

KUDUARRA BIODIVERSITY SURVEY

September 2020





Where did we go?

In September 2020 the Ngurrara Rangers led an eight day trip to Kuduarra (Well 46) on the Canning Stock Route to do a biodiversity survey. The convoy of eight cars included traditional owners for that area, Ngurrara Rangers, Karajarri Rangers and scientists from Environs Kimberley, 10 Deserts and the Department of Biodiversity, Conservation and Attractions. The project also received support from scientists from the NESP Threatened Species Hub.

Alfie Thirkal welcomed everyone to country at Lampa (Well 49) as we drove through, and when we arrived at Kuduarra (Well 46). We were lucky enough to have some clouds and even a bit of light rain at the beginning of the trip. We were also fortunate to have a camp cook, Steve Barnes, to prepare delicious meals for us. Apart from working around Kuduarra, we also drove down to visit Gravity Lakes.

Why did we do the survey?

We want to understand what plants and animals live on country at different stages of regrowth after **warlu** (fire), from **wuntara** (recently burnt) to **yurnara** (old growth grass). To do this we set trapping lines to catch small mammals, lizards and snakes in sites with different aged **jitapuru** (spinifex), so we could learn how things change over time after a fire.

This knowledge will help us plan our fire management. The Rangers are using controlled **warlu** fires during **makurra** (cool season) to try and stop **parntulirrinny** (hot fires) during **parranga** (hot dry season). This fire management results in patches of **jitapuru** of many different ages across Ngurrara country.

This trip allowed us to get out on country and visit sites with the rangers, traditional owners and project partners. We can also tell funders and the community what is happening to the plants and animals on country.

This was our first trip investigating this question, which we will follow up in future years at Kuduarra. We had help from the Karajarri Rangers, who have been doing this kind of survey for two years with help from scientists from NESP Threatened Species Hub and Environs Kimberley.



Department of Biodiversity,
Conservation and Attractions





Methods — how did we do the survey?

When we arrived we drove around to see the age of the **jitapuru** spinifex in the areas around Kuduarra. We had selected Kuduarra as the rangers are doing focused fire management there, and by looking at satellite images we knew there were different ages of **jitapuru** close to the Kuduarra camp.

We didn't want it to get too complicated, so we restricted our sites only to the **pirntirri** (flat sandplains). In the future we would be interested in having sites on **jilji** (sand dunes).

We ended up choosing four different stages of grass regeneration, or ages of **jitapuru** since fire, to see what animals live there:

- **Wuntara** (recently burnt)
- **Waruwaru/Parrawa** (early regrowth, resprouting grass / moderate regrowth after fire, burnt within last 3 years, visibility of game still good)
- **Nyirrinyanu** (grass is dense and mature, impedes the hunter and pierces the hunter's skin)
- **Yurnara** (old-growth, with accumulated dead grass)

We set up 2 sites in the 4 different stages of **jitapuru**, and at each site we had 2 x 50m fences with 10 buckets dug in the ground, 4 funnels laid alongside and 4 camera traps for mammals.

Altogether, we set up 800m of drift fence, 80 pitfall buckets, 32 funnel traps and 32 cameras.



Setting up the sites. Sometimes the ground was soft, other times like concrete!



Drone image of the two fences at a **yurnara** (old growth) site.



WUNTARA

BURNT:
0 Years Ago



WARUWARU/PARRAWA
Laparnwarti (little) jitapuru

BURNT:
1-3 Years Ago



NYIRRINYANU

Yitilijanka (after rains) jitapuru

BURNT:
4-8 Years Ago



YURNARA

Jarlujangka (from long ago) jitapuru

BURNT:
8+ Years Ago



The buckets and funnel traps catch small lizards, frogs, snakes and mammals.

We are targeting these types of animals as they are small and don't travel very far, so that they are affected more by local fires.

We trapped at the 8 sites for 5 days. That means we set traps for 560 trap-nights.

We checked the traps during **rarrpa** (dawn/twilight). If an animal was in the trap, we took it out, identified its species, measured it, gave it a little mark so we could tell if we caught it again, then let it go.

At each site we also took measurements to say what was on the surface of the ground at each site. We walked anywhere through the site for 100 steps, calling out what the toe of our feet was touching every time we took a step.

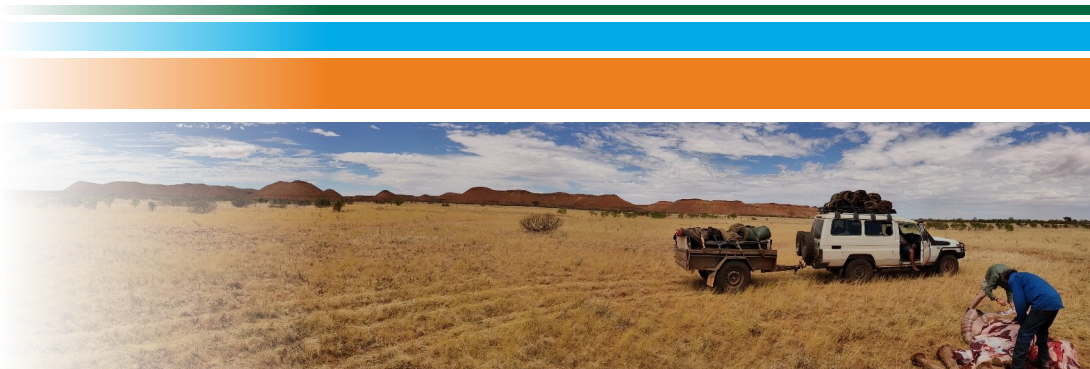
We called out **walyarra/rampala** (sand), leaf litter and logs, **jitapuru** (spinifex/ other grass), and other plants.



Emily checks the traps



Alfie and Hamsini measure a legless lizard





Two-way Learning

The trip used and valued both Ngurrara and scientific cultures.

It was important for the rangers and other traditional owners to learn from the scientists about scientific methods, survey design and the scientific names of animals. To help this:

- There was a live 'scoreboard' which was updated everyday with the results to help everyone understand why we were doing the survey and the results
- Rangers took part in all aspects of the survey, design, site setup, identification and data entry
- There was a quiz on the last night to test what the rangers had learnt

It was equally important for the scientists and other kartiya to learn from the rangers and traditional owners about Walmajarri culture, knowledge and language for country, plants and animals. To help this:

- Walmajarri language was used as much as possible throughout the survey
- Scientists were taught about different aspects of Walmajarri culture, including colonial history, bush tucker and bush medicine.
- There was a quiz on the last night to test what the scientists had learnt and their Walmajarri pronunciation!

The best way to keep country healthy is by combining and valuing both scientific and Walmajarri knowledge and cultures.



Hamsini, Alfie and Elton check out the (scoreboard) with results from the last day



Quiz night, with rangers quizzed about the science they learnt, and scientists quizzed about the Walmajarri language and culture they had learnt.



Results — what did we find?

Overall, we caught 287 animals, from 25 different species. We caught the most **Wiji**, then **Pampirta**, then one type of **Wakura**.

Some species like to live in **Yurnara**, others in **Wuntara**, whereas some don't mind where they live.

We caught 12 species only once or twice, so it's too early to say what sort of place they like to live in.

With more data, we should be able to know what they like.

We caught one mammal, a Kaluta (*Dasykaluta rosamondae*), that has not been seen by scientists this far east in WA. That is called a range extension.



Yurnara



Nyirrinyanu



Waruwaru/Parrawa



Wuntara

Each number is the total number of a species (top) caught in a stage of **Jitupuru** regrowth (left)

Like to live in Yurnara



Ctenophorus isolepis
Central Military Dragon
on
Wiji



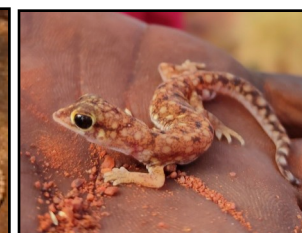
Ctenotus pantherinus
Leopard Ctenotus
Wurrkarn

	20	23
	19	5
	19	1
	→ 6	0

Like to live in Wuntara



Ctenophorus nuchalis
Central Netted Dragon
on
Pampirta



Rhynchoedura ornata
Western Beaked Gecko
Wakura

	0	4
	0	2
	7	2
	32	13



Like to live in Nyirrinyanu and Waruwaru / Parrawa

						
<i>Lucasium stenodactylus</i> Sandplain Gecko Wakura	<i>Lerista bipes</i> Western Two-toed Slider	<i>Lerista labialis</i> Southern Two-toed slider	<i>Ctenotus grandis</i> Grand Desert Skink Wurrkarn	<i>Ctenotus piankai</i> Coarse Sands Ctenotus Wurrkarn	<i>Ctenotus quattuordecimlineatus</i> 14-Lined Ctenotus Wurrkarn	<i>Varanus eremius</i> Pygmy Desert Monitor Wirilka



Yurnara



Nyirrinyanu



Waruwaru/Parrawa



Wuntara

	1	3	0	0	0	1	1
	1	16	4	3	3	3	2
	13	10	0	0	2	2	1
	4	1	0	0	0	3	0







Might like Wuntara and Yurnara

We don't have enough data yet to know where they like

	
<i>Lucasium stenodactylus</i> Sandplain Gecko Wakura	<i>Lerista bipes</i> Western Two-toed Slider

15	3
1	0
2	0
14	5

					
<i>Delma nasuta</i> Sharp-snouted Delma Tampul	<i>Varanus brevicauda</i> ShortTail Monitor Wirrily	<i>Morethia ruficauda</i> Lined Firetailed Skink	<i>Ctenotus helenae</i> Clay Soil Ctenotus Wurrkarn	<i>Menetia greyii</i> Common Dwarf Skink Wurrkarn	<i>Anilius grypus</i> Long Beaked Blind Snake Munyjuku
					
<i>Pygopus nigriceps</i> Western Hooded Scalyfoot	<i>Gehyra variegata</i> Variegated Dtella Wakura	<i>Heteronotia binoei</i> Prickly Gecko Wakura	<i>Ctenotus hanloni</i> Nimble Ctenotus Wurrkarn	<i>Eremiascincus pallidus</i> Western Skink	<i>Lerista separanda</i> Dampierland Plain Slider
		<p>If we want to help all the animals of the desert we need to have all these different aged jitapuru scattered close by.</p> <p>This was great to see as it is exactly what the rangers are trying to achieve with our fire management work!</p> <p>Right-way warlu (fire) = lots of different aged jitapuru = lots of different animals = Healthy Country!</p>			
<i>Sminthopsis macruora</i> Stripe-face Dunnart	<i>Dasykaluta rosamondae</i> Kaluta				



Results continued

We found that the area of bare ground, grass and leaf litter changes over time after a fire.

At first, there is a lot of bare ground and not much grass or leaf litter. But after a few years, it's the opposite: more grass and leaf litter and less bare ground.

Most animals caught in Wuntara and Waruwaru/Parrawa sites were species that like to shelter in **Murnku** (termite mound), burrows or under rocks; we caught fewer animals that hide under grass or leaf litter.

Maybe the species that like grass and leaf litter (e.g. Military Dragon, *Ctenophorus isolepis*) get killed by the fire, by predators after fire, or move away.

Wuntara also contained fewer animals that were active during the day (e.g. Leopard Skink, *Ctenotus pantherinus*), most likely because there is nowhere to hide from day-time predators like a **jarnun** (black kite) **jarirmanu** (swooping and grabbing).



Yurnara



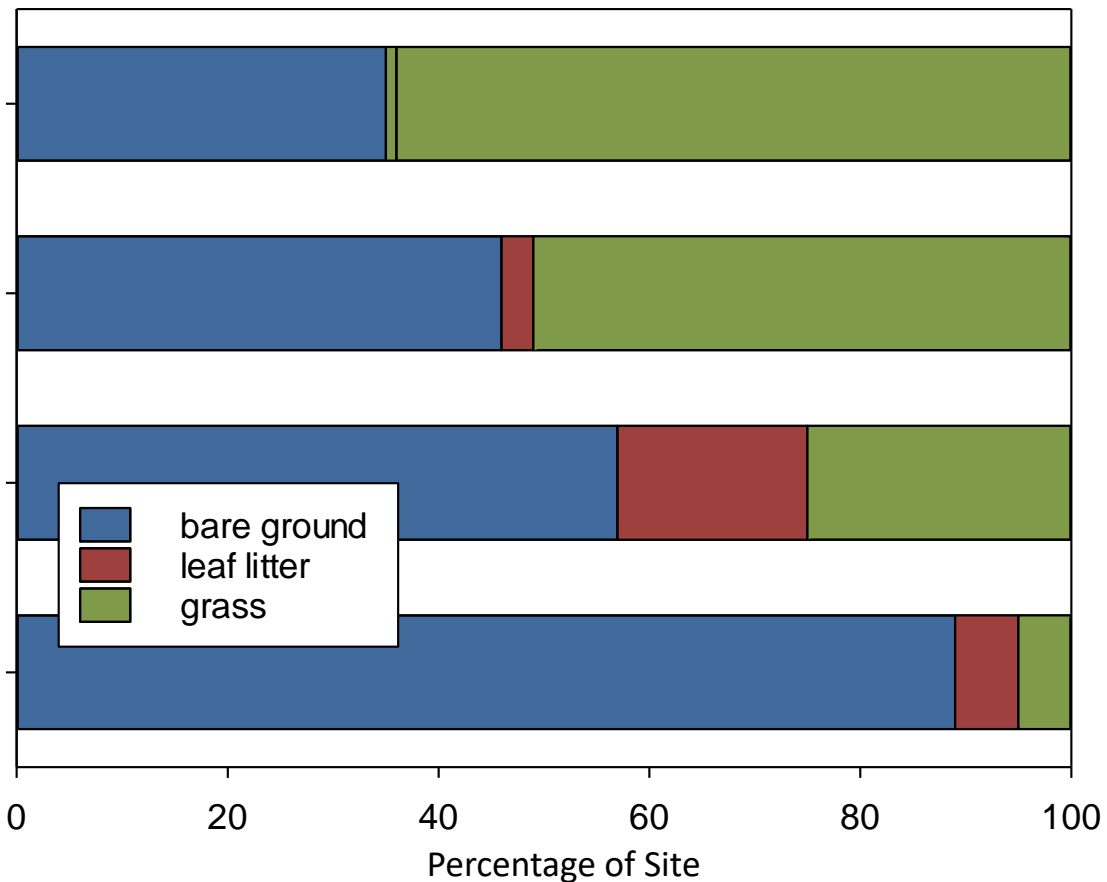
Nyirrinyanu



Waruwaru/Parrawa



Wuntara





Conclusions — what did we learn?

We learnt and practised our survey skills, and data collection skills. We shared our knowledge of names and fire ecology with the scientists that came with us.

We learned that some species like to live in places that were burnt recently, others in places burnt a long time ago.

To look after all animals we need to make sure there is **jitapuru** of different ages around in the same area, **Wuntara**, **Waruwaru**, **Parrawa**, **Nyirrinyanu** and **Yurnara**, so all the animals have somewhere to live.

To do this we need to stop **parntulirrinny** (hot fires) burning wide areas of country all at once, because then there will only be one type of habitat and some animals will lose out.

Instead, we need to use controlled **warlu** to burn lots of small areas at different times, so there is **jitapuru** of different ages, so different animals have somewhere to live on country.

Even though this is our first survey, our data are already telling a story.

As we collect more data, our story will get stronger, and we will be able to show people that our fire management is making country healthy.





Thankyou

The Ngurrara Rangers would like to thank the Walmajarri community, Karajarri Rangers, Environs Kimberley, 10 Deserts, NESP Threatened Species Hub, DBCA and Steve Barnes.

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This report was compiled by Sarah Legge (NESP) and Malcolm Lindsay (EK), and all Walmajarri language was checked against the published dictionary.

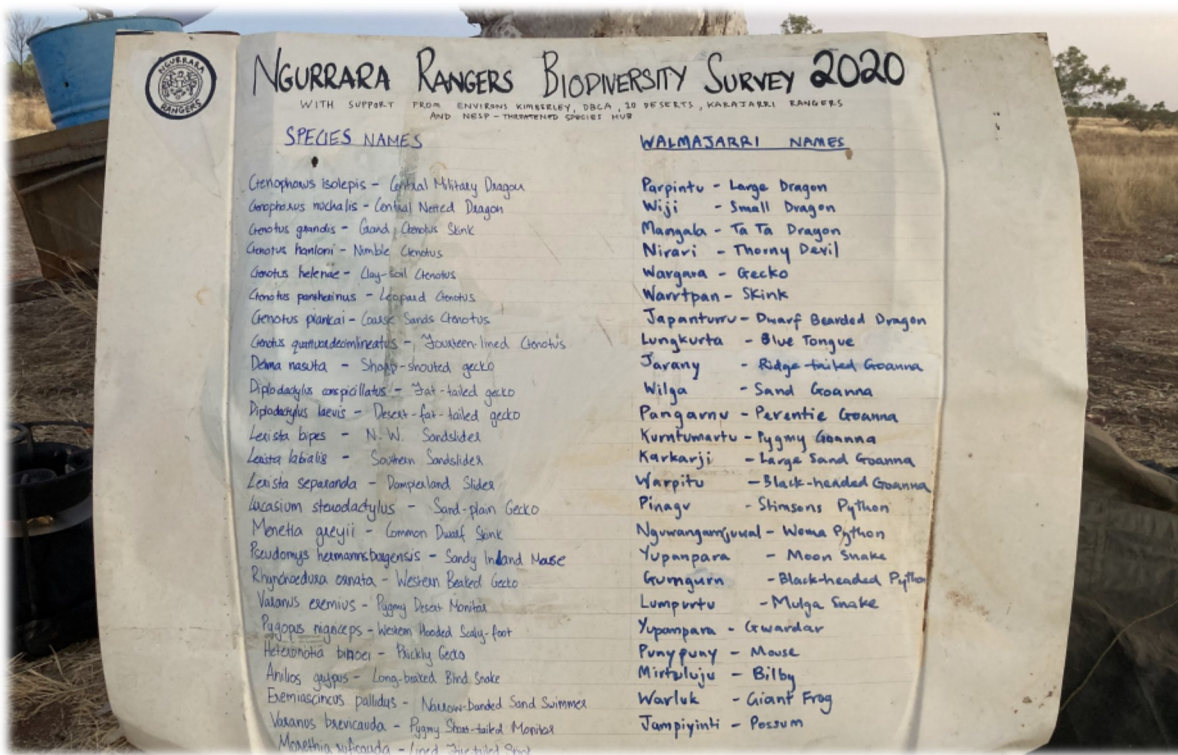
For more information contact the Ngurrara Rangers, countrymanager@yanunijarra.org.au



National Environmental Science Programme



Department of Biodiversity, Conservation and Attractions



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WITH SUPPORT FROM ENVIRONS KIMBERLEY, DBCA, 10 DESERTS, KARAJARRI RANGERS AND NESP - THREATENED SPECIES HUB

SPECIES NAMES

- Genophis isolepis* - Central Military Dragon
- Geophis mackayi* - Central Nered Dragon
- Geophis grandis* - Grand Geophis Skink
- Geophis henloni* - Nimbble Geophis
- Geophis heleneae* - Clay-bell Geophis
- Geophis pantherinus* - Leopard Geophis
- Geophis planckii* - Coarse Sand Geophis
- Geophis quadradominatus* - Fourteen-lined Geophis
- Dama nasuta* - Shaggy-shouted gecko
- Diplodactylus conspillosus* - Bat-tailed gecko
- Diplodactylus laevis* - Desert-fat-tailed gecko
- Leiolia bipes* - N.W. Sandstone Slider
- Leiolia kabalis* - Southern Sandstone Slider
- Leiolia separanda* - Vampeland Slider
- Lacisium stenosdactylus* - Sand-plain Gecko
- Monetta greyii* - Common Dwarf Skink
- Pseudomys heermansburgensis* - Sandy Inland Mouse
- Rhynchoedura ornata* - Western Bearded Gecko
- Vatinius eximius* - Pigmy Desert Monitor
- Pagopus ruficeps* - Western Headed Scaly-foot
- Heteronotia bilboi* - Bucky Gecko
- Anilius guypus* - Long-beated Blind Snake
- Emmascincus pallidus* - Narrow-banded Sand Swimmer
- Voxanus breicauda* - Pigmy Short-tailed Monitor
- Monetta rubicunda* - Lined Dwarf-tailed Skink

WALMAJARRI NAMES

- Parpintu - Large Dragon
- Wiji - Small Dragon
- Mangala - Ta Ta Dragon
- Nirari - Thorny Devil
- Wargara - Gecko
- Warrtpan - Skink
- Japanturu - Dwarf Bearded Dragon
- Lungkurta - Blue Tongue
- Jarany - Ridge-tailed Goanna
- Wilga - Sand Goanna
- Pangarnu - Perentie Goanna
- Kurntumarlu - Pygmy Goanna
- Karkarji - Large Sand Goanna
- Warrpitu - Black-headed Goanna
- Pinagu - Simons Python
- Ngwanganjwal - Woma Python
- Yupanpara - Moon Snake
- Gwungurn - Black-headed Python
- Lumpurtu - Mulga Snake
- Yupampara - Gwardar
- Puny-puny - Mouse
- Mirtaluju - Bilby
- Warluk - Giant Frog
- Jampiyinti - Possum