

WORLD WIDE FUND FOR NATURE AUSTRALIA

PROGRESS REPORT NO. 4

P145 The Status and Conservation of the Western
Mouse
(*Pseudomys occidentalis*)

April 1992

by

L. Whisson and K.D. Morris

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1. Objectives

- a) To determine the distribution and status of the Western Mouse (*Pseudomys occidentalis*) in the south-west of Western Australia.
- b) To assess the habitat requirements and other factors which may determine this species' distribution.
- c) To assess the impact of fire, exotic predators, and rabbit control programs on the Western Mouse.
- d) To prepare a species Recovery Plan.

2. Methodology

This project commenced in January 1990 when Mr Leigh Whisson was employed as a consultant to undertake the work. Progress Reports #1, #2 and #3 provide details of work undertaken until October 1991. This report provides information on progress from October 1991 to April 1992. It is anticipated that Mr. L. Whisson will spend a further two to four weeks on the Barrow Island black rat eradication program during the six months to October 1992.

3. Summary of Work: October 1991 to April 1992.

3.1 Literature review.

Literature relating to the biology and conservation of rodents in Australia continued to be perused during this period. Management Programs and Recovery Plans for endangered mammal species were also examined. An updated bibliography is included in this report.

3.2 Western Mouse distribution and biology.

Regular trapping of Dragon Rock Nature Reserve (DRNR), Rock View Nature Reserve (RVNR) and Anderson Lake Nature Reserve (ALNR) continued at six weekly intervals. Further information on population numbers, growth rates and reproduction of the Western Mouse was obtained as well as information on other species present. The Lake Grace/Lake Chinocup Nature Reserves were surveyed for the Western Mouse in November 1991.

In 1975, Woody Island Nature Reserve (WINR) in the Recherche Archipelago was found to support a *Pseudomys* species, identified at the time as *P. albocinereus*. However no specimens were collected and a sketch made at the time showed some resemblance to the Western Mouse. Consequently in April 1992 the island was again trapped in an attempt to confirm the identity of the *Pseudomys*.

3.3 Western Mouse habitat preference.

Collection of vegetation structural attributes (vegetation height and density, litter cover and depth) and species composition has commenced at sites where the

Western Mouse has been recently located in the Fitzgerald River National Park (FRNP), Ravensthorpe Range, ALNR and DRNR.

3.4 Assessing the impact of exotic predators.

Baiting of foxes, using dried meat baits and 1080, commenced at DRNR in May 1991 and has continued at six weekly intervals. The grids established at DRNR were trapped for four months prior to this and have been trapped at six weekly intervals since. A trapping grid was also established at RVNR to act as an unbaited control for this trial. Estimates of poison bait take rates and fox abundance have also been obtained. It was originally intended to also control feral cats at DRNR, however baiting techniques to successfully achieve this have not yet been developed. It is unlikely that the dried meat poison baits laid for foxes will be as effective for cats as they are for foxes.

3.4 Rabbit Baiting Techniques Trial.

In March 1992, a trial designed to assess if rabbit poison baiting programs affect the Western Mouse, was commenced. This involved following the movements of radio-collared Western Mice in the presence of Rhodamine impregnated unpoisoned oats and assessing oat bait take. This needs to be repeated in spring 1992 before management recommendations can be made.

4. Results

4.1 Western Mouse distribution and biology.

4.1.1 Distribution.

There are now 10 conservation reserves from which the Western Mouse has been recorded since 1972 (Table. 1). These reserves range in size from 400 ha. (ALNR) to 328,000 ha. (FRNP). However it should be noted that the Western Mouse may have disappeared from Bending and the Lake Grace/Lake Chinocup Nature Reserves. Further surveys of these areas are required to confirm this. An opportunistic survey of Tarin Rock Nature Reserve for the Red-tailed Phascogale located the Western Mouse in the southern portion of the reserve. It was previously thought that the Western Mouse had disappeared from this reserve. The survey of Woody Island did not find any *Pseudomys*, but did find large numbers of the introduced Black Rat *Rattus rattus*.

Other native mammal species recorded during surveys for the Western Mouse include Mitchell's Hopping Mouse, *Notomys mitchellii* at RVNR, the Western Brush Wallaby, *Macropus irma* at DRNR, RVNR and FRNP, the Common Brushtail Possum, *Trichosurus vulpecula* at DRNR and Chinocup Nature Reserve and Ravensthorpe Range region and a Tamar Wallaby, *Macropus eugenii* at Chinocup Nature Reserve. The sight records of *T. vulpecula* and *M. eugenii* are notable as these species have not been recorded from these areas since the early 1970s. They should also benefit from the fox control trial being undertaken at DRNR. All mammal species recorded during surveys for the Western Mouse are shown in Table 2.

4.1.2 Breeding and Growth Rates.

Juvenile Western Mice entered the population at DRNR and RVNR in late November and early December. Juveniles weigh 12-15 g at this stage. Growth rates average about 3 g per month, by late February the sub-adults are 27-30 grams.

Adult body weights are 35 g and they breed in their first year. At DRNR Western Mice live for at least 3 years.

4.1.3 Diet.

No further information on diet was collected during this period.

4.1.4 Movements.

Radio-tracking has confirmed that individuals travel up to 600 meters in a straight line overnight to burrows and may occupy areas of up to 20 ha. Four individuals were tracked to the same burrow system over a three night period but were found to utilise a number of other burrows in the vicinity within this period.

4.2 Fox Control Trial.

The fox baiting program at DRNR has continued to be successful in reducing fox numbers. Spotlighting transect since October 1991 have sighted another 7 foxes (all juveniles) in 6 hours (Table 3). This makes the overall postbaiting fox sighting rate 0.5 foxes/hour compared with 4 foxes/hour prior to fox baiting.

Trap success rates for the Western Mouse at DRNR have continued a general increase since fox baiting has been implemented (Figure 2). However trap success rates for Western Mice at the unbaited control (RVNR) have also increased (Figure 3) and it is impossible at this stage to attribute this apparent population increase to the reduction in fox numbers. Continued monitoring over another breeding season is required before a proper assessment can be made. It is interesting to note however that at ALNR, the trap success rates for the Western Mouse fell over the same period (Figure 4)

4.3 Rabbit Baiting Techniques Trial.

During the rabbit baiting trial in March 1992, Western Mice encountered and traversed the oat trails laid; however they did not consume the oats.

5. Preliminary Recommendations for Management.

No recommendations for management can be made at this stage. However the surveys undertaken to date suggest that the Western Mouse may still be declining.

6. Work Still to be Completed.

It is clear that the research required to adequately meet the objectives of this project will not be completed by September 1992 when current funding ceases. A proposal to extend funding to May 1993 is attached. Work that will be undertaken until September 1992 is shown below.

a) Continue surveys of selected conservation reserves to confirm the distribution and habitat preferences (including relationship to fire history) of the Western Mouse. Bending Nature Reserve, Tarin Rock Nature Reserve and Lake Grace/Lake Chinocup Nature Reserves also need to be re-surveyed to confirm if the Western Mouse has disappeared from these reserves.

b) Continue obtaining information on reproduction, diet, population size, home range size and habitat preference at DRNR and ALNR.

c) Continue the fox baiting trial at DRNR and monitoring of Western Mouse populations at DRNR, RVNR and ALNR.

7. Difficulties Encountered

Most aspects of this project have taken longer than anticipated and it will be necessary to continue the project until May 1993 to achieve all of the objectives.

8 Reports and Publications Arising

An article on the Western Mouse was produced for inclusion within the revised edition of "Complete Book of Australian Mammals", (The Australian Museum) edited by R. Strahan. (article enclosed Appendix 1.)

9 Budget

WWFNA Contribution

Financial Statement as at June 30 1991

Receipts

January 1990		\$6 625
April 1990	\$6 625	
August 1990	\$6 625	
January 1991		\$6 625
April 1991	\$6 750	
October 1991		\$6 750
April 1992	\$7 000	
	TOTAL	\$47 000

Expenditure

Consultant's Salary (535KM0107)		\$41 908
Equipment (535KM0101)	\$ 500	
Travel Costs (535KM0102)	\$ 2 734	
Miscellaneous Costs (535KM0104)	\$ 1 000	
Publication Costs (535KM0109)	\$ 0	
	TOTAL	\$46 142
	BALANCE	\$ 858

CALM Contribution

For the 16 Months to April 31st .

	Expenditure	Allocation
Salaries	\$ 27 700.00	\$ 28 000.00
Equipment	\$ 2 740.00	\$ 3 000.00
Plant	\$ 14 540.00	\$ 14 500 00
Administration	\$ 3 000.00	\$ 3 000.00
TOTAL	\$ 47 980.00	\$ 48 500.00

Western Mouse Bibliography

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Table. 1. Summary of surveys for Western Mouse in nature reserves in the southern wheatbelt of W.A.

Reserve Name	Res.	W.m Recorded	Reserve	W.m
Comments	No.	yes/no (date)	Surveyed this study	Trapped
NATURE RESERVES				
Anderson Lakes	25194	Yes (1986)	Yes	Yes
Bendering	25681	Yes (1976)	Yes	No
Dragon Rocks	36128	Yes (1973)	Yes	Yes
Flat Rocks	27487	Yes (1975)	No	No
Hatters Hill	N/A	Yes (1953)	No	No
Harris	32549	Yes (1984)	No	No
Lake Grace/Lake Chinocup	28395	Yes (1972)	Yes	No
Lake Magenta	25113	No	Yes	No
North Karlgarin	20338	Yes (1976)	Yes	Yes
North Tarin Rock	29857	No	Yes	No
Nyabing	24117	Yes (1953)	No	No
Ravensthorpe Range	N/A	Yes (1983)	No	No
Rock View	29617	No	Yes	long term study site
Roe	20339	No	Yes	No
Tarin Rock	25711	Yes (1972)	Yes	Yes
Woody Island	N/A	Yes? (1975)	Yes	No
NATIONAL PARKS				
Fitzgerald River	N/A	Yes (1986)	Yes	Yes
Frank Hann	N/A	No	Yes	No

Table. 2. Mammal species captures including recaptures recorded from conservation reserves surveyed for the Western Mouse in the southern wheatbelt area of W.A. during the Western Mouse project

Abbreviations: (Trap nights)

ALNR - Anderson Lakes Nature Reserve	(5752)
RVNR - Rock View Nature Reserve	(17500)
DRNR - Dragon Rocks Nature Reserve	(4500)
FNNR - Frank Hann National Park	(1700)
FRNR - Fitzgerald River National Park	(1200)
NKNR - North Karlgarin Nature Reserve	(4500)
LMNR - Lake Magenta Nature Reserve	(2400)
NTNR - North Tarin Rock Nature Reserve	(500)
TRNR - Tarin Rock Nature Reserve	(1000)
LCNR - Lake Chinocup Nature Reserve	(1300)
WINR - Woody Island Nature Reserve	(490)

Species	ALNR	RVNR	DRNR	FHNP	FRNP	NKNR	LMNR	NTNR	TRNR	LCNR	WINR
TOTAL											
Parantechinus apicalis	0	0	0	0	0	0	1	0	0	0	0
0	1										
Sminthopsis crassicaudata	0	0	2	0	0	0	0	0	0	0	3
0	5										
Sminthopsis granulipes	0	0	0	0	2	5	0	5	0	0	0
0	12										
Ningauai ridei	0	0	3	0	0	0	0	0	0	0	0
3											
Isoodon obesulus	0	0	0	0	1	0	0	0	0	0	0
1											
Trichosurus vulpecula	1	0	3	0	0	0	0	0	0	2	2
0	1										
Cercatetus concinnus	0	0	2	0	0	0	0	0	0	0	0
0	2										
Tarsipes rostratus	5	0	0	0	12	0	0	0	0	0	0
0	17										
Macropus eugenii	0	0	0	0	0	0	0	0	0	1	0
1											
Macropus irma	0	1	2	0	0	0	0	0	0	0	0
1											
Pseudomys albocinereus	0	0	0	0	7	0	0	6	0	0	0
0	13										
Pseudomys occidentalis	30	65	213	0	9	2	0	0	1	0	0
0	320										
Notomys mitchellii	0	38	1	15	0	27	0	0	0	0	0
0	81										
Rattus fuscipes	0	0	0	0	39	0	0	0	0	0	0
39											
Rattus rattus	0	0	0	0	0	0	0	0	0	0	46
46											
Mus musculus	2	85	33	0	0	14	0	1	0	0	0
133											

Table. 3. Results of pre- and post- baiting spotlighting surveys for foxes on Dragon Rocks Nature Reserve and an adjoining farmer's property.

Spotlighting Results. (CALM)	Hrs	Foxes Sighted	
Pre baiting	8	22	
Post baiting	30		2
Spotlighting Results (Farmer)			
Pre baiting	4	16-18	
Post baiting	22		11

APPLICATION FOR EXTENSION OF FUNDING FROM THE WWFNA

Title of Project:

P 145 - Status and Conservation of the Western Mouse (*Pseudomys occidentalis*).

Project coordinators:

Mr. K. Wallace, CALM., Narrogin.
Dr. A. Burbidge, CALM., Woodvale.
Mr. K. Morris, CALM., Woodvale.
Mr. L. Whisson, Consultant, CALM., Woodvale.

Project extension justification:

The aims of this project are listed in Progress Report #4. Two of the project aims are: (a) to assess the habitat requirements and other factors which determine this species' distribution, and, b) to assess the impact of exotic predators and rabbit control programs on this species.

Distribution surveys for the Western Mouse have taken longer than anticipated and consequently the assessment of habitat requirements has also been delayed. Fox baiting at Dragon Rocks Nature Reserve commenced in June 1991 and at least 2 years baiting is required before a response from a seasonal breeder such as the Western Mouse could be expected. A trial to determine if the Western Mouse will feed on poison oat bait trails set to control rabbits was undertaken in March 1992. This needs to be repeated in spring (September/October 1992) before a management recommendation can be confidently made.

An extension to funding is therefore sought to enable this important project to continue until May 1993. This will enable the consultant, Mr Leigh Whisson, time to complete the research required and prepare a species Recovery Plan.

Project Budget:

WWFA contribution:

Salaries	\$ 24 500	(Level 2/4 with on costs)
Travel	\$ 2 600	(70 days @ \$37/day)
Equipment	\$ 1 500	(radio-collars)
Total	\$ 28 600	

CALM contribution:

Salaries	\$ 18 000	(project supervision and assistance)
Plant	\$ 3 500	(4WD and running costs)
Equipment	\$ 1 500	(field equipment)
Administration costs	\$ 2 000	(office and support)
Total	\$ 25 000	

Figure 1. Location of sites surveyed and visited for the Western
Mouse Project

1. Bendering, North Karlgarin, Roe, 2. Tarin Rock and North Tarin Rock, 3. Dragon Rocks and Rock View, 4. Lake Grace and Lake Chinocup, 5. Dunn and Commander Rocks, 6. Lake Magenta, 7. Anderson Lakes, and 11. Woody Island Nature Reserves, 8. Fitzgerald River and 9. Frank Hann National Parks, 10. Ravensthorpe Range.

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