Department of Environment and Conservation
Our environment, our future

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Science Division

Woylie declines: what are the causes?

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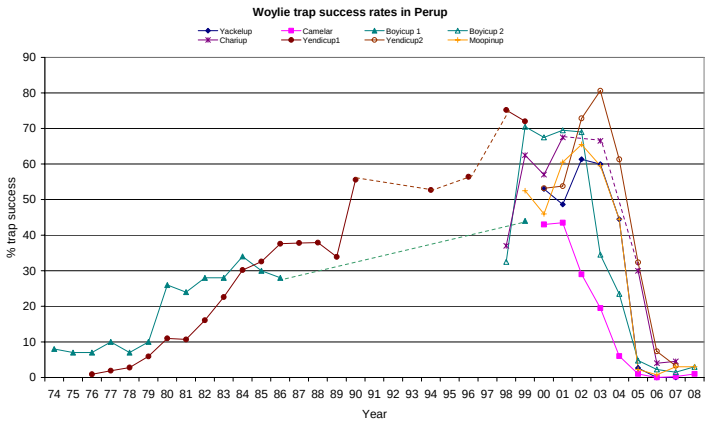
Background

The woylie (*Bettongia penicillata*) has declined by about 80% since 2001. The largest and most important populations have generally been the most affected, each experiencing greater than 93% losses within two to five years with few or no signs of a subsequent recovery. There are now less than 2000 individuals estimated remaining within the last four indigenous populations (Perup, Greater Kingston, Dryandra and Tutanning), which despite the low numbers still support high levels of genetic diversity. About 8000 woylies also persist in the many translocated populations across Australia. While some of these are now especially important to the long-term conservation of the species, some have also declined, many are very small and their future uncertain, and most of them have limited genetic diversity.

In 2008, Western Australia relisted the woylie as "*fauna that is rare or is likely to become extinct*" (Wildlife Conservation Act 1950). The IUCN Red List also revised the woylie as *Critically Endangered*. The Federal conservation status revision is pending. A Recovery Team was also established and is currently developing a recovery plan.

Juvenile woylie (Photo: Sabrina Trocini)



The 30-year recovery and decline of the woylie in the Perup, Upper Warren

Findings

Current evidence indicates the population declines are driven primarily by mortality. Predation/scavenging by feral cats and foxes have been associated with most mortalities, but it is likely other factors, notably disease, are involved (predisposing individuals to predation/scavenging). A number of viruses and a couple of parasites remain suspects and the subject of ongoing investigations. Habitat loss / modification, food resources and fire are among the factors that so far do not appear to be causing the current population collapses.

Spores from fungi species dispersed in woylie scats - part of the food resources and ecology study (Photo: Kerry Zosky)

Management Implications

Understanding the causes of the woylie declines and the factors limiting population recovery is a top priority of the Woylie Recovery Plan because this will directly instruct conservation and management efforts on the most effective and efficient means of ensuring a robust and sustained recovery of the species. The aim of the Woylie Conservation Research Project (WRCP) is to identify the causes of the recent woylie declines. Between 2006 and 2008 the focus was on understanding the characteristics of the declines and collecting the evidence necessary to identify the key suspects. Scientific tests are now needed to prove which of these are actually involved. The current priorities are to secure the funds to do this and address the following;

- Determine the role of (i) predation and (ii) disease in the decline and recovery of the woylie populations.
- Intensively investigate the woylie population at Keninup, Upper Warren – the last remaining moderate-density wild woylie population in WA to be affected by the declines.
- Continue data analyses and modelling – i.e. maximizing the extraction of evidence and understanding of the woylie declines using the large amount of data that has been generated and collated to date

Adult woylie being released

Volunteers preparing a sandpad to monitor predators

Radio-tracking to recover a dead woylie to determine cause of death

Health and disease screening of a woylie by field staff, and volunteers in Perup

Several university student projects are involved with this work including the development of forensic predator profiles to identify the predators/scavengers of carcasses; conservation genetics; food resources and ecology; viruses and epidemiology; and the potential role of parasites such as *Toxoplasma*, *Trypanosoma*, *Theileria*, enteric parasites and ectoparasites.

This work has broad biodiversity benefits beyond the woylie decline, including capacity-building to better respond to other species and ecosystems declines, emerging wildlife disease threats and other biodiversity and biosecurity risks. These benefits are being achieved through continued development of i) collaborative relationships, ii) management / response models and infrastructure, and iii) the development of skills, expertise and baseline information.

Project Partners

The collaborations in this project are one of its greatest strengths and are critical to its success and the conservation outcomes for the woylie.

Over 85 individuals have been involved in the project. Collaborating institutions include the Department of Environment and Conservation, Murdoch University, Perth Zoo, Australian Wildlife Conservancy, the South Australian Government Department of Environment and Heritage, University of Western Australia, Manjimup Aero Club, Data Analysis Australia and the University of Adelaide. Contributions by volunteers have also been extremely important. More than 200 individuals have contributed 600 days and 5 000 hours of volunteer service so far.

For more information go to:
http://www.dec.wa.gov.au/programs/saving-our-species/woylie-conservation-research-project.html

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