WOODVALE NATURE RESERVE: FAUNA SURVEY 2002

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1. ABSTRACT

Woodvale Nature Reserve is a small oasis in an urban desert. It offers a glimpse of remnant native vegetation and has a diversity of reptile and bird species. Problems experienced within the reserve are common: feral predation, urban encroachment, weeds and an irregular fire pattern. These all impact on the health and diversity of reserve flora and fauna species. Surveying over a two-week period took place to obtain a more in-depth look at the species living in the reserve.

2. INTRODUCTION

The purpose of the survey undertaken from October 14 – October 25 2002 was to study the presence of native and introduced fauna species within Woodvale Nature Reserve. This was accomplished using traps and visual observation of tracks and scats, as well as opportunistic fauna sightings. Major vegetation types were also observed. A survey of this kind had not been undertaken since 1991, when a smaller scale study took place. Since establishment in 1973 the reserve has provided a safe haven for fauna and flora, from urbanisation and accompanying threats (such as habitat destruction and predatory pets). These problems have impacted upon the area and are believed to pose a long-term threat to the general condition and security of the reserve. The following report documents the findings from the survey.

3. RESERVE SUMMARY

3.1 Location

Woodvale Nature Reserve is a 39-hectare reserve found north of Perth, 6km east of the Indian Ocean. The Mitchell freeway and rail transport system run along the western boundary of the reserve, residential areas have been established along the southern and eastern boundaries. The northern boundary fronts a four-lane highway that is Ocean Reef Road (see map).

3.2 Flora

In 1991 the reserve contained some 200 species of plants from 45 of the 153 families in the Perth region. The major vegetation species on the reserve are *Eucalyptus gomphocephala, Eucalyptus marginata and Allocasuarina fraseriana* over *Banksia attenuata, Banksia grandis, Banksia menziesii* and *Banksia prionotes* (woodland/open woodland over heath). A number of orchid species have been recorded on the reserve and these together with other native species, illustrate species richness indicative of an area relatively undisturbed by urban development. However, of the 200 plant types recorded in the reserve 32 are naturalised weed species and are of concern.

3.3 Birds

In past reports, 72 bird species have been recorded on the reserve. These consist of 32 vagrants and irregular visitors; 12 regular visitors and 28 species that are either residents or present throughout the year. Approximately 25 species were recorded feeding on the reserve in the 1991 survey. The numbers present at any one time vary in accordance with climatic conditions and food availability that affect bird movements. The reserve offers a refuge area for transitory species and a breeding habitat for common and uncommon residents as well as regular visitors. The tall tuarts and eucalypts have nesting hollows supporting large numbers of bird species such as the Port Lincoln Ringneck Parrot (*Platycercus zonarius*), Pink and Grey Galah (*Cacatua roseicapilla*) and the Corrella (*Cacatua tenuirostris*).

3.4 Mammals

In 1975 a link mesh wire fence with an electric pulse at the top was erected around the boundary. As a consequence a number of native fauna were trapped within the reserve, including the Western Grey kangaroo (*Macropus fuliginosus*) and Brush-tailed possum (*Trichosurus vulpecula*).
By 1989 the Western Grey kangaroo population numbered 27 animals and was considered to be too many for the 39 hectares. A program to relocate all these animals commenced toward the latter end of 1989. At present it is believed only one non-breeding male kangaroo resides in the reserve. Brush-tailed possums have not been sighted in approximately four years.

3.5 Reptiles

There have been no major trapping surveys for reptiles and/or amphibians in this nature reserve. Previous sampling has resulted in 14 species of lizards, 4 snakes and 3 species of frogs recorded.

3.6 Fire History

With the exception of prescribed burning in the 4-5 years preceding 1991, the recent history of fire in the reserve is not well documented. The last recorded wildfires in the reserve were 1994 and 2000. In the latter case fire effected all but two small areas of the reserve, the area directly surrounding the buildings and an area to the north of the buildings (management zones 4, 5 and 6).

Narrow fuel reduced buffers were established using prescribed fire over the period 1987-1991. Buffers were established on the northern and eastern boundaries of the reserve and around the buildings.
Values at risk of being damaged or destroyed by wildfire are, in order of priority

(i) Human life, within and adjacent to the reserve.
(ii) Property including buildings, homes, plants and equipment.
(iii) Degradation of the conservation and aesthetic values of the reserve.

Values at risk are characterised as extremely high.

3.7 Climate

Typical weather conditions of the Swan Coastal Plain are dry hot summers and mild wet winters. Due to these conditions average daily temperatures range from 30° in January and February to 18° in July and August.
On average 80% of annual rainfall occurs between May and August. In recent years, rainfall levels have dropped significantly.

3.8 Topography

The reserve is located on the Gnangara mound within the Spearwood Dune system and is characterised by the typical undulating dunes of the Swan Coastal Plain. Soil type is grey over yellow sand with limestone and clay formations at depth.

4. SURVEYING METHODS

Sampling was carried out by means of pit traps, Elliott traps, cage traps and visual observation in four management zones. These zones (management zones 4, 6, 8, and 14) were chosen as representatives of the reserve and the major vegetation types (see map for location).

At each site, pit traps (20-30cm deep by 12.5 cm diameter) were placed in two 20m lines of four pits, with the pits in each line connected with fly wire fence. In addition to this, 10 Elliott traps (at 10m spacings) and 1 cage trap were placed between the pit trap lines. 10 Cage traps were also placed at 10-20m intervals in separate management zones (11 and 12) where is was hoped that possum species may be residing, in the reserve's tallest jarrah and tuart trees.

The pit traps were open for five nights (closed for one night due to wet weather conditions). The Elliott and cage traps (management zones 4, 6, 8, 14) were open for six nights. The cage traps in zones 11 and 12 were open for a period of four nights. All traps were closed over weekend periods and were checked daily when open.

Visual observation was used to obtain a description of the prominent plant species in each zone, as well as a list of the most commonly sighted birds in the reserve.

A chain drag placed behind a vehicle was used over two days to smooth over sandy management zone boundaries, enabling recording and observation of animal tracks and scats. This was of particular importance with regards to estimating the fox population in the reserve and whether a baiting program should be undertaken in the future.

5. RESULTS

In total, 36 species were caught in the pit traps, 1 in an Elliott trap and 0 in the cage traps. Of the species caught in the pit traps 8 species were reptiles, 3 mammals, 6 spiders and 2 centipedes. The most common species caught were *Morethia obscura* and *Ctenotus fallens.* Management zones 4 and 14 were the most successful in terms of trapping numbers (see success rates for each management zone). Opportunistic sightings of bird species *Cracticus tibicen*; *Cracticus nigrogularis* and *Cacatua roseicapilla* were abundant throughout the reserve. The fauna and flora tables provided offer more specific data on these species. The results from each management zone are as follows:

Management Zone 4
Location: 384612E
6483515N

Flora

Trees
Allocasuarina fraseriana
Eucalyptus marginata
Eucalyptus gomphocephala
Banksia attenuata
Banksia prionotes
Acacia rostellifera

Shrubs
Xanthorrhoea preissii
Stylidium schoenoides
Hakea lissocarpha
Petrophile linearis
Hibbertia hypericoides
Macrozamia riedlei
Gompholobium tomentosum
Hypocalymma robustum
Calothamus quadrifidus

Climbers and Creepers
Hardenbergia comptoniana

Sedge
Isolepis marginata

Herbs
Conostylis candicans

Weeds
Ehrhata longiflora
Briza maxama
Arctotheca calendula
Petrorhagia velutina
Lupins consentinii
Carpobrotus eduils
Gladiolus caryophyllaceus
Ehrhata calycina

Fauna
Spiders
Centipede
Ctenotus fallens
Hemiergis quadrilineata
Varanus tristis
Morethia obscura
Aprasia repens

Trap Success Rate: 79%
Fire History: Last burnt in wildfire 1994.

Management Zone 6
Location: 384944E
6483562N

Flora

Trees
Allocasuarina fraseriana
Eucalyptus marginata
Eucalyptus gomphocephala
Banksia attenuata
Banksia prionotes
Acacia rostellifera

Shrubs
Xanthorrhoea preissii
Stylidium schoenoides
Hakea lissocarpha
Jacksonia sternbergiana
Hibbertia hypericoides
Hibbertia racemosa
Myoporum parvifolium

Climbers and Creepers
Hardenbergia comptoniana

Sedge
Isolepis marginata

Herbs
Conostylis candicans
Thysanotus triadrus
Sowerbaea lexiflora
Wahlenbergia capensis

Weeds
Ehrhata calycina
Ehrhata longiflora
Briza maxama
Arctotheca calendula
Gladiolus caryophyllaceus

Fauna

Hemiergis quadrilineata
Morethia obscura

Trap success rate: 21%
Fire history: Last burnt in wildfire 1994

Management Zone 8
Location: 384672E
6483266N

Flora

Trees
Allocasuarina fraseriana
Eucalyptus marginata
Eucalyptus gomphocephala
Banksia attenuata
Banksia prionotes
Shrubs
Macrozamia riedlei
Xanthorrhoea preissii
Hakea lissocarpha
Hibbertia hypericoides
Gompholobium tomentosum
Anigozanthus humilis
Petrophile linearis
Climbers and Creepers
Hardenbergia comptoniana
Sedge
Isolepis marginata
Herbs
Eryngium pinnatifidum
Wahlenbergia capensis
Weeds
Ehrhata calycina
Ehrhata longiflora
Briza maxama
Arctotheca calendula
Gladiolus caryophyllaceus
Petrorhagia velutina

Fauna

Ctenotus fallens
Morethia obscura
Cryptoblephorus plagiocephalu
Aprasia repens

Trap success rate: 36%
Fire history: Last burnt in wildfire 2000

Management Zone 11/12
Location:384955E
6483390N

Flora

Trees

Allocasuarina fraseriana
Eucalyptus marginata
Eucalyptus gomphocephala
Banksia attenuata
Banksia prionotes
Banksia grandis
Acacia rostellifera

Shrubs

Xanthorrhoea preissii
Hakea lissocarpha
Hibbertia hypericoides
Myoporum parvifolium
Gompholobium tomentosum

Climbers and Creepers

Hardenbergia comptoniana

Sedge

Isolepis marginata

Herbs

Conostylis candicans
Sowerbaea lexiflora

Weeds

Briza maxama
Arctotheca calendula
Petrorhagia velutina
Lupins consentinii
Carpobrotus eduils

Trap success rate: O
Fire History: Last burnt in wildfire 2000

Management Zone 14
Location: 384716E
6483196N

Flora

Trees
Allocasuarina fraseriana
Eucalyptus marginata
Acacia saligna
Banksia attenuata
Banksia prionotes
Banksia grandis
Shrubs
Xanthorrhoea preissii
Hakea lissocarpha
Hibbertia hypericoides
Hibbertia racemosa
Gompholobium tomentosum
Anigozanthus humilis
Petrophile linearis
Hypocalymma robustum
Climbers and Creepers
Hardenbergia comptoniana
Kennidia prostrata
Sedge
Isolepis marginata
Herbs
Conostylis candicans
Thysanotus triadrus
Weeds
Ehrhata calycina
Ehrhata longiflora
Briza maxama
Arctotheca calendula
Gladiolus caryophyllaceus
Petrorhagia velutina
Lupins consentinii
Carpobrotus eduils

Fauna

Wolf Spider
Mus musculus
Morethia obscura
Menetia greyii
Aprasia repens
Trap-door Spider

Trap success rate: 58%
Fire history: Last burnt in wildfire 2000

6. DISCUSSION

The pit traps were the most successful method of trapping used in this survey. The majority of animals captured were reptiles, with three *Mus musculus* found in management zone 14. Since these management zones were last effected by fire in different years, it is difficult to establish the impact that fire has had on trap success rates, although it has more evidently effected the health of some vegetation types, such as the *Banksia* species.

No possums or evidence of possums were found in the reserve, which further confirms the absence of this species during the last three-four years. Fox (*Vulpes vulpes*) tracks were consistently found on sandy firebreaks around the reserve (see map) and are likely to be the cause of this absence. Some of these tracks suggest the presence of juveniles as well as adults in the area. No other tracks or evidence of introduced species (*Oryclolagus cuniculus* and *Felis catus*) were observed. Kangaroo tracks, from the resident male were recorded predominantly on the western boundary fence line (adjacent to Mitchell freeway) however no sightings were made.

The survey findings and species diversity were consistent with the species list supplied (taken from 1985) with the following exceptions:

- Lizard species: *Lerista elegans, Lerista praepedita, Lialis burtonis* and *Veranus gouldii,*
- Gecko species: *Diplodactylus sp.cf.vittatus* and *Phyllodactylus marmoratus* and
- Snake species: *Ramphotyphlops australis, Vermicella semifasciata, Pseudonaja affinis and Moreilia spilota.*
- Amphibian species: *Limnodynastes dorsalis, Heleioporus eyrie* and *Myobactrachus gouldii.*

Weather conditions such as lack of rain (in the case of amphibians) or conversely, insufficient heat (in the case of geckos) are likely to have impacted on these results.

8 Species of birds were sighted throughout the reserve, some of which were nesting in hollows. This is an insignificant result in comparison to past records, however this aspect of the survey was given little priority, inevitably effecting the quality of the results.

Vegetation types were as expected for this area. A total of 38 plant species were observed and considered to be dominant. Major species include *Eucalyptus marginata, Eucalyptus gomphocephala* and *Allocasuarina, Banksia attenuata, Banksia prionotes over Xanthorrhoea Preissii* and *Hibbertia hypercoides*. Previous reports indicate a strong presence of *Corymbia calophylla* however in this survey it was not observed to be a main vegetation type. The weed species *Ehrhata calycina* and *longiflora, Briza maxama* and *Arctotheca calendula* were found in all the studied management zones, suggesting that weed treatment of some kind is required.

7. CONCLUSION

Despite the problems associated with encroaching urbanisation, irregular fire patterns and climate changes, Woodvale Nature Reserve appears to have a good diversity of reptile species such as skinks and monitors, as well as birds.

Lack of funding for improvements, such as better fencing to exclude intrusion by humans and feral animals (eg foxes) needs to be addressed before native animals such as the Brush-tailed possum are able to succeed (reproduce and survive) safely. Due to the number of tracks found within the surveying period, it is recommended that baiting take place to eradicate ferals in this reserve. According to track observations,

they appear to be increasing in numbers and would be contributing to the absence of native fauna species in the area.
Since the removal of the Western Grey kangaroo, the problem of ticks throughout the reserve has been minimised. However weed species that were kept to a minimum by the kangaroos have now become a problem. To alleviate this, a volunteer program could be initiated in the reserve. Volunteers could assist with manual weed control while learning about the reserve (native flora and fauna) and gaining invaluable work experience.

8. REFERENCES

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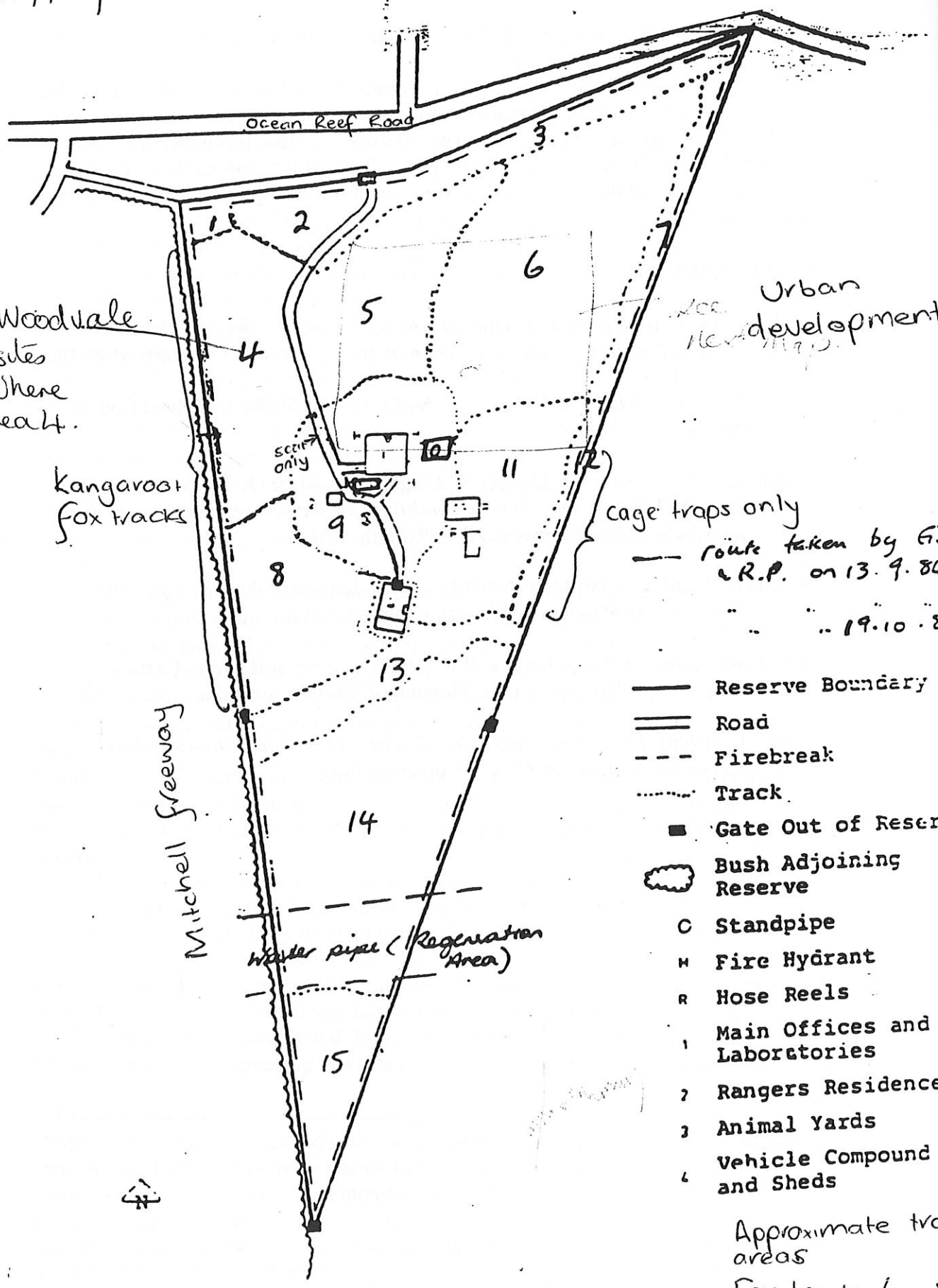
Small vertebrate trapping.

WOODVALE NATURE RESERVE



SCALE: 1cm. = 65m.

Map as at 19.10.1984

WOODVALE NATURE RESERVE: FLORA RESULTS

TREES	MZ 4	MZ 6	MZ 8	MZ 11	MZ 12	MZ 14
Allocasuarina fraseriana	+	+	+	+	+	+
Eucalyptus marginata	+	+	+	+	+	+
Eucalyptus gomphocephala	+	+		+	+	
Banksia attenuata	+	+	+	+	+	+
Banksia prionotes	+	+	+	+	+	+
Banksia grandis				+	+	+
Acacia rostellifera	+	+		+	+	
Acacia saligna						+
SHRUBS						
Xanthorrhoea preissii	+	+	+	+	+	+
Stylidium schoenoides	+	+				
Hakea lissocarpha	+	+	+	+	+	+
Jacksonia sternbergiana		+				
Hibbertia hypericoides	+	+	+	+	+	+
Hibbertia racemosa		+				
Myoporum parvifolium		+		+	+	
Macrozamia riedlei	+		+			
Gompholobium tomentosum	+		+	+	+	+
Anigozanthus humilis			+			+
Petrophile linearis	+					+
Hypocalymma robustum	+					+
Calothamus quadrifidus	+					
CLIMBERS & CREEPERS						
Hardenbergia comptoniana	+		+	+	+	+
Kennidia prostrata						+
SEDGE						
Isolepis marginata	+	+	+	+	+	+
HERBS						
Conostylis candicans	+	+		+	+	+
Thysanotus triadrus		+				+
Sowerbaea lexiflora		+		+	+	
Eryngium pinnatifidum			+			+
Wahlenbergia capensis			+			

WEEDS						
Ehrhata calycina	+	+	+	+	+	+
Ehrhata longiflora	+	+	+	+	+	+
Briza maxama	+	+	+	+	+	+
Arctotheca calendula	+	+	+	+	+	+
Gladiolus caryophyllaceus	+	+	+	+	+	+
Petrorhagia velutina	+		+			+
Lupins consentinii	+					+
Carpobrotus eduils	+					+

WOODVALE NATURE RESERVE: FAUNA RESULTS

Management zone 4	**Trap type**	**Weight (g)**	**Total Length**	**Snout-Vent Length**	**Date**	**Comments**
Spider	Pit				17-Oct	
Spider	Pit				17-Oct	
Centipede	Pit				17-Oct	
Spider	Pit				17-Oct	
Ctenotus fallens	Pit	16	270mm	88mm	22-Oct	
Ctenotus fallens	Pit	2.5	130mm	43mm	22-Oct	
Ctenotus fallens	Pit	14	260mm	75mm	22-Oct	
Wolf Spider	Pit				23-Oct	Juvenile
Hemiergis quadrilineata	Pit	1.5	127mm	46mm	23-Oct	
Varanus tristis	Elliott	69.5	505mm	185mm	24-Oct	Female, tail length 320mm
Hemiergis quadrilineata	Pit	3	121mm	45mm	24-Oct	
Morethia obscura	Pit	1.6	11mm	46mm	24-Oct	Orange underneath-breeding
Aprasia repens	Pit	0.5	100mm	80mm	25-Oct	
Ctenotus fallens	Pit	12.9	256mm	75mm	25-Oct	
Ctenotus fallens	Pit	10.4	226mm	75mm	25-Oct	Yellow underbelly
Management zone 6						
Hemiergis quadrilineata	Pit	1.8	94mm	61mm	17-Oct	
Hemiergis quadrilineata	Pit	0.4	78mm	33mm	24-Oct	Juvenile
Hemiergis quadrilineata	Pit	2.3	130mm	48mm	24-Oct	Orange underneath-breeding
Morethia obscura	Pit	3	125mm	50mm	24-Oct	

	Trap type	Weight (g)	Total Length	Snout-Vent Length	Date	Comments
Management zone 8						
Ctenotus fallens	Pit	2.5	64mm	44.6mm	22-Oct	Missing tail
Morethia obscura	Pit	2	110.1mm	45.6mm	22-Oct	Orange underneath-breeding
Cryptoblephorus plagiocephalus	Pit	1	80.5mm	37mm	22-Oct	
Morethia obscura	Pit	3.1	126mm	50mm	24-Oct	Gravid-Pregnant
Aprosia repens	Pit	6	100mm	60mm	24-Oct	
Aprasia repens	Pit	0.7	135mm	86mm	25-Oct	Yellow underbelly
Ctenotus fallens	Pit	16.4	255mm	80mm	25-Oct	Yellow underbelly
Management zone 11						
Management zone 12						
Management zone 14						
Wolf Spider	Pit				17-Oct	
Mus musculus	Pit	6			17-Oct	Juvenile female
Morethia obscura	Pit	2	80mm	50mm	17-Oct	Orange underneath-breeding
Morethia obscura	Pit	2.5	111mm	43mm	22-Oct	
Mus musculus	Pit	5.8			22-Oct	Juvenile female
Morethia obscura	Pit	1	75mm	40mm	23-Oct	Orange underneath, no front right foot
Aprasia repens	Pit	1	155mm	98mm	23-Oct	
Trap-door Spider	Pit				23-Oct	

	Trap type	Weight (g)	Total Length	Snout-Vent Length	Date	Comments
Mus musculus	Pit	7	105mm	53mm	24-Oct	Juvenile male
Morethia obscura	Pit	2.5	98mm	50mm	24-Oct	Gravid
Menetia greyii	Pit	0.4	71mm	30mm	24-Oct	
Opportunistic sightings						
Pogona minor						On tree stump near driveway
Cacatua roseicapilla						Nesting in tree hollow
Platycercus zonarius						
Cacatua tenuirostris						Pair nesting in tree hollow
Anthochaera chrysoptera						
Cractiais nigrogularis						
Corvus coronoides						
Cracticus tibicen						Protecting nest
Dacelo gigas						
Spiders						
Butterfly						
Dragonfly						
Praying Mantis						On Pit trap fencing

TRAPPING DATA SHEET

Please use pencil

35 19 1.5 35 31 species 23

Locality: Woodvale Nature Reserve

Grid No:

Personnel:

Please attach map of grid/transect layout

Date	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
No of traps set	/ /	/ /	/ /	/ /	/ /	/ /
Small Cage (CS)						
Large Cage (CL)						
Medium Elliott (EM)						
Pitfall (P)						

	Date	Trap type	Trap No	Species	Id L/R	N/R RT	Sex	Wt (g)	Age	Head L/W	Pes S/L	Scrot W/L	Total L	S-V L	Tail L	Leg L	Pouch	PY/ CR	Comments
1	17/10	Pit	M2 46 -2	Spider															
2	"	Pit	M2 40 -4	Spider Centipede															
3	"	Pit	M2 49 -3	centipede															
4	"	Pit	M2 44 -1	Spider															
5	17/10	Pit	M2 14 -4	'Big' Wolf spider															
6	17/10	Pit	M2 14 -1	Mus musculus		N	F	6.0	J	21.5									
7	17/10	Pit	M2 14 -3	morethia obscura		N		2.0					80	50					orange under
8	17/10	Pit	M2 66 -1	Hemiergis quadrilineata		N		1.8					94	61					
9	22/10	Pit	M2 46 -2	Ctenotus fallens		N		16.0					270	88					closed Pits due to rain
10		Pit	M2 40 -2	Ctenotus fallens		N	-	2.5					130	43					
11		Pit	M2 8a -2	ctenotus fallens		N		2.5					64	44.6					no tail
12		Pit	M2 8a -3	morethia obscura		N		2.0					110.1	45.6					orange under
13		Pit	M2 8a -3	Cryptoblepharus plagiocephalus		N		1.0					80.5	37					
14		Pit	M2 14a -3	morethia obscura		N		2.5					111	43					
15		Pit	M2 14b -1	Mus musculus		N	?	5.8	J	20.5									
16	23/10	Pit	M2 4 -2	Ctenotus fallens		N		14.0					260	75					

3 1   13.5

	Date	Trap type	Trap No	Species	Id L/R	N/R RT	Sex	Wt (g)	Age	Head L/W	Pes S/L	Scrot W/L	Total L	S-V L	Tail L	Leg L	Pouch	PY/ CR	Comments
17	23/10	Pit	MZ 4a -2	spider wolf					J										
18	23/10	Pit	MZ 4a -1	Hemiergis quadrilineata									[illegible]	46					yellow under
19	23/10	Pit	MZ 14a -2	Morethia obscura				1.0					75	[illegible]					orange under missing & front f[illegible]
20	23/10	Pit	MZ 14b -3	Aprasia repens				1.0					155	78					
21		Pit	MZ 14b -3	Spider Trapdoor															
22	24/10	ET	MZ 4 ET5	Varanus tristis			F	69.5					505	185	320				
23		Pit	MZ 4b -2	Hemiergis quadrilineata				3.0					121	45					
24		Pit	MZ 4a -4	Morethia obscura				1.6					111	46					orange
25		Pit	MZ 8b -1	morethia obscura				3.1					126	50					Gravid
26		Pit	MZ 8b -1	Aprasia repens				6.0					100	60					
27		Pit	MZ 14b -1	Mus musculus			M	7.0	J	18			105	53					
28		Pit	MZ 14b -2	morethia obscura				2.5					98	50					Gravid - pregnant
29		Pit	MZ 14a -4	menetia greyii				0.4					71	30					
30		Pit	MZ 6a -2	Hemiergis quadrilineata				0.4	J				78	33					
31		Pit	MZ 6a -3	Hemiergis quadrilineata				2.3					130	48					orange
32		Pit	MZ 6a -3	morethia obscura				3.0					125	50					
33	25/10	Pit	M8b -2	Ctenotus fallens				16.4					255	80					yellow under
34		Pit	MZ 8b -2	Aprasia repens				0.7					135	86					"
35		Pit	MZ 4a -3	Ctenotus fallens				10.4					226	75					"
36		Pit	MZ 4a -3	Ctenotus fallens				12.9					256	75					
37		Pit	MZ 4a -3	Aprasia repens				0.5					100	80					
38																			
39																			
40																			
41																			