LAND FOR WILDLIFE
South East Queensland

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Southern Boobook (left) and Barking Owl (right) are two of the seven species of owl found in SEQ. Photos by Todd Burrows.

Owls: Stealthy nocturnal predators of SEQ

Owls are impressive nocturnal predators that possess a remarkable array of abilities for detecting and catching their prey. They have excellent night vision and a facial disc of feathers for focusing sound providing probably the best directional hearing in the world. One ear also sits higher than the other enabling them to pinpoint quarry. The target probably won't hear them coming as specialised wing feathers enable silent flight, meaning the owl can even hear well in flight and make adjustments if the prey moves. Piercing sharp claws and crushing talons limit escape.

With broad long wings owls are capable of gaining lift easily and can carry large prey items relative to their body size, the Powerful Owl even taking prey as large as Common Brushtail Possum, Greater Glider and the occasional young Koala. A photograph I saw recently of one with a torn up pair of board shorts in its talons suggests even young surfers may be on the menu! On a serious note, nesting Powerful Owls have been known to attack those that stray too close to their nest, and with the beak and talons they possess that would not be a pleasant experience.

Seven species of owl are found within South East Queensland, the most abundant and widespread being the Southern Boobook. All owl species are heavily reliant upon sufficient intact habitat that supports a diversity of prey species. Like so many of our other native fauna species they also require the declining resource of tree hollows for nesting and shelter. Private land owners can help by protecting and restoring native vegetation on their property and installing suitable nest boxes for owls and their prey.

Article by Todd Burrows
Land for Wildlife Officer
City of Gold Coast

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Australian Government

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editorial

Nature Needs Half. That's the message from Harvey Locke, an American conservationist, who recently visited Australia. Imagine thousands of square kilometres of land managed to allow the movement of large animals, namely bears, in the continental USA. An example provided by Harvey showed that the survival of Grizzly Bears in several states depended on not only large tracts of land being conserved, but also the protection of a small corridor that connected these large tracts. Through tracking the movement of bears, the importance of one corridor became evident, so this land was purchased and protected.

Regarding Harvey's key slogan, it is based on the fact that the majority of ecological studies show that top order predators require at least 50% of the landscape to be primarily under nature's management to survive. We often kick around figures of 15% (eg. National Reserve System) or 30% (as in standard conservation planning) of land requiring conservation to ensure the survival of species, but Harvey says we should not be apologetic for saying that in fact, Nature Needs Half!

This edition profiles a top predator of SEQ, the Red Goshawk, which is possibly now extinct from our region. Did it need 50% to survive and we simply don't have that amount of native vegetation left? We just don't know, but if you think you have seen a Red Goshawk, please contact us.

Just as nature has needs, we too need nature. For quietude, enjoyment and well-being and also for our utilitarian needs of energy, fresh water, clean air and healthy food. Examples of the benefits we derive from nature are shown in every Land for Wildlife property profile, including this edition with Michelle Benson from Tallebudgera and the Humphreys from Whiteside sharing their stories. Thank you.

Stories are powerful tools and we have many good tales to tell from SEQ. Land for Wildlife is about people who, often independently, are putting conservation into action one tree at a time. So to all of you who have set aside some, or even 50%, of your property for conservation, congratulations and thanks!

For all those wildlife carers who help or simply marvel at wildlife, whether they be flying-foxes or native Water Rats, thank you, and feel free to share your story in this newsletter. Have a safe summer.

Deborah Metters
Land for Wildlife
Regional Coordinator
SEQ Catchments

Landholder Registrations, Land for Wildlife SEQ - 1/12/2014			
Registered Properties	Working Towards Registration	Total Area Retained	Total Area under Restoration
3088	799	55,720 ha	5,368 ha

SEQ Catchments
Healthy Land, Healthy Water

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VOLUNTARY WILDLIFE CONSERVATION

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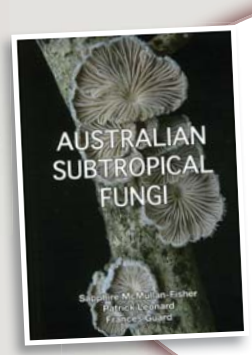
fauna vignettes



PRIZES!

SEQ Catchments is giving away copies of *Australian Subtropical Fungi (*RRP $30) to selected Land for Wildlife members who contribute published articles in the January and April 2015 editions. Limit of two free books per newsletter edition. Please send your article and/or photographs to the Editor (details pg. 2).

Out with the mowers, in with the Grass Owls

These images of an Eastern Grass Owl were captured on a Maleny Land for Wildlife property. Irene Keton, the owner of the property protected her ten hectare rainforest remnant 13 years ago by entering into a Voluntary Conservation Agreement (VCA) with Sunshine Coast Council. With assistance from Council, Barung Landcare and Lake Baroon Catchment Care, an additional 3 ha of boggy ex-grazing country has been fenced and revegetated. During this period the remaining 8 ha of pasture continued to be grazed by cattle.

Last year, Irene decided to give her paddocks a spell from grazing and before long the tall grass was providing a new habitat niche for local fauna. Within six months the Eastern Grass Owls had arrived. Other bird species to appear in response to the long grass included a Spotted Harrier, finches, mannikins and grassbirds. Some of these birds had not previously been observed on the property.

Nick Clancy
Land for Wildlife Officer
Sunshine Coast Council

Goshawk Envy

These photographs captured some interesting behaviour of a pair of Grey Goshawk. Whether they are rare animals, such as Grey Goshawks, or common species, both can be fascinating when captured on motion-sensor camera as they are often behaving in a way that we don't see, as animals modify their behaviour when humans are around.

To capture these images, a Reconyx HC500 motion-sensor camera was set up on a Land for Wildlife property at Mt Mellum near a small pool of water in a gully. This was during the very dry period of January 2014. We were hoping to capture images of wildlife coming into drink. No bait was used.

I asked the Queensland Museum, through their excellent "Ask an Expert" online service what they thought these goshawks were doing. They suggested that it is probably a male and female pair (as juveniles would have already left the nest by January) and that maybe one of the goshawks had caught something that the other one wanted!

Alan Wynn
Land for Wildlife Officer
Sunshine Coast Council

fauna profile

As flash as a rat with a gold ~~tooth~~... belly!
The Australian Water Rat: A little known aquatic predator

I grew up in wheat and sheep country where there were very few native mammals around. Maybe that's why as a kid I took great pleasure in regularly standing on a bridge over the local lagoon in anticipation of seeing the resident Water Rat working its way along the water's edge. I recall being told how hunting had nearly wiped them out because their soft, durable pelts were much sought after during the lean depression years. The story goes that locals would make traps out of old jam tins, and once caught, the Water Rat pelts would be taken to the local tannery where they would fetch a handsome sum.

I puzzled over how this once over-hunted critter survived in water that no one ever dared swim in because it looked and smelt, well…. just a little like a cess pit. I also wondered how the sleek creature I enjoyed watching ended up with the seemingly undignified name of 'Water Rat'. Despite the fact that there are many fascinating native rodent species in Australia, it must be said that anything with the word 'rat' in its title is encumbered with a bit of an image problem. Even the slickest marketing spin-doctor would struggle to win popular appeal for a rat, let alone a partially drowned rat.

My native lagoon critter looked more like the otters I had seen on nature documentaries. Ok, so I will concede that it is in fact Australia's largest member of the rodent family and it does have large chisel shaped incisors and abundant whiskers, a bit like a very large……rat. But to this young admirer it was a glistening, streamlined native predator gliding along on its bow wave, as flash as a rat with a gold belly!

Perhaps that's why there has been an official attempt to change its common name to 'Rakali', which is an indigenous name. But I think it's safe to say that this name change hasn't really stuck and nor has "Golden-bellied Water Mouse' which is what its scientific name (*Hydromys chrysogaster*) translates as; so 'Water Rat' it is.

Adult Water Rats are the size of a small possum with the body measuring about 30-35 cm in length while the distinctly white–tipped tail is slightly shorter than the body. They have a flattish square head with small ears and eyes. Their colour varies considerably with some having a brown to black back and a golden belly, while in other areas they can appear slate grey with a white belly. They are well adapted to their aquatic lifestyle with dense water repellent fur. They use their large, partially webbed hind feet as paddles, while their thick tail operates like a rudder.

They occur throughout most of Queensland and much of non-arid Australia where permanent water bodies exist. Along with an additional eight closely related species (tribe *Hydromyini*) they also occur in New Guinea where they are thought to have originated. Apart from their obvious requirement for water they are habitat generalists capable of occupying an assortment of aquatic environments both natural and man-made, fresh, brackish and saline. They tend to avoid high energy streams, preferring slow moving or still water. As demonstrated by my lagoon creature they also appear to be able to survive in polluted waterways.

Water Rats are opportunistic predators and while they catch most of their prey in shallow waters close to the shoreline, they are also adept at hunting and scavenging on land. They are predominately carnivorous and their diet varies according to location. Prey can include crayfish, aquatic invertebrates, fish, mussels, birds (including domestic poultry), small mammals, frogs and reptiles (including small turtles). Adjacent to urban waterways they have been recorded preying on introduced Black Rats (*Rattus rattus*). They will also eat carrion, food scraps, the occasional plant and have been observed sneaking meals from pet bowls and camp sites.

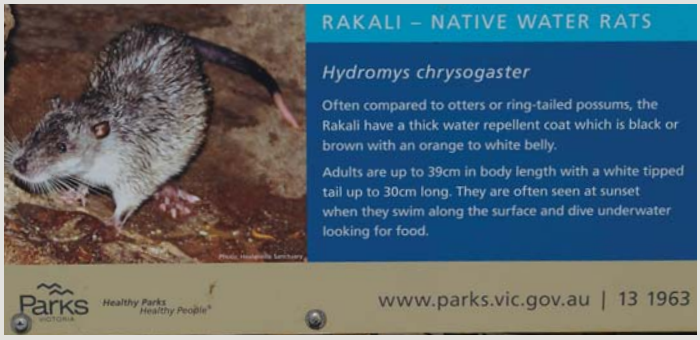
Water Rats are intelligent animals. They remove mussels from the water and leave them in the sun to open prior to eating. There is also evidence to suggest that they can consume Cane Toads without ill effect. Researchers have found them very wary of traps and if caught they don't make the same mistake twice. If accidentally caught in nylon crayfish traps they will often chew their way out. However like turtles and Platypus, Water Rats can and do drown if caught in an 'opera house' style crayfish trap.

Water Rats are generally shy and not often observed; however, one sign that indicates their presence is their habit of dining at a 'table'. Once captured, prey is carried to a favoured feeding location such as an exposed tree root, rock or log. Discarded crayfish and mussel shells on such a 'table', or eaten out fish scattered around a pond, can be a good indication that a Water Rat lives nearby.

Dusk is probably the best time to catch a glimpse of them as they are usually most active after sunset, but they are unique amongst rodents for their occasional day time foraging. By day, Water Rats occupy burrows located on the banks of

Wonderful photos of the elusive native Water Rat (facing page and above) taken by Leo Berzins (Oystercatcher / Leo, Flickr CC BY-NC-SA 2.0).

The golden belly and white-tail tip - two distinctive traits of the native Water Rat. Photo by Lizardstomp, Flickr (CC BY-NC-SA 2.0).



This Parks Victoria sign is helping to promote an indigenous name, Rakali, for Australia's native Water Rat.

Water Rats like to collect their food and then dine at a 'feeding table', shown here as a collection of discarded yabby claws. Photo by Paul Campbell, Flickr (Paul Campbell / outback traveller).

streams, or shelter in large hollow logs lying near the water. Burrows have a round entrance of about 15 cm diameter. They will use multiple burrows in their territory, including unoccupied Platypus burrows.

Other signs that may indicate the presence of Water Rats include well-worn runways along the water's edge or regular crossing points. Their scats are torpedo-shaped and about 1 cm long, 8 mm wide. Males leave a distinctively pungent fishy scent to mark their territory. Not only are they smelly, the males are quite aggressive and will defend their territory vigorously which can lead to fierce fights with intruders, occasionally resulting in tails being lost or injured.

Nesting occurs in a chamber at the end of the burrow and in times of plenty they can have multiple litters per year. Litters usually consist of two to four young which usually appear in the warmer months of the year. After about a month of suckling the young are weaned and have to fend for themselves. It is believed that Water Rats normally survive for a maximum of about 3-4 years in the wild and for the most part lead a solitary existence.

They are a seemingly tough and resilient species that appears to tolerate human encroachment and modification of habitat. Today there are urban populations in highly developed rat-races such as inner Sydney and Melbourne. However their relatively short lifespan leaves them vulnerable to population crashes if successive years of drought restrict successful breeding opportunities, especially in marginal habitat. Habitat alteration such as swamp drainage and flood mitigation do pose some risk for this species as does predation by introduced animals such as cats and foxes. They are also predated on by snakes and fish when they are young, and birds of prey will take adult Water Rats.

Despite the hunting frenzy in the 1930s the Water Rat's distribution doesn't appear to have altered much since European settlement. As urban and rural land management practices continue to improve, hopefully so too does the habitat of this poorly known Australian aquatic predator. I recently revisited my childhood lagoon and I was pleasantly surprised to see that the banks had been revegetated and the water was much cleaner. Although I didn't see one, I was also reliably informed that it is still home to a 'Rakali'. Who knows maybe the name change will catch on after all?

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Article by Nick Clancy
Land for Wildlife Officer
Sunshine Coast Council

fauna profile

Do Red Goswhawks still occur in SEQ? Maybe, maybe not...

A summer spent searching for Australia's rarest bird of prey

With its enormous taloned feet, rufous-striped body, powerful hooked bill and crested head, the Red Goshawk is nothing short of spectacular. Although this bird of prey has never been considered a common species, it once bred throughout the tall eucalypt forests that stretch from southern New South Wales up to Cape York and across the Top End. Today, however it is thought to be Australia's rarest bird of prey.

I first heard of the Red Goshawk over 15 years ago, when a colleague returned to New Zealand from a trip to tropical Queensland. In a hushed voice he leaned across the restaurant table and with wide eyes told me he had seen a Red Goshawk. A seed was sown.

Requiring large tracts of biodiverse habitat, the Red Goshawk naturally occurs at low densities. As a result, it is well known amongst the birdwatching community as a very difficult bird to find and it seems no wonder that sightings of this species in SEQ are few and far between. On the other hand experts were concerned that the number of reports from the public had begun to decline and a renewed effort was required to establish how Red Goshawks are faring in SEQ.

With the support of SEQ Catchments, Griffith University, The Queensland Department of Environment & Heritage Protection, Birds Queensland and BirdLife Southern Queensland, I packed up my hammock, billy and binoculars ready to head out into the bush. But before I set off I needed to speak with those who had gone before me, local Red Goshawk experts Greg Czechura, Rod Hobson and David Stewart. As they regaled me with stories of their adventures searching for this enigmatic bird three things became apparent - searching for this bird was going to be hard work, I would need to get out into the less populated parts of SEQ and it would require a great deal of patience on my part. Overall, one thing was clear - this was not going to be easy!

Starting in December 2013 I bush camped for the next four months, spending dawn until dusk searching for Red Goshawks from high points and along valley bottoms. The breeding season (Dec-May) was considered the most conducive to maximising observations as both adults and fledglings are active during this period. Particular focus was given to areas where breeding activity had been recorded in the past 20 years.

My weeks typically involved hiking into the bush early Monday morning, bush bashing around until I found a good vantage point, camping for the night at that spot and then moving onto another vantage point the next day, until I finally came out of the bush on a Friday evening to head home and restock supplies. Being a relatively recent arrival from overseas I have to admit to the Aussie bush being a rather intimidating experience for me. If it wasn't snakes frightening me half to death, cicadas making my ears ring or ticks and leaches making me bleed, the heat and humidity were doing their best to desiccate my delicate winter white skin! Mind you, camping in places like the Lost World Plateau in Lamington, high on the ridge in Main Range National Park and by the pools at Summer Falls in the Conondales more than made up for these trying work conditions. Every location proved to be as spectacular as the last.

After five months I had spent a total of 470 hours of active searching in the bush around SEQ. But all in vain, as sadly I was unsuccessful in locating a single Red Goshawk. Several raptor nests were observed, but only one inactive nest appeared to have the potential to be a Red Goshawk nest. Further investigations are required to verify the species using this nest. All other species of raptor, except the rare arid-zone Grey Falcon, were seen during this survey.

So what does this mean? Well, it is certainly not looking good for Red Goshawks in SEQ. Similar surveys to the one I conducted were undertaken in 2001 during which Red Goshawks were encountered on six occasions. Experts think that these results tell us that the distribution range of this magnificent bird is shrinking towards the north. This theory is consistent with recent suggestions by raptor experts that the Red Goshawk has become extinct from NSW. Most distressing, this finding has implications for environmental health, with the loss of this species that sits at the top of the food chain suggesting a more widespread decline in biodiversity in SEQ. But can we be sure Red Goshawks

Far left: A magnificent Red Goshawk in flight. Photo by James Watson.

Left: Potential Red Goshawk habitat.

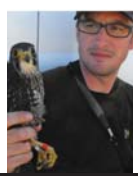
Above: The author camping during his Red Goshawk surveys.

have gone from SEQ? Well, it is hard to definitively know and that is where we need your help.

As the Red Goshawk is a very difficult bird to find the only way we can be certain whether it has disappeared from SEQ, or is still present, is for lots of people to keep looking. Red Goshawks look similar to a number of other birds of prey, namely Square-tailed Kites and Little Eagles, and these species are often mistaken for a Red Goshawk. However, if you think you have seen a Red Goshawk, even better if you have a photo (even a distant photo), then we would love to hear from you. Please contact Liz Gould at SEQ Catchments - lgould@seqcatchments.com.au

Losing Red Goshawks from SEQ would be one thing, but losing them without anyone noticing and not learning from the loss of this species would be a tragedy. It is important that we learn what is limiting the survival of Red Goshawks in SEQ so that we can address these issues elsewhere in its range and work towards restoring the landscape in SEQ to once again support what has to be one of Australia's most magnificent birds.

The full survey report can be viewed online via the SEQ Catchments website > Resources page.



Article by Dr Richard Seaton

fauna vignette

Phascogales caught on film

A jet-black bushy brush tail almost as wide and long as the body was half the animal. The body was grey. With tail it appeared to measure roughly 40 cm. It ran ahead of my car briefly, feet wide spread, before heading off into shrubs at the side of the track. I saw this creature one dark night in my headlights.

Books suggested it was a Brush-tailed Phascogale, nocturnal and arboreal. The nocturnal description fitted but not the arboreal one. What was it doing on the ground?

I described my sighting to Catherine Madden, our Land for Wildlife Officer. Her excitement surprised me. She had seen dead specimens but not a live one. Phascogales require a home range of around 70 hectares for females and a 100 for males and so are sparsely spread. How do they ever find one another?

On her next visit Catherine brought a night vision camera in the hope of capturing definitive evidence of a phascogale. She chose a smooth barked tree as it showed promising scratch marks. It was not far from where I had seen the creature. I made a lure of peanut butter, honey and oats and smeared it on the trunk. But, absolutely nothing happened. Day after day I visited the tree and the lure remained untouched.

So we chose a different tree only two metres away. This was an ironbark with a deeply furrowed trunk. We moved the camera and applied more lure. This time we had results better than we could have hoped for. Catherine emailed me pictures of a phascogale scampering up and down the tree trunk, as well as a possum and a melomys that were also caught on camera.

Phascogales are described as carnivorous with a diet of smaller mammals, birds, lizards and invertebrate such as centipedes and spiders. But like many animals it seems they cannot resist peanut butter. Or could it be the honey in the mixture that attracts them as they as they are observed drinking nectar from ironbarks and other trees?

I was thrilled that we filmed a phascogale relatively easily when it has such a large home range. Maybe someone else will also find "our" phascogale on their property or better still another one.

Joy Stacey
Land for Wildlife member
Upper Brookfield, Brisbane

Editorial note: Please note that a permit is required to "take, use, keep or interfere" with native animals according to the Nature Conservation Act 1992 (Qld). *Using bait to attract wildlife to fauna monitoring cameras is considered "interfering" and thus a permit is required. You can apply for a Scientific Purposes Permit or an Educational Purposes Permit through the Department of Environment and Heritage Protection on 1300 130 372.*

property profile

Education is the Key

Eric and Trish Humphreys are proud Land for Wildlife members and often get together with neighbouring Land for Wildlife members to chat about wildlife stories, identify plants, discuss restoration techniques and share resources.

I first met Eric and Trish Humphreys at a dam management workshop not long after I started working at Moreton Bay Regional Council. I was impressed with their level of interest in the topic as they studiously took notes and asked insightful questions. Since that day, the Humphreys have been at almost every workshop and event I have been involved in, always eager to learn more about fauna, flora and habitat restoration. Trish states, "support from Land for Wildlife Officers is actively sought and is highly valued."

The Humphreys moved to their property in 1993. Trish explains, "Most of the place had been bulldozed clear and used as horse paddocks. We wish we'd known enough then to stop the weeds in their tracks when we first arrived. A couple of our neighbours were Land for Wildlife members, and it became increasingly clear that we could make a greater impact on the environment if we too became a Land for Wildlife property. We joined Land for Wildlife in February 2009. We wanted to get involved so we could learn how to maintain and improve existing habitat and to maximise the potential of this property to attract a diversity of wildlife."

Since joining the program, Trish and Eric have been gradually battling weeds including lantana, ochna, Easter cassia, corky passion, snakeweed, creeping lantana, mistflower and blue billy goat as well as revegetating through planting and encouraging natural regeneration. Through their research, the Humphreys have learnt how to use a variety of different weed control techniques and even propagate their own plants for revegetation.

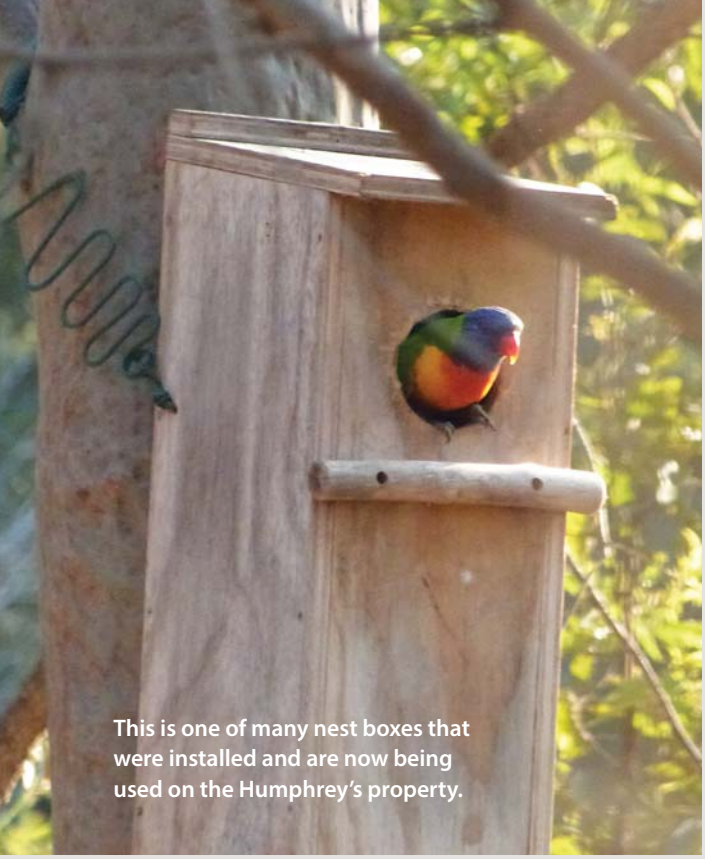
Providing habitat by not just planting trees is an important part of the Humphreys' property management. They have piles of woody debris throughout their wet eucalypt forest to provide habitat for insects, skinks, lizards and snakes. They have made ten nesting boxes for possums and gliders. During the latest property visit, we were able to capture footage of four Common Brushtail Possums inhabiting their nest boxes. The Humphreys have also seen a Squirrel Glider using one of the nest boxes.

The Humphreys have also been painstakingly removing barbed wire from their property. They have seen firsthand the terrible injuries to our native wildlife caused by barbed wire. Several years ago, they helped rescue a Little Red Flying-fox by contacting a local bat care and rescue volunteer group when they noticed it had become entangled.

Eric and Trish are a part of a close knit group of Land for Wildlife members at Whiteside. They often get together with their neighbours to share wildlife sightings, discuss options for habitat regeneration on their property, identify species of plants and share resources. Their community involvement extends to their local Bushcare group, where they are regular volunteers and help to rehabilitate bushland at North Pine Country Park/Old Petrie Town.

The Humphreys have learnt some valuable lessons along their Land for Wildlife journey. Eric says, "Some of the key things that we have learnt are the importance of knowing our Regional Ecosystems. That the problems associated with regeneration and weed control are not confined to our property. There are so many benefits in attending Land for Wildlife activities to acquire knowledge and skills. Presenters and our Land for Wildlife Officers can offer solutions to the problems we encounter. On the other hand, we have been able to share with others things that have worked here and are delighted when we find our suggestions have worked elsewhere."

Trish and Eric enjoy monitoring fauna on their property. Sightings include the Squirrel Glider, Spotted Pardalote, Koala,



This is one of many nest boxes that were installed and are now being used on the Humphrey's property.

Seeing wildlife such as this Little Red Flying-fox entangled in barbed wire motivated Eric and Trish Humphreys to methodically remove all barbed wire fencing from their property. This flying-fox was handed to wildlife carers.

A Squirrel Glider photographed on its way back to its nest box on the Humphrey's property.

"Tackling smaller areas is more sustainable and less frustrating than clearing large areas - and is more beneficial to wildlife."

Pacific Baza, Short-beaked Echidna, Wedge-tailed Eagle, Powerful Owl, Little Red Flying-fox, Forest Kingfisher, Red-browed Finch, Eastern Yellow Robin, Tawny Frogmouth and many more.

When asked about their greatest achievements on their property to date, the Humphreys humbly state; "Taking time to appreciate what we've gained so far. Realising that tackling smaller areas of the property is more sustainable and is less frustrating than clearing large areas – and is more beneficial to wildlife. Taking on smaller projects also gives better opportunity to target specific plantings for that area."

Over the next year, Eric and Trish will be working on revegetating an ephemeral gully on their property, continuing their ongoing battle with weeds and attending more Land for Wildlife workshops.

Editorial note: This article was received in early 2014 prior to Danielle leaving Moreton Bay Regional Council. She now works as a Land for Wildlife Officer with the neighbouring Sunshine Coast Council.

Above left: Piles of vegetative debris are retained as habitat for small animals such as skinks, lizards and invertebrates.

Above right: Mulch is spread in areas undergoing revegetation.

Article by Danielle Crawford (former) Land for Wildlife Officer Moreton Bay Regional Council

fauna focus

A Deadly Recipe: Flying-foxes, extreme heat and climate change

Photo by Joe Navin. Flickr (CC BY-NC-SA 2.0 with minor changes).

Flying-foxes are essential to many Australian ecosystems. They have a unique role in exchanging pollen across large distances and also help disperse large-fruited plant species, particularly rainforest plants.

Flying-foxes are highly mobile - some have been recorded travelling 500 km within 48 hrs (Roberts, et.al., 2012). It was initially thought that flying-foxes would be able to adapt to the projected average increases in temperature associated with climate change by simply moving to more comfortable environs. In fact recent research suggests the reverse may well be the case due to the increased number of catastrophic events, such as heat waves.

In 2008, following an extreme heat event in NSW, Dr Justin Welbergen conducted research looking at the impact of 19 similar events across Australia between 1994 and 2008. The result? More than 30,000 dead flying-foxes due to extreme heat events.

Closer to home, the 4 January 2014 extreme heat event in South East Queensland (SEQ) caused the largest single loss of flying-foxes on record, with more than 45,500 estimated dead. Three species of flying-fox were affected (Black, Grey-headed and Little Red Flying-foxes). Similar to the impact of heat waves on humans, the groups of flying-foxes most impacted were the young, the old, and pregnant or lactating females. More recently, the 16 November 2014 extreme heat event caused more flying-fox mortalities in parts of SEQ and northern NSW.

Last January, Black Flying-foxes were the hardest hit, representing 96% of the dead and more than 50% mortality in SEQ camps. This may be because Black Flying-foxes appear to be expanding their range southwards and thus are becoming exposed to temperature extremes not experienced in tropical areas of Australia. A similar impact is likely on the less abundant, threatened, Grey-headed Flying-fox, which was once an occasional visitor to Melbourne, but now has a permanent population there.

Whilst the impact on flying-fox distribution and abundance, and consequent impacts on the plant species and ecosystems they interact with, is unknown, a number of facts and trends give cause for concern:

- Climate change projections indicate extreme heat events are likely to become more common. Dr Welbergen's investigations found that Grey-headed Flying-foxes today are three times more likely to experience temperatures over 42°C than in the 1970s.
- Flying-foxes have a low reproduction rate, the loss of significant numbers of mature females in the January 2014 heat event will slow population recovery.
- The disparate impact across the three species may affect inter-species relationships and distribution.
- The impact of extreme heat events on flying-foxes is conspicuous due to their gregarious nature, however, the impact on other wildlife, particularly solitary and cryptic species, e.g. Koalas, is less obvious.

For more information on how to help injured or stressed bats visit www.bats.org.au or call the 24 hr Bat Rescue Hotline on 0488 228 134.

How do flying-foxes cool down?

Flying-foxes have four strategies for thermoregulation – fanning, clumping, licking and panting. These are applied in this order and reflect the level of heat stress being felt. Panting is the last resort strategy as it, along with licking, lead to dehydration. When temperatures reach 42°C and above, these strategies start to fail and animals suffer heat stroke and imminent death.

Stressed flying-foxes should not be handled except by trained handlers or wildlife carers due to human health risks associated with being bitten or scratched. Whilst awaiting expert help, heat-stressed animals can be assisted by wetting them directly with a hose or other water source. Do not mist animals, this increases ambient humidity and reduces the ability of flying-foxes to thermoregulate.

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http://theconversation.com/killer-climate-tens-of-thousands-of-flying-foxes-dead-in-a-day-23227

Article by Liz Gould
Biodiversity Conservation Manager
SEQ Catchments

Australian Paralysis Tick. Photo by Robert Whyte.

practicalities

Ticks: The unwanted wildlife

No one likes getting bitten by wildlife. Whether it be a spider, ant, tick or snake – rarely do we invite their physical contact. Despite an international reputation of being a land of biting animals, thankfully very few people in Australia have died from native wildlife related injuries in recent times. According to seemingly reliable online statistics, it would seem that European Honeybees are about twice as deadly (responsible for an average of ten Australian deaths annually) as native animals (responsible for about four deaths annually), with the key culprits being snakes and sharks.

Possibly the most troubling animal we have to deal with as bush regenerators is the Paralysis Tick. Compared to other dangerous wildlife in SEQ, ticks are much more abundant, widespread and undetectable when compared to venomous snakes, funnel-web spiders or jumping ants, as examples. Paralysis Ticks can kill people with young children being the most vulnerable. Every bush regenerator I know has been bitten by a tick, and all of them would have captivating tick stories to tell. Ticks can make you quite ill and they should be taken seriously.

I was therefore delighted to come across a straight-forward, well-illustrated free publication from the Australian Association of Bush Regenerators, released in May 2014 entitled *Ticks and Tick-borne Diseases: protecting yourself*. It contains the most concise collection of information regarding tick removal and prevention processes that I am aware of, and thus I would like to share some of its key messages.

In summary, there are three recommended methods to remove adult ticks:

1. Manual removal using fine pointed tweezers or a specifically designed tick-removal device.
2. Chemically kill the tick while it is still attached using a pyrethrin containing insecticide designed for topical use such as Lyclear®.
3. Chemically kill the tick while it is still attached using an ether containing spray, such as Aerostart® or Wart-Off Freeze®.

In early 2014, a Land for Wildlife Officer removed 120 tiny ticks after visiting a property and understandably felt quite ill. According to *Ticks and Tick-borne Diseases: protecting yourself* the best ways to remove large infestations of larval or nymph ticks are to apply benzyl benzoate or apply Lyclear®, or take a bicarb soda bath by dissolving two cups of bicarb soda in a deep bath.

Ticks and Tick-borne Diseases: protecting yourself also offers a compilation of information on tick biology, tick-borne diseases and tick allergies. I know bush regenerators who have nearly died from tick-induced anaphylaxis and those who have developed severe allergies to red meat due to tick bites and those who have become very ill due to tick-borne infections such as tick typhus. This publication delves into these ailments and also presents evidence that Lyme disease, or a Lyme disease-like illness is present in Australia and is transmitted by ticks.

Despite these facts, ticks should not deter us from bush regeneration. We need more people interacting with, caring for, and learning about Australian ecosystems than being fearful of wild places. I hope that this publication helps make bush regeneration safer for Land for Wildlife members by helping us choose preventative clothing or sprays, giving us tips on what to do when we come across ticks, and helping us stock our first-aid kits with appropriate tick treatments to take care of ourselves.

You can download *Ticks and Tick-borne Diseases: protecting yourself* at www.aabr.org.au > Learn > Publications. Or ask your Land for Wildlife Officer for a copy.

Please help tick researchers

Two research projects are underway exploring ticks and tick-borne diseases. Both projects need tick specimens so please help by sending ticks to:

1. **Murdoch University Research**. Contact Research Assistant, Alex Gofton, on 08 9360 2312 or a.gofton@murdoch.edu.au and request a collection kit and instructions.

2. **University of Sydney Research**. Alive ticks (nymphs and unengorged adults) place in a ziplock bag with moist blades of grass and post to: Ann Mitrovic, School of Medical Sciences (Pharmacology), University of Sydney, Room 294 Blackburn Building D06, University of Sydney NSW 2006. Dead ticks can be posted without moisture and can be frozen. Engorged adults need to be sent in a plastic vial which can be provided by contacting ann.mitrovic@sydney.edu.au. Make sure you clearly label any specimens with your name, contact details, collection location and date.

Article by Deborah Metters
Land for Wildlife Regional Coordinator
SEQ Catchments

fauna vignette

Grass Trees: A seasonal lolly shop

At a recent Land for Wildlife event, Keith McCosh, Land for Wildlife Officer from Scenic Rim, showed me markings on the waxy/milky outer coating on a new flower stalk of a *Xanthorrhoea* or Grass Tree. After looking carefully at these markings I realised they were in fact tiny footprints and scratches. Keith told me these markings belonged to a glider that had recently landed on the stalk to feed on the rich nectar of the flower.

A few months later I visited a Land for Wildlife member in Upper Brookfield and I noticed these same little footprints on one of their Grass Trees that had just finished flowering. I excitedly informed the landholders as to what left the footprints and a plan was devised to install a motion-sensor fauna camera when the Grass Tree next flowered. In late autumn 2014, a camera was fixed next to the flowering Grass Tree to try and capture images of the culprit.

One month later, I collected the camera and to my surprise captured the target - a Squirrel Glider. For seven nights in a row it visited the flower spike, consuming as much nectar as it could over numerous visits throughout the night. As well as a glider, the camera captured Lewin's Honeyeaters, Noisy Friarbirds and Olive-backed Orioles, all of which feasted on the nectar over a two-week period.

If you happen to be lucky enough to have Grass Trees on your property, be sure to check any recent flower stalks for little footprints. It's a sure way to know that your property is creating habitat for these special native animals.

Article by Cody Hochen
Land for Wildlife Officer
Brisbane City Council

Photos clockwise from above:

A Squirrel Glider photographed at 1.15am using the Reconyx HC600 motion-sensor camera.

Noisy Friarbird photographed at 9.34am.

Olive-backed Oriole photographed at 7.34am.

Grass Tree flower spikes have a whitish, waxy coating that can be rubbed off when touched exposing a dark green layer below. When animals climb up or down the spikes to access nectar from the flowers, they leave footprints along the spike. Shown here is a Grass Tree spike with footprints that were probably made by a glider that had recently visited this spike.

Lewin's Honeyeater captured on camera at 9.44am.

digital media reviews

Rainforest Plants of Australia

By Gwen Harden, Hugh Nicholson, Bill McDonald, Nan Nicholson, Terry Tame and John Williams

This much awaited interactive key is a world-first. Apparently, there is no other product like this worldwide! How lucky are we to have this for identifying local plants.

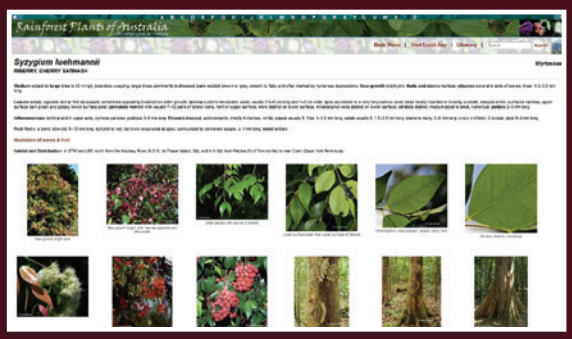
This interactive key uses Lucid software allowing users to search for plants using a wide range of features such as geographic distribution, leaf shape, flower colour, fruit size, seeds, bark and the type of plant (ie. vine, shrub, tree). Each time you select a feature, the key returns a diminishing range of potential species, until you are left with just a handful or even one species to choose from. Basically, this key replaces the much-loved 'Red Book' (*Rainforest Trees and Shrubs*) and 'Green Book' (*Rainforest Climbing Plants*).

This key covers 1130 species of tree, shrub, mistletoe and climbing plants. Every species is elaborately illustrated with many colour photographs showing leaves, bark, fruit and flowers. There are over 11,000 photographs on this key.

In addition to the photographs are diagrams to describe botanical terminologies and to illustrate diagnostic features.

It is recommended that this key is run on systems using modern web browsers, ie. Internet Explorer, Chrome, Firefox or Safari. Once installed on your computer, it can be updated, like an app, when updates become available. Apparently is was not possible to create this key into an app at this time due to constraints of app technology! Apps simply can't process all the data contained within this key.

For all of us who are trying to improve our ID of rainforest plants, this is a must-have item. Warm congratulations to all authors.



Published by Gwen Harden Publishing and Terania Rainforest Publishing, 2014
DVD case with USB key and lanyard.
Price: $80 (website) or $100 (RRP)

Available from:
Gwen Harden Publishing www.rainforests.net.au / (02) 6569 5958
or
Terania Rainforest Publishing www.rainforestpublishing.com.au

Review by Deborah Metters

A Complete Guide to Reptiles of Australia (4th Edition)

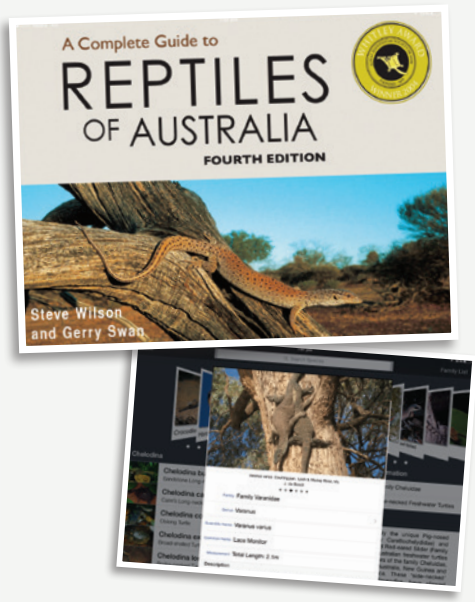
By Steve Wilson and Gerry Swan

This app allows you to explore over 960 species of reptiles through stunning photographs and detailed information on families and individual species. This app is adapted from the paperback book *A Complete Guide to Reptiles of Australia* (Steve Wilson and Gerry Swan). You can casually browse through the app by flicking through the reptile families, or you can search for a particular species using scientific or common name. The app also includes a glossary for all those tricky technical terms.

Each species includes information on family, scientific name, common name, measurements, description, status, photos and a distribution map. There are also functions for adding your own personal notes (sightings, behaviours, further reading/research) and your own photos in each species profile, which is really handy.

The app would be improved with a search function allowing users to filter species based on size, colour, location, habitat etc. to narrow down possible options when trying to identify a species in the field; however it is still an excellent reference resource.

This is a worthwhile investment for reptile enthusiasts as it provides all the detail of a comprehensive field guide in the lightweight form of an iPad, iPhone or iPod Touch (all which you can easily pop in your backpack when out weeding or planting!) The app itself is over 100MB, so you will need to be able to connect to a Wi-Fi network in order to download it.

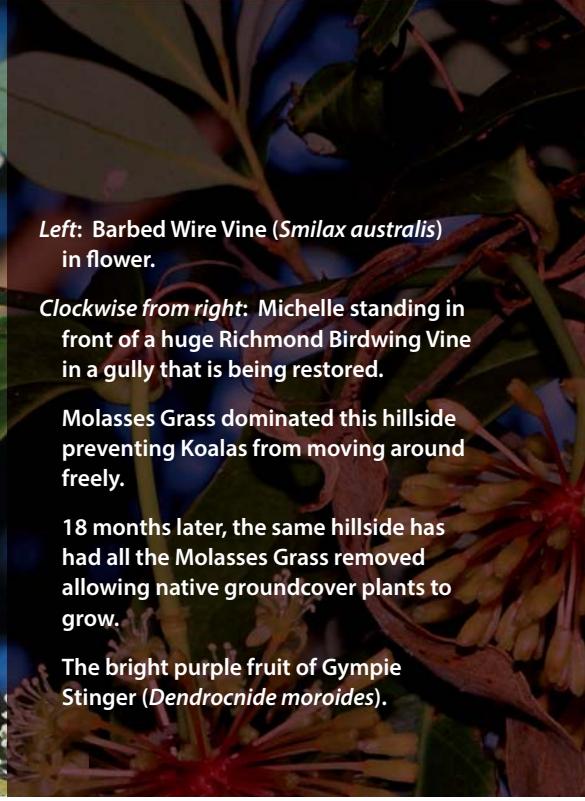


New Holland Publishers, 2014
App for iPad, iPhone or iPod Touch
Price: $24.99

Review by Danielle Crawford
Land for Wildlife Officer
Sunshine Coast Council

property profile

To Restoration, with Love



Left: Barbed Wire Vine (*Smilax australis*) in flower.

Clockwise from right: Michelle standing in front of a huge Richmond Birdwing Vine in a gully that is being restored.

Molasses Grass dominated this hillside preventing Koalas from moving around freely.

18 months later, the same hillside has had all the Molasses Grass removed allowing native groundcover plants to grow.

The bright purple fruit of Gympie Stinger (*Dendrocnide moroides*).

What joy forest life here brings to inspire this little bush restorer! Whether it be the sense of magic that fireflies bring just on dark in the early spring or the delightful sight of Noisy Pittas, Paradise Riflebirds and Regent Bowerbirds visiting for the winter, my passionate connection with the environment here drives a strong and determined spirit towards restoring degraded and weedy areas. I love the rich flashes of colour up in the canopy of Richmond Birdwing butterflies hovering around their territory, or spotting a sleepy Koala's legs dangling from a comfy crook in a spotted gum, or the uniquely eerie call (scream!) of the Sooty Owl.

These days this beautiful 24 hectare bushland estate in Tallebudgera Valley that I call home is an important link in the east-west Burleigh to Springbrook bioregional corridor and shares a boundary with the City of Gold Coast's Trees Road Conservation Area. The fragments of blue plastic I see all though the gully suggest that its past includes a period of banana farming after it was logged perhaps 60 years ago.

I have always been a pretty keen weeder in my 16 years here. Eight years as a carer for Wildcare and my work at Bush Nuts Native Nursery has raised a concerned awareness in me of the responsibility we have in valuing and protecting the biodiversity here and I was thrilled when the estate finally joined the wonderful Land for Wildlife program four years ago.

My mission really stepped up with the discovery of Cat's Claw Creeper which was invading the northern gully and threatening the area's native vegetation, including Richmond Birdwing butterfly habitat. The cat's claw took hold maybe 20 years ago (I'll never forget the day I spotted its lovely yellow flowers from the veranda!). The main infestation was about a quarter of a hectare in size so I felt confident that with a little help from friends I could knock it!

We started out by cutting off all the vines climbing up the trees and then treated the cut vines at ground level using the cut, scrape and paint method. Then I foliar sprayed the ground mass monthly with a glyphosate/metsulfuron methyl mix and a wetting agent (Pulse® Penetrant) until it thinned out. I was so frustrated when the tubers kept re-shooting, but I persisted with monthly foliar spot spraying and four years on, we're almost there! I prefer to dig out the last of those stubborn tubers by hand (enough spray I say) and will need to be on high alert for a few years yet to ensure this serious weed is completely eradicated.

For the last three years I have received funding through the City of Gold Coast's Nature Conservation Assistance Program (NCAP). I feel so fortunate in receiving the funding; such wonderful support has enabled me to hire a great team of restoration contractors and drives a real incentive to succeed in restoration efforts.

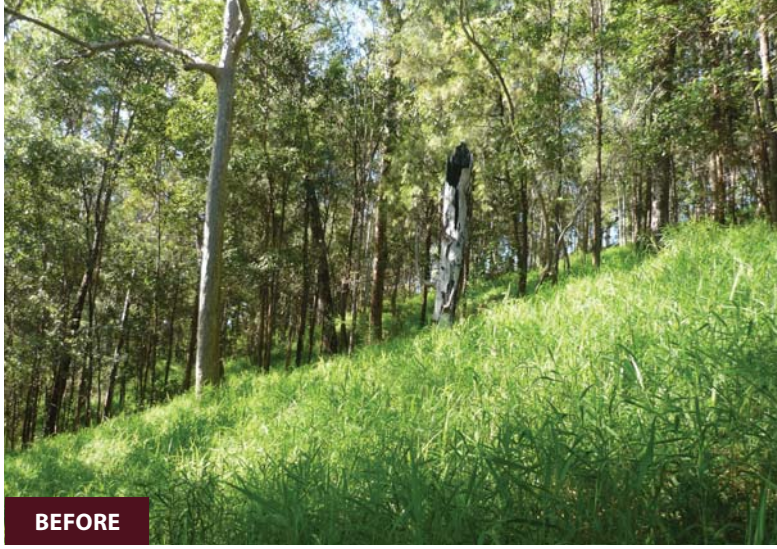
The current project area is about 5.5 hectares and predominantly involves eradicating Molasses Grass in Koala habitat as well as managing cat's claw, lantana, Camphor Laurel, Tobacco Bush, Brazilian Nightshade, White and Corky Passionfruit, Ochna, Crofton Weed and Broadleaf Paspalum in the northern gully.

The Molasses Grass that dominated the northern eucalypt slopes was up to two metres high. It is an easy weed to kill and was initially foliar sprayed by the contractors. Then I did follow up spot spraying and hand weeding; and now, 15 months later, it continues to serve as a protective layer of mulch for the soil as native groundcovers and grasses slowly start emerging again.

In the gully area the lantana is either being lopped and reduced to mulch (with their stems cut, scrape and painted) or where there aren't any natives amongst it, over-sprayed, leaving skeletal patches that continue to provide habitat for many small creatures until the lantana breaks down.

As frustratingly dominant as Camphor Laurels are in the landscape, there is evidence that they have played a role in regeneration here. I have observed many native species such as Red Kamala (*Mallotus phillipensis*), Red Bean (*Dysoxylum mollisimum*), Creek Sandpaper Fig (*Ficus coronata*), and Native Ginger (*Alpinia caerulea*) establishing underneath many Camphor Laurel trees. In autumn, when they are fruiting, the camphors attract many frugivores (including Topknot Pigeons, Green Catbirds, Olive-backed Orioles and Australasian Figbirds), which disperse native seed from nearby forests. In recognition of the role they play, I am wary not to open up the camphor canopy too soon and choose carefully which ones to target for stem-injection over the next few years.

My first attempt to stem-inject a camphor tree was an exhausting disaster as I had the wrong drill bit! I am thrilled to report that my new super turbo screw drill bit does the trick. Once stem-injected, the



dead camphor's structure provides great support for vines, and perches for more seed depositing visitors. In situations where there is no native canopy, I like to leave Tobacco Bushes until they are about 2-3 metres high (pre-fruiting age), then inject herbicide into nick cuts (a method known as 'frilling'), leaving the structure to act as a perch for seed dispersing wildlife.

When I cut and scrape weeds I use a small hand pump in the form of an old hair spray bottle (atomiser), which sits well in my tool holster. For me it's easier than painting with a poison pot, the only disadvantage being that you need to hold it upright to apply.

With concerns around the changing climate, I decided to plant some fast growing species. The species I planted are found in the small remnant and regrowth rainforest nearby so I know that they're appropriate choices. They include Native Frangipani (*Hymenosporum flavum*), Brown Kurrajong (*Commersonia bartramia*), Brittlewood (*Claoxylon australe*), White Cedar (*Melia azedarach*), Celerywood (*Polyscias elegans*) and Red Cedar (*Toona ciliata*).

I have also sporadically planted some secondary species that are found in the small but amazingly diverse nearby remnant, such as Silver Leaf (*Argophyllum nullumense*), Marblewood (*Acacia bakeri*), Muskwood (*Alangium villosum*), Finger Lime (*Citrus australasica*), Glossy Laurel (*Cryptocarya laevigata*), Gympie Stinger (*Dendrocnide moroides*), Black Walnut (*Endiandra globosa*), Winged-leaved Tulip (*Harpullia alata*), Fine-leaf Tuckeroo (*Lepiderema pulchella*), Fissistigma (*Meiogyne stenopetala*), Veinless Mock-olive (*Notelaea johnsonii*), and Veiny Wilkiea (*Wilkiea huegeliana*).

Access to the gully site is a steep descent, giving it a secluded garden feel where Richmond Birdwing butterflies glide about in the warmer months and Eastern Yellow Robins and Rufous and Grey Fantails always flit around. They are wonderful company for me as I work (about eight hours a week) and dream of a beautiful future for many vulnerable species.

I think that Mother Earth doesn't deserve too much spraying, thus I choose to do a lot of hand weeding, especially through emerging native grasses and all those delicate lovelies such as Darling Pea (*Swainsona galegifolia*), Tripladenia (*Tripladenia cunninghamii*), Love Flower (*Pseuderanthemum variabile*), Small-flowered Geranium (*Geranium homeanum*), Maidenhair (*Adiantum* spp.) and Forest Lobelia (*Lobelia trigonocaulis*).

I have a particularly challenging relationship with a dear Swamp Wallaby. I am sure her chomping and snapping of young saplings is in protest of the gradual disappearance of her lovely soft beds of Broadleaf Paspalum. Eucalypts, Poison Peach and Native Mulberry are some of her favourite flavours. She loves to check out what's on offer inside those tree guards so I'm not really sure if they serve much purpose, but they seem to offer a more favourable micro-climate in dry weather.

And so, time and body permitting, I'll keep lovingly tending every precious little native sprout towards forest healing. And when that day comes when I have to leave, I will get someone to set up a kind of bird drone or wallaby poo cam in that forest, wi-fi it up to my virtual goggles, and I will settle back in a comfy chair with my handy remote and take a walk through that special forest that I learnt so much from during my journey in restoration.

Article by Michelle Benson
Land for Wildlife member
Tallebudgera, Gold Coast

focus on flora

Scentless Rosewood

So many of our amazing local rainforest plants are poorly served by their common names, such is the tree we are talking about in this article, *Synoum glandulosum* subsp. *glandulosum* - otherwise known as Scentless Rosewood. For this species the descriptive word 'scentless' alludes to an inadequacy, as in, "There's the real Rosewood and it smells great, and then there's this other Scentless Rosewood that doesn't have much of a scent....". This is a bit of an unfair comparison for this rather stunning small tree, and it deserves a name all of its own rather than being a poor cousin!

Synoum glandulosum is endemic to the rainforests of eastern Australia and is the only representative of this Genus this far south. Its family is Meliaceae, which sees it related to the more diverse genera of *Toona*, *Melia* and *Dysoxylum*. It is generally smaller than other local emergent rainforest trees such as the cedars and rosewoods. Scentless Rosewood grows to only about ten metres high on forest edges, but in regrowth but can attain a height close to 20 metres as it gets drawn up by the surrounding forest.

Leaves are pinnately compound, alternate and can vary between 10-22 cm in length. Foliage is generally very dense and can retain branches low to the ground, making it a great species for sealing forest edges. Flowers are white to pale pink, they are present in winter and potentially pollinated by moths and flies. The fleshy 3-valved fruit are orange when they ripen in late spring and spilt to reveal an orange-red aril with a brown skinned fleshy green seed within. A wide range of birds including pigeons, bowerbirds and currawong are attracted to the fruit.

The seeds of Scentless Rosewood germinate readily when the aril is removed (perhaps even within a fortnight) and can grow rapidly during the warmer months of the year. It is a great addition to most rainforest plantings.

The bright green and reddish new growth of Scentless Rosewood (header) and its distinctive fruit and seeds (above).

Spencer Shaw
Land for Wildlife member
Owner, Brush Turkey Enterprises
Reesville, Sunshine Coast

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