterpillars disperse by wind on fine silky threads before the few lucky ones settle on a suitable tree bark and burrow in to continue their long larval stage hidden from view. The most visible evidence would be some sawdust on the tree or the ground below.



Giant wood moth
(Image: R Fletcher)

I also found more info and images in an old issue of the Friends of ANBG newsletter 'Fronds':

<https://www.friendsanbg.org.au/sites/default/files/pdf/news73apr13.pdf>

Official Opening Maroochy Bushland Botanic Gardens, December 1st 2001

Maureen Sheargold

"One Perfect Day" describes the official opening of the Maroochy Bushland Botanic Gardens on December 1, 2001. The entire event, organized by Kathy Contoleon from Maroochy Shire Council was impressive and meaningful with the didgeridoo starting in the distance and slowly approaching to announce the beginning of the official proceedings. The Official Opening was carried out by then Governor His Excellency Major General Peter Arnison with the planting of the *Elaeocarpus eumundii*. Speeches were given by Mayor Allison Grosse, Councillor Joe Natoli, Director of Town Planning Magdy Youssef and President of the Friends Maureen Sheargold. This is an extract from her speech, given on behalf of the Friends.



Governor Peter Arnison planting the *Elaeocarpus eumundii* at official opening helped by Stuart Blair's brother, Cameron Blair

"Yesterday I drove along the old Bruce Highway and saw the large road sign that said 'Maroochy Bushland Botanic Gardens' and I realized that at last our Botanic Garden has become a reality. For the Friends it has been five years of challenge, persistence, and hard work - there have been many times when we ought to have given up.

What kept us going was our shared belief in what our Botanic Garden can be. That belief began on the day that Rob Haupt guided us through a tangle of lantana, and we caught sight of the lagoon. We were captured then by the spirit of this place and were convinced that here we could have a botanic garden that is different and that makes a difference.

We are opening the Gardens today because Maroochy Shire Councillors and Council Staff have trusted and supported a community vision. It hasn't always been an easy partnership and yet through that partnership we have developed mutual respect and a working relationship that has given a result far beyond what could have been achieved separately. It has enabled the Friends to bring into the region funding that would not otherwise have been available. We are especially proud of our beautiful Federation Bridge that was funded by Centenary of Federation grants. We have also received funding from Jupiter's Casino, the Gaming Machine Community Benefit Fund, The Australian Open Garden Scheme, International Year of the Volunteer Fund, The department of Mines and Energy, MSC community Support Fund and the CADET Work for the Dole Scheme.

The Friends would like to be able to acknowledge everyone who has played a part in the Gardens but that's impossible. We are grateful to all our major contributors who are on our acknowledgement board at the entry. Thank you for your confidence and support. This Garden is based on a generosity of spirit that crosses the whole community. It is the individuals who have given their time, labour, expertise, and money. It is the businesses who have given sponsorship, in-kind contribution, materials and support and the community organisations who have made donations and worked on site. Thank you everyone. I hope that all of you feel today that your support is justified.

Our Members have each played their own part and I believe will always cherish the knowledge of what they have contributed. Our hope is that the Gardens will go on from here to become the significant Botanic Garden that we believe it is meant to be. That will depend on what we as a community are prepared to do to make that happen.

Today is what we have all worked for. It is an exciting and wonderful occasion. However, for the Friends there is also a touch of sadness. This is the place where we have dreamed and worked together for the last five years – sometimes to the point of exhaustion. We have shared friendship, laughter and some tears. This has been our Garden. Today it becomes yours. We hand it to you willingly. Please use it, treasure it and help make it a legacy that we can proudly hand on to all who follow us, for centuries to come."

Who was Stuie Blair?

Janet College

This plaque can be found in the Contemplation Garden, close to the northern boundary of the Gardens. It is an area due for refurbishment, and to assist with this work, a donation was recently made by the family of Stuart Blair, on the twentieth anniversary of his death.

Stuart was appointed the first landscape architect for Maroochy Shire Council in 1995, initiating many environmental and civic projects. He was instrumental in the early development of the Botanic Gardens, of which he was a wholehearted supporter. (In the early days, he made himself responsible for all the lawn-mowing.) Highly respected in his profession, Stuart became popular among his colleagues for his cheerful nature and broad smile. His sudden, untimely death in 2001 was a major shock for all.

At the opening of the Gardens, in December 2001, Stuart's brother Cameron was invited to help the

Governor of Queensland, Major General Peter Arnison to plant a commemorative tree.



Stuie Blair plaque in Contemplation Garden

The plaque on the rock in the Contemplation Garden was placed by colleagues in the Strategic Planning Department of Maroochy Shire Council, poignantly echoing Stuart's own signature farewell, "Catch Ya!". Past work colleagues still hold an annual breakfast in the Gardens, with family members, in his memory. This year, due to the Covid lockdown in Melbourne, Stuart's mother Patsy, and his sister Jo, (who, along with Cameron, remain members of the Friends), were unable to attend the twentieth anniversary breakfast.

Adapted from wording supplied by Di Cartmill, Stuart's relative.

When is a cherry not a cherry?

Paul Horne

Common names given to plants can be misleading from a botanical point of view but are usually more familiar than their botanical names. Common names were often chosen because of the plant's characteristics that were similar to the European plants familiar to the early colonists.

The **bush or scrub cherry** (*Syzygium australis*) is a rainforest tree native to eastern Australia.



Bush or scrub cherry

The pleasantly sour fruit are also eaten fresh or cooked. The fruit can be used to make jams and jellies.

Exocarpos cupressiformis, with common names of **native cherry**, and **cypress cherry**, belongs to the sandalwood family of plants. It is a large shrub or small tree, 3 to 8 m tall.

In the early stages of development, this plant is thought to be partly parasitic on the roots of other trees, particularly Eucalyptus. More mature plants are less reliant on this parasitism once photosynthesis in their stems is well established. The leaves resembles those of the cypress and are reduced to small scales; these green, drooping stems are the site of photosynthesis

The inedible fruit is a globular, hard, greenish nut, 4-6mm long, containing one seed. It is found on top of a short stalk, the pedicel. As the fruit develops the stalk swells to 5-6mm in diameter and turns yellow or red, to form the edible "cherry"



Native or cypress cherry

It is a species endemic to Australia and found in sclerophyll forest, especially in shallow soils, and on granite outcrops from Queensland to Victoria.

Friends' Events

Open Management Meetings

2nd Thu, 1pm @ Friends Shed

Dec 09

Jan 14

Feb 11

Bushcare

2nd Sat, 7am (subject to weather)

Dec 11

Jan 09

Feb 13

Fauna Watch Survey

2nd Wed, 8am

Dec 08

Jan 13

Feb 10

Welcome to our new Friends

Winsome Rogers, Leanne Gumbleton, Deb Ashby, Damian Kenny, Geoff McLaren, Phil Wetton, Keith and Evie Brown

Contact Information

Mail

Friends of MRBBG Inc.
PO Box 445, BUDERIM, Qld 4556

Web

friendsofmaroochybotanicgardens.org.au

Facebook

Maroochy BG Friends
(fb.com/groups/600452596770097/)

Email

friendsofMRBBG@gmail.com

Secretary

Bob Ducrou 07 5456 2743

Membership:

A form is available on our Website, or use this link to download - [Membership Application Form](#)