



Jumping into Science

Jumping spiders are the heavy lifters of the spider world. They have been curing arachnophobia, going viral online and are appearing on mainstream TV. Many new species of jumping spider are being found in Australia, both in remote regions and also in Brisbane backyards.

If you were to lightly beat the foliage of any shrub or small tree on your Land for Wildlife property, you would be almost certain to have a new species of spider in your collecting tray. This is because there are more undescribed and undiscovered spiders in Australia than there are known ones. Currently there are about 500 described species of jumping spiders in Australia, but it is very likely that this will expand to 3000–5000 species when the science is all done.

Jumping spiders make up about 13% of all described spiders, the highest number of species in any spider family.

All jumping spiders are recognisable because of their two large front eyes. Four of the remaining six eyes provide 360-degree vision, which is astonishingly good. They are able to see the moon nearly as well as we can, and have the ability to magnify their vision up to four times— a skill many of us wish we could share.

One of the smallest jumping spiders is *Maratus purcellae* (left) at 1.8mm long. Above is *Opisthoncus* sp. discovered by Robert Whyte in his Brisbane backyard.

Their ability to track and ambush prey is amazing. They can calculate distances while watching their prey, then move to a vantage point out of line of sight and with a prodigious leap, fly through the air to grab their victim and immobilise it.

Jumping spiders have unusual mobility allowing their abdomen to move in elaborate and colourful displays. Some courtship displays in *Maratus* spp. (peacock spiders) feature a complicated ritual of leg waving, toe-tapping and abdomen twerking. Most have brilliantly coloured side flaps they extend like peacock tail feathers to mesmerise their mates.

Jumping spiders are small - the largest being only 15mm long. They can be ant-like, beetle-like and can even mimic flies by walking backwards and having enlarged black spots on their abdomens.

The world of jumping spiders is thoroughly explored in my new book, which is reviewed on page 13.

Article and photos by Robert Whyte
Co-author, *A Field Guide to Spiders of Australia* (2017).

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editorial

Next year, 2018, marks a milestone for the Land for Wildlife South East Queensland (LFWSEQ) program. It turns 20. Leaving the teenage years behind is a transition – a time to stand on one's own two feet and own one's power.

The LFWSEQ program has stood the test of time – it has outlived two state coordinating agencies, three regional coordinating organisations, twelve Council amalgamations / de-amalgamations, three federal government funding programs and survived the swinging pendulum of politics.

As a testament to its ability to move with the times, stay true to its values and remain relevant to the community, the LFWSEQ program continues to grow at the same rate that it did 19 years ago. We must be doing something right!

Next year we will celebrate this anniversary in various ways, so keep an eye out for correspondence from your Land for Wildlife Officer. There are now over 7000 Land for Wildlife members who manage over 4200 properties across SEQ. Thank you to all of you for coming on this journey of nature conservation. It is a journey for which I am grateful to have in my life due to the sheer diversity, interconnectedness and wonder of nature. I look forward to sharing this celebration with you next year.

This edition has a bit of a coastal theme, which may seem out of place for this newsletter. But most of our properties have

some connection, however slight, to the coast. I also took this opportunity to use my editorial license to showcase one of my favourite groups of animals – shorebirds. Their migrations are just so incredible.

Thank you to all contributors to this edition – your stories build knowledge within the Land for Wildlife network and can make the tough, and sometimes lonely, task of bush regeneration feel brighter. Let's just hope it rains soon.

As always, I welcome your feedback and contributions.



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flora vignette



Owenia venosa.
Photo by Anita Morrison.

Owenia venosa fruit on the tree (main image) and on the ground (left inset) partly eaten by some animal. Photos by Melanie Mott.

Question: How do I propagate Rose Almond?

Own Land for Wildlife blocks at both Childers and in the North Burnett area. On a recent drive along a little used country road near Biggenden I noticed many fallen fruit along the roadside in one particular spot. These proved to be from three very large, mature trees with dark glossy foliage and bark somewhat like an ironbark but chunkier. On two trees the fruit was in clusters at the end of the twig, on the third the fruit hung singly – looking much like an apple tree.

Despite the large quantity of fruit that had fallen, few seemed to have been sampled by local wildlife. The ripe fruit seems to have no smell and a dab of the pink flesh against my lip didn't produce any unpleasant effect. Its size is a little larger than a Burdekin Plum – up to 9 cm circumference, matt not shiny and of a pleasant dusty pink both on the tree and on the ground.

A local land owner told us that this was a wild plum and sought after in times gone by as flooring for dance halls. However, the timber is so hard that sawing had to be done in water. (I may be wrong but presumed this to be to stop the saw from overheating and quickly becoming blunt.)

I would be pleased to learn what this fruit is, its uses, food value (if any) and how it can be propagated.

Anita Morrison
Land for Wildlife member
North Burnett

Answer: With Patience!

Thanks Anita for your enquiry. As I learn more about dry vine forests visiting landholders in the Land for Wildlife program, I have come to recognise very quickly that *Owenia venosa* or Rose Almond /Crow's Apple/Sour Plum is a common tree species in this vegetation type. The tree grows to about 20 metres and is found in dry vine forests from the NSW border to Rockhampton, including around the Biggenden area. In Ipswich, these trees are mostly found around Rosewood, Tallegalla, Marburg and Pine Mountain.

The first thing you notice about this tree, especially in winter, is its glorious, round, pinkish-red fruit, which can grow to 4 cm in size. The fruit is technically referred to as a fleshy aril (specialised seed covering). This aril completely surrounds the seed inside.

This is a truly beautiful tree and it's no wonder landholders are asking how to grow them, but, to be frank it's tough and near impossible! The seeds are notoriously difficult to propagate and no one seems to have found a reliable propagation technique. Rose Almond seeds can remain viable in the soil but not germinate until after ten, or sometimes 20 years.

When thinking about growing Rose Almond, think about how this plant may germinate in the wild. Seeds require the right combination of environmental conditions like moisture, temperature, light, nutrients, fungi, disturbance and sometimes ingestion by wildlife. Seeds that do not

germinate but remain viable are considered dormant. The seeds of *Owenia venosa* are considered to have mechanical dormancy due to the presence of a hard, wood fruit wall, usually an endocarp which is common in the Meliaceae family.

To find out who is having success at germination, I spoke to a number of people from Native Plants Queensland and staff from regional native plant nurseries. Here are some tips that may help you propagate Rose Almond.

- ✓ When choosing seeds under an *Owenia venosa* tree, choose the seeds that are almost rotting.

- ✓ Plant the seeds in a compost heap under the shade of a tree and water the area every so often. Wait (yes, this may take years).

- ✓ To break the seed dormancy, consider sandpapering the seed, heating the seed up, impacting, scarifying or nicking the seed. Then scatter seeds (not too densely) on a bed of free-draining potting mix in a container (e.g. flower pot) that is free-draining. Do not over-water.

Other essential ingredients are patience, persistence and experimentation. Don't give up and good luck when germinating *Owenia venosa*.

Article by Melanie Mott
Land for Wildlife Officer
Ipswich City Council

Landholder Registrations, Land for Wildlife SEQ - 1/9/2017

Registered Properties	Working Towards Registration	Total Area Retained	Total Area under Restoration
3338	904	60,012 ha	6,894 ha

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practicalities

Make Your Own Wildlife Rescue Basket



Imagine you're driving home after an evening out and a wallaby jumps in front of your car. You can't stop in time and hit it. The female wallaby has died but you notice her pouch is quite large and when you have a look inside you see a joey. What do you do next and have you got what you need in your car?

At a recent Sunshine Coast Land for Wildlife workshop, participants learnt the basics of wildlife rescue and put together their own wildlife rescue basket to keep in their cars. The workshop was run by the capable volunteers Roslyn Leslie, Donna Anthony and Sylvia Whiting from Wildlife Volunteers Association Inc (WILVOS). As a result of this workshop, over 30 Land for Wildlife members now have the knowledge, skills and equipment they need to assist injured wildlife that they may come across.

Birds

The most common calls that WILVOS receives are related to baby birds that have fallen out of nests due to high winds or other accidents. If you come across this scenario, the ideal response is to place a hanging basket (or similar) high up with the birds in it, near the place you found them, and usually the parent(s) will come back to look after them. You can make the hanging basket look a little more lifelike by putting grass or bracken in it. If the birds aren't found by their parents in an hour or so then the chicks need to go into care.

Of course there are some baby birds that

may look abandoned, e.g. Masked Lapwing (plover) or Brush Turkey chicks, but aren't, and these should be left alone.

Birds that have hit windows and are stunned should be supported. Wrap a towel in a horseshoe shape and place the bird in the middle of the horseshoe. Rest their head on the towel and keep their airway clear and their back supported.

Koalas

Sick Koalas often have red eyes, due to conjunctivitis, and a stained bottom. Don't climb trees to catch injured or sick Koalas, ring a specialised Koala rescue group for professional assistance.

Kangaroos & Wallabies

All female marsupials have a pouch and often have young attached at the nipple. Pulling a small joey off a nipple can cause permanent damage to the joey's jaw or brain. Instead (and this is not for the faint-hearted) it is recommended to use scissors to cut the nipple off the dead mother and then pin the nipple to the inside of the sleeping bag (very rarely the joey could swallow the nipple and choke). If the wallaby or kangaroo has a very long nipple there might be a bigger joey nearby who has become separated from its mother so listen to see if you can hear it (they make soft contact sounds).

Snakes

Never attempt to rescue an injured snake – always contact a professional snake catcher or wildlife rescue group.

Equipment

Notebook and pen are required to take notes of where you picked the animal up and your observations. This is especially important for territorial animals. Towels are handy for catching animals, e.g. draping a towel over an injured bird before you pick it up. Towels are also used for covering hot water bottles or as padding in the basket. Pillow slips are best turned inside out. Place the animal inside and tie a knot in the end of the pillowcase to keep it secure.

All animals suffer from shock so put warm (not boiling) water in a hot water bottle, wrap it in a towel and put the animal on top of this. An exception to this rule is echidnas as they don't cope with heat.

It's best to place wildlife in a securely fastened basket as you don't want an unconscious animal to wake up while you are driving, ending in both of you panicking at the same time! Echidnas must be placed in a sturdy container.

Safety

Your safety is paramount. Never do something you feel uncomfortable with and certainly don't tackle large animals that are in obvious distress. Adult kangaroos and wallabies undergo myopathy (shock) when in care and die from stress. Because of this, the animal should be put down humanely. In these situations ring Policelink on 131 444.

Most native wildlife have sharp claws, teeth or beaks so it is recommended never to

Make your own wildlife rescue basket using these inexpensive, household items:

- Basket with a foldable lid that can be fastened shut
- Hot water bottle or similar (e.g. wine flask)
- Two towels
- Two pillow slips
- A couple of safety pins
- Scissors
- Disposable gloves
- Small length of pool noodle for bird perch / claw grip
- Pen and notebook
- Safety vest
- Contact details of wildlife rescue groups



“ It's best to treat a native animal the same way you would like to be treated. ”

touch them bare-handed. The easiest technique is to drop a towel over them and then pick them up. It's best to wear disposable gloves when handling wildlife.

Road safety around injured wildlife is especially important and each basket should have a fluoro safety vest included. Make sure that it is always safe to pull over and that you won't be injured or cause an accident trying to rescue injured wildlife. If you do check a dead animal on the roadside, once finished, pull the body off the road so that other scavenging wildlife are not hit by a car as well. Unless you are trained in handling bats and are vaccinated against rabies (due to risk of Australian Bat Lyssavirus) do not approach, pick up or touch any bat (microbats and flying foxes). Contact a wildlife care organisation or specialist bat carer.

Ethics

It's best to treat a native animals the same way you would like to be treated. Ring a wildlife care organisation (see contact details right) for help and if necessary get the animal to the vet ASAP. There are laws about how long you can hold wildlife for without passing the animal on to a registered carer. These times vary for different species but a good ball park figure is to make sure the animal has gone into care within 24 hours.

Unless you are trained, do not feed animals or give them water. Often the animal will aspirate water into their lungs and most animals have very specific dietary requirements and feeding inappropriate food will do more harm than good.

If you would like to do more for injured and orphaned wildlife, the organisations listed to the right are always looking for volunteers and offer excellent training to learn how to become a wildlife rehabilitator.



Article by Stephanie Reif
Land for Wildlife Officer
Sunshine Coast Council

Wildlife rescue and rehabilitation groups in SEQ

All Regions	
RSPCA (all hours)	1300 ANIMAL (1300 264 625)
Wildcare Australia	5527 2444
North (including Moreton Bay and Sunshine Coast)	
Australia Zoo Wildlife Hospital	1300 369 652
Bat Rescue Inc	0498 313 068
Bribie and District Wildlife Rescue Inc	0400 836 592
Koala Rescue Queensland	0423 618 740
Moreton Bay Koala Rescue	0401 080 333
Native R&R (Rescue and Rehabilitation)	0432 320 348
Pine Rivers Koala Care (all hours)	0401 350 799
Twinnies Pelican & Seabird Rescue	5439 9995
Wildlife Rescue Sunshine Coast	0448 148 013
WILVO's	5441 6200
South (including Logan)	
Daisy Hill Koala Ambulance	3299 1032 or 0412 429 898
Logan City RSPCA Animal Ambulance	1300 ANIMAL
Central/Greater Brisbane (including Redlands)	
BARN (Brisbane Area Rescue Network)	0405 056 066
Bat Conservation and Rescue	0488 228 134
Brisbane City Council Wildlife Ambulance	3403 8888
JG Native Animal Care	0411 316 833
Pelican and Seabird Rescue	0404 118 301
Redland City Council Wildlife Ambulance (all hours)	3833 4031
West (including Ipswich and Lockyer Valley)	
FAUNA	0448 856 055
Ipswich Koala Protection Society Wildlife Ambulances (all hours)	0419 760 127 or 0412 817 595
Australian Rescue and Rehabilitation of Wildlife Association (ARROW)	0430 904 415

property profile

Folk Festival Creates a Wildlife Haven



At first glance the two concepts – staging a major cultural festival and managing a property for wildlife – seem incompatible. Yet organisers of the Woodford Folk Festival have made great progress with both. Their annual event is now internationally renowned and the venue is becoming a haven for wildlife.

It began in 1994 when, after the Maleny Festival grew so that it was bursting at the seams, the non-profit Queensland Folk Federation Inc (now Woodfordia Inc) purchased a 500 acre block of land near Woodford. The property, now named Woodfordia, became registered as a Land for Wildlife property in 2007.

It was a dairy cattle property nestled up against what is now the Bellthorpe National Park in the southern Conondale Range. The Jinibara are the registered Native Title holders in this area.

Organisers realised that here was an opportunity to do more than stage a music festival. Along with ownership of a block this size, there was a responsibility to leave a legacy for future generations by rehabilitating the site, and with this came the prospect of developing a cultural and environmental showcase.

Festival infrastructure was an urgent priority but so was revegetation, needed to increase comfort levels for festival patrons,

provide campers with shade, minimise dust, create wildlife corridors, improve soil quality and prevent erosion.

It all looked a bit daunting at first. Weeds were rampant, paddocks had nothing but introduced grasses and different soil types – rocky, shale or heavy clay – indicated a few difficulties ahead; acidic soil as well, the result of an old pine plantation.

On the plus side, there were vegetated gullies, some bushland with areas of dry eucalyptus and rainforest, and a reasonable riparian zone along the watercourse which flows to the Stanley River.

The biggest plus though was an enthusiasm and determination to begin the process of ecosystem restoration. So was born the annual Tree Planting Weekend, first held in 1997. Now known as The Planting, it began with the primary aim of getting as many trees into the ground as possible. Festival patrons of all ages came to help, putting in thousands of trees (current total: 106,000) and after 20 years the transformation of the site from paddock to parkland is very evident.

A huge range of species was planted, mostly endemic rainforest trees being favoured. Organisers set up teams for particular areas, each team having a leader who demonstrated the basics – dig hole, add a little nutrient, place tree, heap

up soil, position tree guard, water well, mulch well. The trees were then left to themselves, with some spectacular results and some disappointments. Survival rate is about 60%.

Crucial to a good outcome was to choose species appropriate to the soil, terrain, and intended usage, such as meeting festival needs or creating wildlife habitat. There was much success with Hoop, Bunya and Kauri Pines, whereas Wollemi Pines perished. Site preparation, mulching for example, well before planting, showed better results, as did replacing straw bales with hardwood mulch. Pink tree guards were used, this colour best concentrating photosynthetic energy to help plants grow.

Most crucial of all was support from patrons and volunteers who came along to The Plantings to be involved, often working in the rain, and often coming back year after year. Highly successful was a Bunya Baby project. Bunya Pines in tubes were given to patrons to take home, nurture for a few years, and then return to be planted out on Araucaria Hill, which overlooks the Festival precinct and already had Hoop Pines in abundance.

The Planting Festival inspired a group of volunteers to form Treehuggers, who meet each month to carry on with yet more planting and maintenance.

This in turn led to the creation of various environmental projects - Forest Woodfordia, Bush Foods, Orchids, Native Grasses and Butterfly Host plants. Then there is a project growing plants to use on Festival stages, others concentrating on Cycads and Tree Ferns, and Weedfordia, which has the challenge of dealing with the ubiquitous weeds. All this allows attendees to work at their own particular passion when Treehuggers meet or when The Planting is staged.

Butterflies are a special attraction. The Butterfly project has planted food species for rare butterflies - Richmond Birdwing, Laced Fritillary and Regent Skipper. Conservation of all invertebrates, not just butterflies, is the overall aim.

The Planting itself has shifted focus from mass tree planting to an event with a stronger educational component, workshops and discrete environmental projects. Even so, this year patrons planted 785 trees, 159 butterfly host plants, and, following a successful trial, 300 native grasses.

These days there's more science behind the revegetation. Soil health is critically important, and fungi have a starring role. Woodfordia has a trained fungal researcher

in its environmental team, and the aim is to utilise fungi to increase plant growth. By inoculating mulch and other organic material with fungi, more water is retained, plants flourish, weeds are suppressed and erosion is lessened. Fungi habitat is also useful for earth worms, wood lice, termites and larger animals and so on up the food chain. It's a simple and low-cost technique which holds much promise.

Another innovative measure at Woodfordia is the use of biochar, which enhances soil and sequesters carbon. Bamboo has been planted on site for use in construction but it requires preservation in a bamboo smoker, the biochar being a by-product of this process. Other soil nutrients come from a giant compost heap formed from organic waste generated by the festival. An inventive waste water treatment plant has been installed.

Wildlife on the property appears to be thriving. Several dams and ponds form habitat for amphibians. Many bird species have been recorded, 217 at least, most either resident or regular visitors. The vulnerable Glossy Black Cockatoo may be seen. The number of species has remained fairly constant, but there has been an expected decline in overall numbers of grassland habitat species, with

a corresponding increase in woodland habitat species.

Red-necked or Bennett's Wallabies are common. And many reptiles - goannas, water dragons, bearded dragons, brown snakes, common and brown tree snakes, carpet pythons and Red-bellied Black Snakes. Birds, Sugar Gliders and three species of possum take advantage of more than 400 installed nest boxes.

Feral animals with their destructive habits intrude. Red Deer, Rusa Deer and wild pigs, which enter from the adjoining National Park, foxes and cats all pay unwelcome visits. Management strategies are in place but, as with weeds, it's a perennial problem.

Much has been achieved at Woodfordia, but much more remains to be done. If you'd like to become involved, come along to The Planting in 2018, or join Treehuggers on the last weekend of every month. You'll need to register - email treehuggers@woodfordia.com or phone Woodfordia's office - 5496 1066.

**Article by John Burrows
Land for Wildlife member
Cooroy, Noosa
and Woodfordia Inc. member**



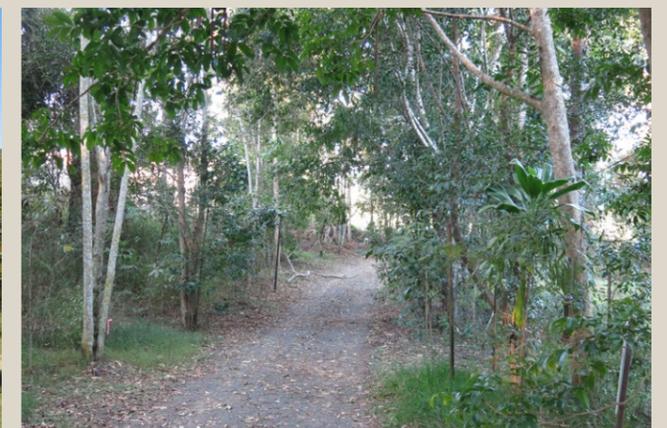
The Planting 2006 at Outer Barcoo.



Eleven years later - the Outer Barcoo area.



Carparking area in 2017.



Walkway to Festival entrance in 2017.

our little corner

Moreton Bay: How does my property interact with the Bay?

Moreton Bay is a stunningly rich natural and cultural asset on the doorstep of SEQ. How lucky are we to be able to catch the ferry over to Minjerribah (North Stradbroke Island) to see whales, Koalas, Quandamooka middens and feel the city hum subside all in one easy day's outing. It is understandable that an application to list Moreton Bay as a World Heritage Area was recently submitted.

Using internationally recognised ecosystem services analysis, Healthy Land & Water has valued Moreton Bay at \$7.6b annually. This is the price of services provided by Moreton Bay such as recreation, tidal surge protection, coastal erosion control, seafood habitat and nutrient filtration. Coastal saltmarshes, mangroves, coral reefs and seagrass beds provide most of these services. This staggering figure reflects how much it would cost us to engineer (assuming that we could) these services. Thank you Moreton Bay!

It is interesting to ponder how our own properties interact with the Bay. Basically every property east of the Great Divide that is on or south of the Pumicestone Passage and north of the Nerang River / Gold Coast Seaway (The Spit) has some influence, however slight, on Moreton Bay. There are numerous ways in which all ecosystems are interconnected, but the most obvious connection between our properties and Moreton Bay is via waterways.

It is too simplistic to estimate how long it takes a raindrop falling in the upper Lockyer catchment to reach Moreton Bay as there are so many considerations. In a major flood event this may be only several days. In dry periods, rain will infiltrate or evaporate well before reaching the Brisbane River.

Some clever research has been done regarding sediment movement in SEQ, and the effect of sediment on Moreton Bay. Scientists have been able to tell us that about 11,000 tonnes/year of sediment enter our waterways from two key sediment-yielding sub-catchments (one in the Bremer and one in the Logan). This is mostly from gully and streambank erosion. Understandably, considerable investment has been directed towards these sub-catchments to reduce this soil loss.

I was pleasantly surprised to read research that shows that no major seagrass beds in Moreton Bay were lost as a result of the 2011 floods. However, flood-derived sediments reduce the resilience of seagrass beds in the long-term.

With summer on our doorsteps and hopefully some summer rains, it is good to think about how all of our properties in SEQ are connected, in some small way, to the ocean. Ensuring that the gullies and waterways on our properties are well vegetated is the goal. However, we know that past land management has left many of our waterways bare and it can be a difficult and expensive process to repair.

If you need advice or assistance on revegetation or erosion control, feel free to chat with your Land for Wildlife Officer or your Area Manager through Healthy Land and Water.

This photo of a Water Mouse was captured by a fauna monitoring camera in McCoy's Creek Wetlands as part of a City of Gold Coast project to assess potential fox predation on Water Mice.



This daytime photo shows a mangrove tree hollow where Water Mice may shelter.

The Water Mouse (*Xeromys myoides*) is an iconic native animal that lives in mangroves, saltmarsh and some freshwater wetlands in SEQ. Like many small, native mammals, it is nocturnal and comes out at night to forage on marine invertebrates in the intertidal zone.

It nests just above the high water mark either in large mud nests that it constructs, or within hollows of mangrove trees or within mud banks. The same nest may be used by several generations.

The Water Mouse is listed as Vulnerable under Commonwealth and State legislation and several Councils in SEQ are involved with projects to conserve and manage Water Mouse habitat.



ecosystem profile

Unmuddying the values of Coastal Saltmarsh

In keeping with this edition's coastal theme, this article explores an ecosystem found along the coast of South East Queensland (SEQ). With its distinctive low-growing plants, salty muddy ground, and its proximity to mangroves, saltmarsh is generally easy to recognise. Sadly, it has also been an undervalued ecosystem, and as a result has borne the brunt of mismanagement and outright attempts to drain and fill it in over the years.

Thankfully, coastal saltmarsh is a reasonably resilient ecosystem due to its saline nature. Not too many weeds can survive the salt, and the boggy nature of the ground combined with hungry mosquitoes and sandflies can deter most visitors and machinery. However, when it dries out, saltmarsh can be a favoured place for illegal dumping and hooning.

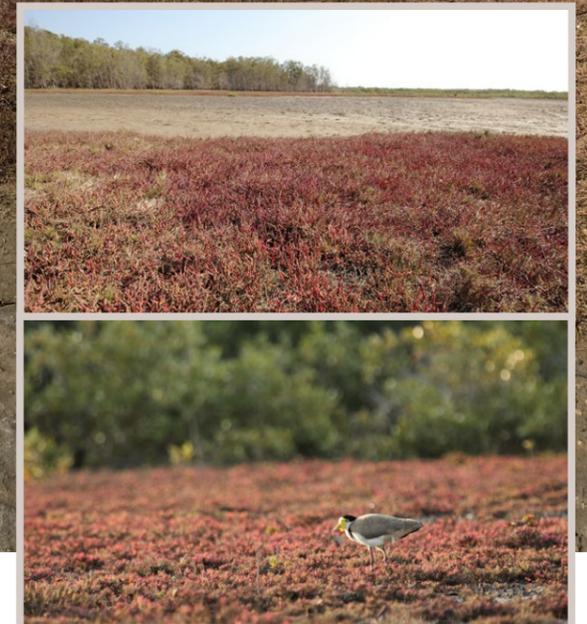
In SEQ, good tracts of coastal saltmarsh can be found from the Noosa River in the north through to the southern Gold Coast areas. Some larger tracts of saltmarsh include Eprapah Creek, Hays Inlet, Pumicestone Passage, Caboolture River mouth, Logan River mouth, and the southern parts of North Stradbroke Island.

I recently had the muddy pleasure of counting shorebirds at the Geoff Skinner Reserve - Brisbane's largest tract of saltmarsh. Despite being weighed down

by my snowshoe-sized boots caked with mud, it was a peaceful and expansive place to explore. Afterwards, I wanted to champion this ecosystem and celebrate the fact that it is one of only a handful of ecosystems in SEQ recognised as nationally significant. It is listed as Vulnerable under Commonwealth environment legislation.

Coastal saltmarsh often adjoins mangroves; but unlike mangroves that are inundated daily by tides, saltmarshes are inundated less regularly by king tides and storm surges. Saltmarsh soils consist of waterlogged silts and clays with high organic content. Just below the surface are iron sulphides, which when disturbed, can release sulphuric acid - a distinctive smell that accompanies you when walking through saltmarsh muds. The plants and sediments within saltmarsh store large quantities of carbon making saltmarsh ecosystems important players in the carbon sequestration race.

In SEQ, coastal saltmarsh is defined as Regional Ecosystem 12.1.2. There are less than twenty Land for Wildlife properties in SEQ containing this ecosystem - the lucky few who can say that they have a nationally significant coastal ecosystem in their backyard. They occur from Beerburum, to Deception Bay, Toorbul, Hays Inlet, out to the islands of Macleay and Karagarra and



south to the Jacob's Well Environmental Education Centre.

Marine Couch (*Sporobolus virginicus*), Beaded Samphire (*Sarcocornia quinqueflora*) and Seablite (*Suaeda australis*) are common native groundcovers found in coastal saltmarsh.

The most obvious wildlife inhabitants of coastal saltmarsh are crabs, snails and periwinkles, plus prawns and fish when inundated. Insects are also abundant, including those annoying midges. Many birds and bats feed, roost or take refuge in coastal saltmarshes, including migratory shorebirds discussed on pages 10-11.

These days it is well recognised that coastal ecosystems such as mangroves and saltmarshes are essential for fisheries, coastal erosion protection and nutrient filtering. They are also beautiful, almost other worldly places where you can stretch your legs and imagination. If you would like to get involved in protecting and monitoring tidal ecosystems, Mangrove Watch, may be for you. For details, visit www.mangrovewatch.com.au

Articles by Deborah Metters
Land for Wildlife Regional Coordinator
Healthy Land and Water



fauna profile

Migratory Shorebirds: Extraordinary journeys, tenuous futures

Rarely does this newsletter contain articles about the marine habitats of SEQ, understandably given that most Land for Wildlife properties don't contain them. They are however key attractions for people living in this region. People flock to sandy beaches, go fishing or crabbing in the mangroves and snorkel around coral and rocky reefs of the bay islands.

Of course, the health of Moreton Bay is in-part dependent on the health of our creeks, plus the management of urban and industrial areas. Reducing soil erosion, marine pollution and litter is everyone's responsibility. Even though the ocean may seem like a long way away if you are in the Lockyer, in effect, most Land for Wildlife properties in SEQ, plays some role in the health of the marine habitats of our Bay.

This article sheds light on one group of remarkable animals who, during summer, call Moreton Bay home.

Moreton Bay Marine Park (MBMP) extends from Caloundra in the north down to the southern tip of South Stradbroke Island and covers 3400km². The diverse ecosystems of the park provide habitat for a wide variety of wildlife including significant populations of resident and migratory shorebirds. In 1993 the majority of MBMP was listed as a Ramsar site. The Ramsar Convention is an international treaty for the conservation and sustainable use of wetlands and is named after the city of Ramsar in Iran, where the Convention was originally signed in 1971.

The migratory shorebirds seen in MBMP use the East-Asian Australasian Flyway (EAAF), which stretches from Alaska and Siberia through East-Asia and South-East Asia to Australia and New Zealand. These birds breed in the northern hemisphere

The Far Eastern Curlew is the largest migratory shorebird in Australia with a body about 45cm long and a huge 19cm long bill. They eat small crabs and molluscs. As with all shorebirds, they feed at low tide both during the day and at night. Photo by Todd Burrows

“ A female [Bar-tailed Godwit] was satellite tracked as it travelled 11,690km in a single flight. ”

and avoid the boreal winter by making incredible migrations to Australasia.

The Bar-tailed Godwit for example makes the longest non-stop journey of any bird species. A female was satellite tracked as it travelled 11,690 km in a single flight over nine days from Alaska to New Zealand. Extraordinarily, the bird totalled 29,500km in a full migration cycle over 174 days. In its lifetime these migrations will take it approximately the distance from the Earth to the Moon!



Shorebirds arrive in Moreton Bay tired and depleted after their huge migratory flight. They need to refuel (eat) quickly to put back on enough weight to be able to fly back to the Arctic six months later. Disturbing shorebirds while they eat (low tide) or rest (high tide) can impact their ability to gain weight quickly. Photo by Todd Burrows.

These journeys are even more remarkable in that the birds are unable to land or feed on the water, increasing the risk of flying across the open ocean.

Approximately 50,000 migratory shorebirds comprising of 30 species utilise Moreton Bay during their non-breeding season (our summer) with some using the area as a staging location before moving further south.

Birds begin to arrive in late August to September departing from late February



Shorebirds can congregate together in their thousands at high tide to sleep and rest. There are only a handful of suitable high tide roost sites for shorebirds within the whole of Moreton Bay so please never disturb the birds when they are roosting. Photos by Deborah Metters.



through to May. Some immature birds remain in the park during our winter. Most species feed in the zone between high and low tide, foraging over exposed sand bars, mud flats and into shallow water for crustaceans, molluscs, marine worms, insects and other invertebrates. As the high tide approaches they require roosting sites where they can rest and preen. A few species like the Ruddy Turnstone and Wandering Tattler prefer to feed along rocky shorelines.

The migratory shorebirds of Moreton Bay range in size from the large Far Eastern Curlew to the tiny Red-necked Stint and have a variety of bill lengths and shapes. This variation in bills enables species to feed on different prey items at varying depths in the substrate which allows wetlands to support a higher diversity of species. This is evident even within individual species through sexual dimorphism; the female Far Eastern Curlew for example has a significantly longer bill than the male which allows them to seize prey from greater depths.

The survival of many migratory shorebirds along the EAAF is under very serious threat. Long term monitoring in Australia has revealed disturbing declines (up to 90%) in many species. In recognition of this the Australian Government has recently listed the Far Eastern Curlew, Curlew Sandpiper and Great Knot as Critically Endangered under Commonwealth environmental legislation. The next level up on the list is extinct!

In addition the Red Knot and Lesser Sand Plover have been listed as Endangered and the Greater Sand Plover and Bar-tailed Godwit listed as Vulnerable.

The Australian Government has fostered individual agreements with Japan, China

and Republic of Korea in an attempt to protect these birds along the EAAF. The highly productive Yellow Sea between China and the Korean Peninsula is the critical link between the northern breeding grounds and southern wintering sites for migratory shorebirds of the EAAF. It provides the opportunity for these birds to rest and rebuild body condition before continuing migration.

Despite these individual and international agreements vast areas of intertidal habitats in the Yellow Sea have been reclaimed in recent years destroying critical feeding and roosting areas. The scale of this destruction is hard to comprehend and is the most significant threat to these species. Even in MBMP there are proposed developments which, if approved, would destroy important feeding habitat.

During their time in Moreton Bay birds are trying to increase their body mass to fuel their flights back to the breeding grounds. Shorebirds can lose over 50% of their body mass during their huge migration, so they need a quick and reliable food source to eat as soon as they arrive.

Various disturbances can hamper these efforts and unfortunately for the birds the summer months are also the peak time for recreational users in MBMP. Human-related disturbance is the main problem with people, cars and pet dogs (even horses in some locations) sharing the beaches and mudflats where the birds roost and feed.

Noisy jet-skies and jet-boats can travel on shallow water bringing them close to birds and are especially a problem on high tides when the birds are restricted to a limited number of roosting sites; low flying powered paragliders have a similar impact. Fireworks used adjacent to shorebird habitat also result in significant stress.

What can we do to help migratory shorebirds?

- ✓ Be considerate of feeding and especially roosting shorebirds, whether you are walking, driving or boating. Domestic animals should be kept under control and well clear of shorebirds.
- ✓ Reduce marine pollution. The health of shorebird prey is in-part dependent on the amount and quality of sediment flowing into Moreton Bay and much of the rubbish and pollutants that are discarded on land eventually end up in the ocean.
- ✓ Learn more about them and get inspired by seeing them in the wild. There are a number of good locations to view shorebirds without causing disturbance including the Port of Brisbane, Toorbul, Coombabah Lake and Curlew Island (Gold Coast Broadwater). You will need binoculars or a spotting scope.
- ✓ Get involved with or support one of the local conservation groups such as the Queensland Wader Study Group (QWSG), Birdlife Southern Queensland and Birds Queensland. QWSG conduct shorebird identification days in SEQ along with regular surveys, counts and banding for monitoring.

Due to the reliance of shorebirds on critical locations along the EAAF it requires the efforts of many countries to protect their future. Hopefully, Australia and Moreton Bay can be a safehaven for these extraordinary birds well into the future.



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

fauna profile

Spiders: Architects of the natural world

Catching a spider web across the face while walking through the bush is an electrifying experience which I'm sure many of us have shared. Thankfully, I spotted this vivid beauty (header image) before I was wearing her. This encounter occurred while wandering around a Melaleuca swamp on a Land for Wildlife property in Ransome in August 2016.

In a small thin web hung this female, her body 5mm long, with her shiny spiny abdomen about 20mm wide and looking very much like a brightly coloured spiny surfboard lashed across her back. At the edge of the web was her much smaller male counterpart, whom I didn't get a good look at before the hanging branch that the web was attached to fell, and the female abseiled across to a nearby tree and hid under the leaves.

Having never seen any spider like this I was very excited to identify the species, and my first port of call for a visual confirmation was the website www.arachne.org.au. This website is full of amazing high resolution photos, being the online annex for the new reference *A Field Guide to the Spiders of Australia* (reviewed on facing page).

A search of this website led me to the Orb-weavers of the family Gasteracanthinae, but there was no picture of my spider. A quick email to the spiderific Robert Whyte, revealed that no, I had not discovered a new species, but a Four-spined Jewel Spider (*Gasteracantha quadrispinosa*), and it happened to be a species that Robert had never seen or photographed himself.

I was chuffed at my luck in finding a critter that such a keen arachnologist had not yet seen, and I marvelled at the sheer diversity of spider fauna in our region. This species is well camouflaged against foliage or bark and eats smaller arthropods caught in webs that hang about 2m from the ground (around head height).

My spider journey continued later that month in Brookfield when we found a delicate silken abode built with

mesmerising symmetry in a hole about 1cm wide, in a living Brush Caperberry (*Capparis arborea*). At the time I was only aware of tree funnel-webs building webs in trees like this, but Robert Whyte suspected this web was from an Ariadna species. Feeling inspired to find out the exact species, I submitted a photo through the 'Ask an Expert' page on the Queensland Museum Discovery Centre website at www.qm.qld.gov.au. This fantastic service puts your request to the experts, and I received a reply within a couple of days.

QM confirmed this web was characteristic of tube-dwelling spiders in Genus Ariadna, Family Segestriidae but without a visual of the actual spider they could not determine the species.

Ariadna species build retreats in rotted knotholes in trees and sometimes in between rocks and logs. This tree hole

must have been made from a borer or another animal as these spiders lack the ability to dig. Their web has a dense silken entrance, with trip-lines radiating outwards presumably that warn the spider of nearby insects/meals. Interestingly the spiders of this family only have six eyes and not the usual eight, and their first three pairs of legs are arranged in a forward position, to facilitate their tube-dwelling life.

Spiders of the Ariadna have not been well studied, which is not a surprise given their cryptic nature, and they are rarely encountered by people so it is unknown whether they are venomous. They certainly provide fascinating architecture.



Article and photos by Fflur Collier
Land for Wildlife Officer
Brisbane City Council



Spiders in the Genus Ariadna build webs with dense silken entrances with trip-lines radiating outwards, which alert the web owner of nearby insects/meals. I found this tube-dwelling spider's web in a *Capparis arborea* tree.

book reviews

A Field Guide to Spiders of Australia

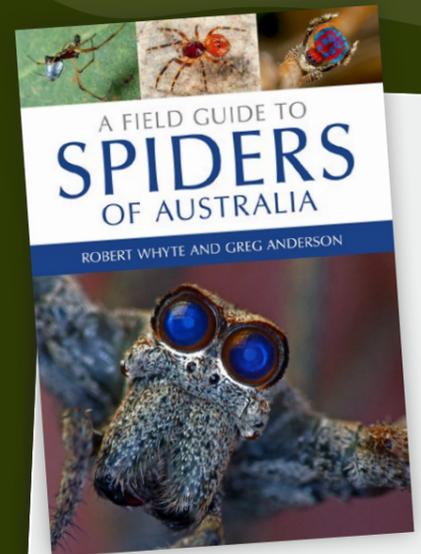
By Robert Whyte and Greg Anderson

My relationship with spiders has been one of fascination and fear. As a child, I collected spiders, fed spiders and lured spiders out of their hides. But it was always like playing with fire – trepidation was close by. I have watched my friend and colleague, Robert Whyte, take his interest in spiders from a position of determining the health of a bushland area, to one of deep understanding and appreciation, combined with an insatiable drive to inspire others. Culminating in this stunning new book, Robert's passion for spiders has helped me, and many others, expand our appreciation and reduce our fear of these animals.

The photographs in this book are striking and reflect the fortunate era we live in whereby travel, communication and high-end photography are easily accessible. All 1300 photographs are of living animals, many staring down the lens, captivating the reader.

This book is the most comprehensive account of Australian spiders. Its friendly layout with colour coding for major spider families helps organise this book into manageable sections. Apart from introductory pages covering topics such as spinnerets, webs and burrows, the text is limited to concise photograph captions. As such, it is designed to be flicked through to assist identification.

This book sets a new standard for invertebrate field guides – lots of live animal photos enabling readers to have a crack at identification themselves. It paves the way for anyone to get involved with invertebrate taxonomy and demonstrates that we all can meaningfully contribute to scientific knowledge. Given that only one-quarter of all Australian spiders have been identified, and that 90% of Australian spiders are found nowhere else in the world, I believe that this book will help create more amateur arachnologists.



Published by CSIRO Publishing, 2017
Paperback, colour photos, 464 pages

Price: \$49.95

Available from CSIRO Publishing or select online and in-person book stores. Also available as an eBook.

Review by Deborah Metters

The Australian Bird Guide

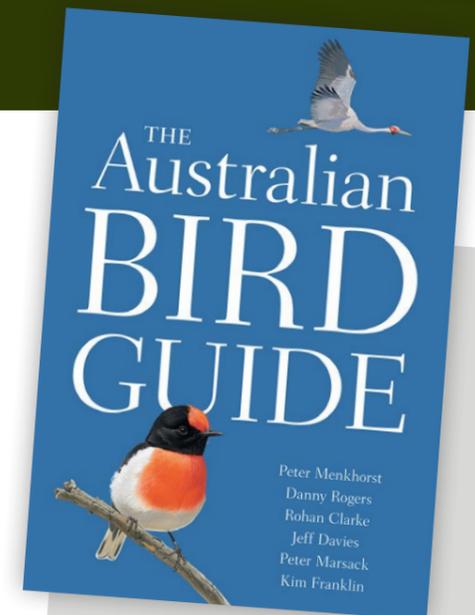
By Peter Menkhorst, Danny Rogers, Rohan Clarke, Jeff Davies, Peter Marsack and Kim Franklin

I first heard about the development of this book in 2010 (two years after it started) when birding friends of mine spent time with renowned HANZAB (Handbook of Australian, New Zealand and Antarctic Birds) illustrator Jeff Davies (the main artist for this book), in his Melbourne studio. With his painstaking attention to detail, I knew this was going to be the bird guide to have. I've never anticipated the publication of a book so much. Seven years later, I can confirm the long wait has been well worth it!

This collaborative effort, by the experienced authors and illustrators, has drawn on the knowledge and photography of the Australian birding community with a catalogue of half a million bird images

collected to inform the artwork. As a result, this book expresses the explosion of information on Australian birds that has come with the digital photography revolution of the last 15 years. It provides an unprecedented view into the variation within species and diagnostic features to aid with identification (especially for some of the most difficult groups such as seabirds and migratory shorebirds).

With this book in hand, the reader will more easily be able to identify the 900 known Australian species using the 4700 detailed illustrations, text descriptions and distribution maps. This monumental work will be of interest to anyone wanting to learn more about Australian birds.



Published by CSIRO Publishing, 2017
Softcover, full colour illustrations, 576 pages

Price: \$49.95

Available from CSIRO Publishing or select online and in-person book stores.

Review by Todd Burrows



landscape conservation

The Little Liverpool Initiative



When you mention the Little Liverpool Range (The Range) to someone in conversation you would probably be met with a blank stare. But nestled about 40 minutes from the Ipswich CBD and bordering the Ipswich, Lockyer Valley and Scenic Rim Council areas is a wildlife corridor that is home to a number of significant species including Glossy Black Cockatoo, Powerful Owl, Brush-tailed Rock-wallaby, Little Pied Bat and Slender Milk Vine to name a few.

The Range provides a link between Main Range National Park and the Great Eastern Ranges and contains a significant amount of remnant vegetation. As a result, The Range has been identified as an important wildlife corridor.

There is good potential for long-term conservation of The Range as there is minimal pressure from urban encroachment, as well as an opportunity to expand the existing remnant vegetation. To achieve this, the Little Liverpool

Range Initiative was formed, providing a collaborative approach to conserving and enhancing The Range. This Initiative involves three Local Governments, Healthy Land & Water, University of Queensland, Qld Trust for Nature, the Gainsdale Group and local landholders. A strong focus is placed on community involvement by holding workshops and events, as well as inviting landholders within the Range to get involved in the Initiative.

Conserving wildlife corridors like The Range, which provide links to larger conservation areas, is essential to assist in the movement of native species and increase species ability to adapt to climate change, which will become increasingly difficult with current rates of fragmentation. Private land holdings within these corridors are essential to achieving the overall conservation goals. Even when an individual property has low biodiversity values low due to previous land use, its biodiversity contribution to a larger corridor may be considered very high.



Within the Little Liverpool Range are properties with expansive vistas, dry vine scrubs, open eucalypt forests and grazing land – a mix of ecosystems and opportunities for wildlife.

This concept of landscape conservation will be explored at an evening event on 22 November 2017. Hosted by the Gainsdale Group and Ipswich City Council this event will focus on landscape conservation within the context of the Little Liverpool Range and the Great Eastern Ranges Initiatives. Guest Speakers include Harvey Locke – an internationally renowned pioneer of landscape-scale conservation and co-founder of the Yellowstone to Yukon Conservation Initiative, and Bob Debus – chairperson of the Great Eastern Ranges Initiative.

There are limited tickets available for this event so if you are interested in attending, please email partnerships@ipswich.qld.gov.au for further information.

**Article by Nick Swanson
Land for Wildlife Officer
Ipswich City Council**

**Photos by Dennis Gannaway
Rural Area Manager
Healthy Land and Water**



flora profile

Mangrove Fern

Bridgette Chilli Davis, a Mooloolah Kabi Kabi woman (inset), provides traditional knowledge on the Mangrove Fern. Image on left - Mangrove Fern growing in an estuary on a Land for Wildlife property at Ninderry. Image on right - spores on fertile fronds.

Ferns. They grow in lush moss covered rainforests and along the banks of sparkling mountain gullies, right? Not quite.

Ferns are a diverse group of plants that grow in a variety of different ecosystem types, including aquatic, mangroves, coastal heath, eucalypt forest and of course rainforest. Characterised by being a vascular plant that doesn't produce flowers, fruit or seeds but rather reproduces predominantly by spores.

Walking through an estuarine ecosystem dominated by mangroves, with kingfishers diving above and soldier crabs scuttling below, you could be excused for thinking that the likelihood of seeing a fern is up there with seeing a pig fly. However, the Mangrove Fern (*Acrostichum speciosum*) is actually a relatively common species of mangrove swamps, riverine estuaries and cliff-faces by the sea. Its distribution in Australia spreads from north-eastern New South Wales all the way along the coast to north-western Western Australia.

This species has leathery, stiff fronds that stand upright to almost 2m in some areas. It has a shallow underground system of modified stems that run horizontally, called rhizomes. These rhizomes become massive in old specimens. Although predominantly an estuarine species, it is not restricted to those ecosystems and has been observed growing at the headwaters of some rivers.

I spoke to Bridgette Chilli Davis, a Mooloolah Kabi Kabi woman, who kindly

told me about her family's traditional use of the Mangrove Fern:

"The bulbs of the Mangrove Fern stalk were pounded down to make a flour, this was mixed with water, flattened into shape and cooked on rocks in the fire, to make a type of salty flat bread."

Although the Mangrove Fern tolerates salt water inundation from time to time it tends not to grow in salt water permanently. It also doesn't mind freshwater inundation and occurs a relatively long way up estuaries.

During a recent Land for Wildlife property visit, I observed the Mangrove Fern growing in clumps along a 600m stretch of a tributary of the North Maroochy River. Where the creek first enters the property, it is dominated by Weeping Lillypilly (*Waterhousea floribunda*) but by the time it leaves the property, the dominant vegetation is a mix of mangrove species. I undertook some sampling of salinity levels and as expected there is salt water mixing occurring on the property as it changes from near fresh water to salt water. The mangrove fern occurs throughout this stretch of creek, supporting claims in the literature that it tolerates a wide range of salinity levels.

As you can imagine, clumping masses of Mangrove Fern make great refuge for a broad range of fauna that occur in estuarine environments.



The Mangrove Fern is one of the first plants to colonise after a disturbance and often inhabits areas cleared of mangroves. It is particularly valuable for reducing coastal erosion and filtering nutrients and sediment.

Marine plants that grow on or adjacent to tidal lands (including the Mangrove Fern) are protected under the *Fisheries Act 1994*, and the destruction, damage or disturbance of marine plants is prohibited without prior approval from Fisheries Queensland.



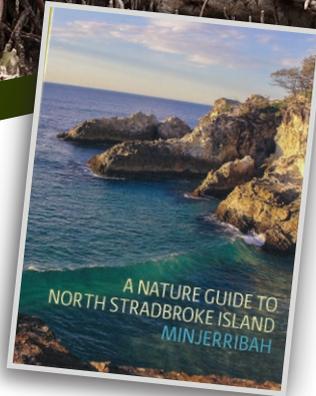
**Article and photos by
Danielle Crawford
Land for Wildlife Officer
Sunshine Coast Council**





book reviews

A Nature Guide to North Stradbroke Island - Minjerribah



Congratulations to Friends of Stradbroke Island (FOSI), a community group that champions Minjerribah's environmental values, for producing this captivating book. Packed with stunning photographs this book is part field guide, part touring guide.

The field guide component covers the native plants, birds, mammals, frogs, reptiles and some invertebrates found on the island, plus the main marine aquatic animals such as dolphins and whales. A suite of nature photographers generously provided images to create this practical photographic guide.

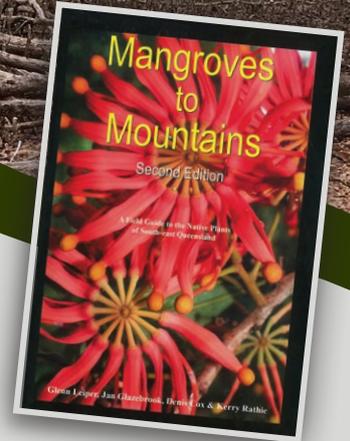
The touring guide component presents well-known and off-the-track places to visit on Minjerribah. A clever seasonal guide outlines monthly highlights such as plants in flower, birds breeding, butterflies emerging or manta rays returning. Combined, these sections can be helpful trip planners.

While Quandamooka place names are mentioned throughout and the Quandamooka People's Native Title is acknowledged, this book is not a cultural guide to Minjerribah. However, tantalising photos such as the enormous Main Beach midden taken in the 1960s left me wanting more indigenous cultural content. A companion Cultural Guide maybe?

This is a must-have book for Straddie lovers.

Edited by Mary Barram and Sue Ellen Carew
Published by Friends of Stradbroke Island, 2017
Soft cover, colour photos, 352 pages
Price: \$35
Available from www.fosi.org.au and select bookstores

Mangroves to Mountains (Second Edition)



Ten years after its first release, *Mangroves to Mountains* continues to be the definitive field guide to native plants of SEQ. This book is now even better with the recent release of the second edition. It now provides full coverage of all wattles, all orchids, all gumtrees (eucalypts, corymbias, lophostemons, angophoras and syncarpias) and impressively, all flowering rainforest plants (trees, shrubs and vines) found in SEQ.

The sections on sedges and grasses have also been expanded. In total, 250 species have been added to this second edition bringing the total number of plants covered to just over 2450 species. Surprisingly, despite this increase in content, the second edition is thinner in size thanks to different paper.

The life-long work of the authors in documenting our native flora is reflected in this book, plus their passion for educating others and sharing their skills. We are fortunate in SEQ to have such an incredible resource at our fingertips. A perfect Christmas gift for those who love the outdoors.

By Glenn Leiper, Denis Cox, Jan Glazebrook & Kerry Rathie
Published by Logan River Branch of Native Plants Queensland, 2017
Paperback, colour photos, 576 pages
Price: \$50
Available from www.mangrovestomountains.com and select bookstores

Reviews by Deborah Metters

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