Project Plan SP 2016-075

Threatened animal recovery through feral cat control in Western Australia - Dryandra component

Animal Science

Project Core Team

Supervising Scientist	Manda Page
Data Custodian	Manda Page
Site Custodian	

Project status as of June 16, 2020, 9:46 a.m.

Closure pending approval of closure form

Document endorsements and approvals as of June 16, 2020, 9:46 a.m.

Project Team	granted
Program Leader	granted
Directorate	granted
Biometrician	granted
Herbarium Curator	not required
Animal Ethics Committee	granted

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Biodiversity and Conservation Science Program

Animal Science

Departmental Service

Service 7: Research and Conservation Partnerships

Project Staff

Role	Person	Time allocation (FTE)
Technical Officer	Georgina Anderson	0.01
Supervising Scientist	Manda Page	0.0

Related Science Projects

SP 2013-005 Improving the use of remote cameras as a survey and monitoring tool
SP 2012-023 Feral cat control and numbat recovery in Dryandra woodland and other sites
SP 2016-074 Threatened animal recovery through feral cat control in Western Australia - Kalbarri component
SP 2016-072 Threatened animal recovery through feral cat control in Western Australia - South coast component
SP 2016-068 South West Threatened Fauna Recovery Project: Southern Jarrah Forest

Proposed period of the project

Feb. 29, 2016 – June 30, 2018

Relevance and Outcomes

Background

SW Threatened Fauna Recovery Project Background

Over the last 200 years, 50 per cent of the world's mammal extinctions have occurred in Australia (Short and Smith 1994). In Western Australia alone, 12 mammals and two birds have become extinct and at 30 June 2015, 39 terrestrial mammals and 23 terrestrial birds native to the State were classified as being threatened with extinction. Of these, three mammals and two birds are ranked as critically endangered. In mammals, most extinctions and declines have occurred in medium size species, in the so called 'critical weight range' of 35g to 5500g (Burbidge and McKenzie 1989).

Predation by feral cats and foxes is a key threatening process in the decline of many, if not all, of these species. Foxes have been successfully controlled for many years in a range of locations across Western Australia using dried meat sausage baits containing 1080 poison. Over a decade of research by Parks and Wildlife scientists has led to the development of the Eradicat® feral cat bait, a moister meat bait, also containing 1080, that is more palatable to feral cats. Eradicat® was registered for operational use in Western Australia in December 2014, providing the opportunity to integrate broadscale feral cat control with existing fox baiting programs and other actions, such as translocation, that are implemented to improve the recovery of threatened native animals.

On 16 July 2015, the Minister for Environment, Hon. Albert Jacob MLA, and the Commonwealth Minister for the Environment, Hon. Greg Hunt MP, announced $1.7 million in funding for the Department of Parks and Wildlife to assist threatened animal recovery. The funding will be used to integrate the new Eradicat® feral cat bait with current fox baiting in four different Western Australian environments. Sites have been specifically selected to direct the funding to improving conservation of species identified in the Commonwealth's Threatened Species Strategy and to align with fauna recovery programs already underway or planned by Parks and Wildlife in the south-west of WA.

This project fits within a broader suite of actions delivered by Parks and Wildlife to reduce the impacts of feral cats and foxes on threatened species in Western Australia. This includes Western Shield, the Integrated Fauna Recovery Project on the south coast, Rangelands Restoration at Matuwa and many other smaller scale projects.

The primary goal of the project is to contribute to the recovery of key threatened mammal and bird species found at each of these sites, through integrating feral cat baiting with existing fox baiting to reduce the impact of introduced predators, and undertaking translocations to establish new, secure populations, where necessary.

While the Eradicat® feral cat bait is a key tool in achieving effective feral cat control, other methods, such as shooting and/or trapping, may also be employed. For example, some individual cats appear to be reluctant to take baits or local climatic conditions may reduce the effectiveness of baiting alone. Some flexibility is built into the project plan to allow this suite of control options to be employed, as necessary.

The project is funded for three years over the 2015-16, 2016-17 and 2017-18 financial years. A project agreement has been signed with the Commonwealth Government outlining funding to be provided in each financial year and key deliverables.

Dryandra Woylie/Numbat project

The woylie and numbat are iconic WA species. Recovery with fox control resulted in the woylie being the first fauna species to be removed from the State (and subsequently Commonwealth) threatened species lists in 1996. It was relisted in 2008 following a dramatic decline in numbers, and following continuing declines was ranked as Critically Endangered in 2014. The numbat is ranked as Endangered and has also continued to undergo population decline at some sites, including Dryandra.

Since the mid 2000's woylie numbers in particular have declined at Dryandra. This is a trend for most known non-fenced wild populations in W.A. The State Government has committed to safeguarding woylies and numbats from predators in Dryandra Woodland through an election commitment in 2013. This project outline is based upon the spirit of this announcement; to preserve the numbat and woylie at Dryandra.

The Woodland is one of the most important areas for fauna conservation in the State. Woylie and numbat populations within the Woodland are genetically valuable and the localised extinction of either species would result in an irreparable loss of genetic diversity of the species. It could also potentially reduce opportunities for visitors to the Woodland to see these animals in the wild.

There is published evidence that feral cats are now the primary predator of both woylies in the Woodland (Marlow et al 2015a), with feral cats having become an emerging predator as fox numbers have been reduced (Marlow et al 2015b). Recent research also implicates feral cats in the decline of numbats (DPaW, unpublished data). There has and continues to be active research into the cause of the decline and effective techniques to control feral cats and this project draws on this knowledge in an attempt to undertake feral cat control at an operational scale. This project acknowledges that baiting alone may not be effective in mitigating feral cat numbers and predation, and consequently additional effort and tools will be incorporated in an attempt to prevent the local extinction of woylies and numbats in the Woodland.

Aims

To contribute to the long term recovery of the wild populations of woylies and numbats at Dryandra Woodland through:

- Effective integrated control of feral cats with existing fox control;
- Maintain and build a sustainable woylie and numbat population at Dryandra with the assistance of population augmentation;
- Continued and improved monitoring techniques and analysis of data; and
- Effective neighbour engagement.

Expected outcome

- Integration of feral cat and fox control, including developing standard protocols for delivery of both Eradicat® and Probait® to maximise effectiveness and the use of other introduced predator control techniques;
- Monitoring feral cat and fox populations to measure success of management actions;
- Monitoring woylies and numbats to measure success of management actions;
- Translocations of numbats and woylies to supplement existing populations; and
- Community awareness and engagement, including with neighbouring landholders, to ensure understanding of, and support for, management actions.

Knowledge transfer

Managers of other sites with threatened fauna that would benefit from the integrated introduced predator control.

Tasks and Milestones

Year 1- 2015/16

Task	Milestones	Outputs	Timeframe	Responsibility
Develop baiting prescriptions	Prescription determined	Agreement on prescription to be applied in 2016	Early 2016	WB Region, WS
Implement integrated baiting	Integrated baiting as per prescription annual	Operational baiting includes Eradicat®	Annually for entire project	WS, WB Region
Implement other feral cat control methods	Other control methods trialled and implemented	Other control methods undertaken	Entire project	WB Region
Undertake cat/fox monitoring	2mth analysis of camera grids	Camera monitoring undertaken and analysed at 2mth intervals	Entire project, analysis every 2mths	WB Region, Thomas
Undertake woylie monitoring	Complete WS monitoring in autumn and spring	WS monitoring completed in autumn and spring	April and Sept annually for entire project	WB Region
Undertake numbat monitoring	Complete driven survey twice per year	Driven surveys completed	November and April for entire project	Friend
Review translocations	Determined if success criteria stated in TPs is achieved	Results presented to Woylie and Numbat RT	December 2016	WB Region,
Undertake woylie supplementation	Up to 50 woylies released in Dryandra	Supplementation of woylie population	June 2016	WB Region (in conjunction with Upper Warren)
Undertake neighbour engagement	Complete communication plan Begin engaging direct neighbours	Communication plan for project Informed neighbours	December 2016 June 2016	WB Region, WB Region,
Undertake media /awareness	Complete communication plan Social media awareness campaign	Communication plan for project	December 2016 June 2016	WB Region, WB Region, PICA
Reporting	Progress Report submitted on time	Progress report	March 2016	WB Region

Year 2- 2016/17

Task	Milestones	Outputs	Timeframe	Responsibility
Implement integrated baiting	Integrated baiting as per prescription annual	Operational baiting includes Eradicat®	Annually for entire project	WS, WB Region

Undertake cat/fox monitoring	2mth analysis of camera grids	Camera monitoring undertaken and analysed at 2mth intervals	Entire project, analysis every 2mths	WB Region, Thomas
Undertake woylie monitoring	Complete WS monitoring in autumn and spring	WS monitoring completed in autumn and spring	April and Sept annually for entire project	WB Region
Undertake numbat monitoring	Complete driven survey twice per year	Driven surveys completed	November and April for entire project	Friend
Undertake woylie supplementation?	Up to 50 woylies released in Dryandra	Supplementation of woylie population	July 2017	WB Region (in conjunction with Upper Warren)
Undertake neighbour engagement	Continue engaging direct neighbours Attend local shows	Informed neighbours Shows attended	July 2017	WB Region
Undertake media /awareness	Publish at least 2 media articles per year for overall southwest project Community focus Posters for shows	Articles written Posters created	July 2017	PICA
Reporting	Mid and end of year progress reports and Financial report submitted on time	Reports completed	Sept 2016, January 17	

Year 3 – 2017/18

Task	Milestones	Outputs	Timeframe	Responsibility
Implement integrated baiting	Integrated baiting as per prescription annual	Operational baiting includes Eradicat®	Annually for entire project	WS, WB Region
Undertake cat/fox monitoring	2mth analysis of camera grids	Camera monitoring undertaken and analysed at 2mth intervals	Entire project, analysis every 2mths	WB Region, Thomas
Undertake woylie monitoring	Complete WS monitoring in autumn and spring	WS monitoring completed in autumn and spring	April and Sept annually for entire project	WB Region
Undertake numbat monitoring	Complete driven survey twice per year	Driven surveys completed	November and April for entire project	Friend
Review woylie translocations	Determined if success criteria stated in TPs is achieved	Presented to Woylie RT	June 2018	WB Region,
Undertake neighbour engagement	Continue engaging direct neighbours Attend local shows	Informed neighbours Shows attended	July 2018 July 2018	WB Region

Undertake media /awareness	Publish final media articles for overall southwest project	Article written	July 2018.	PICA
Reporting	Mid and end of year progress report and financial report submitted on time	Reports submitted	January 2018, July 2018	

References

Marlow, N.J., Thomas, N.D., Williams, A.A.E., Macmahon, B., Lawson, J., Hitchen, Y., Angus, J., and Berry, O. (2015a) Cats (Felis catus) are more abundant and are the dominant predator of woylies (Bettongia penicillata) after sustained fox (Vulpes vulpes) control. *Australian Journal of Zoology* **63**(1), 18.

Marlow, N.J., Thomas, N.D., Williams, A.A.E., Macmahon, B., Lawson, J., Hitchen, Y., Angus, J., and Berry, O. (2015b) Lethal 1080 baiting continues to reduce European Red Fox (Vulpes vulpes) abundance after more than 25 years of continuous use in south-west Western Australia. *Ecological Management & Restoration* **16**(2), 131-141.

Study design

Methodology

a) Monitoring Feral Cats and Foxes

A landscape camera trap grid design is used to monitor introduced predators and native species. This has been established at Dryandra since 2014. The design was informed by a 60 day pilot study that tested transects vs grids, and lures vs non-lures.

Sixty camera traps with a constrained randomisation are distributed across the main central block of Dryandra with a minimum distance of 750m between cameras. All cameras are offset 50 m from boundaries and tracks (Fig. 1).

Cameras are placed on 450 mm plastic peg, facing south. Vegetation within approximately 3 m in front of cameras is pruned to near ground level. No lures are used. Cameras are serviced every ~2 months with cards and batteries changed.

Approaches to analysis are still being trialled but recognise that these can only provide information on trends in introduced predator activity over time and space. Data can be presented as

- Species sccumulation analysis
- Detection Rates
- Activity (i.e. heat maps)
- Occupancy
- Cusum control charts.

Limitations:

- Only provided indices and/or trends (i.e. occupancy, relative abundance, activity)
- Time to process images
- Space to store data
- Time lag between analysis and informing management actions (i.e. targeting feral activity hotspots)

Advantages:

- Simultaneously collect data on native species and species assemblages
- Effective and consistent data collection
- Capture landscape scale data over long temporal sequences

b) Monitoring Woylies

Woylies at Dryandra will be monitored by targeted trapping events and long-term camera trap monitoring. Targeted trapping will incorporate two transects:

- Standard Western Shield trapping of 75 cage traps set along a pre-existing transect, at 200m interval (see Figure 2)
- York Williams transect of 50 traps set at 200m intervals.

Both transects will be undertaken in Autumn and Spring each year.

Camera traps will be used to monitor introduced predator and native fauna activity (see section a).

c) Monitoring Numbats

Post translocation monitoring

All numbats released will be fitted with radio-collars (Biotrack Pip3 Ag357 with brass collar). These collars weigh 6-7g, less than 2% of the body weight of a small numbat.

The fate of individuals will be determined by monitoring at weekly intervals for the first month, then monthly for six months. A forensic investigation will be conducted into any death recorded, including swabbing of the collar for predator DNA and comparison of carcass and site information with a database of previous numbat deaths. DNA swabs will be submitted to a suitable laboratory, such as Helix Molecular Solutions, for predator identification (species level) and genotyping of cat or fox DNA (individual level).

Standard annual monitoring

Driven surveys to measure sighting rates along a set transect of 362 km are carried out in the main block of Dryandra in April and November each year. This transect is driven six times during each survey and all sightings are recorded. The data collected contribute to a sighting rate (sightings/100 km).

Proposed Site Baiting Prescription

Monthly ground fox baiting (Jan, Feb, March, July, Aug, Nov, Dec) + feral cat baiting in other months (April, May, June, Sept, Oct)

Each month of fox baiting includes 1330 Probaits® distributed at 200m intervals along tracks in the main block.

Each month of cat baiting (March-May) includes 2660 Eradicat® baits distributed at 100m intervals along tracks in the main block.

Other complementary measures including with neighbours: Targeted fox and feral cat baiting, trapping and shooting around perimeter of reserve. Trial of raised platform trapping within main block of the Woodland. Encourage trapping, shooting and baiting on neighbouring lands.

Biometrician's Endorsement

granted

Data management

No. specimens

Herbarium Curator's Endorsement

not required

Animal Ethics Committee's Endorsement

granted

Data management

- Woylie trap monitoring data is inputted into faunafile by WB Region,
- Tony Friend manages numbat tracking and driven survey data
- Camera trap data is stored in an open source MSAccess database (CPW Photo Warehouse). Outputs from camera data will be produced by Thomas/Cowan. District and Regional staff will be trained in analysis and output techniques and a training document produced.

Budget

Consolidated Funds

Source	Year 1	Year 2	Year 3
FTE Scientist			
FTE Technical			
Equipment			
Vehicle			
Travel			
Other			
Total			

External Funds

Source	Year 1	Year 2	Year 3
Salaries, Wages, Overtime			
Overheads			
Equipment			
Vehicle			
Travel			
Other			
Total			