4.6. PCS expansion – Inclusions of woylie data from external programs

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Abstract

Additional populations were specifically sampled to complement and expand the population comparisons that have focused on the Upper Warren region and Karakamia. This was in response to the early findings from some of the woylie conservation research project disease investigations and concurrent woylie declines in South Australia. The additional sites included Batalling forest, Dryandra and Tutanning Nature Reserves in Western Australia, and Venus Bay Peninsula Conservation Park, Venus Bay Island A and St Peter's Island in South Australia. The additional samples were opportunistically collected in collaboration with the workers responsible for the pre-existing programs at these sites. Samples were used to assist specific disease investigations, conservation genetics, dietary analysis, and necropsy and pathology samples from dead woylies. Details of the additional sites samples are briefly summarized here. The results from the additional sampling sites are addressed within the specific report sections for which the samples were principally collected.

4.6.1. Introduction

The Woylie Conservation Research Project (WCRP) has primarily focussed on the woylie populations within the Upper Warren region and Karakamia Wildlife Sanctuary (i.e. Population Comparison Study (PCS) sites and Upper Warren Fauna Monitoring transects). The reasons for this focus are provided in the Introduction of this report (Chapter 1) and the Science Project Proposal (SPP 2007/02). Other woylie populations in Western Australia and South Australia however, offered additional scope for comparison ranging from apparently 'healthy' and 'stable' populations to those experiencing a decline, isolated island populations and natural and translocated populations. The targeted inclusion of additional populations in this project was made in response to disease findings of distinct differences between the Karakamia and Upper Warren - namely the absence of *Toxoplasma* and *Trypanosoma* in the former. Within this context, reports received in late 2006 of characteristically similar declines from Venus Bay Peninsula (VBP), South Australia were also considered as potentially important and instructive in helping to identify possible causes of the seemingly evermore extensive woylie declines.

The inclusion of additional sites relied on existing trapping programs being undertaken by workers independent of the WCRP. These additional populations included Batalling forest, Dryandra and Tutanning Nature Reserves in Western Australia, and VBP Conservation Park, Venus Bay Island A (VBA) and St Peter's Island in South Australia. The inclusion of these sites has been predominantly limited to the collection of samples specifically relevant to disease and conservation genetics, and opportunistically scats for woylie dietary analysis as part of the PhD research program into woylie food resources by Kerry Rodda.

While the WCRP provided the protocols, equipment, support and guidance, the collection of the additional 'external-program' samples depended on the co-operation and efforts of the workers responsible for these opportunities. Specialist assistance in phlebotomy was provided by qualified vets and WCRP collaborators, Carlo Pacioni and Sabrina Trocini at Dryandra and Tutanning (i.e. where required). DEC employees Christina Gilbert (qualified nurse) and Fiona Kirkpatrick trained and

assisted with disease sampling in the Upper Warren prior to taking similar samples in Batalling. Qualified vets, Monarto Zoo and DEHSA staff conducted the sampling in South Australia.

Through direct collaboration and co-operation, the necropsy and pathology of woylie mortalities associated with the mesopredator research in Dryandra and Tutanning (Nicky Marlow *et al.*) were also incorporated into the protocols associated with WCRP. Sick, injured or recently dead woylies encountered during other woylie-associated activities that were reported to the WCRP were also investigated by the WCRP.

A brief summary is provided for the additional sites sampled by collaborators in association with the WCRP:

4.6.2. Other WA populations

4.6.2.1. Batalling forest

Principal Collaborator: Fiona Kirkpatrick, DEC Collie

Site history: Woylies were translocated from Perup to the Batalling area in 1983. A healthy and expanding population was recorded in 1993 (Start *et al.*, 1995). Between 2002 and 2007 a decline of 97% has been observed in the woylie population.

Reason for inclusion: The cause(s) of this decline are unknown making the Batalling population of interest to this study.

Data/Sample collection: Data and samples were collected from Varis Road and Steed Road transects on 22nd -25th November 2006 and 27th – 30th November 2007 by Fiona Kirkpatrick, Christina Gilbert and DEC Collie District colleagues

4.6.2.2. Dryandra Nature Reserve

Principal Collaborator: Nicky Marlow, DEC Science Division, Woodvale

Site history: Dryandra supports one of the three last remaining natural (indigenous) woylie populations. The woylie capture rate has declined by 93% (2000 – 2006).

Reason for inclusion: The cause(s) of this decline are unknown making the Dryandra population of interest to this study.

Data/Sample collection: Data and samples were collected on 21st-24th November 2006 by Nicky Marlow and the meso-predator research project team. *Western Shield* trapping data is available but not yet analysed. Pathology samples were collected from dead radio-collared woylies sent to Murdoch University for necropsy to assist in the determination of factors associated with the mortality.

4.6.2.3. Tutanning Nature Reserve

Principal Collaborator: Nicky Marlow, DEC Science Division, Woodvale

Site history: Tutanning supports one of the three last remaining natural (indigenous) woylie populations. It has remained at low densities for about a decade, with no apparent indications of recent decline.

Reason for inclusion: An apparently stable, but low density population, provides a powerful comparison to declined populations such as Dryandra and Upper Warren.

Data/Sample collection: Data and samples were collected on 28th November 2006 by Nicky Marlow and the meso-predator research project team. Additional data and samples were collected by Peter Orell and Christine Freegard on 10th-12 April 2007 during tammar translocation monitoring. *Western Shield* trapping data is available but not yet analysed. Pathology samples were collected from dead radio-collared woylies sent to Murdoch University for necropsy to assist in the determination of factors associated with the mortality.

4.6.3. South Australian Populations

4.6.3.1. Venus Bay Peninsula/Monarto Zoo

Principal Collaborators: Jason van Weenan and David Armstrong (South Australian Department of Environment and Heritage) and Ian Smith (Monarto Zoo, South Australia).

Site history: VBP was the first unfenced reintroduction of woylies to the mainland in South Australia, occurring in 1994. By 2002, the woylie population had increased and expanded to the northern section of the peninsula. A steady decline in the southern half of the peninsula was observed from early 2005. This appeared to gradually extend into the northern half, corresponding with the way in which the population initially expanded north up the peninsula, culminating in a sudden massive decline of more than 90% between March and July 2006. A total of 53 woylies from VBP were sent to Monarto Zoo for captive holding during the woylie decline to insure against population extinction.

Possible cause(s) of decline: A combination of limited food resources, cat predation and severe weather events has more recently been hypothesised as the cause for the extreme decline seen in this population (Section 4.7 VBP summary). Reason for inclusion: The decline observed in the VBP population was of interest to this study due to a simultaneous decline in isolated Western Australian and South Australian woylie populations. Initially the cause of the declines were unknown. Subsequent hypothesis of the cause(s) remain untested/unsubstantiated.

Data/Sample collection: Monarto Zoo staff collected data and samples from the captive woylies in December 2006 and May 2007.

4.6.3.2. Venus Bay Island A

Principal Collaborators: Jason van Weenan and David Armstrong (South Australian Department of Environment and Heritage)

Site history: This translocated island population is descended from seven captive bred animals introduced in 1980. The island of 17 hectares supports only a small woylie population. Since an initial boom-crash cycle the population has stabilised at between 25 and 35 individuals (Start *et al.*, 1995). Monitoring conducted in December 2006 revealed half the animals were in poor condition (D.Armstrong, DEH, SA, pers. comm.). On the latest monitoring trip in June 2007, 22 animals were caught, 16 of which were new animals. The animals appeared to be in good condition.

Possible cause(s) of decline: The poor body condition and lack of adult survival is thought to have been caused by the harsh summer drought experienced in 2006/2007 and a subsequent lack of resources (D. Armstrong, DEHSA, pers. comm.).

Reason for inclusion: VBA was of interest to this study as an isolated island reference population with no introduced predators.

Data/sample collection: On 26th June 2007 data and samples were collected by David Armstrong.

4.6.3.3. St Peter's Island

Principal Collaborator: Jason van Weenan (South Australian Department of Environment and Heritage)

Site history: This translocated island population is descended from a total of 113 Woylies released in 1989 from captive populations held in Canberra and Monarto. In 1993 the population was recorded as being well established and growing quickly (Start *et al.*, 1995). The island is 3 439 hectares in size and no decline has been observed.

Reason for inclusion: This island population was of interest to this study as a reference population that had not shown decline in numbers, has no introduced predators and is an isolated population.

Data/sample collection: Data and samples were collected from 78 animals captured on 9th-11th June 2007 by Jason van Weenan.

4.6.3.4. Other woylie individuals/populations

Liaison with workers closely associated with other woylie populations has included Scotia Wildlife Sanctuary (AWC, NSW), Paruna Wildlife Sanctuary (AWC, WA), St Johns forest (DEC, WA), and Julimar (DEC, WA). Liaison with individuals or organisations with private colonies and/or are wildlife carers have included establishments in Northcliffe, Yelverton, Boyup Brook, Kalamunda, Wellard, Roleystone and Mt Helena. Liaison has also occurred with individuals investigating possible repeated woylie sightings near Fitzgerald National Park (SCNRM, WA).

Liaison has generally involved i) encouraging strategies to minimise the potential spread of possible agents of decline, ii) close surveillance of woylies for signs of population decline and/or individuals displaying symptoms or poor health, iii) recovery of any dead or dying animals, and iv) reporting any cases of sick or dead woylies when they have been encountered.

A necropsy was conducted on one of three woylies that died at a private captive colony in Wellard, Perth. The three animals died in November 2006 without a known cause. The details of this case are provided in the pathology section of the report (Section 5.4). There were three incidences of metabolic bone disease (two euthanased, one survived) in hand-reared woylies provided by a wildlife carer to Yelverton Eco Retreat. Details of these cases are provided in the Clinical section of the report (Section 5.3).

4.6.4. References

Start, T., Burbidge, A. and Armstrong, D. 1995. Woylie Recovery Plan (2nd Edition). Western Australian Wildlife Management Program No. 16, Department of Conservation and Land Management.