Where have all the woylies gone?

What is a woylie? Also known as the brush-tailed bettong (*Bettongia penicillata*), the woylie is a small native kangaroo-like marsupial that stands about 30 cm tall and weighs around a kilogram. Living mainly on a diet of underground fungi (native truffles), bulbs, tubers and seeds, the woylie plays a very important role in promoting the health of the forests and woodlands by spreading the seeds of the plants and the spores of fungi on which it eats.

Woylie released after radio collar was fitted as part of the survival and mortality study

Brief history of woylie distribution and abundance

- 1800s Distribution across much of southern and central Australia
- 1960s Three remnant populations left (Upper Warren, Dryandra and Tutanning (Fig. 1)
- 1970s isolated increases start in response to fox control & translocations
- 1996 *Western Shield* conservation program starts
- 1996 delisted from Endangered/Threatened species lists - State and Federal
- 2001 Dryandra population start to decline
- 2002 Upper Warren and Batalling populations start to decline

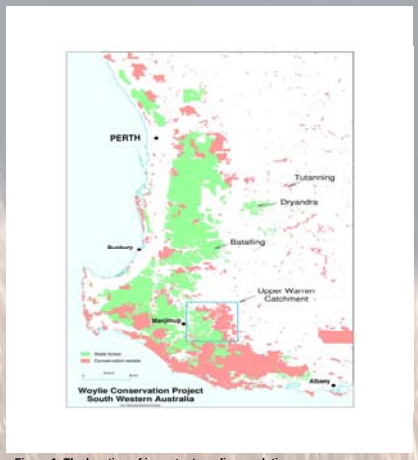


Figure 1. The location of important woylie populations.

Checking breeding status as part of the demographics study

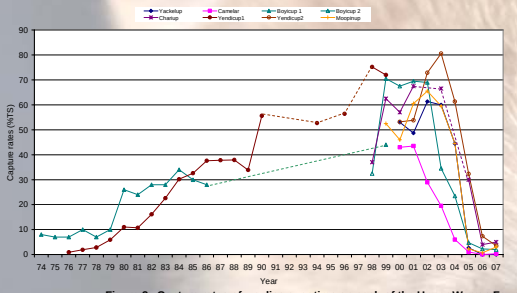


Figure 2. Capture rates of woylies over time on each of the Upper Warren Fauna Monitoring transects in southern and central areas of Perup Nature Reserve.

Recent woylie declines

Since 2001 woylie populations throughout southwestern Australia have undergone rapid and substantial declines. For example;

- Dryandra declined 93% by 2006
- Upper Warren populations declined 95% by 2007 (Figure 2)
- Batalling (reintroduction in 1982) declined 97% by 2007
- Overall, woylie have declined by an estimated 70 – 80% between 2001 and 2006

Live trapping is done as part of the Upper warren Fauna Monitoring and the Population Comparison Study

Adult woylie ready for release after full health check

Woylie field health check and disease sampling

Predator activity surveys using sandpads

Cat foot print on sandpad

What is causing the declines?

The aim of the Woylie Conservation Research Project (WRCP) is to identify the causes of the recent woylie declines.

The WRCP is focussed primarily on understanding declines in the Upper Warren region first, and consists of three major components;

I) Meta-analysis of existing databases to be aggregated into a single database (including 25,479 woylie records) to characterise the spatial and temporal patterns of population change, examine whether demographic changes were associated with woylie declines and any other circumstantial evidence or clues as to "who dunit"

II) Upper Warren Fauna Monitoring - building on, enhancing and co-ordinating previously independent existing activities, the monitoring provides information on population changes and collect regional scale evidence on demographics, health, disease, diet and genetics.

III) Population comparison Study (PCS) designed to discriminate factors and attributes associated with contemporary declines. The PCS has five main lines of enquiry relating to woylies and the key suspects;

a)woylie density and demographics
b)woylie survival and mortality
c)predators
d)resources
e)disease

Radio tracking woylies in the Upper Warren as part of the survival and mortality study

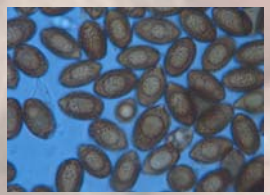
Collaboration

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

Principle collaborating institutions include Department of Environment and Conservation, Murdoch University, Perth Zoo, and Australian Wildlife Conservancy. Collaborations also exist with individuals from the South Australian Government Department of Environment and Heritage, University of Western Australia, Manjimup Aero Club, Data Analysis Australia and the University of Adelaide. Over 85 individuals are involved in some ongoing manner. Contributions by volunteers have also been extremely important. More than 123 individuals have collectively contributed more than 500 days and 4000 hours of volunteer service so far.

University PhD students projects (Murdoch University) involved in the WCRP include;

Toxoplasma	Nevi Parameswaran
Ectoparasites	Halina Burmej
Endoparasites	Unaiza Parkar
Food Resources	Kerry Rodda
Ectoparasites & bacteriology	Yazid Abdad
Conservation genetics & epidemiology	Carlo Pacioni



Spores from underground fungi as part of the food resources study

Woylie food underground fungi as part of the food resources study

Key Project Sponsors

'Saving our Species' Biodiversity Conservation Initiative
Department of Environment and Conservation
South West Catchments Council

australian wildlife conservancy

PERTH ZOO

Murdoch UNIVERSITY

Department of Environment and Conservation

Background image by Sabrina Trocini