RECOVERY TEAM ANNUAL REPORT THREATENED SPECIES AND/OR COMMUNITIES RECOVERY TEAM				
Recovery Team	Woylie			
Reporting Period Submission date 24 April	**DATE FROM:**	**1/4/14**	**DATE TO:**	**31/3/15**

Current membership		
Member		**Representing**
Chair	Manda Page	DPaW Species and Communities Branch
Exec Officer	Rebecca Kay/Abby Thomas	DPaW Species and Communities Branch
Members	Adrian Wayne	DPaW Science
	Rebecca Ong/Rebecca Kay	DPaW Swan Region
	Chris Gilbert/Emma Rowbotham	DPaW Southwest Region
	Brian Macmahon/Peter Wnuk	DPaW Wheatbelt Region
	Brad Barton/Ian Wilson	DPaW Warren Region
	Anthony Desmond	DPaW Midwest Region
	Angela Duffy/Peter Copley/Liz McTagart	DEWNR SA
	David Roshier/Laura Ruykys	AWC
	Andrew Thompson/Stephanie Godfrey/Amy Northover	Murdoch University
	Juanita Renwick	DPaW Western Shield
	Carlo Pacioni	Murdoch University
Guests	Kath Howard/Rebecca Boyland	WWF
	Kim Ottewell	DPaW
	June Butcher	Kanyana
	Lizzie Aravidis	Native Animal Rescue
	Chris Rafferty	Whiteman Park
	Jeff Short	Consultant

Dates meetings were held	19.8.14; 18.2.15
Highlights of achievements for the previous 12 months suitable for publication in *WATSNU* and contribution to DEC annual report. Provide 1-2 paragraphs summarising total number of new populations located, surveys completed, list major management actions etc	• Translocation from Perup Sanctuary into Kingston sites help boost the unfenced Upper Warren population and provide data for Murdoch University ARC research projects. • Outbreak Investigation Workshop found that predators are a key player in the decline, food resource limitations are not ruled out but difficult to determine the extent of disease as a factor. Murdoch University and partners continue research on the possible link between trypanosomes and declines with multiple scientific publications. • The population management strategy for the woylie continues to develop and incorporates new work based on population modelling undertaken to guide genetic management in woylie translocations. • Continuation of annual monitoring programs of existing and translocated populations by DPaW, Whiteman Park and AWC. • Continuing research into introduced predators and new cat bait Eradicat. • A draft Communication Plan for the Woylie is developed.

List of recovery actions coordinated by Recovery Team

Detail under the headings below the recovery actions undertaken during the reporting period. Provide separate detail for each species/community against each action. For species/community-specific recovery teams, the generic activity types below can be replaced by the specific recovery actions from the recovery plan where appropriate.

Recovery Action 3,4,5,6: Population management strategy (including population health, genetic health, insurance populations, captive populations and associated translocations).	***Population Monitoring:*** *Indigenous populations* <u>Dryandra</u> Five individuals (2m and 3F) were captured during April 2014. All females were carrying PY and all seemed in good health. During a survey in February 2015 low numbers of woylies and possums were captured (9 woylies from 350 traps). <u>Upper Warren</u> Woylie numbers in Warren Region are stable or increasing. Also see translocation results in Kingston sites. <u>Tutanning</u> No woylies were captured during April 2014 trapping. Now 4 years since the last record of a woylie at Tutanning. A single woylie was caught on a camera in March 2015. *Translocated populations (DPaW regions)* - Western shield monitoring of sites continued in 2014 - Camera monitoring has been initiated in some sites (i.e. Perth Hills District, Wellington District). - Numbers vary considerably between sites. *Translocated fenced or island populations* <u>Perup Sanctuary:</u> Annual monitoring occurs in March with 2 grids of 81 trap points each. In March 2014 123 woylie captures (51 individuals) on Alf Rd grid – slightly down from October, and 133 woylie captures (55

	individuals) on Quad Bike grid – slightly up from October. Most females either had no PY, very small PY or had active pouches. Very few signs of elongated or lactating teats suggesting a lack of breeding over summer. Scotia: 390 woylies in stage 2 and 30 in stage 1. Yookamurra: an observed decline in numbers following a dry spell, but latest monitoring is showing that they are again increasing in numbers. Karakamia: population surveys in June 2014 estimated the population size at 205-217 individuals. Whiteman Park: Experienced a fire in December 2014. Post fire monitoring of woylies in Feb 2015 detected 30 plus woylies within the sanctuary with no signs of injury. **Translocations** The woylie translocation of 182 individuals (90 to Warrup and 92 to Walcott) was conducted June 2014. Early indications are that the translocation has successfully increased the resident woylie population and that a substantial proportion of the translocated animals have survived the first six months post translocation. Both translocation sites continue to receive monthly fox baiting.
Recovery Action 2) Minimise predation by introduced foxes and cats at priority sites.	The Outbreak workshop was held in March. 28 experts attended the workshop, representing the major woylie populations across Australia (DPAW, AWC, DEWNR SA), epidemiologists Lee Skerratt and Gerado Martin (James Cook University) and workshop co-organisers/sponsors Kath Howard and Rebbeca Boyland (World Wildlife Fund). The most likely causes of the woylie decline in order of the amount of supportive evidence (but requiring further investigation) were: 1. Release of woylie abundance through predator control or introduction of woylies; then prey switching by efficient predators (cats) across the landscape driving the decline. 2. Release of woylie abundance through predator control or introduction of woylies; then exhaustion of resources driving the decline. 3. Unknown Disease (Evidence of disease largely absent other than it being plausible). Work is currently underway for more data to be collated and analysed to progress the outbreak investigation and produce a manuscript for publication in 2015. -
Recovery Action 1) Verify the causes of the decline and suppression of recovery and implement remedial action to address these.	**ARC project**: Pre and post monitoring and sampling around the Perup translocation has been conducted as part of a collaborative project to understand the role and significance of parasites in translocations of threatened mammals. There has been some observed changes in trypanosomes present and not present in the translocated woylies. **Carlos Pacioni** completed two new reports around population modelling which provided guidance to translocation of woylies in relation to genetic health. The model indicated that source

populations should be large and ideally with a minimum population of 1000 individuals. And that a maximum of 30% of the source population can be removed without impacting the demography and genetic profiles of the source populations.

Current Student Projects:

- Atkinson, A. (Hons, MU) – Assessment of genetic modeling and management of woylie translocations
- Botero, A. (PhD, MU) – Genetic characterisation of trypanosomes
- Burmej, H. (PhD, MU) – Ectoparasites of threatened mammals in Western Australia: Biodiversity and impact
- Hing, S. (PhD, MU) – Relationship between stress and disease in woylies
- Jones, K. (PhD, MU) – Social networks and parasite transmission in woylies
- Lim, Z. (RSM, MU) – A review of pathology in the woylie
- Northover, A. (PhD, MU) - The ecology of parasite transmission in fauna translocations
- Pan, S. (PhD, MU) – *Toxoplasma gondii* infection and atypical genotypes in Western Australian wildlife species.
- Parkar, U. (PhD, MU) – Blastocystis in humans and other mammals
- Pleitner, M. (BSc, University of Wuerzburg, Germany) – health associations with the declines of woylies in the Upper Warren
- Skogvold, K. (PhD, MU) – A comparative health and disease investigation in the woylie – captive vs free-range enclosure vs wild
- Thompson, C. (PhD, MU) – Trypanosome effects on woylies and their vectors
- Worth, A. (PhD, MU) – Toxoplasma effects on woylie behaviour
- Yeatman, G. (PhD, UWA) – Woylie and wildlife ecology in the Upper Warren

Recent Scientific Publications

Jones, K., Thompson, R. C. A., Wayne, A. F. and Godfrey, S. (2014). Parasite transmission in the critically endangered woylie. (Poster). In 'Proceedings of the 2014 Australian Society for Parasitology 50th Anniversary Conference'. Canberra, ACT Australia.

Northover, A., Thompson, R. C. A., Lymbery, A., Wayne, A. F. and Godfrey, S. (2014). Investigating the incidence of polyparasitism in translocated woylies (*Bettongia penicillata*): Impact on host fitness and translocation success. (Poster). In 'Proceedings of the 2014 Australian Society for Parasitology 50th Anniversary Conference '. Canberra, ACT Australia.

Pacioni, C. (2014). 'Modelling woylie (*Bettongia penicillata*) populaition genetics to inform management strategies.' WWF-Australia, Perth, Western Australia.

Pacioni, C., Johansen, C. A., Mahony, T. J., O'Dea, M., Robertson, I., Wayne, A. F. and Ellis, T. (2014). A virological investigation into declining woylie populations *Australian Journal of Zoology* **61**, 446-453.

Thompson, C. K., Godfrey, S. S. and Thompson, R. C. A. (2014). Trypanosomes of Australian mammals: A review. *International*

	Journal for Parasitology: Parasites and Wildlife **3**, 57-66. Thompson, C., Wayne, A., Godfrey, S. and Thompson, R. C. (2014). Temporal and spatial dynamics of trypanosomes infecting the brush-tailed bettong (*Bettongia penicillata*): a cautionary note of disease-induced population decline. *Parasites & Vectors* **7**, 169. Thompson, C.K., Wayne, A.F., Godfrey, S.S., Thompson, R.C.A., (2015). Survival, age estimation and sexual maturity of pouch young of the brush-tailed bettong (*Bettongia penicillata*) in captivity. Australian Mammalogy, - online http://dx.doi.org/10.1071/AM14025. Wayne, A.F., Maxwell, M., Ward, C.G., Vellios, C.V., Wilson, I., Wayne, J.C., Williams, M.R., (2015). Sudden and rapid decline of the abundant marsupial, *Bettongia penicillata* in Australia. Oryx 49(1), 175-185. Wayne, A. F. (2014). Perup Sanctuary: insuring woylies against extinction. *Landscope* **29(3)**, 12-17. Worth, A. R., Lymbery, A. J. and Thompson, R. C. A. (2014). Adaptive host manipulation by Toxoplasma gondii: fact or fiction? *Trends in Parasitology* **29**, 150-155. Worth, A. R., Andrew Thompson, R. C. and Lymbery, A. J. (2014). Chapter Three - Reevaluating the Evidence for *Toxoplasma gondii*-Induced Behavioural Changes in Rodents. In 'Advances in Parasitology'. (Ed. D. R. a. J. R. Stothard) Volume 85 pp. 109-142. (Academic Press: Oxford, United Kingdom).
Recovery Action 7: Inform and educate the community about, and involve the community in, the recovery actions required to conserve the woylie.	- A communications plan has been drafted for the Woylie. *Television* - Channel 7 Today Tonight, Perup Sanctuary – January 2014 - Documentary entry, Maroo Wildlife Refuge - Down Under Berlin Australian Film Festival April 2014 - GWN News 'Cute little Aussie animals on the brink of extinction may survive' – August 2014: *Radio* - Wayne, Adrian. 2014. Woylie woes. ABC Radio – National Bush Telegraph program. March 31. Podcast: www.abc.net.au/radionational/programs/bushtelegraph/woylie-woes/5356270 *Print* - Kay, R. Woylie translocation to Perup Sanctuary. 2013. WATSNU. December, vol 19 No 2, page 2. - Wayne, A. 2014. Perup Sanctuary, Insuring Woylies Against Extinction. Landscope, autumn vol 29 issue 3, page 14-17. - Laurie, V. 2014. Woylies from woe to go and back again. The Australian, March 31, page 3. - Wayne, A. 2014. Perup Sanctuary, Insuring Woylies Against Extinction. Wildlife Rescue Magazine, June edition. - Paddenburg, Trevor. Rare woylies released into wild near Manjimup. Perth Now/Sunday Times, June 22. - Croy, Liam. 2014. Iggy pops in the help save the woylies. West Australian, August 4. - Corlett, Aaron. 2014. Orphan woylie gets second chance.

	Manjimup-Bridgetown Times, August 6.