

Managing feral cats in an arid landscape

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Background

Adaptive management is the systematic acquisition and application of knowledge to improve natural resource management over time. An adaptive management framework has been employed in the control and monitoring of feral cats (*Felis catus*) in the Matuwa Indigenous Protected Area (IPA) for the past 16 years.

The Matuwa IPA is a 2,440 km² ex-pastoral station purchased by the Western Australian Government in 2000. The reclaimed pastoral lease is situated approximately 137 km east-north-east of Wiluna. In 2015, Matuwa became exclusive possession native title land held in trust by the Tarlka Matuwa Piarku Aboriginal Corporation (TMPAC). Informal joint management between the Department of Biodiversity, Conservation and Attractions and TMPAC has been ongoing since 2014.

The 'Rangelands Restoration' program at the Matuwa IPA aims to achieve the successful reconstruction and conservation of several arid zone species. To date, five species have been successfully reintroduced to Matuwa; the bilby (*Macrotis lagotis*), brushtail possum (*Trichosurus vulpecula*), golden bandicoot (*Isodon auratus*), burrowing bettong (*Bettongia lesueur*) and mala (*Lagorchestes hirsutus*), of which the final two are confined to a predator-free fenced area. The successful reintroduction of native species to the arid zone is likely to be contingent on effective and sustained feral cat control.

Toxic baiting with Eradicat® is recognised as the most effective method for managing feral cats at the landscape-scale. Eradicat® baits contain 4.5 mg of directly injected '1080' (sodium monofluoroacetate). In arid regions, baiting programs for feral cats are most effective during the cool, dry winter periods when the abundance and activity of prey, particularly young mammals and reptiles, is at its lowest.

At Matuwa, the aerial application of bait deployment followed the *Western Shield* baiting prescription, which requires an aircraft flying at a nominal speed of 160 kt at 500 ft to deploy batches of 50 baits at one km intervals. Ground baiting involved the application of one Eradicat® bait every 100 m along the western half of the property's non-gazetted roads (approximately 2.8 baits/km²).

We used 120 Reconyx PC900 camera-traps and a rapid survey technique called the cat track activity index to determine if aerial baiting with Eradicat® was more efficient and/or cost-effective than track baiting plus leg-hold trapping. Leg-hold trapping was conducted across both aerial and ground baiting sites.



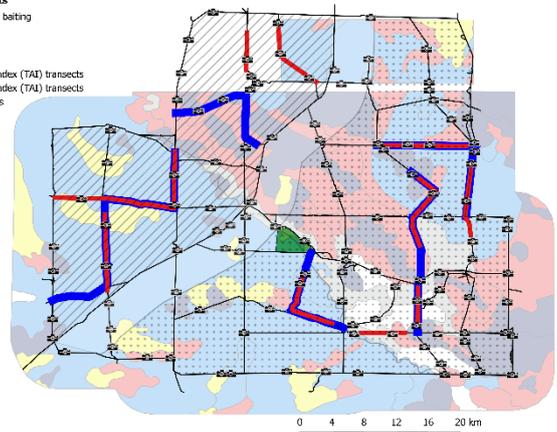
Legend

1080 Baiting treatments

-  Western Shield aerial baiting
-  Ground baiting
-  Unbaited 9km buffer
-  Camera-traps
-  2018 Track Activity Index (TAI) transects
-  2019 Track Activity Index (TAI) transects
-  4WD tracks and roads

Habitat categories

-  Sandplain
-  Brookaway
-  Calcrete
-  Hardpan
-  Salt lake
-  Stony
-  Predator-free pcn



Left: Feral cat captured on a camera-trap at the Matuwa IPA. Right: The scale of the feral cat control and monitoring program at Matuwa.

Findings

- Analysis of efficiency and cost effectiveness of control techniques provides information for selecting optimal combinations of techniques. Aerial baiting alone was more cost-effective than ground baiting alone. Ground baiting plus leg-hold trapping was more cost-effective than aerial baiting alone; each percent decline in cat detection cost on average \$0.39/km². Aerial baiting plus leg-hold trapping, whilst the most expensive option, was the most effective method of suppressing feral cats with a 98 percent reduction in cat detection.
- Analysis of density of feral cats shows variation on different habitats, and they were twice as likely to be detected on spinifex sandplain habitats than stony or hardpan habitats.
- This study provided additional evidence that annual aerial baiting with Eradicat® is more effective than ground baiting when cats need to be controlled at a landscape scale.
- It appears that annual aerial baiting does eventually result in adult male bias in the feral cat population, which may reduce the efficacy of Eradicat® over time, but could be corrected using alternative control techniques, such as leg-hold traps.

Management implications

- Effective feral cat management will be optimised by using a combination of complementary control techniques.
- Annual aerial baiting with Eradicat®, as per the *Western Shield* prescription, should be considered baseline feral cat control at the landscape scale.
- In periods of high food availability, which may be indicated by periods of above average rainfall, intensive feral cat control, including landscape scale leg-hold trapping, may be required.
- Ongoing monitoring of feral cats is required to determine the timing of intensive trapping.
- Targeted ground baiting in areas of known high cat activity can offset the cost of a trapping program and may be effective in areas too small to allow aerial baiting.
- At Matuwa, cat density on sandplain habitat makes it a key focus area for feral cat management, as well as adjacent habitat that may provide cats with shelter such as forested or wooded drainage lines, breakaways, or calcrete ridges.
- While the track activity index is a less accurate monitoring approach than camera traps, it does provide a rapid survey of cat activity.



Left: Mala (*Lagorchestes hirsutus*). Right: Golden bandicoot (*Isoodon auratus*). Photos: Judy Dunlop.

Further information

Algar D, Onus M and Hamilton N (2013) Feral cat control as part of rangelands restoration at Lorna Glen (Matuwa), Western Australia: the first seven years. *Conservation Science Western Australia*, 8, 367-381.

Lohr CA and Algar D (2020) Managing feral cats through an adaptive framework in an arid landscape. *Science of The Total Environment*, 137631.