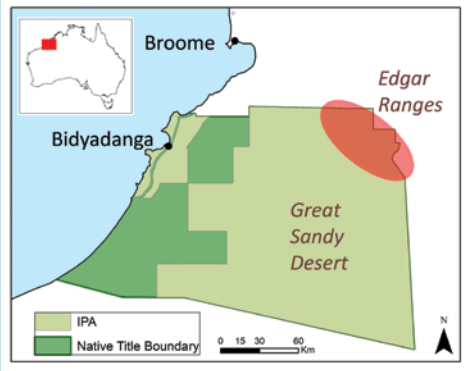
Karajarri Fire and Biodiversity Project

About the project

This project is about supporting fire management, cultural knowledge and biodiversity over the inland pirra (desert shrublands) and marangurru (spinifex country) areas of Karajarri Indigenous Protected Area (IPA).

The IPA is a huge area and access from the ground is hard. Karajarri rangers are using aerial burning to manage fire over large areas. To see if this is helping wildlife, Karajarri are working with partners like Environs Kimberley and the NESP TSR Hub to set up a monitoring program in the pirra and marangurru.

They want to "see what animals are here, check out if the country is in good shape, and if the fire management is working."



Karajarri IPA covers part of the Great Sandy Desert. The Edgar Ranges is in the north-east part of the IPA. The red highlighted area indicates the fieldtrip location.

Monitoring sites

The first monitoring trip was in April 2019, to the Edgar Ranges. The monitoring sites were set up in places that burnt one or two years ago in a big wildfire, and other places that havent burned for ten or more years. The rangers spent two days digging to set up 80 pitfall traps, 32 funnel traps and 32 camera traps, connected with 800 m of drift-fence set up in 16 lengths.

The rangers trapped for six days, and caught almost 750 frogs, mammals and reptiles (skinks, dragons, geckoes, snakes). They counted birds of nearly 60 species. They also did surveys for plants and for what was on the ground surface.

Photos throughout were taken by S. Legge, J. Weymss, P. Martin; they belong to the Karajarri IPA

Marissa, Sheen and Jackie check a pitfall trap.

Gulu doing bush tucker surveys.

Bayo checks a funnel trap.

Threatened Species Recovery Hub
National Environmental Science Programme
Kimberley Land Council
Karajarri Rangers
environs KIMBERLEY
Government of Western Australia
natural resource management program

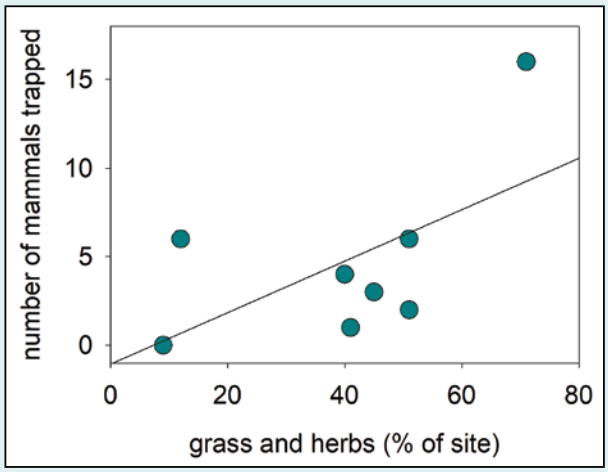
Monitoring data

The data are telling interesting stories. The numbers of small animals trapped at the sites depended on how much bare ground versus grass cover and leaf litter there was.

Sites that were burnt 1-2 years ago in the wildfire had more bare ground, and less grass and leaf litter covering the soil.

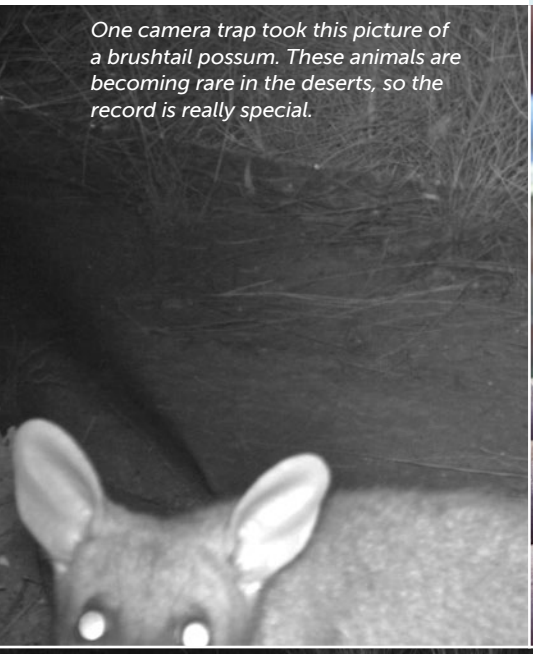
Mammals

Small mammals, like lesser hairy-footed dunnarts and native mice, were more common when there was more grass cover. They need grass to hide from predators, especially feral cats and foxes.



The more grass and herbs there was at a site, the more mammals we caught.

The lesser hairy-footed dunnart we caught in a pitfall trap. We 'caught' lots of native mice on the camera traps.



One camera trap took this picture of a brushtail possum. These animals are becoming rare in the deserts, so the record is really special.

There were lots of cat tracks at the sites,and the camera traps picked up cats and foxes.

Reptiles

Reptiles were more common at sites with less bare ground (and more leaf litter and grass).

There are lots of different kinds of reptiles. Some are active only during the day, some at night. Some species live on the surface of the ground, whilst others live up in trees, or burrow under the sand. Fire could affect species with these different lifestyles in different ways. For example, if a species is active at night, or burrows under the sand, maybe it doesn't matter if there is more or less grass on the soil surface.

So we checked to see if there were differences between daytime and night time reptiles, and between reptiles that live on the ground versus the species that burrow or live in the trees. And there was!

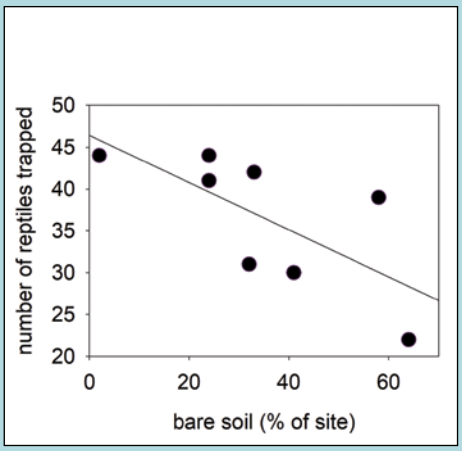
The numbers of daytime reptiles, and the number of reptiles that live on the soil surface, was less when there was more bare ground. But the numbers of night-time reptiles, and reptiles that burrowed or climbed trees, didn't change as the amount of bare soil increased.

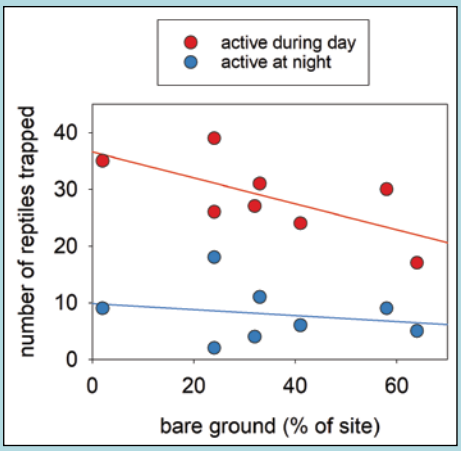
We also found that the rarest reptile species (the ones we only caught once) like the blue-tongue lizard and pygmy desert monitor, were usually at the sites with lots of ground cover.

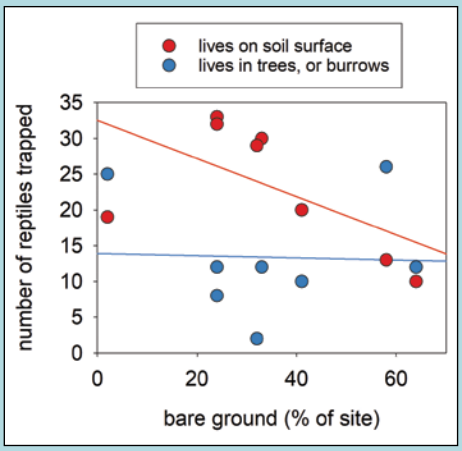
The northern shovel-nosed snake (left) burrows under the soil to hunt the eggs of other reptiles. Bynoe's gecko (right) is active at night. Both species seem to do ok even after wildfires, probably because they don't rely on cover from grass and leaf litter to survive.

Ctenotus inornatus *(left) is a big skink that lives on the ground and is active during the day.* Delma butleri *(right) is a legless lizard that lives under spinifex. After big fires burns off their grass and leaf litter habitat, there are less of these kinds of reptiles.*







Like mammals, reptiles, especially the species that live on the ground surface and are active during the day, need cover (grass and leaf litter) to hide from predators. The cover also protects them from the sun, and keeps the soil surface a bit cooler.

More information

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What we have learned

The monitoring work is showing us that as we get fire under control, and stop the big desert wildfires, there will be more grass cover and leaf litter on the ground, and also more small mammals and reptiles.

We plan to do this monitoring work twice a year, at Edgars and Kulgara, for a few years, to really understand what fire does to the wildlife and to help us manage fire to keep country healthy.

Beno with a skink caught in a pitfall trap.

Jacko collecting plants.

Kamahl with a desert rainbow skink.

Sheen, Moonie, Gulu and Ewan entering data back at camp.

Threatened Species Recovery Hub
National Environmental Science Programme

To read the full report on the Edgar Ranges fieldtrip, check out:
Karajarri rangers, Environs Kimberley, NESP TSR Hub (2019)
Karajarri Fire and Biodiversity Project April 2019 fieldtrip report.

Project partners: Karajarri IPA, Kimberley Land Council, NESP TSR Hub, Environs Kimberley, with additional support from The Nature Conservancy, Bush Heritage Australia, WA State NRM, WA DBCA.