



Feral cat captured on a motion detection camera.



Northern Australia
Environmental
Resources
Hub

National Environmental Science Programme

Feral cats and small mammal decline in Kakadu National Park

Wrap-up factsheet

Key findings

- The effect of excluding cats on small mammal populations was inconclusive, possibly due to the short study period and very sparse mammal populations in the area.
- Predation by cats is impacting small reptile populations.
- Frequent fire is also negatively affecting small reptile populations, independent of the effects of cat exclusion.
- Small and medium-sized mammals account for almost 75 per cent of the diet of feral cats in Kakadu, with both dingoes and cats preying on medium-sized mammals such as the Northern Brown Bandicoot.
- The density of cats was estimated to be about one cat per 5 km², consistent with estimates from other areas in northern Australia.

Why is this research important?

There has been a dramatic decline of native animals across northern Australia over the past few decades, even in conservation reserves such as Kakadu National Park. The main drivers of biodiversity decline are thought to be feral cats, inappropriate burning, and the degradation of habitats by introduced herbivores such as buffalo, cattle, horses and donkeys. Erecting large cat-proof exclosures in Kakadu allowed researchers to investigate the relative importance of these drivers.



Researcher Danielle Stokeld releases a northern quoll.

Management implications

- Due to the low number of small and medium-sized mammals, conventional survey methods will not be adequate to monitor long-term population trends. Sampling methods for future surveys and monitoring need to incorporate new technology such as motion cameras.
- Using camera traps to estimate cat densities can help land managers identify priority areas for cat management, and evaluate the effectiveness of management intervention.
- Improved understanding of the ecological factors that influence and regulate cat populations can help inform management strategies that aim to reduce the impact of feral cats on biodiversity.



A northern quoll is captured on camera after it was enticed by a bait station.

- Improving fire regimes and reducing degradation by feral herbivores will result in greater vegetation cover and structural diversity, which favours small mammal populations.
- Ongoing monitoring of reptiles would provide valuable information about the responses of different reptile species to feral cats and fire, and help identify fire management priorities.



DENR researcher Danielle Stokeld inspects the cat fence, photo Michael Lawrence-Taylor.

How did we undertake the study?

Excluding predators

The research took place at Kapalga in Kakadu National Park in the Northern Territory. Two 64 hectare predator-proof exclosures were constructed, and four non-fenced sites with two burning regimes were established as comparisons. Small and medium-sized mammals and reptiles were sampled before fence construction. Capture and release trapping was then undertaken three times per year over two years. Small cage, Elliott and pitfall traps was used to capture mammals and reptiles while camera-traps were used to improve the detection of mammals, and to detect cats and dingoes.

What are predators eating?

Predator scats (faeces) were collected to find out what animals were eaten. Forty-two kilometres of vehicle track in the study area were scanned for dingo/dog and cat scats. GPS coordinates were recorded and the sun-dried scats were sent for analysis of hairs and other evidence of prey species.



This possum was one of dozens of mammals sampled during the study.

How many feral cats are there?

Camera traps were used to assess cat densities. Two grids of 48 camera traps each were set up, each grid with three 7 km transects. Cameras were left operating for five weeks to maximise detection of cats. An attractant (cat urine) was used at every second camera and, where possible, cameras were placed along tracks, near floodplain and billabong edges, or in natural clearings. White light flash cameras, which take colour photos day and night, were used to improve individual cat identification.



A camera trap is pointed at a bait station, used to attract animals, photo Michael Lawrence-Taylor.



A feral cat is captured on camera.

How can we take this work further?

This research, along with previous work undertaken in northern Australia, suggests feral cat predation is playing a significant role in mammal declines. This body of work shows the impact of cats is being exacerbated by a mix of inappropriate fire regimes, and habitat degradation by feral herbivores such as buffalo, cattle, horses and donkeys. The reduced cover resulting from frequent burning and grazing helps cats to hunt far more effectively.

Reducing the density of feral cats across large open landscapes is difficult and expensive. However, improving fire regimes and reducing the number of feral herbivores can result in habitats with greater ground cover and structural diversity of vegetation. Cats are unable to hunt as effectively and populations of small mammals will benefit.



Feral pig captured on camera.

All photos by DENR unless otherwise stated.

Management actions that focus on reducing the impacts of fire and other disturbance processes have an important role in addressing mammal declines in northern Australia. This is now being tested in a NESP Northern Hub project that is investigating practical, landscape-scale management options to support the recovery of threatened species in Kakadu National Park.

Further Information

This factsheet and the final report '*Experimental evaluation of the role of feral cat predation in the decline of small mammals in Kakadu National Park*' can be accessed at: www.nespnorthern.edu.au/projects/nesp/investigating-feral-cats-in-small-mammal-decline/

A booklet produced for Aboriginal Landowners in Kakadu during the first phase of the project '*Bringing mammals back: investigating the role of feral cat predation on native mammal decline using cat-proof fencing*' can be accessed [here](#).

The follow up project assessing how native animals respond to integrated fire and feral herbivore management, can be viewed at: www.nespnorthern.edu.au/projects/nesp/kakadu-national-parks-threatened-species/

Contact: Graeme Gillespie or Danielle Stokeld
Northern Territory Department of Environment and Natural Resources

T (08) 8995 5025

E Graeme.Gillespie@nt.gov.au or Danielle.Stokeld@nt.gov.au

Visit: www.nespnorthern.edu.au



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