Assessment of introduced predator presence within the Perup Sanctuary, Western Australia

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Plate 1. Entry gates to the 400 ha introduced predator-proof enclosure.

Recommended citation: Hamilton, N. and Rolfe, J. (2011). Assessment of introduced predator presence within the Perup Sanctuary. Unpublished Report, Western Australian Department of Environment and Conservation.

Abstract

The Upper Warren Region is home of one of the last remaining Woylie populations in the south west of Western Australia. To ensure the successful breeding and recovery of Woylies, a 400 ha 'introduced predator-proof' enclosure has recently been constructed. The aim of this work was to quantify and eradicate feral cats and foxes in this enclosure, prior to the introduction of Woylies. This program was conducted following the removal of a number of native species from within the area.

After an extensive trapping exercise and track surveys, which included monitoring sand plots and deployment of remote cameras for seven days, no sign of either foxes or feral cats was found. Seven Brushtail Possums and one Australian Raven were captured in leg-hold traps and released unharmed outside the enclosure. The sand plots, remote cameras and opportunistic sightings indicated the presence of a number of native animals still within the enclosure and included: Chuditch, Brushtail Possums, Tammar Wallabies, one Woylie and Monitor lizards.

Introduction

The Woylie (*Bettongia penicillata*) has declined by more than 80% since 2001 (Orell 2009). The largest and most important populations have generally been the most affected, each experiencing greater than 93% losses within two to five years with few or no signs of a subsequent recovery. There is now less than an estimated 1300 individuals remaining within the last four indigenous populations (Perup, Greater Kingston, Dryandra and Tutanning) (op. cit.). In an attempt to establish and secure 'insurance' populations one of several decisions was to re-introduce a minimum of 40 Woylies into a 400 ha introduced 'predator-proof' enclosure at Perup (the Perup Sanctuary) (Wayne 2010).

Before any Woylie translocations into the enclosure could be undertaken, it was critical that any introduced predators were removed. The timing of the translocation was dependent on the confirmation of the Perup Sanctuary's 'introduced predator-free' status, but was planned to be undertaken between September and December of 2010 (Wayne 2010). This report summarises the program of monitoring for presence and removal of these predators from what can be considered a 'fenced island'.

Material and Methods

Study site

Perup Nature Reserve (34^0 10.515' S, 116^0 34.279' E) is located 50 km to the north-east of the town of Manjimup in the south west of Western Australia. It is part of the Upper Warren region, lying between the Perup and Tone Rivers. The region experiences a moderate Mediterranean-type climate with warm dry summers and cool wet winters. It supports dry sclerophyll forest and woodland dominated by jarrah (*Euclyptus marginate*), marri (*Corymbia calophylla*) and wandoo (*E. wandoo*) at canopy level. Common understorey species include *Leucopogon*, *Hakea, Acacia*, *Bossiaea*, *Macrozamia, Gastrolobium*, *Xanthorrhoea, Hibbertia*, *Pteridium* and *Billardiera* spp (Strelein 1988). Average annual rainfall varies along a north-south gradient of increasing rainfall but is about 700 mm, mostly falling between May and August (Burrows and Christensen 2002).

Trapping exercise

The trapping technique utilizes padded leg-hold traps, Victor 'Soft Catch'® traps No. 3 (Woodstream Corp., Lititz, Pa.; U.S.A.), a Felid Attracting Phonic (FAP) that produces a sound of a cat call, and a blended mixture of cat faeces and urine (Pongo) (for details see Algar *et al*. 2010). Sixteen leg-hold traps were set around the inside fence area at 500 m intervals, eight of these with FAPs (alternate traps) and all with pongo. In addition, seven leg hold traps were set on the internal tracks; all with a FAP and pongo (see Figure 1). Four Sheffield cage traps baited with apple and carrot as lure were set to try to remove remaining Brushtail Possums (*Trichosurus vulpecula*) from the enclosure. The trap locations were recorded on a GPS and are provided in Figure 1. Traps were checked twice daily due to weather conditions during the monitoring process (see below).

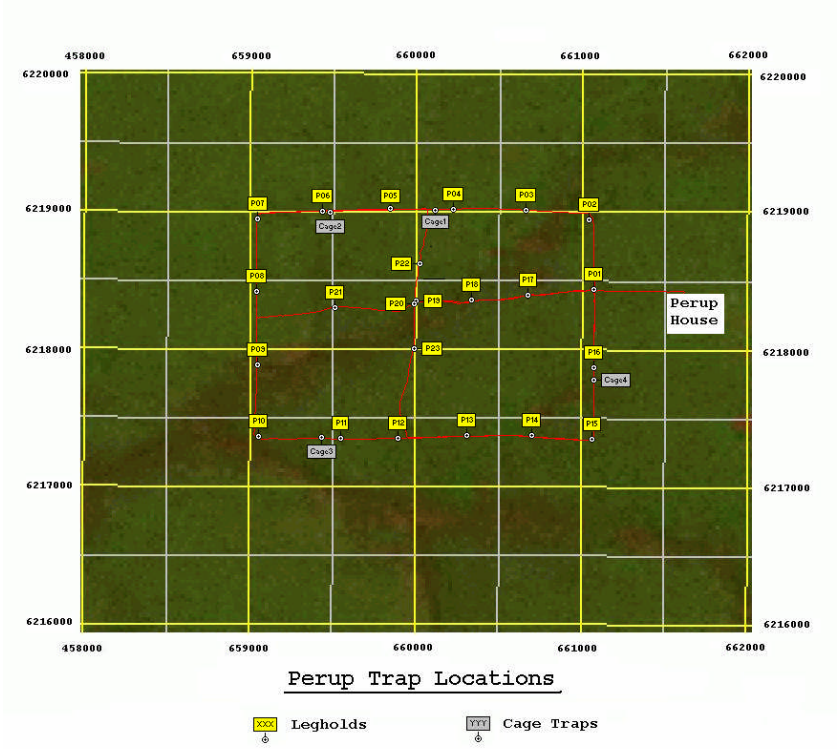

Figure 1. Leg-hold and cage trap locations at the Perup Woylie Enclosure

Monitoring

The enclosure was examined twice daily (06:00 h and 16:00 h) for feral cat and fox activity by walking the internal road network (8 km). This monitoring technique was used to avoid spreading dieback by vehicle as well as it increased the possibility of observing any introduced and native animal activity. Furthermore, 20 sand plots with Pongo as an attractant were established along the road transects between the trapping transects (see Figure 2) and monitored daily over a six day period. These plots were used to identify feral cat and fox activity as well as that of native animals. Sand was also placed around the two artificial watering points within the enclosure to monitor animal activity. Five remote sensor cameras (Reconyx) were set up over seven days at each corner of the enclosure and one at a water point (WP2 on Figure 2). The photographs were downloaded and analysed every few days.

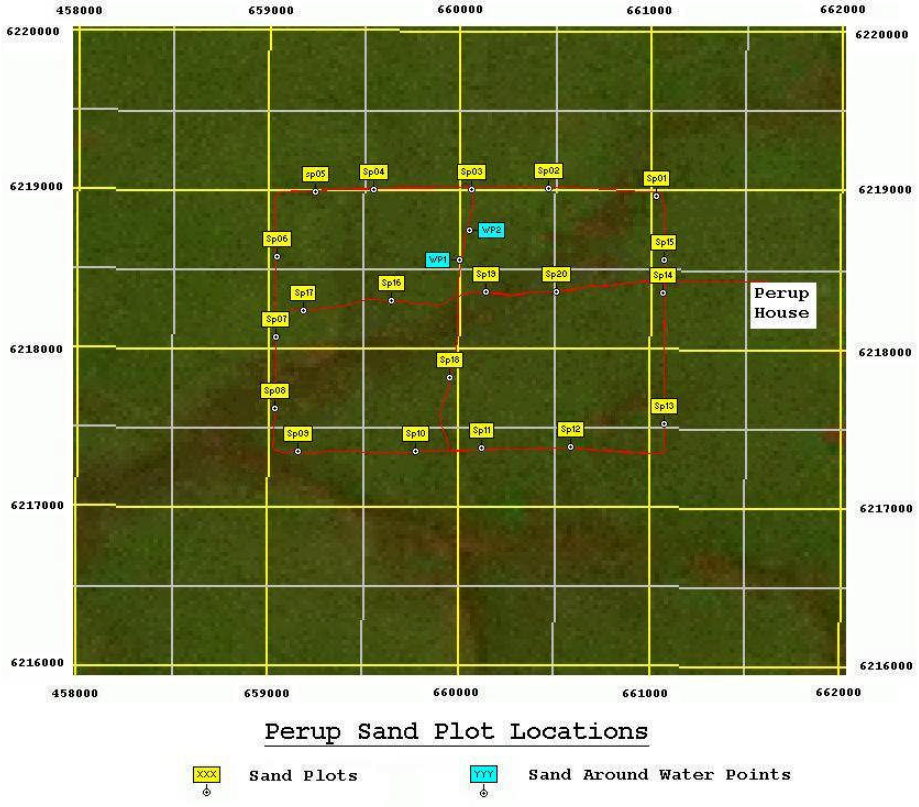

Figure 2. Sand plots and water point locations within the Perup Woylie Enclosure

Results

During the course of this exercise, no sign of feral cat or fox activity was observed within the enclosure. Over ten nights of trapping, seven Brushtail Possums and one Australian Raven (*Corvus coronoides*) were caught in leg-hold traps without any injuries and released outside the enclosure. No animals were captured in the cage traps.

During the monitoring of the road network, one Brush Wallaby (*Macropus irma*), two Tammar Wallabies (*M. eugenii*) and one Woylie were sighted. The sand plot monitoring indicated the presence of a number of native species: - Brush Wallaby, Chuditch (*Dasyurus geoffroii*), Tamar Wallaby, Brushtail Possum, Southern Brown Bandicoot (*Isoodon obesulus*), Heath Monitor (*Varanus rosenbergi*.) and various bird species. The remote cameras captured the presence of one Chuditch, one Brushtail Possum and one Australian Raven.

Discussion

After an extensive trapping exercise and track surveys, which included monitoring sand plots and deployment of remote cameras no evidence of feral cat and fox activity was detected suggesting these introduced predators were not present within the enclosure. Any feral cats and foxes present in the area may have moved out prior to the fence closure, during the *battue* conducted several weeks prior to this program. During the final stages of fence construction, following the *battue*, no evidence of fox or feral cat activity was observed in the area by operation staff (B. Whittred pers. com.).

To ensure that the fenced area remains 'introduced predator-free', a dedicated monitoring effort will need to be undertaken. Whether the fence construction provides an effective, long-term barrier to fox and feral cat movement can only be determined if routine surveys for footprints are conducted within the fenced area and in particular along the fence-line. The use of remote cameras along the fence-lines should also be considered.

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