

## **Project Closure SP 2015-016**

# **Improved fauna recovery in the Pilbara – benefitting the endangered northern quoll through broad-scale feral cat baiting**

**BCS Animal Science**

### **Project Core Team**

**Supervising Scientist**

Russell Palmer

**Data Custodian**

Russell Palmer

**Project status as of Aug. 10, 2022, 3:26 p.m.**

Closure pending approval of closure form

**Document endorsements and approvals as of Aug. 10, 2022, 3:26 p.m.**

**Project Team**

granted

**Program Leader**

granted

**Directorate**

required

# Improved fauna recovery in the Pilbara – benefitting the endangered northern quoll through broad-scale feral cat baiting

## Closure goal

completed

## Closure reason

This project was externally funded as part of the approval process for the Rio Tinto Yandicoogina JSW and Oxbow Iron Ore Project in the Pilbara. Western Australian State and Commonwealth environmental approvals via Ministerial Statement 1038 and EPBC Decision Notice 2011/5815.

The compliance conditions required Rio Tinto to contribute \$3M AUD towards an offset fund to be allocated to a Threatened Species Offset Plan to be spent over 5 years. This project formed the bulk of the Threatened Species Offset Plan and the funding target was reached by Rio Tinto during 2020.

The project is now complete with many excellent outcomes.

## Key publications and documents

### Papers

Williamson S D, van Dongen R, Trotter L, Palmer R, Robinson, T. P. (2021) Fishing for feral cats in a naturally fragmented rocky landscape using movement data. *Remote Sensing* **13**, 4925.

Anderson H, Richards B, Ross W, Palmer R (2021). Feral cat (*Felis catus*) predation confirmed for Rothschild's rock-wallaby (*Petrogale rothschildi*) in the Pilbara. *Australian Mammalogy* **44**, 169-172.

Palmer R, Anderson H, Richards B, Craig MD, Gibson LA (2021). Does aerial baiting for controlling feral cats in a heterogeneous landscape confer benefits to a threatened native meso-predator? *PLoS One* **16**, e0251304.

Cowan M, Moro D, Anderson H, Angus J, Garretson S, Morris K (2020). [Aerial baiting for feral cats is unlikely to affect survivorship of northern quolls in the Pilbara region of Western Australia](#). *Wildlife Research* **47**, 589–598.

Moro D, Dunlop J, Williams MR (2019). Northern quoll persistence is most sensitive to survivorship of juveniles. *Wildlife Research* **46**, 165–175.

### Reports (in DBCA Library)

Palmer R, Anderson H, Richards B (2020). *Predator control baiting and monitoring program, Yarraloola and Red Hill, Pilbara region, Western Australia: 2019 annual report and final report, year 5*. Department of Biodiversity, Conservation and Attractions, Kensington, WA. 64 p.

Palmer R, Anderson H, Richards B (2019). *Predator control baiting and monitoring program, Yarraloola and Red Hill, Pilbara region, Western Australia: 2018 annual report, year 4*. Department of Biodiversity, Conservation and Attractions, Woodvale, WA. 59 p.

Palmer R, Anderson H (2018). *Predator control baiting and monitoring program, Yarraloola and Red Hill, Pilbara region, Western Australia: 2017 annual report, year 3*. Department of Biodiversity, Conservation and Attractions, Kensington, WA. 56 p.

Palmer R, Anderson H, Angus J, Garretson S, Morris K (2017). *Predator control baiting and monitoring program, Yarraloola and Red Hill, Pilbara region, Western Australia: 2016 annual report, year 2*. Department of Parks and Wildlife, Woodvale, WA. 53 p.

Morris K, Cowan M, Angus J, Anderson H, Garretson S, Palmer R et al. [Williams M, Pearson D] (2016). *Baseline monitoring for northern quoll and Rothschild's rock-wallaby at Eradicat® baited and unbaited sites, Pilbara Region, WA. 2015: Yandicoogina JSW and Oxbow Project, threatened species offset plan*. Department of Parks and Wildlife, Kensington, WA. 26 p.

Morris K, Cowan M, Angus J, Anderson H, Garretson S, Algar D et al. [Williams M] (2015). *The northern quoll cat bait uptake and survivorship study, Yarraloola offset area, Pilbara Region, WA: Yandicoogina JSW and Oxbow Project, threatened species offset plan*. Department of Parks and Wildlife, Woodvale, WA. 32 p.

Morris K, Thomas N (2014) *Operational introduced predator control program – Yarraloola Offset Area, Pilbara Region, WA 2015-2019*. Department of Parks and Wildlife, Perth.

**Other Publications (included data collected during this project).**

Stobo-Wilson, A. M., Murphy, B. P., Legge, S. M., ...[Palmer R] & Woinarski, J. C. (2022). Counting the bodies: Estimating the numbers and spatial variation of Australian reptiles, birds and mammals killed by two invasive mesopredators. *Diversity and Distributions*, 28(5), 976-991.

Stobo-Wilson AM, Murphy BP, Legge SM, *et al.* [Palmer R] (2021). Reptiles as food: predation of Australian reptiles by introduced red foxes compounds and complements predation by cats. *Wildlife Research* **48**, 470–480

Stobo-Wilson, A. M., Murphy, B. P., Crawford, H. M., Dawson, S. J., [Palmer R] *et al.* (2021). Sharing meals: Predation on Australian mammals by the introduced European red fox compounds and complements predation by feral cats. *Biological Conservation*, **261**, 109284

Woinarski JCZ, Stobo-Wilson AM, Crawford H, Dawson SJ *et al.* [Palmer R] (2021). Compounding and complementary carnivores: Australian bird species eaten by the introduced European red fox *Vulpes vulpes* and domestic cat *Felis catus*. *Bird Conservation International*. Online, Pp 1–17.

Woinarski JCZ, Legge SM, Woolley LA, Palmer R, Dickman CR, Augusteyn J *et al.* (2020). [Predation by introduced cats \*Felis catus\* on Australian frogs: compilation of species records and estimation of numbers killed.](#) *Wildlife Research* **47**, pp. 580–588

Woolley L-A, Murphy BP, Geyle HM, Legge SM, Palmer RA, Dickman CR *et al.* (2020). [Introduced cats eating a continental fauna: invertebrate consumption by feral cats \(\*Felis catus\*\) in Australia.](#) *Wildlife Research* **47**, pp. 610–623

Murphy BP, Woolley LA, Geyle HM, Legge SM, Palmer R, Dickman CR *et al.* (2019). Introduced cats (*Felis catus*) eating a continental fauna: the number of mammals killed in Australia. *Biological Conservation* **237**, pp. 28–40

Woolley L-A, Geyle HM, Murphy BP, Legge SM, Palmer R, Dickman CR *et al.* (2019). [Introduced cats \(\*Felis catus\*\) eating a continental fauna: inventory and traits of Australian mammal species killed.](#) *Mammal Review* **49**, pp. 354–368

Woinarski JCZ, Murphy BP, Palmer R, Legge SM, Dickman CR, Doherty TS *et al.* (2018). How many reptiles are killed by cats in Australia?. *Wildlife Research* **45**, pp. 247–266

Woinarski JCZ, Murphy BP, Legge SM, Garnett ST, Lawes MJ, Comer S *et al.* [Palmer R] (2017). How many birds are killed by cats in Australia?. *Biological Conservation* **214**, pp. 76–87

Woinarski JCZ, Woolley LA, Garnett ST, Legge SM, Murphy BP, Lawes MJ *et al.* [Palmer R] (2017). Compilation and traits of Australian bird species killed by cats. *Biological Conservation* **216**, pp. 1–9.

#### Reports

Murphy, B., Ross, W., & Cremona, T. (2021). The effect of cat baiting on foraging and antipredator behaviour of the northern quoll in the Pilbara, Western Australia. NESP Threatened Species Recovery Hub.

## Knowledge Transfer

See above list of papers and reports.

Direct on-country project communications occurred with Robe River Kuruma (RRK) traditional owners (TOs). The project funded salary for ten TOs to participate in over 20 field trips, most individuals worked on multiple trips.

Annual project updates (Powerpoint Presentations) were delivered by Russell Palmer to Rio Tinto and the Robe River Kuruma Aboriginal Corporation. Project presentations, publications, and reports were also provided the local pastoralist (Corker Family of Red Hill), DBCA Pilbara regional staff and Australian Premium Iron Management.

A final Project Powerpoint presentation was provided to the RRK for their Annual General Meeting in 2020. This presentation was delivered by Arnold Bobby (TO) and well received by senior TOs.

#### Information Sheet

Palmer R, Gibson LA, Craig M, Pitt, G (2022) Managing feral cats to protect northern quolls in the Pilbara. *Information Sheet* **106/2022**, 2 p.

#### Popular magazine articles

Palmer R, Anderson H, Angus J, Thomas R (2017). Who takes the bait? *Landscape* **32**, 39–44.

Anderson H, Palmer R (2018). No laughing matter: camera trap snaps a Laughing Dove on Yarraloola Station, SW Pilbara. *Western Australian Bird Notes* **168**, 35–36.

#### Student theses

Abdi HA (2019). Excluding bycatch of endangered northern quoll from feral cat leg-hold traps. Honours thesis. Curtin University, Perth.

Johnson A (2020). Caught out: Using camera traps to assess the effectiveness of feral cat baiting in north-western Australia. M. Biol. Sc. Thesis, The University of Western Australia, Perth.

Williamson S (2020). Species distribution modelling of Feral cats (*Felis catus*) in the Pilbara, Western Australia. Master of Geospatial Intelligence. Thesis, Curtin University, Perth.

Lkhagvasuren, B (2021). Improved species distribution models for feral cats in the Pilbara region using machine learning and behavioural change point analysis. Master of Geospatial Intelligence. Thesis, Curtin University, Perth.

### **Media**

Russell Palmer (DBCA), William Ross (PhD student CDU) and Russell Thomas (RIO) interviewed by Kendell O'Connor (ABC North West WA) at Yarraloola 27-28 April 2017. Story by Kendall O'Connor posted on the ABC News website <http://www.abc.net.au/news/2017-05-14/northern-quolls-may-be-learning-to-avoid-toxic-baits/8524890>

The story aired on the Western Australian Sunday night ABC News on the 14 May 2017. <https://www.facebook.com/abcnorthwestwa/videos/10154417561676811/>

### **Conference presentations**

Morris K, Cowan M, Palmer R (2016). Assessing the risk to northern quolls (*Dasyurus hallucatus*) from feral cats and feral cat baiting in the Pilbara, WA (ABSTRACT). Newsletter of the Australian Mammal Society Oct, 21-22.

Woinarski J, Legge S, Murphy B, Palmer R et al. (2018). The impacts of feral cats on Australian wildlife. PowerPoint presentation to WA Feral Cat Symposium, 31st May 2018, Mandurah Performing Arts Centre.

Legge S, Woinarski J, Murphy B, Garnett S, Comer C, Dickman C et al. [Palmer R] (2017). The threat posed by cats to Australian birds (ABSTRACT). In *AOC Conference 2017: List of Abstracts: Deakin University, Geelong, Victoria, 8-11 November 2017* p. 2

## **Dataset links**

All Project files and datasets are stored on Sharepoint under the Animal Science Program/Threat Management at [SP 2015-016 Yarraloola TSOP](#)

Camera trap images are stored separately in CPW Photo Warehouse, freely available software based in Microsoft Access. This information, raw and processed (tagged) images, is stored on three different external hard-drives kept at Woodvale.

All Project financial documents were provided to Vicki Hartshorn.

## **Hardcopy location**

All original datasheets (all entered) are filed according to year and stored in a filing cabinet at Woodvale.