KARAKAMIA WILDLIFE SANCTUARY ANNUAL REPORT 2008

INTRODUCTION

Karakamia Wildlife Sanctuary was established in 1992 by the Australian Wildlife Conservancy (AWC) and covers 275 ha of Jarrah forest in the southwest of Western Australia, east of Perth. The primary goal of the sanctuary was to re-establish the medium-sized mammals that had either declined significantly in the region, or had become regionally extinct. The key to the success of this project was the protection and effective management of critical habitat, and the exclusion of feral animals with a 9 km vermin-proof fence surrounding the entire property. After initial surveys to determine species present, six mammal species were re-introduced to Karakamia between1994-1998. These included the Quenda (September 1994), Numbat (December 1994), Woylie (January 1995), Western Ringtail Possum (August 1995), Quokka (October 1996) and Tammar Wallaby, and the supplementation of some species already present (Western Brush Wallaby and Brushtail Possum).

Monitoring of flora and fauna has been ongoing since 1992. One indicator of the success of the program is that 771 mammals (including 603 Woylies) have been translocated from Karakamia to other suitable locations such as Paruna Wildlife Sanctuary (AWC), Avon Valley and Kalbarri National Parks and Cervantes (Department of Environment and Conservation).

The purpose of this report is to summarise monitoring and research activity undertaken on Karakamia Wildlife Sanctuary during 2009. This includes monitoring of translocated species to satisfy agreed reporting commitments between AWC and DEC

METHODS AND RESULTS: FAUNA

SPOTLIGHTING

On four occasions (approximately every 3 months) a 9km/1hr spotlighting drive transect was conducted incorporating the different habitats within the sanctuary (see 2005 report for a map of the route). On each occasion, spotlighting was undertaken for consecutive nights and the results are reported as mean (±SE) number of animals recorded per night (figure 1). The results suggest that most species at Karakamia are relatively stable though there is some variability.

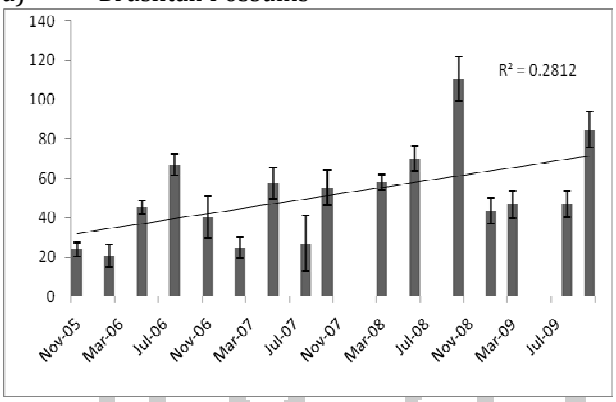
Six species of frog were recorded on the spotlight transect in 2009: Slender Tree Frog (*Litoria adelaidensis*), Banjo Frog (*Limnodynastes dorsalis*), Quacking Frog (*Crinia georgiana*), Glauert's Froglet (*Crinia glauerti*), Bleating Froglet (*Crinia pseudinsignifera*) and Motorbike Frog (*Litoria moorei*). While Lea's frog (*Geocrinia leai*) and Western Marsh Frog (*Heleioporus barycragus*) were not detected during the transects they have been opportunistically heard by staff during winter calling near the creek.

TRAPPING AND TRANSLOCATIONS

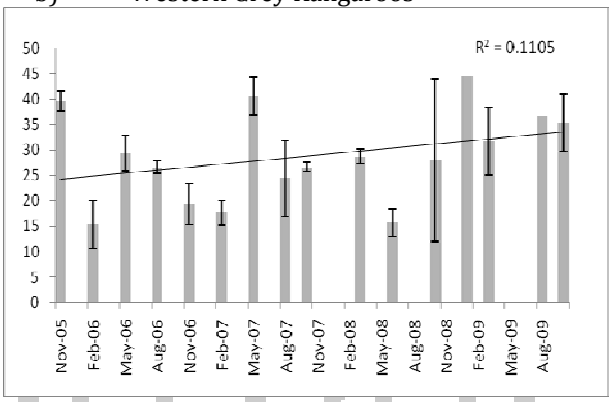
As a result of the dramatic decline detected in many Woylie populations in the south-west of WA, AWC is involved in Woylie Decline Research co-ordinated by Dr Adrian Wayne (DEC Manjimup). This involved the establishment of a grid of 5 x 6 cage traps (total 30), each 50 m apart. These grids were trapped in May and September in 2009 for four consecutive nights. Figures 2-5 presents the results of this entire trapping program from September 2006 to September 2009. The results indicate that, based on trap rate, the Woylie population in Karakamia is not showing any indication of decline. Recent surveys are

- returning the highest trap rates since September 2006, including an increase since May 2009 (Figure 2),
- indicating a reasonable, and increasing rate of recruitment (Figure 3),
- indicating high breeding rates with the highest proportion of females with pouch young ever recorded (Figure 4), and
- showing the average weight of adults fluctuates seasonally (Figure 5), being lowest at the end of the dry season when resources are most limited, but increasing since the May 2009 survey.

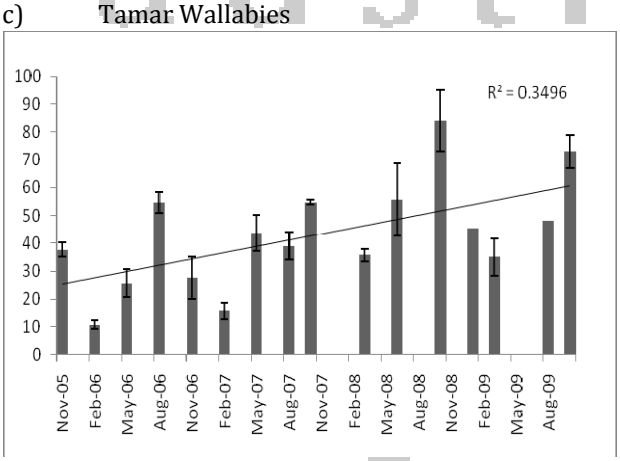
a) Brushtail Possums



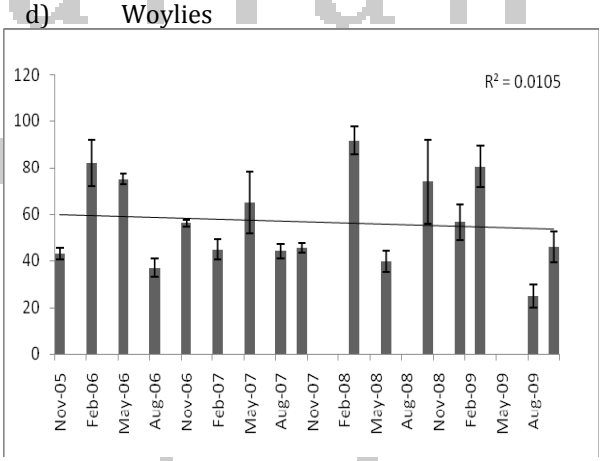
b) Western Grey Kangaroos



c) Tamar Wallabies



d) Woylies



e) Quenda

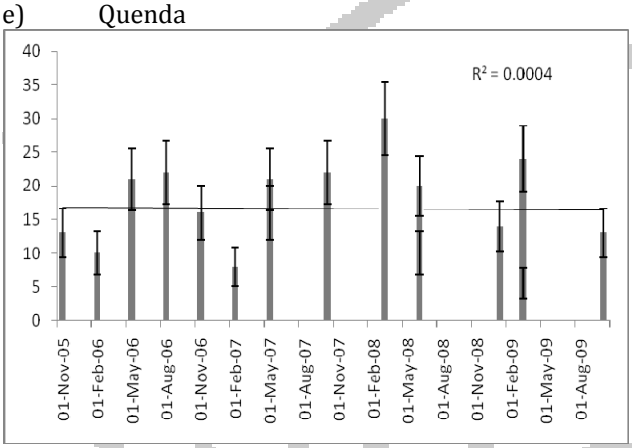


Figure 1: Mean (±SE) number of animals per night recorded during spotlighting transects (2005-2008) for a) Brushtail Possums, b) Western Grey Kangaroos, c) Tamar Wallabies, d) Woylies and e) Quenda (the trendline is a simple linear regression).

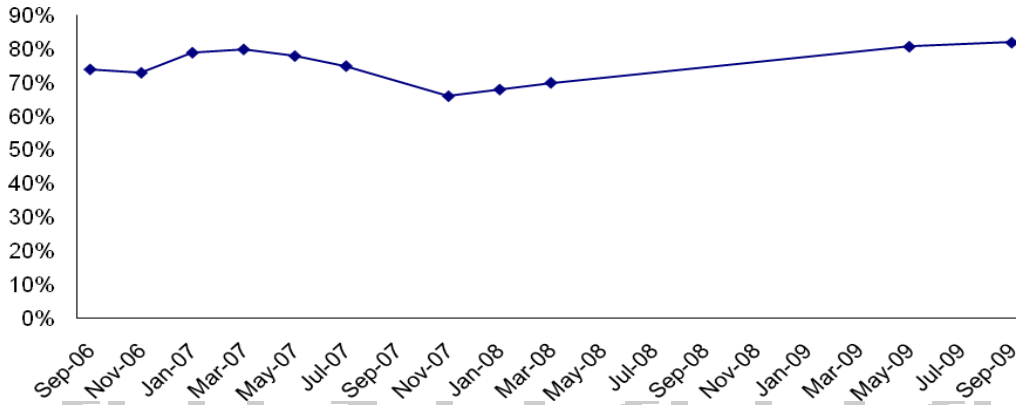


Figure 2: Trap rate from Woylie grid trapping program (September 2006 – September 2009).

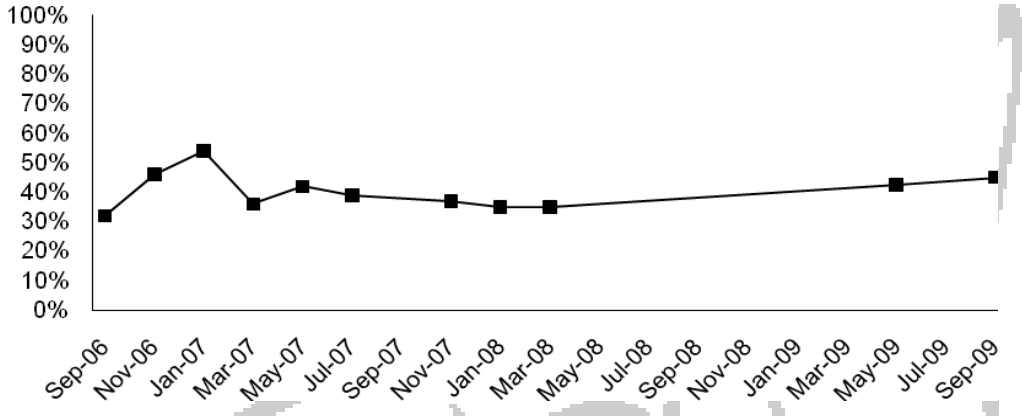


Figure 3: Proportion of individuals trapped that were new individuals (not previously tagged).

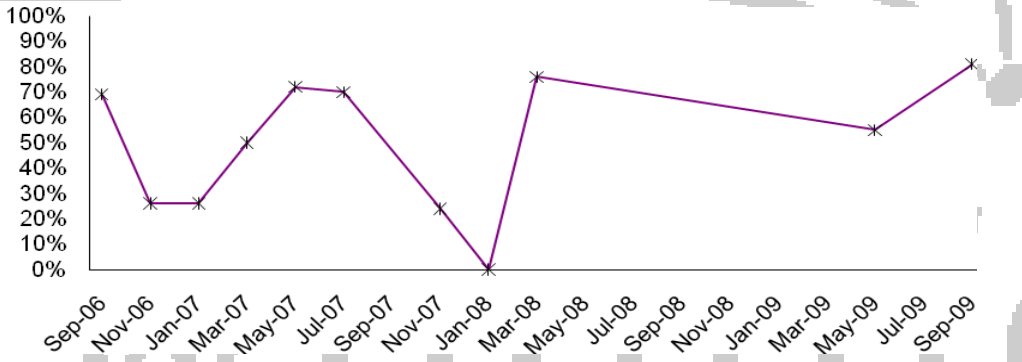


Figure 4: The proportion of females trapped with pouch young

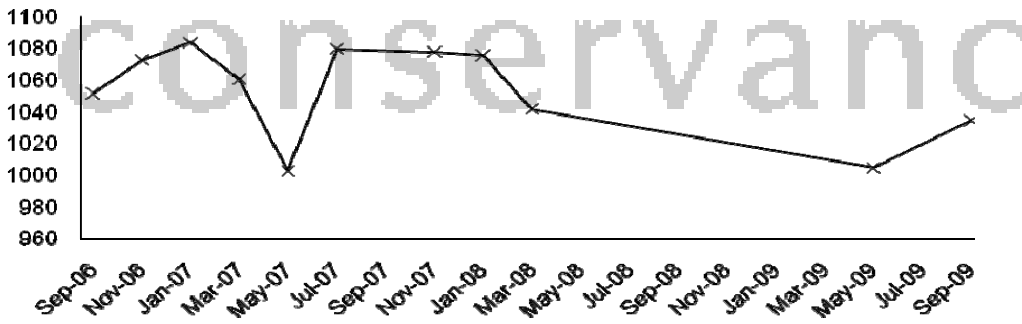


Figure 5: The average weight of adults caught.

This biannual woylie trapping along with 150 other trap nights in 2009 at Karakamia were also utilized to support a number of student research projects including:

- Bryony Palmer's (honors project, Murdoch University) investigating if native mammals disperse Phytophthora cinnamomi.
- Kerry Zosky's (Phd research, Murdoch University) on food resources and Woylie declines in south-western Australia.
- Halina Burmej's (Phd research, Murdoch University) on ectoparasites and threatened mammals in WA.
- Murdoch University in conjunction with DEC; Dr Andy Smith and Professor Andy Thomson's research into disease and parasites in the Karakamia Woylie population.
- Stephanie Byrne (honors project, University of Queensland) comparing remote monitoring techniques in different landscapes.

Pit trapping was also undertaken at Karakamia. At 10 sites across the sanctuary between two and six pits (with drift fences) were placed approximately 50m apart. These pits were opened in December 2009 for four consecutive nights. Table 1 presents the results of this pit trapping event in comparison to December 2008. Several species had lower trap rates and there were some species not captured at all in 2009.

Table 1: Results of pit trapping at Karakamia in December 2008 and 2009

Species	# Individuals Captured in Dec 2008	# Individuals Captured in Dec 2009
Antechinus flavipes	20	9
Crinia georgiana	9	3
Cryptoblepharus buchananii	1	0
Ctenotus labilliardeiri	1	0
Heleioporus barycragus	1	0
Hemiergis initialis	1	2
Lerista distinguenda	26	6
Menetia greyii	5	3
Morethia obscura	1	4
Mus mus	1	0
Tiliqua rugosa	1	0
Tacyglossus aculeatus	0	1

In July 2009, 24 Brushtail Possums were translocated from Karakamia to Lorna Glen as part of the DEC reintroduction program. Further information on the outcome of this translocation will be available from DEC.

BIRD SURVEYS

Birds Australia WA undertakes bird surveys at Karakamia annually. In 2009 this was undertaken in October. No new species were recorded.

OPPORTUNISTIC OBSERVATIONS

In addition to formal monitoring, opportunistic observations are recorded during routine sanctuary work, including evening spotlight tours and motion sensor camera surveillance. This includes unusual sightings, calls, scats, tracks and breeding events that might not be detected by other monitoring techniques. Of some importance, in September 2009 an un-tagged Quokka was captured on motion sensor camera. Quokkas are at very low density at Karakamia, there were only ever three translocated into the sanctuary. Despite low founding numbers they have persisted and (as previously reported to and discussed with DEC) this population would benefit from more individuals being translocated into the property. Ringtail Possums are also opportunistically

recorded in the Sanctuary; highlights for Ringtails at Karakamia in 2009 include regular sightings of Ringtails in most parts of the sanctuary, including areas where they have not been recorded previously.

FERAL PREDATOR INCURSIONS

Incursions of both a cat and a fox occurred in Karakamia in 2009. This elicited a large and sustained control effort (involving baiting, trapping, tracking, spotlighting and sniffer dog hunts) and associated monitoring for the feral invaders and for any impact on our threatened mammals. Both the cat and the fox were removed, and surveys showed that our populations of Quenda, Woylies and Tammar Wallabies had maintained their numbers. Nevertheless, the feral exclusion fence will be upgraded in the next few months to reduce the risk of future breaches.

METHODS AND RESULTS: FLORA

Monitoring of vegetation is undertaken by photographic record of 11 established photo points at six monthly intervals, which have been conducted since 1992. These photographs are archived by AWC at Karakamia. An extensive field herbarium is maintained with over 300 specimens.

CONCLUSION

Monitoring and research undertaken on Karakamia Wildlife in 2009 indicates that the populations of most translocated species are healthy. This is particularly important for the Woylie which is in decline in other areas of Western Australia. The Karakamia Woylie population is a key component for the recovery of this species and AWC will continue the close monitoring of the population and collaborate with other organizations to assist in understanding the widespread decline. At this stage there are no definite translocations planned for 2010 for Woylies out of Karakamia.

The '*Karakamia Woylie Project: providing a long-term haven for a critically endangered species in Western Australia*' won the 2009 WA Environment Award for the Biodiversity Category.

FURTHER INFORMATION

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