Progress Report SP 2011-005

Ecology and management of the northern quoll in the Pilbara

Animal Science

Project Core Team

Supervising Scientist	Judy Dunlop
Data Custodian	Judy Dunlop
Site Custodian	Judy Dunlop

Project status as of July 5, 2016, 1:25 p.m.

	Approved and active

Document endorsements and approvals as of July 5, 2016, 1:25 p.m.

Project Team	granted
Program Leader	granted
Directorate	granted

Ecology and management of the northern quoll in the Pilbara

A Dunlop, K Rayner

Context

The northern quoll *Dasyurus hallucatus* is listed as an threatened species under the Commonwealth's *Environment Protection and Biodiversity Conservation Act* 1999. Funding from mining offset conditions are being used to gain a better understanding of quoll distribution, ecology, demographics and management requirements in the Pilbara region on a landscape scale. There are two major components of the project: regional monitoring and disturbance area monitoring. Regional survey and monitoring of Pilbara northern quoll populations over 10+ years will provide a regional context for understanding population dynamics. Other ecological

Aims

- Improve understanding of northern quoll population distribution, ecology and demography in the Pilbara.
- Provide information to resource development companies that will allow appropriate management of mining sites to ensure the persistence of resident northern quoll populations.
- Plan, establish and implement a regional northern quoll monitoring program in the Pilbara.
- Develop an understanding of quoll habitat requirements and model predicted distribution in the Pilbara.

Progress

- The third season of regional northern quoll monitoring at ten sites commenced in May 2016.
- Predictive species distribution modelling was undertaken in collaboration with Edith Cowan University. Distribution maps have been produced, and expanded to include scenarios of climate change and cane toad invasion.
- Northern quoll distribution model paper has been produced and submitted for publication.
- Research priorities for the Pilbara northern quoll (as determined by 2013 workshop) were published in Australian Mammalogy (Cramer et. al, 2016).
- A third northern quoll workshop was hosted by Parks and Wildlife in May 2016 with support from Roy Hill.
- Quoll distributional data is continually added to the Pilbara Threatened Species portal in NatureMap.
- Dietary analysis was undertaken on 500 northern quoll scats from throughout the Pilbara.
- Manuscript for dietary analysis produced, and submitted for publication.
- Northern quoll spatial use and home range estimates were generated from an Honours project in association with Edith Cowan University.
- Novel GPS collars for northern quolls were tested in a field setting, and provided information on spatial use and interactions with infrastructure.

Management implications

- Enhanced distributional data is publicly availability in an online repository for decision-making relating to northern quolls in the Pilbara. Future monitoring of northern quolls can be aligned with the methods of the regional program, to enable regional comparisons of population trends and change.
- Sophisticated northern quoll population distribution maps can be used to predict the likelihood of occurrence, and inform management decisions. Areas without data collection have been identified as priorities for ground-truthing, and key populations likely to be impacted by future threatening processes have been determined.
- Results from GPS tracking of northern quoll suggests that impacts can be limited if known quoll habitat is not fragmented or destroyed by infrastructure developments.
- Modelling the changes in mortality of different cohorts of northern quolls has enabled best-practise baiting regimes to be implemented for feral cats in the Pilbara.

Future directions

- Outcomes of the 2016 workshop will be made publically available and assist in setting future directions.
- Regional monitoring will continue, including collection of additional presence records.
- Population genetics for Pilbara northern quolls will be assessed with a further 500 DNA samples to be analysed. This will reveal information about the important northern quoll conservation units, genetic diversity within the region and effective home range size.
- Paternal genetics of northern quoll offspring will be examined, to inform on relatedness and paternity of litter-mates.
- Investigation into the interactions between northern quolls and introduced species (including predators; feral cat, red fox, wild dog, and the invasive cane toad) will continue.
- Characterisation of northern quoll denning requirements, with the view to protecting these key habitat features, or recreating them with artificial habitat.