Arid Zone Monitoring
Species Profile

Fox

Vulpes vulpes

Language names

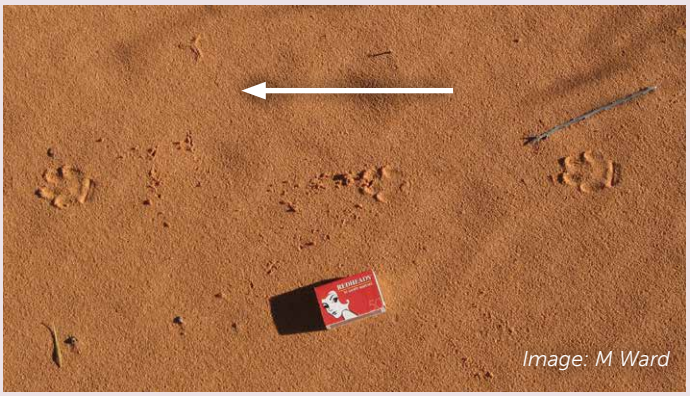
Kirlmarrara, Ngatin, Puwutjuma, Tuuka, Waltaki

Introduced species: Predation by the European red fox is listed as a Key Threatening Process under national environmental law (the EPBC Act)

Fox.

Fox scat, with fur and bone fragments.

Fox tracks.



Fox tracks (arrow shows which way it is going).

Impacts

- Foxes hunt and kill native animals
- Foxes have helped to make many Australian mammal species to become extinct, and still cause declines and local extinctions of animal populations like bilbies
- Foxes carry diseases which can affect wildlife, pets and people
- Reducing the number of foxes can allow native animal populations to grow

Habitat

Foxes are found right across southern Australia, in every habitat, including in towns. They don't usually live in the tropics, although foxes are known from the northwest coast of the Great Sandy Desert and Dampierland. Foxes need access to water, so they are not in the driest parts of the desert unless it is raining. Foxes are active at night. During the day, the fox sleeps in dens, rabbit burrows, logs and other shelter.

Fox scat

Fox scats are similar to cat and dingo scats. They are about 2cm wide, and sometimes sausage shaped. They may contain fur, bones, feathers, insects and plant material. Fox scats are sometimes laid on high ground or near the bodies of dead animals.

Fox tracks

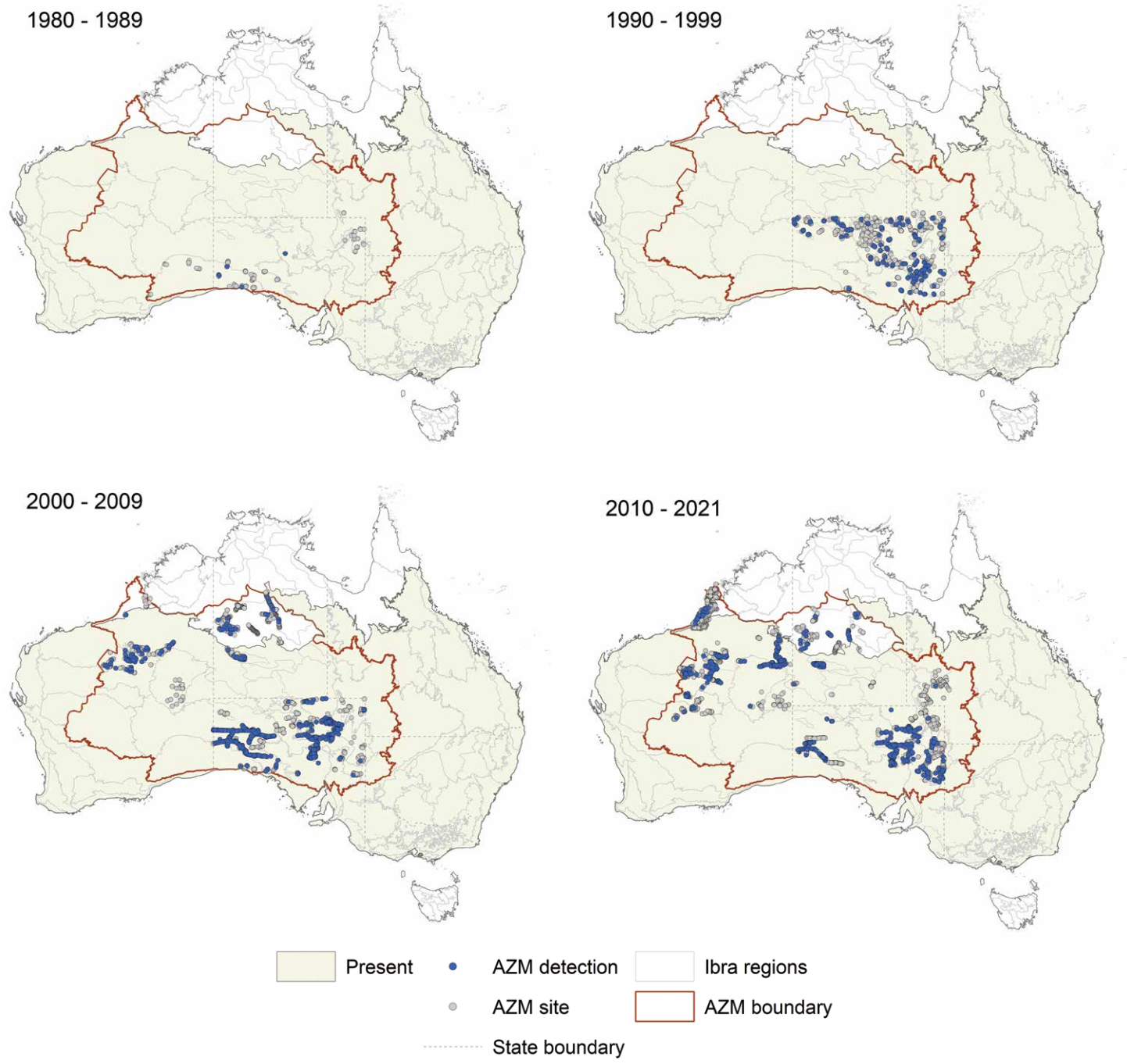
Fox and dog tracks look almost the same. Fox prints are smaller, and they have a narrower, more oval paw print than dogs, with the marks made by the central claws are closer together.

Arid Zone Monitoring project findings

Fox distribution

Foxes were introduced to Australia in the 1860s. Then established in southern Victoria in the 1870s, then spread quickly across temperate, sub-tropical, and inland Australia. They are mostly absent from the tropics.

The maps summarise the detections of foxes over time in the AZM dataset. They show that foxes have been detected wherever people have surveyed since the 1980s. Each blue dot is a survey site where foxes were recorded in that decade. The grey dots show all the other sites that were surveyed in that decade, but where camels were not recorded. These records were made by Indigenous Ranger groups, land councils, NGOs, government agencies and researchers. The information about the overall distribution in the map background is taken from the Australian Faunal Directory[1].



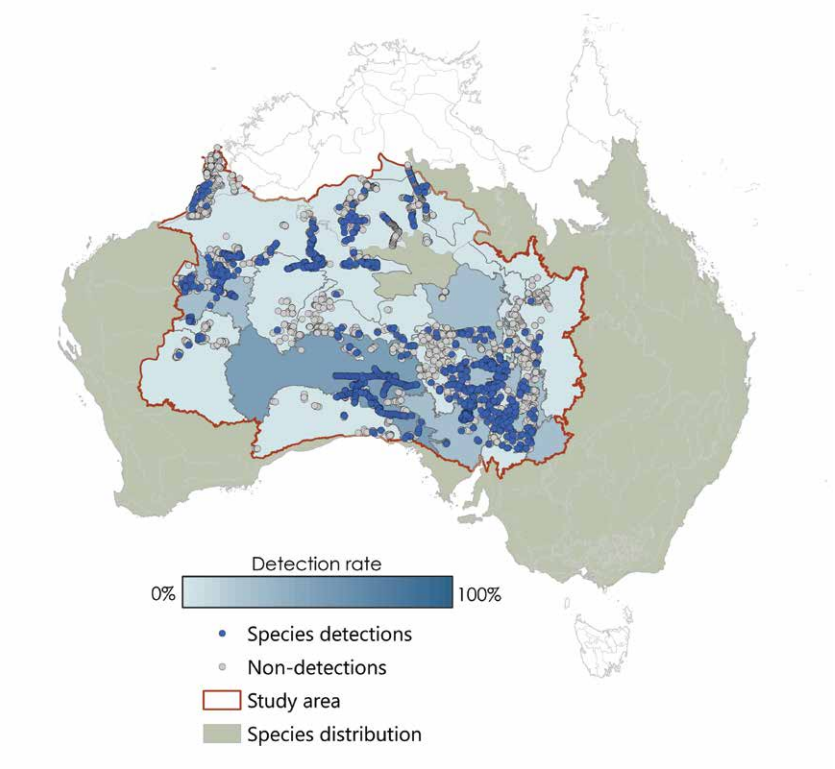
The maps above are based on data shared by data providers with the AZM project. The data are from track and sign surveys. This method is great for detecting species that live in sandy deserts, but not as good for species that prefer rocky habitats, or species with distributions that are mostly outside the central deserts. The method also works best for larger-bodied animals with tracks that are easily identified.

It is possible that extra surveys have been carried out that have not yet been shared. If you see 'gaps' in the maps that you could fill by sharing your data, let us know.

Fox detection rates

Foxes were detected over 19% of all surveys in the AZM dataset. It was the fifth most commonly recorded mammal species, and the fourth most commonly recorded introduced mammal species.

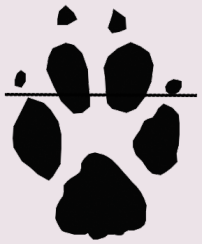
The map shows the average detection rate for foxes across all surveys carried out in each bioregion, since the 1980s. Detection rates have been higher in the southern deserts (deeper blue shading), compared with the northern deserts. A more detailed analysis of fox detections at a subset of AZM sites that were revisited over five or more years, shows that foxes tend to be detected more in recently burnt areas, and when rain has caused an increase in the amount of green vegetation.



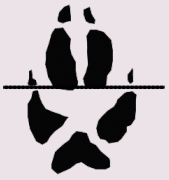
Animals that might be confused with the fox during survey

- Dingo
- Cat

To tell the difference between these species check the position and alignment of the toe pads and the presence of claw marks – dingoes and foxes leave a claw imprint in the sand whereas cats do not. Dingo tracks are larger and wider than cat and fox tracks. The front toes of foxes are further in front of the back toes, than those of dingoes.



Dog



Fox

Cat

Image: Naomi Indigo

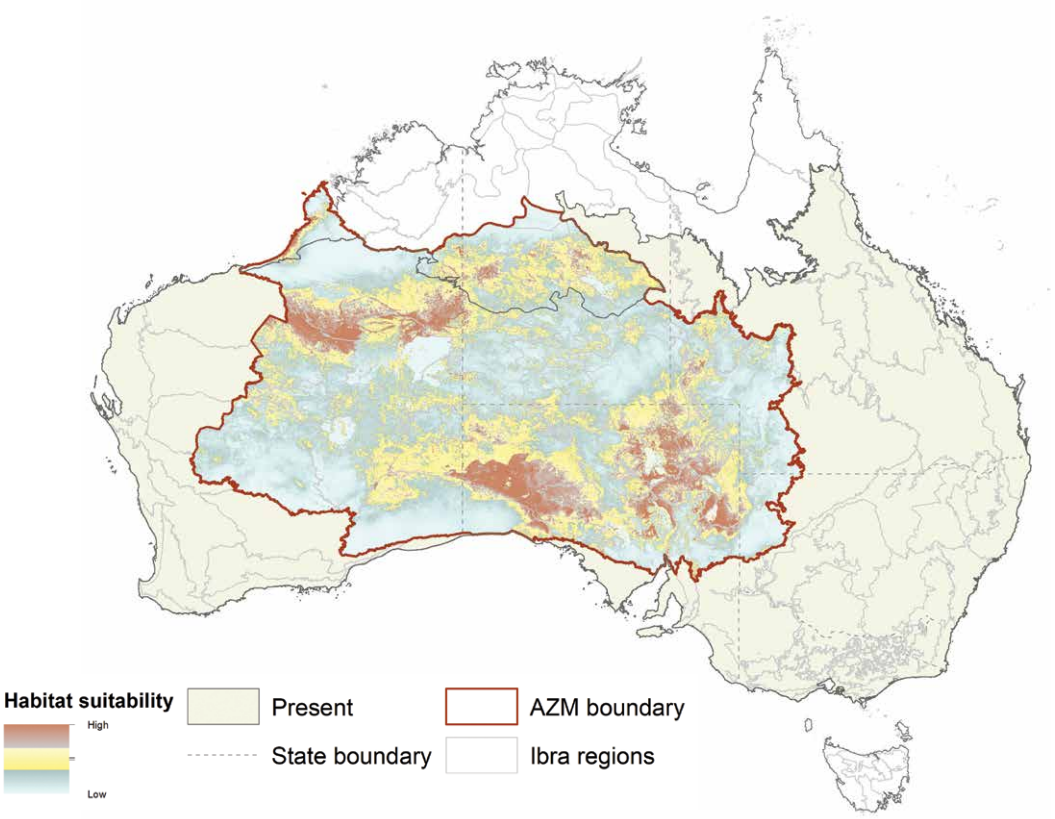
Things to think about when surveying for foxes

- Survey during good conditions (in the early morning is best, not too windy and not straight after rain).
- Organise to do surveys at regular times every year – for example, before the wet or hot season (October) and in the early dry season or early cool time (April).
- Follow advice of experienced trackers - know how to tell fox tracks apart from dingoes and cats before you go to survey.
- Look for tracks on the roads, as predators often use roads adjcent to sandplot sites.
- If you want to see changes over time, you will need to go back to the same areas to sample over several years. If you want to see if management actions (such as right-way fire or culling) are working, you need to sample many different sites, before and after the action. You might need help from a scientist to make the sampling design strong.

Fox habitat suitability

The habitat suitability model can tell us about where foxes are most likely to be found. The analysis considered climate factors like annual, seasonal and daily temperature and rainfall; landform factors like elevation and slope; soil factors; and habitat factors like the amount of vegetation (NDVI) and fire frequency.

The model suggests that foxes prefer low-lying areas and places with clear temperature differences between the night and day, such as are found in temperate regions. These are the red-brown shaded areas of the map. The map only shows habitat suitability inside the AZM project boundary, but foxes are also found outside the project area and can be very common in these areas. The habitat suitability model does not predict well in large areas where there has not been any sampling, for example in parts of the Great Sandy Desert or the Great Victoria Desert; getting more survey data from these areas would improve the model.



Further information

Centre for Invasive Species Solutions- Glovebox Guide for Managing Foxes:
https://pestsmart.org.au/wp-content/uploads/sites/3/2021/03/CISS-Glovebox-Guide-Fox-web.pdf

Arid Zone Monitoring project:
https://www.nespthreatenedspecies.edu.au/projects/arid-zone-monitoring-surveys-for-vertebrates-across-arid-and-semi-arid-zones

References

[1] ABRS. Australian Faunal Directory. 2021; https://biodiversity.org.au/afd/home. Accessed June, 2021.

Threatened Species Recovery Hub
National Environmental Science Programme

This project received support from the Australian Government's National Environmental Science Program.

The Arid Zone Monitoring project is a collaboration between the NESP TSR Hub and over 30 Indigenous ranger groups and Indigenous organisations, 8 NGOs and NRM groups, 5 government agencies institutions, and many individual researchers and consultants. The project has gathered track and sign data from across Australia's deserts, using it to map the distributions of desert species and their threats. The national database includes almost 50,000 species presence records from over 5300 unique sites and almost 15,000 site visits, over the period from 1982 to 2020. The project area was defined by using IBRA subregional boundaries - the project boundary captures Australia's desert subregions where track and sign-based surveys are commonly used. The project showcases the collective work carried out by all groups working across the arid zone, and lays the groundwork for creating ongoing, national-scale monitoring for desert wildlife.

Cite this publication as NESP Threatened Species Recovery Hub, 2021. Arid Zone Monitoring Species Profile: Fox, Project 3.2.5 findings factsheet.