



LAND FOR WILDLIFE

South East Queensland

Newsletter of the Land for Wildlife Program South East Queensland

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Two large native snails of SEQ are Fraser's Banded Snail (main) and the Giant Panda Snail (inset).

Native Snails: A litmus test for healthy ecosystems

With the recent winter rains it has been a good time to observe one group of poorly-known invertebrates, land snails. With rainfall, snails emerge from their places of hibernation underneath leaf litter and logs to look for food. Most native land snails eat fungi and micro-algae, but some are carnivorous and eat other snails. In contrast, the common introduced European Garden Snail eats plants and is considered an agricultural pest.

Australia's largest snail, the Giant Panda Snail, can be found amongst leaf litter, especially fallen palm fronds, in subtropical rainforests throughout South East Queensland (SEQ). Its shell can grow to 9 cm wide.

Despite having eyes on the ends of their upward-facing long tentacles, snails have poor vision and can detect light from dark, but not much more. What they lack in sight, they make up for in teeth, of which they have thousands. Their teeth are microscopic and are used for cutting up food. They move around on their muscular flat foot. To avoid damage to their soft foot and to create adhesion with the surface they are moving over, snails continuously secrete slime, creating snail trails.

An interesting fact about most Australian



land snails is that they are hermaphrodites, meaning that they have both female and male reproductive organs and can choose which gender they want to be when they mate.

Like many invertebrates, native land snails can be used as indicators of environmental health. If there is an abundance and diversity of native snails, then the habitat is likely to be in good condition. Land snails play an important role in decomposition of plant material and they probably help disperse fungal spores. Many animals eat snails, and even in death, snail shells are an important source of calcium for other animals. So next time you are outside on a rainy night, take the time to look around and appreciate our native land snails – there are over 1500 species in eastern Australia in all different shapes and colours.

For more information about land snails visit the website *Facts About Snails* compiled by Australia's leading expert on land snails and Curator of Molluscs at the Queensland Museum, Dr John Stanisic.

Article by Deborah Metters with thanks to *Facts About Snails*. Photos by Deborah Metters (main) and Ross Coupland (inset).

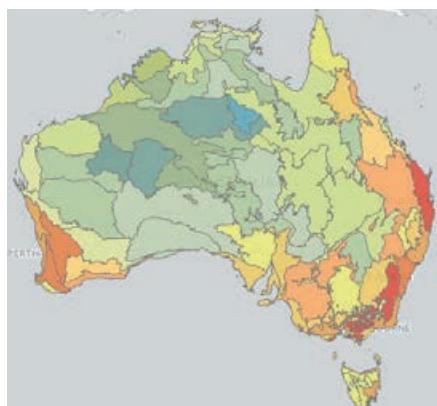
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editorial

In March this year, the Australian Government released its latest (2016) State of the Environment (SOE) Report. These reports are produced every five years and showcase how our natural environment is faring. It is available online and is worth a read. The site also offers an interactive map of Australia showing various layers of environmental data that can be turned on or off. I found this map below quite telling. It shows the number of plants, animals and ecosystems listed under Commonwealth environmental legislation as threatened. You can see that the south-east Queensland / northern NSW bioregion jumps out, unfortunately, as one of the leaders (red areas).



What this map doesn't show is the number of people working to manage and protect these threatened species. Surely, the SEQ region would have to be a leader in this category too. As evidenced by the last few editions of this newsletter, Land for Wildlife members are managing and protecting endangered animals and ecosystems. These landholders often incur personal

and financial costs to look after these animals and ecosystems, but they also derive enjoyment and pride from making a difference. Researchers say that in addition to good relationships, a key pillar of human happiness is our ability to contribute meaningfully to something bigger than ourselves. Protecting something from extinction is a pretty big contribution, I think.

So if you want a national perspective on environmental issues, the SEO Report is a good place to start.

From national to local, this newsletter encourages and celebrates Land for Wildlife members who are restoring ecosystems and learning about nature. It encourages readers to install fauna monitoring cameras (you can often borrow one from your Land for Wildlife Officer – just ask them), or to look closely at sedimentary rocks for fossils. It offers readers a starting point to determine the age of native trees – this is based on recent research and an impressive 75 year monitoring program. It shows that plantings only seven years old can support one of SEQ's rarest birds, the Black-breasted Button-quail. And it shows that it doesn't matter how old you are, you can still make a difference, even at 99 years of age.

I hope you enjoy this edition, and as always, I welcome your feedback and contributions.



Deborah Metters
Land for Wildlife Regional
Coordinator
Healthy Land and Water

Landholder Registrations, Land for Wildlife SEQ - 1/6/2017			
Registered Properties	Working Towards Registration	Total Area Retained	Total Area under Restoration
3262	879	60,700 ha	6,840 ha

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Land for Wildlife is a voluntary program that encourages and assists landholders to provide habitat for wildlife on their properties.

Looking to Buy or Sell a Land for Wildlife Property?

Looking for a High-Resolution Map of your Property? VISIT www.lfwseq.org.au

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□ lfwseq.org.au
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fauna vignettes

Nocturnal Surprises

Twenty years ago, this property had only three trees and grass. Now, plenty of trees, less grass, and a plethora of native wildlife.

We had little knowledge of the extent of nocturnal fauna on our property until purchasing an infrared motion-sensing wildlife camera. We had seen evidence and had our suspicions about the nightlife, but once the camera was set up, surprises were abundant.

In the first week, several Bobucks (Short-eared Brushtail Possums) were captured in

the night time photos, several with young. The brushies had seemed to be absent from the area for years, and this recent comeback coincided with a decrease in domestic dog ownership among neighbours.

Possums weren't the only species picked up by the motion sensors; bandicoots, antechinus and wallabies. To our amazement a Sugar Glider made an appearance, climbing down a tree and scratching through the leaf litter.



CONGRATULATIONS!

Contributors on this page have each won a copy of *Australian Wildlife After Dark*, a stunning book showcasing Australia's nocturnal wildlife. Thanks for entering our competition. Enjoy!



One very important find was a fox caught roaming around near a poultry pen. Without the camera we would have been oblivious to the presence of this pest species.

These finds are a positive reflection of the hard work that has been put into regenerating this property, which brought about an abundance of diversity to the once bare plot.

Kai Wood-Willems
Land for Wildlife member
Ocean View, Moreton Bay



Who Done It?

My property is between Woodford and Kilcoy in the foothills of the Conondale Ranges, Bellthorpe section.

One morning I found the remains of a phascogale with its distinctive tail as pictured. The noteworthy feature of this find was that the head was missing and the skin had been turned inside out like a discarded sock. The skeleton was intact and the skin had been rolled back neatly.

The question is, who had done this?

The remains were on the ground below several large eucalypts in fairly open forest on a ridge top. Several days later the pelt of a Sugar Glider was found in the same location and then another morning, the tail of a Sugar Glider was found.

I am hoping that someone can tell me what creature would kill and eat a phascogale so neatly, and if the same creature also could have killed the gliders.

Michelle Ledwith
Land for Wildlife member
Mary Smokes Creek, Somerset



Editor's Reply: Thank you Michelle for this puzzle. It has intrigued Land for Wildlife Officers and Queensland Museum staff.

In summary, we cannot tell for certain what animal killed and ate this phascogale and the Sugar Gliders, but we can narrow it down to probably an owl or goshawk, or both.

Both the Tyto owls (Sooty and Masked Owls) and the Ninox owls (Barking and Powerful Owls) hunt phascogales and Sugar Gliders. Owls often eat the heads of their prey whole and regurgitate the indigestible bones and fur. Also, owls often bite off the tails of gliders before they consume the rest of the animal. So this would explain both the missing head of the phascogale and the glider tails.

It is difficult to ascertain whether the phascogale was eaten on the ground, or whether these remains were eaten in the canopy and then dropped to the ground. We suspect that it was plucked, opened and eaten on the ground. Loose (plucked) fur around the skeleton would confirm this.

Both owls and goshawks can carefully pick small scraps of meat from bones, leaving a clean, but still articulated skeleton, as shown in your photo. Goshawks are generally diurnal (day-time) birds, but they can fly and hunt at dusk and dawn when nocturnal mammals (ie. phascogales and gliders) are active.

So, it could have been a Brown or Grey Goshawk or a Collared Sparrowhawk that caught and ate this phascogale. Listen out for the calls of owls and goshawks.

If this happens again, the Queensland Museum would welcome the remains as a specimen - please keep it frozen with a note stating when and where it was collected and drop it into the museum when convenient.

Thanks to the Queensland Museum Discovery Centre for their advice. Do any readers have anything further to add?



property profile

Re-creating Habitat for Threatened Species in just Seven Years

In August 2000 an enthusiastic, but nervous, new Land for Wildlife Officer went on her first solo Land for Wildlife visit out to Belli Park, between Eumundi and Kenilworth on the Sunshine Coast hinterland.

There I met Judi who a few years before had bought a mostly cleared 6.4 hectare property where the previous landowner had run some cattle and lit a fire every other year to clean up the grass. This hadn't worried a small patch of eucalypts on the property too much, but had disadvantaged the dry rainforest species, which were mostly confined to two protected gullies. There was not enough vegetation to sign the property up to full Land for Wildlife registration so her property was put on as Working Towards Registration.

Over the next few years Judi moved to the property permanently, built her house and established gardens. Inspired by her parent's efforts at revegetating the family farm in Victoria, she set about planting thousands of rainforest and open forest trees. With the cattle off the property and fire excluded from the rainforest, there was also good natural regeneration to assist Judi's efforts. A number of weeds also decided that they liked the property including Lantana, Groundsel, Easter Cassia, Elephant Grass and Broad-leaf Paspalum.

In 2003 that same Land for Wildlife Officer (now not so nervous but hopefully still enthusiastic) registered Judi's property in Land for Wildlife as, with all her planting, weeding and encouraging of natural

regeneration, it now met the program's criteria. It was a well-deserved Land for Wildlife sign; not everyone works so hard to get their Land for Wildlife sign!

But getting her sign didn't slow Judi down. When Council's annual seedling incentive scheme was introduced in 2005, Judi accessed it almost every year augmenting her own plant purchases. Grants were also used to plant larger areas in stages with a mix of rainforest and open forest plants. In 2013, Judi expressed an interest in finding out more about Council's Voluntary Conservation Agreement (VCA) program. In 2015, she decided to go ahead with a Conservation Covenant and VCA with Council, protecting the natural values of the property.

While Judi's property still has a number of weeds, her investment into the property's natural values have been significant. Her property sits in an emerging corridor linking Mapleton Forest Reserve to West Cooroy State Forest.

Did I mention Judi has a very bad back after working as a nurse for many years? I have never seen someone control weeds so well with a shovel without bending.

Undertaking a fauna survey for Council, local birder Rob Kernot spotted some distinctive round clearings in the leaf litter in late 2015. Thinking that they could be button-quail feeding 'platelets', Rob suggested putting out some fauna cameras to see if it was the elusive Black-breasted Button-quail. To our delight, in May last year we got images of Black-breasted Button-quail on two cameras on

Judi's property! One was under a lantana shrub in a regenerating dry rainforest patch. The other was in a revegetation area established just seven years ago with a Council grant.

The Black-breasted Button-quail is an endearing, shy, ground-dwelling bird that is listed as Vulnerable under state and federal legislation. Black-breasted Button-quails are only known from 14 different populations in Queensland with the largest population at Yarraman-Blackbutt estimated roughly to be comprised of about 2000 adults. They prefer to live in dry rainforests and vine scrubs. Unfortunately, these ecosystems have been extensively cleared and modified, hence why population numbers are quite low.

Like all quails, Black-breasted Button-quails forage on the ground scratching in the leaf litter for invertebrates and seeds. Their preferred habitat contains thick leaf-litter 3-10 cm deep. Black-breasted Button-quails and the similar-looking species, Painted Button-quails, create 'platelets' on the ground through 'pivot-feeding'. They pivot in a circle on one leg scratching away the leaf-litter with their other leg. This scratching creates distinctive round gaps in the leaf-litter about the size of a small dinner plate, called 'platelets'.

The revegetation area on Judi's property has a mix of rainforest and eucalypt species planted and now has a thick leaf litter layer developing. All trees still have very low branches giving cover down low. Until it had been planted this area had been tall grass slashed each year to reduce the fire

66

Not everyone works so
hard to get their
Land for Wildlife sign

Aerial Photograph Sequence

In 1958, the property is mostly cleared with only a few trees present along the creek and in the gullies including Bunya Pines.

In 2003, existing vegetation in the gullies and along the creek have been buffered by plantings Judi has undertaken. The property was registered with Land for Wildlife this year.

In 2016, the larger revegetation projects are maturing. These areas are where Black-breasted Button-quail have been recorded.

risk. Now it is supporting a threatened bird species that depends on thick leaf-litter!

Lantana and other weeds adjoining or within dry rainforests provide additional habitat for Black-breasted Button-quails giving dense low cover and good leaf litter for foraging. Management actions at Judi's now include removing the weeds slowly and in stages so that quail habitat is not disturbed too much. Dry rainforest patches will continue to be encouraged to regenerate naturally. Pest animal control will also be considered as foxes and cats have been recorded in the same areas as the quails.

Being able to assist Judi further through Council's VCA Annual On-ground Works program and knowing that she has provided habitat for a threatened species is very rewarding. Seeing such significant changes on Land for Wildlife properties makes the tedium of being stuck in the office doing administration not so bad. It's been a pleasure and privilege to be Judi's Land for Wildlife Officer over the last 17 years and I am looking forward to searching through the images from the next fauna cameras for more Black-breasted Button-quail.

Reference & Further Reading

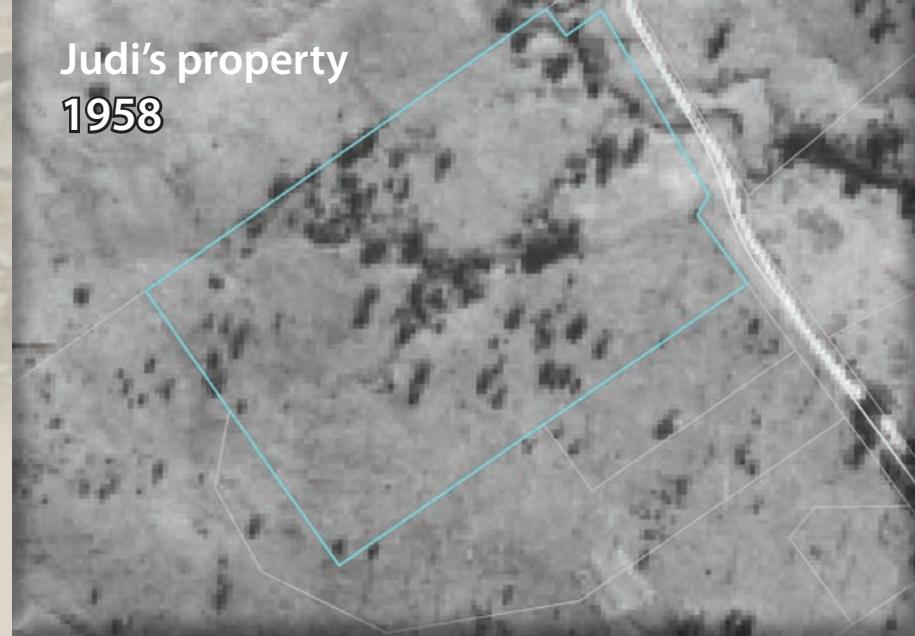
Curtis LK, Dennis AJ, McDonald KR, Kyne PM & Debus SJS (editors), 2012. *Queensland's Threatened Animals*. CSIRO Publishing.



Article by Stephanie Reif
Land for Wildlife Officer
Sunshine Coast Council

Judi's property

1958



2003



2016



ecosystem profile

Dry Rainforests of South East Queensland

To most people, the mention of the word rainforest conjures up visions of lush green tall vegetation festooned with epiphytes (orchids, mosses and ferns), numerous vines, palms and ferns. In South East Queensland (SEQ) in places such as Lamington, Springbrook, Tamborine and Mt Glorious these types of luxuriant rainforests are commonly encountered.

However there are other rainforests that are not as lush and tropical-looking as these types, one type in particular is 'dry rainforest'. Though not as moist as other types of rainforests, dry rainforests can easily be distinguished from other surrounding vegetation such as open eucalypt forests and woodlands, due to their dark green colour and the tight, compact crown seen from a distance.

Dry rainforest is a term used to describe vegetation, where rainfall is low because of topographic conditions (sometimes referred to as rain-shadow). Other terms used to describe variants of dry rainforests are dry vine forest, dry vine scrub, softwood scrub, Brigalow scrub, bottle-tree scrub, Hoop Pine scrub and microphyll (small-leaved) vine forest. At the drier

extreme these vegetation communities sometimes grade into what is known as semi-evergreen vine thicket, or SEVT for short.

A feature of some dry rainforests is that many of their tree species have the capacity to shed most or all of their leaves as a strategy to survive long periods of drought (this is where the term semi-evergreen is derived from). Compared to wetter types of rainforest in higher rainfall areas the dominant canopy height of dry rainforest is considerably lower.

In most cases dry rainforest has a lower canopy layer plus an upper layer of emergent trees rising above the canopy. The lower canopy usually consists of 10-30 tree species and the upper layer consists of scattered taller trees. Common emergent trees include Hoop Pine, Lacebark (*Brachychiton discolor*), Rusty Fig (*Ficus rubiginosa*) and Crows Ash (*Flindersia australis*).

Due to past clearing, dry rainforest remnants are considerably diminished and the remaining patches are still under further threat from vegetation clearing, grazing, wildfires and weed invasion. In

times past, dry rainforests were cleared for grazing and other types of agricultural use in the mistaken belief that the soils, that they were occurring on, were more fertile and nutritious than the soils supporting other drier types of surrounding vegetation such as eucalypt forests and woodlands. In most situations this was untrue as once the dry rainforests were cleared and utilised, for whatever agricultural activity was needed, the fertility was quickly depleted. This is because the fertility and nutrients were stored in the top few centimetres of soil and ground litter, while the dry rainforest still existed.

While some of the tree, shrub and vine species occurring in dry rainforests are confined only to dry rainforests (e.g. Narrow-leaved Bottle Tree, *Brachychiton rupestris*; Leopard Ash, *Flindersia collina*; Small-leaved Scrub Ironbark, *Bridelia leichhardtii*) many other species also occur in other moister rainforest ecosystems (e.g. White Cedar, *Melia azedarach*; Guioa, *Guioa semiglaucia*; Hairy Birdseye, *Alectryon tomentosa*). These species that occur in both dry and wet rainforests often occur as pioneers (early successional) plants in the moister rainforest types.

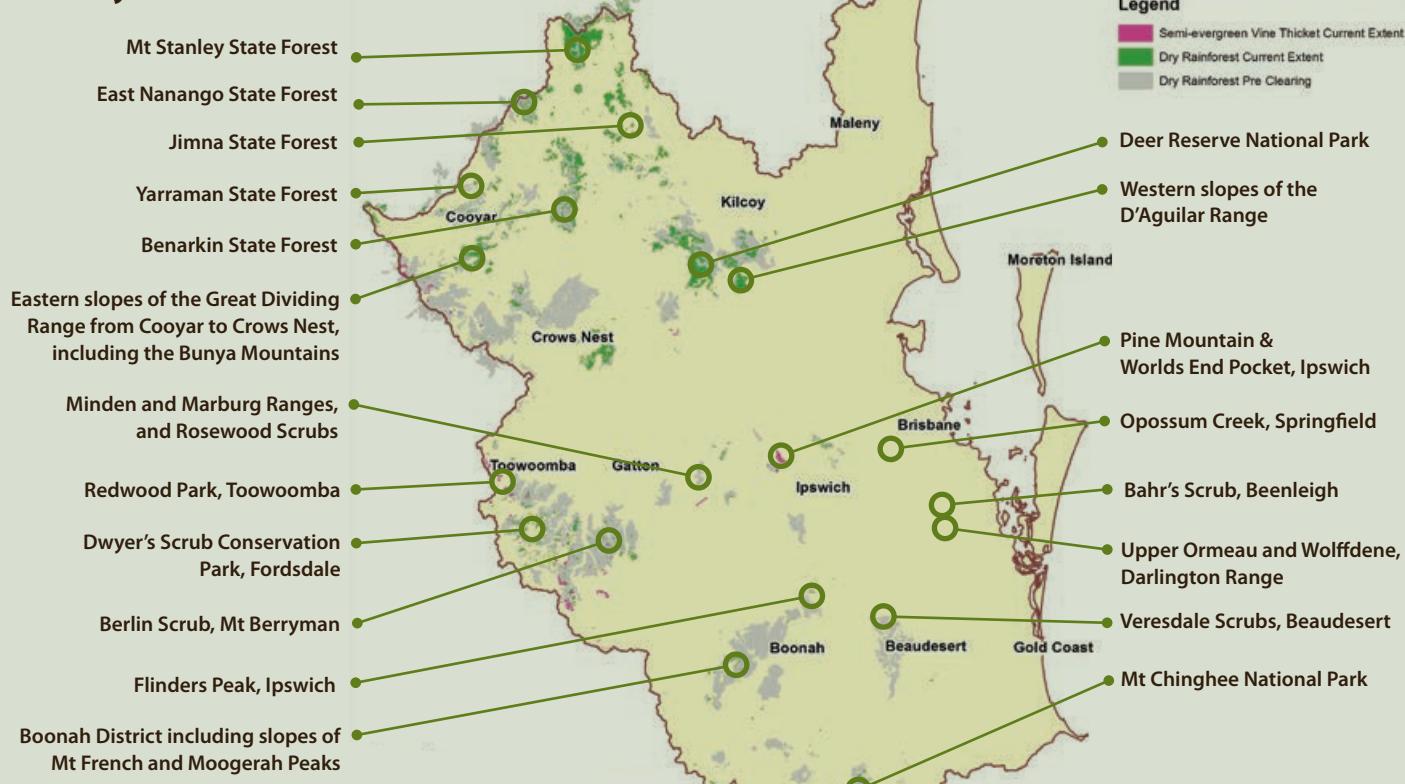


Dry rainforests often have lots of vines and can be difficult to walk through.



Dry rainforests in SEQ often occur in small patches with lots of edges, resulting in more fires and weeds, making the rainforest patch smaller and less resilient.

Dry Rainforests of SEQ



Climate change is likely to increasingly affect our moister rainforest types in SEQ with many of the moisture dependent plants becoming stressed during long dry periods and possibly facing local extinctions. This is where many species of dry tolerant plants found in dry rainforests will be most likely to replace them and help the less drought resistant rainforests to continue to survive.

Once established, many dry rainforest plants are more likely to cope with lowering annual rainfall and warmer temperatures as a result of climate change. It is therefore suggested that the many plant species found in dry rainforest be considered for regeneration projects, or in rainforest areas where loss of moisture dependant species is already occurring.

Equally, it is extremely important to continue to protect, manage and maintain the integrity of all remnants of dry rainforests. Dry rainforests contain a good number of threatened and uncommon plant species and a large percentage of the Regional Ecosystems, in which they are represented, are listed as Endangered under Queensland legislation.

Some of the greatest threats to our SEQ dry rainforests currently are introduced weeds, wildfires, grazing and a lack of funding streams for active conservation management. Some of the worst weed threats include vines such as Madeira Vine, Cat's Claw Vine, Climbing Asparagus and Glycine. Weedy shrubs and trees include Lantana, Chinese Celtis, Tree Pear, Ochna,

Coral Berry and Privet. Weedy grasses include Green Panic, Guinea Grass, Rhodes Grass and Broad-leaved Paspalum.

Introduced grasses are a major threat to dry rainforests as the grasses grow quickly and produce huge amounts of biomass. When dry, this biomass is highly flammable. If these grasses become established on the edges of dry rainforests, when a fire comes through, the fire will kill many fire-sensitive rainforest plants. Fire will also cause the dry rainforest to contract in size, getting smaller and smaller until it is no-longer a functioning ecosystem.

Introduced grasses can also find their way deep into a dry rainforest patch. This often occurs during drought conditions when stock is allowed to enter the dry rainforest areas for shelter. Drought causes many rainforest trees to drop their leaves making the canopy more open. During these dry periods the grass seeds contained in the stock droppings, are able to germinate, and the grasses become established, thrive and eventually cure off leaving a highly combustible fuel load within the rainforests. In such scenarios, fires can encroach deep within the dry rainforest reducing the health of the ecosystem.

If you are lucky enough to have dry rainforest on your property, please do what you can to protect it from wildfires and introduced grasses.



Article by Paul Grimshaw
Land for Wildlife member
Mt Crosby, Brisbane



Dry Rainforest Factsheets

Several excellent factsheets are available on the dry rainforests of SEQ. Download them from www.lfwseq.org.au or ask your Land for Wildlife Officer for a copy.

Revelling in the Dry introduces the common plants, animals and weeds found in dry rainforests. It offers land management recommendations including 10 Restoration Tips.

In addition, there are 8 factsheets for dry rainforest Regional Ecosystems (REs):

RE 12.12.13	RE 12.11.13
RE 12.11.11	RE 12.9-10.16
RE 12.8.21	RE 12.9-10.15
RE 12.8.13	RE 12.5.13

Check your Land for Wildlife property assessment form about the RE on your property, or ask your Land for Wildlife Officer.



practicalities

How Old is That Tree?

H ave you ever paused to wonder how old the trees on your property are? Soon after purchasing my own property I remember marvelling at some of the trees and guessed that they may have pre-dated European settlement, but it was just that....a guess.

The thought of 'owning' something that old didn't sit comfortably with me, rather I felt a sense of responsibility to be a good custodian. But the question of just how old these trees were remained in the back of mind.

In the Australian bush the vast majority of seedlings die before reaching maturity with many only lasting a few years. For those that do survive their growth rate is influenced by many factors including individual species attributes, climate, water availability, geology, soil, root stress, drought, competition, disturbances and other factors such as disease.

So how can you determine the age of a tree? Most people will be familiar with the idea of counting growth rings (dendrochronology). A tree grows a little each year and in doing so it lays down a growth ring. A wide ring represents a wet year, and some ring variations can even be correlated with major events like droughts or wildfires. However this method is not considered reliable in the forests of Eastern Australia and besides, it's not much use if the tree you want to age is still standing.

Knowing the disturbance history of a site can help to age a tree. By looking at historical aerial photos that show cleared areas which are now vegetated, the date of the photo will provide an insight into the age of the re-growth. Other tree ageing methods include radiocarbon dating and

“As a society we place significant value on 100 year old buildings, and yet we have trees in our landscape that are much, much older than this.”

using growth models based on increments in tree diameter growth measured over time.

A recent scientific paper (Ngugi et. al., 2015) published in the *Journal of Forestry Research* drew on an impressive historical dataset to develop growth models that can be used to calculate the age of some trees (mainly commercial timber species).

The data included DBH (diameter at breast height) measurements collected for 75 years (1936-2011) on over 86,000 trees (155 species) in more than 640 permanent forest plots in South East Queensland. This allowed the authors to study trends in incremental growth rates in tree species across sites that receive similar annual rainfall. The findings of this study are considered consistent with other studies using tree core samples and carbon dating.

They found that stem diameter increments for species growing naturally in forests of subtropical Queensland ranged from 0.01 to 0.5 cm per year, with a mean DBH growth increment of 0.25 cm/yr.

Using this figure it would take a tree 120 years to reach the size (girth) of your average power pole (300 mm). This is slow compared to similar native species grown in plantations which can have DBH increments of 1-5 cm/yr. This faster growth rate for planted trees is presumably due to the application of horticultural practices

and reduced competition compared to a native forest.

As you would expect, this research found that some species grow faster when they occur in an area with higher annual rainfall (e.g. Grey Ironbark, *Eucalyptus siderophloia*; Small-fruited Grey Gum, *E. propinqua*; Queensland Blue Gum, *E. tereticornis*; White Mahogany, *E. acmenoides* and Brushbox, *Lophostemon confertus*). Bucking this trend were Blackbutt (*E. pilularis*), Flooded Gum (*E. grandis*), Narrow-leaved Ironbark (*E. crebra*) and Poplar Box (*E. populnea*), which didn't reach their maximum growth rates in the highest rainfall zones. Brown Bloodwood (*C. trachyphloia*) maintained relatively constant growth rates across all rainfall zones.

They also found that growth rates vary during the life of a tree, but across all rainfall zones most species go through their highest rate of growth between 20 and 60 cm DBH. As a tree gets older its growth rate slows and the authors warn that age estimates for large trees (>80 cm DBH) should be used cautiously because they had a limited representation in the dataset. Additionally, many older trees have bole deformities and/or swelling in the base of the tree (given the unfortunate name of 'butt swell'). Such deformities can increase the margin of error when relying on DBH to calculate age.

Table: Predicted age (years) of tree species based on diameter at breast height (DBH) measurements and rainfall zones in SEQ. These figures have been calculated using growth models in Ngugi et. al., 2015.

	Diameter at breast height (DBH), centimetres									
	10	30	50	70	90	110	130	150	170	180
Blackbutt (<i>E. pilularis</i>) 1600 mm rainfall	49	60	70	82	99	124	166	251	509	1048
Spotted Gum (<i>C. citriodora</i>) 800 mm rainfall	67	129	205	380	1724					
Spotted Gum (<i>C. citriodora</i>) 1200 mm rainfall	58	82	105	138	195	331	1046			
Pink Bloodwood (<i>C. intermedia</i>) 1200 mm rainfall	73	139	234	532						
Pink Bloodwood (<i>C. intermedia</i>) 1600 mm rainfall	83	103	131	179	281	644				
Broad-leaved Ironbark (<i>E. fibrosa</i>) 1200 mm rainfall	43	84	159	608						
Broad-leaved Ironbark (<i>E. fibrosa</i>) 1600 mm rainfall	32	74	120	203	461					
Narrow-leaved Ironbark (<i>E. crebra</i>) 800 mm rainfall	94	211	281	327	360	384	551			
Tallowood (<i>E. microcorys</i>) 1600 mm rainfall	73	79	108	180	588					

(Predicted
Age in Years)

For these larger trees radiocarbon dating of core samples provides a more accurate measure of age. A large Brushbox at Lamington National park has been dated using this method and was determined to be 1500 years old. While trees of this age are no longer common in the landscape, numerous other tree species of similar age are still standing in SEQ.

So why don't we see more old trees? Well firstly, because most of them have been felled since European settlement, and secondly, many young trees die when they germinate in a location where there's insufficient light, moisture or nutrients to sustain them into maturity. They may simply be eaten or succumb to disease, fungal attack, drought, fire, floods or wind.

Most Land for Wildlife members would know that tree hollows provide crucial habitat for wildlife and that older trees are more likely to have hollows. Research conducted in SEQ by Wormington & Lamb (1999) found that Blackbutt generally doesn't produce hollows suitable for use by fauna until it is over 165 years

old. Tallowood (*E. microcorys*) begins developing hollows at approximately 170-200 years and Scribbly Gum (*E. racemosa*) at 200-235 years. Large hollows in these species form after approximately 250 and 300 years respectively. To put this into perspective if you plant a Tallowood today (and assuming it survives) it will not provide a nesting hollow until about 2267!

Some Land for Wildlife members will be the current custodians of trees that are centuries, if not millennia, old. Knowing the age of a tree gives us an insight into the time scales of some ecological processes. Rarely have very old trees simply lasted by chance, they require a degree of luck, protection and importantly they require good custodians.

Today high intensity wildfires are a threat to many old trees. Habitat trees often have a hollow trunk and once alight these 'pipes' act as a chimney and will often burn until the tree falls.

The regular use of low intensity fire by Traditional Owners extended the life

How to Measure DBH

Measure the circumference of the tree trunk 1.4 metres above the ground. Divide the circumference by π (3.14) to calculate the DBH.

expectancy of many veteran trees in our landscape. Reducing the fuel around old trees where they are at risk of wildfire is one way you can help prolong their life. Other things you can do are to prevent soil compaction around the root zone by excluding stock and vehicles. Plan ahead to avoid future conflicts by not placing infrastructure close to large trees.

As a society we place significant historical value on 100 year old buildings, some are placed on a heritage register and protected, and yet we have trees in our landscape that are much, much older than this. These trees provide a valuable cultural link to the past. Despite this, in most areas of Queensland individual old trees are not afforded any protection.

As the urban fringes in SEQ continue to bulge, many of these old trees are deemed hazardous and removed. By having a deeper appreciation of the age of the trees around us, maybe we can learn to afford them the custodianship they will need to keep standing well into the future.

References & Further Reading

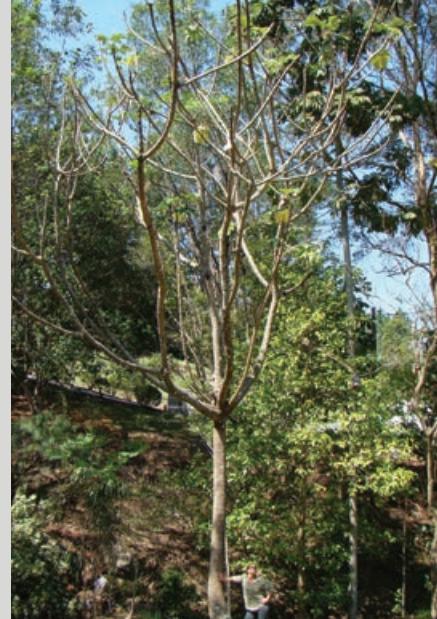
- Brack C & Brookhouse M (2017) Where the old things are: Australia's most ancient trees. *The Conversation*, ABC News, 19 April.
- Gibbons P & Lindenmayer D (2002) *Tree Hollows and Wildlife Conservation in Australia*. CSIRO Publishing.
- Koch A, Driscoll D, Kirkpatrick J (2008) Estimating the accuracy of tree ageing methods in mature *Eucalyptus obliqua* forest, Tasmania. *Australian Forestry*, 71 (2).
- Ngugi MR, Doley D, Cant M & Botkin DB (2015) Growth rates of Eucalyptus and other Australian native tree species derived from seven decades of growth monitoring. *Journal of Forestry Research*, 26 (4).
- Turner J (1984) Radiocarbon dating of wood and charcoal in an Australian forest ecosystem. *Australian Forestry*, 47 (2).
- Veteran Tree Group Australia, www.veterantreegroup.blogspot.com.au
- Wormington K & Lamb D (1999) Tree hollow development in wet and dry sclerophyll eucalypt forest in south-east Queensland. *Australian Forestry* 62 (4).



Article by Nick Clancy
Land for Wildlife Officer
Sunshine Coast Council



Green topside and white underside of leaf.



A dying tree after herbicide treatment.



Finger-like flowers on a male plant.

Header images: Mexican Bean Tree (*Cecropia peltata*) photos taken by City of Gold Coast Pest Management Officers.



Be careful not to confuse Mexican Bean Tree with the look-a-like weed, Rice-paper Plant (*Tetrapanax papyriferus*) shown left.

the tree is male or female.

For those of you wondering how on Earth you're meant to keep up with every emerging weed and what your obligations are under the Biosecurity Act, don't worry; your Conservation Partnerships Officers can help with that. It's one of the reasons we encourage you to seek regular property revisits from your local officer.

Whilst the process for detecting and controlling restricted invasive plants might seem daunting, please remember, we're all in this game for the same reason – we want to protect our native wildlife. As landholders you have the opportunity to stop weeds before they establish (remember, one year's seed, seven years' weed!).

If you think you have a Mexican Bean Tree please report it to Biosecurity Queensland and remember, your Conservation Partnerships Officers are here to support you, so always feel welcome to contact us.

References & Further Reading

- www.daf.qld.gov.au
- www.goldcoast.qld.gov.au/environment/mexican-bean-tree-13508.html
- Suburban and Environmental Weeds of south-east Queensland app.



Article by Lexie Webster
Supervising Conservation Officer
City of Gold Coast

property profile

Remembering When We Drank Water from the Creeks

A few years ago I had the opportunity to visit one of the largest privately-owned Land for Wildlife properties in SEQ, the Rathburnie Estate Nature Refuge. It is administered by Valmai Burnett in accordance with her late husband's bequest to the World Wildlife Fund Australia for the "demonstration, education and research into sustainable environmental/economic farming practices." Valmai has lived at Rathburnie, overlooking the Brisbane River, for the past 65 years.

She is sharp, witty and passionate about sustainable land management that mixes conservation with primary production.

Although a million people would see the Brisbane River weekly, I think only a small portion would ever visit its headwaters in the "Valley of the Lakes" above Wivenhoe Dam. It is here where Valmai lives at the junction of Cooyer and Avoca Creeks where the "bright waters meet" at Avocavale, as in the Vale of Avoca in Ireland.

In the January 2011 floods, Valmai saw the Brisbane River rise to normal flood levels, when at midnight on the 10th of January, a "steering wind" and an abnormal column of rising cold air started dumping huge quantities of rain, which lasted about an hour. A wall of water came roaring down the gullies and the sound of the river in the dark was "absolutely frightening". The river rose five metres above 1974 flood levels.

66 Rathburnie adopts a system of wet season spelling across six paddocks 99

It wasn't until the river fell again that the devastation was evident. Massive Blue Gums, hundreds of years old, which used to house Koalas were stripped from the river. Phone lines were washed away and radio provided the only weather reports.

The management of Rathburnie by Valmai and her late husband, Graham, has been influenced greatly by science, in particular the CSIRO Ecograze project. This project found that if alternative paddocks are spelled (i.e. cattle removed) in the wet season for three months to let native grasses grow and set seed, the carrying capacity of the land can be increased by up to 80%. As part of its commitment to sustainable land management, and in line with research findings, Rathburnie adopts a system of wet season spelling across six paddocks, each 300 acres in size, and each offering access to water.

Research has also shown that cattle only need 16% of their diet as protein, the rest can be roughage from tall native perennial grasses. Therefore, Rathburnie grows and harvests lucerne on the river flats to provide a protein supplement for cattle, and native grasses are allowed to grow tall to provide the roughage ruminants need.

When Graham purchased Rathburnie in 1932, he researched local Aboriginal campsites, such as the nearby Lions Camp Duckadang at the junction of Avoca Creek and the Brisbane River and ensured that buildings were also built on high ledges, above flood levels, just as Aboriginal campsites would have been.

Valmai has read widely about Australia's land management history and shared stories from early European settlers who described this country as open woodland with widely-spaced large trees, and where tall grasses reached the horses' bellies. European farming methods were originally productive due to the rich soil biota and humus (carbon) content, which had been built up under Aboriginal custodianship over millennia.

However, these fertile soils were quickly depleted and now landholders need to better manage shallow, ancient soils underlaid with salt and highly variable rainfall.

Valmai recounts how Rathburnie was once a real Garden of Eden where she would drink from the creek while listening to the tinkling of the Scarlet Honeyeaters. She hopes that one day Australians will enrich this land while being able to derive a sustainable income from it.

**Article by Deborah Metters
Land for Wildlife Regional Coordinator
Healthy Land and Water**

Photos by Valmai Burnett.

This massive Blue Gum was uprooted during the 2011 floods and now lies in a paddock below the bridge at Brisbane River crossing number 4.



earth science

Fossils of South East Queensland

Fossilised imprint of a round leaf with lots of fine veins, possibly from a ginko-type plant.
All photos taken from fossils found in early Jurassic Ripley Road Sandstone on a Land for Wildlife property, Bellbird Park, Ipswich. Photos by Deborah Metters and Keith McCosh.

The rocks we see today both sustain us and show us a glimpse into the past. Old rocks tell a story of life on Earth. South East Queensland (SEQ) is relatively young, about 300 million years old, in comparison to the rest of Australia. For example, some rocks in the Pilbara, Western Australia, are a staggering 3.5 billion years old - some of the oldest rocks found on Earth – and the Earth is about 4.6 billion years old.

Stories are found in the fossils left in the rocks. Fossils can only be found in sedimentary rocks. These rocks are products of erosion that form layers at the bottom of a lake or ocean, and gradually cement together to form rock. These fossils form markers in the various rock layers and help tell stories of life on Earth and the movement of continents. Of course, no one place has the whole story, so little pieces must be collected from all over the world. SEQ has some from the Triassic, Jurassic and the Cenozoic. The rest of Queensland has a lot more from different ages.

Fossils can be made up of actual remains (bones, teeth, hard bits, etc), impressions, and traces (such as tracks, burrows and even scats (yes - fossilised poo)). Bones can be preserved in rocks as original material or in an altered form, where silica replaces the original material, molecule by molecule, called 'silicification'. Petrified wood is actually 'silicified' wood. Sometimes this silica can produce beautiful colours when it forms 'opal', under special conditions.

In SEQ, the Triassic Period (~252-201 million years ago – MYA) was the most important. The Triassic created most of the sandstones that underlie much of SEQ. The Clarence Moreton Basin (Roma-Ipswich-Grafton) was a vast swampy valley with thick vegetation and early dinosaurs. Lots of coal formed as the basin began to fill up, especially around Ipswich. Some volcanic

activity created the Brisbane Tuff that now forms the Kangaroo Point cliffs.

Triassic fauna included early dinosaurs (theropods), early crocodiles (thecodonts), early amphibians (temnospondyls), early mammal-like creatures (dicynodonts), lungfish, and rather familiar-looking insects. Triassic flora included the first appearance of conifers (Araucariaceae), seed ferns (dicroidium), ginkoes, horsetails (equisetales) and ferns.

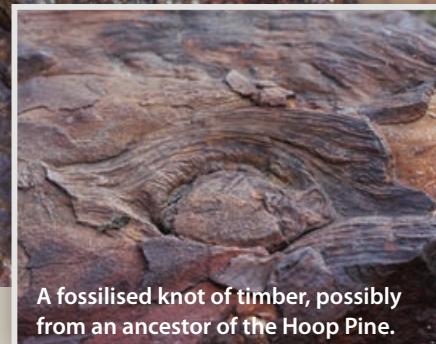
After the Triassic came the Jurassic, the 'Age of Dinosaurs'. The Clarence Moreton Basin finally filled up with plenty of plant fossils and petrified wood. There are a few animal fossils but sadly no signs of dinosaurs, although a sauropod was found near Injune in Walloon Coal Measures. There were certainly dinosaurs here in SEQ, but so far, none have been found that died and fell into the right sort of mud, to create fossils. A small basin around Sandgate has revealed fossils from the Jurassic period.

Jurassic fauna included dinosaurs – sauropods, theropods, and ornithopods, freshwater plesiosaurs, amphibians, and fish. Jurassic flora was dominated by conifers as well as cycads, horsetails, seed ferns and ferns (including tree ferns).

The Jurassic ended about 145 MYA without much fanfare in Gondwana, except for the start of a series of inland seas across western Queensland. This was the Cretaceous Period (144-66 MYA), a monumental time for the evolution of flowering plants and the shameless manipulation of insects for the purpose of pollination. Plants used insects for cross-pollination between different individuals to keep the gene pool fit and healthy and capable of change under changing conditions. A small basin around Maryborough collected coal and fossils around this time.



Fossilised imprint of a broad, strap-like plant leaf, possibly *Nilssonia taeniopteroides*, a cycad.



A fossilised knot of timber, possibly from an ancestor of the Hoop Pine.

The Gondwana supercontinent progressively got smaller as India and Africa left. Eventually South America and Australia left, leaving Antarctica all alone and stuck at the South Pole. The Cretaceous ended 66 MYA with a rather large bang - the Chixulub Meteor impact near the Yucatan Peninsula in Mexico, which caused the extinction of 65% of all life on Earth. The dinosaurs went extinct and a whole new world began - the Cenozoic Era or the 'Age of Mammals'.

During the Cenozoic Era, Australia started its steady march northwards into the tropics. We got hotter and drier and developed our own peculiar fauna and flora. A few small basins in SEQ (Redbank Plains, Geebung, Beaudesert and Murgon) collected a range of 'modern' fossil species. Limestone areas from other parts of Queensland (Riversleigh and Mt Etna) have revealed a great array of fossil species collected around this time, about 20 MYA, and it is definitely worth visiting these sites if you are interested in fossils or geological history. A trip to Winton and Richmond is a must for fossil lovers too with a few big dinosaurs being uncovered in these areas.

Back in SEQ, you may wish to find some sedimentary rock and start digging - carefully. Or perhaps just contemplate the vast amount of time (along with the magical evolution of life) that has been used to create your little patch on Earth. A great reference is the Queensland Museum book, *In Search of Ancient Queensland* (reviewed on facing page).



Article by Keith McCosh
Land for Wildlife Officer
Scenic Rim Regional Council

book & app reviews

In Search of Ancient Queensland

By Dr Alex Cook and Dr Andrew Rozefelds

This book is a great reference for Queenslanders. It details the fossil record found in Queensland along with the geological events that shaped our continent and our State over the last 250 million years.

Rich in photographs, diagrams and maps, the book is a very captivating read for an ecologist. There is nothing else quite like it and must surely be the standard for geological interpretation of Queensland.

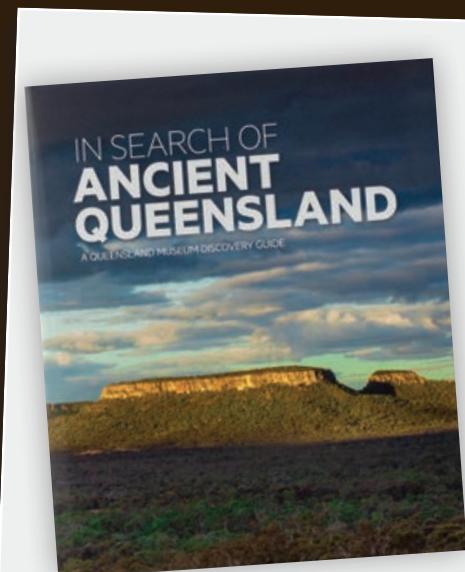
A potentially dry and dusty topic comes alive in this book with excellent artistic impressions of plants, animals and environments long gone. It contains 270 pages of top-class photography, held together with easily readable text. Every page has a new story, with many sirens calling - I had to stop myself from racing outside and digging in the dirt.

The Queensland Museum collection of fossils is obviously quite comprehensive

and provides much of the material for this book. Some materials, especially dinosaur fossils, are held in museums in inland Queensland, especially as a result of recent dinosaur finds around Winton, Richmond and Eromanga. These finds have created great excitement in Queensland fossil circles.

I sometimes find fossils on Land for Wildlife properties and this adds a great deal of colour to our connectedness to the land. The ancient story is there to see, along with the modern story - and they are linked. I am lucky enough to have Triassic plant fossils on my own property - so I can feel the ancient story of life in the Clarence Moreton Basin, on the outer edge of Gondwana, somewhere down near the Antarctic Circle, well before the rise of the dinosaurs.

I thoroughly enjoyed *In Search of Ancient Queensland*. Get yourself a copy. Start digging.



Published by Queensland Museum, 2014

Paperback, colour photos, 280 pages

Price: \$39.95

Available from select bookstores and the Australian Age of Dinosaurs website.

Review by Keith McCosh

GroNATIVE App

By Griffith University

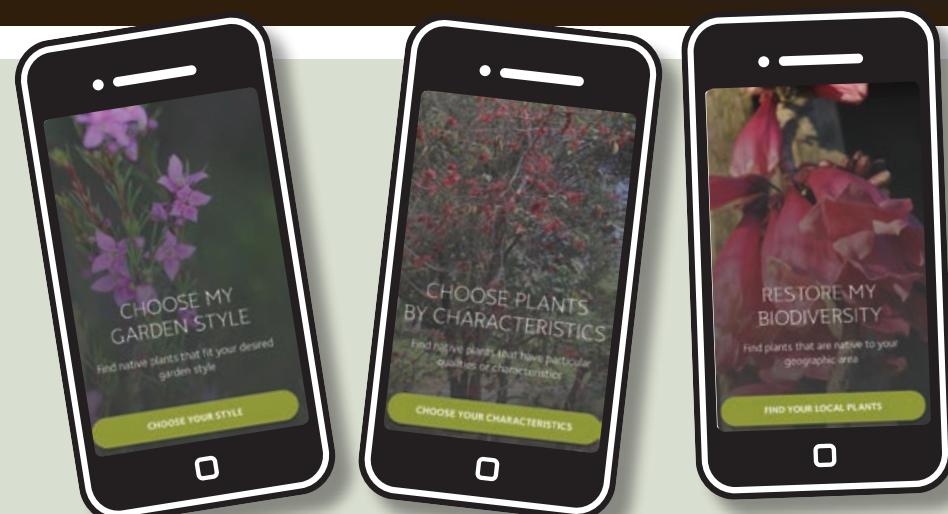


I recently attended the launch of the free GroNATIVE app, which is designed to help landholders in South East Queensland choose native species for their garden.

Users can base their species search on their suburb, garden style preference, the structure they're trying to create (e.g. trees, epiphytes, sedges etc.) and the biodiversity benefits they'd like their garden to provide (e.g. lizard habitat, food for bees, fruit-eating birds etc.).

Fact sheets with bright pictures and basic info are available for each of the 400 mentioned species and users can create a species list as they go, to keep track of the ones they're keen on. The app also provides suggestions on nurseries local to the user's location, although this by no mean guarantees stock will be available.

One of the main criticisms of the app is that it doesn't drill down to vegetation type/ Regional Ecosystem level (which is what Council Officers would ordinarily advise Land for Wildlife members to look at when



restoring their habitat). In some instances, the app recommends species that may not be appropriate to the area.

As such, I advise users to only refer to the app as a guide for planting in their garden. Talk to your Land for Wildlife Officer about a species' appropriateness for planting in habitat / bushland areas. If you are concerned about a plant spreading from your garden to the bushland, again, chat with an expert first.

If this app helps keeps the likes of Jacarandas, African Tulips and Murraya out of people's gardens (and ultimately our

bushland) I think it's a good thing. It is free to download so why not check it out and make up your own mind.

A joint initiative of the Queensland Government, Natura Pacific and Griffith University. Version 1.2, released May 2017

Size: 118 MB

Price: Free

Available to download from Google Play or iTunes.

Review by Lexie Webster

tribute

The Passing of a Local Legend

Graeme admiring the decades of restoration of his bit of paradise in Brookfield.

It was sad to hear that late last year, one of Brisbane City Council's original Land for Wildlife members, Graeme Wilson had passed away.

Graeme was a stalwart in the Brookfield area, building his house on his 7 hectare block on Savages Road 62 years ago. His professional and life experiences throughout his 99 years could fill a novel, but it was his passion for the environment through the restoration of his property and his thousands of volunteer hours with the Moggill Creek Catchment Group (MCCG) that I knew him best for.

You could say that Graeme was before his time. His knowledge and passion of the environment started some 50 years ago, before most of Australia's leading environmentalists had even left school. This passion was no doubt bought on by his childhood experience on the family farm, his study of botany, his love for nature and the beauty of the bush. Rather than a broad-scale weed control approach, Graeme was an advocate for working with nature, relying largely on natural regeneration and working with the weeds to achieve a natural habitat.

His knowledge in local flora and ecosystems made Graeme the go to person for any local plant identification. This made him a great candidate to become the nursery manager with the MCCG, a position he took up for almost 16 years.

He was also a long standing editor of the catchment group's quarterly newsletter, amazingly up until 99 years of age, often

“Some of my favourite memories of Graeme’s property are walking through the forest and hearing the non-stop calls from birds.”

sharing his knowledge of the environment and local and exotic flora. This outstanding contribution to the community led to Graeme being awarded the Brisbane City Council Senior Citizen Australia Day Award in 2013.

Graeme's passion for the restoration and the overall protection of his property resulted in him signing the second ever Voluntary Conservation Agreement (VCA) in Brisbane in November 1996. Somewhat fittingly it was Graeme's 20th anniversary in the program only a few days before he passed away, also coinciding with the 20th anniversary of the MCCG.

Even before signing the agreement, Graeme's passion resulted in huge amounts of effort put into the assisted regeneration and supplementary planting of large portions of his property, which had been extensively cleared for cropping in the early 19th century. Fortunately a small corridor of Large-leaved Spotted Gum (*Corymbia henryi*) woodland through the centre of the property escaped cultivation. Weeds were kept under control in the remnant area and it is a highlight of the property today.

Graeme's enthusiasm rubbed off on his youngest son, Andrew, and over the last 20 years they turned the property

into a refuge for an assortment of fauna, particularly birds. Surrounded mostly by cattle grazing and mown paddocks, Graeme's property was a beacon for local wildlife.

Some of my favourite memories of Graeme's property are walking through the remnant open eucalypt forest, and no matter what time of day hearing the non-stop calls from birds flitting around in the canopy of the large eucalypts.

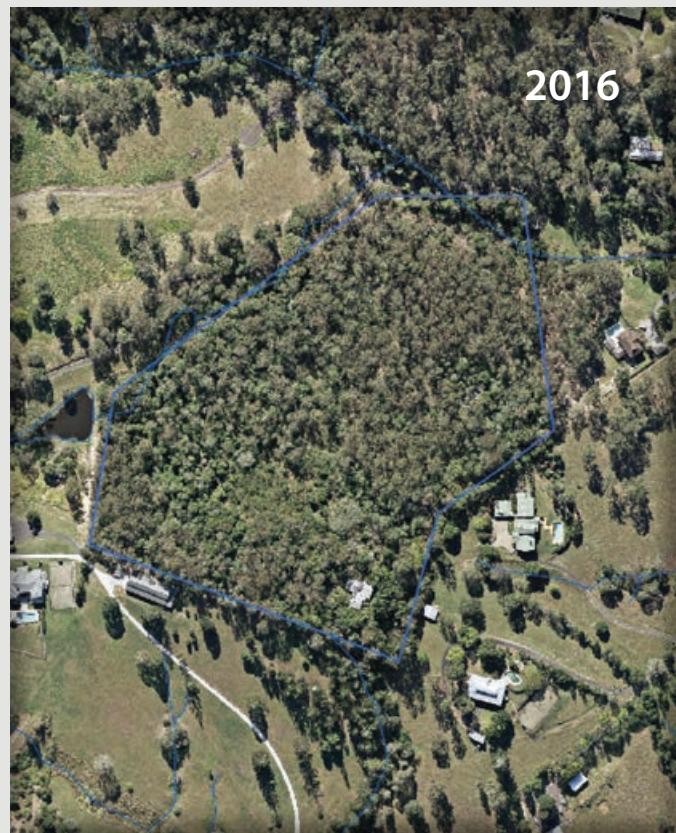
Hillsides were controlled of Lantana and allowed to regenerate and, when necessary, replaced with a variety of eucalypt and hardy dry rainforest species. Natural regeneration was encouraged, and those that escaped the wrath of ever-present deer, flourished throughout these areas, with a huge variety of species establishing.

Down towards Wonga Creek, the soil and moisture was more inclined to the planting of rainforest species. A permanent sink hole was revegetated with figs and other rainforest species some 20 years ago. Today, a 20 metre high Moreton Bay Fig can be seen from Savages Road, showcasing the great work that both Graeme and Andrew have put into the property.





Graeme's property 1946



2016

This 1946 imagery of Graeme's property highlights the extent of clearing before he purchased the property in 1954. Fortunately the patch of *Corymbia henryi* through the centre of the property was kept and no doubt assisted with the natural regeneration that took place over the following decades.

With the better soil, nutrients and moisture came the weeds. Climbing Asparagus in particular started to take over the edges and move into the forest. However, with the bad came a positive discovery. As far back as 2010, Graeme and Andrew noted that the curtains of Climbing Asparagus were not as thick and green as usual. Plants looked to be thinning out, turning a yellow colour at the end of the vines and in some cases die-back was present. After a bit of research and correspondence with someone in the food asparagus industry, this thinning sounded much like a fungus/rust that is the scourge on the industry. These symptoms were accelerated in recent wet years. Although not officially proven, the damage was very noticeable and was definitely having an effect on the vigour of some vines.

Unfortunately Climbing Asparagus, one of the most invasive weeds in Queensland, continued to grow, particularly on the edges of the forest. This is when Graeme and Andrew applied to Brisbane City Council for a Community Conservation Assistance (CCA) project, to control the worst patches and plant local native species in areas that had been dominated by asparagus vine. This was no mean feat as the huge infestation of Climbing Asparagus had degraded the soils, and smothered and killed native shrubs and

small trees. Thanks to CCA funding, the area is now vastly improved, with the wall of Climbing Asparagus gone. With the help of some well-timed rain, natural regeneration is complementing the planted shrubs and trees, which are now starting to poke their heads out of the tree guards.

This is only a scratch on the surface of what Graeme achieved in his lifetime. His outstanding contribution to the environment on his VCA property and through the MCCG can't be understated. His legacy will live on through the hundreds of thousands of trees he passed on as nursery manager of the MCCG. As stated in his nomination for a BCC Australia Day Award in 2013:

"Graeme's contribution would be worth significant recognition and accolades whatever his age. That he continues so outstandingly at the age of 95 years is astonishing, such that he is a role model for people of any age. He is a legend."



Article by Cody Hochen
Land for Wildlife Officer
Brisbane City Council



Top image: Graeme sharing his wealth of knowledge with members of the Moggill Creek Catchment Group.

Middle: One of Graeme's favourite plants were figs. He encouraged their planting throughout the landscape and propagation at the Moggill Creek Catchment nursery. Here, Graeme admires a large *Ficus superba* in Brookfield.

Lower: This stunning Hoop Pine was one of Graeme's first plantings, 65 years ago.



Philosophy with Phil

Seed Collecting

I get asked regularly about collecting seeds to grow native plants. I think I regularly disappoint people with my answers!

There are whole books written about seeds. Murray Ralph has a good one, *Growing Australian Native Plants from Seed*. Nan and Hugh Nicholson, as well as producing their great books on rainforest plants, have some good notes worth reading - look in the back of *Australian Rainforest Plants Volume 5*.

These will give you an insight into the huge variety of seeds from our native plants.

The problem with going 'seed collecting' is that often it turns into a fishing/hunting trip, and if you don't come back with a trophy, you have failed. Nature is an evolving, living thing. I often have to visit a tree or trees 3 or 4 times until the fruit is ripe. If it is not ripe, then picking the fruit deprives the whole ecosystem of the fruits including the birds, marsupials, insects and us!

With so much variety in seeds it is hard to generalise about when to harvest. There are large seeds that germinate easily (e.g. Black Bean, *Castanospermum australe*) through to minute seeds from eucalypts. There

are winged seeds, fleshy seeds, ones with hard seed coats and ones that 'explode' to throw the seed away from the parent (e.g. Handsome Flat-pea, *Platyllobium formosum*).

Some seeds have very long germination times. Some such as Crow's Apple (*Owenia venosa*) - are still sitting in potting mix after 20 years! Please remember that nature does not care about 10 or 20 years. This is nothing to her.

So, I would suggest a couple of things.

First, have a good look at one fruit/seed. Peel the flesh off and find the kernel. You may need to use your secateurs to cut the fruit. If in doubt, bring one or two seeds/ fruits in to show someone that may know if they are ready. Many seeds are inside capsules of some sort. With casuarinas and eucalypts you have to get the fruit/capsule before it opens and disperses its seeds. Again take just a couple and put them in a container and observe.

Flindersias are a real test. Their beautiful seed pods open on the tree and spills their seeds to be distributed by the wind. So you have to get the seed pod when it is ripe

or full, but before it splits open. I have two large *Flindersia australis* on my driveway, and I stopped about ten times to check them before the pods finally opened. If one pod has just opened, chances are the others are about to. So grab one, put it in a container and see what it does.

Next is to not rob the tree! You should never get so excited that you strip the tree of all its fruits. Leave some for nature and the birds. Try taking a small amount from a few trees. You get better diversity this way.

Another thing to consider is that many plants develop fruit over long periods to maximise the chance of germination. So you have to observe. And then 'graze' over a long period to gather some seeds, just like the birds do.

Please don't pick unripe fruit, but do observe - it's fun and you learn so much.



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

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