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**Investigation of woylie (brush-tailed bettongs)
population declines – a critical and challenging problem**

Adrian Wayne¹, AndrewThompson², Andrea Reiss³, Paul Eden³, Carlo Pacioni², Andrew Smith², Phil Nicholls², Manda Page⁴, Jason Van Weenen⁵, Keith Morris¹, Nicky Marlow¹, Peter Orell¹

¹ Department of Environment and Conservation, Western Australia, ² Department of Veterinary and Biomedical Sciences, Murdoch University, Western Australia, ³ Perth Zoo Veterinary Department, Western Australia, ⁴Karakamia Wildlife Sanctuary, Australian Wildlife Conservancy, Western Australia, ⁵Department of Environment and Heritage, South Australia

The woylie (*Bettongia penicillata*) has declined by about 80% since 2001. The declines by affected populations in Western Australia and South Australia have been rapid (<95% per annum), substantial (>90% lost) and apparently biased toward the largest and most important populations. The declines are continuing in some areas and as yet there have been no clear signs of a sustained post decline recovery. Most of the remaining unaffected populations are small (<300 individuals), isolated and inherently vulnerable.

The species collapse was unexpected. It followed a successful recovery of the species during the previous 25 years, due principally to the successes achieved by fox control and a strategic translocation program. Determining the cause(s) of the current declines remains critically important to the conservation of the species. Key elements of the approach to the investigation have included;

- A large, highly collaborative, multidisciplinary, interagency research team
- Caughley's 'Declining Population Paradigm' as the principal research framework
- Establishment of a more integrated and co-ordinated regional monitoring program
- Aggregation of multiple independent datasets toward a single relational database to enable more powerful analyses
- A population comparison study to discriminate associations with contemporary declines including woylie demographics, survival and mortality and the key putative agents of decline – predators, food resources and disease.

While different factors appear to be involved in at least some of the declines, based on current evidence from the focal populations in the Upper Warren, the leading hypothesis remains that the observed rates of increased mortality are principally associated with predation/scavenging of individuals made more vulnerable by some other factor, principally disease. Determining the possible role of disease in the woylie decline has been particularly challenging and will be the focus of this presentation.

Presenting and Corresponding Author: Adrian Wayne, Science Division, Department of Environment and Conservation, Locked Bag 2, Manjimup, 6258, Western Australia
Email: adrian.wayne@dec.wa.gov.au