



Thank goodness for nest boxes. This one is in demand from both a Rainbow Lorikeet and Sugar Glider. Photo by Vic Weaver.

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Wattle Homes

No Room at the Inn

When I bought our property in 1975 it was mainly a kikuyu paddock. Back then, Witta was a rural area of dairy and beef cattle properties. Initially we ran beef cattle and then planted about 300 avocado trees. We built our home in 1981.

Eventually, as most of the avocado trees started to die out due to root rot and as I was cutting them out, I started to plant native trees. Over time these areas of native trees have become well established and our property has become home to lots of little critters such as wallabies and forest pigeons. We like to keep some areas of grass to let the sunlight in otherwise we would be living in a dark, damp rainforest.

As well as rural acreage properties, Witta now has subdivisions of residential sized blocks. The changes in land usage has resulted in a vastly changed environment with residents creating their own wildlife habitats. Unfortunately the number and variety of weeds has also increased. Birds have also increased, benefiting from this new food source. They are unfortunately good distributors of weeds too.

I try to prioritise my weed control efforts and I use selective herbicides to target specific weeds. We are always learning and just keep going.

We joined Land for Wildlife back in 2009 and have installed 15 nest boxes on our property, thanks to the Sunshine Coast Council incentives program. The nest boxes are made and installed by Hollow Log Homes, so we just sit back and observe the wildlife moving in. Possums, of course, get into the boxes, as do parrots, lorikeets and other critters. We have lots of wonderful birds now, especially since the native trees have matured. We are at the stage that we see birds such as drongos and fantails coming back each year to nest.

There is always something to look out for in nature, and my interest in photography has encouraged me to keep an eye out for interesting bird behaviour, as shown in this photograph above.

Article by Vic Weaver
Land for Wildlife member
Witta, Sunshine Coast

editorial

Compared to many other nations, Australia is the clichéd 'lucky country'. A friend recently returned from Mexico where her family work a standard 12 hour day only to rest during their one week's annual leave. I have just returned from a four weeks paid annual leave. Lucky. Australia still leaves much room for improvement in certain areas, but it is always better to focus on one's blessings.

My leave turned into a combined staycation, road trip out west and day trips around SEQ, mostly in pursuit of bird species that are not yet on my 'list'. I ticked the Painted Honeyeater in a patch of roadside Brigalow near Goondiwindi; such is the plight of our declining woodland birds, hanging on to bits of habitat among fields of wheat and cotton.

Then I was off to Lamington National Park with friend and Land for Wildlife colleague, Todd Burrows, in pursuit of the elusive Rufous Scrub-bird. It is not signposted, but at Lamington you enter the largest patch of subtropical rainforest on Earth. Just under two hours' drive from my home. And not only did I see the scrub-bird, I even got a blurry photo of it. Talk about lucky.

The luck continues in this edition with the story of Luke, an orphaned Long-nosed Potoroo, who triggered the discovery of a previously-unknown potoroo population on the Blackall Range. Through the tenacity

of Land for Wildlife Officers combined with enthusiasm of Land for Wildlife landholders, this truly is a good news story. We now have researchers, governments and landholders working together to protect a fungi-eating, lightning bolt of fur that few Australians will ever see – the threatened Long-nosed Potoroo.

To celebrate spring, Land for Wildlife members have shared their nesting tales, whether they be Willie Wagtails on clotheslines, Bush Stone-curlews under houses or lorikeets in nesting boxes, there is always something enjoyable about watching nature in action.

On a final note, I would like to pay tribute to Darryl Larsen, who after 17 years of service to private land conservation in SEQ, has retired and will re-focus his passion for conservation towards hands-on bush regeneration activities. In effect, he has swapped an office for his local creek and his computer for a restoration tool kit. The January edition will profile Darryl's career and his unique perspective on the rise of the private land conservation sector. Aren't we lucky to have such a sector in SEQ?

As always, thanks to all contributors and I welcome your feedback or comments.



Deborah Metters
Land for Wildlife
Regional Coordinator
SEQ Catchments

Landholder Registrations, Land for Wildlife SEQ - 1/9/2015

Registered Properties	Working Towards Registration	Total Area Retained	Total Area under Restoration
3129	840	58,204 ha	5,945 ha

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The Editor
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07 3211 4404
dmetters@seqcatchments.com.au

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Land for Wildlife Officers South East Queensland

Brisbane City Council

All enquiries, 3403 8888

Peter Hayes

Catherine Madden

Cody Hochen

Scott Sumner

Tony Mlynarik

Amanda Maggs

Gold Coast City Council

Lexie Webster, 5582 8344

Saul Hondow, 5582 8896

Todd Burrows, 5582 9128

Ipswich City Council

Stephani Grove, 3810 7173

Lockyer Valley Regional Council

Kaori van Baalen, 5462 0376

Logan City Council

Nicole Walters, 3412 4859

Peter Copping, 3412 5321

Rachel Booth, 3412 4821

Moreton Bay Regional Council

Ainslie Wyer, 5433 2288

Zoe Samson, 5433 2244

Noosa Council

Conor Neville, 5329 6287

Redland City Council

Maree Manby, 3820 1106

Scenic Rim Regional Council

Keith McCosh, 5540 5436

Somerset Region

Darren McPherson, 5424 4000

Sunshine Coast Council

Alan Wynn, 5439 6477

Danielle Crawford, 5475 7339

Dave Burrows, 5475 7345

Marc Russell, 5475 7345

Kenneth McClymont, 5439 6433

Stephanie Reif, 5475 7395

Qld Murray-Darling Region

Toowoomba, Crows Nest and western regions

Sandy Robertson, Qld Murray-Darling Committee, 4637 6228

Burnett Mary Region

Gympie, Fraser Coast, North & South Burnett, Bundaberg and Baffle Creek

Burnett Mary Regional Group, 4181 2999

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fauna vignette

Nesting Willie Wagtail Calendar

2013



NOV 20



Willie Wagtails find that my clothesline makes a good place for a nest.

DEC 11



Three open mouths and dinner's arrived.

DEC 15



Getting squishy.

DEC 17



First flight. Once they left the nest, they never returned to it.

2014

OCT 6



This year's nest is on another part of the clothesline.

OCT 13



A sad discovery. We think they probably upended it themselves by accident.

Firstly, there was very little headroom for the sitting bird. They could have knocked it over squeezing under the bar above as they came and went.

Secondly, the 'branch' is a smooth gloss finish and their best efforts of sticking their nest to it probably weren't good enough.

All eggs were broken.

OCT 28



Another nest started being built, this time on a safer part of the clothesline. Two days later it was finished.

DEC 1



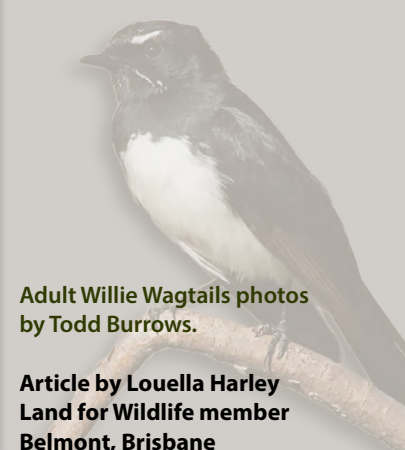
The first two chicks left the nest just after this photo was taken. The third chick left the next day.

DEC 2



The last chick has gone. The nest just lasted the distance. I don't think they'll be getting their bond back though!

It's been a delight to see the parents teaching the chicks how to find food, how to bathe in the pool, and for us to watch their wobbly flying as they strengthen their wing muscles.



Adult Willie Wagtails photos by Todd Burrows.

Article by Louella Harley
Land for Wildlife member
Belmont, Brisbane



fauna discoveries

Lucky Luke Uncovers a New Potoroo Population

A few years ago I heard on the native grapevine that a Long-nosed Potoroo (*Potorous tridactylus*) had been taken into care by wildlife carers near Maleny. The story goes that a Reesville resident was investigating a noise outside their house when they came across a sizeable Carpet Python with a visibly large bulge somewhere between its throat and belly. Another noise was heard nearby and a very small (120 grams) marsupial was found. Unfortunately its mother was probably the 'bulge', but it had managed to escape. This lucky potoroo joey was named 'Luke' and was lovingly cared for and raised (until release) by Land for Wildlife members and wildlife carers, Carmel Givens and Ridley Kennedy.

The Long-nosed Potoroo is one of the smaller members of the kangaroo family. They are just over a foot long and weigh just over one kilogram. This is a rare and cryptic species that seldom ventures from the shelter of dense understory vegetation. They have a patchy distribution along the east coast of Australia. Chance sightings are very rare and are usually restricted to a hopping blur dashing across the road in front of a car at night.

Listed under Commonwealth legislation as vulnerable to extinction, the Long-nosed Potoroo is known to live in a wide variety of habitats from coastal heath to rainforest and in both wet and dry sclerophyll forests. The commonality in their distribution is the presence of a thick understory. Potoroos create runways through the dense undergrowth allowing them to move quickly and escape potential predators.

Like bandicoots, potoroos leave feeding evidence in the form of diggings where they excavate roots and underground fruiting bodies of fungi. Studies in Victoria have shown that fungi can form up to 70% of a potoroo's diet. We can only assume that this is the same in Queensland, but we really don't know. The subsequent dispersal of fungal spores in potoroo droppings is an important ecological process, as some of these mycorrhizal fungi assist plants in the uptake of otherwise inaccessible nutrients from the soil. In effect, potoroos help keep forests healthy and probably ensure more ecological benefits than we currently know.

There are precious few records of potoroos from Queensland, so the discovery of Luke

was a very exciting find indeed. For me, the questions raised by Luke's discovery were many. How large was this potoroo population and how wide spread? Was Luke the last link in a lineage of truffle-seeking local long-noses? What would their absence mean for these forests? Little research has been done on Queensland potoroos and many questions remain unanswered.

"In effect, potoroos help keep forests healthy"

I had long wondered about the presence of potoroos on the Blackall Range. Despite recent records from nearby Bellthorpe and Conondale Ranges, they hadn't been recorded in the Blackall Range area, despite the apparent presence of suitable habitat. Reesville lies at the southern end of the Maleny plateau and incorporates a relatively large tract of forested country on the steeper slopes of the Blackall Ranges western escarpment. There are no National Parks or reserves in this area. All the bushland is privately owned and



Top: This Long-nosed Potoroo is part of a captive breeding program. Note its strong digging claws and its kangaroo-like hind legs. Photo by Leo Berzins (Oystercatcher), Flickr CC BY-NC-SA 2.0.

Left: These two images show a family of Long-nosed Potoroos captured by motion-sensor cameras on a Land for Wildlife property at Reesville. Note the thick, dark tail in the left hand image.

Right: The same family of Long-nosed Potoroos as shown on facing page, captured again using Reconyx motion sensor cameras. Potoroos move in a similar way to kangaroos – they either hop on their hind legs (far right image) or they use their front legs for support and slowly bring their hind legs through.

“ If potoroos around Maleny avoided detection for the past 150 years, what else is out there? ”

Land for Wildlife signs are a common sight along the handful of no-through roads that dissect the heavily vegetated area.

In 2008, Sunshine Coast Council funded survey work to search for potoroos, and at the time I suggested surveying Liz and Kel Harding's Land for Wildlife property next door to where Luke happened to be found several years later. Disappointingly, the survey found no evidence of potoroos reporting that "Despite approximately 1500 hair-trap nights and a combined total of 11 areas surveyed during this and a previous survey (Burnett et al. 2007), potoroos remain missing on the Sunshine Coast".

Inspired by Luke, supported by local landholders, and armed with the latest fauna detection camera technology, my colleague Alan Wynn and I started deploying cameras on Land for Wildlife properties in the Reesville area. The results weren't immediate but we persisted, and in doing so we experimented with different motion sensor camera brands. When we changed to the more sensitive Reconyx cameras, we were delighted to capture images of potoroos on Liz and Kel's property.

Liz and Kel joined Land for Wildlife in 1999 and finding potoroos on their land has made their many years of hard work and custodianship even more rewarding. Buoyed by this success, we expanded our search efforts onto another five neighbouring Land for Wildlife properties, collecting more potoroo records on three of them. It is interesting to note that all

of the potoroo properties have dense understory vegetation such as true and soft bracken ferns.

Once we had a selection of sufficient potoroos photographs we decided to hold a slide show for local landholders. In February 2015 a get-together was organised for Land for Wildlife members in the area as well as any other interested local landholders. Besides potoroos we had captured hundreds of images of other critters. The slide show included images of Brush Turkeys, other birds, reptiles, mammals, more Brush Turkeys and of course potoroos. It was an opportunity for landholders to get to know this cryptic species, which also calls this area home. The local Land for Wildlife membership also grew by another three properties due to this event.

Participants at the slide show were also encouraged to include their properties in a Sunshine Coast University Masters Research project that has been developed in response to this potoroo discovery. The Masters student will be working closely with local mammal expert, Dr Scott Burnett, who has been involved in previous potoroo survey efforts on the Sunshine Coast. The research project will focus on the habitat requirements for this cryptic species and will hopefully fill some of the knowledge gaps.

A follow up event will be held for landholders once the research project has some findings to share.

Participants also took home a kit with gloves and bags and were encouraged to collect any fox or dog scats they find on their properties. In an attempt to better understand the threats to the local potoroo population, scats will be analysed to determine if these predators are preying on potoroos. There are wild dogs in the vicinity and Sunshine Coast Council undertakes baiting in the broader area. There are also foxes in the area, although based on the camera surveys to date, their numbers do not appear to be high. It will be good to gain a better understanding of the interplay between predators and prey to help inform future management.

Two things really excite me about this discovery so far. Firstly is the untapped opportunity available through the use of unobtrusive motion sensor cameras on Land for Wildlife properties and the potential for other discoveries. If potoroos around Maleny avoided detection for the past 150 years, what else is out there? And finally, this demonstrates how Land for Wildlife can play a central role in creating networks of landholders, governments and researchers to raise awareness and act locally to protect threatened species.



**Article by Nick Clancy
Land for Wildlife Officer
Sunshine Coast Council**



fauna research

An Unsavoury Task Helps Potoroo Researchers

Unfortunately many of us who regularly drive through bushland and rural areas become desensitised to the occasional, non-descript lump of fur or feathers on the side of the road marking another wildlife vehicle strike victim. But perhaps we should take more notice, despite the unsavoury nature of this task.

Road kill provides a static record of species presence, and in some cases, presents an ability to physically measure certain traits, and accumulate data trends over time at certain sites. Persistent data at a site/s can be used to drive other initiatives to reduce future impacts, such as speed reductions, warning signage, or wildlife crossing solutions such as rope bridges or underpasses. And just occasionally, a second look can yield an exciting record.

I was recently travelling through the outskirts of Samford to a work function, and noted a dead, grey furry critter in the opposite lane. As I passed it occurred to me that it didn't look quite right. Obviously the impact has caused significant damage, but certain characteristics just didn't gel. After turning around and finding a safe place to stop, I retrieved the creature from the road to take a closer look.

The animal had recently been hit, probably within the last 8 hours so was still in reasonably good condition (for road kill). It was about the size of bandicoot, although maybe a bit longer. Although unlike a bandicoot, this animal had an obvious thick, black solid tail and large back legs with long feet – more like a hopping mammal such as a wallaby or bettong, which are able to stand on their hind legs. Bandicoots in contrast always use their four legs to walk or run. The front legs were short, but were armed with long curved claws, seemingly for digging.

This unfortunate Long-nosed Potoroo was found roadside near Samford. It was carefully collected, frozen and taken to the Queensland Museum. Note the thick, dark tail and strong hind legs. Photos by Darren McPherson.



I wondered if it could be a potoroo, but I had never seen one before, so I wasn't quite sure. I took two photographs on my smart phone and emailed them to a colleague to see if they knew what it was. I got back into my car and drove off to my all-day meeting in the city.

Sure enough, by the time I got to my meeting, my colleague had been in touch with a few experts who had all confirmed that indeed the road killed animal was a Long-nosed Potoroo, a threatened species with only limited populations in South East Queensland. After numerous emails and phone calls, someone living at Mt Glorious agreed to head down the mountain to look for this animal. They successfully located it, double-bagged it and popped it in their freezer.

Potoroo researcher at the Sunshine Coast University, Dr Scott Burnett, asked the potoroo's caretakers to measure the potoroo's neck size, so that correct sized radio-tracking collars could be purchased for the Reesville research project (see article pages 4-5). This potoroo was then given to the Queensland Museum whereby they can take genetic material, record measurements or keep it as a study skin or taxidermied product for education and research.

It is hard to be prepared for every contingency in terms of wildlife and road strikes, but some basics to consider having in your car may include:

- A blanket for throwing over and subduing injured wildlife.
- A large heavy duty garbage bag and ties (for specimen collection and transport).
- A contact list of local wildlife carers so you know who to contact, especially at odd hours.



A captive Long-nosed Potoroo. Photo above and far right by Peripitus, Wikimedia Commons CC BY-SA 2.5.

- A smart phone or camera for taking pictures of the animal and recording location (either take photos of surrounding area so you could determine the location on a map or take a GPS reading).
- Gloves and hand sanitiser.

Always remember safety first when handling wild animals, especially if they are injured. Wild animals will bite, scratch, kick and whip their tails if they can. If you do not feel comfortable handling live animals, don't! Just call a wildlife carer. If the animal is dead and you determine that it could be a useful specimen for the Queensland Museum, pick it up and place it carefully in a garbage bag. Ensure that you either wear gloves or wash your hands thoroughly afterwards. Double wrap the specimen in two garbage bags and place in a freezer as soon as possible. Firmly attach a label on the bag with the following information: date of collection, exact location of where it was collected, your name and contact details and the species name (if known).

It may not be a pleasant job, but recording or collecting road kill animals can offer important information for researchers and can help us all learn more about, and ultimately protect, our wildlife.



**Article by Darren McPherson
Land for Wildlife Officer
Somerset Regional Council**



Underground fruiting bodies of fungi are the favourite food of Long-nosed Potoroos. Captive Long-nosed Potoroos photo above by sunphlo, Flickr CC BY-NC 2.0.

fauna profile

Links between Fungi, Long-nosed Potoroo and Ecosystem Health

During December 2014 to April 2015 the Lockyer Valley Regional Council supported a local community group to undertake professional surveys of small mammals in the Western Lockyer. During one survey, a Long-nosed Potoroo was accidentally flushed from the undergrowth. This incidental sighting is the first record of this species in the survey area. The Long-nosed Potoroo (*Potorous tridactylus*) is a threatened species, listed as Vulnerable under both Queensland and Commonwealth legislation, so this sighting was cause for some delight.

The Long-nosed Potoroo, with its long pointed nose and grey-brown fur, can initially be mistaken for a bandicoot, until of course it tucks up its short muscular fore-legs and hops away like a kangaroo. These strong forelegs are used for digging for its favourite food, fungi. As also mentioned in Nick Clancy's article on pages 4-5, studies undertaken in Victoria have found that 70% of the Long-nosed Potoroo's food was fungi, with over 60 different species of fungi eaten. This amazing, shy animal has an enlarged forestomach, which allows the fermentation of microbes and increases the nutrient uptake from fungi. When fungi availability is limited due to seasons, the Long-nosed Potoroo will forage for invertebrates and other plant materials such as roots, flowers and seeds.

Different fungi deliver a number of varying roles to the broader ecosystem. Many fungi specialise in decomposing organic materials. They are compost makers breaking down logs, leaves and other organic matter, utilising the carbohydrates for food and recycling nutrients for the use of other plants. These fungi ensure we are

not knee deep in leaves and logs whilst walking through the forest.

Mycorrhizal fungi have a symbiotic, or mutually beneficial arrangement, with plants. This fungi form a structure with the plants roots facilitating the sharing of resources.

A small number of fungi are parasitic, parasitising other plants, other fungi, or sometimes insect or beetle larvae. These fungi take nutrients from their host and do not generally cause much harm to their hosts.

“Studies undertaken in Victoria have found that 70% of the Long-nosed Potoroo's food was fungi.”

Lichens on the other hand are specialised fungi, which again form a symbiotic association with an alga or cyanobacterium. The fungus shares water and the alga or cyanobacterium shares carbohydrates and sugars.

A diligent worker in the forest system, the Long-nosed Potoroo turns leaf litter over, mixes top soil and delivers fungi spores to disturbed ecosystems. Potoroos deliver a range of services such as aerating top soil, breaking down leaf litter, providing substrates for microorganisms, improving water and mineral cycles and supporting the re-establishment of mycorrhizal associations to the benefit of plants. All of these services result in healthy ecosystems and faster recovery from disturbance. All of this (and more) from one little animal looking for food. A sublime system indeed.

The strong interrelationship between the Long-nosed Potoroo, fungi and ecosystem health highlights once again the close relationships between plants, animals and the health of the natural system. As we all know this healthy natural system supports our very own existence on Earth.

The Long-nosed Potoroo requires a dense understorey often in natural systems that haven't been burnt for 20 or more years. They are predated upon by cats and foxes and are seriously impacted by habitat loss and degradation, fires that are frequent and widespread as well as a lack of connectivity across the landscape. By keeping our pets indoors at night, managing fire responsibly and fostering landscape connections through the Land for Wildlife program there is much that can be done in our daily lives. The link between us, the Long-nose Potoroo, fungi and ecosystem health is a cycle that never ends – even if those links and potoroos are not readily seen.

References & Further Reading

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**Article by Kaori van Baalen
Land for Wildlife Officer
Lockyer Valley Regional Council**



property profile

Into the Forest

In the mid-1990s in retirement, we decided to have a 'tree change' from small acreage in Brisbane to larger acreage near a nice country town up or down the coast and adjacent hinterland. After much investigation, we settled on the Maleny area on the Blackall Range inland from the Sunshine Coast, but it took a further 18 months for the right block of land to come on the market. Five kilometres outside Maleny at Reesville, it was 13 ha of north-facing, steep, ex-dairy farm land with two creeks, some areas of regrowth forest, plenty of lantana and large cattle grazing areas. We built our new house in the middle of the property and began our new lifestyle in January 1999.

After joining Barung Landcare based in Maleny, we undertook their land management course and learnt that many local Barung members were working on their properties to restore the sub-tropical rainforest that had covered the whole Blackall Range before it was cleared more than a century ago. We decided that restoring the rainforest wildlife habitat on our property was a very worthwhile retirement project for us.

There was a lot to learn as we began the long staged program of progressively removing the abundant woody weeds (lantana, privet, camphor laurel, wild tobacco, blackberry) and planting and mulching local sub-tropical rainforest trees, as well as encouraging regeneration of self-sown ones. The hole-digging and tubestock planting proved to be only the start of our tree growing endeavour, with the ongoing maintenance of each of the planted areas requiring a lot of time and effort until the developing tree canopy

started to assume control five or more years later.

Swamp Wallabies took a liking to a number of the species we were planting and we had to make cages to protect them until they were tall enough to be out of reach, then we re-used the cages. Because of the steep topography and creek gullies, access across the property was only by foot and everything had to be carried manually, including tools, trays of tree tubes and some bales of hay for mulching.

We always planted our trees during the summer wet season and in some years, by the end of the dry season six to nine months after planting, supplementary watering of the new trees was needed; which we did where feasible. After the first major planting in the far west of the property in January 2000, watering of 1000 trees was done twice by bucket that winter from a small waterhole in a tributary creek. In later years, if the required watering was close enough to the house, multiple hoses were joined together for watering from the house tanks by hosing and bucketing.

We enjoyed doing as much as possible of the work ourselves, but ageing and health problems in recent years have forced us to use more outside help. In total, we have so far planted about 7000 trees of 149 local species with many more self-sown. To our great satisfaction, our earlier planted areas now have substantial canopy cover that, together with the pre-existing remnant and regrowth trees, will slowly mature into our future rainforest. At the same time, local native understory species are spreading, including ginger, cunjevoi, ferns and epiphytes such as elkhorns, staghorns and birdnest ferns.

Above: Male Koalas in pursuit of females.



Echidnas and Red-necked Wallabies are some of the regularly-seen wildlife on David and Alison's property.



Before and After: This creek gully was a sea of thick lantana before it was cleared (as shown above) and then planted with sub-tropical rainforest trees. Four years later, in January 2015, the 'After' photo shows a mass of young greenery. Often where thick lantana has been removed, many woody weeds and native trees germinate.

With the trees advancing across the property, the shrinking grass areas are grazed by our last two 'lawn mower' steers which are growing old with us. We would have preferred not to have cattle, but they are essential for this steep property's management.

All of our large-acreage immediate neighbours have lots of the woody weed species and it is disappointing that none of them has shown any interest in removing the weeds or planting native trees. Furthermore, the seeds from woody weeds on neighbouring properties and roadsides are spread by birds and give us the unwanted extra burden of continually finding and removing their seedlings that are germinating all over our property.

Most of all, we love living here surrounded by the natural environment of our developing forest habitat and its array of native wildlife. This is busy Koala territory because the scattered regrowth eucalypts and Brush Box have thrived in the rich volcanic soil. Having no domestic pets, we see Koalas around our house on most days, as well as many other native animals periodically, including Red-necked Wallabies, echidnas, Mountain Brushtail Possums and a range of reptile species. Twice Carpet Pythons have mated and incubated eggs in the rock wall next to the house.

Amongst the exploits of the small nocturnal animals, we've seen a glider being pursued between trees by an owl at dusk and had an antechinus mother with babies trying to build a nest in the glovebox of our car. The many bird species we hear and see include Green Catbirds and Wompoo Fruit-doves. On the downside, when the leeches and ticks are in season, they are waiting for us as we walk around the property.

Observing Koala behaviour during our years here has been a very special experience. In our early days, while we knew what the male Koala call sounded like, we didn't know what creature was making the loud screeching noises at night. Then one day we heard both of these sounds coming from a tree near the house in daylight and saw that it was a male Koala pursuing a female who was resisting his advances. That was the first of many sightings of this kind of behaviour, though sometimes it is a male trying to separate a mother and baby so that he can get to the mother. Strangely, male and female Koalas don't seem able to agree on the female's readiness and willingness to mate. We have also discovered that Koala activity is not wholly nocturnal as we regularly see them on the move during the day, sometimes travelling considerable

“ We have so far planted about 7000 trees of 149 local species. ”

distances on the ground between trees; yet they can also stay in exactly the same tree spot for several days at a time. Koalas sometimes sit in species of trees other than eucalypts and Brush Box and even browse on them.

To provide homes for other arboreal wildlife, nesting boxes have been installed to supplement the very few natural tree hollows on our property. Further down on the steep slopes, there are patches of naturally occurring Richmond Birdwing Vine amongst the few rainforest remnants that survived in the deep creek gullies.

Our rainforest restoration is not only a satisfying retirement project but also an educational process. We have learnt much about local native and non-native plants, wildlife behaviour, weather patterns and a wide range of activities from tree planting and weed control to constructing bush steps and fencing. Most importantly, our restoration of wildlife habitat is a tiny but worthwhile reversal of human destruction of the natural environment.

We have been Land for Wildlife members for many years and also have a Voluntary Conservation Agreement with covenant on our whole property arranged through our Land for Wildlife Officer, Nick Clancy, who has always been very helpful to us.

**Article and photographs by David and Alison McDonald
Land for Wildlife members
Maleny, Sunshine Coast**





fauna profile

The Queensland Bush Stone-curlew

Photo by Todd Burrows.

So much is unknown about Queensland Bush Stone-curlew ecology and behaviour. Information for this article has been gathered from publicly available sources and research undertaken by Griffith University PhD student, Scott O'Keeffe, who is mid-way through a project on urban Bush Stone-curlew ecology.

The Bush Stone-curlew or Bush Thick-knee (*Burhinus grallarius*) is a large ground-dwelling bird with a wingspan of 55-60 cm. They can live for 20 years, sometimes more. They are a terrestrial predator adapted to stalking and running. Bush Stone-curlews are considered common in Queensland but since no monitoring of the species has been carried out in South East Queensland, it is possible that they could suffer the serious declines evident in southern states. In New South Wales they are listed as Endangered and in Victoria, Threatened.

The Bush Stone-curlew call is an evocative and unforgettable sound. It is a penetrating, strident, wail, rising with a slight waver, and dropping at the end and often repeated a number of times in quick succession.

Curlew Habitat

Bush Stone-curlews inhabit open country and avoid dense vegetation. Their ancestral habitats include grasslands, open woodland, mallee, mangroves and

rainforest fringes. They are also found in highly modified environments such as golf courses, rail reserves, roadsides with sparse vegetation, urban parkland and grazing land. Curlews prefer landscapes that give them good visibility at ground level, so they usually inhabit areas with bare ground or low ground cover and widely spaced trees and shrubs. Sites where the ground is covered with leaves, twigs, sticks, stones or sparse grass are preferred for nesting since curlews rely on camouflaged eggs and cryptic plumage to avoid predators.

Curlews protect themselves by combining natural camouflage with good visibility to see predators approaching. If necessary they can respond with distraction and threat displays called 'mantling'. Animals that take eggs and chicks include the usual suspects such as foxes, dogs and cats (feral and pet). Native predators include kookaburras, goannas, pythons, quolls and the Australian White Ibis.

Since curlews are largely nocturnal, they roost inconspicuously during the day in clumps of trees or among fallen timbers. In urban areas, curlews will often roost in raised garden beds with clumped shrubs and grasses or grass-like plants. Curlews forage at night in open areas such as playing fields, parkland, pasture with low grass, and sometimes mangroves, salt marshes and mudflats. The home ranges

of curlews appear to vary widely according to 'habitat quality' and food abundance.

Curlew Diet

Bush Stone-curlews are mainly nocturnal and specialize in hunting small grassland animals, mainly invertebrates. They will also take some small vertebrates such as frogs, lizards, snakes and occasionally small mammals. In coastal areas, they may add molluscs and crustaceans to their diet. Curlews will also eat small seeds and fruits. They obtain moisture from their food and do not need surface water for drinking.

Urban Adaptations

The range of unusual behaviours exhibited by many curlews in urban areas suggests that they are capable of significantly modifying their behaviour to take advantage of urban resources.

For instance, curlews breed in Brisbane's Southbank Parklands, despite the constant presence of noisy humans and traffic. During the day they roost quietly in the edges of shrubbery unnoticed by the crowds. At night, they can often be seen in the shopping precinct harvesting the bounty of insects and geckoes that are drawn to bright lights.

In some instances, curlews have adapted to nesting in concrete environments, next to walls and buildings, and even in seemingly



Bush Stone-curlews are masters of camouflage, which they use to hide themselves, their nests and their young from potential predators.

Left: An adult curlew on a nest. Photo by Scott O'Keeffe.

Right: Curlew eggs. Photo by Todd Burrows.



hostile environments such as industrial estates with little vegetation. They have been observed nesting under buildings including a demountable site office on stumps in an industrial estate. Curlews in the wild have no equivalent nesting sites. Curlews have been observed collecting cigarette butts and surrounded their nests with them. Perhaps the nicotine in the cigarette butts repels parasites or acts as an insecticide.

“Curlews...are capable of significantly modifying their behaviour to take advantage of urban resources.”

How Adaptable are Curlews?

Consider the case of Coochiemudlo Island. Between 2001 and 2014, the human population rose by 47%, from 518 to 759. In that same period, the curlew population increased by 154%, from 74 to 188 birds. Over this time, the island has seen significant growth in housing, changes to the natural environment and the introduction of more pet cats and dogs. As more people have settled on the island, they have thinned the island's natural forest cover, creating a park-like environment, increasing the potential foraging areas for curlews. Unlike the mainland, there are fewer fences restricting curlew movement and there are no foxes.

A significant proportion of residents deliberately provide food for the curlews, which may be significant enough to increase fitness and therefore survival of chicks and adults. This is not a firm conclusion, and the role of supplementary feeding is still under investigation.

Sedentary or Migratory?

Studies in NSW and Queensland have recorded short distance flights by curlews (up to about 15 km) as well as long distance movement (500 km over two nights). But we have no clear picture of patterns of, or triggers for, movement through the landscape. Do we need to provide continuous terrestrial habitat corridors for movement, or can curlews successfully negotiate the city to move from one physically isolated patch to another? We just don't know.

Curlew Conservation

Our knowledge of the ecology of Bush Stone-curlews remains limited. However, we can still propose some practical measures, based on sound science

and observation, to assist with their conservation:

- Minimise disturbance of curlew nesting areas by restricting human and pet access, such as leashing your dog while walking in a park.
- Do not approach nesting curlews, especially with a dog.
- Do not place food near curlew nests (well-meaning but ill-advised). Even the residual smell of food can attract animals, including predators which can kill curlews and their chicks.
- Assess an area before undertaking gardening or maintenance. Curlews on their nests and their eggs are well camouflaged and can be easily overlooked by gardeners. Avoid working within ten metres of a curlew nest.
- Fence woodland remnants that are known or potential curlew habitat areas, and leave fallen branches and debris on the ground.
- Use wildlife-friendly fencing that allows curlews to move and spot predators.
- Report sightings of pest animals and assist local government to manage wild dogs, feral cats and foxes.
- Manage domestic and feral animals on your own property.
- Carefully manage introduced weed species to enhance curlew habitat. Areas where dense, tall grasses grow are avoided by curlews.
- Join patches of native vegetation to increase the size of habitat areas and avoid clearing native vegetation.

To share your sightings of Bush Stone-curlews in the Greater Brisbane area or to find out more about Scott's research, contact Scott O'Keeffe c/ Environmental Futures Research Institute, Griffith University or 0457 328 442 or Curlew.tracker@optusnet.com.au.

References & Further Reading

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Curlews nesting under a building in Oxley. This behaviour shows one way in which curlews have adapted to urban areas.



A fox takes a Bush Stone-curlew egg from a nest near Ipswich.



A wide wing display is one way in which Bush Stone-curlews try to distract potential predators away from their nests.

Article co-authored by Amanda Maggs, Brisbane City Council and Scott O'Keeffe, Griffith University.

All photographs on this page by Scott O'Keeffe.

my little corner

Who is Nesting Where?



Robust, quiet and unobtrusive, a Little Shrike Thrush finds a suitable spot for a nest - a fork two metres high in the foliage of a River Mangrove dangling over a trench that is tidal.

The saltwater is home to all sorts of creatures; crabs, fish and insects, a bird haven you could say. The Little Shrike Thrush has a bill that is pale pink with a large hook, suited to probing and retrieving prey. With force it can tear bark from branches or spend time on the muddy floor turning over litter and debris looking for its next meal.

Early morning in August 2012 a chorus is heard that echoes through the forest as the shrike thrush attempts to attract a mate. It's not long before its calls have been answered. Now the forest is filled with a range of rollicking notes and harsh wheezy sounds as they call to each other.

Their nest building begins on 27 October. They travel up and down through the forest looking for spider webs that they use to bind small twigs together to support the cup-shaped nest. Then comes the collection of dead leaves and rootlets gathered from the creek bank, put in layers to line the nest. The final stage is when she presses down inside the nest with her body to give the nest its final shape.

On 7 November she is sitting on eggs and by 23 November I observed her inspecting her chicks. The chicks are protected from rain by the foliage that hangs overhead just like an umbrella. There are three healthy chicks all with large appetites. Just a week later however, only two remain.

I observed the female travelling back and forth in half hour intervals carrying a smorgasbord of grasshoppers, moths (that have had their wings removed) and other insects. It must be very challenging to provide these on-going meals for her young. I once noticed one of the parents removing waste from the nest and thought that maybe it was to keep odours low as snakes and other predators could hone in on these smells.

The chicks left the nest the first week in December and then on 18 December I observed one parent with only one chick. I thought this was a reasonable outcome as often I see other birds lose all their chicks after several nesting attempts. I keep the area supplied with fresh clean water in a variety of containers that the birds use for drinking and bathing and I believe this is an important contributing factor to our diverse and healthy bird population.

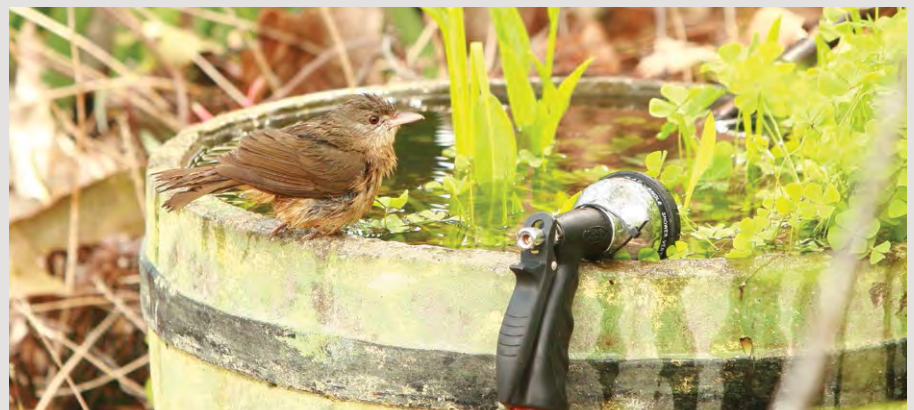
Above: Feeding hungry chicks is a full time job for these parents.

Below: Starting with three chicks, this nest eventually produces just one healthy juvenile Little Shrike Thrush.

Bottom left: Building a nest take a lot of work scavenging the right materials.

Bottom right: Fresh clean water is an essential resource for many bird species, especially seed eating birds like finches, and also for parent birds who expend a lot of energy feeding their chicks.

**Article by Amanda Johnston
Land for Wildlife member
Ransome, Redland**



book reviews

Pest Diseases and Beneficials: Friend and Foes of Australian Gardens

By F. David Hockings

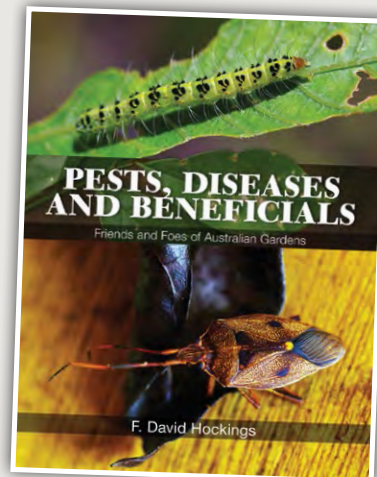
Discovering the weird, the wonderful, the creepy and the crawly is always surprising. Being able to identify scaly marks or perfect holes chewed around the edges of leaves left by insects and other microscopic animals is very satisfying.

This was the first book I turned to when I could not work out what critter was making the soft bubble-like galls infesting eucalypt leaves. The book enabled me to identify the galls as well as the insect belonging to the Psyllidae family. *Pests, Diseases and Beneficials* is a truly fascinating read. The evidence left by all sorts of

insects is often hard to identify or easily overlooked, however this book provides the reader with a variety of commonly seen traces found in your backyard or paddock.

The level of detail is easily understood and appreciated, showcasing the entire life cycles of pests, diseases and the friendly critters found in Australia. The guidance given by David Hockings in regards to the management of pests and diseases is also important for conserving native flora and fauna.

It is a fantastic edition to the bookshelf for garden dwellers.



Published by CSIRO Publishing, 2014
Paperback 280 pages, colour photographs
Price: \$39.95

Available from CSIRO Publishing and other online bookshops.

Review by Stephani Grove

Spud and Charli

By Samantha Wheeler

For something a bit different, *Spud and Charli* is a fictional book with factual information on bats, Hendra virus and horses.

Even though this book is for young readers, directed to girls, I really enjoyed reading it. I found myself wanting to know what happens in the end. The author describes the book as an action-packed adventure about horses, bats and getting carried away by your imagination.

I learnt a few facts about bats and owning horses along the way. I would recommend it and I will definitely be passing the book on. An enjoyable read and a good price.

Published by University of Queensland Press, 2014
Paperback 160 pages
Price: \$14.95
Available from UQ Press and other online bookshops.

Review by Catherine Madden

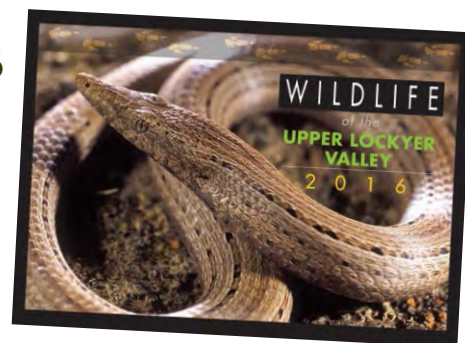


Wildlife of the Upper Lockyer Calendar 2016

The Citizens of the Lockyer Inc. have produced a beautiful calendar for 2016 showcasing the wildlife of the Upper Lockyer Valley.

The large format calendar printed on high quality gloss card contains superb images of wildlife taken by renowned photographers such as Rob Ashdown and Mike Paisley. Each month focuses on a particular time or ecosystem, such as 'After the lights go out' or 'Along the creek'. The calendar also features informative text about each of the animals featured.

Significant dates are included, while the back page features emergency telephone numbers and contact details for local organisations.



The Citizens of the Lockyer Inc. is a group of committed locals from the upper Lockyer Valley who are working to increase awareness of the rich biodiversity found throughout the Lockyer and to promote sustainable rural lifestyles. The group conducts ecological surveys and organises community workshops on ways to protect and restore the environment.

The Citizens of the Lockyer gratefully acknowledges Lockyer Valley Regional Council for their assistance with this calendar.

At just \$15 plus postage if necessary, this unique calendar is great value. To order your copies, simply email Roxane Blackley at bio.earth@bigpond.com or SMS 0428 779 138

flora focus

Ancient Eucalypt Discovered in South America

While many of us recognise eucalypts as an emblematic Australian icon, a recent fossil discovery may provide a linkage for the *Eucalyptus* genus with Patagonia, South America.

The eucalypt fossil record is relatively poor due to a number of factors, including the size of Australia, the small number of people looking for these fossils and the age of suitable sedimentary deposits. Due to this paucity of records, paleobotanists have had difficulty determining the exact age and movement of the genus from fossils, with few published records of fossils of reproductive organs thought to exist within Australia. From these records and other sources, there has been speculation that the genus dates to the Late Cretaceous, some 100.5-66 million years ago (MYA). A recent paper published by researchers from Cornell University and the University of Buenos Aires further speculates that *Eucalyptus* distribution may have established more recently.

The paper, published in 2012, introduced an important chapter to the eucalypt story, by providing evidence for the existence of a eucalypt within the Chubut Province of Patagonia (Argentina). The *Eucalyptus* fossils upon which this discovery is based are around 52 million years old, putting them in the early Eocene Epoch (56-33.9 MYA). The fossils include leaves and reproductive material that are similar

to *Eucalyptus*, although in some cases also similar to the closely related genus *Corymbia*.

This fossil material is significant on many levels. Not only does it add precious reproductive material evidence to the scarce fossil record, but it includes the oldest eucalypt macrofossils currently known. They also represent credible evidence of *Eucalyptus* fossils occurring outside of Australasia and suggest a broader geographic distribution. They do this by showing that eucalypts once inhabited the far western locations within the continents associated with the supercontinent, Gondwanaland.

While Gondwana began breaking up in the mid-Mesozoic Era (160-80 MYA), South America, Antarctica, and Australia remained connected until more recently. Although these continents have since drifted apart, the palaeontological evidence suggests that organisms were able to cross amongst these continents into the Late Cretaceous and probably the earlier part of the Paleogene Period (66-23 MYA). This connection was apparently maintained through the Antarctic Peninsula on the South America-Antarctica side of Gondwana. The biotic connection among these three landmasses was eventually broken by them moving away from one another as well as by Antarctic cooling.



A fossil of *Eucalyptus caldericola* showing leaf venation and capsules that are typical of living eucalypt species today. Photo by Elizabeth Hermsen.

Whatever the case, eucalypts form a key part of Australia's native forests and these new fossils highlight the journey that this remarkable group of trees has made. These fossils also fill an important knowledge gap in the natural history of the environment we rely on everyday.

Acknowledgements

Special thanks goes to John Moss for drawing my attention to the article and Elizabeth Hermsen (Assistant Professor at Ohio University) who undertook the original study. For those keen to visualise global paleogeography reconstructions, there are two websites that may help:

- Blakey Paleogeography Mapping - www2.nau.edu/rcb7
- The PALEOMAP Project - www.scotese.com

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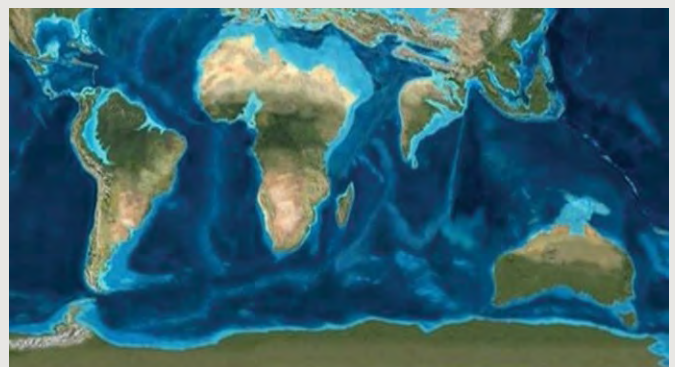
Article by Doug Mohr
Land for Wildlife member
Eden's Landing, Logan

Gondwana starts breaking apart (160-80 MYA) Speculated *Eucalyptus* development (100.5-66 MYA) Last chance for major biotic movement from Antarctica to Sth America (~60 MYA) Patagonian *Eucalyptus* fossils deposited (52 MYA)

Estimated extent of Gondwana (the large southern land mass) during the Late Cretaceous Period (100.5-66 MYA) - a time when *Eucalyptus* may have dispersed to South America from Australia via Gondwana. Imagery from Blakey Paleogeography Mapping.



Estimated extent of Gondwana during the Eocene Epoch (56 - 33.9 MYA) - a time when the Patagonian fossils were deposited. The discovery of these fossils assumes that *Eucalyptus* had successfully reached South America via Gondwana, but for some unknown reason, they went regionally extinct at a later date.





NOTE: Quinlans is a property owned by the Australian Koala Foundation. The property was named in honour of Peter and Julianne Quinlan, committed conservationists, who generously bequeathed this property to the Australian Koala Foundation who now manage the land for conservation and education.

property profile

Quinnie's story of habitat restoration on Oakey Creek

I am 'Quinnie', the spirit Koala of 'Quinlans', where I am the midwife who cares for all the bush creatures that live here.

Recently we heard a group of humans down by our creek, which is a very special place for us. The humans call it Oakey Creek, and it forms part of the Mary River Catchment, which is one of the more significant river systems in the country. They seemed to have lots of equipment with them, and we wondered what they were going to do. We hoped their cheerful chatter meant they were friendly and not going to harm us or our habitat.

We have noticed in the last few years since 'Koala Woman' became custodian of the land at Quinlans that we feel safer and that she is looking out for us. Apparently the people on the creek bank got her permission and were there to help, which is a wonderful change! They were from the Mary River Catchment Authority undertaking a riparian recovery project, which made me very happy to see such wisdom emerging based on the understanding of how important such things are. Some of their friends did a lot of hard work removing masses of weeds that cause big problems in the landscape, before replacing them with hundreds of native shrubs and trees.

This project shows how wise and far sighted these people are, as they planted a wide array of species that will provide food and habitat for generations to come, not only for Koalas but also for all my animal and bird friends here at Quinlans. Furthermore, it will stop the banks eroding so animals can go down to the water's edge in safety. Moreover, it will prevent the loss of the precious topsoil into the creek system where it just clogs things up and makes the water cloudy and hard to survive in for our waterborne friends, the fish, water rats and platypus.

"This is a great example of the synergies that can be achieved when good, wise people collaborate...toward a common goal."

A really important aspect of the Quinlans story is the great number of people and different groups working together to solve the current habitat problems. At present, Sunshine Coast Council is supporting a related project to work with Quinlans supporters to remove weeds and restore habitat in areas connected to the creek.

This is a great example of the synergies that can be achieved when good, wise people collaborate to work in networks toward a common goal.

Koala Woman has inspired the support of other key people who offer their professional services for free. A key platform of Quinlans' plan is to be a publicly accessible educational site that exemplifies the principles of the Australian Koala Foundation and promotes landscape restoration and sustainability.

I bestow a warm-hearted bush blessing on all who come to help us at Quinlans. We look forward to welcoming other Land for Wildlife members when we host field days or other open property events.

Article by 'Quinnie' of Quinlans Land for Wildlife resident Kenilworth, Sunshine Coast

Top: Koala photos by Deborah Metters.

Below: Revegetation and weed control done at 'Quinlans' to increase wildlife habitat and reduce creek bank erosion. Photos by Australian Koala Foundation.





Philosophy with Phil

Wattle Homes

We are Land for Wildlifers - so, that means we are interested in helping our wildlife survive in a fragmented world. I kill weeds and plant trees, but I do it for the wildlife.

The humble, much maligned wattle or Acacia species is the Land for Wildlifers' one true friend. I would like a dollar for every time I have heard "There is nothing in there but wattles". After one such encounter, I went into the wattle 'desert' and counted 28 different species of native plant regenerating in amongst the wattles. Sometimes it is hard to see the forest for the trees (or wattles) in this case!

Wattles are tough. Often the only thing that will survive in a Setaria covered paddock is a wattle. They are quick growing, establishing a good cover to reduce grass competition. I believe a good analogy, if somewhat coarse, is that of a scab forming on damaged skin. Wattles appear as Nature's way of quickly securing the land, and then the process of natural regeneration comes next. When land is cleared, it is open to erosion, loss of moisture, heating of top soil and weed invasion. Thank goodness for quick growing wattles. They even improve the soil by fixing nitrogen.

Many wattle seeds have an oil rich elaisome or aril which is greatly valued by ants. The ants steal the wattle seed and therefore spread the seed around. Wattles are frost tolerant and can also handle dry periods.

The list of wildlife that make wattles home is far too large to list, but includes many bird species, beetles, ants, gliders and possums, moths, butterflies, wasps, bees, micro bats, lizards, spiders etc etc. They are high-rise homes for our wildlife!

And then they die. People generally say wattles are short-lived. Some are, some aren't. I have Hickory Wattles (*Acacia disparrima* subsp. *disparrima*) on my place that are 30 years old and still going strong. I have some dead ones too, as shown in the photograph. But even these dead wattles are gifts that keep on giving... to our wildlife. This dead one shown right has several vines and figs all growing over it. Dead wattles create another treat for wildlife, called 'structure', or depth, cover and habitat. As a fellow Land for Wildlifer, we know that Australian bushlands are not neat, they are habitat.



Wattles... the gift that keeps on giving, even when dead. Photo by Phil Moran.



Phil Moran
Land for Wildlife member
Cooran, Sunshine Coast
Manager, Noosa and
Districts Landcare

Phi·los·o·phy (say fuh'losuhfee) *n.* a system of principles for guidance in practical affairs. *Macquarie Dictionary.*

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