Australian Wildlife Conservancy

MT GIBSON WILDLIFE SANCTUARY Jan -Nov 2007

Introduction

Mt Gibson Wildlife Sanctuary is located approximately 350 km north-east of Perth in the mid-west of Western Australia, between Wubin and Paynes Find. Covering over 130,500 ha of the Avon Wheatbelt Bioregion, the property is a pastoral lease comprising largely pristine, semi-arid ecosystems just north of the heavily cleared "wheatbelt". Importantly, it lies on a transitional vegetation zone called the 'mulga-eucalypt line' straddling two major bioregions; the arid Eremean botanical province to the north and the mesic south-west botanical province to the south. The sanctuary has a highly variable topography, and when combined with this strategic location, the result is an extremely high diversity of flora and fauna.

Mt Gibson has a semi-arid climate with hot dry summers and mild wet winters. There are 9-11 months of dry weather with erratic rainfall averaging 250-350 mm mostly in winter, however cyclonic activity and occasional thundery showers may bring significant summer rainfall. Mean rainfall at Mt Gibson Homestead from 1982-2006 was 332 mm. As for most semi-arid areas of Australia, evapotranspiration rates are considerably higher than rainfall and is the single most important factor contributing to water loss in these systems. The yearly average evaporation rate for the Paynes Find region is 2,480 mm.

The transitional location of Mt Gibson, combined with a highly variable topography, has led to an exceptionally high diversity of flora and fauna. The vegetation communities present on Mt Gibson are representative of the heavily cleared wheatbelt area of Western Australia and include magnificent eucalypt woodlands of Gimlet, Salmon Gum and York Gum. Mt Gibson is therefore an important repository of now rare wheatbelt flora, which is highlighted by the presence of four declared rare and 23 priority flora. All of the thirteen vegetation associations found on Mt Gibson are inadequately represented in current government conservation reserves, and five of these are not represented at all.

Mt Gibson has a long history of pastoralism. Originally an outstation of Ninghan Station, the lease was granted in 1878 to graze sheep. AWC acquired Mt Gibson in 2001, from a partnership that had managed the property for its environmental values leaving much of the habitat in good condition at the time of acquisition.

Initial surveys were conducted in 2001 to assess the station's habitats and species diversity. This was followed by feral goat control and reduction of sheep numbers. Fox baiting commenced in 2004 and in 2006, a collaborative AWC, Department of Environment and Conservation (DEC) and Invasive Animal Cooperative Research Centre (IA CRC) project commenced at Mt Gibson focusing on the integrated control of feral cats, foxes and wild dogs.

This report prepared for DEC covers biological survey activity for 2007 and is an addendum to the Mt Gibson Reports December 2005 and 2006, also submitted to DEC.

Methods

Trapping

As part of the IA CRC project, pit and Elliott trapping was conducted during June and October 2007 (Table 1). Four landsystem types (Joseph: *Acacia* shrublands on yellow sandplain, Pindar: Eucalypt woodlands on red loamy sandplain, Euchre: *Acacia* shrublands on granitic breakaways, Carnegie:

Saline flats; that could be compared with the IA CRC control site at Karara and Lochada Stations) were selected for the project. In each of the four landsystem types, three sites of 25 pit and 25 Elliott traps were installed in February 2006 (12 sites in total). Three hundred pit and 300 Elliott trap nights were therefore used over five nights within the 12 sites during each trapping session.

Table 1: Trapping Effort at Mt Gibson in 2007associated with the IA CRC project.

Trap Type	No traps	No Nights	Total
Pit	300 + 300	5 + 5	3000
Elliott	300 + 300	5 + 5	3000
Total			**6000**

Opportunistic observations
Other observations of interest were noted by staff during routine sanctuary work. This can include unusual sightings, calls, scats, tracks and breeding events that might not be detected by other monitoring techniques.

Vegetation
Monitoring of vegetation was undertaken by photographic recordings at 31 established photo points at 12-monthly intervals, set up to monitor effects of grazing and fire recovery. Thirteen of these sites were established by the Department of Agriculture in the 1970s, the remainder were set up by AWC in 2002, including two exclusion quadrats. These photos are available from AWC.

A field herbarium has been established. In addition, vegetation quadrats for each vegetation association used in the IA CRC project were set up by members of the WA Naturalists' Club in April 2006, led by volunteer DEC botanists Daphne Edinger, Vanessa Clarke and Penny Hussey.

Rainfall
Rainfall records have been recorded daily by the Caretakers at the Mt Gibson Homestead. The last seven years of data is presented in Table 2.

Table 2. Rainfall at Mt Gibson Homestead since 2000.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2000	175.7	1	168	10	4	15.5	37.5	42	16.5	3.5	0	5	**378.5**
2001	69	36.5	20	2.5	22	5.5	38	15.5	26.5	40.5	69	0	**345**
2002	2.5	6.5	1.8	55	4.5	30.5	24	16	12	11	0	27	**190.5**
2003	10	14.5	49	23.5	46	23.5	25	86	29	7	22	0	**312.5**
2004	16	20	27	16	23.5	37.5	39.5	16	8.5	7	12	2.5	**225.5**
2005	6	3	40	2	95	47.5	0	55.5	16.2	6	3.5	0	**274.7**
2006	46	30	20	83.5	3.5	4.25	11.25	13.25	26.25	8	13.7	43	**302.7**
2007	47	40.2	0.2	17.3	7.9	16.4	54.5	9.2	9.4	7.4			**209.5**

Results and Discussion

Trapping

The second year of the IA CRC project resulted in the capture of 279 individuals of 26 different species including the capture of four new species for Mt Gibson (denoted by an "*"; *Brachyurophis semifasciata, Diplodactylus squarrosus, Ningaui yvonneae and Notomys alexis*). The percentage trap success was significantly less at 4.6% than the previous year (2006 6.5%), but still greater than 2005 where the trap success was 2.0% (prior to the IA CRC project with a smaller sample size).

Table 3: Summary of trapping results at Mt Gibson in 2006 and 2007.

Species	No. trapped 2006	No. trapped 2007
*Brachyurophis semifasciata**	0	1
Cryptoblepharus plagiocephalus	1	1
Ctenophorus cristatus	1	0
Ctenophorus reticulatus	3	0
Ctenophorus scutulatus	21	3
Ctenophorus sp.	1	0
Ctenotus mimetes	59	35
Ctenotus pantherinus	1	6
Ctenotus schomburgkii	26	31
Diplodactylus granariensis	1	3
Diplodactylus intermedius	2	0
Diplodactylus maini	1	0
Diplodactylus pulcher	4	9
*Diplodactylus squarrosus**	0	3
Egernia inornata	0	1
Gehyra variegata	0	9
Heteronotia binoei	1	0
Lerista muelleri	1	1
Lialis burtonis	1	0
Menetia greyii	1	4
Mus musculus	59	17
Neobatrachus kunapalari	8	0
Neobatrachus pelabatoides	1	4
Neobatrachus wilsmorei	1	0
Nephrurus vertebralis	1	0
*Ningaui yvonneae**	0	1
Notomys sp.	n/a	4
*Notomys alexis**	n/a	1
Notomys mitchelli	63	71
Pogona minor	7	5
Pseudomys hermannsburgensis	46	22
Pseudophryne occidentalis	1	0
Rhynchoedura ornata	0	1
Sminthopsis crassicaudata	13	2
Sminthopsis dolichura	85	35
Sminthopsis gilberti	1	0
Sminthopsis sp.	1	0
Strophurus assimilus	1	3
Suta fasciata	1	0
Varanus caudilineatus	8	3
Varanus gouldii	1	0
No of species	**33**	**26**
Total animals	**423**	**279**
Trap nights	**6450**	**6000**
% Trap success	**6.5%**	**4.6%**

Some factors likely to influence trapping rates include the weather, which was warm (near 40°C) during the spring trapping in 2007 and may have reduced reptile trap success. Rainfall for 2007 was low, particularly during June and August when the most rainfall is usually recorded (Table 2). There was also significantly higher cat and fox records during October 2007compared with October 2006 over the 80 km of transects monitored as part of the IA CRC project.

Opportunistic observations
There were 19 Malleefowl sightings recorded by staff in 2007 and fresh tracks noted throughout the property. The records were spread out over much of the property including along the main entry to Mt Gibson Homestead, along the Emu Fence, near the northern boundary, adjacent to the Emu farm and near Condamine Well. No active mounds were sighted.

In addition to these sightings, two staff from Coffey Environments conducted an intensive search for Malleefowl in the site adjacent to the proposed Mt Gibson Iron Ore mine in February 2007 and identified 113 mounds of which 15 were classed as active. One fresh dead and four live birds were also sighted during this survey.

Major Mitchell Cockatoos were frequently sighted as were Red-tailed Black Cockatoos but the Purple-crowned Lorikeets were in very low numbers this season due to poor flowering of the Eucalypts.

A Western Brush Wallaby (*Macropus irma*) was also sighted at Mt Gibson on 14/12/2006.

Vegetation
The poor rainfall in 2007 meant that limited flowering specimens were available for collection in 2007.

The DRF team visited Mt Gibson during October 2007 to inspect a number of declared rare and priority species found on Mt Gibson. They were pleased to record a significant increase in *Acacia imitans* and many juvenile *Hybanthus cymulosus*. All the other rare species are still present.

Other Observations
Craig Stephens, the Sanctuary Manager, has noticed an increase in wild dog numbers entering Mt Gibson Wildlife Sanctuary from the south-east. During his discussions with several landholders from the area, many have recounted a lack of baiting for wild dogs in the area this year and in increase in dog numbers on the surrounding properties.