



ISSUE 7

PORT MACQUARIE LANDCARE GROUP INC.



## Fire ecology and biodiversity



Port Macquarie Landcarers are bushland reserve warriors and do much more than just kill weeds. They are either actively or passively encouraging the native bushland to return.

In some cases this work could inadvertently result in conflict with the requirements for Port Macquarie Hastings Council to manage bushfire risk on land that they own or manage. To prevent this happening Landcare works with Council to manage regeneration in a way that retains fuel reduced buffers between bushland and neighbouring residents' properties. These zones are known as Asset Protection Zones. Another holistic management strategy to mitigate bushfire risk to adjoining properties is the implementation of hazard reduction burning.

Hazard reduction burning is a cost effective way of reducing bushfire fuel loads over a larger area where these have exceeded high levels and the vegetation community is capable of regenerating after the event. The vegetation types that are excluded from controlled burns in our area are Rainforests and Saline Wetlands. Areas mapped as SEPP 14 wetlands are also excluded.

What does this mean for the bushland reserves that Landcare operates in? The reduction of fuel loads can help by reducing weed loads. In the short term it can also reduce the elevated fuel layers resulting in easier access for weed control. The characteristics of fire regime adapted vegetation mean that the burns, whilst undertaken for hazard reduction, can also contribute to

increased native regeneration and increased biodiversity.

There are often questions asked about the fauna that inhabit these reserves and how they cope with fire moving through their homes. A number of measures are implemented which reduce the impacts on our native animals. When a reserve is identified with high fuel loads it is divided into smaller mosaics and this, in conjunction with controlling the burn to be of low intensity, allows the fauna to move out of harm's way. Before a burn can be undertaken Council must undertake site assessments and issue environmental approvals which place conditions unique to a particular site. These may include additional fuel removal from around habitat trees prior to the burn to prevent flame contact on the tree and radiant heat levels from impacting on any critters who use tree hollows for their home.

What about the flora? A lot of our native Australian plants are fire adapted and are able to re-sprout after fire. As well, many fire adapted plants need smoke and/or heat to promote seed release and germination. Seed may be held on the plant, or can be sitting dormant in the soil waiting for the conditions that allow it to spring forth.

The photos demonstrate the ability of different Australian vegetation communities to regenerate after fire events.

- Melinda Losh



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# Mahogany Hill Reserve and Bushfire Management

This 1.6 hectare Reserve is surrounded by houses but linked by green corridors to other Reserves nearby. It has many mature trees and is heavily used by wildlife, including koalas.

The site is an old quarry so it has very steep slopes, unstable cliffs and difficult access. It was abandoned to weeds and rubbish 30 years ago, but Landcare volunteers began a bush regeneration project there in 2001.

Mahogany Hill now has healthy native bushland dominated by eucalypts, but there is no evidence of recent fires.

Natural processes have resulted in a build up of fuel on the forest floor, and Council has put in place a strategy to reduce the risk of wildfire.

In spring 2012 Council's Bushfire Management Officer, Melinda Losh, identified "habitat" trees and rainforest species to be preserved then sent in Rural Fire Service (RFS) workers to clear an Asset Protection Zone (APZ) around the 550m boundary of the Reserve.

This reduced the fuel near fence lines and improved access to all areas of the Reserve.

The RFS also dispersed the piles of garden waste and timber that had been dumped in the Reserve. Neighbours were advised not to make any encroachments into the Reserve, and not to add to the fuel with green waste.

In January 2013 the RFS returned to prepare for a planned fuel reduction burn. Regrowth in the APZ was removed and clearing was done around habitat trees to protect them during the burn.



*Clearing around logs and trees*

At this time Australia was experiencing a heat wave. Port Macquarie had hot humid days, below average rainfall, and sometimes strong winds that brought down eucalypt bark and branches.

On some days fire danger was extreme, but Council's strategy of reducing fuel in the APZ had already improved the safety of properties bordering on the Reserve.

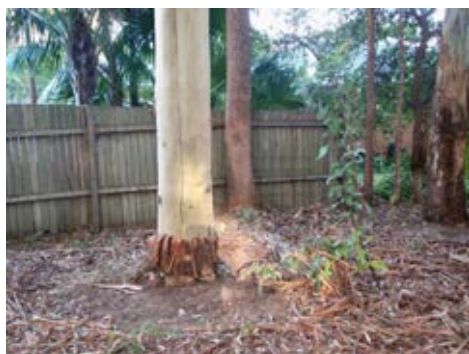
The RFS made thorough preparations for a fuel reduction burn in the northern forest area, so that it could be done when the weather conditions were right.

In terms of the Landcare project, the burn is likely to change the trajectory of growth in the forest, where a rainforest understorey has started to develop under the eucalypt canopy.

The Reserve now has a more secure future because neighbours have been educated about the fire risks created by dumping green waste in the Reserve, and about the penalties for encroaching on the APZ.

When it comes to changing behaviour, a uniform and a big red truck can be very persuasive!

- Julie Ho 0439 597 926  
or [julianneho@hotmail.com](mailto:julianneho@hotmail.com)  
Mahogany Hill co-ordinator



*Asset protection zone at Mahogany Hill*



## Write up in the Press

Landcarers Glenn Holt, Bronwyn Newton and John O'Reilly planting trees along the creek bed of Shelly Beach Road were featured in an article in *Port Macquarie News* on Wednesday, December 19. The article talked about the work done at Shelly Beach and the upcoming work along the waterways of Wrights and Yarrabee Creeks. "In the past 10 years Landcare has restored 9.71 hectares of public land to ecological maintenance, [Estelle] she said. And in the next six years, the Wrights and Yarrabee Creek project would produce more than double that - with the group predicting to

restore some 56 hectares. It is a monumental effort for an organisation that started with just five members and has now grown to 150." Dan Croft, the Acting Director, Development and Environment acknowledged the great relationship between Council and Landcare. "Mr Croft said council's relationship with the group has blossomed over the years, and the positive results were a manifestation of the hard work and determination of local volunteers. Landcare and Friends groups manage 20 of our bushland reserves on behalf of council and the community and this

year handed back three of those reserves in great condition, dramatically reducing council's cost of caring for this land, he said." This press coverage and support from key stakeholders is great for the community visibility of our work and for our morale, and, we hope, helps bring in new members.



## President's Report



What welcome rain at last! Although there was a lot, it was not the damaging rain that some areas have endured.

The revegetation of the sites that have had large areas of weeds removed can now go ahead, knowing that the soil water moisture content will be sufficient to see them established in record time. The total area on all sites to be planted is 3,050 sq metres. With 1 plant per sq metre, this will be a boon to

the Nursery that is bursting at the seams with plants waiting to be planted. The seeds collected over summer will have space to germinate and grow to planting size ready for the next areas to be planted.

Investigations are underway to find a permanent home for Landcare, so hopefully by year's end we will have somewhere for all our equipment to be housed in one place, relieving the need to rely on the generosity of our volunteers to store things for us.

Our next celebration to thank our volunteers will be very special as we will be inviting the Mayor as well as all the residents who watch us work over their back fences! We know they appreciate what we

do, so now we may be able to entice some of them to come and join us. We will be explaining what we have done and why and how they can help. We have been preparing the site in Yarababee 2 off Braemar Drive to be ready for the Thank You BBQ on Saturday 27<sup>th</sup> April. An invitation with all the details will be sent to you in due course.

Thank you all for your contributions to Landcare during the heat of this summer.

*-Estelle Gough*

[nursery@landcareportmac.com.au](mailto:nursery@landcareportmac.com.au)



## Life Members



Ken Errington  
2009



Yvonne Errington  
2009



Steve Cartwright  
2009



Julie Ho  
2011



Estelle Gough  
2012

Created by our patron Roy Sach during his presidency, a Port Macquarie Landcare Life Membership Award "recognises ten years of dedicated and distinguished contribution to the objectives of the Group and therefore to the wider Port Macquarie-Hastings community." Upon receiving the Award, recipients have full membership rights and privileges with no obligation to pay further annual membership fees. What fantastic commitment, justly acknowledged!

## Landcare's New Campaign and Slogan

### What is L.I.F.E.?

Landcare Is For Everyone – that's what LIFE is. Landcare's new slogan replaces 'Donate Yourself to Landcare' and comes with a new graphic that replaces the bucket and ladder (see below).

During the recent National Landcare conference the new Landcare campaign – L.I.F.E. (Landcare is For Everyone), was launched. The L.I.F.E. campaign with catchy music and 3D animation celebrates the strength and breadth of the grass-roots movement and is about people across Australia getting involved in Landcare in their everyday lives. The campaign illustrates the diversity of Landcare, demonstrating how working to preserve the land sustains the very species that live on it, and the variety of different ways that people can get involved.

<http://landcarelife.com/>





# Native Plant: Brush Muttonwood



## *Myrsine howittiana*

This shrub with lovely shiny leaves grows naturally in Sub-tropical Rainforest and often on margins with moist open forest. It is widespread on the coast and lower ranges but not common in coastal areas on the North Coast. We are lucky to see it in Kooloonbung Nature Reserve and in many other reserves in Port Macquarie.

Pruning and growing in good light help this fairly open habit shrub become denser. Its irregular fruiting events make it an interesting addition to the garden. The Rose Crowned Fruit Dove along with other hungry birds will enjoy the colourful fruit, from December to March.

Muttonwood shrubs are named for the colour of their wood. They enjoy some fertiliser and mulch.

- Estelle Gough [nursery@landcareportmac.com](mailto:nursery@landcareportmac.com)



*Myrsine howittiana's*  
ripe fruit approx 5 to  
7mm in diameter  
contain a single  
seed

*The alternate leaves*  
are dark, shiny-green  
on the upper surface  
and the tips are  
rounded



## Lighthouse Beach Signs

These signs have been erected at Lighthouse Beach as part of our Releasing Ecological Brakes project. Funds came from the Australian Government through Caring for our Country - Community Action Grants. The signs are meant to communicate that bush regeneration protects our infrastructure and assets by reinforcing nature's engineering: the system of dunes that give storm protection. For citizens concerned with property values, it should also make sense that Landcarers remove weeds and replace them with native plants.

- Julie Ho



Mal Bailey of Port Macquarie with Landcarer  
Carol Jungblut viewing one of the new signs  
erected at Lighthouse Beach Reserve



# Weed: Privet



**Large Leaf** (or Broad Leaf or Tree)  
*Ligustrum lucidum* and

**Narrow Leaf** (or Small Leaf or Chinese)  
*Ligustrum sinense*

**Family:** Oleaceae (olive)

These two species of privet are noxious weeds in NSW. Both originate from eastern Asia and were introduced to Australia as ornamental or hedging species. They have become widespread weeds of disturbed land, pastoral areas and native bushland in coastal NSW and have extensive environmental, agricultural and human health impacts. Invasive weeds across the Port Macquarie Hastings Local Government area, they are found primarily in riparian and roadside areas and along rural fence lines, but are now spreading into bushland, including remnant vegetation areas. Unfortunately privets are still present in urban gardens, public plantings, hedges and windbreaks, although it is thought that new plantings have declined.

The plant produces masses of flowers in early spring, and the perfume and pollen are believed to be responsible for triggering allergic reactions in susceptible people. Large quantities of fruit are then produced. Propagation is primarily by seed, with birds being the main agents, along with dumped garden waste and, along streamlines, from suckering from damaged roots and broken stem pieces. A trial was conducted at the Landcare Nursery in 2009 on very immature seeds (small green seeds) from the Small-leaf Privet and it was found that they all germinated readily. These features all make the two privets difficult to control.

They are both currently classified as environmental weeds in the Port Macquarie Hastings Local Government area, which means there is no legislative requirement to control them. Council staff undertake control works on privets on Council managed land to protect high priority vegetation areas and in situations where they are growing with other weeds being targeted.

The declaration list for Noxious Weeds in NSW has recently been reviewed and the new Control Order 30 is to go on public exhibition in the next few months. Both Large Leaf Privet and Narrow Leaf Privet are proposed to be included as

Class 4 weeds for the Port Macquarie Hastings Local Government area, with the control requirement being: *The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread.*

Council will be developing Weed Management plans for both privets that will reflect the Class 4 legislative requirements, and will guide land managers in the control of these weeds.



*Narrow Leaf (or Small Leaf or Chinese) Ligustrum sinense*

## Distinguishing Features

Large Leaf Privet	Evergreen tree to 10 metres, trunk whitish-grey. Leaves: opposite, hairless, dark-green above, paler below. Flowers: fragrant, white in large panicles. Fruit: small, fleshy, purplish-black.
Narrow Leaf Privet	Large evergreen shrub or small tree usually less than 3 metres, but can grow to greater heights. Leaves: simple, opposite, slightly hairy on the underside, mid-vein. Flowers: small, white in dense clusters. Fruit: abundant, bluish-black.

Large Leaf Privet is commonly confused with the native shrub Sweet Pittosporum (*Pittosporum undulatum*). Other native tree species that can be confused with privets include: Lilly Pilly (*Syzygium smithii*), Grey Myrtle (*Backhousia myrtifolia*), Coffee Bush (*Breynia oblongifolia*) and Native Olive (*Olea paniculata*). Care is needed to distinguish privets from these native species.

### Control:

**Hand** – generally small plants can be hand pulled, but use caution on steep and friable ground where uprooting can cause soil damage.

**Chemical** – foliar spray with metsulfuron methyl (eg Brushoff) 1.0g/10litres; cut stump to 100mm with undiluted glyphosate (eg RoundUp Biactive); the trees are often multitunked so all trunks need to be treated; chisel or drill and inject larger trees with undiluted glyphosate with 2mL per cut/hole 100mm apart and as close to the ground as possible. Also treat any dominant surface roots. Large infestations of germinated seedlings can be sprayed with RoundUp Biactive (10mls/1litres).

- Carol Jungblut, with input from Grant Taylor (Noxious weed officer Port Macquarie-Hastings Council) and Estelle Gough



*Large Leaf - Ligustrum lucidum*





## With the Birds at The Lilypond

I have had some memorable moments whilst working at the Lilypond, like the only time in my life I have seen a small group of Varied Sitella, who were very busy in an old wattle tree; and seeing groups of Yellow Thornbills dropping like yellow snowflakes through the branches.



Just this Spring, a young Azure Kingfisher nearly bumped into me on a "training flight"; he was so startled he landed in a branch to catch his breath less than a metre from me – so beautiful – his colours not quite at their peak and I dared to hope his parents had nested nearby.

Last week there was something calling and I couldn't find it – it crossed my mind - 'I wish Bill was here to identify



that', so I kept my eyes open and stopped regularly to try and find it. I still hadn't set my eyes on the newcomer but in the meantime, two Brown Scrub Wrens worked their way busily past me as did a Yellow Robin



*Rufus Fantail*



and a family of Brown Thornbills.

Next I had a conversation with a Green Catbird – if one meows at them, they will come in to look at the poor bird who can't talk properly, as do Golden Whistlers. It was then I caught movement and saw for the first time in over a decade, a Rufus Fantail and then nearby a second one. They stayed around for nearly an hour unaware that their presence was causing me such joy and excitement. The first sighting here for over ten years surely means that we Landcarers are doing something right and worthwhile.

- Yvonne Errington  
(Founder & Life Member).



## Revenge of the Candlenut

Back in the olden days when I was buying my own trees to plant in "my rainforest" at the Lilypond and before we had Bill Peel to teach us that indigenous meant 'of this area' and not Australia, I was given a seedling Candlenut Tree. It was propagated from the one at Roto House - historic as well as beautiful. It grew into a magnificent emergent, its pale leaves contrasting with the darker leaves and I loved it.

By the time it flowered I had stirrings of unease, but hesitated to make a final judgement, so for several years we removed 20 to 30 seedlings and gave the parent tree a reprieve until last year

when we "bit the bullet" and it was removed by the professionals. The trunk was left standing for habitat reasons and the rest of it distributed through the Reserve to decay and perform its last service.

Well, last week in under an hour, I removed 1064 seedlings and as I worked, I had a chuckle and thought "so my beauty, this is your revenge eh?" I looked up and noticed the trunk had started to shoot as well but we'll attend to that.



Not really revenge, but a wonderful lesson in the ecology of a true Rainforest. When we removed it we created a huge hole in the canopy and let the sun reach the forest floor, so instead of 20 – 30 seedlings, we had a plethora, nature's regeneration, working fast to fill in the gap.

A White Beech tree that has been about 2 metres high for 10 years has doubled its size in 12 months and will in time replace the Candlenut in the canopy, but not immediately in my affection. It will have to find its own spot there too.

- Yvonne Errington



## Meet Our Volunteer

My name is Bronwyn Newton and I am 64 years old, a retired Building Society Manager.

I joined Landcare in 2008, after moving back to Port Macquarie. Previously my husband and I lived at Huntingdon where our 20 acre block fronted the Hastings River. We were able to obtain a grant from "Stream Watch" to remove the Lantana and Privet. With the help of our daughter, Angela and grandchildren we cleared these unwanted weeds. It's amazing how well the bribe of a baked dinner and chocolate pudding worked!

The Landcare sites that I work on are all different and challenging, from working in ankle deep water and mud, to planting in hot, open areas. On some occasions, due to hot weather, it has been a work out equivalent to a day in the gym.

I find the challenges of working for Landcare extremely rewarding, looking back over time and observing the results of



our efforts. When looking at the early photographs that were taken at Blair Reserve, it is amazing how much the reserve has changed.

There have been many memorable moments for me in the bush. One that clearly comes to mind is the time when the Banded Buff Rail came to feed at my feet in the swamp. Another time, while sitting having morning tea, we

discovered that the "rain" falling was actually a Koala above us.

My other hobbies include, quilting, gardening and Tai Chi which has taken my husband and I to many places of interest around the world.

I enjoy my time working with Rex and the team, and also with Estelle and the crew at Blair.

- Bronwyn Newton

P.S. For anyone interested in Tai Chi and Chi Kung, classes are held in Port Macquarie on Mondays at 9am, 10.30am and 12 noon for beginners to advanced students. A new beginner's class will commence 18 February starting at 12 noon. Contact Robert Newton 6583-3886.

## Itinerant Landcarer



*Email to Julie Ho from Ian Jury*

Hi Julie and Steve,

Merry Christmas to you both.

Carol has settled in well at Innisfail hospital and I have signed on with Johnson area Landcare.

I have a patch of rainforest to weed and am battling huge Syngonium and other vines. No leeches or ticks but some mosquitoes.

Here's a sample of the local wildlife: Long Nosed Bandicoot, Sugar Glider, Red-Eyed Green Tree Frog, Platypus (at midday and very close) all up on the tablelands an hour away, and this morning at the swimming beach a male Cassowary and chick.

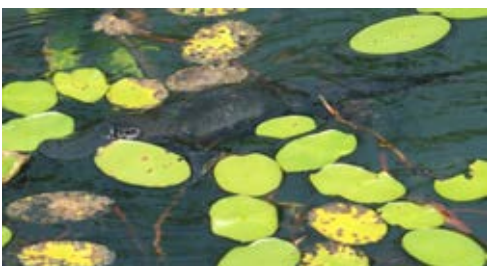
In the garden we have Yellow-bellied Sunbird, Helmeted Friarbird, Metallic Starlings and Pied Imperial Pigeons. Just down the street the Johnson River has crocodiles!

All the best,

Ian J



*"A kid was kicking a football on the beach and the Cassowary chick was chasing the ball across the sand. Everyone was having a laugh."*





# What the Fungi?

## Subject: The role of fungi

This issue I would like to talk about fungi and the important role they play in so many areas of life as we know it.

The study of fungi is called *mycology* and it is a branch of *botany*, although studies have shown that fungi are more closely related to animals than to plants.

Fungi belong to the **Fungi Kingdom** that is separate from plants, animals and bacteria. The Kingdom includes micro-organisms such as yeasts and moulds as well as the more familiar mushrooms and toadstools. It has an estimated 1.5 million to 5 million species, with about 5% of these having been formally classified.

As mentioned in my power-point presentation on the web site home page, fungi are different from plants in that they:

- ◆ do not contain the green photosynthetic pigment chlorophyll, so cannot produce their own food;
- ◆ do not have roots, leaves or flowers;
- ◆ have cell walls that contain chitin, unlike plants which contain cellulose.

These and other differences show that fungi form a single group of related organisms ('true fungi' or Eumycetes) that have a common ancestor. They are distinct from but structurally similar to slime moulds (Myxomycetes) and water moulds (Oomycetes).



All fungi can be placed into one of three categories:

*Saprotrophic* – obtain nutrients from dead organic matter by breaking down the lignin, cellulose or chitin;

*Parasitic* - obtain nutrients from a living organism with no benefit to the host;

*Symbiotic* – provide the living host with antibiotic protection against parasitic fungi in exchange for nutrients.

Members of the Fungi Kingdom are distributed worldwide. They perform an essential role in decomposing organic matter and have fundamental roles in nutrient cycling and exchange. Most are overlooked due to their small size and cryptic (concealed) lifestyles in soil, dead matter (above and below ground), living plants, animals and even other fungi (see photo of *Zygomycetes spinellus*). They may become evident only when fruiting as mushrooms or slime molds.

Fungi have been used as a direct source of food (e.g. mushrooms and truffles) for

centuries, as a leavening agent for bread and in fermentation for making beer, wine and soy sauce.

Since the 1940's they have been used to produce antibiotics and in more recent years various enzymes produced by fungi have been used industrially and in detergents. Biotechnology companies and drug agencies are shifting their focus from the use of animal cells to a cleaner and cheaper alternative offered by plants and fungi to produce vaccines and pharmaceutical drugs.

Fungi are also used as biological agents to control weeds, plant diseases and insects (eg. *Amanita muscaria* - Fly Agaric, the pretty red mushroom with white spots used in most children's fairy tale books, is highly toxic and used to make fly spray).

The fruiting bodies of some species contain *mycotoxins* that are toxic to animals and humans, while some species contain *psychotropic* compounds that are used in spiritual ceremonies and are attracting interest by researchers as therapeutic tools in treating depression.

Fungi can feed us, heal us, protect us and kill us, but without them there would be no us.



*Zygomycetes spinellus*

- Angela Millett

## Life of a Joey



Photo: Theresa Brewer  
Taken along the John Oxley  
Highway Port Macquarie

When a joey is born it is only about 2cm long. It emerges from the birth canal completely blind and hairless then crawls up the mother's fur to the pouch, where it attaches itself to one of 4 teats. The teat swells in the joey's mouth, securing it so it cannot be dislodged by the mother's movement. It stays attached for several weeks. Joey's spend 6-8 months in the pouch until they are ready to begin being independent. A mother kangaroo is capable of having more than one joey of different ages in the pouch at the same time, feeding on different types of milk. Kangaroos usually live for 8 – 12 years, occasionally longer.

A mother kangaroo can suspend the development of an embryo (embryonic diapause) when conditions are poor - for example, during drought - and reactivate it when conditions improve. Female kangaroos of reproductive age spend all their adult lives pregnant.

- Roz Anderson

Thanks to Roz for this great photo which has become one of our footers

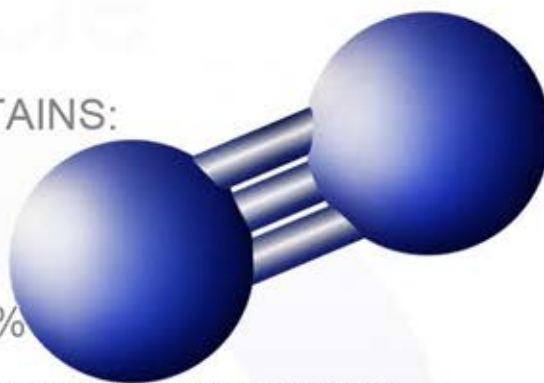




# Why Nitrogen is Important

## THE EARTH'S ATMOSPHERE CONTAINS:

Nitrogen ( $N_2$ )	78.0%
Oxygen ( $O_2$ )	20.9%
Argon (Ar)	0.93%
Carbon Dioxide ( $CO_2$ )	0.035%



Nitrogen is essential for all animal and plant life and passes through a complex natural cycle. It is the most important element in amino acids, proteins, DNA, RNA, enzymes and other cellular constructions including chlorophyll. It is required for both **plant metabolism and plant growth**. Even though it is plentiful in the atmosphere as a gas ( $N_2$ ), plants cannot absorb  $N_2$  so it has to be "fixed" - i.e. converted to a compound form. Since  $N_2$  has a strong, triple, covalent molecular bond (illustrated above) high energy may be needed to break the bond and allow absorbable compounds of nitrogen to be created. Fixation can occur in a number of ways.

High energy processes such as lightning, high temperature (bush) fires and volcanoes cause fixation (as do high energy industrial combustions). The nitrogen released binds with oxygen or hydrogen forming new compounds (nitrate  $NO_3$  and ammonia  $NH_4$ ) that are available to plants via rain.

Biological fixation occurs when atmospheric nitrogen is converted to  $NH_4$  by bacteria, using an enzyme called nitrogenase. These nitrogen fixing bacteria are called "diazotrophic" and include Rhizobia and Cyanobacteria. Rhizobia infect the root hairs of legumes and a small number of other plant types, making  $NH_4$  available for absorption by the plant. Native wattles, Poison Peach and members of the pea family are examples of plants involved in nitrogen fixing in this way. These are pioneers in the establishment of rainforest areas. They are mostly short-lived and once dead and decomposing their stored nitrates are presented to the soil, together with extra populations of Rhizobium bacteria becoming soil  $N_2$  fixers. Cyanobacteria are present in lichens and also fix  $N_2$  directly.

The decomposers - fungi, bacteria, worms, ants, termites, snails and beetles, are the largest providers of nitrogen to living plants by changing compounds within dead, animal and plant material to  $NH_3$  (ammonium) and  $NH_4$  through a process called ammonification (hydrogen is added and oxygen is removed). Decomposers make up 75-90% of soil living biomass and provide or fix 30-40 kgs of  $N_2$  derivatives per hectare under favourable conditions. As bush regenerators, it is therefore important that we retain organic material in the bush for the decomposers, **unless it is a fire threat**. Leaf litter, dead trees and plants, and dead animals are the food or energy supply for the decomposers.

Soil bacteria convert  $NH_3$  and  $NH_4$  through two stages of "nitrification" to nitrites, then nitrates, which can be absorbed by plants. In addition, denitrifying bacteria (e.g. *Micrococcus denitrificans*) convert nitrates into gases which are returned to the atmosphere, completing the cycle.

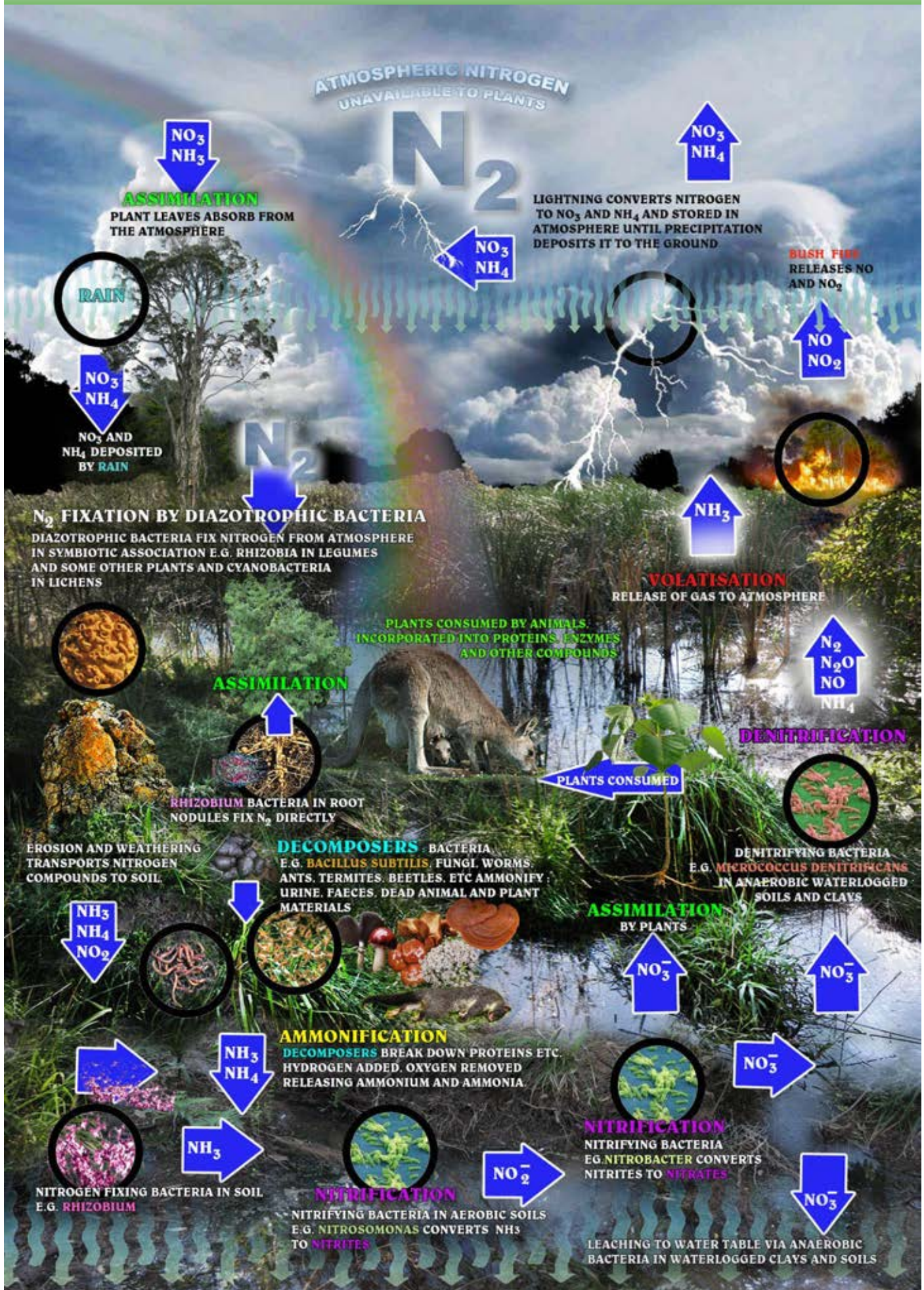


- Rex Moir with input from Bill Peel (Port Macquarie-Hastings Council Ecologist) and Bev Sibthorpe.





# The Nitrogen Cycle in the Bush





# How Human Activities Impact on the Nitrogen Cycle

## nitrogen cycle



Ideally, in nature, the **nitrogen cycle** is finely balanced. Excess nitrates (and phosphates) can accumulate in nutrient - rich areas if plant populations are not extensive enough to cope with them and this over-accumulation (eutrophication) can leach into waterways - lakes, rivers, estuaries and coastal oceans. Over time, though, nature can cope with this natural excess and soon recovers.

Now however, humans are “fixing” huge quantities of nitrogen by making and distributing **fertiliser on farms and home gardens**. This creates unnatural excesses that enter waterways and cause explosive growth in biomass (blooms) of various types of algae, some of which are toxic. As the algal masses die and decompose they deplete the oxygen in the water. Oxygen is critical to the survival of water plants, fish, shellfish and crustaceans. Except for organisms that are mobile the effect can be catastrophic. With the water oxygen depleted and possibly toxic, habitats are destroyed, procreation ceases and the food chain is dislodged.



This illustration shows hypoxic water created by spring fertilising, together with effluent run-off and leaching from farms in the Mississippi River Valley. Result : between 15,000 and 18,000 sq.kms that are virtually lifeless.

The Australian map is to illustrate the scale of the problem in the U.S.A.

## The Good News - Locally

Port Macquarie has the foresight advantage of having retained bush reserves on waterways from their sources to the estuaries.

These unique (for a city) bush areas, that are in most cases connected, include Gallery and Littoral Rainforests and Wetlands. They sequester nitrates.

Swamp and waterlogged soils and clays also “denitrify” excess nitrates, returning gases to the atmosphere, including nitrogen gas ( $N_2$ ).

With the help of governments at all levels and especially with the great commitment and activities of the Port Macquarie-Hastings Council ecology and bush regeneration teams, Port Macquarie’s environment is being greatly enhanced. With participation by Landcare and other conservation groups, native bush restoration is helping foster a **balanced nitrogen cycle** and healthy waterways, to the benefit of all native flora and fauna, as well as humans.

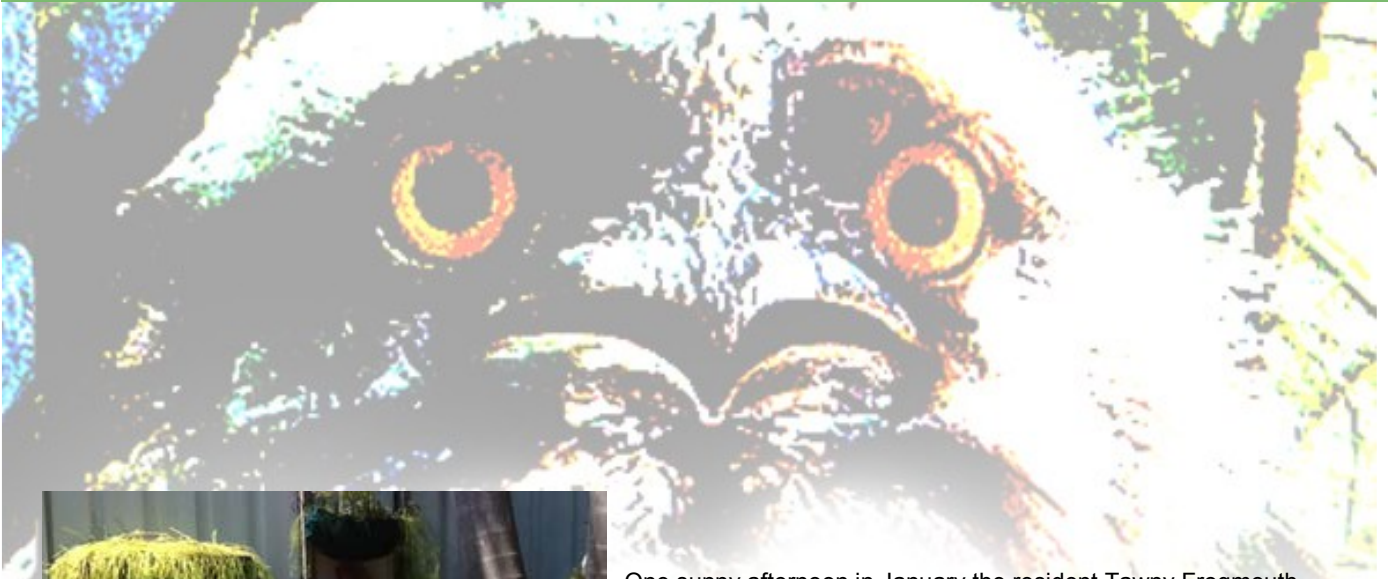


[www.rrrc.org.au/catchment-to-reef/downloads/c2r\\_nutrients.pdf](http://www.rrrc.org.au/catchment-to-reef/downloads/c2r_nutrients.pdf)





## Surprise Drop In



One sunny afternoon in January the resident Tawny Frogmouth *Podargus strigoides* came down from its occasional Bangalow Palm daytime perch to spread its wings and sun itself for a few minutes. The location: our small back courtyard in the Settlement Point area, opposite the fringe of mangrove and woodland habitat of the Hastings River.

This Frogmouth has been noticed over the past two months – first, audibly, by making its 'oomm, oomm' sounds between 8pm-8.30pm, and second by perching on a TV aerial or tiled roof to search for prey. Now I know why I haven't had any bush rats burrowing into my container gardens looking for composting food scraps!

I'm reminded of the fact: create a suitable habitat and the critters will delight you with their presence. Birds come to the bird bath right outside the kitchen window, and Blue Tongue lizards also frequent this little courtyard, mainly because no dogs and cats are allowed in this residential complex.

- Janet Slater

## Guest Speaking Engagement

**From:** [Debbie Loveday](#)  
**To:** [Estelle Gough](#)  
**Sent:** Thursday, January 24, 2013 9:22 AM  
**Subject:** RE: Speaker for Rotary 2013

Hi Estelle,

Many thanks for attending last night's meeting and your excellent speech and presentation.

I think the members were really interested and it has given us food for thought about which plants we buy and put in our gardens.

I know being on acreage just how many camphor laurels I have had to remove, not to say the amount of lantana.

You mentioned that the public can buy plants from Landcare.

Can you please let me know the address, as I am sure many of us would like to support Landcare efforts and buy wisely for our own gardens.

I have attached last night's newsletter and hope you enjoy its contents.

Thank you once again, Regards,

Debbie Loveday, Program Chair for the Rotary Club of Port Macquarie

### Landcare Speaker

Tonight's guest speaker was Estelle Gough from Port Macquarie Landcare. Estelle gave an interesting talk on the amazing work of Landcare. Cleaning up our nature reserves of foreign plants & replanting natives. The group is doing great work in resurrecting native plant areas & removing some of the weeds that have invaded our area. Estelle commended the work we have done at Rotary Park, especially our native garden area.

The Port Wheel  
Rotary Club of Port Macquarie (65th year)  
Club Bulletin, Volume 65  
Number 27, for January 23rd, 2013



Pictured above - guest speaker, Estelle Gough from Port Macquarie LANDCARE with Geoff Workman





## Nest Box Construction with Saltair Flora and Fauna



Ken Errington along with other Landcarers David, Estelle, Julie, Nik and Tim went to a nest box workshop at Saltair Flora and Fauna just south of Crescent Head.

Ken knows the value of nest boxes and already provides them for birds at home.



The Brush Tailed Phascogale or Tuan *Phascogale tapoatafa* is a nest box inhabitant. This nocturnal marsupial is a lightning fast hunter of smaller mammals, birds, lizards and invertebrates; it also eats nectar. Phascogales breed in July then all the males die at once, leaving only pregnant females. Predators include cats and foxes.

Phascogales are threatened by loss of habitat, especially nest hollows that occur in old-growth trees. An individual may use up to 20 nests in a year.

Nest boxes help this species to survive and breed. Here is the Saltair nest box it will happily call home. Made of ACQ arsenic-free treated timber, it has a 40mm hole that will keep predators out. The lid has a front hinge that means it can't be pushed up by a predator.



Feathertail gliders like a box with a closed base, a 20mm round hole near the top of the front panel and a shady SE aspect



Microbats like a box with a sarlon fabric ladder at the entry, a very

warm northerly aspect and some 'swoop' space below

Saltair also provides a home for adaptable marsupials like the Planigale, a tiny ground dwelling carnivore.

Thanks to Bernard and Tiffany Whitehead of Saltair, for hosting a fun workshop on 9/11/12.

- Julie Ho



Here are some of the designs made by Saltair and available for Landcarers to make. The timber pieces are cut, then glued, pinned and fixed with screws. Once installed the boxes can be inspected in the field by removing screws with a cordless drill.

## Yarranabee Python



This python *Morelia spilota* was photographed sunning itself on the edge of Yarranabee Creek bushland in September 2012 by Steve Ho.

It appears to be a diamond python (subspecies *spilota*). Cogger (1979) describes this snake as olive-black with cream or yellow spots, while the carpet python (subspecies *variegata*) is brown with black blotches.

*Morelia spilota* is a widely distributed species, which typically dwells in trees and hunts by night for its prey of birds and mammals. Pythons are non-venomous constrictors that suffocate their prey.

Females of this species lay eggs and coil around the eggs to incubate them until they hatch. Adults may reach a length of four metres.

- Julie Ho

Cogger, H.G. 1979. Reptiles and Amphibians of Australia. A.H. and A.W. Reed, Sydney





## Photos



Photos - Rex Moir

## New Sub-committee for Christmas Party

A sub-committee has been created for the organising of the next Landcare Christmas Party. Those members at the last meeting who volunteered were: Bronwyn Newton, Pieter Schouten, Melinda Losh and Ken Gough. The sub-committee would like to hear from members with suggestions.





# Thank You



## Sunscreen, Mulch and Delivery Costs Donated to Landcare

Our thanks go to Peter Mare, Manager of **Remondis** at Cairncross who purchased sunscreen from his brother then donated it to us in recognition of the work he sees us doing. Remondis has donated 75 cubic metres of mulch for Yarranabee, on top of the 52 cubic metres already donated for Tasman Drive. Our thanks also go to **Hastings Valley Haulage** for delivery of the mulch at a discount price. Port Macquarie Landcarers greatly appreciate this support from two of our local businesses.

## Of Interest

### Vote

Colorbond Australia are offering 10 community grants of \$15,000.00 each to help a 'mate' or a community group win a shed made of Colorbond Steel. Julie Ho has nominated Port Macquarie Landcare Group to obtain a "Home Among the Gum Trees" to house our van and equipment. The selection process depends on the number of votes each nomination receives. If you have a Facebook account please go here and vote for PMLG ... and tell your friends about it! We need as many votes as we can muster.

[http://apps.facebook.com/colorbond/conests/277394/voteable\\_entries/64701198](http://apps.facebook.com/colorbond/conests/277394/voteable_entries/64701198)

### Assist

#### Volunteers needed for Bush Regen Camp

Volunteers are being sought to assist National Parks Association, Mid North Coast Branch with their annual bush regeneration project in Crowdy Bay National Park. In a dedicated and determined effort, MNC branch has been eradicating– with great success– Bitou Bush, Lantana and other weeds from this park since 1979! Over the past 12 years this work has been greatly assisted by a number of Australian Government grants, the current grant being *Caring for Our Country*.

This year's camp will be held from Wednesday, 15 May to Sunday, 19 May. The camp will be held at Kyllies Beach, a delightful spot tucked between coastal forest and the hind dunes. Volunteers will have opportunity for 'down time' to rest and enjoy the campsite or explore the park. The work will only be as easy or hard as each individual chooses to undertake–take your pick from easy hand pulling to the die-hard thrill-seeking lantana-lashing brigade!

Volunteers are welcome to come for any length of time, even just a day. Nibbles and a BBQ will be provided on the Saturday night. Volunteers are exempt from camping and park entry fees. The leader will set up camp on the Tuesday afternoon. We will have use of the NPWS catering trailer, fully equipped with eating, cooking and washing up gear. We are a friendly bunch and look after our visitors well! All volunteer hours will contribute to the fantastic work being achieved by this grant. If interested please phone Sue Baker on 6559 7134.

### Advice

#### Home Energy Saver Scheme to help vulnerable Australians.

Are you having trouble managing your energy needs and bills?

Are you at risk of having your power disconnected?

Are you on an energy retailer's hardship scheme?

Would you like to learn about easy and affordable ways to use less energy in the home?

Information such as easy and affordable ways to use less energy in the home; help to understand your energy bills and the energy market; access to advice, advocacy and support; help to access no or low interest loans for purchase of energy efficient appliances; information on whether you are getting the right rebates and assistance; one-on-one budgeting assistance; and links to other services that may be able to assist you.

Lisa Kennerley Phone: 02 6651 8764 | Mobile: 0417 539 864 | Email: [hess@anglicarenc.org.au](mailto:hess@anglicarenc.org.au)

## Upcoming Events

Date / Time	Event Details	Contact
Tues 12 March 2013 6.45pm for 7pm start	General Meeting of PMLG Port City Bowling Club	RSVP Janet Slater <a href="mailto:janetslater1237@bigpond.com">janetslater1237@bigpond.com</a>
Saturday 27 April 2013 9am - 12 noon	BBQ Yarranabee Site off Braemar Drive Port Macquarie	RSVP Estelle Gough <a href="mailto:nursry@landcareportmac.com.au">nursry@landcareportmac.com.au</a>
Thursday 16 May 2013 10am - 2pm	Volunteers' Expo Port Panthers Auditorium Port Macquarie	Brian Grant - 6582 0297

Habitatler Team: Coordinator and Layout: Carol Jungblut

Editor: Bev Sibthorpe

Photo Editor: Rex Moir



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