

Pirra Jungku – How fire patterns have changed on Karajarri country over 70 years

Project 1.3.4

Key messages

- Fire management has changed a lot since Karajarri people moved off desert country 60 years ago.
- We looked at photos taken from the air of Karajarri Country 70 years ago and in the last 5 years to learn about how fires have changed.
- 70 years ago fires were smaller, closer together and burned less often.
- This might have prevented large wildfires. It was also good for some plants and animals.
- Now wildfires are much bigger and Country burns much more often.

Who was involved in this study?

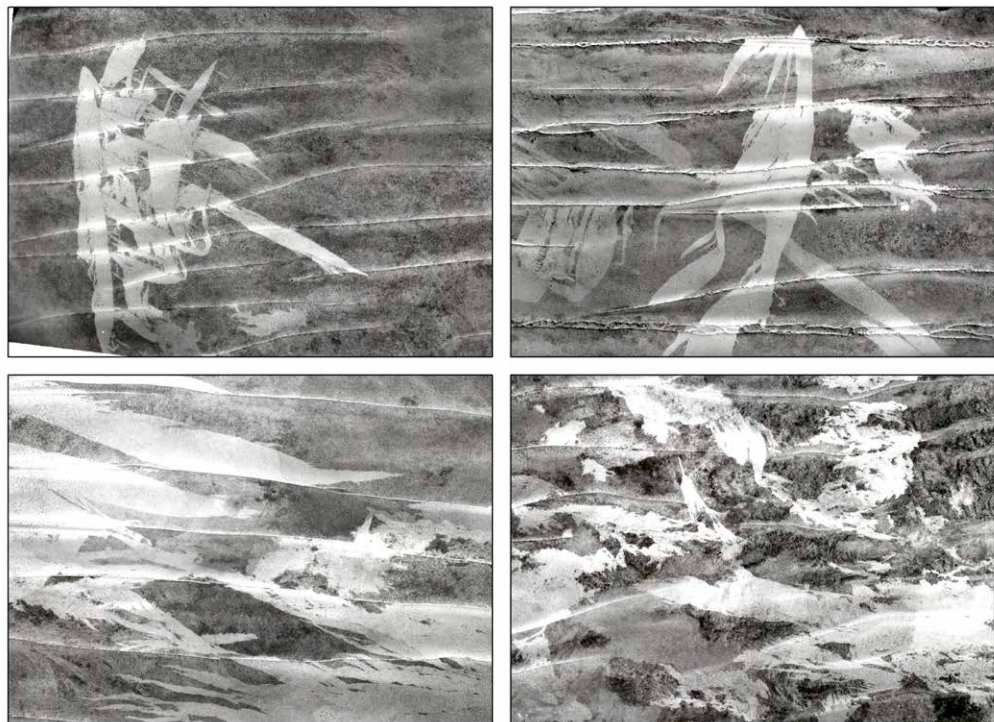
Karajarri Traditional Owners and Karajarri Traditional Lands Association asked scientists to help them with the study.

In this project, Karajarri Traditional Lands Association and Karajarri Rangers worked together with researchers Sarah Legge and Ed Blackwood from The University of Queensland, and with scientists from Environs Kimberley.

The project was funded by the National Environmental Science Program through the Threatened Species Recovery Hub.

Summary in Karajarri language (by Jess Bangu)

Yulpurujangka photo ngangara kankarajangka jungkujangka Karajarrikura ngurrangka, kulurrangujanga pirranga nangn jungku janjaja rangersju kampanya. Kulurrangungku kampayana wupatu jungku. Jauja nangu jungku kampanya wupatu jauja, wartujangka jungu kamanya ngurra wakay. Nangujanga wupatajanga jungku kuwi nyangara malurrangu, nganinaku warrkamku.



ABOVE: Aerial photographs outline the pale fire scars in Desert Country. Fires were lit by Traditional Owners for hunting, gathering, ceremonies and clearing patches for setting up a camp. Credit: Ed Blackwood. Imagery provided by National Library of Australia.



FAR LEFT: Marissa setting up a camera trap along a drift fence. Image: Nicolas Rakotopare

LEFT: Beno doing a vegetation survey. Image: Nicolas Rakotopare

What's this project about?

Karajarri Traditional Owners lived across their desert country for many thousands of years. The fire management these Old People used was good for Country, people, animals and plants.

In the last 60 years Karajarri people moved off parts of their desert country and into towns like Bidyadanga. Without people living on desert country, fire management has changed.

Some people took photos of Karajarri Country from the air in a plane about 70 years ago, in 1947- 1949. We can look at the fire scars in these photos to learn a lot about how Karajarri Traditional Owners were burning Country 70 years ago, before they moved off Desert Country.

By comparing these photos with satellite images from 2016-2020 we can also see how much fire patterns have changed.

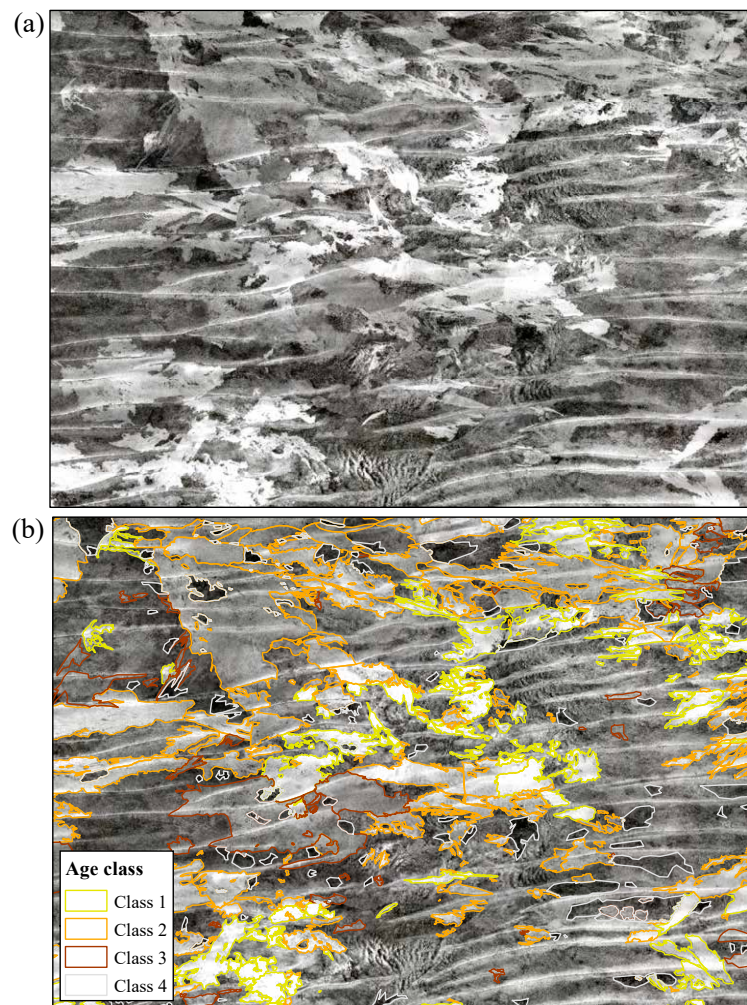
We looked at:

- the size of the fires
- the distance between fire patches
- how old vegetation patches are (time since fire)
- how often fires happen
- if burning was different between cultural sites and other areas

The project happened in 2020 and looked at part of the Karajarri IPA from the coast to Desert Country.



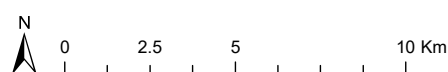
Sheen, Gulu, Sarah and Jacko during a vegetation survey. Image: Phoebe Martin



RIGHT: a) Photos of fire scars in Desert Country taken from a plane in the 1940's.

b) How we mapped fire scar patches using the age of vegetation.

Credit: Ed Blackwood. Imagery provided by National Library of Australia



What did we find out?

We found that fires have got a lot bigger since people stopped living on Desert Country 60 years ago.

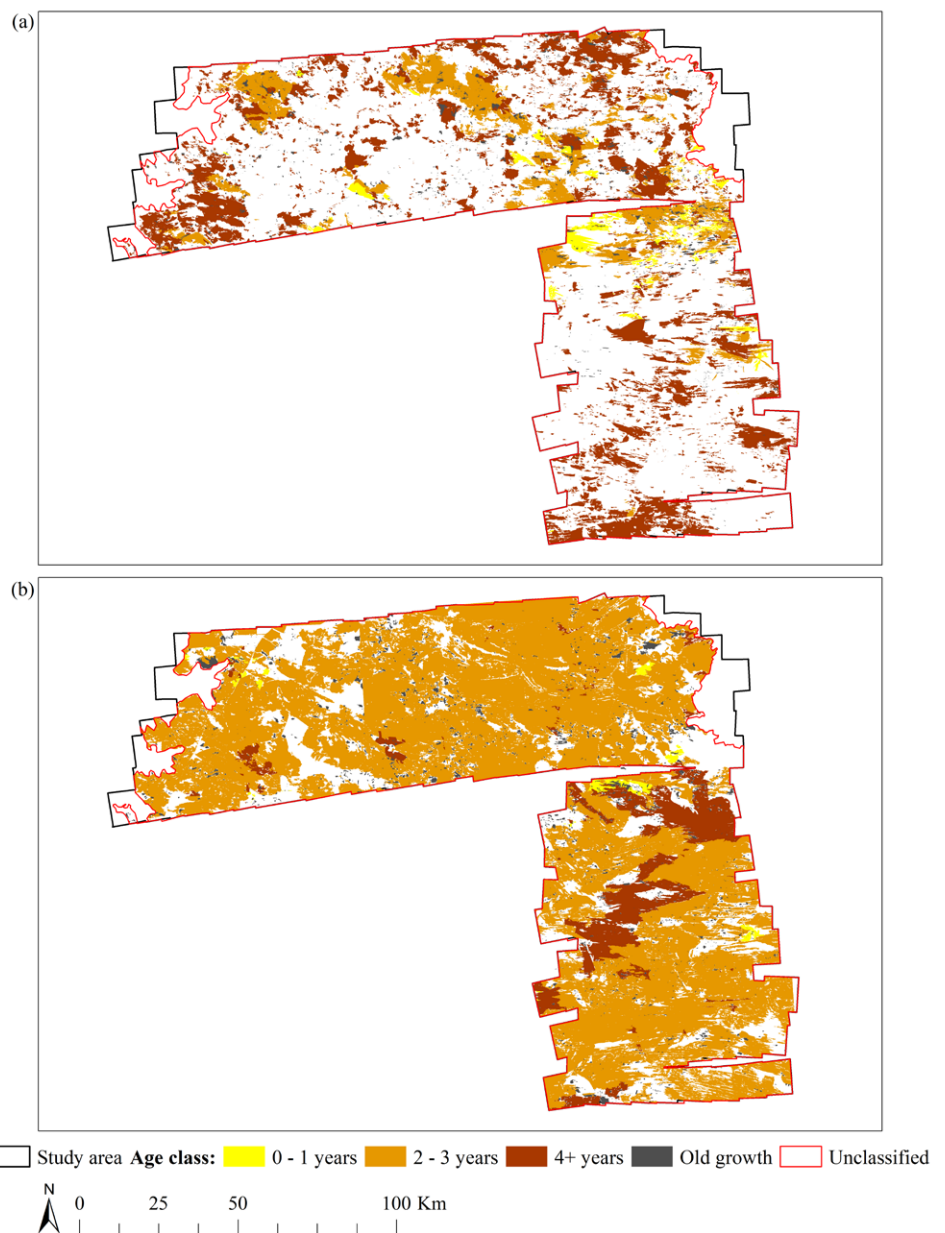
In the 1940s, Karajarri Traditional Owners burnt many small patches. The average size of burn patches was about 50 ha (about 500 m x 1 km, 25 AFL fields). Patches were about 370 m apart on average.

Now fires are much bigger. The average fire burn area is over 10 times larger than they used to be - the average fire patch size is now 582 ha (about 3 km x 2 km, about 250 AFL fields). They are also more spread out, about 550m apart on average.

Country is also burning much more often now. In the 1940s Country was burning every 5-6 years on average, and now Country is burning every 3-4 years on average.

In the 1940s, patches were larger at the coast and smaller in the desert. Nowadays it's the opposite, maybe because Old People burned a lot in the desert, and now people are burning more near the community and coast.

In the 1940s photos we did not see a difference in burning patterns around cultural sites compared to other areas. This may be because for cultural reasons some sites were burnt, and others weren't, or because we did not have accurate maps of cultural sites.



ABOVE: The fire scars showed that in the 1940's (the top map) (a) fires were smaller, more spread out, and happened less often than now (the bottom map) (b). Credit: Ed Blackwood

Why did we do this study?

The study aimed to support Karajarri's fire management goals.

We wanted to understand how Traditional Owners in the 1940s used fire in the desert and how fire has changed since then.

This information is helpful for Karajarri Rangers and Traditional Owners who are doing fire

planning and burning Country.

Better fire management might stop large, hot wildfires from burning across Country. This might also help plants and animals.

The things we learn might also help other Traditional Owners and Rangers to better manage fire on their Desert Country.



Bayo checks a funnel trap. Image: Sarah Legge



The desert spadefoot frog (*Notaden nichollsi*). Image: Sarah Legge



The lesser hairy-footed dunnart (*Sminthopsis youngsoni*). Image: Sarah Legge

How can this information be used

The findings of this study can help Traditional Owners and Rangers to shift current fire patterns to be more like when Traditional Owners still lived across Desert Country.

Rangers and Traditional Owners should continue with the burning program, aiming to burn more smaller-scale fires from the air. This will help to prevent the spread of large hot wildfires. They could also choose some trial areas where many smaller fires could be lit from the ground, and then compare the fire patterns at these places with aerial burning results. The biodiversity monitoring that the rangers are doing will show what type of fire management works best for animals and plants.

More information

If you want to talk about this project you can contact:

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Kamahl and Moonie recording survey data. Image: Nicolas Rakotopare



Marissa, Elton and Jacko digging a trench to set up a drift fence. Image: Nicolas Rakotopare



Karajarri and Nurrara Rangers and partners on one of the field trips. Image: Nicolas Rakotopare