# FLRBG

**July 2012**

Newsletter of the Friends of Lismore Rainforest Botanic Gardens Inc.


# 10 Years Since Our First Planting!!

## President's Message

On 26 August we are planning a big celebration to mark the tenth anniversary of the first planting at the Gardens. We owe a debt of gratitude to those early visionaries who had the dream of a world class botanic garden for Lismore, and whose enthusiasm and hard work ensured the manifestation of the project. Those of us who have become involved since then are very pleased when we see how much has been achieved in our time – so how much more pleased must those early members be?

Many people have been involved over the years in various capacities and we are hoping to see them at our celebrations. If you know of anyone who has been a member of the Friends, or anyone who has been involved in any way, please let them know about this occasion and invite them to come and join us. Ten years is an achievement of which we are rightly proud.

We have been greatly assisted by the management and workers of the Waste Facility over the years, most recently in the refurbishment of the Useful Plants Garden, and we thank them for their interest and assistance.

Come and enjoy our celebrations.

***Jan de Nardi***

**SPECIAL CELEBRATION**

**10th Birthday &**

**National Tree Day**

**Sunday 26 August**

***Planting from 9-11am***

***Formalities from 11am***

**REFRESHMENTS**


*First planting near main gate at Wyrallah Road entrance 25 August 2002*


*Lush growth in Stage 1 of the Gardens in August 2012*

## Work Organiser's Report..... *Pat Offord*

The Volunteers and Council Staff can be proud of the work done since January in spite of a prolonged wet summer and its associated mud and great crop of weeds. The new east section of the Uncommon Plants Garden has been terraced and planted with pioneers /shelter plants and some uncommon species. The West Section of this Garden is starting to look really interesting. All seats and tables have had at least one coat of soft green paint in readiness for our upcoming **10TH Anniversary of planting and National Tree Day**.

The Useful Plants Garden has had a makeover, due to hard work of Council Staff and our volunteers . And some of our Wattles are coming into flower brightening this area.

We have also been installing more permanent labels in several Gardens and now have at least 450 species permanently labelled, at least once. Our activity for National Tree Day is a planting to extend Sunny Slope. The Council Staff has prepared this very interesting site to display some of our hardier native species.

Lastly I **would like to express our gratitude to Rose Hand** who has led our mid week work team over the last three years. She has inspired her team to develop the Discovery Trail as well as playing a major role in the general maintenance of the Gardens. Rose is still propagating plants for us and after a break is getting involved in other projects at the Gardens. *(Continued p.7)*

## Under new management!

I have to say that I was more than a little daunted at the idea of taking over from Rose Hand as organiser of the Wednesday work group at the Gardens. Rose has been doing the job for quite some time and has made a big difference to the Gardens but after having a little chat with Marie I decided I would give it a go.

*Ros planting around pond in Useful Plants Garden*

I am nowhere near as competent as Rose. I can't remember the Latin names of plants and don't know the Gardens nearly as well as Rose does but I thought with Pat Offord's guidance and the occasional call to Rose, I might be able to take it on. The group of guys, and Nancy, (she is superb at weeding and getting rid of rubbish!) who come on Wednesdays, are really a great bunch and willing and able to do anything. And Peter Gould is a treasure, I can turn to him for a plant name or for anything else I am not sure of and he usually has the answer. I know I will learn a lot from him. So we make a great team.

The guys from the Waste Facility are also very helpful and happy to supply mulch or anything else we might need and I think they are proud of what is happening around their work area.

I am beginning to settle in now and am enjoying the challenge and look forward to the future. And if I achieve even half of what Rose managed to do I will be very happy.

*Ros Little*

## Life after the Wednesday Work Group

It is about 5 years now since I joined the Friends of the Botanic Gardens. I have to say its one of the best things I have put my skills and energy into during my life. I love it and am very proud of all the work that we have put into the Gardens. But I'm especially proud of the achievements of the Wednesday work group which I started in 2009. We have established a nursery, created new gardens, done heaps of maintenance of plants, built great paths with drainage and bridges. We've put epiphytes high in the trees and beautiful plants like Stream Lilies, Swamp Lilies, Cunjevois, Tree Ferns and local native ferns around the creeks to stabilize and adorn the understory. I have helped with designing and drawing up plans for new areas which is very exciting.

The Waste Facility staff are very supportive of our projects and are always there when we need them. The nursery is a great joy for a small bunch of us who just love the challenge of getting seeds and cuttings up and growing. Some we sell, some go into the Gardens and some are given away. We keep an eye out for seeds and cuttings that we would like to propagate.

My latest project is playing with 2 and 3 tonne rocks to create an eye catching garden on either side of our Gardens entrance road. Working with 'Tommy Backhoe', a great backhoe driver, we have moved these giant rocks with incredible ease. With the Wednesday group I have put in some stunning old Grass Trees and baby ones as well which enhance the beautiful rocks. Such projects are a real delight.

Ros Little has now taken on the Wednesday work group and I wish her all the best. It really is very satisfying doing this sort of work and I know she will get a lot out of it. I'm still very involved in the Gardens but doing different things at present.

*Rose Hand*

## Bullrushes and leeches

The Bundjalung people used local bullrushes as a protection against leeches. The sap was rubbed on the legs. This aquatic plant is one of the Typha species that grows in the Botanic Gardens along the creek in the Useful Plants Garden. It was a useful vegetable. The young white shoots were eaten raw or the women placed the roots on the coals of a fire for roasting.

*From unpublished interviews with Bundjalung People by the Late Robyn Howell OAM, (1988) Richmond River Historical Society*

**Tommy 'Backhoe' Batchelor at work at the Gardens**

# **Seeds...** *an article by Peter Gould*

Sexual reproduction in plants involves a considerable investment of energy in the production of flowers, nectar, fruit and seed – energy which could otherwise be used for vegetative growth. The aim is to preserve, multiply and disperse the plants genes. It is a risky business requiring sophisticated strategies to ensure the mixing of novel genes in pollination, attracting birds and animals to carry genetic material to new sites and various mechanisms to ensure they are capable of producing a healthy new plant. Plants have evolved seeds as a means of dispersing their genes in space and time.

**Dispersal: by Wind**

Wind dispersal is generally limited to canopy species; one third to half of canopy species in Australian rainforests have wind dispersed seed. White Booyong (*Argyrodendron trifoliolatum)* a common emergent tree of subtropical rainforest in our area, has a winged seed - a samara. Rose Marrara *(Pseudoweinmannia lachnocarpa)* and Sassafras (*Doryphora sassafras*) have fine plumed seeds

Alex Floyd (1990) describes watching the seeds of *Argyrodendron trifoliolatum* in a strong breeze travelling 1 to 1.5 times tree height. Wind dispersal is generally, only effective over comparatively short distances – less than 100 metres.

**Explosive dispersal**

Some plants have developed this method of dispersal where the seedpod twists or inverts at maturity throwing seed out with quite some force. Some members of the Euphorbiaceae are noted for this. The introduced pasture legume Siratro *(Macroptilium atropurpureum)* an occasional problem in regeneration because of its tree smothering propensities, is capable of throwing seed > 10 metres.

**Dispersal by Animals**

Possums, fruit bats, rats and ants all play a part in the dispersal of seeds of some rainforest plants found in NSW. Ring-tailed Possums are primarily leaf eaters but also consume fruit and drop or excrete the seeds. Burred and sticky fruits (e.g. *Desmodium sp.,* both native and introduced) are effectively spread on the fur of pademelons. While Fruit Bats suck the juice from larger succulent fruits, they also swallow and excrete the very fine seeds of Fig Trees *(Ficus sp.)* and are an effective vector for their spread.

**Dispersal by Birds**

Several species of birds have evolved close relationships with many rainforest plants, and are an important vector for seed dispersal

*Seed of Black Booyong* Flickr image

capable of spreading seed kilometres from the parent plant. Birds can be classified as **seed eaters, regurgitators** or **excreters.** Seed eaters are capable of digesting seeds and make no contribution to seed dispersal. These include the Scrub Turkey *(Alectura lathami)* and several species of parrots. The Pied Currawong *(Strepera graculina)* is probably the most common of seed regurgitators. It regurgitates loose pellets of bare seed, stripped of their outer coating and primed to germinate. The Wompoo Fruit Dove *(Ptilinopus magnificus)* is an excreter of seeds. Its wide gape means it is capable of swallowing large seeds and it is particularly important because this ability makes it the main vector for seed dispersal for several large seeded species. Another seed excreter with distinctive habits is the Mistletoe Bird *(Dicaeum hirundinaceum).* It removes the extremely sticky seeds of the parasitic Mistletoes it eats by wiping them off onto a branch, ensuring they have a good chance of getting established on a host tree.

**Rewards and presentation**

Attracting birds to fruit is a matter of presentation and rewards for service. The Beach Alectryon *(Alectryon coriaceus)* a small tree of Littoral Rainforests, has a vivid red fleshy aril surrounding a black seed – properties typical of bird attractant species. The bright red fleshy fruits of the Bangalow Palm *(Archontophoenix cunninghamii)* and Walkingstick Palm *(Linospadix monostachya)* are other examples. The thin-fleshed, oily fruits of the Glenugie Laurel *(Cryptocarya floydii)* bear a remarkable resemblance to those of the Native Grape *(Tetrastigma nitens)* containing small seeds within a sweet, succulent pulp and foraging birds would have trouble telling them apart. Floyd suggests this is an example of mimicry by one plant of another

**Dormancy and viability**

Dormancy and viability in seeds can vary from a few weeks in the case of some climax rainforest species (e.g. White Booyong - *Heritiera trifoliolatum)* up to decades for pioneer species (e.g. Red Ash - *Alphitonia excelsa*).

Staggered germination over 2 weeks to 4 months in Camphor Laurel (Cinnamomum camhpora) gives this ubiquitous invasive weed a significantly improved chance that some of its seed will begin to germinate under ideal soil moisture and temperature conditions. Understanding seed dispersal is an important part of successful rainforest regeneration. Some species are unlikely to ever recolonise more isolated sites. Both White and Black Booyong (*Argyrodendron spp.)* are cases in point - because of their dependence on wind for seed dispersal, and the short viability of their seed, they cannot re-establish in many of the areas where they once occurred as dominant species. *References: Floyd, A.G. 1990,* ***Australian Rainforests in New South Wales (Vol. 1),*** *Surrey Beatty and Sons, Chipping Norton, NSW*

# NSW Seedbank – Rainforest Seed Conservation Program *by Graeme Errington*

The NSW Seedbank is part of the Royal Botanic Gardens and Domain Trust, Sydney, and is located at the Australian Botanic Garden, Mount Annan, in the south west of Sydney. The Trust, through its programs makes a considerable contribution to the conservation of the Australian flora. The NSW Seedbank is a key component of this contribution. Through its program of seed collection, storage and research, it is a source of plant material for living collections, supports education through technical and tertiary level training, and contributes to national and international plant science research, particularly in the area of seed biology.

The primary activity of the Seedbank is the collection, processing and storage of seed. Our seed collectors spend a number of weeks each year in the field, gathering seed from a variety of habitats across NSW. Each of the collections is made in three parts; a sample specimen of the plant for confirmation of identification, data such as the location of the collection site, a description of the habitat and vegetation, characteristics of the target species, the number of individuals the seed is collected from and finally the seed. A unique collection number links the three parts of the collection, which are processed appropriately. The flow of material into the Seedbank drives the other activities of staff including the cleaning, testing, storing and distribution of seed.

## Seed Storage

Seed storage is an efficient and effective method of germplasm conservation for seed that can be dried and frozen (termed 'orthodox'). Critical to the development of a long-term conservation seed collection is maximising the viability of the stored seed for long periods. This is achieved through a combination of reducing temperature and moisture content of the seed. After removal from fruits and cleaning, the seed is placed in a climate-controlled room that maintains conditions at 15% humidity and $15^0$C. Following a period of up to six weeks in this environment, the moisture content of the seed is reduced to between 3-7%. This drying process allows the seed to be frozen and stored at $-20^0$C. The combination of these two processes maximises the seed longevity and seed aging experiments estimate some species will maintain viability in the above conditions for many hundreds of years, when stored under these conditions.

*Richard Johnstone from the NSW Seedbank pressing a herbarium specimen, Border Ranges.* Photo Graeme Errington

The storage of orthodox seed is a well-established process and the majority of the NSW flora can be treated in this manner, although there is some variability in the ultimate life span of individual species in storage. The NSW Seedbank already contains seed from around 50% of the NSW flora, including more than 40% of threatened species, in its collection, but this process is not suitable for all seed. The correct identification of the species that are orthodox is essential to maintain a comprehensive long term conservation seed collection. By default this will identify species that are not suited to the treatment of drying and storing.

## Rainforests

Rainforests in NSW contain 20% of the state's plant species and as many as half of these may be sensitive to desiccation and not suited to the treatments described; these desiccation sensitive species are termed 'recalcitrant'. The conservation of germplasm of recalcitrant species requires the application of other techniques such as tissue culture and cryostorage. The investigation of suitable techniques for the storage of recalcitrant species is a developing focus of research for our scientific staff. Recent research, by staff associated with the NSW Seedbank, into the characteristics of species that may have desiccation sensitive seed is guiding the current 'Rainforest Seed Conservation Program' collection activities. Species that have been identified as desiccation tolerant have been targeted for collection and storage, while characteristics such as seed coat thickness and texture, and leaf shape can be indicative of species that may be suitable for storage and will be collected and assayed for their suitability.

Over the next three years the Rainforest Seed Conservation Program will aim to collect seed from 145 rainforest species. We will be collecting in areas from the South Coast to the Border Ranges of the Far North Coast, in a variety of habitats from littoral rainforest to cool temperate rainforests of higher elevations. Already some 50 species have been collected, many of these have been stored and others are being tested. Some of the interesting species we have collected include: *Desmodium acanthocladum* a species restricted

to a small number of locations in the Northern Rivers area, all three species of *Psychotria, (P. daphnoides, P. loniceroides* and *P. simmondsiana*) from mainland NSW, the endangered *Issoglossa eremanthoides* from a remnant of 'Big Scrub' near Booyong, and *Harnieria hygrophiloides* from littoral rainforest near Brunswick Heads.

**Myrtle Rust & Rhodamnia**

The recent introduction and spread of the disease myrtle rust is of particular concern for a number of NSW rainforest myrtaceae species. There are four species of *Rhodamnia* in NSW and one species in particular has been badly affected by myrtle rust. The common and widespread species *Rhodamnia rubescens* (Scrub Turpentine) is at considerable threat of becoming extinct if the current level of damage continues. Defoliation is placing many individuals and populations under severe stress and flower and fruit production is very limited. The seed storage potential of *Rhodamnia* is unknown and our investigation of this issue is limited by available seed. *Rhodamnia* and other affected genera such as *Archirhodomyrtus* and *Rhodomyrtus* will be a focus of collection for the Rainforest Seed Conservation Program. We are interested in sourcing these species and would appreciate any information on fruiting specimens.

**Program's success**

The success of the Rainforest Conservation Program is dependent on the development of partnerships with individuals and other organisations. Contributions to the program may include the supply of suitable seed and information on the location and progress of fruit development of species in the relevant local area. The Friends of Lismore Rainforest Botanic Gardens has contributed seed from a number of species to the past research and the current program.

For further information contact graeme.errington@rbgsyd.nsw.gov.au

# Myrtle Rust in our Gardens

Myrtle rust is largely dormant at this time of year. However, removal of infected foliage and spraying of all leaf surfaces of vulnerable species with Copper oxychloride is the recommended control. Species particularly impacted in our plantings include Rhodamnia sp. and Native Guava.

I had a chat recently about Myrtle Rust with, environmental consultant Peter Gould. He said that he had noticed a difference between two mature Myrtle Rust infected *Rhodamnia rubescens* specimens on his property at Terania Creek. The more exposed specimen (i.e. without much canopy cover) had a severe reduction in leaves and new shoots – it was about 80% defoliated and looked to be dying compared to a specimen growing in about 70% shade which had 90% leaf cover and was flowering and fruiting quite vigorously.

His explanation was that beneficial fungi, lichens and microbes covered the leaves of the tree in the more

*New leaves on Myrtle Rust infected plant*

sheltered site. Leaf microbial phyllosphere diversity, distribution and abundance was possibly having some competitive effect on the success of myrtle rust. It would be great to test this hypothesis to see if it can be disproved.

If Peter's hypothesis turns out to be true then this provides further support for the theories as to why a forest canopy is crucial to a host of rainforest plants, and other microbial life forms. Microclimate is everything to a rainforest plant.

*Damian Butler, LRBG Gardener*

# New Discovery Trail in Room 2

The Wednesday group has recently installed a new walking track from the bitumen path though to Rose's Gardens of mixed rainforest plants - many of which are not found anywhere else on site. It was quite an achievement with most of the work being completed on one Wednesday morning.

This track opens up a whole new area of the Gardens and connects with the path that goes through the Fern Gully picnic area and back to the bitumen, creating a loop. A small bridge over Fern Gully still has to be built and some edging to be finalized but the path is usable with care at the crossing.

*Some of Waste Facility staff who work at the Gardens*

# Mycorrhizae in Rainforest *from Mike Fulloon*

The mycorrhizae are a group of fungal species that form a special symboitic partnership with the roots of plants. Almost all terrestrial plants form these relationships and are unable to thrive without them. They infect roots by surrounding and invading the plant root tissues with their hyphae, but not damaging the plants cells. The fungal hyphae form a web-like mass of threads called the mycelium which is spread throughout the soil substrate. This mycelium gathers minerals and water over an extended area much greater than the plants roots can penetrate and occupy. The plant can then use some of the water and minerals especially phosphorus and in return the fungi can obtain water, simple sugars and amino acids from the plant. This mycorrhizal web can connect with different species of plants and spread over a large area of forest and the interconnected plants may be able to share nutrients. Some mycorrhizal fungi are host specific and can only associate with one species or are found in only one soil type. These fungi also provide some antibiotic protection to the host plant against pathogenic fungi. The fungal mycelium can form a huge web between the soil particles and respond and grow much faster in response to water or favourable conditions than the host plants' roots can. Some plant seeds will only germinate and establish in the presence of mycorrhizal fungi.

Mycorrhizal relationships in the rainforest are relatively unstudied and much more work needs to be done on them. There is difficulty in identifying these fungi as the spore producing body is only visible above ground for short periods of time and the hyphae are impossible to identify easily. A large percentage of Australian fungi have not been studied or named.

Fungi play an essential role in rainforests as they help in plant nutrition by supplying essential enzymes and minerals and by breaking down and recycling dead plant material. They also play a role in soil structure where the fungal mycelium can bind soil particles together. Some are also pathogenic and destroy living plants.

The spore producing bodies of the macrofungal mycorrhizae are the parts ( mushroom and toadstool caps ) seen on the forest floor but some have underground truffle -like spore bodies . The underground spores are often spread by bandicoots and other small mammals and insects.

Some macrofungi that form mycorrhizal partnerships with plants belong to the genera Amanita, Boletus, Cortinarius, Inocybe, Laccaria, Pisolithus and Ramaria.

Other plants are infected by mycorrhizal microfungi that do not form visible spore producing bodies, especially the orchids which can not grow without them.

## Council Report

The Council maintenance crew has been working hard to improve the appearance of the Botanic Gardens during the winter period. This has included weed spraying and significant amounts of mulching. This has made the Useful Plants Garden look amazing.

Council is working on improving the signage, pathways and drainage around the gardens. Planning has also progressed on the education centre with a third site now being selected and the third development application being submitted. The new site, near the existing offices and over the road from the weighbridge will offer good linkages into the garden both into the useful plants and rare and threatened gardens. Part of this education centre development is a planned outdoor teaching area.

Council congratulates the Friends of the Botanic Gardens on the impending 10 year anniversary of the Gardens in August.

*Kevin Trustum Waste Operations Coordinator*

## Some guidelines re visits of groups to the Gardens

We love having groups of people come the Gardens. To ensure that their time there is as enjoyable as possible we have devised some guidelines re organisation of such visits.

**Advise Marie** phone 6689 5261 or friendslrbg@bigpond.com so she can make sure brochures, maps, postcards etc are available – or if you need display boards or the display tent for shelter or any other special requests.

**If the group requires one or more members to give your guests a guided tour** contact Pat Offord 6629 1435 or pofford3@bigpond.com preferably **four weeks** before the date of the visit.

**Some visitors need a little more detail about plants and plantings (usually Garden Clubs, University or Botanic Gardens staff). Please make sure the guides can provide this information. Contact Pat Offord or Jan de Nardi 6629 8244 or jande@activ8.net .au if you need assistance**

**Advise Kevin Trustum** at the Waste Facility of the proposed visit - email Kevin.Trustum@lismore.nsw.gov.au or phone 6623 2004. You don't want to clash with an event organised by the Waste Facility education team or find the driveway blocked by work vehicles!

You need to **organise a key for the toilets** at the weighbridge either from the Waste Facility office or from Ros Little phone 6628 2909 or rnrlittle@southernphone.com.au.

There is no charge for a guided tour but we do **ask for a gold coin donation** - so a donation box needs to be obvious.

**Reporting back to a committee member after the visit** helps us know what it going on and what needs to be done to make future visits even better.

**Gardens are open 8 till 4 weekdays, 9 till 4 weekends, closed public holidays – open other times by arrangement.**

# Local community groups enjoy their visits to the Botanic Gardens

## *Nimbin Garden Club*

Nimbin Garden Club held their April meeting at the Botanic Gardens. "Although somewhat wet underfoot after heavy rain, asphalt and gravel paths made easy walking through the various garden areas. Our guide was Geoff Walker.
The walk through the Gardens began from the picnic area, planted with koala-food eucalypts, which forms part of a 'koala corridor' between disparate bushland areas. Club members were delighted by the early sighting of koalas in nearby trees, one just above ground level! We passed through an open swampy area populated with native bullrushes preserved as a home for resident native birds, then slightly uphill into a buffer zone of subtropical rainforest which features many species of Lillipillies including a couple magnificent Giant Water Gums (*Syzygium francesii)* and a healthy young specimen of the rare Coolamon *Syzygium mooreii.* The path continued gently along the path past stands of mature Hoop Pines *Araucaria cunninghamii* which, Geoff informed us, mark the 'thumbprint' of dry rainforest.
The paths wound through areas of new plantings incorporated naturally into the established regenerated native bushland, crisscrossing a small creek and climbing gently upward out of the rainforest to an open grassed area dominated by a few mature Forest Red Gums *(Eucalyptus tereticornis).* Our walk then meandered back downhill via alternate paths to the picnic area equipped with covered barbecue area, water and electricity where we enjoyed our much anticipated 'cuppa' .
*Adapted from article by Stephanie Eyles*

## *U3A Photography Club*

On 18 May the U3A photography class spent their regular Friday morning session at the Lismore Rainforest Botanic Gardens. About 25 people attended and the day

turned out fine following the huge amount of rain we had had.
As the class was to commence at 10am we were unfortunate to miss the early morning mist through the trees and the wet spider webs that make for great photos. By ten o'clock things were drying out. However, plants, fungi and colourful bugs made interesting subjects and four koalas were up to their high performance standard and really enjoy being photographed. One show off actually came down to head height and performed a treat with dozens of photos being taken. The Gardens were at their winter best and a return trip by the group in spring is planned.
A display of the photos taken on the visit were shown at the Workers Club the following week. See above one of two that were voted best of the day taken by Heather Bolton. 'Harlequin beetle on the Native Hibiscus.' *Ian Murray*

## *View Club*

The Lismore View Club visited the Gardens by proxy! Marie Matthews gave them a talk and slide show at the Workers Club on 19 June. They were very impressed by what we had achieved at the gardens and like many people in Lismore – surprised to know that we existed! They later visited the Gardens in person. We are interested in giving more such talks for any interested groups.

## *After School group*

23 May saw an afternoon visit by a group of primary school children with two adult carers as part of their after school care activities. Jan de Nardi welcomed them and made sure they got out OK after the main gate closed at 4pm. We are planning to prepare some educational walks especially geared to school ages children.

## *Rotary Members*

This month Patricia Wilson took a group of Rotary members on a guided tour of the Gardens. Their time was limited but they very much enjoyed what they saw.

Many people are beginning to realise the Lismore Rainforest Botanic Gardens is a great place to visit – we regularly meet families and individuals who include the Gardens as one of their favourite places to walk. With the number of walking paths and trails increasing all the time it can be quite an adventure for children, and for any plant lovers a wonderful place to view rainforest specimens – especially while the trees are young and not too tall. Some plants are already showing signs of blossoming so this spring and summer should give a great display of flowering trees and shrubs.

*Melaleuca species in flower on Sunny Slope Spring 2011*

## *Pat's Report* *cont. from p.1*

**Rose's shoes were hard to fill but Ros Little** has stepped up to the mark and is doing a great job with her Wednesday team. Ros has worked as a volunteer on our Sunday team for many years and we appreciate her commitment to this role .

**I am looking forward to seeing many old friends on 26th August**

# Water-lilies & other water plants

*Jan de Nardi*

When we think of water lilies we think of floating plants with large colourful flowers. In this area there are two similar looking species of which one is native, and one, unfortunately increasing in number, is introduced.
This is an attempt to show some differences between the two. The leaf size and shape can overlap, but there are differences which are listed below.

## Native

*Nymphaea gigantea*
Flickr Image

Leaf margins are toothed with acute (sharp-pointed), regularly-spaced teeth.
Petals have rounded tips, purple to lilac-blue, fading with age to pale blue and/or white.
Stamens are incurved to the centre of the flower, with no purple coloured tip, though occasionally a small yellow tip is present.
Seeds are red, maturing to grey, with some hairs.

## Introduced

**Cape Water-lily** (*Nymphaea caerulea* subsp. *zanzibarensis*)
Leaf margins are irregularly sinuate (wavy) with occcasional teeth
Petals have acute tips, pinkish-blue, blue or white, not changing with age.
Stamens are erect and straight with blue-purple tips 5-8mm long.
Seeds are olive-green or yellow, but appearing brown *en masse.*

**There are two other native plants with floating flowers**, which although small, are still a delightful presence in our dams and permanent still waters. They are two species of ***Nymphoides***. While less showy than the larger water-lilies, but they are none the less pretty in a more delicate way.

**Water Snowflake** (*Nymphoides indica)*
This one has white flowers, 2.0 – 2.5 cm in diameter, with a yellow centre. There are 5 petals, which are fringed and covered with white hairs - sometimes described as 'bearded'.

**No common name** *Nymphoides geminata*
This one has yellow flowers, 0.5 – 1.5 cm in diameter. Also with five petals, these are delicate with a fringed margin and a fringed wing down the centre of each petal.

## Floating Ferns

There are also two species of a floating fern which are extremely common in our area. These ferns float on water, with fine roots hanging below the surface. They are mostly found covering the surface of still or slowly moving water.

***Azolla filiculoides*** sometimes called Pacific Azolla, has simple fine roots. It is not tolerant of low temperatures, and in temperate regions it largely dies back in winter, surviving by means of submerged buds. Like other species of *Azolla*, it can fix nitrogen from the air.

***Azolla pinnata***, sometimes called Ferny Azolla, has numerous fine lateral roots growing from the primary roots.

*Azolla spp.*

*Information compiled from 'Wetland Plants of Queensland, a field guide', by K.M.Stephens & R.M.Dowling, CSIRO publishing, 2002, pp54-55.*
*Flora of NSW ed. Gwen Harden, UNSW Press, vol.1, 1990, pp.150-151, also vol. 3, 1993, pp.506 – 507.*
*PlanetNET- FloraOnline http://plantnet.rbgsyd.nsw.gov.au/*

## ANNUAL GENERAL MEETING

The Friends of Lismore Rainforest Botanic Gardens

**Saturday 18 August at 9am**

**Neighbourhood Centre Carrington St Lismore**

***All members welcome***

## Friends Committee

**President:** Jan De Nardi 6629 8244
jande@activ8.net .au
**Vice President:** Pat Offord
**Secretary:** Denis Matthews
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**Treasurer & Membership:**
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**Organiser:** Pat Offord
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**Data Base Manager** Mary McDermott
**Propagation:** Rose Hand
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**Wednesday Group Organiser:** Ros Little
6628 2909
rnrlittle@southernphone.com.au
**Committee:** Annette Deal
Geoff Walker
Peter Gould
Margaret Smith
Website: www.lismore.nsw.gov.au then >things to do>recreation>Botanic Gardens

Our 'in house' graphic designer Annette Deal has produced two more designs for Gardens Postcards giving you now three beautiful images to choose from. They are available at Work Days and other events or contact Marie 6689 5261 - $1 each.