

Concept Plan SP 2020-023

Feral cat control for mammal conservation using felixer grooming traps in the southern forests

Animal Science

Project Core Team

| | |
|-----------------------|--------------|
| Supervising Scientist | Adrian Wayne |
| Data Custodian | Adrian Wayne |
| Site Custodian | |

Project status as of June 2, 2020, 3:39 p.m.

New project, pending concept plan approval

Document endorsements and approvals as of June 2, 2020, 3:39 p.m.

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|----------------|----------|
| Project Team | required |
| Program Leader | required |
| Directorate | required |

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Biodiversity and Conservation Science Program

Animal Science

Departmental Service

Service 7: Research and Conservation Partnerships

Background

Feral cats are one of the most significant threats to native species in Australia with over 100 listed threatened species impacted by feral cats (Woinarski et al. 2014). Efforts to control feral cats have had mixed success with baiting practices having greater success in arid regions and much lower success rates in the southern jarrah forest (Wayne et al. in prep). This appears to be largely due to the preference of cats to take live prey, which are more consistently available in higher rainfall, more productive environments.

The 'Felixer' cat grooming trap is a novel method of controlling feral cats that takes advantage of their compulsive grooming behaviour. The trap consists of an auditory lure to attract cats and a series of infra-red sensors, which when triggered are analysed using a series of algorithms to identify if the animal is a target (fox and cat), or non-target species. When a target is identified the trap shoots a sticky gel that contains 1080 poison onto the animal's fur. The fox or cat will then groom this gel from their fur and in doing so will ingest the poison and die. These devices can be highly effective in removing feral cats. For example, Felixer traps removed about 33 or 60% of feral cats during a 6-week deployment in a 2,600 ha area (e.g. Moseby et al. 2020).

Statistical and design modelling show that 4-8 Felixer grooming traps can remove >80% feral cats from a 15,000 ha area in 4-8 week period (Brian Chambers and Adrian Wayne, unpublished data). These models are based on the best available data and analyses on feral cats in the southern jarrah forest including home ranges and movement patterns from cats fitted with GPS collars (Adrian Wayne, unpublished data), and SECR-derived cat densities, detection probabilities and spatial information (Legge et al. 2017, Wayne et al. 2013, unpublished data).

SWCC has been contracted by the Department of Agriculture Water and Environment through the National Landcare Program to undertake a study of the effectiveness of cat grooming traps to reduce feral cat numbers in the Upper Warren and Muir-Byenup areas in Western Australia's south west. Numerous threatened species, are found in this area including the woylie, western ringtail possum, chuditch, numbat and several bittern species (*Botaurus* spp.). Many of these threatened species have suffered large declines in recent times, with predation by feral cats having been identified as a major contributing factor (Wayne et al. 2017a & b). Felixer traps have previously been tested in the presence of woylies, chuditch, larger macropods and brushtail possums, and have been shown to reliably identify these species as non-targets (Dunlop et al. 2017; Read et al. 2019; Ecological Horizons 2018; 2020). The traps have not yet been tested in areas with numbat populations and we will test if Felixer traps will reliably identify numbats as non-targets before their deployment in the field.

Aims

1. Safety Assessment: Determine the safety of the Felixer grooming trap for use in the presence of numbats.
2. Test: Determine whether Felixer grooming traps can reduce feral cat densities by at least 60%.
3. Optimise: Improve the efficiency and effectiveness of Felixer grooming traps by refining the deployment design (i.e. adjusting spatio-temporal factors such as density, duration, mobility, location in the landscape)
4. Sustain: Identify how to maintain a reduction in cat densities to allow for the recovery of native prey species (i.e. investigate the timing, frequency and spatial scale of Felixer trapping required to overcome recruitment from breeding and immigration).

Expected outcome

1. Confirmation of the safety of using Felixer grooming traps in the presence of numbats and other native fauna
2. Confirmation that Felixer traps can significantly reduce feral cat densities.

3. Operational protocols for the efficient and effective use of Felixer grooming traps to substantially reduce cat densities in the southern jarrah forests.
4. Operational protocols for maintaining a reduced density of feral cats using Felixer grooming traps in the southern jarrah forests.
5. The most robust measures of cat densities in the southern jarrah forests to date.

Strategic context

This project directly addresses several of the key strategic themes and goals relating to biodiversity and conservation in the DBCA, BCS Science Strategic Plan (2018-21), including;

Theme 3: Management of invasive species and pathogens. Goal: Invasive species and pathogen management methods are evidence based and effective.

Theme 7: Availability of scientific information for evidence-based decision making. Goal: Scientific knowledge is available to inform adaptive management and decision making. Conservation advice is based on scientific information.

Theme 8: Innovative science and effective use of technology. Goal: Science is innovative and agile in assessing and adopting new technologies and methodologies, where appropriate.

Elaboration:

- Introduced predators, particularly feral cats are the major threat to the conservation of many native species, particularly mammals and ground birds.
- Effective feral cat control is key to the conservation of many species.
- Eradicat baits, although shown to be effective in some areas, have not yet been effective at substantially reducing cat numbers in the southern jarrah forest, due to high non-target bait interference (Wayne et al in review). Cats are also likely less likely to take baits while there their preferred live prey is readily available. It is therefore unlikely that Eradicat baits alone will significantly reduce cat densities in high conservation value areas such as the Upper Warren, which supports critically important populations of several priority species such as the *Critically Endangered* woylie, and western ringtail possum, *Endangered* numbat and *Vulnerable* chuditch (Wayne et al in review).
- Felixer grooming traps are a relatively new innovation that have provided good results elsewhere but have not been trialled in the southwestern Australian forests.

Expected collaborations

- Project leader: South West Catchments Council (SWCC)
- Blackwood Basin Group (BBG)
- World Wildlife Fund for Nature (WWF)
- BDCA internal – Western Shield, RFMS (Warren Region, Donnelly District), BCS
- Melissa Taylor (PhD Candidate, Murdoch University) – value-adding opportunity to also investigate methods for calculating chuditch densities
- Significant number of community volunteers

* Indicative Operating Budget

Note: DBCA's proposed contribution to the operating budget of the project is to purchase 6 of the 8 Felixer grooming traps required for the study (SWCC will purchase 2 traps). John Asher, Western Shield has agreed in principle to purchase 2 Felixer grooming traps at \$15,000 each. Therefore, this proposal is seeking an additional \$60,000 to purchase the four remaining Felixer traps.

Proposed period of the project

July 1, 2020 – June 30, 2023

Staff time allocation

| Role | Year 1 | Year 2 | Year 3 |
|-----------|--------|--------|--------|
| Scientist | 0.05 | 0.05 | 0.05 |

| Role | Year 1 | Year 2 | Year 3 |
|--------------|--------|--------|--------|
| Technical | 0.1 | 0.1 | 0.1 |
| Volunteer | 0.2 | 0.2 | 0.2 |
| Collaborator | 0.5 | 0.5 | 0.5 |

Indicative operating budget

| Source | Year 1 | Year 2 | Year 3 |
|---------------------------|---------|--------|--------|
| Consolidated Funds (DBCA) | *60,000 | | |
| External Funding | 100,000 | 50,000 | 50,000 |