Australian Wildlife Conservancy

PARUNA SANCTUARY

Black-footed Rock-Wallaby

27/6/01

Introduction

This monthly report is the first of an on-going monitoring program for Black-footed Rock-wallabies *(Petrogale lateralis lateralis)* established between Paruna Sanctuary and the Department of Conservation and Land Management. The report is based upon radio-tracking work carried out during the first month after the Rock-wallaby release.

Methods

Ten Black-footed Rock-wallabies were translocated to Paruna Sanctuary from Mt Caroline Nature Reserve, 300 km west of Perth, on 29/5/01. The animals consisted of 6 females and 4 males of various ages.

The release site at Paruna was predetermined by Australian Wildlife Conservancy staff and confirmed as a suitable location by an on-site visit by CALM staff. The location contains a large area of broken dolorite outcrop approximately 200 m by 75 m and numerous smaller outcrops within 500 m. These areas contain small caves and deep crevases and are surrounded by thick patches vegetation with open grasslands.

Rock-wallabies were monitored by radio-tracking, with opportunistic observations made of any un-collared individuals. Six adult animals (2 males and 4 females) were fitted with mortality radio-collars for this purpose. Animals were also fitted with reflective ear tags to enable identification whilst spotlighting (females red and males blue). Rock-wallabies were radio-tracked every second day for the first two weeks, and at least once weekly thereafter.

Diurnal locations were collected, and movements between periods confirmed survivorship. Furthermore, a 'mortality mode' on the collars enabled survivorship to be ascertained. If the 'mortality mode' was triggered the animal was located and cause of death determined. Data was entered onto recording sheets that included:- Date, Time, ID, Sex, Age, Location, and Vegetation Community.

Results and Discussion

Twenty-five records were made, and 'Tracking Sheets' are presented for individual animals. Details of animals gathered on arrival are given in Table 1. For further information please contact Sanctuary staff.

At the end of the period 4 of the 6 radio-collared animals were alive. Two individuals were discovered dead just 2 days after release (in two separate locations). The cause of death was not conclusive but evidence from the remains indicated Wedge-tailed Eagles. Eagles are very common along the Avon Valley and were frequently sighted in close proximity to the release site by staff whilst radio-tracking.

From the tracking sheets it can be seen that the remaining 4 collared animals were very sedentary, and localised around the release site. None have moved more than 200m and are staying within areas of large bolders, deep caves, and rock crevases.

Two individuals were observed whilst radio-tracking and appeared to be uncollared, although this cannot be confirmed conclusively. One animal was moving rapidly through the rocks, and the other was sunning itself on a rock 100m from observers before moving off. Radio-tracking work will continue on at least a weekly basis.

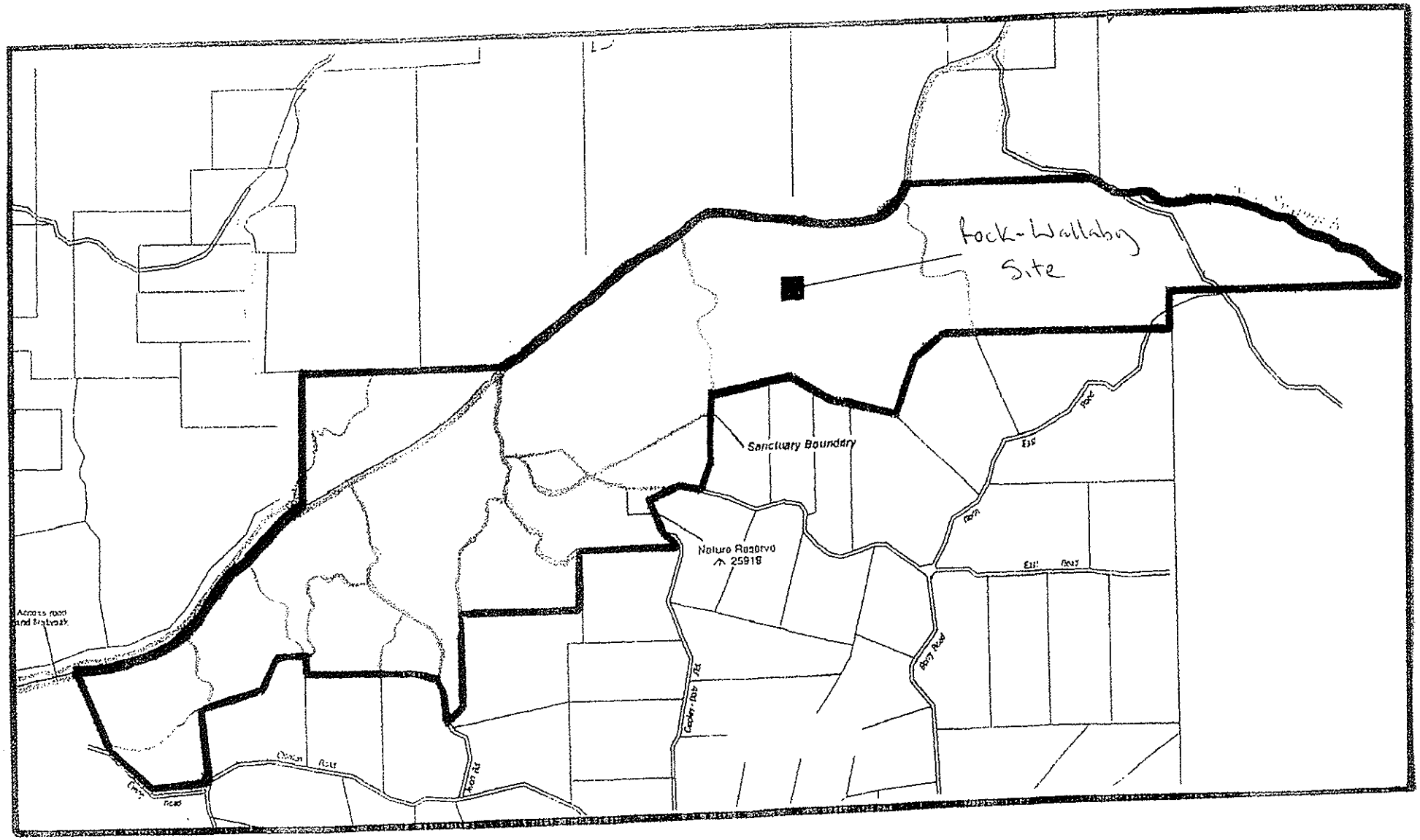
Table 1: Paruna Rock-wallaby Translocations - May 2001

Date	Species	N/R	Trap	ID	Tag	Sex	AgePes	Weight	Pouch	Perio
29/05/2001	Rock-wallaby	R		616	W	F	A	3650	EPY	R
29/05/2001	Rock-wallaby	R		613	W	F	A	3650	EPY	R
29/05/2001	Rock-wallaby	R		607	W	F	A	2900	EPY	R
29/05/2001	Rock-wallaby	R		608	W	F	A	3550	EPY	R
29/05/2001	Rock-wallaby	R		2329	C	F	A	3750	EPY	R
29/05/2001	Rock-wallaby	R		2477	C	F	A	3750	Reg	R
29/05/2001	Rock-wallaby	R		5179	C	F	A	3400	EPY	R
29/05/2001	Rock-wallaby	R		609	W	M	A	2950		R
29/05/2001	Rock-wallaby	R		615	W	M	A	4750		R
29/05/2001	Rock-wallaby	R		2379	C	M	A	5150		R

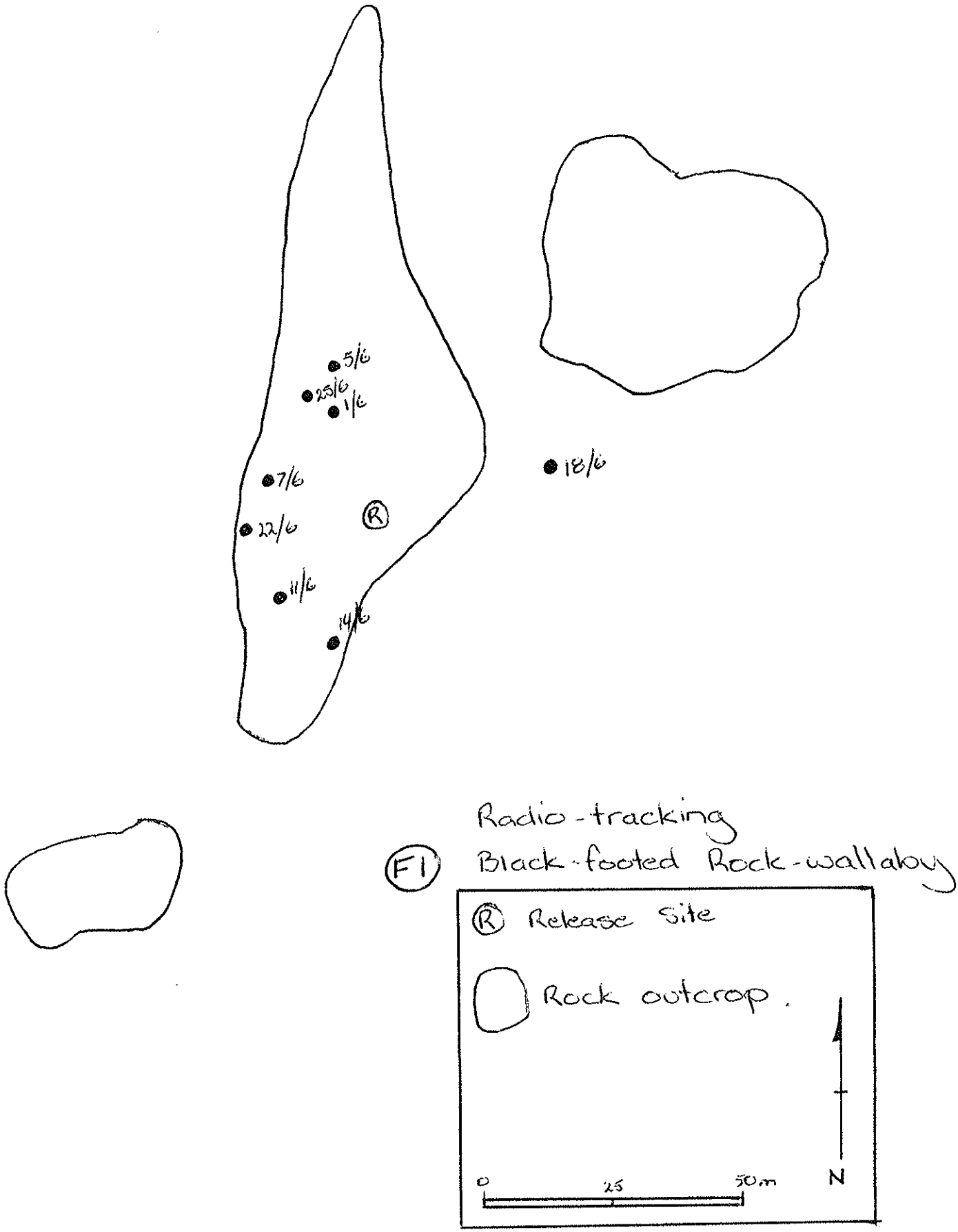
R/I: Founder
K: Marked animal
N: New animal
RT: Re-trap

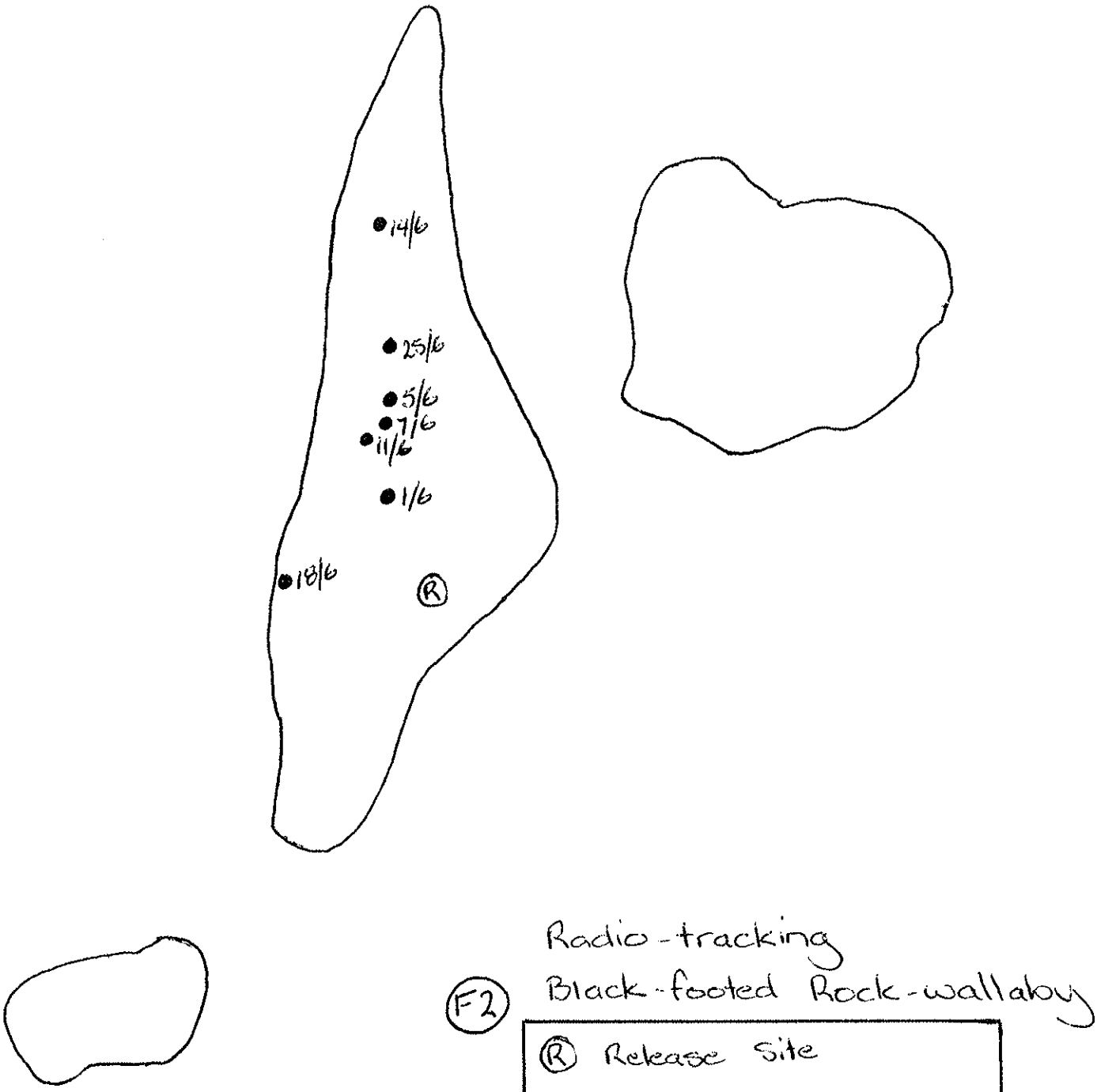
EPY: Embryonic pouch-young
MPY: Medium pouch-young
LPY: Large pouch-young

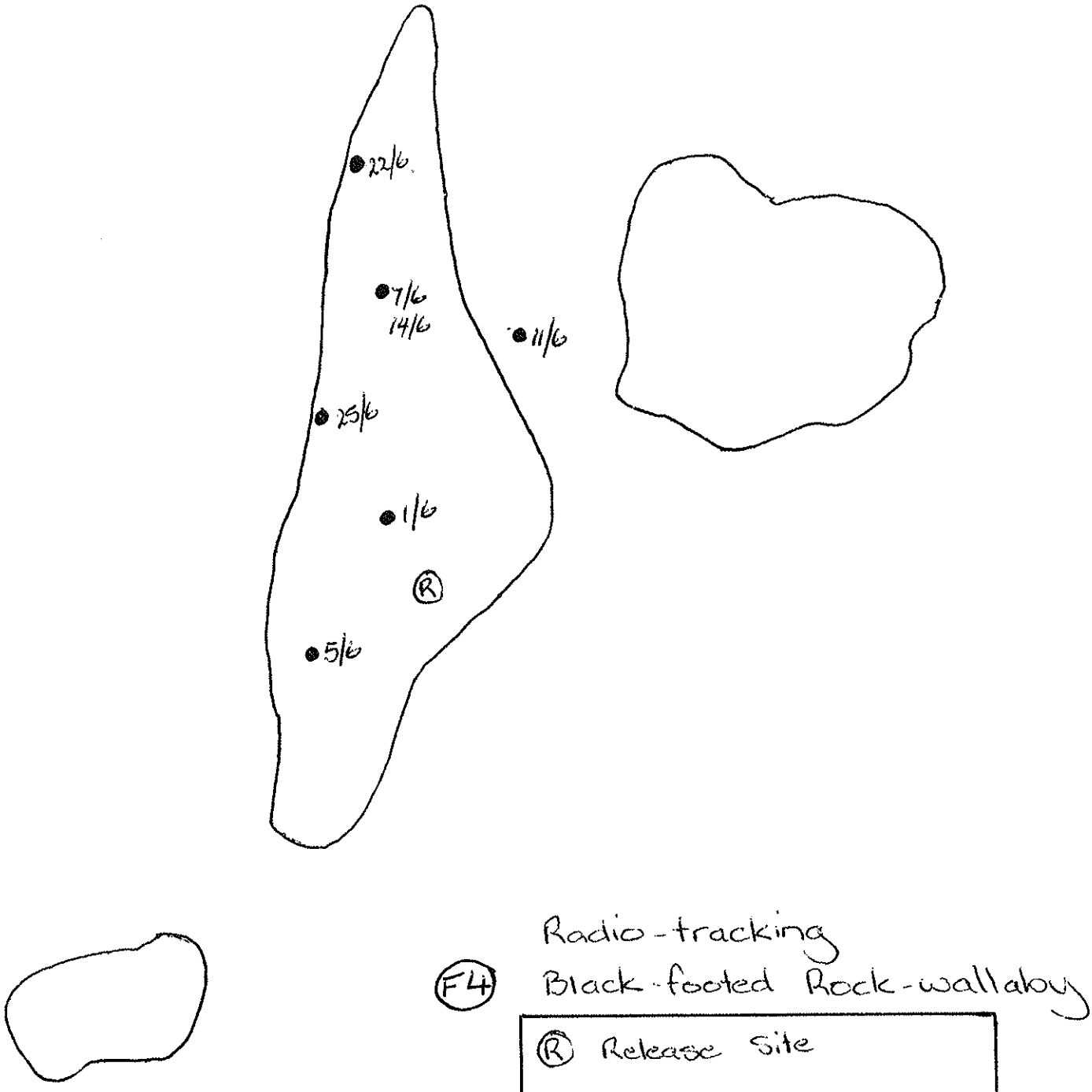
Reg: Regressed pouch
Lac: Lactating

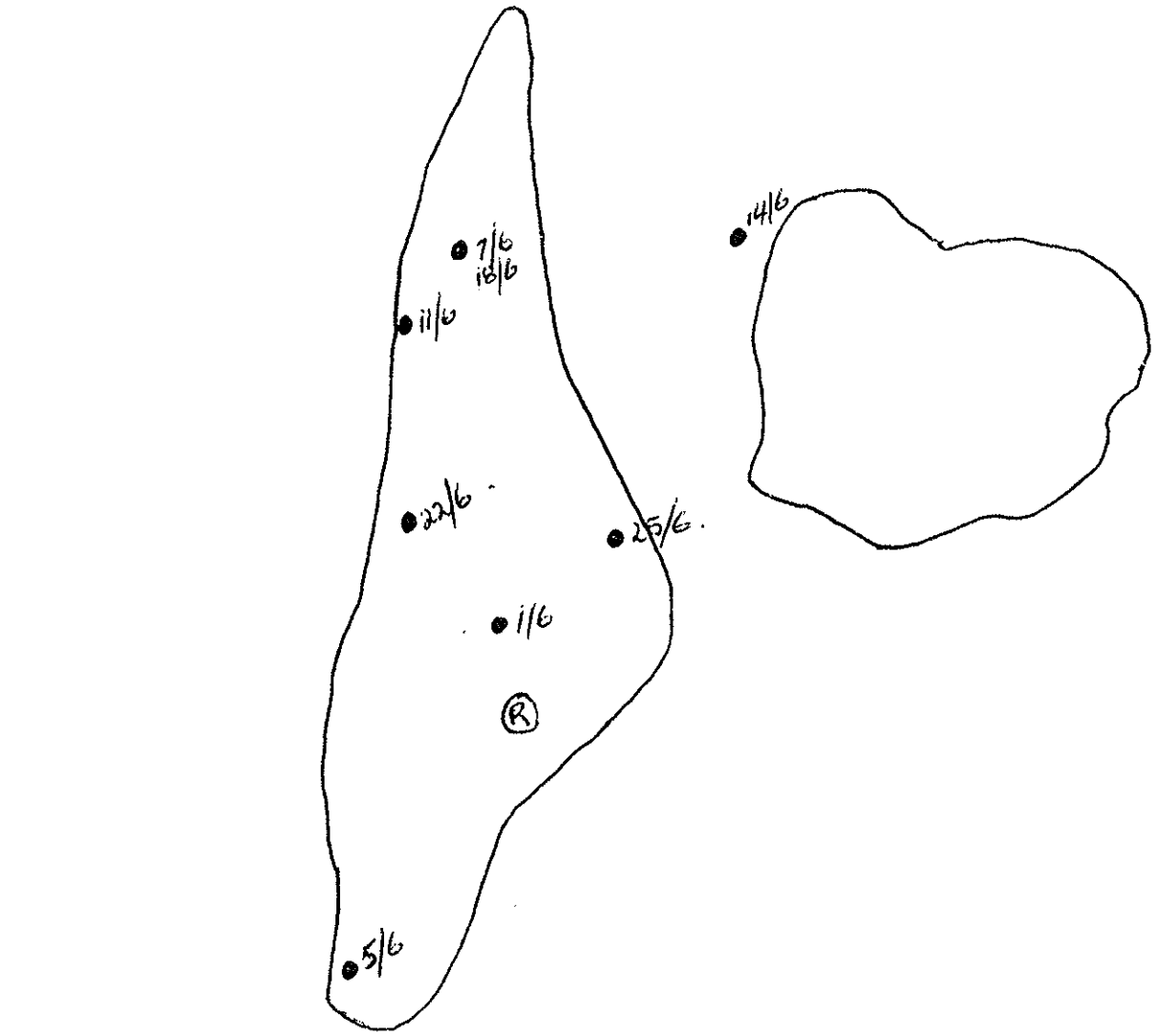


Parona Sanctuary: Rock-wallaby Radio-trackin
Location Map.


5/6
25/6
1/6
18/6
7/6
R
22/6
11/6
14/6
Radio-tracking
F1
Black-footed Rock-wallaby
R Release Site
Rock outcrop.
0
25
50m
N
John Forrest Cairn


14/6
25/6
5/6
7/6
11/6
1/6
18/6
R
Radio-tracking
Black-footed Rock-wallaby
F2
R Release Site
Rock outcrop.
0
25
50m
N
John Forrest Cairn


22/6
7/6
14/6
11/6
25/6
1/6
R
5/6
Radio-tracking
F4
Black-footed Rock-wallaby
R Release Site
Rock outcrop.
0
25
50m
N
John Forrest Cairn



Radio-tracking
Black-footed Rock-wallaby

M2

R Release Site

Rock outcrop.

0 25 50m N

O John Forrest Cairn

Australian Wildlife Conservancy

PARUNA SANCTUARY

20/12/01

Black-flanked Rock-wallaby
Petrogale lateralis lateralis

Introduction

This report forms part of an on-going monitoring program for Black-flanked Rock-wallabies *(Petrogale lateralis lateralis)* established between Paruna Sanctuary and the Department of Conservation and Land Management, and is an addendum to an earlier report based upon radio-tracking work carried out during the first month after the Rock-wallaby release, produced on 27/6/01.

Methods

Ten Black-footed Rock-wallabies were translocated to Paruna Sanctuary from Mt Caroline Nature Reserve, 300 km west of Perth, on 29/5/01. The animals consisted of 6 females and 4 males of various ages, the animals were checked for any visible health problems before release. Data on these animals is tabled in the report produced on the 27/6/01.

The release site at Paruna was predetermined by Australian Wildlife Conservancy staff and confirmed as a suitable location by an on-site visit by CALM officers. The location contains a large area of broken dolorite outcrop approximately 200 m by 75 m, and a number of smaller outcrops within 500 m. All these areas contain numerous small caves and deep crevasses and are surrounded by thick patches of vegetation with open grasslands and heathlands nearby .

Rock-wallabies were monitored by radio-tracking every fortnight, with opportunistic observations made of any un-collared individuals. Six adult animals (2 males and 4 females) were fitted with mortality radio-collars for this purpose. Animals were also fitted with reflective ear tags to enable easy identification (females red and males blue).

Diurnal radio tracking locations were collected during the period. Movements between tracking periods and the 'mortality mode' on the collars enabled survivorship to be ascertained. If the 'mortality mode' was triggered the animal was located and the cause of death determined if possible. Data was entered onto recording sheets that included:- Date, Time, ID, Sex, Age, Location, and Vegetation Community. Notes on opportunistic observations were also entered on these sheets. During the previous period, just two days after release, two of the six radio-collared animals were predated by Wedge-tailed Eagles (see 27/6/01 report).

The previous occurrence of goats in the area had been noted with 'old' droppings found in discrete areas within the breakaway. Six monitoring sites have been set up where all droppings have been removed, these are visited once a month to note any new scats. If goats are detected they will be exterminated.

Results and Discussion

Sixty two records were made and 'Tracking Sheets' are presented for individual animals. Details of animals gathered on arrival are given in Table 1. For further information please contact Sanctuary staff.

During this reporting period the remaining 4 radio collared individuals were still alive. From the tracking sheets it can be seen that these 4 collared animals were very sedentary, and localised around the release site. None have moved more than 200 m and are staying within areas of large boulders, deep caves, and rock crevasses.
Home ranges for the 3 collared females were of a similar size>100 m in diameter with the boundaries

overlapping to some degree. The single collared male, on the other hand, moved over a larger area that encompassed all the home ranges of the collared females. All tracking points were within a 150 m radius of the release point.

Two apparently uncollared individuals were observed while radio-tracking , although this cannot be confirmed conclusively. One animal was moving rapidly through the rocks, and the other was sunning itself on a rock 100 m from observers before moving off. Radio-tracking work will continue on at least a fortnightly basis.

Rock wallaby scats have been found over a wide area within 200 m of the release site. They were mostly found on exposed rock, although a number were also located amongst vegetation between outcrops. At these sites evidence of browsing upon shrubs was observed on a number of occasions.

The animals seem to rest during the day in areas that have a large proportion of broken rock and steep rock faces. On occasions when observed during the day they move rapidly over the flatter vegetated rock. On two occasions animals have been seen sitting on top of smaller outcrops in full sun during the late morning. No young or individuals without eartags have been seen.

No fresh goat droppings have been collected within the monitoring sites or in the surrounding areas.

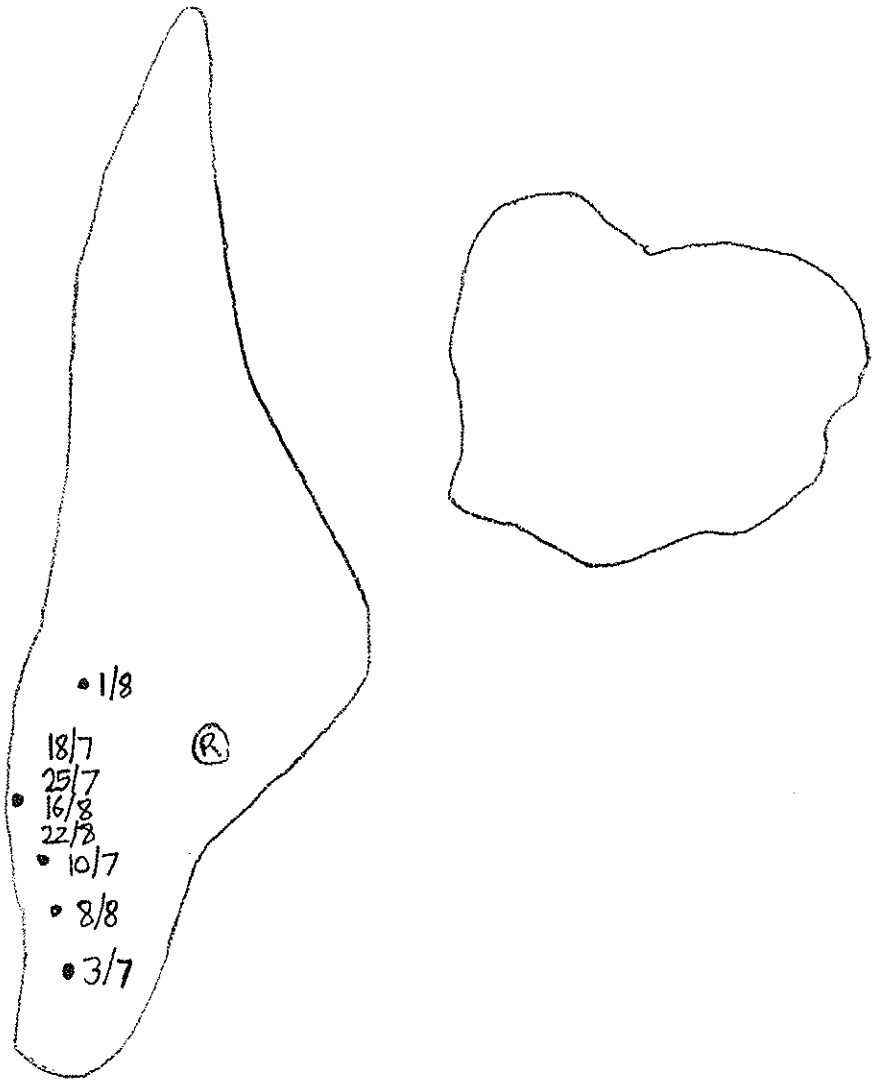
CONCLUSIONS

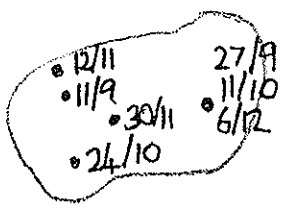
The Rock-wallabies that survived the initial period after release have developed distinct home ranges which cover a large proportion of the rocky outcrop. The male's home range overlaped all the collared females home ranges which were smaller and more discreet.

Unfortunately no young have been observed thus far. Supervised volunteers have been used to monitor the population and will continue to be used over the preceding months.

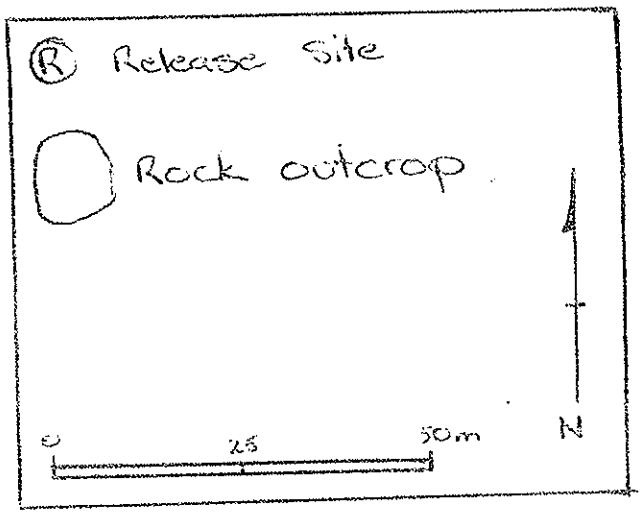
Heavy browsing of shrubs has been noted with Rock-wallaby scats noted nearby. Plant species that were browsed include *Acacia pulchella*, *Scavola sp.*, *Darwinia citriodora* and grasses. Concentrations of droppings have been also been observed in areas where water is seeping from the rocks, and these are obviously used as a convenient water source. These sites will continue to be monitored throughout the summer months.

More extensive exploration of the breakaway system has now been completed and extensive cave systems up to 10 m deep have been located. These are well used with numerous droppings and tracks present. One female Rock-wallaby (F1) was tracked onto one of these cave systems.



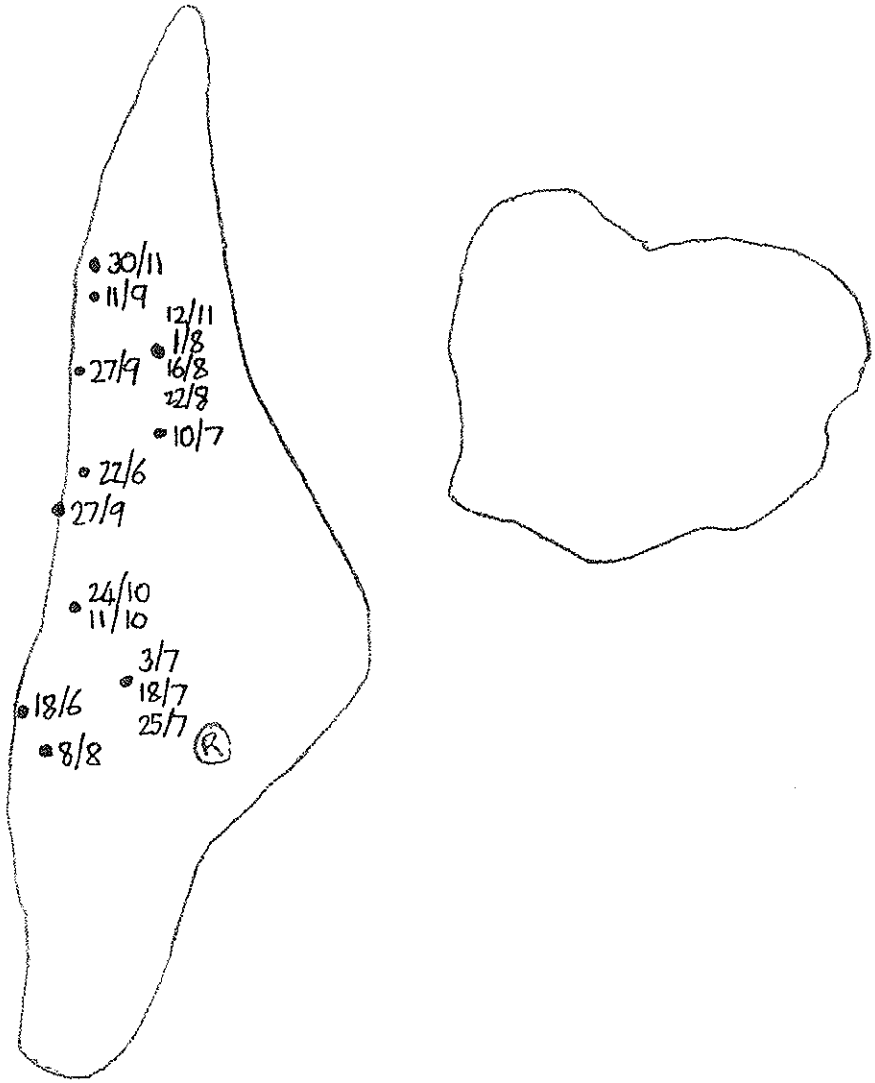


Radio-tracking
Black-footed Rock-wallaby



F1 Freq. 151.158.6.
27/6/01 - 18/12/01

O John Forrest Cairn



Radio-tracking
Black-footed Rock-wallaby

R Release Site

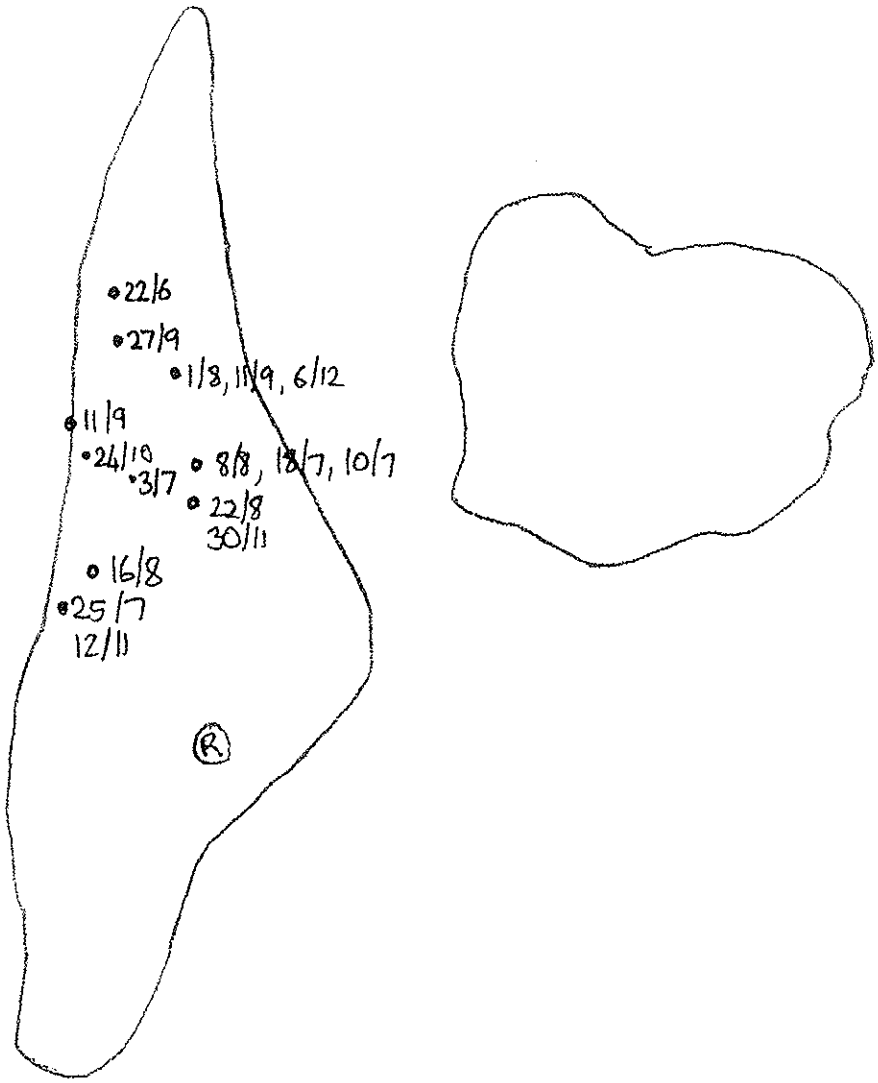
Rock outcrop.

0 25 50m N

F2 Freq. 151 101.5.

27/6/01 - 18/12/01

O John Forrest Cairn



Radio-tracking
Black-footed Rock-wallaby

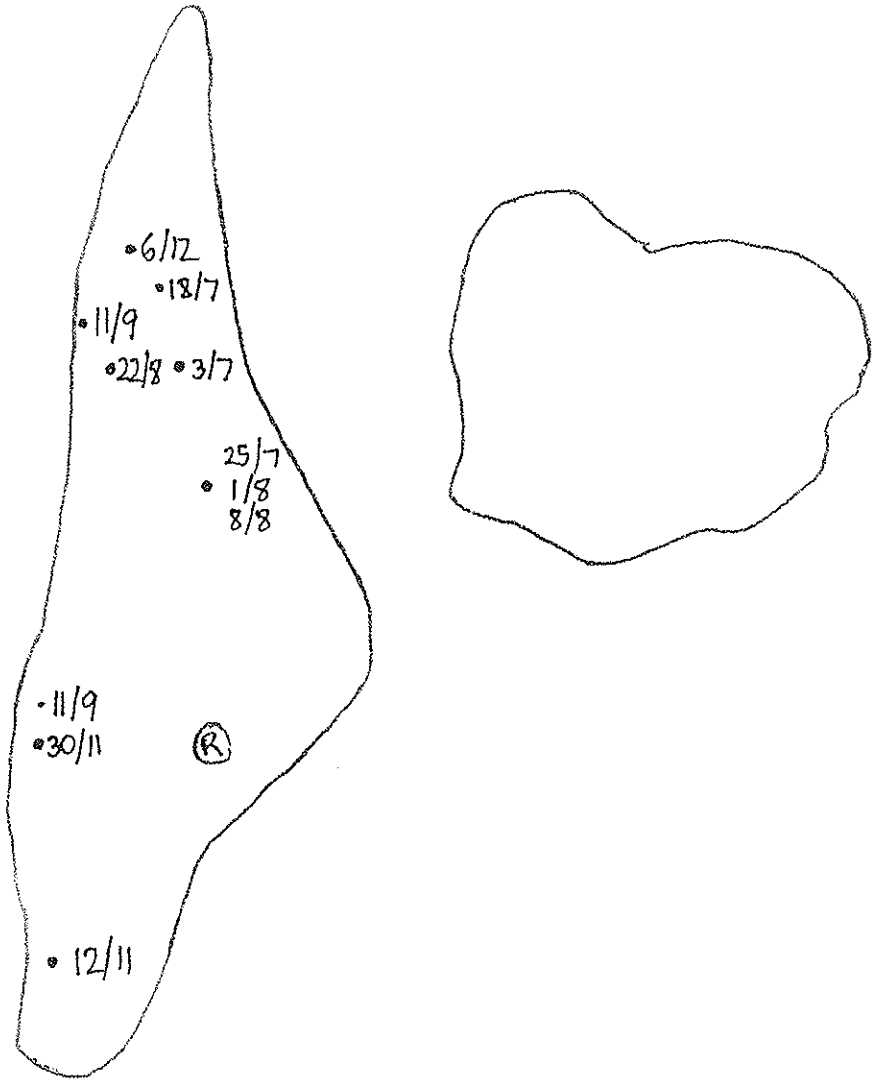
R Release Site

Rock outcrop

0 25 50m N

F4 Freq. 151.110.0
27/6/01 – 18/12/01

○ John Forrest Cairn



Radio-tracking
Black-footed Rock-wallaby

R Release Site

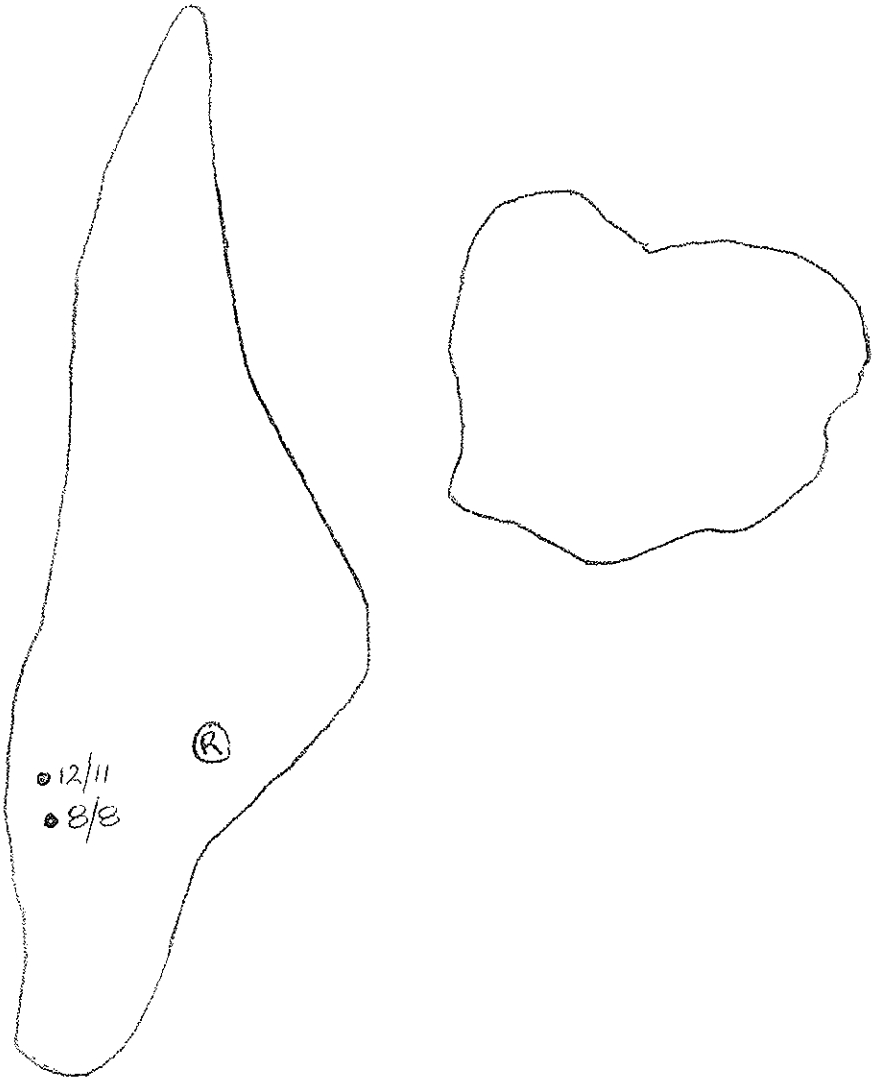
Rock outcrop.

0 25 50m N

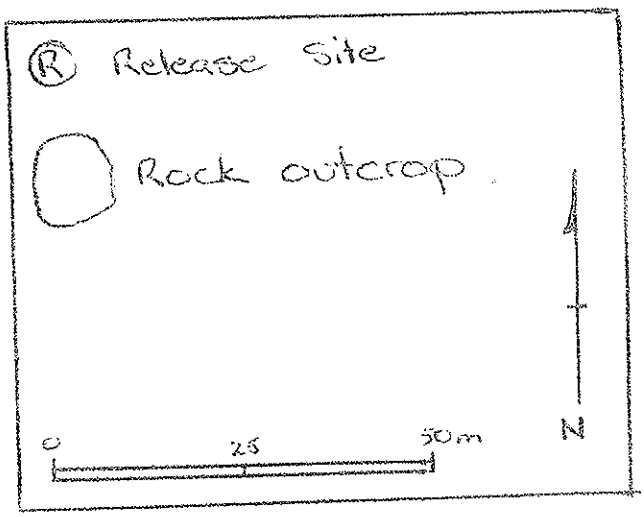
M2 Freq. 151.131.6

27/6/01 - 18/12/01

O John Forrest Cairn



Radio-tracking
Black-footed Rock-wallaby



Unknown Sightings
27/6/01 – 18/12/01

O John Forrest Cairn

Australian Wildlife Conservancy

PARUNA SANCTUARY 24/06/02

Black-flanked Rock-wallaby
Petrogale lateralis lateralis

Introduction

This report forms part of an on-going monitoring program for Black-flanked Rock-wallabies *(Petrogale lateralis lateralis)* established between Paruna Sanctuary and the Department of Conservation and Land Management, and is an addendum to earlier reports produced on 27/6/01 & 20/12/01.

Background

Ten Black-footed Rock-wallabies were translocated to Paruna Sanctuary from Mt Caroline Nature Reserve, 300 km west of Perth, on 29/5/01. The animals consisted of 6 females and 4 males of various ages, the animals were checked for any visible health problems before release. Data on these animals is tabled in the earlier report entitled 'Paruna Sanctuary: Black-footed Rock- wallaby' dated 27/06/01.

All animals were fitted with reflective ear tags to enable easy identification (females red and males blue). Six adult animals (2 males and 4 females) were also fitted with mortality radio-collars. Two individuals (1 male, 1 female) were predated by Wedge-tailed Eagles within 2 days of release.

Methods

Rock-wallabies were monitored by radio-tracking every fortnight, with opportunistic observations made of any un-collared individuals.

Diurnal radio tracking locations were collected during the period. Movements between tracking periods and the 'mortality mode' on the collars enabled survivorship to be ascertained. If the 'mortality mode' was triggered the animal was located and the cause of death determined if possible. Data was entered onto recording sheets that included:- Date, Time, ID, Sex, Age, Location, and Vegetation Community. Notes on opportunistic observations were also entered on these sheets.

Goats had previously been recorded in the release area and exterminated. Six monitoring sites have been set up. These are visited monthly, particularly to note any new scats. If goats are detected they will be culled.

Results and Discussion

During this report period, twenty six records were made and 'Tracking Sheets' are presented for individual animals. For further information please contact Sanctuary staff.

Three Rock-wallabies were killed by trains and found dead along the railway track during the period:- two were radiocollared (M2 & F4), the third was an unknown adult. All three bodies were within 50m of each other. Sanctuary staff found that the Rock Wallabies were following a set path to the Avon River across the train track to access water during the dry summer months. A water trough was set up along this path and a fence erected to discourage the wallabies from crossing the train track. Fresh scats have been observed around the trough suggesting its use. It is believed that this route is only used used during the dry months of Feb-April. Observations during the previous report (20/12/01) suggested they were obtaining water from seeps in the rocks during the wetter months which dry out during the summer.

From the tracking sheets it can be seen that F1 remained very sedentary. However, F2 moved territory to a new location. An unknown juvenile was observed on 14/3/02. This is the first breeding record for the sanctuary.

Radio-tracking work will continue on at least a fortnightly basis. Supervised volunteers have been used to monitor the population and will continue to be used over the proceding months.

Rock-wallaby scats have been found over a wide area within 700 m of the release site. They were mostly found on exposed rock, although a number were also located amongst vegetation between outcrops. At these sites evidence of browsing upon shrubs was observed on a number of occasions.

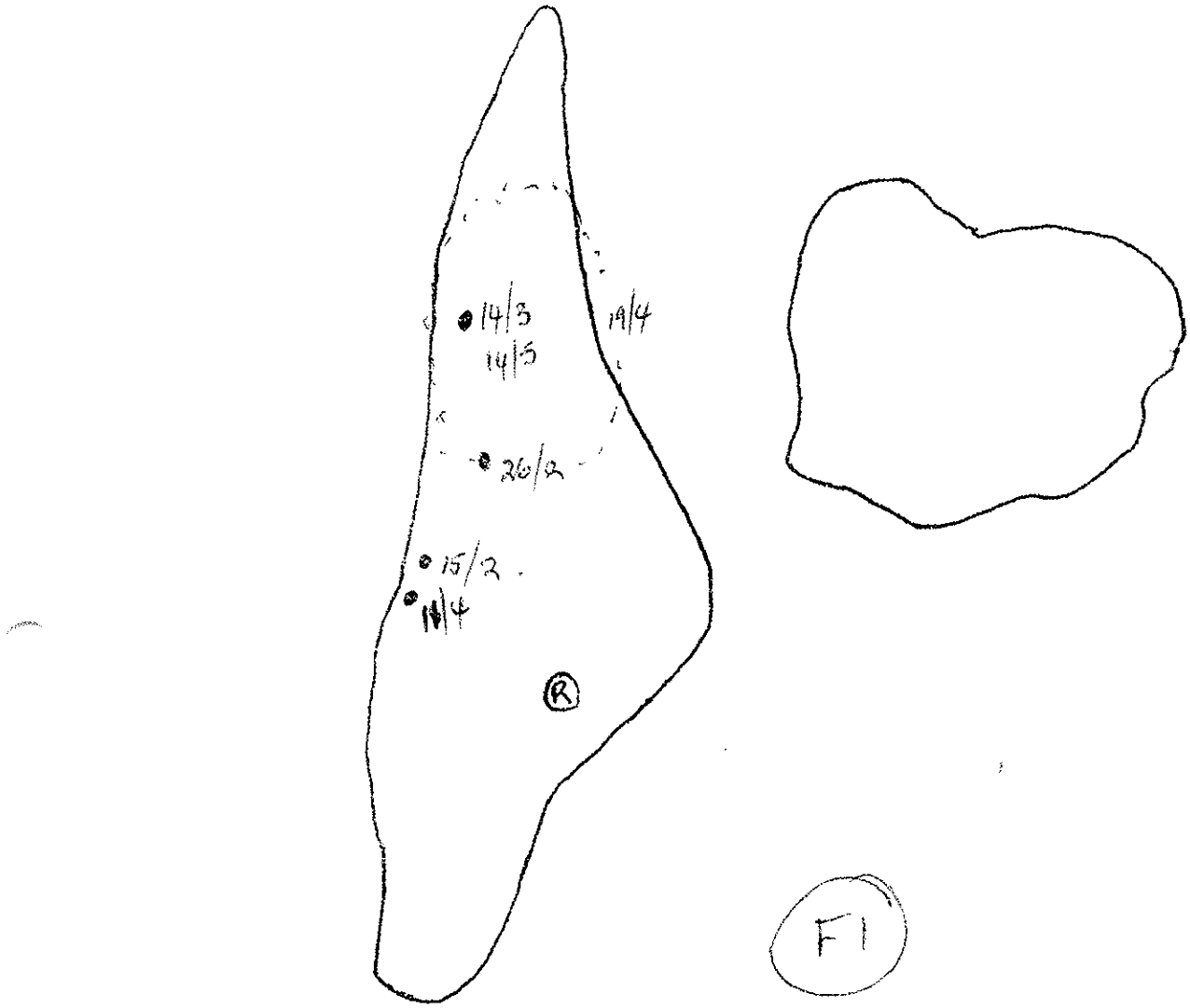
The animals seem to rest during the day in areas that have a large proportion of broken rock and steep rock faces. On occasions when observed during the day they move rapidly over the flatter partially vegetated rock. There are now only 2 radio-collared animals to monitor . No un-collared wallabies have been sighted except for the juvenile. Total numbers are unknown but could be as little as three (the fate of the 4 uncollared animals is unknown, except for the one animal hit by a train).

No fresh goat droppings have been collected within the monitoring sites or in the surrounding areas.

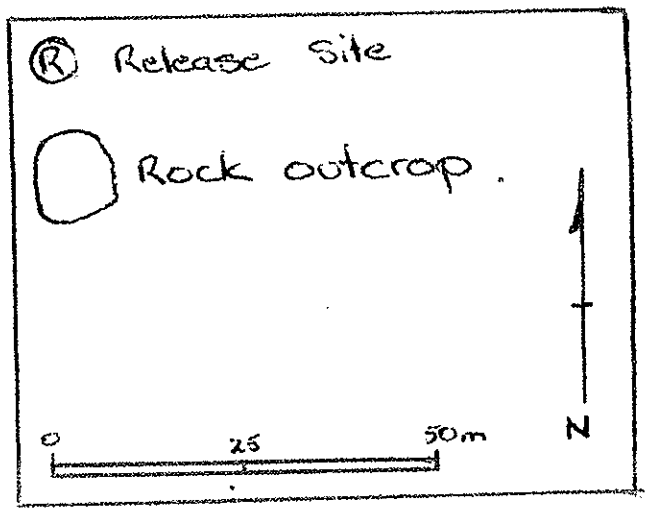
CONCLUSIONS

All collared animals (besides the two taken by eagles within the first 2 days) survived for over 8 months at Paruna (including the dry summer period) with successful breeding documented. The Rock-wallabies that survived the initial period after release have developed distinct home-ranges which cover a large proportion of the rocky outcrop. The only fatalities during this period were those that were hit by trains. It is believed that these were seeking water from the Avon River at the end of a dry summer. This problem has now been resolved by the establishment of an artificial water source and barrier fencing to prevent movement onto the railway line. This methodology has proved successful with Rock-wallabies now using the water source and being confined to the southern side of the railway line.

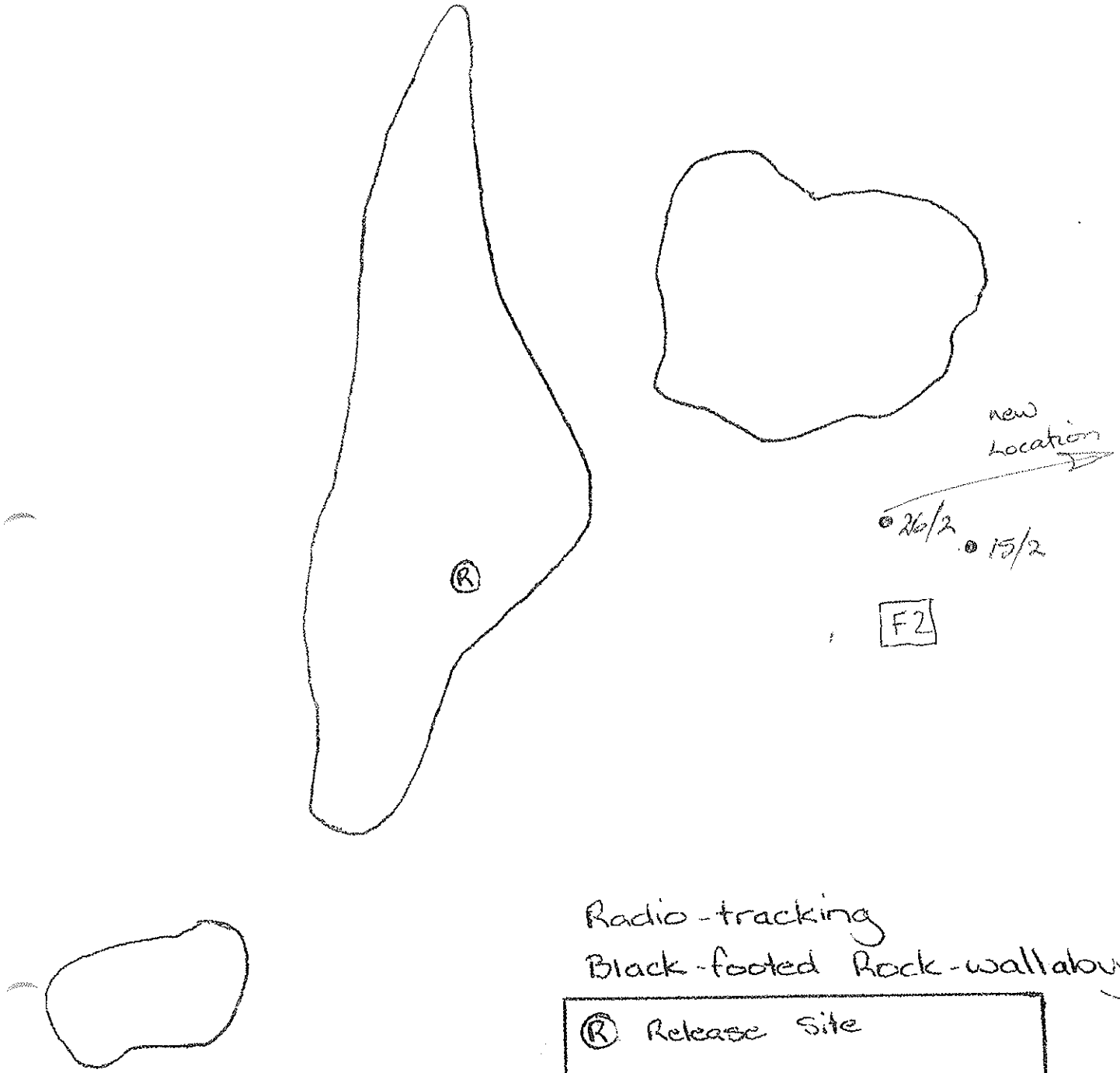
It is believed that the habitats and predator control initiatives within Paruna allow for the successful establishment of Black-flanked Rock-wallabies. Another translocation to boost existing numbers is planned for spring 2002.



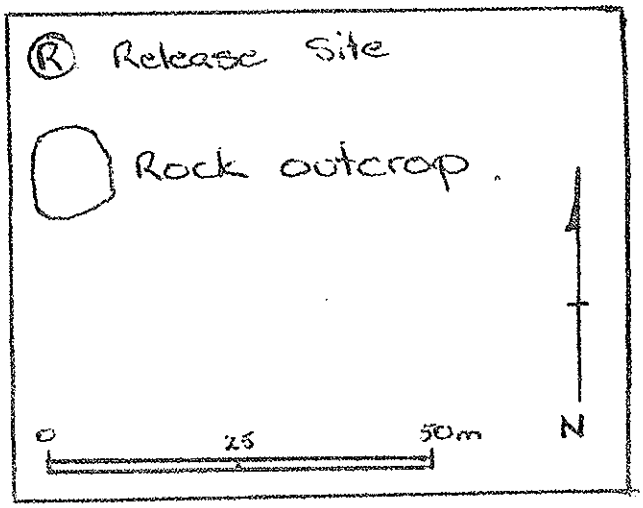
Radio-tracking
Black-footed Rock-wallaby



O John Forrest Cairn



Radio-tracking
Black-footed Rock-wallaby



O John Forrest Cairn

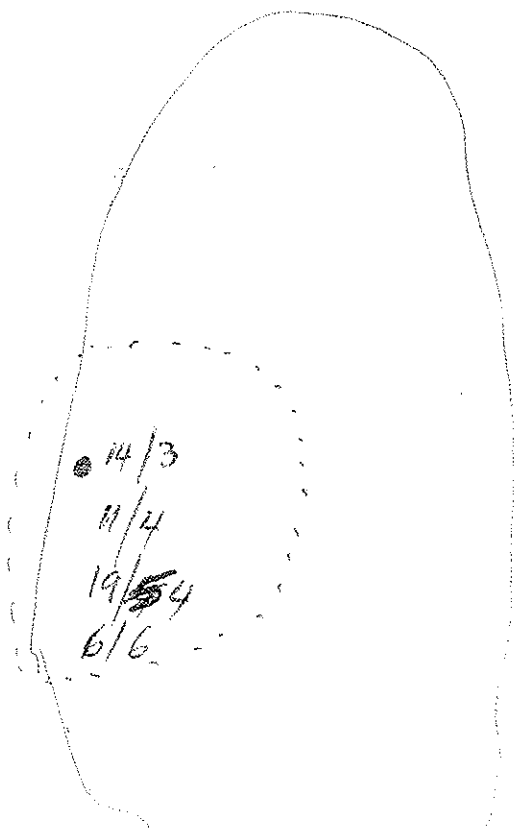
F2

Radio - tracking

Black-footed Rock-wallaby

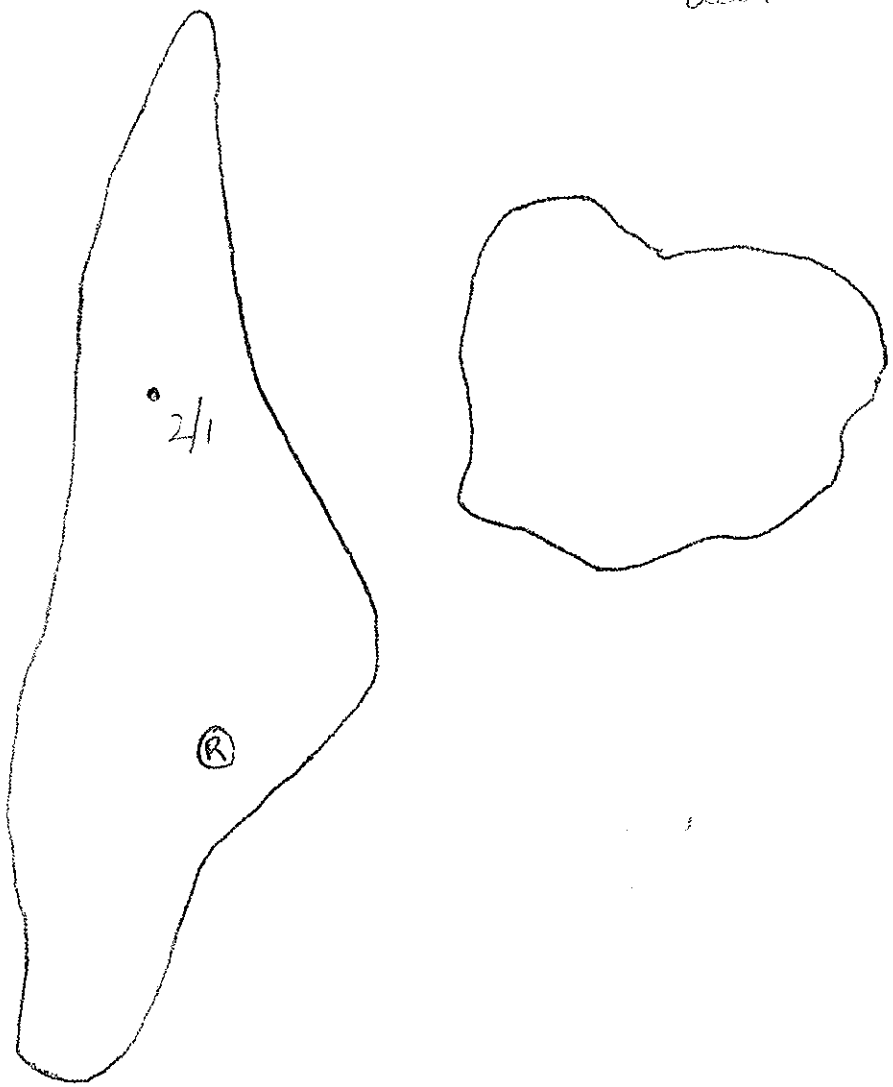
Rock outcrop.

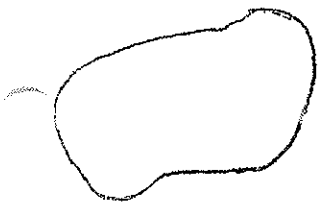
Scale. 1:10000



Trail track (Not to scale)

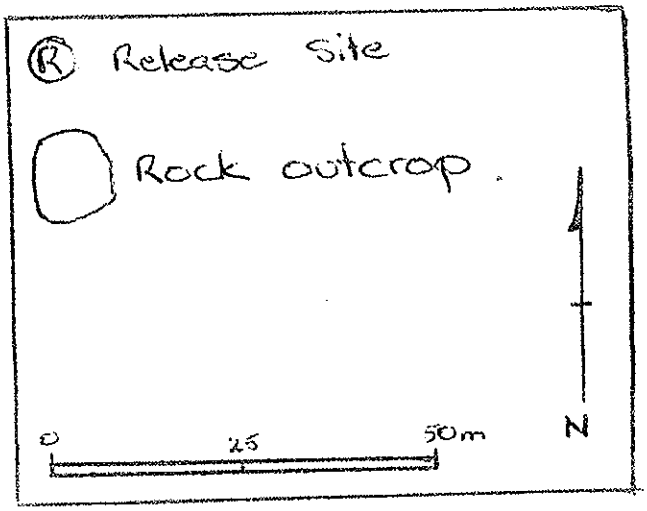
5/2 Dead



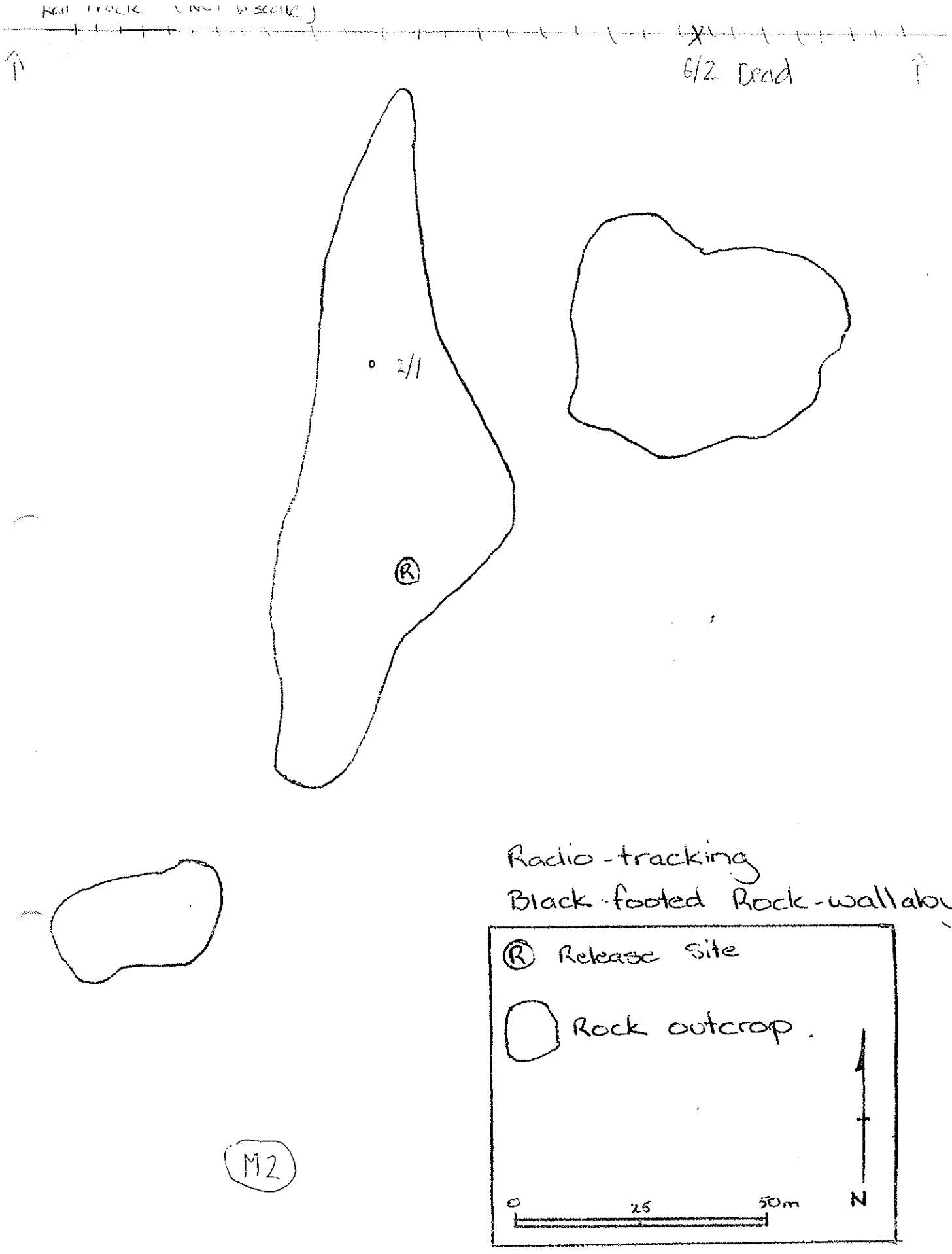


F4

Radio-tracking
Black-footed Rock-wallaby



○ John Forrest Cairn


6/2 Dead
2/1
R
Radio-tracking
Black-footed Rock-wallaby
R Release site
Rock outcrop.
0
25
50m
N
M2
John Forrest Cairn

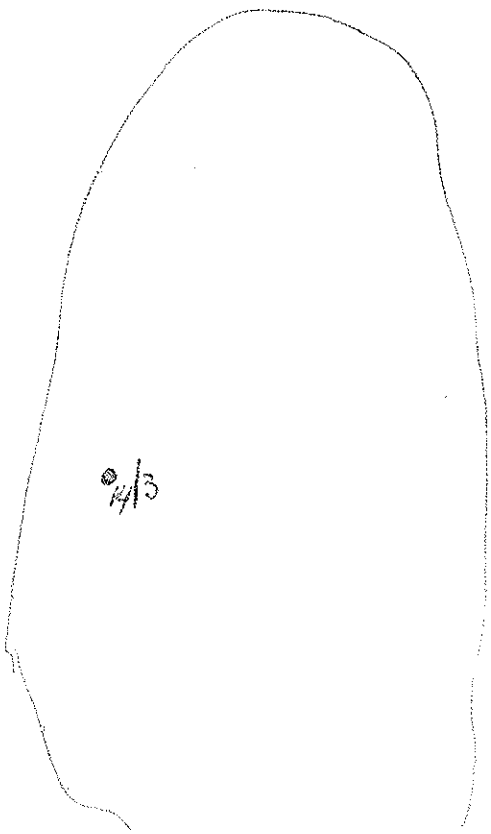
Unknown

Radio - tracking

Black-footed Rock-wallaby

Rock outcrop.

Scale. 1:10000



Australian Wildlife Conservancy

PARUNA SANCTUARY

24/12/02

Black-flanked Rock-wallaby
Petrogale lateralis lateralis

Introduction

This report forms part of an on-going monitoring program for Black-flanked Rock-wallabies *(Petrogale lateralis lateralis)* established between Australian Wildlife Conservancy and the Department of Conservation and Land Management (DCLM), and is an addendum to earlier reports produced on 27/6/01, 20/12/01 & 24/6/02.

Background

First Release
Ten Black-footed Rock-wallabies were translocated to Paruna Sanctuary from Mt Caroline Nature Reserve, 300 km west of Perth, on 29/5/01. The animals consisted of 6 females and 4 males of various ages, the animals were checked for any visible health problems before release. Data on these animals is tabled in the earlier report entitled 'Paruna Sanctuary: Black-footed Rock- wallaby' dated 27/06/01.

All animals were fitted with reflective ear tags to enable easy identification (females red and males blue). Six adult animals (2 males and 4 females) were also fitted with mortality radio-collars. Two individuals (1 male, 1 female) were predated by Wedge-tailed Eagles within 2 days of release. During the summer of 2001 - 2002, two collared and one uncollared wallabies were found dead along the railway line, killed by trains presumably while crossing the line to access the Avon River for water. To address this problem a water trough and fence were placed at the bottom of a breakaway which is used by the wallabies to cross the valley. The outcome of this management strategy is currently being monitored.

Second Release
During August 2002, a second release consisting of 12 Rock-wallabies of various ages (4 females and 8 males) were translocated from "The Granites" near Mount Caroline.

All animals were fitted with reflective ear tags to enable easy identification (females red and males blue). Four adult animals (2 males and 2 females) were also fitted with mortality radio-collars. Data on individual animals is presented in Appendix 1.

Methods

Rock-wallabies were monitored by monthly radio-tracking as well as opportunistic observations made of any un-collared individuals.

Diurnal radio tracking locations were collected during the period. Movements between tracking periods and the 'mortality mode' on the collars enabled survivorship to be ascertained. If the 'mortality mode' was triggered the animal was located and the cause of death determined if possible. Data was entered onto recording sheets that included:- Date, Time, ID, Sex, Age, Location, and Vegetation Community. Notes on opportunistic observations were also entered on these sheets.

Goats had previously been recorded in the release area and exterminated. Six monitoring sites have been set up. These are visited monthly, particularly to note any new scats. If goats are detected they will be removed.

Results and Discussion

During this report period, 60 records were made and 'Tracking Sheets' are presented for individual animals.

From the tracking sheets, it can be seen that F1, F7 and M5 were very sedentary. An uncollared male Rock-wallaby was seen attempting to cross the bottom track to the river at night. A second unknown wallaby was sighted on rocks south-west of the release site. This was an adult with no ear tag (bred from first release animals).

Two deaths have been recorded during the period. A female wallaby from the second release, F8 was found dead three days after release 50m from release site, cause of death was determined to be predation by Wedge-tailed Eagle. F2 (from the first release) was also found dead of natural causes in a cave on the 30/8/2002. The body was complete, undisturbed, with no signs of predation. No signal was found from a second release male (M6) after release despite an extensive search. This could be due to collar failure, predation or dispersal.

Rock-wallaby scats have been found over a wide area within 700 m of the release site. In particular areas scats were noted to be in very high densities. They were mostly found on exposed rock and deep caves, although a number were also located amongst vegetation between outcrops. At these sites evidence of browsing upon shrubs was observed on a number of occasions. Numbers of fresh scats were recorded regularly around the drinking trough and will be monitored on an ongoing basis. No fresh goat droppings have been collected within the monitoring sites or in the surrounding areas during the period.

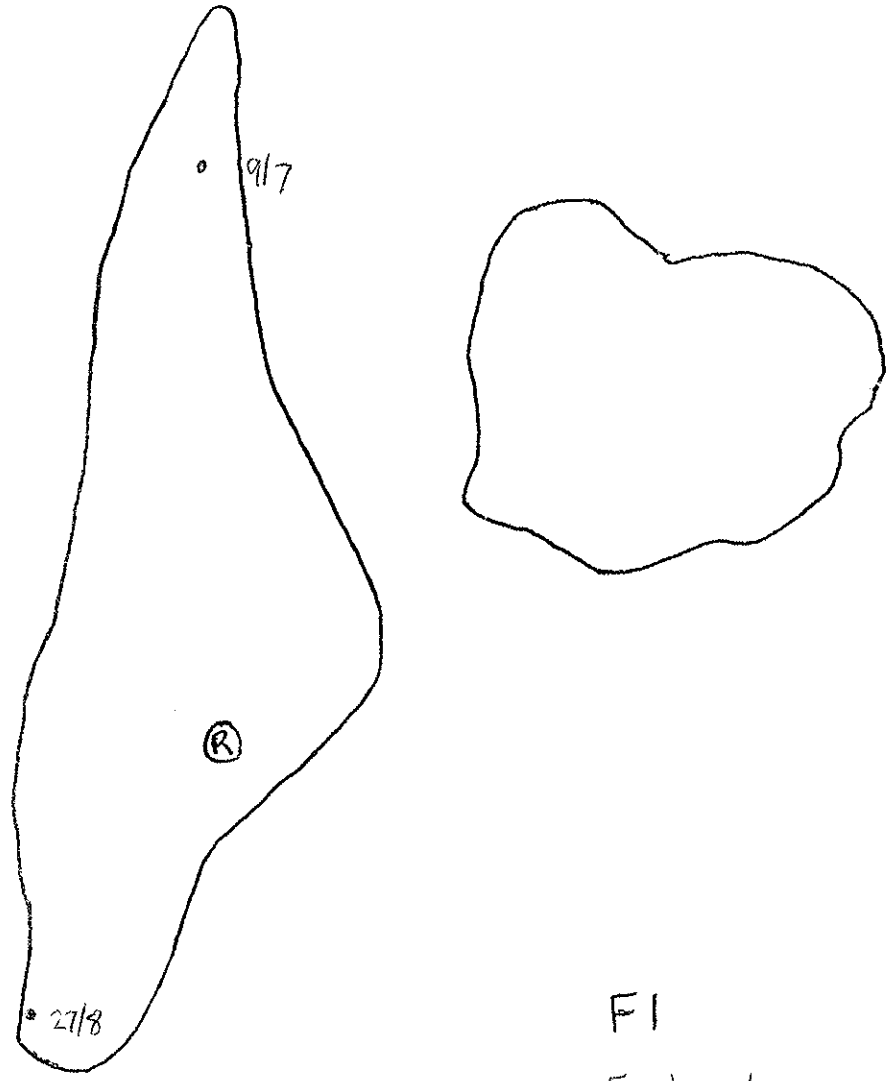
Radio-tracking work will continue on at least a monthly basis. Supervised volunteers have been used to monitor the population and will continue to be used over the proceeding months.

CONCLUSIONS

The Rock-wallabies that survived the initial period after release have developed distinct home-ranges which in total cover a large proportion of the rocky outcrop near the release site. The only fatalities during last summer were those along the railway line, presumably hit by trains. It is believed that these were seeking water from the Avon River at the end of a dry summer. To address this problem an artificial water source and barrier fencing has been established to reduce movement onto the railway line. This has proved partially successful with Rock-wallaby scats recorded in and around the water troughs. However one staff member did sight a Rock-wallaby moving past the end of the fence towards the river.

In regard to the second release, F8 was killed in the first few days by a Wedge-tailed Eagle (this mimics results from the first release), and M6 has not been recorded at all. Four animals are now collared (1 missing) and 3 others are known to be alive, to make a total of 6 known wallabies. Monitoring will continue on a monthly basis.

It is believed that the habitats and predator control initiatives within Paruna allow for the successful establishment of Black-flanked Rock-wallabies. However, further translocation will be required to boost existing numbers and to improve genetic diversity.

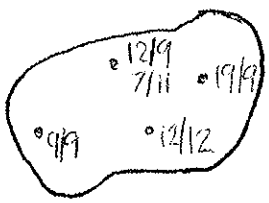


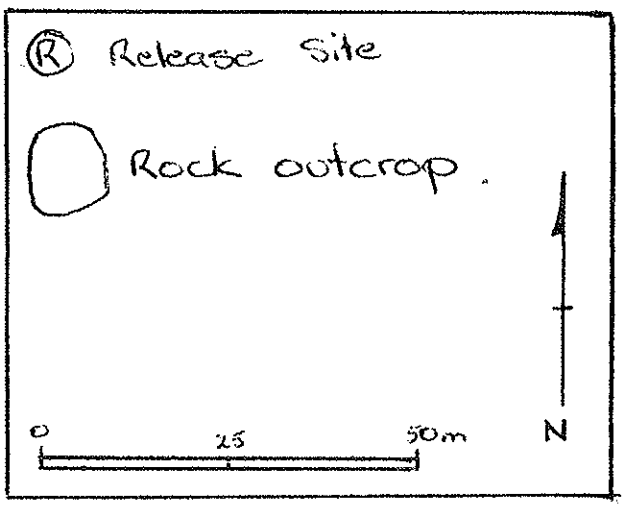
F1

First release

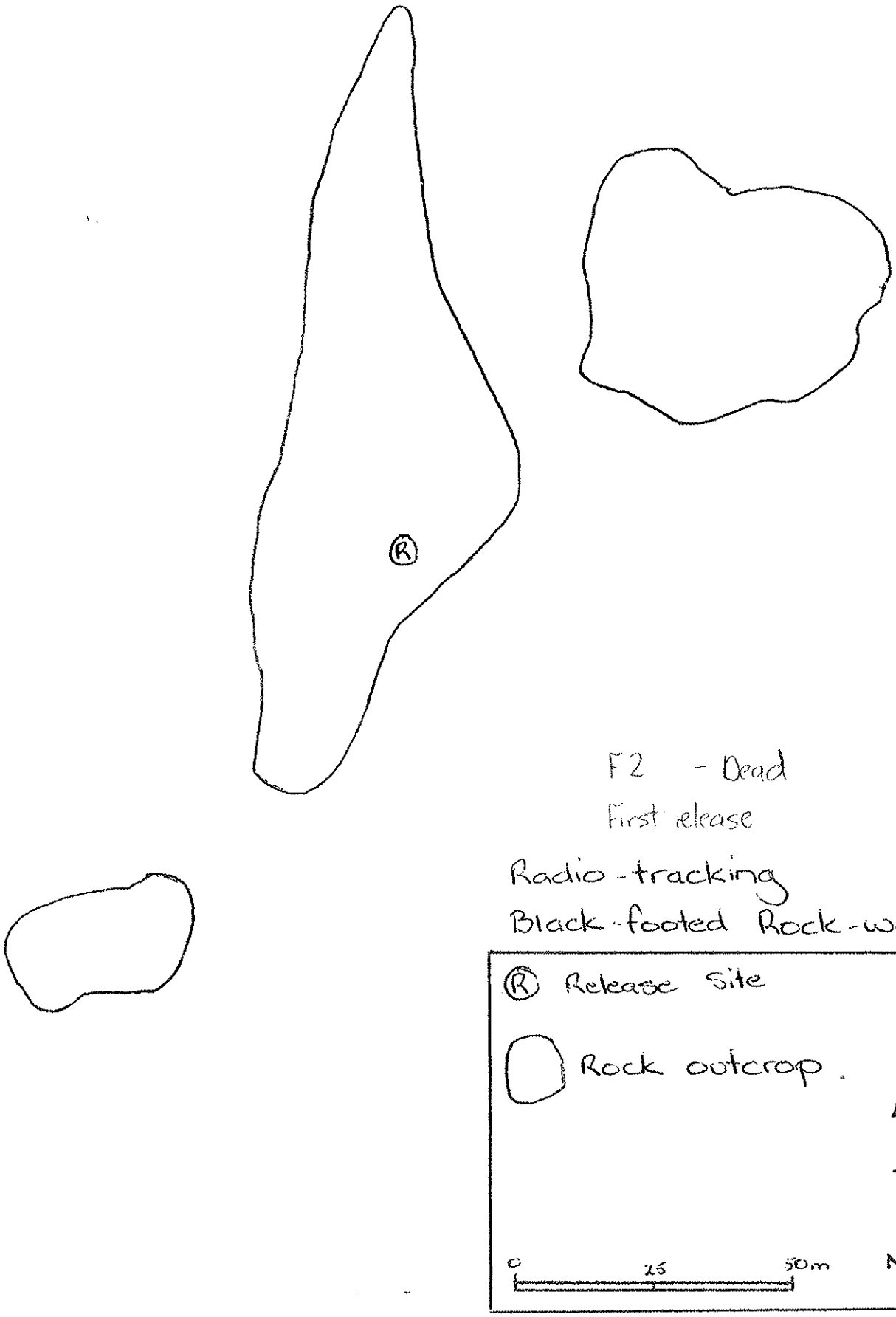
Radio-tracking

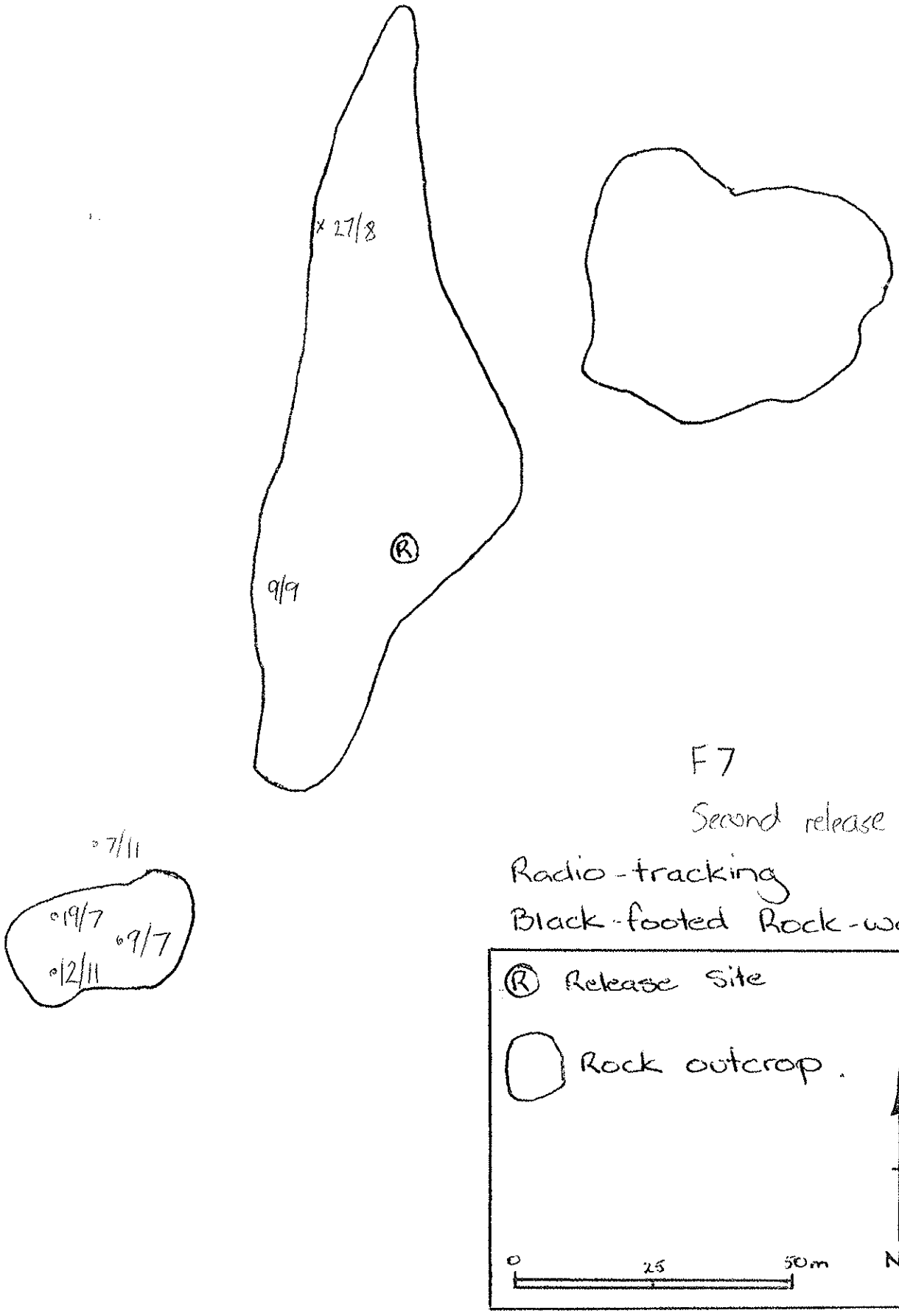
Black-footed Rock-wallaby

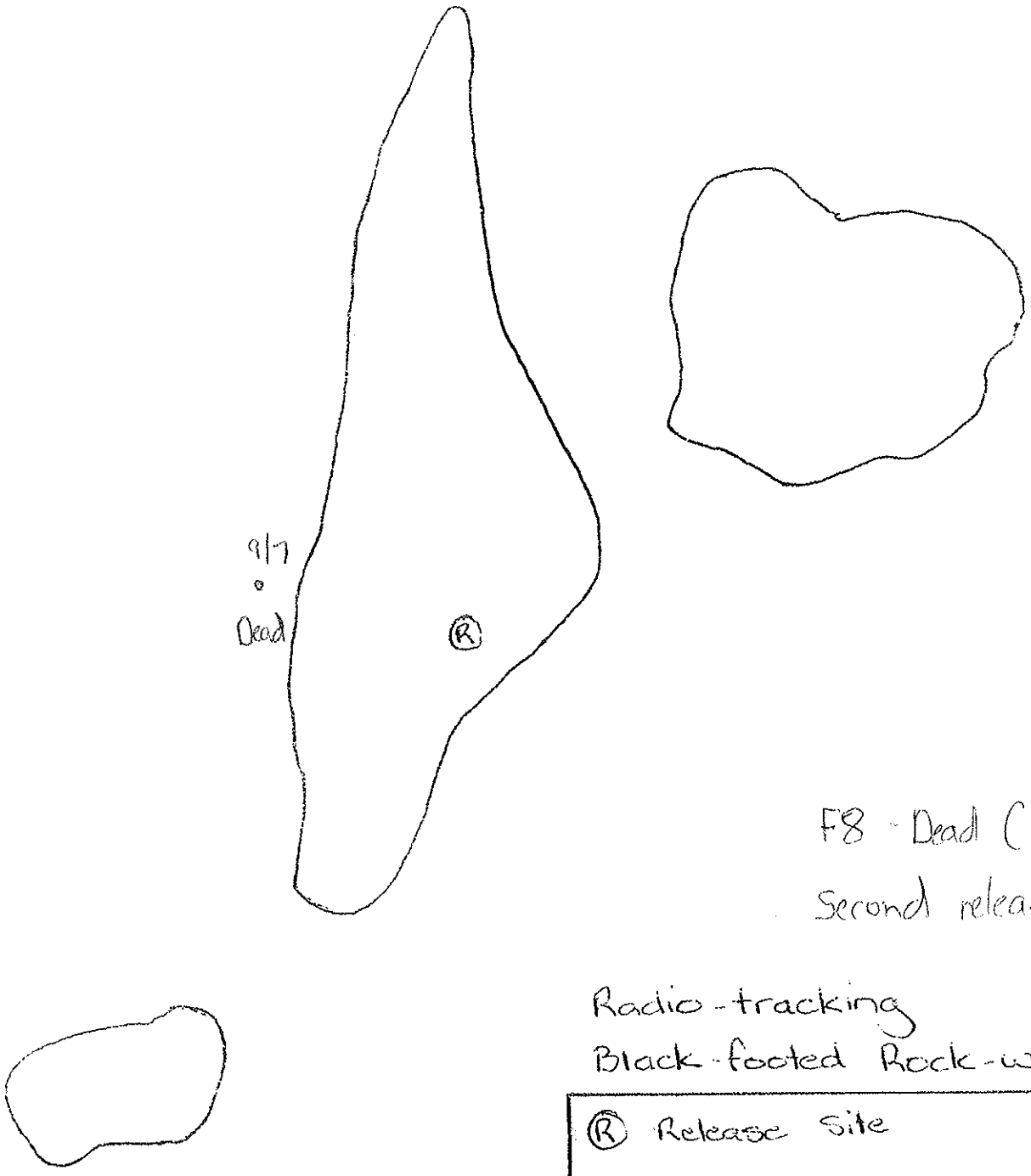




O John Forrest Cairn

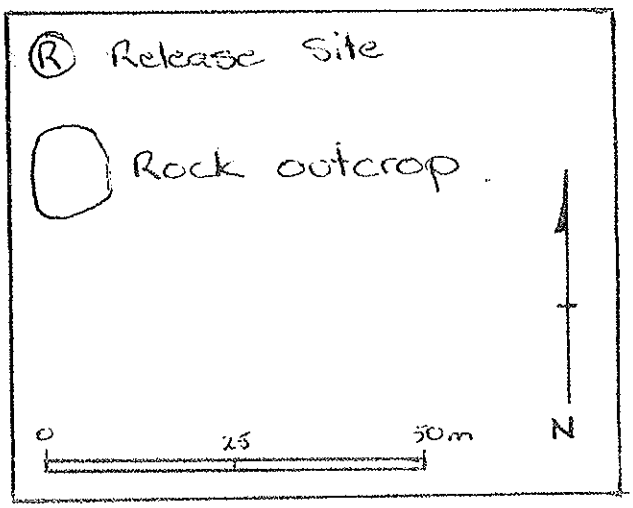

F2 - Dead
First release
Radio-tracking
Black-footed Rock-wallaby
Release Site
Rock outcrop
0
25
50m
N
John Forrest Cairn

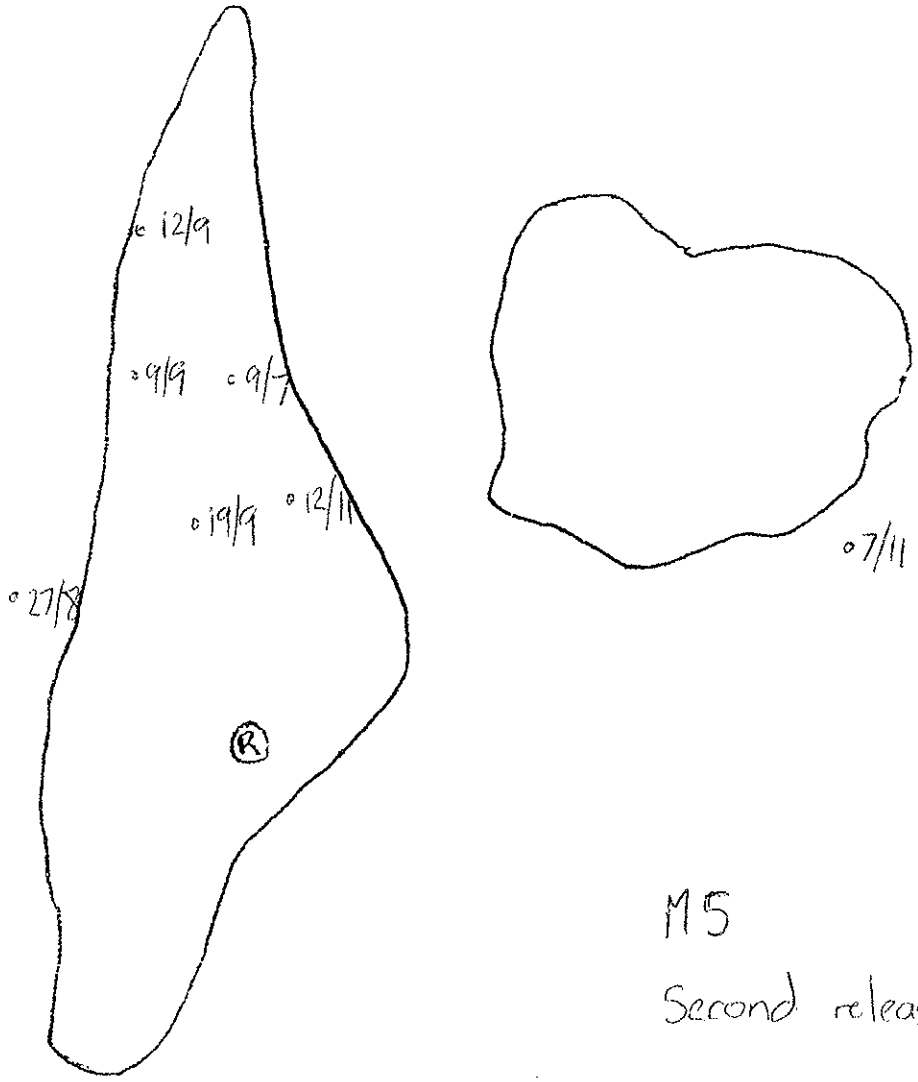

× 27/8
Ⓡ
9/9
7/11
19/7
9/7
12/11
F7
Second release
Radio-tracking
Black-footed Rock-wallaby
Ⓡ Release Site
Rock outcrop
0
25
50m
N
O John Forrest Cairn



F8 - Dead (Wedgetail)
Second release

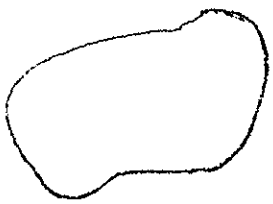
Radio-tracking
Black-footed Rock-wallaby





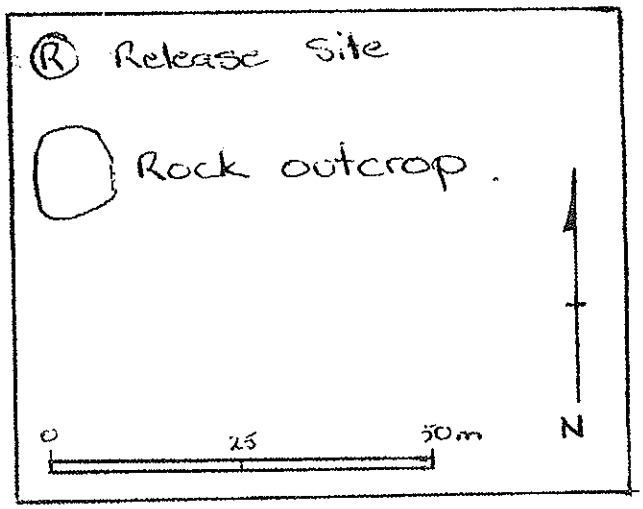
M5

Second release



Radio-tracking

Black-footed Rock-wallaby



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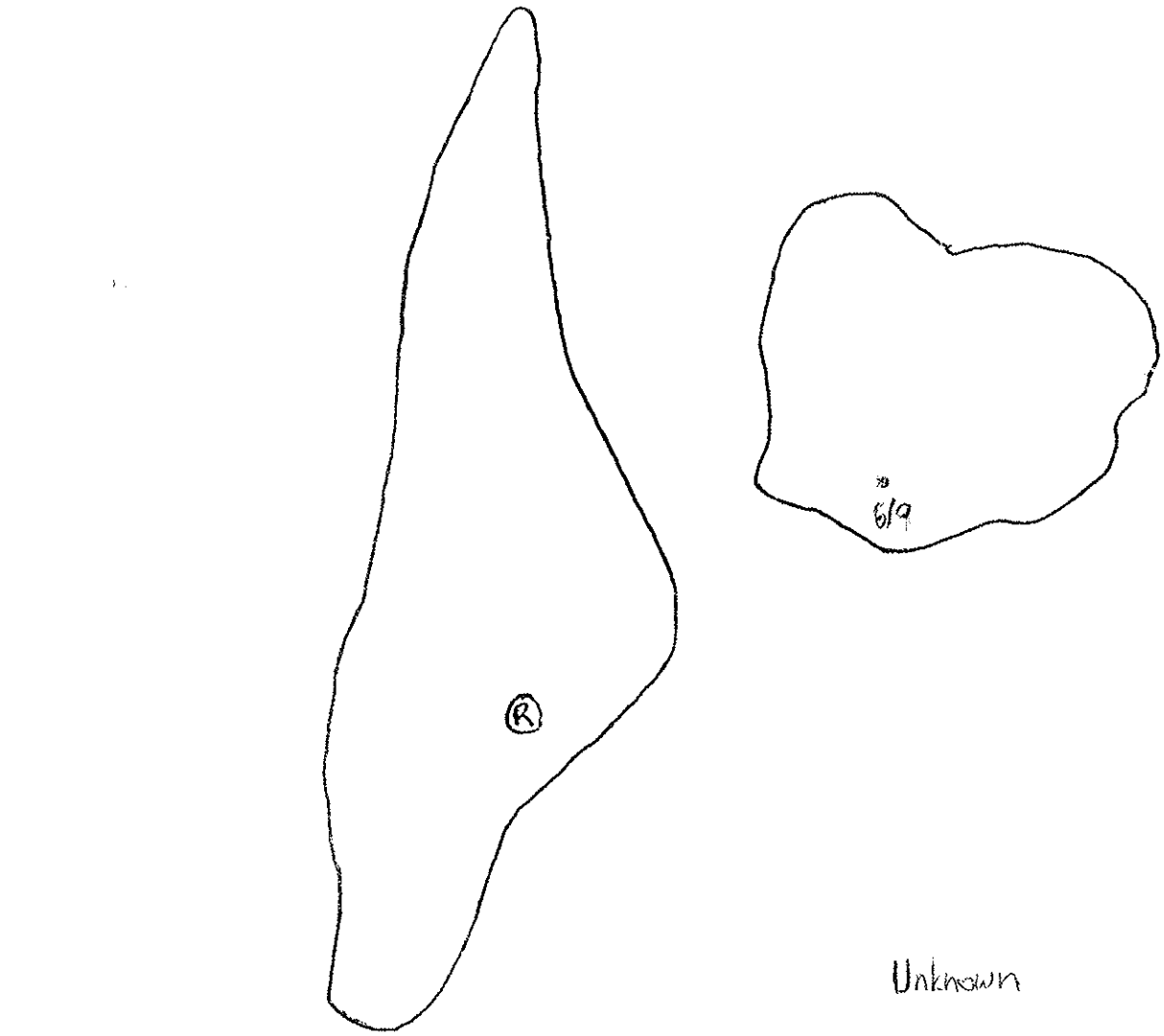
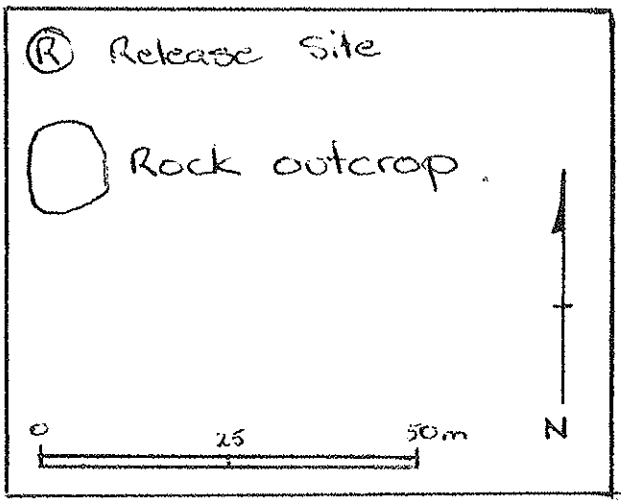


Radio-tracking
Black-footed Rock-wallaby



O John Forrest Cairn

Appendix 1: Trapping Data: July - December 2002

Date	Species	N/R	Trap	ID	Tag	Sex	AgePes	Weight	Pouch	Perio
06/08/2002	Rock-wallaby	R	RR2	744	WBL	F	A	2660	Empty	RR2
06/08/2002	Rock-wallaby	R	RR2	738	WBL	M	A	4220		RR2
06/08/2002	Rock-wallaby	R	RR2	737	WBL	M	A	3170		RR2
06/08/2002	Rock-wallaby	R	RR2	2019	CAL	M	A	4720		RR2
06/08/2002	Rock-wallaby	R	RR2	739	WBL	M	A	2120		RR2
06/08/2002	Rock-wallaby	R	RR2	747	WBL	M	A	4070		RR2
06/08/2002	Rock-wallaby	R	RR2	2068	CAL	M	A	5520		RR2
06/08/2002	Rock-wallaby	R	RR2	746	WBL	F	A	1620	LPY	RR2
06/08/2002	Rock-wallaby	R	RR2	741	WBL	M	A	4370		RR2
06/08/2002	Rock-wallaby	R	RR2	743	WBL	M	SA	795		RR2
06/08/2002	Rock-wallaby	R	RR2	740	WBL	F	A	2570	LPY	RR2
06/08/2002	Rock-wallaby	R	RR2	2083	CAL	F	A	3395	LPY	RR2

R/I: Founder
P: Marked animal
N: New animal
RT: Re-trap

EPY: Embryonic pouch-young
MPY: Medium pouch-young
LPY: Large pouch-young
PY: Pouch Young (size unknown)

Reg: Regressed pouch
Lac: Lactating

Australian Wildlife Conservancy

PARUNA SANCTUARY Dec 2003

Black-flanked Rock-wallaby
Petrogale lateralis lateralis

Introduction
This report forms part of an on-going monitoring program for Black-flanked Rock-wallabies *(Petrogale lateralis lateralis)* established between Australian Wildlife Conservancy (AWC) and the Department of Conservation and Land Management (DCLM), and is an addendum to six monthly reports from June 2001.

Background

There have been three releases of Black-footed Rock-wallabies at Paruna, the last undertaken during this period.

First Release
Ten Black-footed Rock-wallabies (6 females & 4 males) were translocated to Paruna Sanctuary from Mt Caroline Nature Reserve, 300 km west of Perth, on 29/5/01. Details of this release is tabled in an earlier report entitled 'Paruna Sanctuary: Black-footed Rock- wallaby' dated 27/06/01.

Second Release
During August 2002, a second release consisting of 12 Rock-wallabies of various ages (4 females and 8 males) were translocated from "The Granites" near Mount Caroline. Details of the second release are tabled in report 24/12/02.

Some early losses occurred post release due to predation by Wedge-tailed Eagles. During the Summer of 2001-2002, at least three wallabies were killed by trains while crossing to the Avon River to access water. To address this problem, a water trough and buffer fence was erected to guide the wallabies to this alternative source of water. The outcome of this management strategy is currently being monitored with regular fresh scats being recorded throughout the summer 2002-2003.

Third release
In September 2003, a third release of Rock-wallabies from 'The Granites' and 'Mt Caroline' consisting 4 females and 16 males. An additional female that was injured during the translocation was released 23/10/03 after care. All wallabies were fitted with reflective ear tags. Details of the third release are presented below (Table 1).

Table 1: Details of Rock Wallaby Release.

Date	Tag Type	ID	Sex	Age	Weight	Pouch	Notes
7/09/03	WBL	810	F	A	3850	PY	translocated from "The Granites"
7/09/03	WBL	812	F	A	3385	PY	translocated from "The Granites"
7/09/03	WBL	816	F	A	2515	reg	translocated from "The Granites"
7/09/03	WBL	879	F	SA	1510		translocated from "The Granites"
7/09/03	WBL	877	M	A	4060		translocated from "The Granites"
7/09/03	WBL	878	M	A	3610		translocated from "The Granites"
7/09/03	WBL	880	M	A	4010		translocated from "The Granites"
7/09/03	WBL	881	M	A	3560		translocated from "The Granites"
7/09/03	WBL	882	M	A	4810		translocated from "The Granites"
7/09/03	WBL	884	M	A	5010		translocated from "Mt Caroline"
7/09/03	WBL	811	M	A	5560		translocated from "The Granites"
7/09/03	WBL	818	M	A	5260		translocated from "The Granites"
7/09/03	WBL	820	M	A	5010		translocated from "The Granites"
7/09/03	WBL	822	M	A	5260		translocated from "The Granites"
7/09/03	WBL	824	M	A	1760		translocated from "The Granites"
7/09/03	WBL	852	M	A	2010		translocated from "The Granites"
7/09/03	WBL	853	M	A	3560		translocated from "The Granites"
7/09/03	CALM	2038	M	A	4010		translocated from "The Granites"
7/09/03	WBL	855	M	A	5010		translocated from "The Granites"
7/09/03	WBL	856	M	A	4760		translocated from "The Granites"
23/10/03	P	176	F	A	1400	reg	injured during translocation, R forearm amputated and nursed by Liz Apelt, released. Red ear tag.

Methods

Monitoring of Rock-wallabies is undertaken by a combination of radio-tracking and observations. No radio-collars were fitted to the third release animals.

Observations were undertaken at dusk at known sites, identified by the presence of fresh scats. Usually four observers were seated with binoculars adjacent to sites for about an hour, and all observations recorded. Notes were made on presence of tags, collars, markings, sex and pouch condition (if possible).

Radio-tracking of functional collars continues monthly. During this period there were two remaining functioning collars M5 & F7. F1 still has a collar, however this has now failed. (All other collared had been retrieved). Movements of Rock-wallabies between tracking periods and the 'mortality mode' on the collars enabled survivorship to be ascertained. If the 'mortality mode' was triggered, the animal was located and the cause of death determined if possible. All data was entered onto recording sheets that included:- Date, Time, ID, Sex, Age, Location, and Vegetation Community. Notes on opportunistic observations were also entered onto these sheets.

Goats had previously been recorded in the release area and eradicated. Six monitoring sites have been established whereby goat scats are recorded within the granite outcrop area. These are visited monthly, particularly to note any new scats. If any goats are detected in the future they will be eradicated.

Results and Discussion

During this report period, 51 sightings were made. These were all recorded at a site 80m west of the release site, referred to as "Jo's Cave". The dusk observation technique has proved very successful with up to 14 sightings in one evening. Breeding was evident with nine observations noting presence of pouch-young and young at heel. An unmarked female was noted on more than one occasion with a large pouch young, representing an F2 generation.

F1's collar has now failed. F7 has still been recorded in the same area as in the past (the vicinity of "Jo's Cave"). M5 was found dead in thinly wooded rocky area, 150m east of the release site. The cause of death is unknown, nevertheless the remains of the body were intact and the skull was complete, negating the possibility of predation. The ear tags and radio-collar were retrieved. The animal had been dead for some time, however, the mortality mode had not been triggered. The reason for this is unknown, although the body was located on a well-used pad and regular disturbance by animal traffic may be an explanation.

Rock-wallaby scats have been found consistently in the immediate vicinity of the release site, as well as at the far end of the sanctuary (see Map 1). In August scats were found along a creek-bed, 7km West of the release site. In several areas scats were noted to be in very high densities, particularly around "Jo's Cave" where staff have observed a number of Rock-wallabies. They have also been regularly recorded around a drinking trough located 1km north of the release site. These sites will be monitored on an ongoing basis.

No fresh goat droppings have been recorded within the monitoring sites, nor in the entire sanctuary during this period.

Radio-tracking of F7 will continue until the collar fails. Supervised volunteers have participated in Rock-wallaby observation work and will continue to be used over the proceeding months.

Appendix 1 – Rock Wallaby Observations.

Date	ID	Sex	Age	Collar	Ear Tag	Markings	Comments
16/07/03	U	U	A				
16/07/03	U	U					
16/07/03	U	U	U				
16/07/03	U	U	A				
16/07/03	U	U	A				
16/07/03	U	U	A				
2/09/03	U	U	A	U	U	grey	jumped up to F (2 records back) that was sitting on an elevated rock and was shoved back by said female
2/09/03	U	F	A	N	N	bronze chest	
2/09/03	U	U	SA?	U	U	dark with golden marking	small
2/09/03	U	M	A	N	N	even steel grey	
2/09/03	U	U	A	U	U	golden, black band across middle	Large PY head sticking out
2/09/03	U	U	U	U	U	golden	moved quickly over rocks
2/09/03	U	U	U	U	U		
2/09/03	U	U	U	U	U		
2/09/03	U	F	A	U	U	white line on flank	MPY Goldy grey
2/09/03	F7	F	A	Y	Y		collar ok
2/09/03	U	U	A	U	U	light with dark markings	
2/09/03	U	U	SA?	U	U	dark with golden marking	probably same as 2 previous
14/10/03	U	U		U	U	smaller, orangy white patches/dark	
14/10/03	U	U	A?	U			up top
14/10/03	U	U	A?	U			up top
14/10/03	U	F		U	Y	good size, golden shoulders, ear tag	Mpy major stain around pouch
14/10/03	U	U	SA	U			very small, just out of pouch
14/10/03	U	U		U	U		average sized, tail only seen
14/10/03	U	M		U	Y	medium sized, dark tag righ tear	tag right ear
14/10/03	U	F	A	U	Y		shiny tag, new release?
14/10/03	U	U	A	U	U	light colour	Big light one
14/10/03	U	U		U	U		possibly same as previous, moving away
14/10/03	U	U		U	U		40m W of R
14/10/03	U	F	A	U	N		Mpy
14/10/03	U	F	A	U	Y		left tag, shiny, new release?, MPY, smallish size
14/10/03	U	U		U	U		40m W of R
7/11/03	U	U					
7/11/03	U	U					
7/11/03	U	U					

7/11/03	U	F			L		
7/11/03	U	U					
7/11/03	U	U					
7/11/03	U	F			L		pouch young
7/11/03	U	U					
7/11/03	U	U					
9/12/03	N	U	SA	N	N	small	young at heel of next entry
9/12/03	N	M		N	U	medium size, brown	
9/12/03	N	U		N	U	light	
9/12/03	N	U		N	U		two sightings may have been same as previous
9/12/03	N	U		N	U		two sightings may have been same as previous
9/12/03	N	F		N	Y		2 sightings around entrance to main cave
9/12/03	N	U	SA	N	N		3 sightings around entrance to main cave
9/12/03	N	F	A	N	Y	medium size, dark	shiny ear tag, young at heel
9/12/03	N	F	A	N	N	med/light	feeding grooming for long period, MPY
9/12/03	N	M	A	N	Y	grey dark ears	

Australian Wildlife Conservancy

Paruna Sanctuary — Dec 2004

Black-flanked Rock-wallaby *Petrogale lateralis lateralis*

Introduction
This report forms part of an on-going monitoring program for Black-flanked Rock-wallabies *(Petrogale lateralis lateralis)* established between Australian Wildlife Conservancy (AWC) and the Department of Conservation and Land Management (CALM), and is an addendum to six monthly reports from June 2001.

Background
There have been three releases of Black-footed Rock-wallabies at Paruna.

First Release
Ten Black-footed Rock-wallabies (6 females & 4 males) were translocated to Paruna Sanctuary from Mt Caroline Nature Reserve, 300 km west of Perth, on 29/5/01. Details of this release is tabled in an earlier report entitled 'Paruna Sanctuary: Black-footed Rock- wallaby' dated 27/06/01.

Second Release
During August 2002, a second release consisting of 12 Rock-wallabies of various ages (4 females and 8 males) were translocated from "The Granites" near Mount Caroline. Details of the second release are tabled in report 24/12/02. Some early losses occurred post release due to predation by Wedge-tailed Eagles. During the Summer of 2001-2002, at least three wallabies were killed by trains while crossing to the Avon River to access water. To address this problem, a water trough and buffer fence was erected to guide the wallabies to this alternative source of water. The outcome of this management strategy is currently being monitored with regular fresh scats being recorded throughout the summer 2002-2003.

Third release
In September 2003, a third release of Rock-wallabies from 'The Granites' and 'Mt Caroline' consisting 4 females and 16 males. An additional female that was injured during the translocation was released 23/10/03 after care. All wallabies were fitted with reflective ear tags.

Methods
Radio-collars had been fitted to previous releases. All have now expired. Monitoring of Rock-wallabies is now undertaken by observations. Observations were undertaken at dusk, at known sites identified by the presence of fresh scats. Usually four observers were seated with binoculars adjacent to sites for about an hour, and all observations recorded. Notes were made on presence of tags, collars, markings, sex and pouch condition (if possible).

Results and Discussion
During this reporting period, 35 sightings were made. These were all recorded at a site 80m west of the release site, referred to as 'Jo's Cave'. The dusk observation technique has proved very successful with up to 14 sightings in one evening. Breeding was evident with sightings of pouch-young.

Table 1 – Summary of Rock Wallaby Sightings

Date	No	Eartag	Weather	Sex	Age	Markings	Comments
13/07/2004	0						No sightings, visit to site was very late
18/08/2004	3						
23/09/2004	8		light rain & cloudy	2F, 2M, 4 U	7A 1SA	see data sheets, lots of markings showing a number	, a tiny juvenile male independent of pouch (only just)
14/10/2004	9	none seen	fine & mild	1M, 8U	8A 1SA	8A 1SA	one sub adult, one with missing fur
25/11/2004	5	1 blue	Cloudy & Drizzly	1M 4U	5A		1 tagged, 2 untagged, 2 too quick
16/12/2004	10	1 blue	Fine & Mild	2M 1F 7U	10A		1 tagged male, 1 female with py :) 10 sightings though some likely to overlap

In several areas scats were noted in very high densities, particularly around 'Jo's Cave'. They have also been regularly recorded around a drinking trough located 1km north of the release site.

There were no fresh goat droppings or goat sightings recorded in the sanctuary during this period. Supervised volunteers have participated in rock-wallaby observation work and will continue to be used over the proceeding months.

Australian Wildlife Conservancy

Paruna Sanctuary June 2005

Black-flanked Rock-wallaby *Petrogale lateralis lateralis*

Introduction
This report forms part of an on-going monitoring program for Black-flanked Rock-wallabies *(Petrogale lateralis lateralis)* established between Australian Wildlife Conservancy (AWC) and the Department of Conservation and Land Management (CALM), and is an addendum to six monthly reports from June 2001.

Background
There have been three releases of Black-flanked Rock-wallabies at Paruna.

First Release
Ten Black-flanked Rock-wallabies (six females & four males) were translocated to Paruna Sanctuary from Mt Caroline Nature Reserve, 300 km west of Perth, on 29/5/01. Details of this release is tabled in an earlier report entitled 'Paruna Sanctuary: Black-flanked Rock-wallaby' dated 27/06/01.

Second Release
During August 2002, a second release consisting of twelve Rock-wallabies of various ages (four females and eight males) were translocated from "The Granites" near Mount Caroline. Details of the second release are tabled in report 24/12/02. Some early losses occurred post release due to predation by Wedge-tailed Eagles. During the Summer of 2001-2002, at least three wallabies were killed by trains while crossing to the Avon River to access water. To address this problem, a water trough and buffer fence was erected to guide the wallabies to this alternative source of water. The outcome of this management strategy is currently being monitored with regular fresh scats being recorded throughout the summer 2002-2003.

Third release
In September 2003, a third release of Rock-wallabies from 'The Granites' and 'Mt Caroline' consisting four females and sixteen males. An additional female ("Lefty") that was injured during the translocation was released 23/10/03 after care. All wallabies were fitted with reflective ear tags.

Methods
Radio-collars had been fitted to previous releases. All have now expired. Monitoring of Rock-wallabies is now undertaken by observations. Observations were undertaken at dusk, at known sites identified by the presence of fresh scats. Usually four observers were seated with binoculars adjacent to sites approximately an hour, with all observations recorded. Notes were made on presence of tags, collars, markings, sex and pouch condition (if possible).

Results and Discussion
During this reporting period, 20-22 sightings were made. These were all recorded at a site 80m west of the release site, referred to as 'Jo's Cave'. No pouch young were seen during this period.

Table 1 – Summary of Rock Wallaby Sightings

Date	No.	Eartag	Sex	Age	Weather	Comments

22/02/2005	6		3M, 3F	1SA M	Fine	"lefty" seen, 1 female VGC
23/02/2005	1	yes	1F		Fine	
24/02/2005	1		1M		Fine & Warm	same as 1 seen on 22/2 from 5.40-6.30 none seen - boring
10/05/2005	3	1 yellow - L	2U, 1M		Warm & Cloudy	
11/05/2005	3-5	1 R, 1 L - blue	1F,1M, 3U		Light showers, rain forecast	last 3 sightings may be same individual!
12/05/2005	6	1 yellow - R	1M,1F, 4U		Cold, light rain during day, heavy rain 11.5mm over night	3 playing chasey

In several areas scats were noted in very high densities, particularly surrounding 'Jo's Cave'. They have also been regularly recorded surrounding a drinking trough located 1km north of the release site.

Supervised volunteers have participated in rock-wallaby observation work and will continue to be involved over the proceeding months.

Between Jo's Cave and the Avon River there are several other rock outcrops and caves. A random walk was conducted between the Nissan Hut and Jo's Cave, during which a volunteer noted signs of high density wallaby scats under most rock overhangs. Some of which were under rocks near the bottom of the valley and appeared fresh, indicating that wallabies have recently been active in this area.

Australian Wildlife Conservancy

PARUNA SANCTUARY July-Dec 2005

Introduction

Paruna Sanctuary is located in the Avon Valley east of Perth, and was established by AWC in 1998 to create a 2,000 ha wildlife corridor between two regionally significant National Parks: Walyunga National Park to the southwest and Avon Valley National Park to the northeast.

Paruna Sanctuary is in the 'Darling System', at the northern extremity of the Northern Jarrah Forest in the southwest of Western Australia. The majority of the Paruna sanctuary consists of pristine vegetation, dominated by stunning woodlands of Wandoo and Powderbark though some areas of the western blocks have been grazed in the past. There is a great diversity of habitats present within the sanctuary due to the complex geology and topography.

With land acquisition commencing in 1994, Paruna Sanctuary was the second property acquired by AWC. One of the primary aims of Paruna sanctuary was to link two National Parks (Walyunga National Park and Avon Valley National Park). AWC consolidated a number of properties to provide an unbroken corridor that extends 14 km between the two National Parks. The 2,000 ha Paruna sanctuary, in conjunction with the adjacent government conservation reserves, has created a combined area of approximately 19,500 ha, which is dedicated to nature conservation. AWC proposed to re-establish the mammal fauna that had once flourished in the region, and in cooperation with the Western Australian Department of Conservation and Land Management (CALM), the entire area is now managed for this purpose. After initial surveys in 1996 to determine species present and on-going extensive feral animal control across the sanctuaries and national parks, four mammal species were re-introduced to Paruna Sanctuary (and adjacent national parks) from 2000. These populations have been supplemented several times since the initial releases. These are Woylie (2000), the Quenda (2000), Tammar Wallaby (2001) & Black-flanked Rock Wallaby (2001). The existing population of Brushtail Possums was also supplemented.

Previous Reports

Individual bi-annual reports as part of on-going monitoring protocol between AWC & CALM (Department of Conservation and Land Management) for each of the four reintroduced species have been prepared every six months since release. After discussions with CALM and AWC staff, it was determined that these translocated species reports be replaced with an overall report for each sanctuary reflecting overall patterns and trends over time.

Table 1 - Summary of Releases

Species	2000	2001	2002	2003	2004	2005	Total
Woylie	73	61	42	1	50	2	**229**
Quenda	56	1	1	0	33	3	**94**
Tammar Wallaby	0	24	20	0	0	3	**47**
Black-flanked Rock Wallaby	0	10	12	21	0	15*	**58**

* During this reporting period, see details below

Source of Animals
Woylies – Karakamia Sanctuary & a few released from carers
Quenda – Karakamia, various development sites around Perth & a few released from carers
Tammar Wallabies – Tutanning Nature Reserve
Black-flanked Rock Wallabies - Mt Caroline, The Granites & Querikin Rock

Rock Wallabies
Fifteen Rock Wallabies were translocated from Querikin Rock and released at Paruna on 9/12/05 to supplement previous translocations into the sanctuary. Details of the animals released are presented in Table 2.

Table2 – Details of Black-flanked Rock Wallabies released at Paruna during this period.

Date	Tag Type	ID	Sex	Age	Weight	Pouch	No CR	Notes
9/12/05	WBL	1187	M	A	5000			Blue reflective tag R ear
9/12/05	WBL	1183	F	A	3375	EMP		Red reflective tag in L ear
9/12/05	WBL	1179	F	A	3125	EMP		Red reflective tag in L ear
9/12/05	WBL	1184	F	A	4500	EPY	1x50mm	Red reflective tag in L ear
9/12/05	WBL	1149	M	A	3200			Blue reflective tag R ear
9/12/05	WBL	1146	M	A	4375			Blue reflective tag R ear
9/12/05	WBL	1178	F	A	4000	EPY	1x15mm	Red reflective tag in L ear
9/12/05	WBL	1177	F	A	4000	EPY	1x10mm	Red reflective tag in L ear
9/12/05	WBL	1180	F	A	4300	EPY	1x60mm	Red reflective tag in L ear
9/12/05	WBL	1148	M	A	3050			Blue reflective tag R ear
9/12/05	WBL	1182	F	A	3150	EMP		Red reflective tag in L ear
9/12/05	WBL	1150	M	A	6000			Blue reflective tag R ear
9/12/05	WBL	1181	F	A	4125	EPY	1x50mm	Red reflective tag in L ear
9/12/05	WBL	1185	F	A	4750	EPY	1x40mm	Red reflective tag in L ear
9/12/05	WBL	1147	F	A	3025	EPY	1x50mm	Red reflective tag in L ear

Methods
Trapping
Data on vertebrates at Paruna has been collected via systematic trapping as part of the annual trapping program. This program incorporates one hundred and forty Sheffield traps along a set transect and thirteen pit sites consisting of four pits, four large & four medium Elliott traps at each site which is conducted in autumn each year. Each site is trapped for three consecutive nights. Targeted cage-trapping at the release sites is also conducted during spring using fifty cage traps at the Woylie release site over three consecutive nights. This is the principle monitoring technique for monitoring Woylies & Quenda. Map 1 shows the location of transect lines, pit sites and release sites.

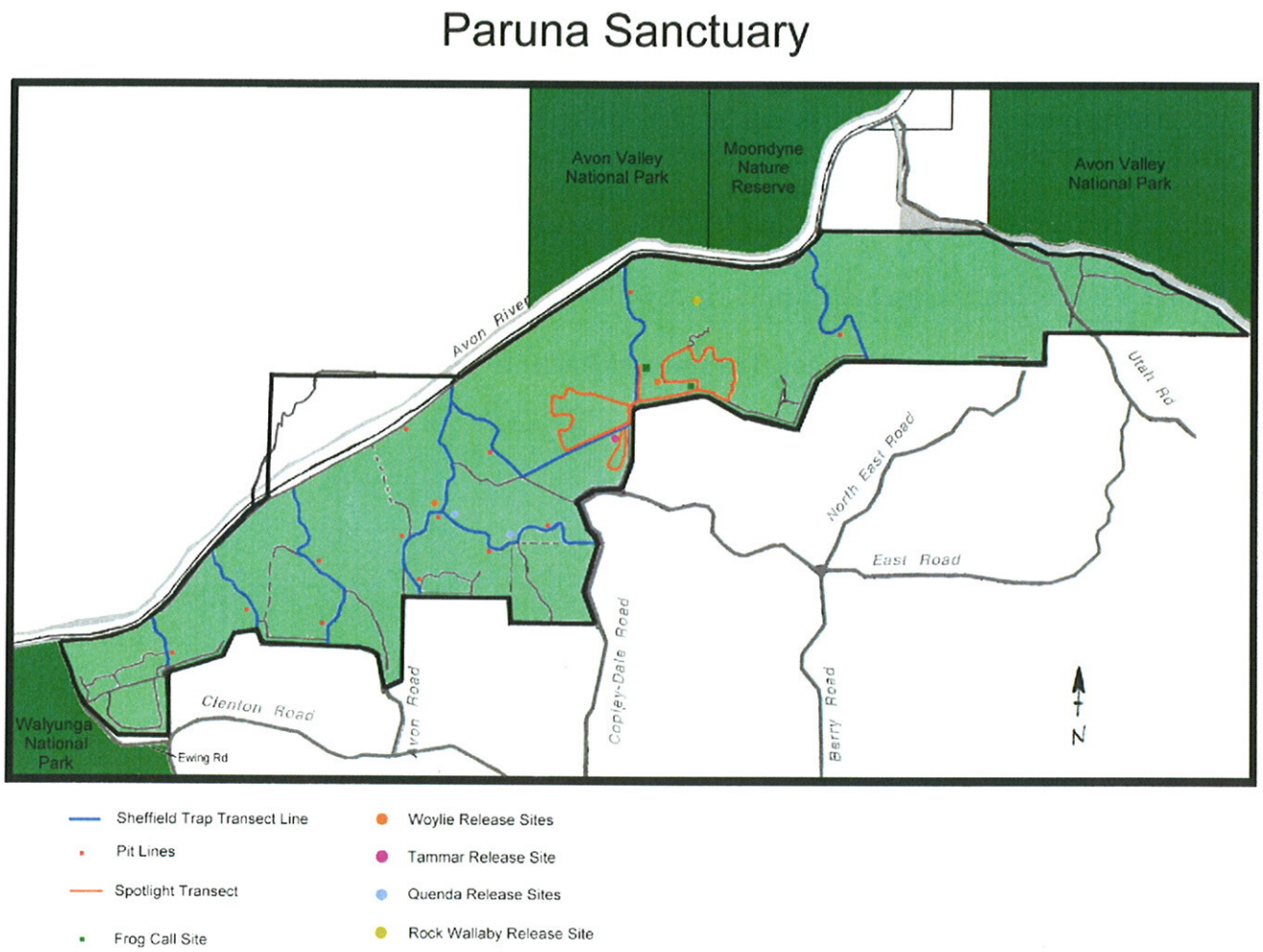
Spotlighting
A driven spotlight transect has been used as part of monitoring at Paruna since 2002. The transect is 7km in length, taking approximately one hour to complete, and is conducted for three consecutive nights every three months. The route incorporates both Woylie and Tammar release sites and a frog call site outlined on Map 1. This transect was set up to standardise spotlight monitoring technique so the data is comparable with other locations including other AWC sanctuaries and CALM reserves. A similar drive transect has also been set up at Faure, Mt Gibson & Karakamia Sanctuaries. Spotlighting is the principle monitoring technique for Tammar Wallabies at Paruna.

Observations

Sitting and observing is the main monitoring technique for Rock Wallabies where observations are undertaken at dusk or dawn, at known sites identified by the presence of fresh scats. Usually four observers were seated with binoculars adjacent to sites for approximately an hour, with all observations recorded. Notes are made on presence of tags, collars, markings, sex and pouch condition (where possible).

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

Map 1 – Paruna Sanctuary – Drive Transect Route



Results & Discussion

Trapping

Table 3 – Trapping Results for this reporting period

Species	Number Trapped
Woylies	31 (inc 14 re-traps)
Tammar	1
Chuditch	6 (inc 3 re-traps)
Quenda	1
Bobtail	9
Raven	1
Trapping Effort	150
% trap	32.6%

A total of forty nine vertebrates were trapped during the target trapping. Table 3 summarises the results. Figure 1 & 2 shows that mammal trapping results since 2000. 2005 showed increased trapping after particularly poor trapping results in 2004. This is likely to be the result of the good season with rainfall recording 650mm in 2004 compared with 850mm in 2005. Woylies make up the majority of the mammals trapped in Paruna as can be seen in Figure 1 and 2. For ease of reading, Woylies were graphed separately. In Figure 2, Chuditch were trapped for the first time in 2002 though never translocated into the sanctuary. These have been trapped frequently since this date. Figure 2 shows an increase in Quenda trapped in 2005 mostly consisting of individuals released late in 2004.

Figure 1 – Woylies trapped at Paruna since 2000.

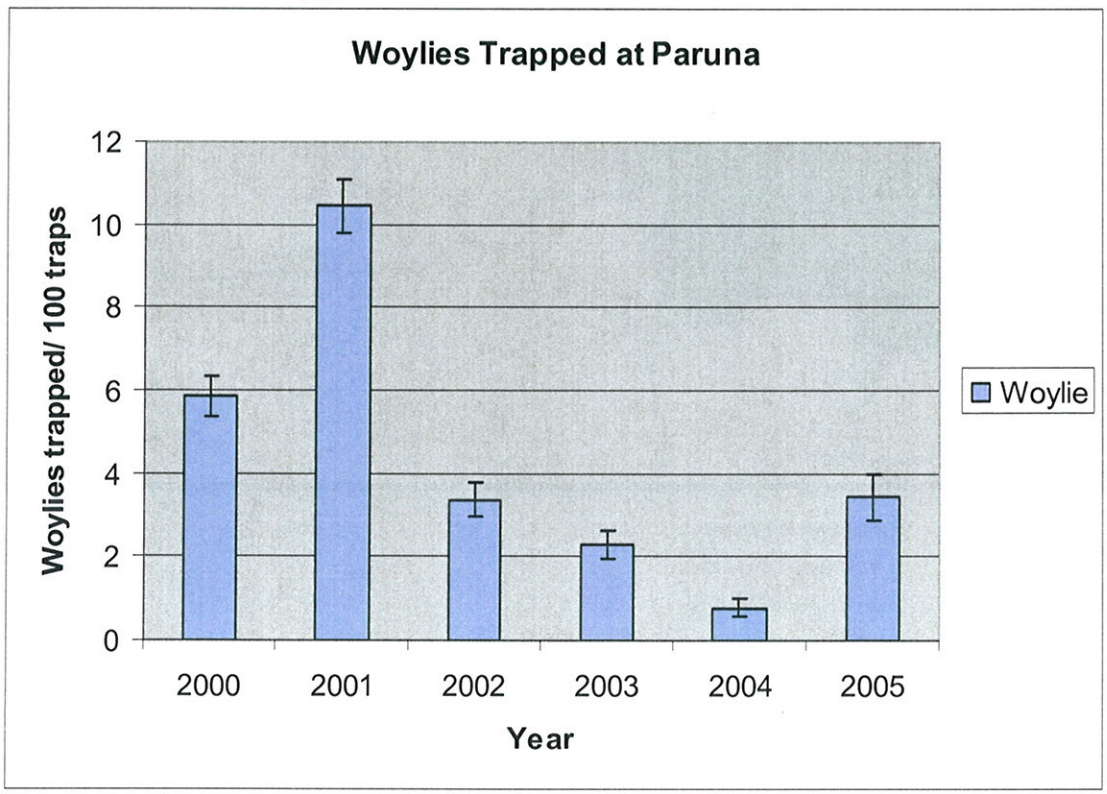
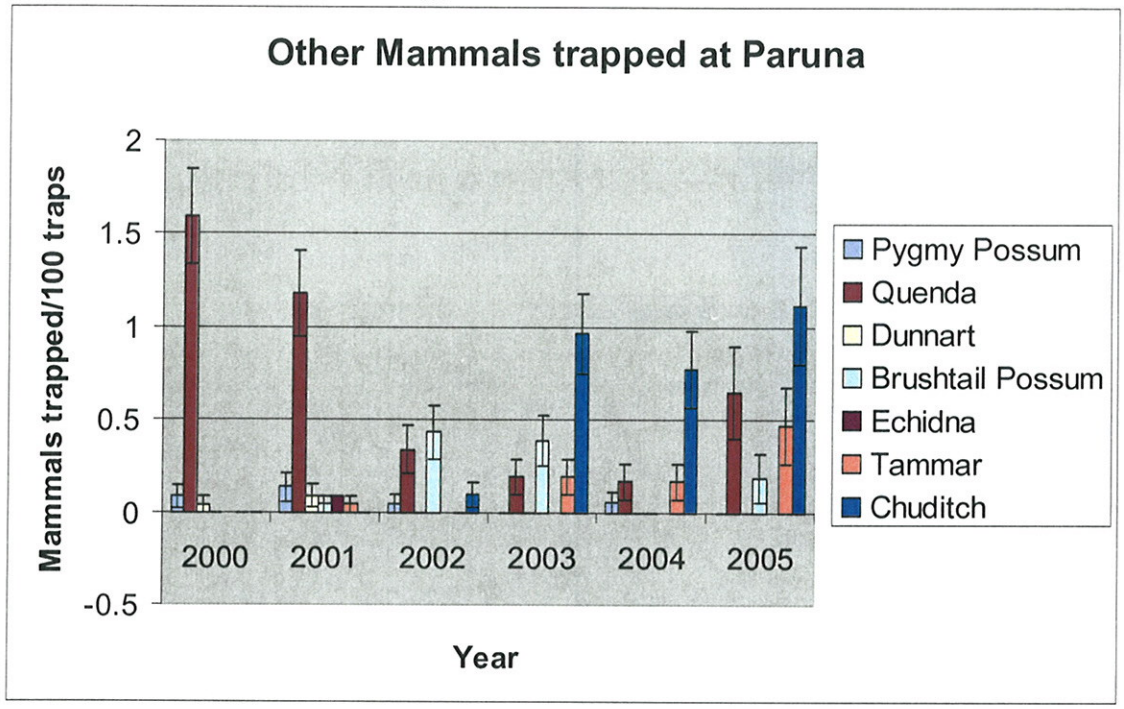


Figure 2 – Other mammals trapped at Paruna since 2000



Spotlighting

Figures 3 & 4 shows the spotlighting results at Paruna, Western Grey Kangaroos were by far the most common animal observed. For ease of reading, Western Grey Kangaroos were graphed separately. It is encouraging to see Tammar and Woylie sightings increasing with rabbit numbers declining. Numbers of all mammals except Western Grey Kangaroos are exceedingly small compared to the results from Karakamia Sanctuary where for example over forty Woylie individuals are observed over a similar transect compared with an average of 1.45 at Paruna. (See Karakamia report Dec 2005). A further translocation of Woylies is planned for June 2006. As seen in Figure 4, a high number of Western Grey Kangaroo was observed with numbers increasing significantly during 2005.

Figure 3 – Mammals spotlighted at Paruna since 2002 (not including Kangaroos)

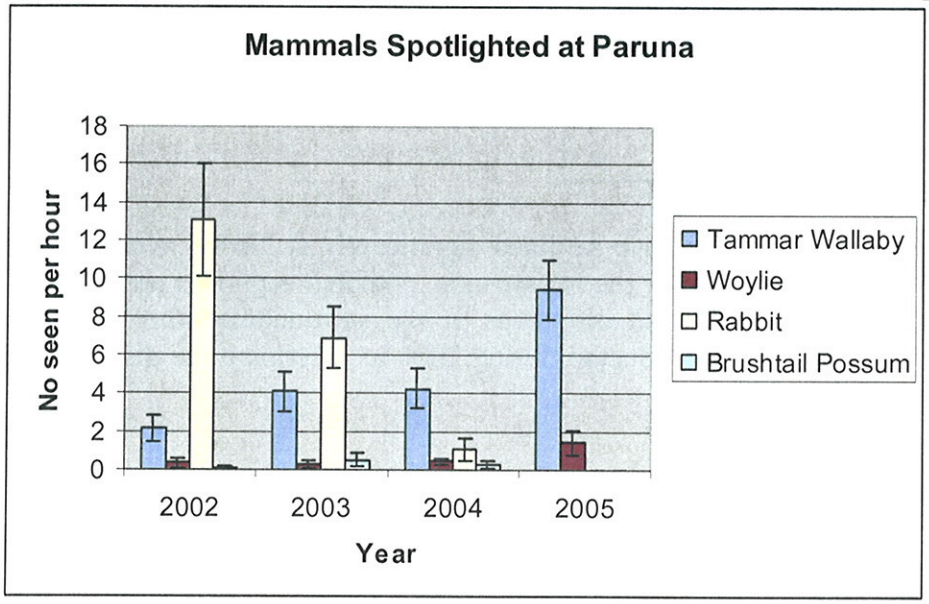
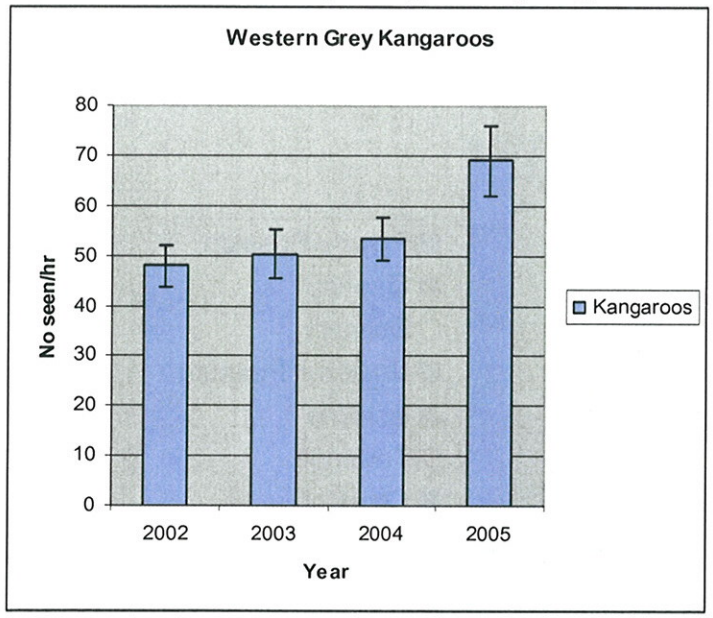
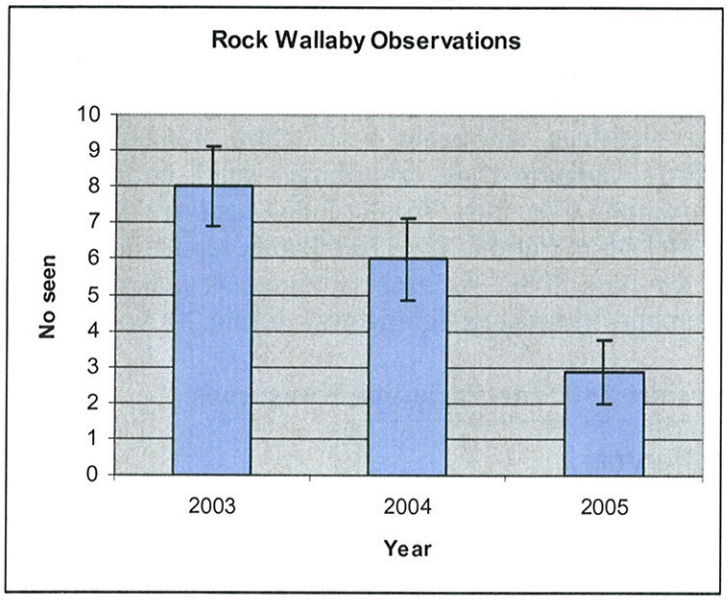


Figure 4 – Western Grey Kangaroos spotlighted at Paruna since 2002



Observations

Figure 5 - Rock Wallaby sightings at "Jo's Cave"



As seen in Figure 5, Rock Wallaby sightings have declined significantly at "Jo's Cave", which is a relatively accessible cave for staff to observe near the release site. Although sightings are down at this site observations by staff reveal plenty of fresh droppings in the surrounding other nearby rock outcrops of Paruna. Further surveys will be conducted during 2006 to determine the dispersal of the growing population.

Australian Wildlife Conservancy

PARUNA WILDLIFE SANCTUARY Jan - Dec 2006

Introduction
Paruna Wildlife Sanctuary is located in the Avon Valley east of Perth, and was established by AWC in 1998 to create a 2,000 ha wildlife corridor between two regionally significant National Parks: Walyunga National Park to the southwest and Avon Valley National Park to the northeast.

Paruna Wildlife Sanctuary is in the 'Darling System', at the northern extremity of the Northern Jarrah Forest in the southwest of Western Australia. The majority of the Paruna Sanctuary consists of pristine vegetation, dominated by stunning woodlands of Wandoo and Powderbark though some areas of the western blocks have been grazed in the past. There is a great diversity of habitats present within the sanctuary due to the complex geology and topography.

With land acquisition commencing in 1994, Paruna Wildlife Sanctuary was the second property acquired by AWC. One of the primary aims was to link the two National Parks. AWC consolidated a number of properties to provide an unbroken corridor that extends 14 km between the two National Parks. The 2,000 ha Paruna Wildlife Sanctuary, in conjunction with the adjacent government conservation reserves, has created a combined area of approximately 19,500 ha, which is dedicated to nature conservation. AWC proposed to re-establish the mammal fauna that had once flourished in the region, and in cooperation with the Department of Environment and Conservation (DEC), and the entire area is now managed for this purpose. After initial surveys in 1996 to determine species present and ongoing extensive feral animal control across the sanctuaries and national parks, four mammal species were reintroduced to Paruna and adjacent National Parks from 2000: Woylie (2000), Quenda (2000), Tammar Wallaby (2001) and Black-flanked Rock Wallaby (2001). . These populations have been supplemented several times since the initial releases. The existing population of Brushtail Possums was also supplemented.

Previous Reports
Individual reports as part of on-going monitoring protocol between AWC and DEC (Department of Environment and Conservation) for each of the four reintroduced species have been prepared every six months since release. After discussions with CALM and AWC staff, it was determined that these translocated species reports be replaced with an overall report for each sanctuary reflecting population establishment and trends over time.

Table 1: Summary of releases of threatened mammals at Paruna.

Species	2000	2001	2002	2003	2004	2005	2006	Total
Woylie	73	61	42	1	50	2	98*	**327**
Quenda	56	1	1	0	33	3	37*	**131**
Tammar Wallaby	0	24	20	0	0	3	0	**47**
Black-flanked Rock Wallaby	0	10	12	21	0	15	0	**58**
Brushtail Possum	2	1	8	26	50	0	1	**88**

* During this reporting period, see details below

Source of Animals
Woylies – Karakamia Wildlife Sanctuary, plus a small number released from carers.
Quenda – Karakamia, Perth development sites, plus a small number released from carers.
Tammar Wallabies – Tutanning Nature Reserve.
Black-flanked Rock Wallabies - Mt Caroline, The Granites and Querekin Rock.
Brushtail Possums – Karakamia Wildlife Sanctuary, plus a small number released from carers

Woylies

Table 2: Details of Woylies translocated to Paruna in 2006

Date.	ID	Sex	Age	Pes	Wt	Pouch	No-CR	Notes
04-Apr-06	0956	F	A		1220		1x10mm	from Liz Appelt
04-Apr-06	0955	M	A		1100			from Liz Appelt
07-Jul-06	1051	M	SA	97.9	860			
07-Jul-06	1001	F	A	96.6	750	V		
07-Jul-06	1108	F	A	94.7	840	EPY	15mm	right eye cateract
07-Jul-06	1109	F	A	100.8	950	REG		ripped left ear, major rip in R ear
07-Jul-06	1110	F	A	107.1	1400	EPY	10mm	
07-Jul-06	1035	F	A	101.3	1140	EPY	20mm	
07-Jul-06	1112	F	A	104.4	1150	EPY	8mm	
07-Jul-06	1032	F	A	104.9	1170	EPY	40mm	
07-Jul-06	1150	M	A	101.0	1100			2 DNA clips on L ear
07-Jul-06	1149	M	A	99.6	1100			
07-Jul-06	1036	M	SA	103.1	1020			
07-Jul-06	1148	M	A	100.2	880			
07-Jul-06	1105	F	A	100.2	1220	EPY	35mm	unilateral discharge from L nostril, purulent discharge cloaca
07-Jul-06	990	M	SA	98.5	860			
07-Jul-06	1147	M	A	99.7	1100			
07-Jul-06	1000	M	A	102.6	1225			big notch out of L ear
07-Jul-06	1039	F	SA	97.3	975	VIR		tag in R ear
07-Jul-06	998	F	A	98.6	1225	EPY		
07-Jul-06	1146	F	A	100.7	865	VIR		
07-Jul-06	1145	F	A	102.1	980	VIR		ripped ear tag, left ear
07-Jul-06	976	M	SA	94.95	1000			
07-Jul-06	934	M	A	102.7	1125			tag in L ear
07-Jul-06	930	M	A	98.7	1060			
07-Jul-06	893	F	A	98.95	1290	EPY	40mm	Sirtrack 150.160 Collar No #9 Barbie
07-Jul-06	0116	F	A	101.5	1190	EPY		Salisbury 6708 Collar No #14
07-Jul-06	954	F	A	102.6	1100	REG		Sirtrack 150.240 Collar No #11 Marge
07-Jul-06	894	F	A	102	990	REG		Sirtrack 150.180 Collar No #10 Isabel
07-Jul-06	898	F	A	105.1	1140	REG		Sirtrack 150.280 Collar No #8 Cybil
07-Jul-06	654	M	A	102.8	1240			Sirtrack 150.100 Collar No #1 Angus
07-Jul-06	952	F	A	104.64	1270	EPY	30mm	Sirtrack 150.120 Collar No #12 Annabelle
07-Jul-06	897	M	A	99.95	1100			Sirtrack 150.260 Collar No # 6 Bazzell
07-Jul-06	943	M	A	107.2	1080			
07-Jul-06	1107	F	A	95.2	930	EPY	15mm	
07-Jul-06	899	M	A	112.15	1320			Sirtrack 150.140 "Collar No # 2 Homer"
07-Jul-06	1106	F	A	105.2	1260	EPY	20mm	

Date.	ID	Sex	Age	Pes	Wt	Pouch	No-CR	Notes
07-Jul-06	1101	M	A	104.1	1100			
07-Jul-06	941	M	A	97.0	960			
07-Jul-06	968	M	A	105.0	980			
07-Jul-06	1102	M	SA	97.0	750			
07-Jul-06	1026	M	A	99.0	1010			
07-Jul-06	1103	M	A	104.3	1200			
07-Jul-06	970	F	A	102.4	1120	EPY	18mm	
07-Jul-06	974	F	A	104.0	1300	EPY	40mm	
07-Jul-06	1104	F	A	106.1	1140	EPY	20mm	ripped L ear
07-Jul-06	1152	F	A	99.4	1000	EPY		
07-Jul-06	930	M	A	98.3	1000			Salisbury 6682 "Collar No 07 Ken
07-Jul-06	1031	M	A	108.7	1125			bony ridges base of tail, ? Old
07-Jul-06	1066	F	A	97.0	980	EPY	10mm	
07-Jul-06	853	F	A	104.3	1300	EPY	40mm	
07-Jul-06	1028	F	A	106.8	1100	EPY	10mm	
07-Jul-06	858	M	A	99.1	1000			
07-Jul-06	1151	M	SA	98.0	820			
07-Jul-06	1176	M	A	95.4	950			
07-Jul-06	1177	M	A	101.7	1350			
07-Jul-06	1064	F	A	96.5	970	EPY	20mm	
07-Jul-06	977	M	SA	99.5	825			
07-Jul-06	1067	F	SA	101.7	990	VIR		
07-Jul-06	916	M	A	98.6	1050			abrasions to nose
07-Jul-06	1178	F	A	103	1250	EPY		
07-Jul-06	1179	F	A	98.1	1125	EPY	30mm	
07-Jul-06	1154	F	A	99.01	1200	EPY		
07-Jul-06	1156	F	A	99.93	1020	REG		
07-Jul-06	878	F	A	99.84	1180	EPY		
07-Jul-06	1113	F	A	101.1	1060	EPY	45mm	
07-Jul-06	1114	F	A	97.0	970	REG		
07-Jul-06	900	M	A	99.8	1050			
07-Jul-06	1157	F	A	98.6	920	REG		
07-Jul-06	1153	F	A	98.4	1180	EPY		
07-Jul-06	1155	F	A	90.6	900	EPY		
07-Jul-06	1009	F	A	99.1	810	REG		
07-Jul-06	879	F	A	100.6	1180	EPY		
07-Jul-06	983	M	A	94.4	875			
07-Jul-06	1037	F	A	103.9	1080	EPY		
07-Jul-06	1063	F	A	94.2	1070	EPY	30mm	
07-Jul-06	1158	F	SA	95.9	990	VIR		
07-Jul-06	1097	M	A	104.2	1060			
07-Jul-06	1098	M	SA	96.8	1000			cataract L eye
07-Jul-06	1061	M	A	104.9	1170			
07-Jul-06	1062	M	SA	101.0	970			
07-Jul-06	1099	M	A	105.7	1220			
07-Jul-06	1060	M	SA	100.7	870			
07-Jul-06	951	M	SA	96.5	880			
07-Jul-06	1059	M	A	102.1	1100			
07-Jul-06	986	M	A	100.8	1020			
07-Jul-06	709	M	A	107.1	1200			hard nobbly middle toe on R

Date.	ID	Sex	Age	Pes	Wt	Pouch	No-CR	Notes
07-Jul-06	1100	M	A	95.6	970			
11-Jul-06	0095	M	A		1080			Sirtrack 150.220 Collar No # 4 target trapped 11/7 George
02-Aug-06	1129	M	A	103.1	1060			
02-Aug-06	1134	M	A	99.95	1100			
02-Aug-06	965	F	A	104.5	1280	EPY	40mm	
02-Aug-06	859	M	A	100.8	1250			
02-Aug-06	1136	M	A	101.2	1180			
02-Aug-06	1119	M	A	98.9	1110			
02-Aug-06	1040	F	A	102.2	1340	EPY		"Collared No 10 Isabell
02-Aug-06	996	F	A	104.7	1100	EPY	40mm	
04-Aug-06	1065	F	SA					been at Perth Zoo getting eye treated

Note: apart from the two animals in April acquired from carer Liz Appelt, all Woylies released at Paruna came from Karakamia Wildlife Sanctuary. They were released near the Nissen Hut to supplement previous populations released in the same vicinity (Figure 1).

Table 3: Details of Quenda translocated to Paruna in 2006.

Date	Tag Type	ID	ID2	Sex	Age	Head	Pes	Wt	Pouch	Notes
07-Feb-06	P	0578					47.9	345		hand reared by Penny Anderson from Mundaring area
02-Aug-06	K	1128		F	A		50.9	600	VIR	
02-Aug-06	K	1130		M	A		61.41	1280		
02-Aug-06	K	1131		M	A		62.7	1150		
02-Aug-06	K	1138		M	A		59.6	860		
02-Aug-06	K	1141		F	A		51.5	680	EPY	
11-Oct-06	WB	3212	3213	M	A	84.9	62.8	1060		
11-Oct-06	WB	3210	3211	F	A	76.8	54	570	2MPY	
11-Oct-06	WB			M	J	63	47.4	275		not tagged too small
11-Oct-06	WB	3214	3215	M	A	88.8	63.8	1070		
11-Oct-06	WB	3216	3217	M	A	86.6	60	1000		
11-Oct-06	WB	3218	3219	F	A	75.6	55.1	610	1EPY	
11-Oct-06	WB	3220	3221	M	A	108.2	66.3	1540		missing tail
11-Oct-06	WB	3224	3225	M	A	89.3	54.1	820		patchy fur
11-Oct-06	WB	3226	3227	M	A	82.2	63.2	880		tip of tail missing, patchy fur
11-Oct-06	WB	3228	3229	F	A	83.5	56.5	830	2MPY	fresh cur above r eye
11-Oct-06	WB	3230	3231	F	A	80.7	52.8	690	2MPY	
11-Oct-06	WB	3232	3233	M	A	89.5	64.7	1130		missing tip of tail
11-Oct-06	WB	3234	3235	F	A	83	61	860	2MPY	
11-Oct-06	WB	3243	2344	M	A	82	62.7	880		tail 15mm
11-Oct-06	WB	3241	2342	M	A	93.7	67.8	1600		
11-Oct-06	WB	3239	2340	M	A	91.1	65.7	1400		
11-Oct-06	WB	3238		M	A	94.8	67	1500		dirty ears
11-Oct-06	WB	3222	3223	F	A	85.4	54.4	910	EPY	
11-Oct-06	WB	3236	3237	F	A	75.1	52.5	890	MPY	dirty ears
17-Oct-06	K	1256		M	A		62.3	840		
17-Oct-06	K	1275		F	A		51.4	550	VIR	
17-Oct-06	K	1251		M	A		61.4	1370		

Date	Tag Type	ID	ID2	Sex	Age	Head	Pes	Wt	Pouch	Notes
17-Oct-06	K	1252		M	SA		51.1	420		
17-Oct-06	K	1253		F	A		58.9	900	EPY	
17-Oct-06	K	1255		F	A		58.2	850	EPY	
17-Oct-06	K	1254		F	SA		44/3	210	VIR	
18-Oct-06				M	SA		45.3	250		not tagged too small
18-Oct-06				F	SA		39.2	200	VIR	not tagged too small
19-Oct-06	P	0552		F	A		55.5	850	EPY	
19-Oct-06				M	SA		44	260		not tagged too small
19-Oct-06				M	SA		41	190		not tagged too small

* Source of Animals: Feb – carer, Aug – Karakamia and Oct – from development site in Kewdale. These were released on the "Hart" Block at Paruna in the vicinity of previous releases.

Methods

Trapping

Data on vertebrates at Paruna has been collected via systematic trapping as part of the annual trapping program. This program incorporates 140 Sheffield cage traps along a set transect and 13 pit sites consisting of four pits, four large and four medium Elliott traps at each site, which is conducted in Autumn each year. Each site is trapped for three consecutive nights. Targeted cage trapping at the release sites is also conducted during spring using fifty cage traps at the Woylie release site over three consecutive nights. Additional target trapping as part of Andrew Hide's UWA honours project (see Karakamia 2006 DEC report also) was conducted during 2006. This is the principle monitoring technique for monitoring Woylies and Quenda. Figure 1 shows the location of transect lines, pit sites and release sites. Table four outlines trapping effort for 2006.

Table 4: Trapping effort at Paruna in 2006.

Trap Type	No. Traps	No. Nights	Total
Pit Trap	52	6	312
Medium Elliott Trap	52	6	312
Large Elliott Trap	52	6	312
Sheffield Trap	Up to 140	26	2474
Tammar Trap	Up to 4	6	18
Total			**3428**

Radio-tracking

Eleven animals were radio-collared for the July 2006 release and a further individual in the August release as part of Andrew Hide's honours project. These animals were previously radio-collared at Karakamia to determine home range. They were periodically radio-tracked to determine survival and dispersal from the release site. Nine woylies were fitted with Sirtrack radio-collars incorporating two stage transmitter, leather strap, whip aerial and mortality function. A further two were fitted with Biotelemetry collars incorporating a single stage transmitter and brass loop. Due to an early mortality, one of the Sirtrack collars became available and was fitted to an animal for the second release in August.

Spotlighting

A spotlight drive transect has been used as part of monitoring at Paruna since 2002. This transect is 7 km in length, taking approximately one hour to complete, and is conducted for three consecutive nights

every three months. The route incorporates both Woylie and Tammar release sites and a frog call site (Figure 1). The spotlight transect was established for comparison with other AWC sanctuaries and DEC reserves.. Spotlighting is the principle monitoring technique for Tammar Wallabies at Paruna.

Opportunistic observations

Sitting and observing is the main monitoring technique for Rock Wallabies where observations are undertaken at dusk or dawn, at known sites identified by the presence of fresh scats. Usually four observers were seated with binoculars adjacent to sites for approximately an hour, with all observations recorded. Notes are made on presence of tags, collars, markings, sex and pouch condition (where possible).

Other observations of interest are 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 has been undertaken by photographic recordings at 17 established photo points at six monthly intervals since 1999. These photographs are available from AWC. Intensive species counts in all quadrats are undertaken every five years. An extensive field herbarium has been established with more than 270 comleted specimens.

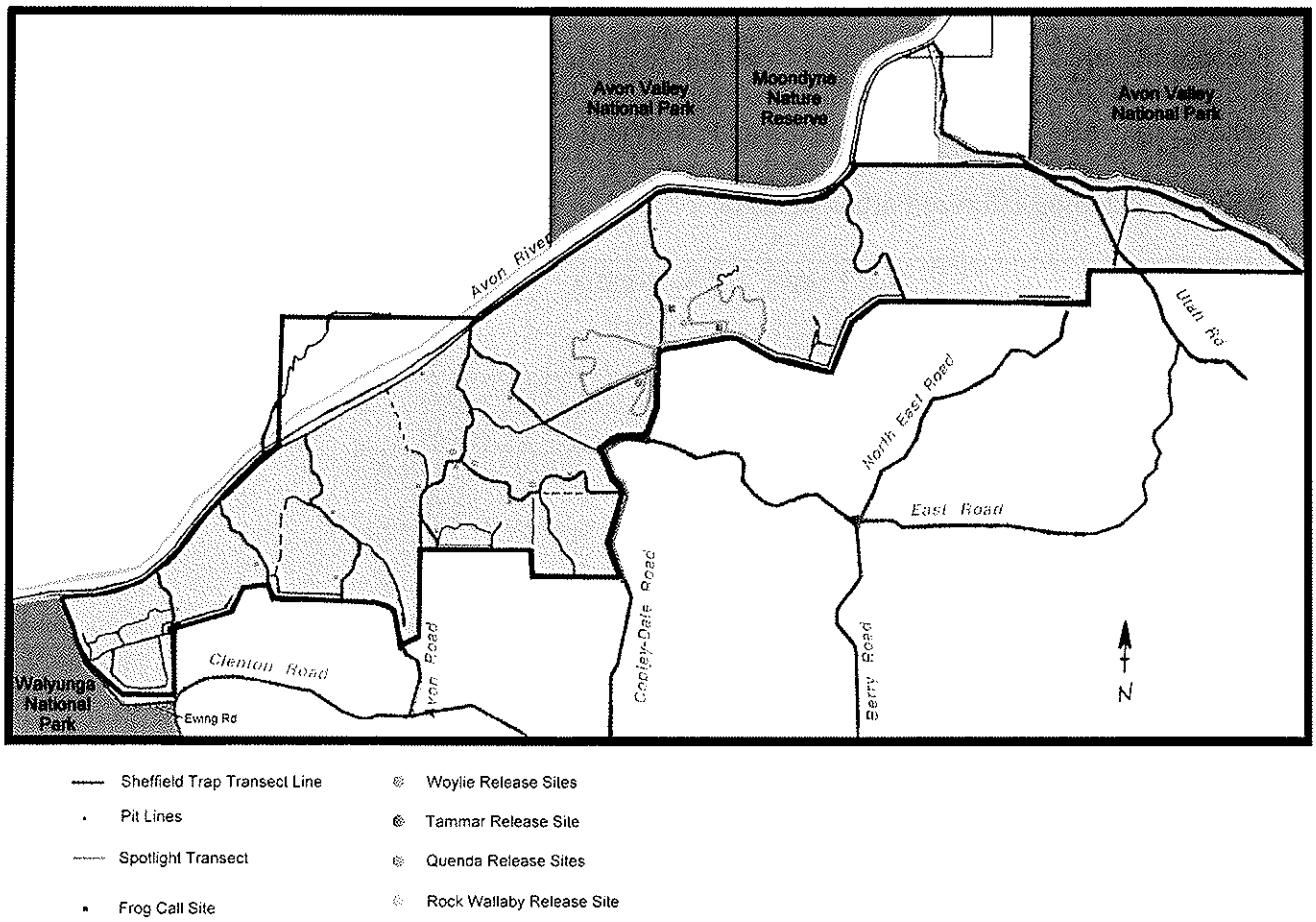


Figure 1: Spotlight drive transect route and mammal release sites at Paruna Wildlife Sanctuary

Results and discussion

Trapping

Table 5: Trapping results for 2006 at Paruna.

Species	**No. Trapped**
Woylies	622 (Inc 455 retraps)
Tammar	4 (Inc 1 retrap)
Chuditch	45 (Inc 28 retraps)
Quenda	116 (Inc 38 retraps)
Brushtail Possum	5 (Inc 1 retrap)
Echidna	3
House Mouse	16
Raven	5
Blue Wren	1
Magpie	2
Bobtail	21
Menetia greyii	2
Morethia obscura	1
Diplodactylus granariensis	2
Total	**845**
Trap nights	**3428**
% Trap success	**24.6%**

A total of 845 vertebrates were trapped at Paruna during 2006 (Table 5). Figure 1 and 2 display mammal trapping results since 2000. 2006 saw an increase in the number of mammals trapped, and this result is largely due to the Woylie release in July 2006 and extensive targeted trapping following the release as part of Andrew Hide's UWA Honours project. Woylies make up the majority of the mammals trapped in Paruna (Figures 1 and 5) and were therefore graphed separately. Chuditch were trapped for the first time in 2002 though never translocated into the sanctuary, and have been trapped frequently since this date. The number of Quenda trapped in the sanctuary continues to increase, including a number of new individuals. This population has been further supplemented with the release of more than 30 Quenda late in 2006, but most of these were released after the trapping so did not affect the improved trapping results.

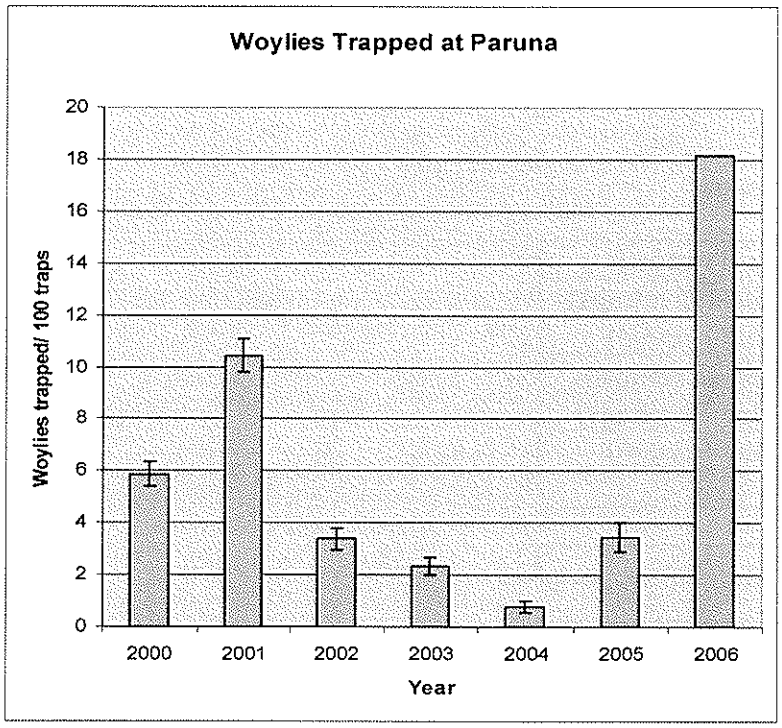


Figure 1: Woylies trapped at Paruna since 2000. Note that the error bars for 2006 are not visible as they are very small due to the large sample size.

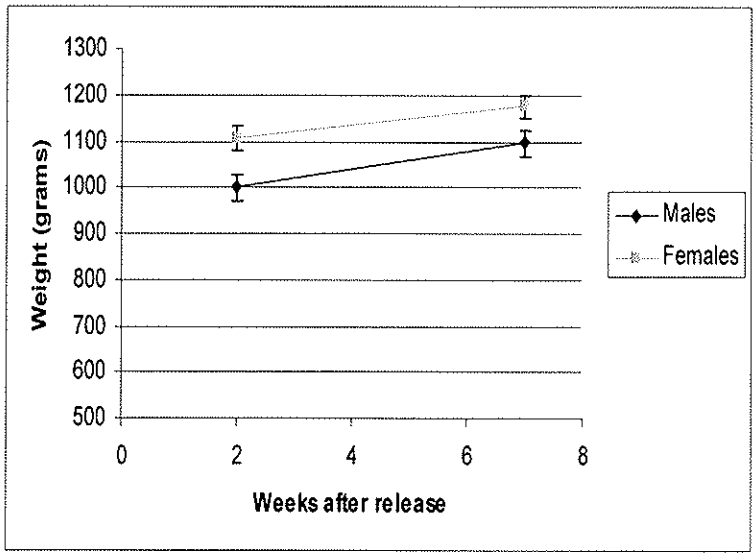


Figure 2: Weight of Woylies post-release at Paruna.

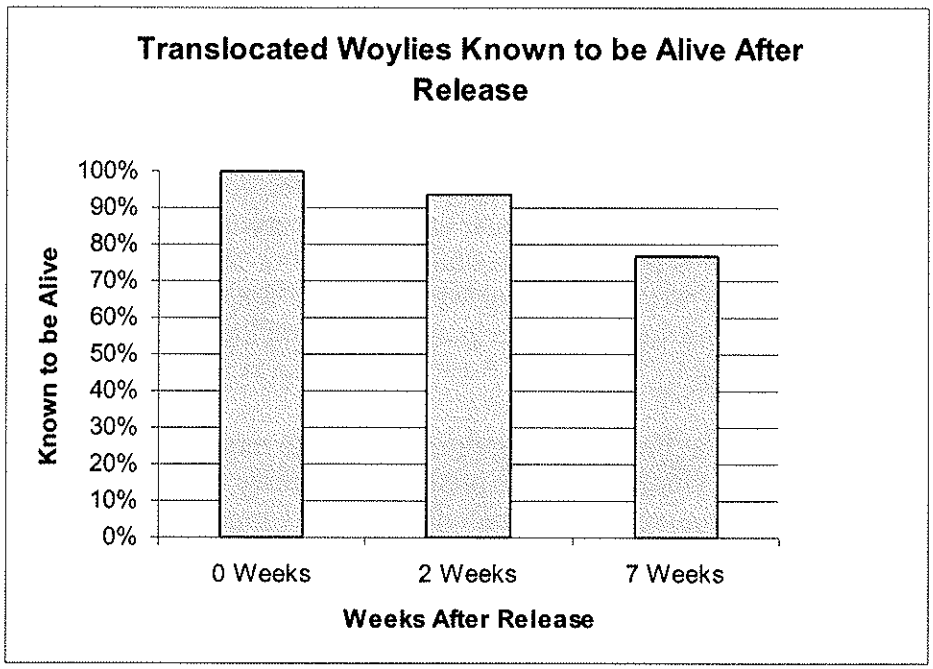


Figure 3 – Woylies known to be alive after release.

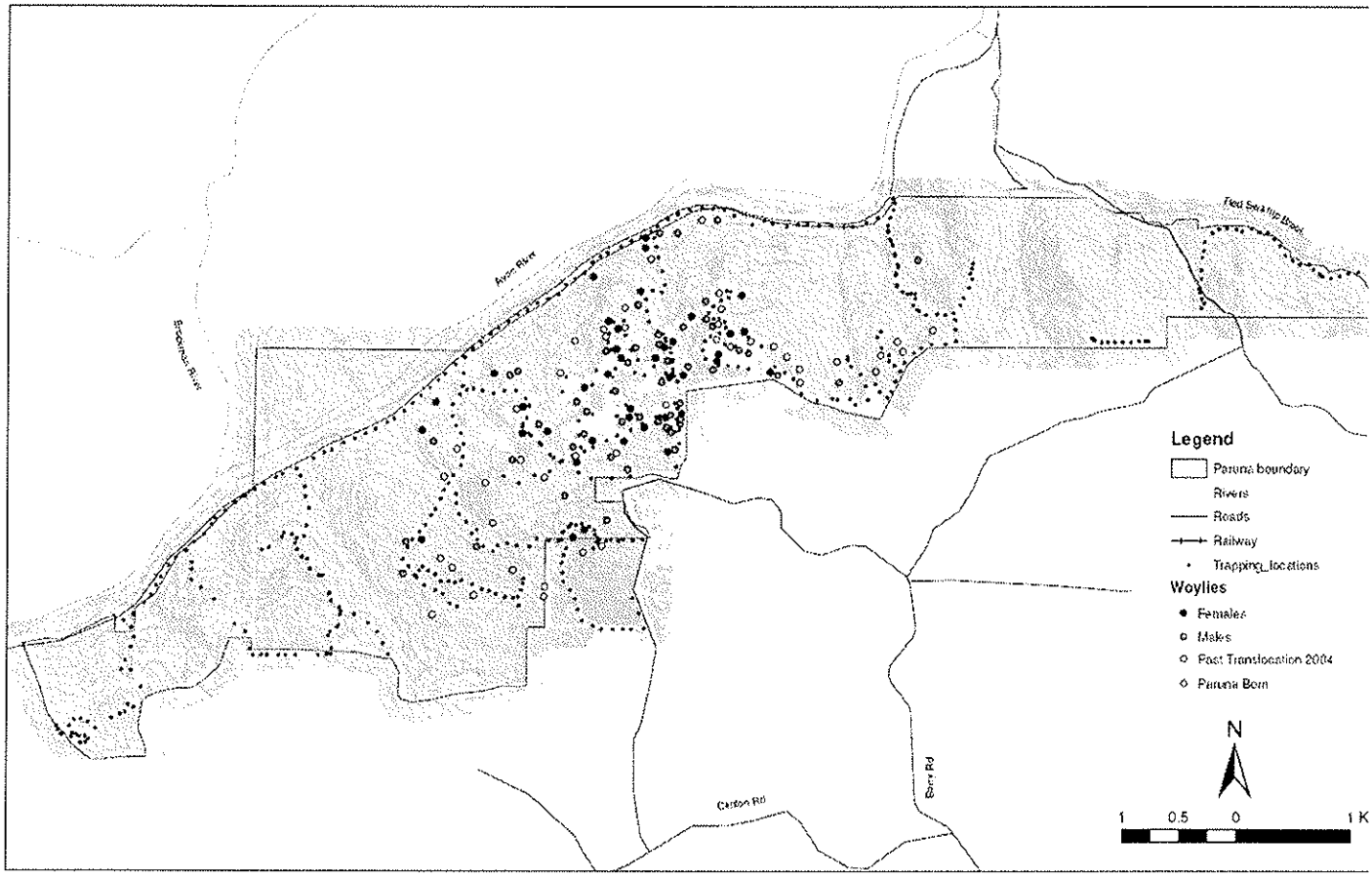


Figure 4: Movements of radio-tracked Woylies trapped at Paruna since July 2006 release.

Woylie research

Additional woylie data was collected by Andrew Hide during his honours project (Figures 3,4 and 5). Figure 3 shows a significant increase in Woylie weights two months after release, which is not surprising as the density of Woylies in Paruna was significantly lower than Karakamia, so it is likely that additional food resources are available. Figure 4 shows the known to be alive population two months post-release which shows a loss of 25% of animals. This loss was supported by the radio-tracking data which saw a similar 25% predation rate in the two months. If the graph were extrapolated it is likely that the number known to be alive after two years, even with recruitment, would not have increased exponentially. The trapping data supports this assumption as very few animals (only five from the 2004 release of fifty animals) from previous releases were captured despite extensive trapping efforts in 2006. Figure 5 shows trap locations, founders, previous releases and Paruna born animals.

Radio-tracking

Three of the 12 radio-collared animals died at Paruna during the three month monitoring period. All of these casualties were caused by predation. One female was predated only three days after the release. The body, with intestinal tract carefully removed intact and only the heart ingested, was discovered cached under a tree (with no signs of digging) and covered in leaves, suggesting that fox or cat predation was the likely cause of death. Two days later another female was predated. The remains of the body were not found; only the collar and fur spread two metres in either direction. The collar was found in the open paddock, five metres from the edge of the bush and with pin prick marks on the side of the collar. The predator responsible was thought to be a bird of prey, due to the style of fur plucking and pin prick holes, however a cat or fox could also have been responsible.

No more animals were predated for a further ten weeks until late September when a male was found dead. The location of this kill was in close proximity to the first kill and the remains of two additional Woylies and possibly a Tammar Wallaby were found within five metres of the dead collared animal. It was consistent with a fox or cat kill.

Two collars failed, both were Biotelemetry collars. One was opportunistically trapped and the collar was removed and the other had not been re-trapped since the collar failure. Nine of the eleven collars (one used twice) have now been retrieved and attempts to retrieve the final two collars will continue.

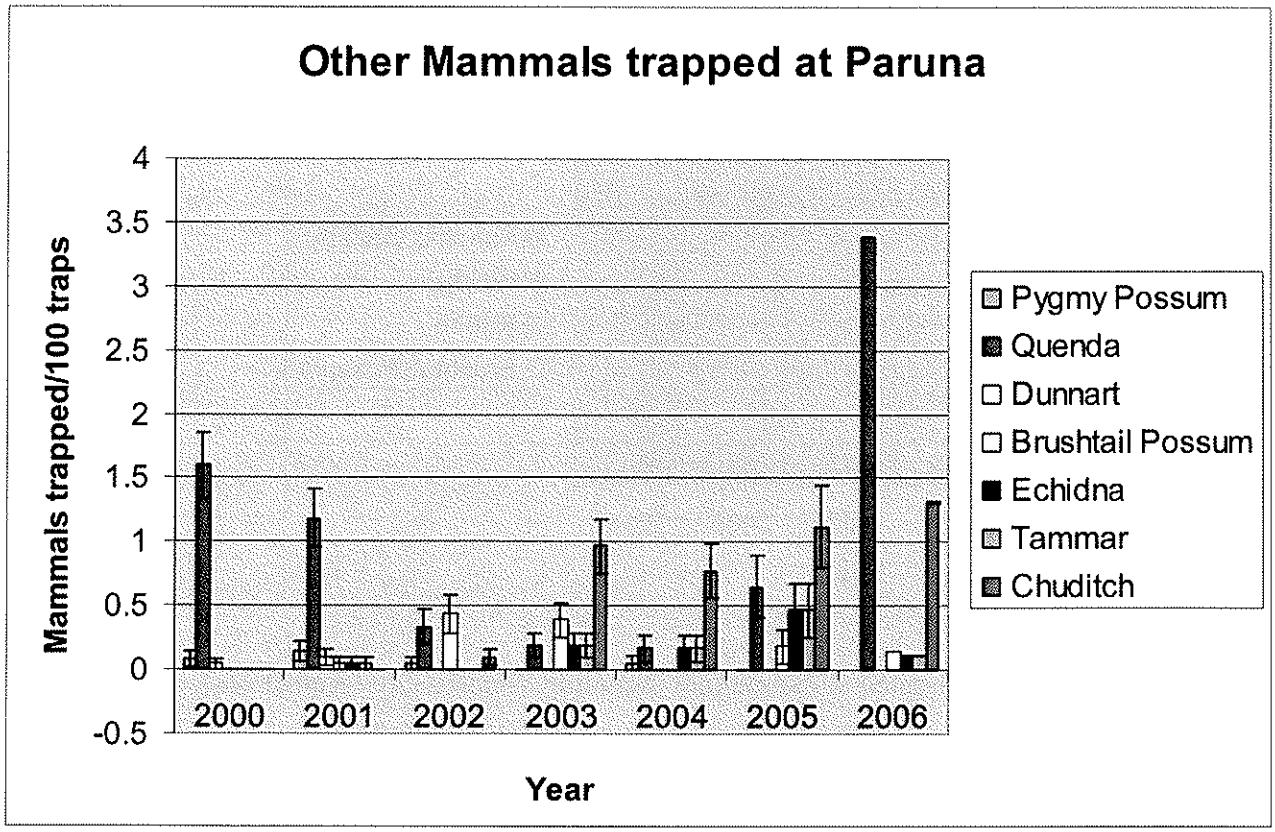


Figure 4: Other mammals trapped at Paruna since 2000. Note that the error bars for 2006 are not visible due to the large sample size.

Spotlighting

Western Grey Kangaroos were by far the most common animal observed during spotlighting drive transects at Paruna (Figures 3 and 4) and were therefore graphed separately. It is encouraging to see Tammar Wallaby and Woylie sightings increasing while rabbit numbers are declining. Numbers of all mammals except Western Grey Kangaroos are exceedingly small compared to the results from Karakamia Sanctuary. (see Karakamia DEC report December 2006). A high number of Western Grey Kangaroos was observed with numbers still increasing during 2006 (Figure 4).

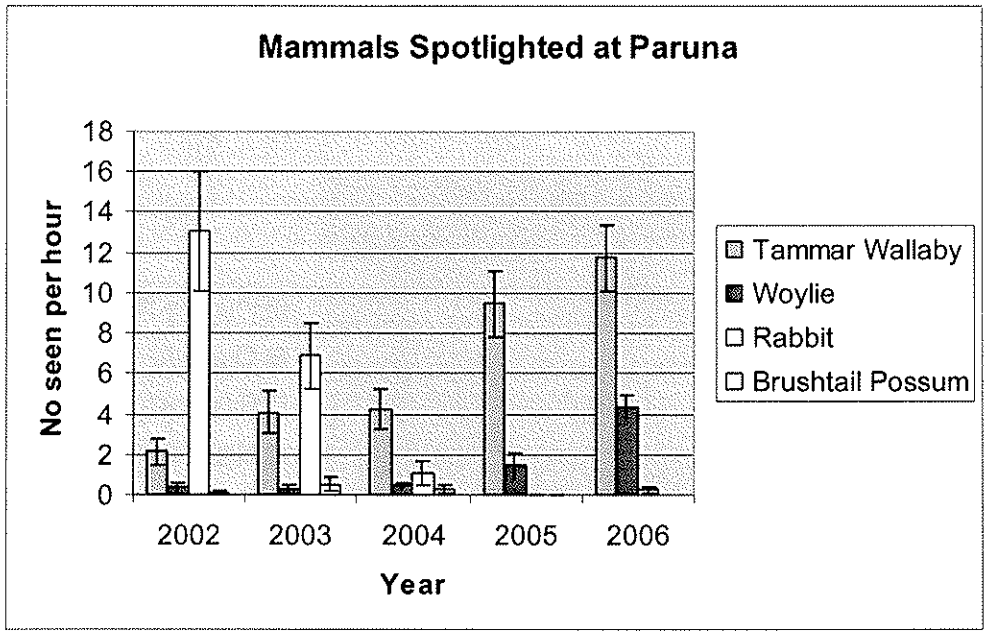


Figure 3: Mammals spotlighted at Paruna (not including Western Grey Kangaroos).

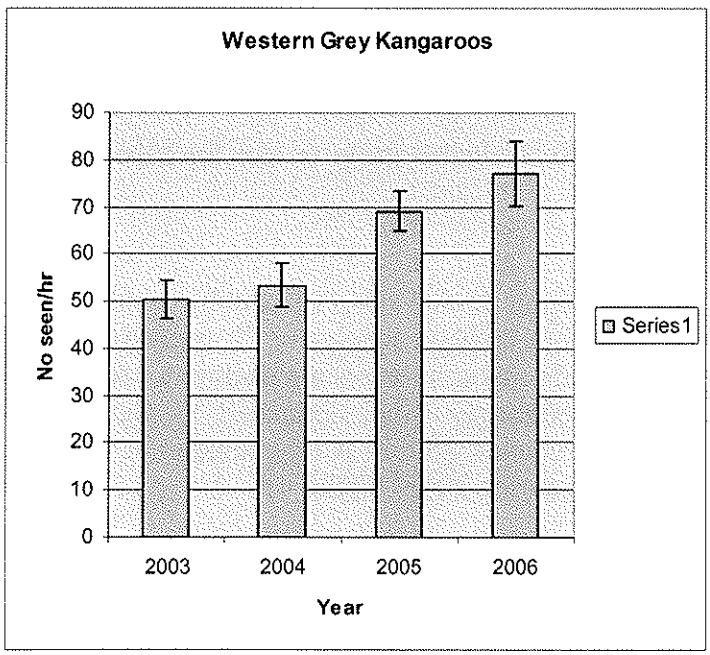


Figure 4: Western Grey Kangaroos spotlighted at Paruna in 2006.

Opportunistic observations

Rock Wallaby sightings increased at Jo's Cave in 2006 though only three observation periods were made at the outcrop during 2006 (Figure 5). During 2005 it was noted that Jo's Cave was not being used for a period by the Rock Wallabies as no fresh droppings were noted, but they have obviously moved back in as fresh droppings and wallabies were sighted on three occasions in 2006. Other monitoring included intense searches in the region of the nearby rock outcrops that still show fresh

droppings. Three females were observed with obvious pouch young in November. Goat droppings were not recorded at the outcrop and there were no signs of any goat activity at this location.

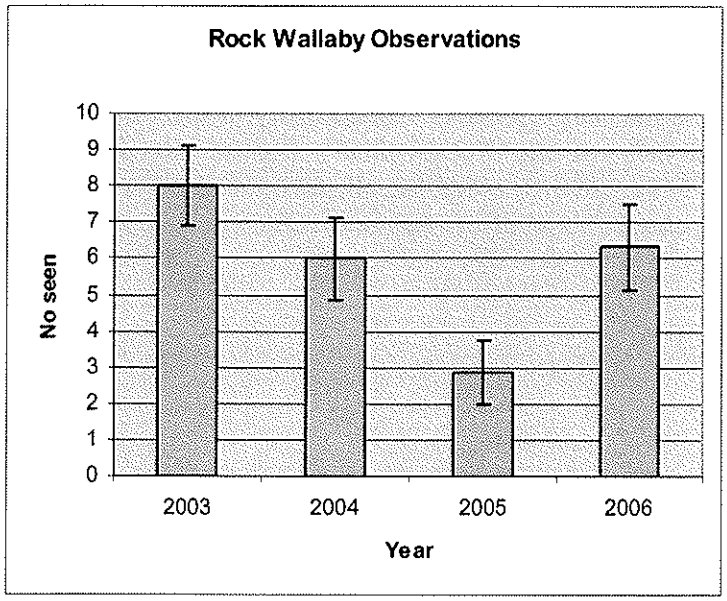


Figure 5: Rock Wallaby sightings at "Jo's Cave".

Other Observations

Amphibians

Up to seven species of frog were recorded calling during the wetter months: *Crinia georgiana, Crinia glauerti, Crinia pseudinsignifera, Litoria moorei, Litoria adelaidensis* and *Limnodynastes dorsalis* are all frequently heard on the spotlight transect. *Helioporus barycragus* is often heard in other locations and was also trapped on wet nights in autumn. Due to the poor rainfall this year calling has been less vigorous than previous years.

Birds

Nocturnal Birds are often observed during the spotlight transect, in particular Tawny Frogmouths and the occasional Boobook Owls. White-striped Mastiff Bats are frequently seen or heard.

Two new birds were added to the species list by staff in 2006: Baudin's Cockatoo and the Stubble Quail. Baudin's Cockatoo, a priority species, was confirmed by the presence of feeding marks on the Marri nuts distinguishing them from Carnaby's Cockatoo. They have also been observed near the Nissen Hut feeding on *Banksia grandis* flowers.

Wedge-tailed Eagles laid two eggs and raised one young on an old nest north-west of the Nissen Hut. Prey animals included piglets, emu chicks, young kangaroos, rabbits, ravens and a Baudin's Cockatoo. Peregrine Falcons have been observed on two occasions perched in a dead Powderbark north of Gate 10. A pair of Sparrowhawks built a nest near Blood Track, north of Gate 4 and laid three eggs.

Western Yellow Robins were heard calling near the Nissan hut on several occasions. Rufous Tree-creepers were observed frequently in singles or pairs in Wandoo and Powderbark

woodland near Gate 8. Two Yellow-rumped Thornbill nests were found in *Dryandra sessilis* thickets west of the Nissan Hut

Weeds

Previous wildfire activity has resulted in a significant increase in invasive weeds in the western section in areas that were previously grazed prior to AWC acquisition, dominated by Patterson's Curse *Echium plantagineum*, Cape Tulip *Homaria sp* and Wild Oats *Avena sp*. Noteworthy is the establishment of eastern wheat-belt weed species at the vicinity of the Rock-wallaby habitat site Jo's Cave. A concentrated effort during spring 2005 was undertaken to eradicate all introduced plants surrounding this site. To date this has been successful. A concentrated effort was undertaken during spring 2006 on Cape Tulip at the west end of Paruna.

Australian Wildlife Conservancy

PARUNA WILDLIFE SANCTUARY Jan - Nov 2007

Introduction

Paruna Wildlife Sanctuary is located in the Avon Valley east of Perth, and was established by the Australian Wildlife Conservancy (AWC) in 1998 to create a 2,000 ha wildlife corridor between two regionally significant National Parks: Walyunga National Park to the southwest and Avon Valley National Park to the northeast.

Paruna Wildlife Sanctuary is in the 'Darling System', at the northern extremity of the Northern Jarrah Forest in the southwest of Western Australia. The majority of the Paruna Sanctuary consists of pristine vegetation, dominated by woodlands of Wandoo and Powderbark though some areas of the western blocks have been grazed in the past. There is a great diversity of habitats present within the sanctuary due to the complex geology and topography.

With land acquisition commencing in 1994, Paruna Wildlife Sanctuary was the second property acquired by AWC. One of the primary aims was to link the two National Parks. AWC consolidated a number of properties to provide an unbroken corridor that extends 14 km between the two National Parks. The 2,000 ha Paruna Wildlife Sanctuary, in conjunction with the adjacent government conservation reserves, has created a combined area of approximately 19,500 ha, which is dedicated to nature conservation. AWC proposed to re-establish the mammal fauna that had once flourished in the region, and in cooperation with the Department of Environment and Conservation (DEC), the entire area is now managed for this purpose.

After initial surveys in 1996 to determine species present and ongoing extensive feral animal control across the sanctuaries and national parks, four mammal species were reintroduced to Paruna and adjacent National Parks from 2000: Woylie (2000), Quenda (2000), Tammar Wallaby (2001) and Black-flanked Rock Wallaby (2001). These populations have been supplemented several times since the initial releases. The existing population of Brushtail Possums was also supplemented and Chuditch have recolonised the area.

Previous Reports

Individual reports as part of on-going monitoring protocol between AWC and DEC for each of the four reintroduced species have been prepared every six months since release. After discussions with DEC, it was determined that these translocated species reports be replaced with a singe annual report for each sanctuary reflecting population establishment and trends over time.

Table 1: Summary of releases of threatened mammals at Paruna.

Species	2000	2001	2002	2003	2004	2005	2006	2007	Total
Woylie	73	61	42	1	50	2	98	0	**327**
Quenda	56	1	1	0	33	3	37	0	**131**
Tammar Wallaby	0	24	20	0	0	3	0	0	**47**
Black-flanked Rock Wallaby	0	10	12	21	0	15	0	19*	**77**
Brushtail Possum	2	1	8	26	50	0	1	0	**88**

* During this reporting period, see details below

Source of Animals
Woylies – Karakamia Wildlife Sanctuary, plus a small number released from carers.
Quenda – Karakamia, Perth development sites, plus a small number released from carers.
Tammar Wallabies – Tutanning Nature Reserve.
Black-flanked Rock Wallabies - Mt Caroline, and Querekin Rock (also called The Granites).
Brushtail Possums – Karakamia Wildlife Sanctuary, plus a small number released from carers.

Table 2: Black-Flanked Rock Wallabies Released in 2007.

Date	Tag	ID	Sex	Age	Pes	Weight	Pouch	Notes
19/04/2007	MEL	007	M	A	150.5	4425		translocated from Querekin Rocks
19/04/2007	MEL	010	F	A	132.7	2675	EPY	translocated from Querekin Rocks
19/04/2007	WBL	1298	M	A	143.7	4250		translocated from Querekin Rocks
19/04/2007	WBL	1295	M	A	148.6	4250		translocated from Querekin Rocks
19/04/2007	MEL	064	F	A	136.2	3650		translocated from Querekin Rocks
19/04/2007	MEL	002	F	A	130.2	3200	EPY	translocated from Querekin Rocks
19/04/2007	MEL	021	M	A	141.5	4075		translocated from Querekin Rocks
19/04/2007	MEL	061	M	A	144.7	3450		translocated from Querekin Rocks
19/04/2007	WBL	1302	F	A	131.0	3050	EPY	translocated from Querekin Rocks
19/04/2007	MEL	053	F	A	135.2	4175	EPY	translocated from Querekin Rocks
5/04/2007	WBL	1251	M	A	140.1	4300		translocation from Mt Caroline
5/04/2007	WBL	1204	M	A	142.3	3900		translocation from Mt Caroline
5/04/2007	WBL	1227	M	A	144.9	3300		translocation from Mt Caroline
5/04/2007	WBL	1199	M	A	137.1	3400		translocation from Mt Caroline
5/04/2007	WBL	1205	M	A	140.8	4300		translocation from Mt Caroline
5/04/2007	WBL	1224	M	A	135.9	3200		translocation from Mt Caroline
5/04/2007	WBL	840	M	A	145.9	4200		translocation from Mt Caroline
5/04/2007	MEL	473	M	A	145.8	4800		translocation from Mt Caroline
8/05/2007	MEL	023	M	A	137.8	3900		injured during trapping 19/4 at Querekin Rocks, taken to Liz Appelt and released when recovered

Methods

Trapping

Data on vertebrates at Paruna has been collected via systematic trapping as part of the annual trapping program. This program incorporates 140 Sheffield cage traps along a set transect and 13 pit sites each consisting of four pits, and four large and four medium Elliott traps, which is conducted in autumn each year. Each site is trapped for three consecutive nights. This is the principle monitoring technique for Woylies and Quenda. Figure 1 shows the location of transect lines, pit sites and release sites. Table 3 outlines trapping effort for 2007.

Table 3: Trapping Effort at Paruna in 2007.

Trap Type	No. Traps	No. Nights	Total
Pit Trap	52	6	312
Medium Elliott Trap	52	6	312
Large Elliott Trap	52	6	312
Sheffield Trap	6 x 140 1 x 30	7	870
Tammar Trap	2	1	2
Total			**1808**

Spotlighting

A spotlight drive transect has been used as part of monitoring at Paruna since 2002. This transect is 7 km in length, taking approximately one hour to complete, and is conducted for three consecutive nights every three months. The route incorporates both Woylie and Tammar release sites and a frog call site (see 2006 report for route). The spotlight transect was established for comparison with other AWC sanctuaries and DEC reserves. Spotlighting is the principle monitoring technique for Tammar Wallabies at Paruna.

Opportunistic observations

Sitting and observing is the main monitoring technique for Rock Wallabies where observations are undertaken at dusk or dawn, at known sites identified by the presence of fresh scats. Usually four observers are seated with binoculars adjacent to sites for approximately an hour, with all observations recorded. Notes are made on presence of tags, collars, markings, sex and pouch condition (where possible).

Other observations of interest are 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 has been undertaken by photopoints at 5 vegetation sites plus an additional 12 rehabilitation sites at six monthly intervals since 1999. These photographs are stored at Karakamia. Intensive species counts in all quadrats are undertaken every five years. An extensive field herbarium has been established with more than 270 completed specimens.

Results and discussion

Trapping

A total of 198 vertebrates were trapped at Paruna during 2007 (Table 4).

Table 4: Trapping results for 2007 at Paruna.

Species	No. Trapped
Woylies	69 (inc. 32 retraps)
Tammar	1
Chuditch	17 (inc. 7 retraps)
Quenda	47 (inc. 13 retraps)
Brushtail Possum	7 (inc. 1 retraps)
Pygmy Possum	2
Grey-Bellied Dunnart	1
House Mouse	2
Raven	14
Magpie	6
Bobtail	26
Hemiergis initialis	1
Menetia greyii	1
Morethia obscura	2
Gecko (not ided)	1
Pseudophryne guentheri	1
Total	**198**
Trap nights	**1808**
% Trap success	**11.0%**

Figure 1 and 3 display mammal trapping results since 2000. Note that 2006 saw an increase in the number of mammals trapped, and this result is largely due to the Woylie release in July 2006 and extensive targeted trapping following the release as part of Andrew Hide's UWA Honours project.

Woylies made up the majority of the mammals trapped in Paruna (Figure 1) and were therefore graphed separately. Chuditch were trapped for the first time in 2002 though never translocated into the sanctuary, and have been trapped frequently since this date. The number of Quenda trapped in the sanctuary continues to increase, including a number of new individuals. This population has been further supplemented with the release of more than 30 Quenda late in 2006, but most of these were released after the trapping so did not affect the improved trapping results.

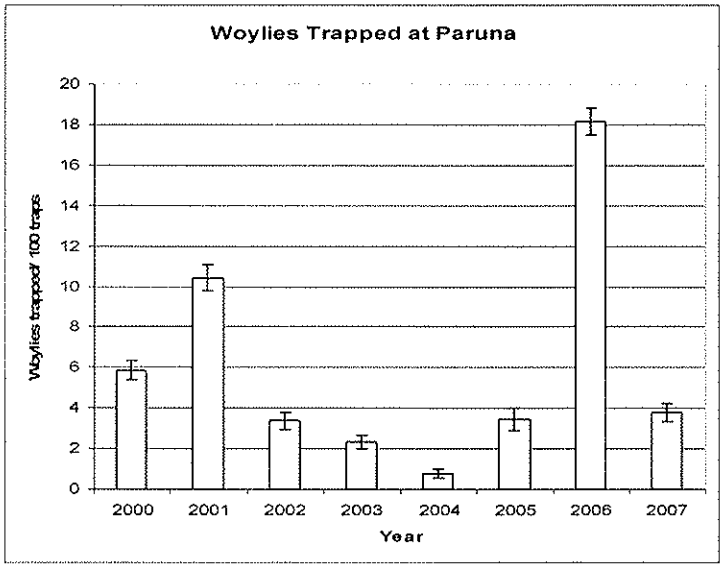


Figure 1: Woylies trapped at Paruna since 2000.

Woylie research

Figure 2 shows the number of translocated woylies (n = 98 in July 2006) known to be alive 14 months after release. Nine of the founders were trapped during the October 2007 trapping. This low trap rate supports the suggestion that animals are subject to predation in the months after translocation. Note that only the standard annual AWC monitoring was conducted in 2007 and none of the additional trapping conducted as part of Andrew Hide's Honours project in 2006.

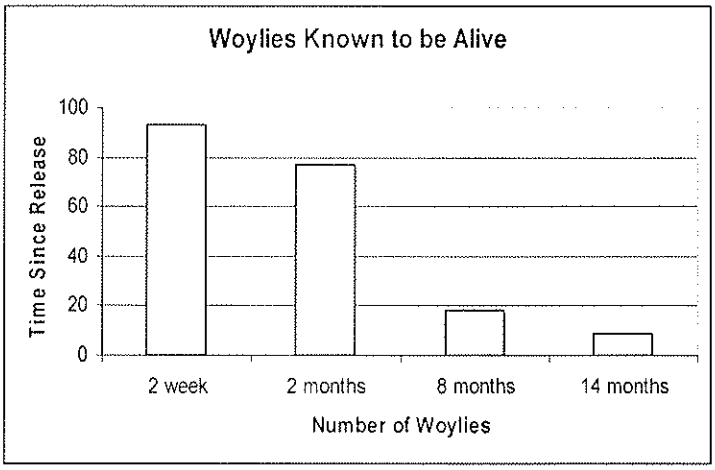


Figure 2: Woylies known to be alive at Paruna after translocation of 98 from Karakamia in July 2006.

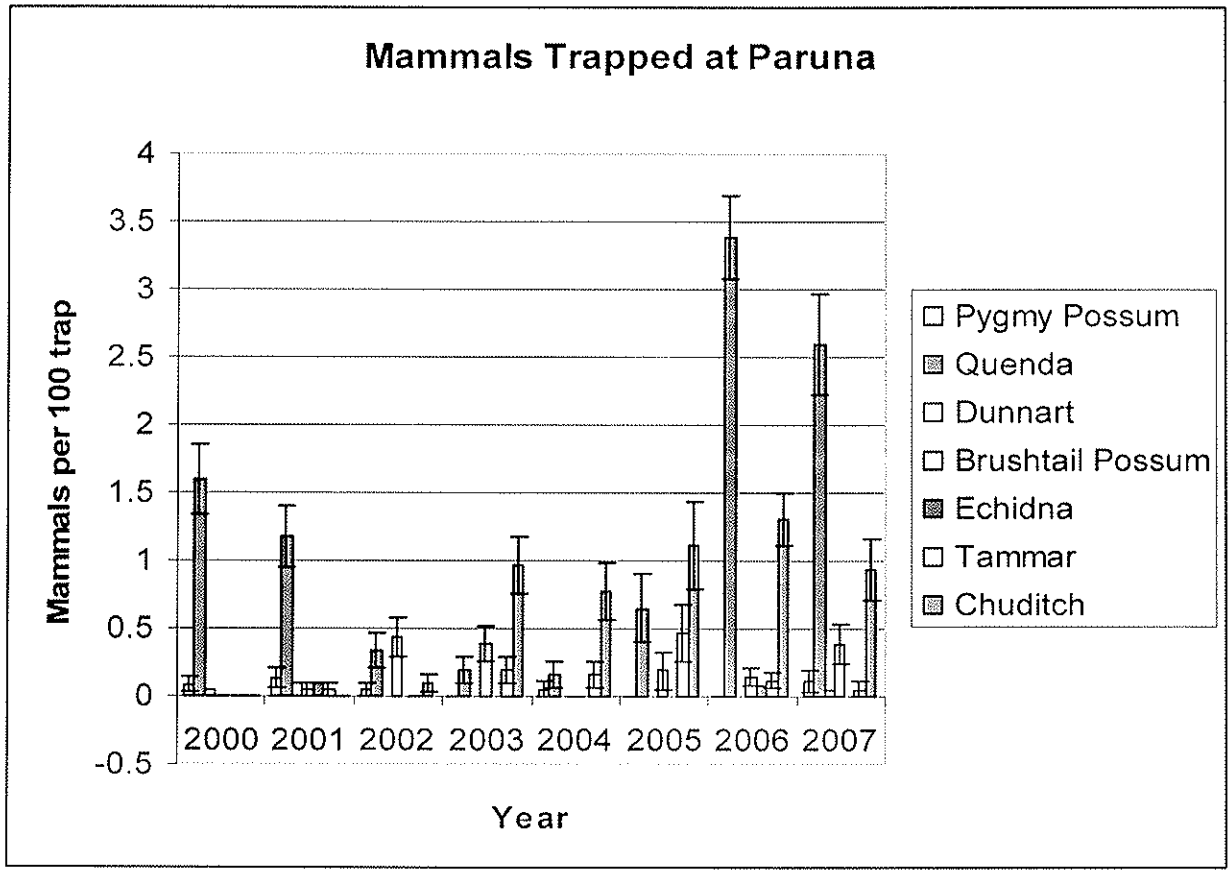


Figure 3: Mammals (other than Woylies) trapped at Paruna since 2000.

Spotlighting

Western Grey Kangaroos were by far the most common animal observed during spotlighting drive transects at Paruna (Figures 4 and 5) and were therefore graphed separately. It is encouraging to see Tammar Wallaby and Woylie sightings have increased while rabbit numbers have declined. A high number of Western Grey Kangaroos was observed with numbers still increasing during 2006 but a large drop was observed in 2007. This decline in survival is likely to be due to the very dry summer and autumn and lack of feed available to the kangaroos (Figure 5). The Woylies are still shown in high numbers in 2007 but this was due to high numbers sighted in February 2007, while all the other spotlight transects this year resulted in few or no Woylie sightings.

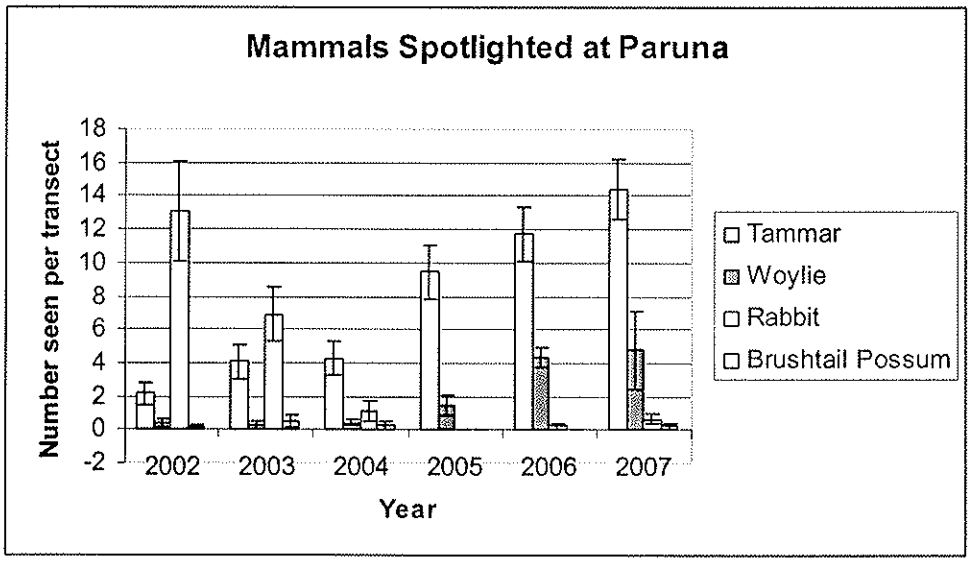


Figure 4: Mammals spotlighted at Paruna (not including Western Grey Kangaroos).

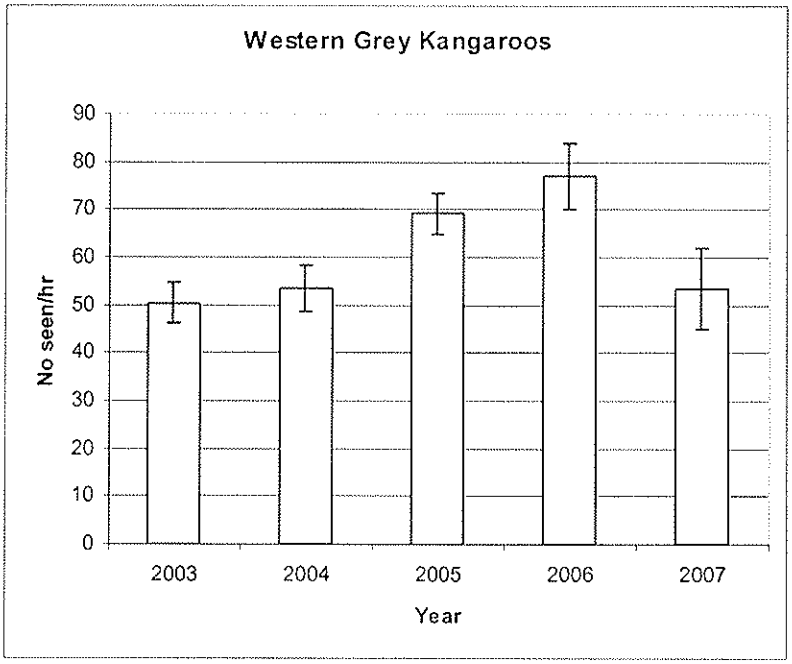


Figure 5: Western Grey Kangaroos spotlighted at Paruna in 2007.

Opportunistic observations

Most monitoring for Black-flanked Rock-wallabies consisted of intense searches around rock outcrops and water tanks. Many droppings were observed (both fresh and old) and several adults and young individuals were observed. One wallaby was found dead with its head missing, typical of fox/cat predation but no identification tags were found. Goat droppings were not recorded at the outcrop and there were no signs of any goat activity at this location.

Other Observations

Mammals

White-striped Mastiff Bats are frequently seen or heard.

A visitor to Paruna sighted a "Striped Squirrel" in broad daylight dashing into a hollow log which by the size and description is likely to be a numbat at the west end near the boundary with Walyunga on 2/9/2007.

Three juvenile Pygmy Possums were found near the residence at Paruna in August in the stump of a dead grasstree.

Amphibians
Up to seven species of frog were recorded calling during the wetter months: *Crinia georgiana, C. glauerti, C. pseudinsignifera, Litoria moorei, L. adelaidensis* and *Limnodynastes dorsalis.* All were frequently heard on the spotlight transect. *Helioporus barycragus* was heard briefly during autumn but due to poor autumn rains was not heard frequently. Other winter breeding species called strongly during the latter wet months and many juvenile *L. adelaidensis* were found in the Nissen Hut dam.

Birds
Red-eared Firetail Finches were heard calling at several locations and a nest was discovered in a Marri sapling confirming their presence and that they were breeding at the sanctuary. This is a north easterly extension of the known range of this finch.

The White-backed Swallow *Cheramoeca leucosternum* was added to the species list by visitors in September 2007.

Nocturnal Birds were often observed during the spotlight transect, in particular Tawny Frogmouths and the occasional Boobook Owl.

Herbarium
Members of the Murdoch Branch plus volunteers added several new species to the plant list. Work continues on the Paruna Herbarium with the WA Herbarium assisting with identification of species.

Weeds
Previous wildfire activity has resulted in a significant increase in invasive weeds in the western section in areas that were previously grazed prior to AWC acquisition, dominated by Patterson's Curse *Echium plantagineum*, Cape Tulip *Homaria* sp. and Wild Oats *Avena* sp. Noteworthy is the establishment of eastern wheat-belt weed species at the vicinity of the Rock-wallaby habitat site Jo's Cave, presumably translocated along with the Rock-wallabies.