LAND FOR VILDLIFE SOUTH EAST QUEENSLAND VOL. 14 NO. 3

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Land for Wildlife South East Queensland Team, November 2019

FAREWELL KEITH

After 16 years in the role, Keith McCosh recently retired as Land for Wildlife Officer for Scenic Rim Regional Council and starts a new chapter in his life. Keith led the growth of private land conservation not only in the Scenic Rim, but across SEQ and will be greatly missed. His skills and passion for geology, fossils and native plants will continue through his involvement with the Fassifern Field Naturalists and other groups.

Thank you Keith for your commitment to LfWSEQ and nature conservation. You leave a legacy of registering over 230 new Land for Wildlife properties and facilitating 15 Voluntary **Conservation Agreements &/or Nature** Refuges, which protect Scenic Rim's stunning biodiversity into the future. We wish you all the best.





*Please note that these figures do not include Fraser Coast or Gympie Land for Wildlife data.

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

Land for Wildlife South East Queensland is a quarterly publication published by 13 Local Governments in south-east Queensland and distributed free of charge to their Land for Wildlife members.

Opinions expressed by contributors to *Land for Wildlife South East* Queensland are not necessarily those of the Land for Wildlife program nor any of the supporting agencies.

Printed on EcoStar Silk 100% post-consumer recycled paper, FSC certified, chlorine-free process and made carbon neutral. Printed by Greenridge Press, Toowoomba using vegetable based inks.

ISSN 1835-3851 Print run - 4415 copies

Front Cover: This Southern Angle-headed Dragon was spotted only 2m off a popular walking track at Lamington National Park. Photo by Deborah Metters. Front Cover Inset Photos: Lomandra seed photo by Saul Hondow, and a tray of seedlings photo by Rusty Linnane.

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Welcome to the August 2020 Issue

EDITORIAL

I was hoping by the time I wrote this Editorial that things would be 'back to normal'. However, a new norm has settled into place and that includes a good dose of uncertainty.

Most councils are again offering visits to LfW properties with some recommencing workshops for LfW members, all with social distancing measures in place. Given that restrictions and health advice are being regularly reviewed, we encourage LfW members to touch base with your LfW officer if you want to know about any LfWrelated services in your area.

Although Queensland has comparatively fared OK through this terrible pandemic, covid-19's close ally, fear, seems to have touched everyone. Whether it is slight unsettledness or gripping angst, this pandemic has brought people's mental health to the fore.

My love and need for regular time in nature is largely because of how it makes me feel and to maintain my mental health. Mental health is not a term I use often. That is largely because of my personal challenges with it, and those of my family members. Nature, conservation, birding and even weeding are essential parts of my wellbeing. I know that I am not alone in this, especially within the LfW community.

There is tonnes of research about the psychological benefits of being in nature. It reduces feelings of anger, anxiety and stress and has been shown to improve our mood and can bring about feelings of calm, meaningfulness and vitality. Many of these benefits can also be triggered just by simply looking at an image of nature. This deep connection we innately have with nature is understandable given that the concepts of 'being inside' and 'screen time' are a relatively recent.

Research further shows that the more we are connected to nature, the more we want to conserve it. This connection starts during childhood. If we connect to nature as a child, it is more likely that we will keep that connection as an adult and will support pro-environmental behaviours (such as conservation). Furthermore, if we see others doing environmental actions, we are more likely to do the same actions ourselves. Hopefully through LfW, we see that there are many other landholders doing conservation work and that inspires us to continue. Nature is endless and there is always something to get into. As this edition shows, it could be catching, identifying and releasing fish in your creek, or wildlife photography, or analysing predator scats, or refining your skills at seedling identification, or propagating native plants or poetic inspiration. This newsletter assures us that it really doesn't matter what 'it' is that touches you about nature, it is just important that we have some connection to it for our own health and for our common future.

Stay safe. Be in touch. Thanks for all the conservation work you do.

Deborah Metters Land for Wildlife Regional Coordina

Land for Wildlife Regional Coordinator

We welcome all contributions. Please send them to: The Editor ✓ deborah@seqlfw.com.au ✓ 0437 910 687



Climate & Weather REGIONAL OUTLOOK

July-Sept 2020

Daytime & Night temperatures. Very likely to be warmer than average.

Rainfall. Wetter than average conditions are likely.

Root-zone soil moisture. The level of soil moisture may have increased due to recent rainfall but long-term rainfall deficiencies remain in some areas.

Frost. The number of frosts per season has decreased by
4 nights between 1989-2018 compared to 1959-1988. More frosty nights occur in dry winters when soil moisture is low.

Influences

- Indian Ocean Dipole (IOD) neutral to negative resulting in possible above average winter-spring rainfall in southern Australia.
- El Niño-Southern Oscillation (ENSO) double the normal likelihood of a La Niña forming in 2020 - potentially resulting in a wetter than average winter and spring.

Sources

www.bom.gov.au/climate/ahead/ www.bom.gov.au/climate/climate-guides/ (south east Queensland)

Weeds to Watch July-Sept 2020

Black-eyed Susan has bright yellow-orange flowers, which bloom at this time of the year. Young plants can be pulled out by the roots, whereas mature, dense infestations may require foliar spraying.

Mother of Millions has been in flower lately with some paddocks speckled red. This weed spreads quickly from seed and from dislodged or broken leaves (patterned fleshy leaves are shown here), which can take root.

Singapore Daisy can flower year round. Generally late winter/ early spring is a good time for treating this weed in creeks and around dams as water levels are low and most frogs are inactive.



Lomandra IT'S A RUSH

k I'm just going to throw it out there and confess "I love lomandra". From their bold strapping leaves to their upright tufted habit and sweet scented flowers, these plants make my blood rush to the point where my partner now cringes when asking "what should we plant here" ... but seriously folks... let's look at lomandra.

Ten species of lomandra, commonly known as mat rush, are naturally found in SEQ. They are often referred to as a 'large grass' however their family is Laxmanniaceae and the true grass family is Poaceae.

Naturally, the ten species are found across a range of ecosystems including heathlands, wetlands, waterways, rainforest, eucalypt forest and montane rock faces. In fact, there's not many plant communities where they are not found.

In urban and city environments, they are planted everywhere, from roadsides and roundabouts, to parks and sporting fields. Lomandra is one of the most widely used native plants across our landscape. Why you ask? Primarily it's because they are incredibly hardy in our harsh environment, but it goes much further than that!

They are tolerant to drought and frost, grow in most soil types, handle vehicle pollutants, many are fire retardant and others survive major flood events, for example *Lomandra hystrix* is well known for dissipating water flow during peak flows. When established in mass, their fibrous root systems intertwine forming 'mat like' structures that effectively stabilise topsoil. After multiple recent cyclone events a number of Land for Wildlife members that manage riparian areas mentioned that, "the weeds just washed away but lomandra remained". For landscaping steep slopes with minimal ongoing maintenance, lomandras are perfect.

Traditional use of lomandra by Indigenous communities is vast. It was used to make baskets, dilly bags, nets, fish and eel traps, mats, food containers and other implements. The long tough leaves were split, bundled, soaked and drawn through hot ashes to allow the fibres to become suitable for weaving. Leaf fibres were used to make string for armbands and necklaces. Medicinally, the leaves were sometimes used as bandages and the root of some lomandra species were used for the treatment of bites and stings.

The sweetly scented flowers are edible. Fruit is also edible but they are tough and need to be ground to meal first. The base of the leaf is a little bit fleshy and can be eaten. It is said to be refreshing, tasting both nutty or like fresh green peas. I tested this on my lomandras and can confirm whilst it was refreshing, it wasn't quite like the sugar snaps in my garden.

In regard to habitat value, lomandras play a vital role for insects and this in turn, benefits birds, frogs and other animals that feed on insects. Flowers are pollinated by beetles and the nectar harvest is well sought after by bees, whilst ants harvest and distribute seeds. Importantly, leaves are also food for the larvae of numerous skipper butterflies. The tufted structure of the larger lomandra species provides shelter and protection for many small animals including snakes, skinks, and smaller mammals including pademelons and rodents. It is well documented that Indigenous people also considered them a great place to hunt!

At home I'm always excited to hear the rustling of critters as I brush through my lomandras. When I sit quietly, it never ceases to amaze me how much activity and diversity lays within. One of my favourites is a family of Major Skinks that bask in the sunshine on the outer edges of lomandra and, with the slightest of movement, will retreat to shelter in the blink of an eye.

So if you need a low maintenance, stabilising plant that will provide great habitat for our local critters consider lomandras.

If you would like to grow your own, follow these easy steps as most species propagate readily from seed. Ideally collect your seed from a number of different plants in the wild (rather than planted ones) and ensure you have permission for seed collection.

Article and photos by Saul Hondow Land for Wildlife Officer City of Gold Coast

References & further reading:

Leiper G, Glazebrook J, Cox D & Rathie K (2017) *Mangroves* to *Mountains: A field guide to the native plants of south-east Queensland*. Logan River Branch SGAP.

McKerney M & White H (2011) *Bush Tucker, Boomerangs and Bandages: Traditional Aboriginal Plant Use in the Border Rivers and Gwydir Catchments.* Border Rivers-Gwydir Catchment Management Authority.

Williams C (2010) *Medicinal Plants in Australia Volume 1: Bush Pharmacy.* Rosenberg Publishing.



Can you spot the the Major Skink *(Egernia frerei)* basking on the fallen leaves at the base of this lomandra plant?

PROPAGATING



STEP 1

Lomandra longifolia seed is arranged on spikes and when mature turns yellow. The green seed shown here is slightly immature. Wear gloves when cutting and handling as the inflorescence is spikey.



STEP 2

Place the whole flower spike into a paper bag and store in a cool well-ventilated area. The outer coating or husk will split when dry to release the seed - this usually takes a couple of weeks. You may need to tap the bag gently to get all the seed to release. The seed looks like grains of brown rice. Place the released seed on a tray or flat surface and gently blow away any remaining husk.



STEP 3

Pour boiling water into a bowl – let it cool for 5 minutes before adding the seed and soak for a couple of hours. This treatment helps break down the hard seed coat and controls insects that may damage the seed whilst in the seed raising tray. The viable seed usually sinks in the bowl over time. Anything floating on the surface is unlikely to have a developed embryo and will not germinate.



STEP 4

Drain and sow seeds in seed raising mix. 20kg bags are available at most gardening shops for around \$10. Seed raising mix has no fertiliser, unlike potting mix, so will not damage emerging shoots. As a general rule, seed should be buried about the same depth as the diameter of the seed – in this case only a couple of millimetres. Place the tray under shade and keep moist. Seeds generally germinate in 2-4 weeks.



STEP 5

Once an inch high, 'prick out' seedlings and transplant them to tubes or pots to develop.

All Things GREAT & SMALL

y name is James and I am 13 years old. Since I was young, I have been interested in nature, mainly animals but I've become more fascinated by plants recently. I live on a 50 hectare Land for Wildlife property in Ravensbourne that's mainly natural bushland and it's really helped me develop a love for nature. One of the reasons my parents joined the Land for Wildlife scheme was the presence of New Holland Mice on the property. These mice were found in 2001, and at the time, it was only one of three known populations in Queensland.

I've been lucky to have many memorable experiences with wildlife and these are some of my highlights.

Southern Angle-headed Dragon

Visiting Goomburra National Park with a good family friend, Mr Rod Hobson chasing the Southern Angle-headed Dragon was one of my best days out. Despite getting up at 5am to get there nice and early we found ten of them along the Circuit Walking Track and we were very happy. They were hard to spot until you have your eye in for them, since they hug very close to the tree and unless you are looking for them, they just look like a bump on the tree.

Black-breasted Button-quail

Black-breasted Button-quail are listed as threatened under both federal and state environmental legislation. Recently, friends of our family suspected they had button-quail on their property by the presence of platelets. Platelets are small circular depressions made in the leaf litter by feeding quails.

We set up motion sensing cameras to find the quails and get an understanding of when they're most actively feeding and which habitat they prefer. I've also been spending a fair amount of time sitting in the lantana (which seems to be their preferred habitat) with a telephoto lens to get a quality photo of them. This time spent sitting there has made me realize how shy they are and how difficult it will be to get a photo of them.

Beck and lan, the property owners are currently members of Friends of Land for Wildlife and hope that Land for Wildlife will again start up in the Toowoomba area.

Toowoomba Funnel-web Spiders

In 2019 Mr Hobson brought out two lecturers and a student from James Cook University to visit our property looking for the Toowoomba Funnel-web Spider. We found some of their funnels just at the bottom of a slope behind our house and successfully located a few spiders so it was a worthwhile trip for them. They took the spiders back as specimens to test their behaviour under laboratory conditions. Aside from learning to extract spiders safely, another bonus of this survey was that we came across a few colonies of the Small Ant Orchid (Chiloglottis truncata). This is a small terrestrial orchid that has a limited distribution and this population appears to be the most southerly record of the species.

Freshwater Native Fish

My grandparents have a property between Maleny and Conondale in the Conondale Ranges with an attractive freshwater creek just down the road. As a young boy, I used to go down there with my brother and Dad and catch the native rainbowfish, Purplespotted and Western Carp Gudgeons, catfish, Australian Smelt and hardyheads using a fly-screen technique. They always have fascinated me and will continue to do so.



I have caught many different species of native fish in Elaman Creek at Conondale. I identify them and then release them back into the river.



Finding this Boyd's Forest Dragon on our property in North Queensland was another great wildlife experience for me.

Like many terrestrial orchids, the Small Ant Orchid has a fascinating lifecycle. It depends on a specific thynnine wasp for pollination. This orchid lures in a male thynnine wasp using visual mimicry (part of the orchid looks like a female wasp), as well as producing pheromones indistinguishable from a female wasp. By visiting the orchid, the male wasp disperses the orchid's pollen.



Southern Cassowary

In 2014, my family bought a north Queensland property for conservation purposes, resulting in some fascinating wildlife sightings. On this 70 acre rainforest property, I have managed a handful of encounters with the Southern Cassowary. The closest one and most amazing was when a young Cassowary wandered through the rainforest above our house. I caught a glimpse of him and quickly walked up to see if I could get a shot of him. To my surprise, he inquisitively ventured closer to me and eventually came out in the open which was perfect for getting a photo - to amaze me even further he came in very close to me, about 2-3 metres away!

Victoria's Riflebird

On a separate trip to north Queensland, my Mum and I were going for a walk and we heard a raspy call above us. To our amazement it was a male Victoria's Riflebird displaying spectacularly to attract a female. Like all riflebirds, the male raises his wings above his body in an arc, which creates a display like no other bird. Sometimes looking for wildlife is just about luck and being in the right place at the right time.

Beatrice River

Our north Queensland property borders onto a stretch of the pristine Beatrice River that varies from towering waterfalls, to shallow stretches with large boulders, to deep swimming holes. These large swimming holes are the perfect place to sit and wait for a platypus to swim by or see an Azure or Little Kingfisher fly by. They also hold a variety of native fish species including Fly-specked Hardyheads, Eeltailed Catfish and Long-finned Eels. One of my favourite things about visiting the river is the presence of rockmaster dragonflies, no matter what time of year these dragonflies are always there to greet me.

I consider myself very fortunate to have visited a number of Land for Wildlife properties over the years and I hope that I can continue this into the future. Not only are Land for Wildlife properties an important refuge for plants and animals they are also a great place for people to learn about nature.

Article by James Sparshott Photos by the Sparshott family Land for Wildlife members Ravensbourne, Toowoomba Until the program is re-established in Toowoomba region, feel free to support/join the Friends of Land for Wildlife Toowoomba group via www.friendsoflfwtoowoomba.org



A male Victoria's Riflebird in display.





A rockmaster dragonfly.

Nature photography is a great way to spend time in nature and to learn about plants and animals and their habitats.

Large Waterhousia trees with hollows in the remnant forest.

Out of Left Held DEALING WITH THE UNEXPECTED WHILE RESTORING RAINFOREST

Seventeen years ago we purchased 11 acres on the Sunshine Coast. The land included four acres of critically endangered rainforest with London Creek winding through it, creating depressions and water holes. This forest was surrounded by paddocks with cattle grazing down to the creek. We had found a magical spot we could improve.

In 2003 we joined Land for Wildlife and applied for restoration grants each year. Over the next 12 years we planted over 1,000 trees on the grassy paddocks fringing the remnant rainforest. With no vehicular access, we had to carry our tube stock and tools, making our way through tenanted horse paddocks and across the creek on a narrow plank.

We were working and raising three boys. In 2006, I was diagnosed with cancer. I even fell off the plank one day because my balance was not the best while on chemo. Regular flooding and frosts resulted in a fairly high attrition year in and year out. Huge tree trunks and logs would occasionally get washed through, smashing our new plants.

In 2013, we applied for a grant jointly with six other property owners for contractors to plant 1,000 trees on one acre of pastured land this time on the closer side of the creek. This was in a more accessible section, so for about 3 to 4 years we were able to use a ride on mower to mow between the trees until the canopy formed.

Outside of our property, we were alerted to the potential destruction of an iconic Sunshine Coast State Forest, home to ancient trees and endangered rainforest between Steve Irwin Way and the Bruce Highway. We spent from 2013 to the end of 2016 creating and managing the Save Steve Irwin Way Forest Campaign with online petitions, social media, submissions and meetings with ministers and government departments. During this busy time, Dave was diagnosed with lymphoma.

Thankfully, we have both now recovered and feel very fit and healthy. To our delight, the Campaign was successful and the road footprint had been reduced to 10% of its original impact, and the rest of the 744 hectare forest was declared a National Park.

Despite all our usual activities working and bringing up a family plus the curve balls coming our way, our Peachester rainforest is growing fabulously, especially the planted sections that are developing a healthy canopy and forest floor. In 2018 we decided to protect six acres of our property including the remnant and regenerating rainforests by entering into a Voluntary Conservation Agreement with the Sunshine Coast Council. In early 2020, I started to coordinate a local Land for Wildlife group. This group was established five years ago by Christine McMaster who, up until this year, had organised activities where we visited each other's properties, socialised and shared knowledge and experiences. Of course, with the onset of coronavirus, a change in activity was required to comply with social distancing rules.

Instead of gathering as a group, members of our local Land for Wildlife group started sharing before-and-after photos of our properties in emails, and as I write this, I am still exploring ideas to improve our connections and ways to inspire each other.

A visit by our new Conservation Partnership Officer, Kylie Gordon, during the coronavirus restrictions had to be performed without us present to comply with Council's rules, so we emailed a virtual tour of our property including an Avenza map and before-andafter photos. They then did their socially distanced visit to the property and sent us their report and feedback including an Avenza map, photos and a report showing us their walking tracks and pinned areas of interest.

So despite all the unexpected issues that have arisen, we have still been able to achieve massive improvements in the environment that we have spent so much time caring for. And late at night when the wind is howling or the rain is pouring I know that there are plenty of safe cosy hollows, tunnels, dens and tree branches for the wildlife.

Stella (and Dave) Wiggins Land for Wildlife members Peachester, Sunshine Coast











Dave and Matt (one of our sons) translocating Weeping Lillypilly (*Waterhousia floribunda*) seeds from a nearby dry gully to a regenerating area.



The plank.



Avenza Property Mapping

New technologies are appearing all the time and it can be hard to keep up. One product that showed up many years ago and continues to prove its relevance and usefulness is Avenza Maps.

Shown here is a map of Dave and Stella's property created using the Avenza Maps app. The orange line is the track that Land for Wildlife Officers walked while they were visiting the property. Each red pin marks a specific feature, in this case, a notable weed. The green pins indicate a significant plant species. All pins can be clicked on for more information and to show the corresponding photograph, if one was taken.

Maps created using Avenza Maps are not only great at recording interesting property features, they can also help with navigation. Avenza Maps uses the in-built GPS systems on smart phones and tablets to navigate even when outside of internet or network connections.

Avenza Maps has both free and paid subscription services, just visit their website. Feel free to ask your Land for Wildlife Officer about getting a geo-referenced map of your property that will enable you to record tracks and features using Avenza Maps.

Tick MAGNET

Paralysis Ticks will use a suite of native and introduced animals as hosts. The most common hosts are bandicoots, such as this Long-nosed Bandicoot. Paralysis Ticks wait on the outer leaves of low growing plants for a host to brush up against, at which time they will move on to the host, attach and start feeding. Photo by Todd Burrows.

S tomping through the bush I experienced the faintest of, all that I can describe as, chemical zaps and knew that I'd picked up another very unwelcome hitchhiker. Resisting the urge to scratch the affected area I ducked behind a convenient tree and inspected the site in question. Sure enough, in the centre of a red circular spot was the back end of a tick that was now upended, firmly attached and happily feeding on my blood. For any of us who spend time in the bush this is an all too familiar scenario as ticks are unfortunately a fact of life for those who enjoy or work in the outdoors. That said, how many of us have stopped to think about the pesky creature in question?

At the class level ticks are members of the eight-legged Arachnida along with their well-known spider and scorpion relatives and have been around for at least 300-400 million years. They are all parasitic blood suckers that undergo several moults, usually interspersed with blood feeds, before the final moult into a reproductive adult. At the family level, ticks are classified as either hard ticks (Ixodidae), which have a hardened scutum (middle part of the thorax) or soft ticks (Argasidae), which lack this feature. Female Ixodidae ticks lay a single large batch of eggs before dying, whilst female Argasidae lay several smaller batches of eggs.

Most ticks have three discrete hosts as part of their lifecycle. These hosts do not need to be the same species. This three-host lifecycle sees a hatched larva attach to a host, feed, then drop off. It then moults to become a nymph which again requires a host to feed on before dropping off. The nymph then again moults and emerges as an adult that again requires a new host on which to feed and mate. The blood engorged fertilised females drop off the final host and lay their eggs before dying.

In contrast, the introduced Australian Cattle Tick (*Rhipicephalus australis*) is a one-host tick and from the time it hatches from its egg and is picked up by a host, usually a passing cow, it will go through the life stages of larva, nymph and then adult on the one host animal.

Most ticks spend most of their life waiting for a new host and there is high mortality due to predation and starvation during this 'waiting' time. Being obligate parasites, it is vital that ticks are able to efficiently find a host. To this end ticks (and mites) possess a unique sensory organ on their front legs called Haller's organ. This specialised organ is sensitive to heat, carbon dioxide and other chemosensory cues given off by a potential host. To facilitate host attachment, ticks crawl onto the end of low growing vegetation then extend and wave around their receptor equipped front legs and wait to ambush a host. This waiting 'ambush' behaviour in ticks is called 'questing'. As an animal brushes past, the alerted tick grabs onto the host and then crawls over the animal before finding a suitable area to attach and feed.

In Australia there are about 74 tick species with names such as Robert's Bird Tick (*Argas robertsi*), Ornate Kangaroo Tick (*Amblyomma triguttatum*), Southern Reptile Tick (*Bothriocroton hydrosauri*) and Wallaby Tick (*Haemaphysalis bancrofti*). The common name gives an indication of their preferred host type. Of these 74 only a couple are known to make a meal of us.

In South East Queensland the most commonly encountered tick is the three-host Paralysis Tick (*Ixodes holocyclus*). This one tick is responsible for 95% of human tick bites in eastern Australia, the occasional hospital visit (I've been there), and several fatalities. It's also known for innumerable expensive vet visits, sick livestock and for the death of many animals, as a single feeding female can be deadly if not removed in time. Given their long association and exposure to this tick, native Australian wildlife have a much higher tolerance level.

Although it's the same beast, the Paralysis Tick is also referred to as grass tick, seed tick and bush tick depending on the lifecycle stage of the animal. If you are unlucky, you can pick up multiple pin hole sized larval ticks if you brush past a hatched egg mass which can result in intense irritation which people call 'scrub itch'. However, this term should rightly be reserved for infestations of larval mites. The tick-transmitted disease, Queensland Tick Typhus, is also colloquially called scrub typhus, but in the medical literature Scrub Typhus is reserved for a mite-transmitted infection.

The Paralysis Tick occurs along the eastern seaboard from Cape York all the way through to Lakes Entrance in Victoria. It is found in damp, humid, bushy areas as these environmental conditions reduce the risk of the tick drying out and dying due to desiccation. When it comes to host selection, the Paralysis Tick is not particularly choosy and has been recorded parasitising 34 mammal, 7 bird and numerous reptile species. In SEQ, scientific studies indicate that bandicoots are both a major and vital host, and a stable number of bandicoots are required to sustain a Paralysis Tick population.

A typical lifecycle of a Paralysis Tick is around one year, from laid egg to adulthood. This is influenced by temperature, humidity and the time required to find hosts. Considering that a tick only spends about 20 days of its life feeding, this leaves a lot of time for hiding in the leaf litter and questing. Under experimental conditions unfed larvae can survive up to 162 days, unfed nymphs for 275 days and unfed females up to 77 days.

Although there is a distinct 'tick season' (October to December), when females are most likely to be encountered, in theory, ticks can be picked up at any time of the year at any stage of their lifecycle. That said, the six-legged pin hole sized larvae are most likely to be found late February to May, the eight-legged pinhead sized nymphs April to September and the unfed 4mm long female, which will expand to about the size of a grape once replete, October to December. Males are also active in this period but are unlikely to be noticed as they very rarely feed on a host. They are little vampires, and their mouthparts are adapted for feeding on blood-engorged females, on which they leave distinct feeding scars.

The female Paralysis Tick has long mouth parts, the ends of which are equipped with cutting edges that are used to slice into the host's skin. The mouth parts also have tiny backward facing barbs, which are also inserted into the wound. The tick then stabilises itself in its inverted feeding position by splaying out its palps.

Feeding is facilitated by the production of numerous biologically active molecules that are pumped into the wound through the tick's saliva. In combination, these molecules overcome the host's immune response and allow the tick to feed for days. These molecules include anti-coagulants, anti-platelet, vasodilators (chemicals that open blood vessels to encourage blood flow) and anti-inflammatories to name a few. The Paralysis Tick also produces a neurotoxin that can induce motor paralysis. In an actively feeding female, neurotoxin production peaks around days 4-5, then tapers off.

So next time you are 'attacked' by a tick, while you are cursing the inevitable itchiness or worrying about allergies and possible diseases, try to also be amazed by this efficient piece of natural engineering. Rejoice in the knowledge that you have got a good bandicoot population and, by association, other native animals to act as hosts to keep the tick population 'ticking' over.



Tony Mlynarik Land for Wildlife Officer Brisbane City Council



Ticks often use native macropods as hosts, often attaching around the ears and eyes. Photo (top) by Deborah Metters and (lower) Todd Burrows.

First Aid and Tick Removal

A Google search for tick first aid/removal will bring up contradictory information even from respectable sources. It is an evolving science with medical literature and research being updated regularly. All reputable information however agrees that tick removal/death should be carried out as soon as practical once the tick is detected. Removal techniques should avoid aggravating the tick or squeezing the tick's body, to minimise the risk of the tick injecting more of its saliva (and chemicals) into the wound.

The Australian Department of Health currently recommends the removal of adult ticks using fine tipped forceps (not household tweezers), by grasping the tick as close to the skin's surface as possible. Pull upwards with steady pressure and avoid jerking or twisting the tick.

The Australasian Society of Clinical Immunology and Allergy recommends killing an adult tick in place by using an ether-containing spray and then either gently brushing the dead tick off or allowing it to fall off by itself. Larval and nymph ticks should be killed by applying a permethrinbased cream (such as Lyclear), which is designed for killing mites (e.g. scabies).

Seek medical attention as soon as possible if you have an allergic response to a tick bite.





Female Paralysis Ticks, both unfed and blood-engorged, collected from a Koala. Photo by Bjørn Christian Tørrissen, CC BY-SA 3.0.



The Paralysis Tick is responsible for 95% of all human tick bites in eastern Australia. The long mouth parts of this unfed female are clearly visible. Photo by Robert Whyte.



WHAT ARE foxes eating IN SEQ?

eral animals are a compelling topic for most Australian conservationists. I am always intrigued by the diversity of experiences and opinions out there. It is safe to say that the daily number of native animal fatalities caused by the jaws and claws of pest predators in Australia is in the millions. Yes, that's daily, and can make one feel quite overwhelmed.

Few feral animal studies have been conducted in SEQ; however, this has recently changed with a four-year research project along the coastal fringe of the Sunshine Coast (between Shelly Beach and Point Cartwright) that focussed on the diet of foxes. Foxes are well known to be opportunistic, smart and resilient. I have heard LfW members at Bellthorpe talk about their local foxes sustaining themselves for months of the year on fallen avocados from orchards. LfW members at Austinville (see facing page case study) have caught images of their local foxes eating bandicoots and possums, night after night. I know my local foxes visit neighbourhood chook pens and have cached partially eaten carcasses in the undergrowth of my yard.

Foxes have played a major role in the extinction of many small to medium sized terrestrial animals in Australia such as ratkangaroos, bandicoots and native mice. They continue to place pressure on small native mammals, reptiles and ground-dwelling birds like button-quails. Like all good opportunists, foxes adapt their diet to fit their surrounds including rabbits in semi-arid Australia, and in London, probably not surprisingly, about onethird of their diet is left-over human rubbish.

So, what are foxes eating on the Sunshine Coast? It turns out that the main part of their diet is terrestrial arthropods, mainly beetles, and especially Christmas Beetles in summer when the adults emerge from their life in the ground. These coastal foxes are also eating marine arthropods, mostly Ghost Crabs, again primarily during summer. Their next main food source is fruit, including weedy asparagus berries. Foxes took advantage of the Short-tailed Shearwater wreck that occurred in 2013, cleaning up many of the dead, beach-washed birds that did not survive their annual migration.

Sunshine Coast foxes along the coast, are also eating small mammals including the native Grassland Melomys and Swamp Rat, and the introduced House Mouse and Black Rat. However, this is in much smaller quantities and frequency when compared to other Australian studies, where small to medium-sized mammals comprise the bulk of fox prey. Human rubbish, fish and reptiles are only very occasionally eaten.

Foxes, like many birds, are vectors for plant seed dispersal. They eat the fruit of both weeds and native plants, and then deposit the

Foxes have been photographed using fauna monitoring cameras on many Land for Wildlife properties in SEQ.

seed at a new location in a nice manure compost.

I am fortunate to work with the researcher who undertook this study, Dr Julie O'Connor, who also manages the LfW team at Sunshine Coast Council. She had the joy of sifting through 1185 fox scats containing 3021 food items to reach these results. Her research also extended into looking at the effectiveness of lethal vs non-lethal control of foxes to protect beach nesting turtle eggs. Interestingly, the non-lethal control (putting exclusion mesh over the turtle nests) looks to be more effective as foxes learn that there is no food available at turtle nests. Whereas lethal control appears to disrupt inter-generational learning within fox family groups and can lead to increased predation of turtle nests.

Like any good science, this research poses more questions and creates space for future studies on feral predators in SEQ. This study shows that foxes, on the coastal strip of the Sunshine Coast, are arguably a low-impact predator and perform some 'good' ecological services such as eating carcasses of beach-washed birds, dispersing native seeds and controlling pest rats and mice. This would be a very different story if the turtle eggs were not adequately meshed, or lax rubbish collection enabled foxes to feast on our take-away food scraps, or if there were threatened ground dwelling animals like the Ground Parrot or bilbies.

So for now, as controversial as it may sound, foxes in humanmodified coastal ecosystems on the Sunshine Coast are probably performing an important ecological function as the only mammalian predator. It is virtually impossible to imagine quolls, dingoes or Tasmanian Devils, which once filled this ecological niche, returning to this now busy urban region. Thus, in this distinct area, we may wish to change our thinking about foxes from the bad guy to the handy cleaner who can be taught to stay away from turtle nests.

Article by Deborah Metters Land for Wildlife Regional Coordinator

References & further reading:

O'Connor JM et.al. (2020) From carrion to Christmas beetles: the broad dietary niche of the red fox in a hybrid coastal ecosystem in south-eastern Queensland. *Aust Journal of Zoology.*

O'Connor JM et.al. (2019) Is the European red fox a vector of the invasive basket Asparagus (*Asparagus aethiopicus*) in eastern Australia? *Aust Mammalogy*.

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The Return of Pademelons TO OUR PROPERTY ONE FOX AT A TIME

Since buying our property, one of our key wildlife objectives was to get a permanent population of pademelons back onto our place. We assumed they were here before European settlement and introduced pest predators, but we only ever saw glimpses of them.

We started baiting and trapping pest animals, mainly foxes, over 15 years ago. Only recently have the laws been changed to give us the flexibility to put out fox baits when we need to (i.e. when foxes are observed) rather than at prescribed times.

I am also part of the Gold Coast Hinterland Pest Management Group that carries out coordinated wild dog baiting on council reserves and other properties, which complements my fox baiting.

In May 2020, for the first time in at least 40 years, the pademelons have come back and appear to have taken up residence! I am hoping it is permanent and I will keep a close eye on things.

I am convinced that fox baiting, and the corresponding decline in fox numbers, has been the main factor in the return of the pademelons. I also firmly believe that foxes prefer disturbed habitats rather than intact or restored native habitats, especially rainforest. Our success in restoring rainforest ecosystems on our property, I believe, has also contributed to the decline of foxes and has allowed for the re-establishment of pademelons.

So hopefully we have achieved one of our long-term objectives. Our next is to see the return of quolls!

Article by Wal Mayr Land for Wildlife member Austinville, Gold Coast





Our objective - a pademelon on our property!





Fauna monitoring cameras have been utilised by Wal for many years to record and track predators and native wildlife.

A Guide to Introduced Pest Animals of Australia

Peter West

Many of Australia's introduced animals are part of the daily background wildlife we see, such as Cane Toads on roads, Rock Doves around towns, House Sparrows picking up crumbs outside bakeries and Hares running into paddocks. Some of our introduced animals are not particularly problematic pests to conservation or industry, but others cause extensive damage ecologically and economically.

This book is an introduction to 60 pest vertebrate animals in Australia covering mammals, birds, reptiles, fish and amphibians. It covers their distribution, breeding behaviour, preferred habitat and identification, which is helpful for some animals such as the six species of deer that are now wild in Australia.

Where the research has been done, the economic damage from our most destructive pest species is shown in dollars, with foxes topping the list at \$227m/yr, followed by rabbits (\$206m/yr), feral cats (\$146m/yr) and feral pigs (\$106m/yr). Control options are discussed for all species, at a

general level, as this book is not designed to be a comprehensive review of the effectiveness of control methods.

I didn't realise that Ferrets had established themselves in and around Melbourne and I am not surprised after a quick Google search returned many proud Ferret breeders in Victoria. Thankfully, it is illegal to have them as pets here in Queensland.

The four high-risk species listed at the end of this book – a toad, snake, crow and goose – provide a glimpse into the pest animals waiting on Australia's doorstep. They affirm the need for strong controls to limit illegal wildlife trafficking, accidental introductions and the wild release of legally kept pet animals. This is a useful book for land managers, conservationists and freshwater fishers as it clearly depicts nine species of pest fish.

Review by Deborah Metters





Paperback | Apr 2018 \$39.95 | 160 pgs Colour photographs CSIRO Publishing

Seedlings or Weedlings? RUSTLING IN THE UNDERGROWTH

eeds can be treated in any growth stage, yet the most resource effective and environmentally efficient time to treat or remove weeds is at the seedling stage. Requiring less energy and less herbicide, seedlings or should we say, 'weedlings', can be removed to allow native 'seedlings' to establish with limited competition. However, this poses a threat, as native seedlings can be difficult to identify, or lost under annuals or worse, mistakenly identified and removed as weedlings.

The loss of native seedlings can have a detrimental impact on not only the biodiversity of an ecosystem, but also on your arduous work of ecological restoration. In a small restoration site, there may only be a limited number of plants that germinate of a local threatened species. The loss of those individuals may result in the species being unable to increase their population or survive. Therefore, seedling identification is vital to increase biodiversity when practicing assisted natural regeneration (i.e. weed control).

The ability to correctly identify seedlings, and therefore confidently remove weedlings, can increase the rate of native plant survival and speeds up the process of forest restoration. Until now, this skill was learnt by years of practice in the field or restoration industry or working in a native plant nursery. Personally, I have a fascination with sub-tropical rainforest seedlings and spent hours looking at forest seedlings trying to determine what and where the parent trees were. Either way, this is a skill that can be enjoyable to learn and hugely beneficial to your restoration works.

As with learning mature plant species, firstly learn the ones that occur at a site you visit regularly. Becoming familiar with both native and exotic species within the site and adjoining areas is key, as these are the species that are more likely to be germinating. The botanical features and characteristics that each plant species possess are generally present at the seedling stage.

The key to identifying seedlings is to first look for mature trees, then look for immature specimens at a sapling stage, then continue to look for younger plants until you start seeing seedlings. Notice that some species will have tell-tale botanical characteristics that helped you identify the mature tree in the first place. Seedlings will often be found under the drip lines or within close proximity of the parent trees, so when trying to identify seedlings look up and around and the site will give you the answers.

This practice can be challenging yet rewarding. It can also provide motivation when conducting laborious restoration techniques. Knowing the desirable plant species present on the site may be the stimulation needed to motivate you to conduct further work. Even seasoned bush regenerators get enthusiastic about seeing favoured seedlings, or maybe that's just me.

If you cannot identify a seedling, let it mature a bit more until it discloses identifiable features. Most plants, except annuals, do not set seed very quickly, so you should have time to wait. Even Madeira Vine will take a couple of months before it can produce a viable tuber or threaten your restoration works.

It is not critical to know every weedling on your site. Learn the problematic weeds first such as the ones that produce masses of seeds quickly, or can inhibit seedling growth, or can threaten the integrity of the ecosystem. These are the weedlings that you need to focus on. Other weedlings can have lower priority for removal and you may need to leave them and focus your efforts on the priority problematic weedlings. As previously mentioned, native seedlings can be mistakenly removed when confused with exotic weedlings. During my career as a bush regenerator I have noticed this on many occasions and not just when working with trainees or volunteers, even experienced bush regenerators can make the same mistakes. These mistakes cannot just be attributed to inexperience or inappropriate operators; these mistakes happen because the similarity between native and exotic species makes them look almost identical.

"If you do not know, then let it grow."

One of the most common environmental weeds on the east coast of Australia is Camphor Laurel (*Cinnamomum camphora*), which is a tree in the Lauraceae family. There are over 100 native Lauraceae species within Australia and many of them have very similar characteristics to Camphor Laurel. Some native Lauraceae species look almost identical to Camphor Laurel at the seedling stage.

For example, White Bolly Gum (*Neolitsea dealbata*) seedlings look so alike Camphor Laurel weedlings that they are often mistakenly sprayed or removed because of these similarities. Both have the same leaf shape, size, coloration and even have the same prominent yellow venation distinguishable to the Lauraceae family, they even have the same glaucous underside of the leaf. Once about 200mm high the Bolly Gum's leaves will have grown considerably, and any new growth will have a purplish brown appearance. Camphor Laurel leaves will always have that distinctive smell, yet removing a leaf to crush and smell can be detrimental to a seedling and this should be the final check. However, there are subtle differences and learning these key features can be achieved with experience.

Even the most common weed in Australia, Lantana (*Lantana camara*) has its own doppelgangers, and they are both common native pioneer species occurring after any disturbance. Native Mulberry (*Pipturus argenteus*) and Poison Peach (*Trema tomentosa*) both look similar to Lantana at seedling stage and are often incorrectly identified and mistakenly removed.

Recently I developed a series of training workshops to assist people to learn identification skills for commonly confused seedlings and weedlings. Through a visual presentation and hands on practical experience, these workshops allow attendees to identify the botanical features of common environmental weedlings and native pioneer seedlings. My passion for this topic stems from 20 years of experience in instructing volunteer and trainee bush regenerators to avoid off target damage when conducting ecological restoration. If you are interested in these workshops, feel free to get in touch at rustleinthetrees@outlook. com

So, get out into your site and get down to seedling level and look for those little gems hidden amongst the weeds before you go furiously hand weeding or spraying. Who knows what you might find?



Article and photos by Russell (Rusty) Linnane Bush Regenerator



Exotic Lauraceae Species Camphor Laurel

- Red auxiliary bud and petiole (leave stem)
- New leaves reddish becoming green
- Midvein prominent
- · Intra marginal veins obvious
- Underside of leaf not as glaucous



Native Lauraceae Species White Bolly Gum

- Brown auxiliary bud and petiole
- New leaves purplish brown at first
- Midvein is not as prominent
- Lateral veins more prominent
- More prominent glaucous underside



Native Pioneer Species

Native Mulberry

- Opposite leaves
- Reddish petiole
- Longer petiole
- Leaves increase in size



Exotic Environmental Weed

Lantana

- Opposite leaves
- Leaf bases almost touch
- Leaves aromatic
- Petioles stay short



Native Pioneer Species

Poison Peach

- Alternate leaves
- Longer petioles



This cluster of native Poison Peach seedlings is hiding one Lantana weedling (being pointed at).



As an example of seedling progression, above are two images of Brush Box (*Lophostemon confertus*). Left is 20mm seedling and right is a 200mm seedling. Both have prominent mid veins, opposite leaves and noticeable hairs.







Lazy Afternoon

with the sun on my arms and the buzz, of a solitary bee the wings of a butterfly pause, flutter then drift from my mind soaking rain has expelled the dry the buds of the corynanthum swell

and the mating damselflies with wings so fast over water, hidden a timeless music, resonates as it trickles through rocks under grass that's gone to seed and makes its way down, and down

and the angst of the world drains from my mind sinking, down, and into the earth and I am nowhere, and everywhere gorging on the essence of life

I talk to the wrens and finches, and promise to leave the cockspur alone drongo complains that I don't belong but I know, I'll give more than I take as I cut through summers of lantana growth my feet askew between tiny new trees

I cool as the sun creeps over the ridge and I know that it's time to go though aching and grazed, I don't want to move I am gripped by the catbird's cry but I gather the tools and then I leave as cuckoo's eerie trill descends

By Gabby Bell Land for Wildlife member Maleny, Sunshine Coast

Southern Angle-headed Dragons

The front page photo and this short descriptor are inspired by James's story on page 4 about finding both species of dragon lizard that occur in Australia. Dragon lizards live in rainforests and nearby wet cool forest ecosystems. In north Queensland, the Boyd's Forest Dragon lives in the Wet Tropics. Here in SEQ, the Southern Angle-headed Dragon lives in rainforests of the Gold Coast and Sunshine Coast hinterlands and across the Main and D'Aguilar Ranges.

Quite a few Land for Wildlife members would be lucky enough to have Southern Angle-headed Dragons on their properties. They are easily overlooked in shady rainforests where they often occur along tracks, creeks and edges of clearings. They cling vertically to vines, narrow-trunked trees or shrubs and generally prefer dappled sunlight rather than direct sun. When alarmed, they will either freeze or gently glide around to the other side of the narrow trunk to avoid direct observation.

Southern Angle-headed Dragons are unmistakable in appearance with their angular heads and spiky scales. Their long tail (up to 25cm in length) is notable and is at least twice as long as their body. Their camouflage make them perfect ambush hunters for insects and arthropods. Next time you're wandering along a track or creek in the rainforest, keep an eye out for these amazing animals – they are often clinging to trunks only 1-3 metres off the ground – at perfect eye-height.

Article and photo by Deborah Metters.

