Arid Zone Monitoring
Species Profile

Camel

Camelus dromedarius

Language names

Artep mpwer, Auru, Kaajuwal, Kamala, Kamula, Kamule, Kamurl, Kamwerl

An invasive herbivore, noted in the key threatening process (Novel biota and their impact on biodiversity) listed under national environmental law (the EPBC Act). Was the subject of a national Feral Camel Action Plan from 2010, developed under the Australian Pest Animal Strategy.

Camel.

Camel scat.

Camel tracks in dried mud.

Camel tracks in soft sand. Arrow shows the direction the camel is moving in.

Impacts

- Damage to plants (curly pod wattle, bean tree, quandong, plumbush and supplejack) and wetlands.
- Damage to cultural sites.
- Compete with native animals for food.
- Damage to buildings, fences, and safety risk.

Animal Description

Camels are very large, weighing around 500 kg. Their dry or cool season coat is longer and darker than the wet or warm season coat.

Habitat

Camels are specialised desert animals, with adaptations to survive without daily access to water.

Camel scat

Camels produce round pellets, usually in large numbers. The pellets have bits of plant material in them.

Camel tracks

Tracks are very large and rounded, with a large gap between two pads at the front and back.

Animals that might be confused with the camel during survey

- Horse
- Donkey

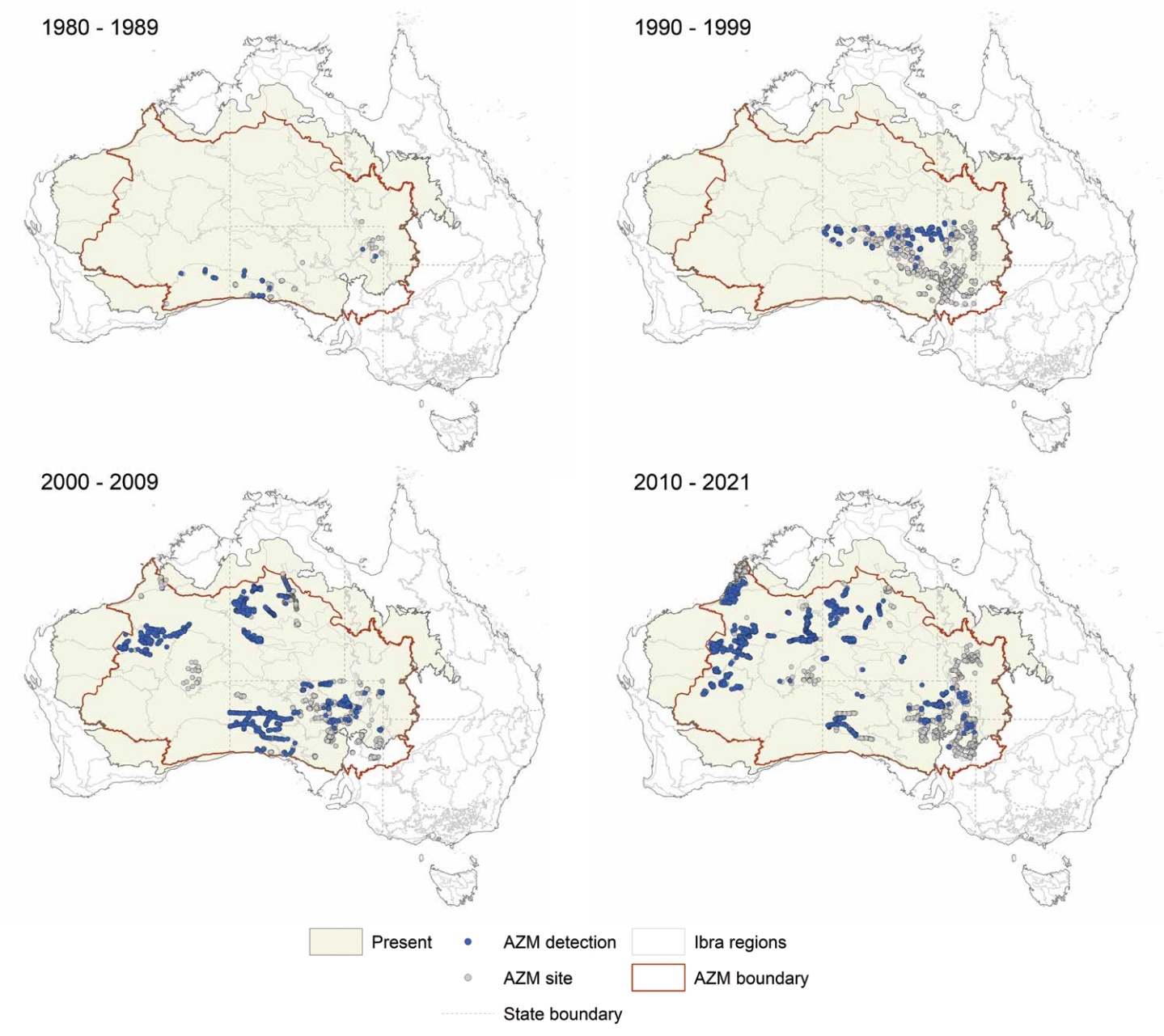
To tell the difference between these species, check the size of the tracks because camel tracks are much larger. Also the camel track has a large gap between two rounded toe pads. Donkeys and horses have an obvious "complete" hoof print that does not have separate toe pads.

Arid Zone Monitoring project findings

Camel distribution

Camels were introduced to Australia in the mid-1840s from Afghanistan and India to help with transport. When cars and trucks became used instead, from the 1920s, many camels were let go in the deserts, becoming feral. They quickly spread across central Australia. Camels can eat most desert plants and can go for a long time without water. This means they can reach almost all parts of all the deserts.

The maps below summarise the detections of feral camels over time in the AZM dataset. They show that camels are found throughout central Australia and have been detected wherever people have surveyed since the 1980s. Each blue dot is a survey site where camels 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 show 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.

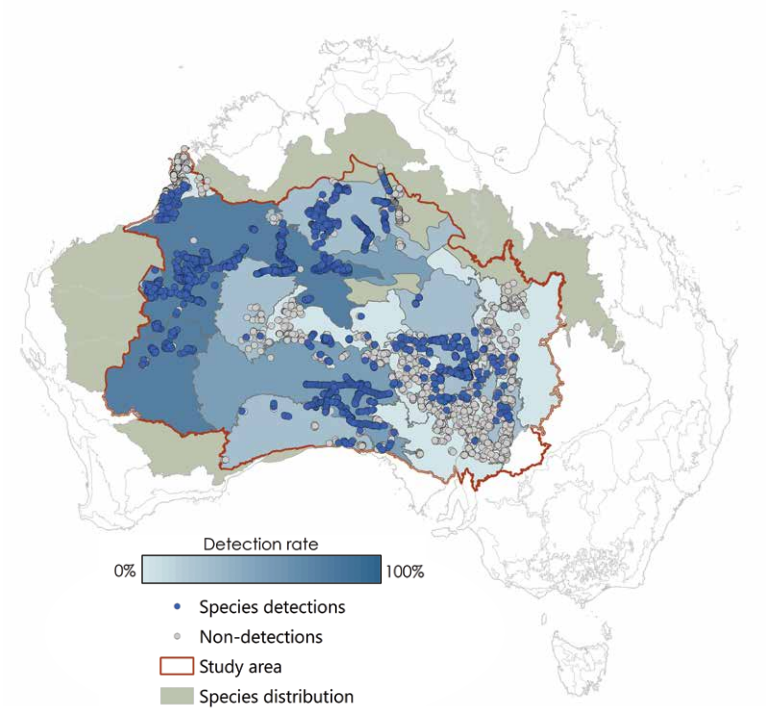
It is possible that extra surveys have been carried out that have not yet been shared. If you see 'gaps' in the maps that you could fill by sharing your data, please let us know.

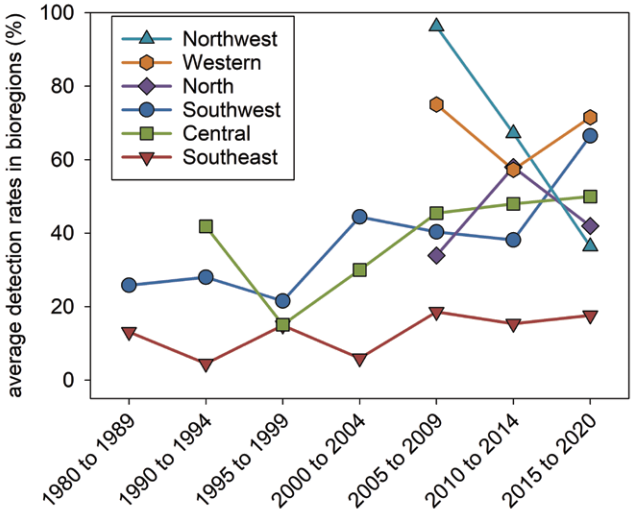
Camel detection rates

Camels were detected at 27% of all surveys in the AZM dataset. Camels were the fourth most frequently recorded mammal species, behind rabbits, dingoes and cats.

The map below shows the detection rate of all surveys carried out in each bioregion, since the 1980s. Detection rates for camels are higher in the north-western and western deserts (deeper blue shading) compared with elsewhere. This pattern is also shown in the graph, which shows the average detection rates in north-western and western desert bioregions has mostly been higher over the past 20 years, than in other regions. The graph also suggests that detection rates for camels in the northwest may have decreased in the last ten years. This might be because the national camel control program removed many camels from that region early in the last decade. A more detailed analysis of camel detections at a subset of AZM sites that were revisited over five or more years, shows that camel detections are not strongly affected by fire, nor the amount of green vegetation available. Camel detections are lower when rain has fallen in the last month, probably because the rain washes away older tracks.

Camel tracks and scats are easy to see, and last a long time on the sand surface. This can make camels look more common than smaller species whose sign does not last as long. That is why it is important to record the age of sign (e.g. less than a week old, older than a week) to help understand changes in camel detection rates.





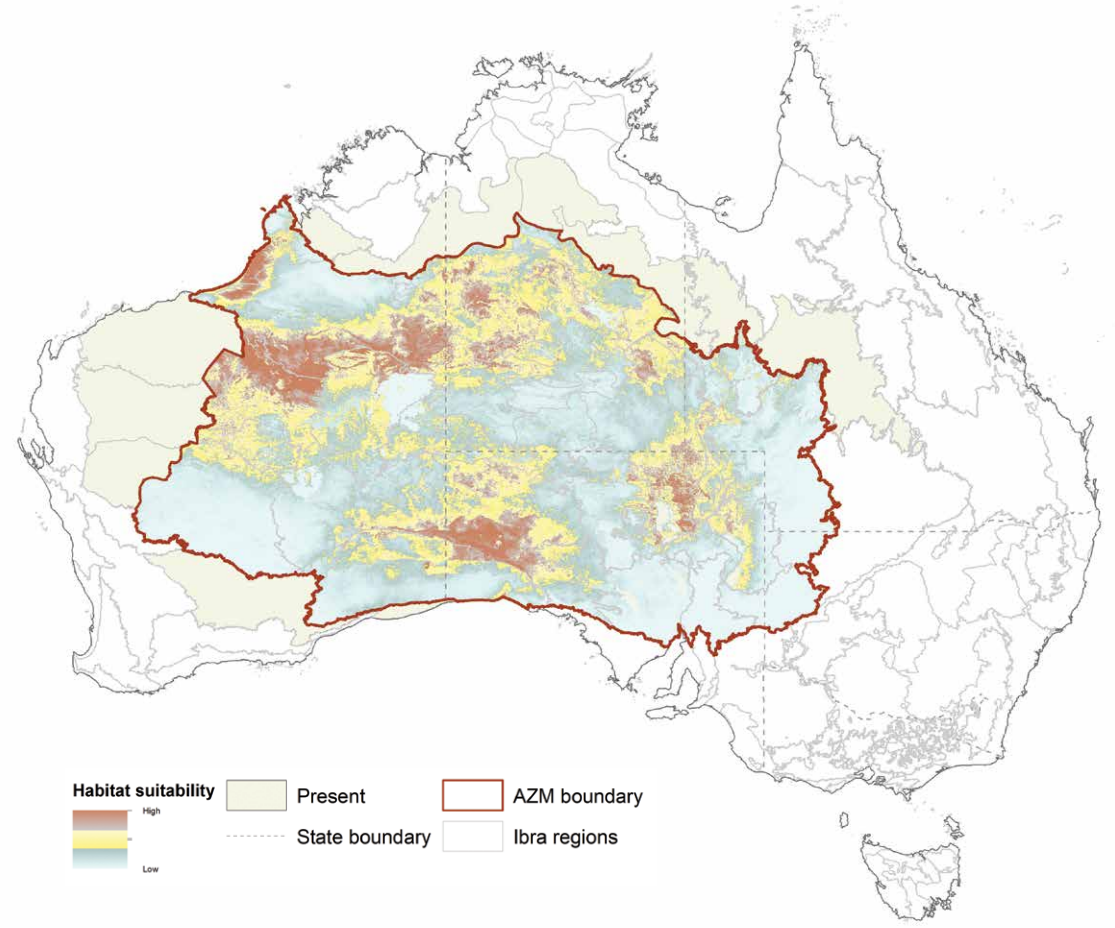
Things to think about when surveying for camels

- Survey during good conditions (not too windy or 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 camel tracks apart from other species such as horses and donkeys before you go to survey.
- Record the age of camel sign.
- Pay extra attention to finding signs around water sources as camels will gather for a drink.
- 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 (culling or fire) 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.

Camel habitat suitability

The habitat suitability model can tell us about where the camel is 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 camels are more common in areas of high average temperature and low rainfall. The map shows us that we can expect to find camels in all parts of the desert, and that they might be more common in some parts of South Australia and Western Australia, where the map shading is reddish brown. The map only shows habitat suitability inside the AZM project boundary, but camels are also found further north and west, in the pale beige part of the map and might be common in these places too. 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 and the Great Victoria Desert; getting more survey data from these areas would improve the model.



Further information

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

References

[1] Australian Faunal Directory. 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.

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