Context Summary

The woylie (*Bettongia penicillata*) has declined by about 90% since 2001. Population declines have been rapid (<95% per annum), substantial (>90% lost) and have particularly impacted the largest and most important populations. Most of the remaining unaffected populations are small, isolated and inherently vulnerable. The woylie has been upgraded to Critically Endangered as a result.

Aims Summary

- Determine the causal factor(s) responsible for the recent woylie declines in the Upper Warren Region of south-western Australia.
- Identify the management required to ameliorate these declines.
- Develop adequate mammal monitoring protocols that will enable future changes in population abundances to be quantified and explained.

Progress

- A WWF funded project in collaboration with James Cook University has been conducting an outbreak investigation for the woylie. The project began in 2013 and is currently preparing a scientific paper for submission in 2015. A PhD project is being secured to continue the work beyond this.
- An ARC linkage project 'The Ecology of Parasite Transmission in Fauna Translocations' commenced in 2013 and Parks and Wildlife is an industry partner in this, contributing to the project design and providing assistance in the field. The translocation of 182 woylies from Perup Sanctuary to two sites in Greater Kingston was completed in June 2013. Pre and post translocation monitoring is providing evidence of the effects of these conservation actions on the populations of woylies and sympatric mammals at the source and destination sites. A similar process is now also underway for a third translocation of 69 woylies from sites across the Upper Warren to Dryandra (the other remaining natural woylie population) conducted in June 2014.
- Other monitoring of woylie populations and introduced predators within the Upper Warren region as part of this project have ceased. Some monitoring continues as part of Western Shield and district programs, to which this project has continued to provide practical support.
- The evidence remains consistent in indicating that the woylie declines have been mortality-driven, principally due to the predation (particularly by cats) of individuals that may have become increasingly vulnerable due to disease.
- Collaborative disease investigations continue, particularly into the key associations with the declines.
- Seven native species have now successively declined since 1994 in the Upper Warren region (dunnart, wambenger, bush rat, quenda, ngwayir, woylie and western brush wallaby), to similar extents (>80%), at similar rates and with no signs of significant or sustained recovery. The chuditch koomal and Tammar wallaby have more recently increased in the region.
- Several papers have been recently published in scientific journals and others are in preparation.

Management implications

- Insurance populations to conserve the remaining genetic diversity of the woylie remains a priority. Continued loss of genetic diversity due to important woylie populations remaining small or becoming extinct will compromise the recovery prospects and conservation of the species.
- More effective control of feral cats and foxes is critical for sustaining and facilitating the recovery of important woylie populations. Improved control and monitoring of introduced predators is therefore very important.

- Wildlife disease may contribute to woylie declines by making animals more vulnerable to predation. Resolution of the role of disease in the declines will directly inform woylie recovery strategies and management.
- The serial decline of multiple mammal species in the Upper Warren region is of serious concern requiring action, especially given the high conservation value of the area and of the populations it supports.

Future directions

- Continued in kind support to the ARC linkage and WWF funded projects, Western Shield and district monitoring activities and the students assocaited with this project
- Analysis and publication in scientific journals of the research conducted to date