A conservation conundrum: the population and epidemiological dynamics associated with recent decline of woylies (*Bettongia penicillata*) in Australia.

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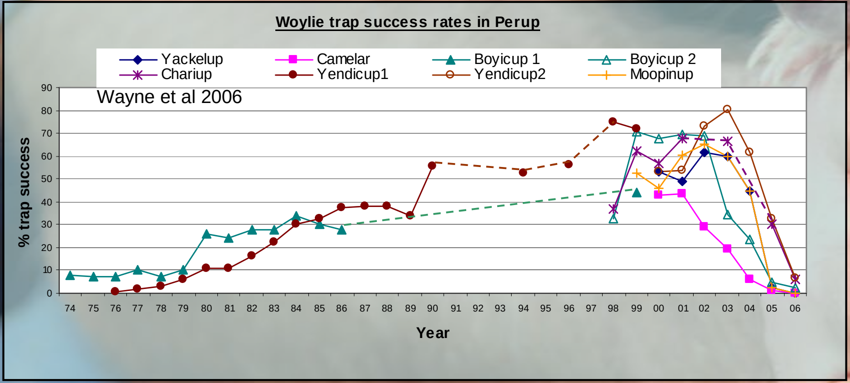
The woylie (*Bettongia penicillata),* a threatened marsupial species, found in the south-west of Western Australia, has undergone two recent genetic bottlenecks. One occurred with European settlement through to the 1970’s, and the second is currently underway.



The Department of Environment and Conservation in Western Australia has been collecting tissue samples from woylie during the normal monitoring sessions for at least the last eight years. Additionally, the Department of Environment and Heritage has collected tissue samples from the extant population in South Australia. These samples will be used for microsatellite genetic analysis.

Specific aims:

- Characterise the historical genetic profile across the woylie’s former range since European settlement by using ancient DNA approaches.
- Characterise the genetic profiles (e.g. genetic variability) of remaining Woylies in Western Australia.
- Investigate the genetic consequences of previous population declines by comparing available historical material with contemporary material from remaining populations (see above).
- Model and quantify the genetic responses within translocated populations in Western Australia and South Australia and the effect of post-establishment animal supplementation.
- Based on the findings of the above objectives, predict the genetic implications of recent woylie declines, and the likely consequences for the future recovery and conservation of the species.
- Describe information on paternity, social structure, home range and individual’s movements between adjacent populations.
- Investigate whether there are any relationships between woylie population declines (and associated demographic change such as survivorship, reproductive success, etc) and the genetic attributes of affected and unaffected populations.

Taking tissue samples