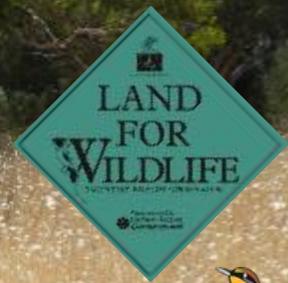


LAND FOR WILDLIFE



&

GARDEN FOR WILDLIFE



Land for Wildlife and Garden for Wildlife Central Australia Newsletter

February 2020

From the Land for Wildlife Coordinators

Hi everyone

As we enter into the third decade of the 21st century, the 2020s have been declared the 'Decade on Ecosystem Restoration' by the United Nations. Coincidentally, and driven by the sudden and unprecedented bushfire havoc in eastern and western Australia, there has been a forced recognition for the need to ACT NOW: government action, personal action, community action, and sector action. This new decade *must* be the decade to take on-ground action to make our landscapes more resilient to drought and increasingly extreme weather events.

Have you noticed that it's continuing to be very hot across Central Australia? Prolonged heat, dry and drying conditions, as well as modern habitat disturbance, is surely taking a toll on our wildlife. The question I pose to all our members and beyond (myself included), is simple: "What are *you* doing today to take action to make a difference?" Since the recent rain in Alice, I pull out Buffel grass tussocks along my early morning walking route. I don't necessarily pull out many, and I (usually) aim for the ones that are easiest to hand-pull, but I feel satisfied knowing that I made a difference today. Every one of us, individually and collectively, CAN make this Central Australia's decade of landscape conservation, restoration and recovery. We urge everyone to take daily actions, large or small, to help our planet.

In this issue you can read about the response of desert ecosystems to rainfall such as we have had recently, growing and harvesting native grasses that provide habitat for a variety of local wildlife, and updates on different impacts and activities following the maelstrom of the recent fires. Grab a cuppa and test your naturalist knowledge with the latest quiz and check out our new section 'START WHERE YOU ARE': information on upcoming environmental events you can get involved in.

~ Kate and Bill

The healing power of weed management and water after recent rains at the Ilparpa Claypans; *Portulaca oleracea* seedlings emerge in areas where Buffel has been

Contents:

From the LfW Coordinators•	1
Pulse of the Desert•	2
Growing and harvesting native grasses•	4
LfW Kangaroo Island; aftermath of the fires•	5
Feral cats feeding frenzy following fires•	6
February Quiz•	7
Dec. Quiz Answers•	8
Interesting links, LfW contact and donation details•	9

"He that plants trees loves others besides himself."

—Thomas Fuller

PULSE OF THE DESERT

In arid environments, the production of [food] resources are often in direct response to rainfall events and occur in 'pulses' i.e. cause and effect patterns. These pulse patterns are important drivers of wildlife population dynamics and composition of environmental communities. Resource pulsing is particularly dramatic in Australian desert environments owing to marked spatial and temporal variability in rainfall, and thus the response of primary productivity.

The size, scale and longevity of rain-driven resource pulses in Central Australian environments largely depends on the size of the rainfall event, soil structure and the availability of nutrients and seed banks in the soil. Shorter bursts of small to moderate rainfall is often enough to stimulate sudden growth pulses by perennial vegetation. Short-lived or annual plant species also quickly germinate in these instances.

Contrastingly, when exceptionally large rainfall events occur, it can also prompt major changes in the landscape which include widespread germination and growth of ephemeral, annual and



A pop-up response of the desert variety: *Podaxis pisitillaris* emerges only 2 days following ~25 ml of rainfall.



The vibrant green of a desert resource pulse in the Ilparpa forest after rains. The vibrancy of colours may be improved as a result of rain washing layers and layers of dust from the vegetation.

perennial plants such that it seems that there suddenly appears a mirage of green across the desert landscape. Large amounts of prolonged rainfall is often followed with recruitment of many tree and shrub seedlings.

Many of our arid-zone wildlife are responsive to periods of high (and low) rainfall and strongly influenced by sudden bursts of the high rates of primary productivity that follow substantial rains. Animal populations such as native and introduced rodents, Bandicoots, Kangaroos and Wallabies usually increase. Interestingly, scientists are discovering that

populations of insectivorous *Dasyuridae* such as Dunnarts and Antechinus, may decline after rainfall, while carnivorous *Dasyuridae* like the *Mulgara*, can often flourish, most likely as a response to rodent population explosions following the rains.

Increasing evidence is describing predators, including ferals, as being just as responsive to a sudden increase in prey items as the prey are themselves to the sudden pulse of edible vegetation. Land management practises that decrease native

A local Dunnart species, the Lesser Hairy-footed Dunnart, *Sminthopsis youngsoni*, is a tiny (length up to 18 cm) distinguished from the closely related Hairy-footed Dunnart by its smaller size and less hairy soles.



PULSE OF THE DESERT *contd.*

vegetation or the vegetative structure of ecological communities exacerbate the risk of predation for vulnerable



A native Long-haired Rat, *Rattus villosissimus*, vulnerable to the pressures of predation from introduced feral predators

animals during these pulse-response events in arid landscapes. Removal of vegetation or simplifying its structural complexity in an area creates easier access to prey.

Diet and population dynamics of avian and larger mammalian predators in arid environments, such as the Dingo (*Canis lupus dingo*), Red Fox (*Vulpes vulpes*) and Cat (*Felis catus*), respond strongly to the abundance of smaller mammals and thus, are indirectly influenced by rainfall-driven pulses of productivity in the landscape. These population increases are likely a reflection of successful recruitment (breeding) as well as

migration of these more mobile animals into areas of high populations of prey animals. During periods of low rainfall, when populations of small mammals decrease, predator population numbers tend to reduce and they often switch their diets to other, more available, taxa, particularly reptiles.

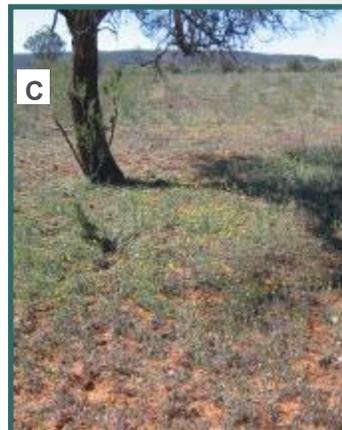
Populations of introduced herbivorous pests also fluctuate after rainfall: Rabbits (*Oryctolagus cuniculus*), Goats (*Capra hircus*), Horses (*Equus caballus*), Donkeys (*Equus asinus*), and feral Pigs (*Sus scrofa*). However these animals exhibit different response rates to the landscape pulses, most likely as a consequence of the differences in breeding cycles and the number of offspring produced.

Reference

Letnic, M., and Dickman, C.R., [Resource pulses and mammalian dynamics: conceptual models for hummock grasslands and other Australian desert habitats](#) (2010)

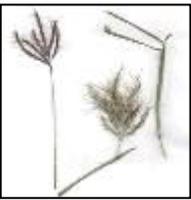
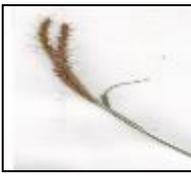


Long-nosed Water Dragon
Amphibolurus Lophognathus longirostris
Image: C Heenan



The rapid response following rain in the Central Australian desert's ecosystems. A) the Todd River flowing after receiving between 20-50 mm of rain over a period of 72 hours; B) *Portulaca* seedlings bursting through the moist soil within hours of rainfall; C) In a matter of days, fields of flowers carpet the ground in the Illparpa area; D) Wild Passionfruit produces fruit only days after rain

GROWING AND HARVESTING NATIVE GRASSES

SPECIES	PHOTO	GERMINATION & ESTABLISHMENT	PERSISTENCE	SEED COLLECTION
Desert Blue Grass <i>Bothriochloa ewartiana</i> <i>Image: Wikimedia Commons</i>		Seed quality is sometimes poor. Good seed germinates readily. <i>Rating: ◇◇◇</i>	Seedlings are very hardy. Mature plants are drought tolerant. <i>Rating: ◇◇◇◇</i>	Dense stands in open areas can be found. Ripe seeds drop rapidly. <i>Rating: ◇◇◇</i>
Native Millet <i>Panicum decompositum</i>		Germinates readily. Seedlings grow rapidly, but will not tolerate dry conditions. <i>Rating: ◇◇◇</i>	Will form dense stands, but requires favourable conditions to persist. <i>Rating: ◇◇◇</i>	Large pure stands uncommon. Seed easily removed, but cleaning required. <i>Rating: ◇◇◇</i>
Native Oatgrass <i>Enneapogon avenaceus</i>		Seed fill is often poor. Seedlings will tolerate dry conditions and mature rapidly. <i>Rating: ◇◇◇</i>	Normally behaves as an annual, but may persist longer under favourable conditions. <i>Rating: ◇◇</i>	Grows in large open stands. Timing of harvesting is important because mature seeds drop rapidly. <i>Rating: ◇◇◇◇</i>
Queensland Bluegrass <i>Dichanthium sericeum</i>		Germination is sometimes poor. Seedlings will not tolerate dry conditions. <i>Rating: ◇◇◇</i>	Requires favourable conditions to persist. <i>Rating: ◇◇◇</i>	Timing of harvest is important because mature seeds drop rapidly. Does not occur in large stands. <i>Rating: ◇◇◇</i>
Curly Windmill Grass <i>Enteropogon acicularis</i>		Germinates readily. Most seedlings die. <i>Rating: ◇◇◇</i>	Plants do not persist. <i>No rating</i>	Seed difficult to remove. Does not occur in open stands. <i>No rating</i>
Silky Brown-top <i>Eulalia aurea</i>		Seed fill is often poor. Good seed germinates readily. Most seedlings die. <i>Rating: ◇◇</i>	Established plants will persist, but only at wet sites. <i>No rating</i>	Grows in pure open stands. Timing of harvest is important because mature seeds drop rapidly. <i>Rating: ◇◇◇</i>
Cotton Panic <i>Digitaria brownii</i>		Seed does not germinate readily. Most seedlings die. <i>Rating: ◇◇</i>	Poor persistence. <i>No rating</i>	Seed is easily removed from plants. Open stands are uncommon. <i>Rating: ◇◇◇</i>
Woollybutt <i>Eragrostis eriopoda</i>		Seed is very difficult to germinate. <i>Rating: ◇</i>	No persistence <i>No rating</i>	Grows in pure open stands. Seed often needs cleaning. <i>Rating: ◇◇◇</i>

Rating classifications

◇ Very Poor, ◇◇ Poor, ◇◇◇ Reasonable, ◇◇◇◇ Good, ◇◇◇◇◇ Excellent

MEMBERS OF LAND FOR WILDLIFE KANGAROO ISLAND, RACE AGAINST THE CLOCK AND PREDATORS TO SAVE REMAINING ENDANGERED KANGAROO ISLAND DUNNARTS



Following the loss of most of their remaining habitat, the desperate plight of the endangered Kangaroo Island Dunnart (above) sees them with little room left to move.
Image: Peter Hammond, KI Land for Wildlife member

The west end of Kangaroo Island has been devastated by wildfire over the past summer and critically endangered species are on the brink of extinction.

Many Land for Wildlife and Garden for Wildlife members and friends in Central Australia will fondly remember Heidi Groffen who coordinated Land for Wildlife in Alice Springs during 2007-2008. She and her partner Pat moved to Kangaroo Island from Alice and instigated the Land for Wildlife program on the Island, the only LfW program in South Australia!

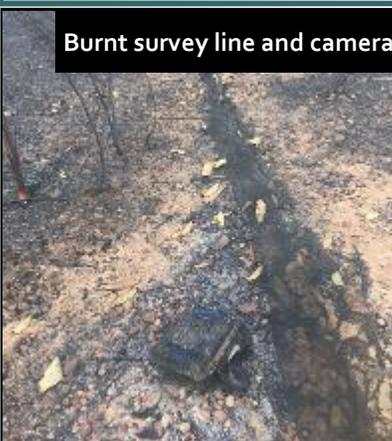
Heidi and Pat are dedicated to habitat and wildlife conservation on KI and have worked tirelessly with a number of private landholders to help secure the endangered KI Dunnart from extinction. The recent devastation wrought by the 2019/20 fires on KI have increased

the Dunnart's likelihood of extinction 100 fold.

Land for Wildlife staff and members are desperately working to protect any remaining Dunnarts. They have been searching the blackened bush for signs of Dunnarts surviving in habitat patches that escaped burning. With some relief, pockets of unburnt habitat have been discovered, some as small as 10m x 10m, with surviving Dunnarts. Camera traps set immediately after the fires have recently captured images of more Dunnarts persevering in a larger habitat patch (250 Ha). Further camera traps have been deployed elsewhere with the hope of recording additional Dunnarts that could still be persisting in other unburnt areas on the Island.

The hopeful rescuers are now busy building bushfire shelters for Dunnarts and other vulnerable small native mammals impacted by the fires. They are utilising the same technology that is currently being implemented in the Otway Ranges in Victoria following the fires there (see article on page 7). The design of the above-ground tunnels was created by Central Australian ecologist, Chris Dickman, to protect small mammals from feral animal predation in open desert environments.

Just like Land for Wildlife in Central Australia, the Land for Wildlife program on KI 'runs on the smell of an oily rag' and is dependant on funding from outside sources. Please offer your support by donating funds for them to carry out this urgent work right now and assist in saving the Dunnart and its habitat from any further loss that would spell disaster. You can make donations to the online funding campaign by clicking [here](#).



Burnt survey line and camera



Building refuge tunnels on KI for small mammals after the fires



Refuge tunnels in place

Feral Cat Feeding Frenzy Following Fires

Feral cats will travel many kilometres outside their home ranges to burnt areas to prey on vulnerable native animals exposed by bushfires.

Reprinted with permission

By Angela Heathcote • australiangeographic.com.au • January 20, 2020



The end of life via predation from a feral cat for (another) Major Mitchell Cockatoo

PLENTY OF AUSTRALIAN animals take advantage of bushfires. Take for example, [Australia's remarkable 'firehawks'](#), which include Black Kites, Whistling Kites and Brown Falcons. These birds will pick up smouldering sticks, drop them in unburnt areas, spreading the fire further and flushing out potential prey.

But when non-native animals, particularly feral cats and foxes, begin feasting on what's left after a bushfire, especially as ecologically devastating as those Australia is currently experiencing, there's potential for some of our unique mammal species to be pushed further towards the brink.

Wildlife ecologist Sarah Legge, who co-authored *Cats in Australia: Companion and Killer* in 2019, says that there are three stages to the impacts feral cats have on native animals affected by the bushfires.

The first is the pressure they've put on native animals before the bushfires. Recent analysis shows that pet and feral cats together kill more than two

billion mostly native reptiles, birds and mammals per year in Australia, and have already contributed to the extinction of more than 20 native mammal species.

Native animals did not co-evolve with cats as their predators, which were introduced to Australia following colonisation, making them (Australian wildlife) easy prey. On top of this, Australian mammals have lower reproductive rates than invasive mammalian predators such as cats and foxes, meaning they (introduced predators) quickly outnumber native animals.

The second stage, which occurs soon after a bushfire, is when cats take advantage of exposed animals that haven't been directly killed in the fire. "They're attracted to hunt in areas that have been severely burnt," says Sarah. "In these areas, their hunting efficiency increases substantially."

In 2015, ecologist Hugh McGregor and Sarah [attached collar cameras on 23 occasions to 13 feral cats](#). They recorded 101 hunting events, of which 32 were successful, and over a quarter of these kills weren't eaten – cats are 'surplus killers'. According to Sarah, the mortality risk for small mammals in fire-affected areas rose significantly. The work also revealed that remnant vegetation left within the fire scar footprint was critical to the survival of small mammals, but in the most recent bushfires, the fire intensity has been extreme in much of the 10 million hectares of land that has been burnt, meaning even small areas of vegetation are few and far between.

In 2016, Hugh and Sarah detailed their discovery that, not only do cats thrive after fires in their own territory, but they will also [travel many kilometres outside their home ranges to burnt areas](#).



Just one of millions of feral cats that continue to impact on the persistence of native wildlife in the Australian environment

Contd. page 7

This Month's Habitat Quiz...??

1. What is the edible portion of the native plant whose photograph appears on page 1 of this newsletter?
2. What is the unusual method used by Thorny Devil lizards to meet their water needs in an arid environment?
3. What are the two defining features that distinguish the Lesser Hairy-footed Dunnart from the Hairy-footed Dunnart?
4. Native snakes are protected in the NT. What are the two legal implications of this protection for anyone?
5. The Anangu people recognise four categories of flora that are found in the Uluru-Kata Tjuta region. What are the Anangu names for these categories? And what do they refer to?

Answers will be in the next newsletter



**Crested Pigeon,
*Ochophaps lophotes***

**Spinifex Pigeons,
*Geophaps plumifera***



Given the large number of feral cats in Australia and the predicted increase in bushfires due to global heating, conservation issues are mounting. As for the current bushfires, Sarah says it isn't yet safe enough in many areas for ecologists to go in and fully assess the damage, but she would expect that any cats that have survived will be doing "very well," which brings us to the third stage.

[Stage three] "After they've mopped up any prey-sized animals in the burnt areas, they'll probably move into remnant unburnt areas that native survivors are using as refuge, putting further pressure on those animals. This will further constrain the ability of populations of native species to recover after the fire."

The question for ecologists is, how can we protect native animals from predation by cats and foxes in the event of bushfires as they become more extreme?

[Deakin University PhD student Darcy Watchorn](#) is the first person to test out supplementary refuges made from chicken wire and shade cloth for native animals in a bushfire-ravaged area. The design of the above-ground tunnels was first created by [Central Australian] ecologist Chris Dickman to protect small mammals from feral animal predation in open desert environments. Darcy tested the shelters in recently burnt areas of Victoria's Otway Ranges to some success, but it's too early to draw reliable conclusions from this.



Feral cat caught in a trap



**The Sandy Inland Mouse,
Pseudomys hermannsburgensis, is another small native mammal under constant threat from predation by feral cats**

Answers to the December Habitat Quiz

1. The three native flora species that are classified as critically endangered in the NT are: 1. *Elaeocarpus miegei* is a tall tree which is found in permanently moist soils in wet rainforest patches in the (very) Top End. 2. *Acacia equistifolia* is known from recent (post 2004) collections from Graveside Gorge in Kakadu National Park and thought to be endemic to the NT. 3. *Intsia bijuga*, also referred to in local languages as Merbau, Kwila, Ipil and Moluccan Ironwood. It is also known from only one site giving it a current known range in Australia of 1.2 ha. It's seeds are widely dispersed by ocean currents which may mean it is a recent arrival to the NT coastline.
2. Female kangaroos have three vaginas. The outside two are where sperm, from the male's two pronged penises, travel up towards the uteri. The middle one is for when the baby joey slides down to develop externally in the mother's pouch.
3. Greater bilbies are nocturnal omnivores that do not need to drink water, as they get all the moisture they need from their food, which includes insects and their larvae, seeds, spiders, termites, bulbs, fruit, fungi, and very small animals. Most food is found by digging or scratching in the soil, and using their very long tongues.
4. The colour, deep purple has been added to the BOM's heat scale to represent temperatures between the range 50-54 C.
5. My guess is you are supporting wildlife by maintaining habitat on your property, possibly providing birdbaths (which more than birds are using at the moment), providing sunning spaces for reptiles and generally speaking, caring for country!

START WHERE YOU ARE: *Local Environmental Events Page*

EVENT	DATE & TIME	VENUE	MORE INFO
 CLEAN UP THE CLAYPANS DAY 2020 AS Landcare, FoIC and ALEC invite people of all ages to step up.	Sunday 1 st March 7:30-10:30 am.	Ilparpa Claypans, Ilparpa Road	Clean Up the Claypans
 STEP UP TO CLEAN UP The Town Council is running a Clean up Australia Day event in the Todd River	Sunday 1 st March; 7:30-9:30 am.	Meet in the public car-park on Leichhardt Tce, opposite the Alice Spring Public Library.	Clean Up Todd River
 Soil Symposium Back by popular demand, the Territory NRM are hosting a 2020 soil symposium series across NT.	Tuesday March 3 rd 8:30-2 pm	Corkwood Room, Desert Knowledge Precinct	Registration https://www.territorynrm.org.au/events .
 40 Years of Action from the Heart: Arid Lands Environment Centre Retrospective	Friday June 12 th 6:00-10:00 pm	Witchetty's, Araluen Arts Centre	RSVP alec.org.au/bday_retrospective

<p>Further Reading Click the link symbol to be redirected to the website</p>		TV • ABC iView series, <i>'Meet the Ferals'</i> , looks at the devastating impact feral animals have on Australia's environment and agriculture and how farmers control introduced pests like cats, goats, pigs, rabbits and wild dogs
		<i>Gardening Tool</i> • Water Tube. This is an easy-care tool for new plantings that require regular watering to establish in the arid zone without the need for a dripper system.
		<i>Facebook</i> • link to the online independent publication <i>'A Drop In The Ocean'</i> to read about current environmental issues that concern all of us.
		<i>Fact sheet</i> • Common snakes and lizard of Central Australia
		<i>Article</i> • 65,000-year-old plant remains show earliest Australians spent plenty of time cooking

Happy reading!
Please consider donating to Land for Wildlife (see right). Your money will help us to continue to support you...



...to support our wildlife

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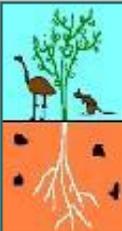
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