NUMBAT RECOVERY TEAM

ANNUAL REPORT

1994

by Tony Friend

for

The Numbat Recovery Team

A ...sponsibility for the views expressed

...tion and Land Management
...Wildlife Research Centre
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SUMMARY

The Numbat (*Myrmecobius fasciatus*) is limited to two surviving populations (at Dryandra and Perup) and to a number of re-introduced populations in various stages of establishment. Re-introduction programs have relied mainly upon the Dryandra population. In 1993, after rising steadily since the introduction of a fox-control program, the numbat population at Dryandra dropped to about half of its 1992 size. The 1994 survey showed that the decline had slowed greatly and retrospective investigation raised several possible explanations including increased fox or cat predation, the pathological effects of a gut parasite, and a response to the numbat population outstripping the available resources. The Dryandra population will be monitored more closely during 1995 and alternative sources for animals for translocation will be examined. During 1994, translocations were carried out to Batalling, Tutanning and Karakamia, while monitoring of re-introduced numbat populations continued on those sites as well as at Karroun Hill and Boyagin Nature Reserves.

The Numbat Recovery was completed and submitted to ANCA during 1994, and funding has subsequently been approved.

INTRODUCTION

The Numbat was at very low population numbers when research aimed at its conservation commenced in 1980, and even since then a number of small populations have become extinct. Total population numbers are still below 1500, and a very substantial increase in population numbers is required before the Numbat can be regarded as secure.

Only two original populations have survived, at Dryandra Woodland and Perup Nature Reserve in the south-west of Western Australia. A re-introduced population, at Boyagin Nature Reserve, 40 km north of Dryandra, is now self-sustaining. Further Numbat populations are being established through translocation to areas of former occurrence at Tutanning Nature Reserve, 40 km north-east of Dryandra, Karroun Hill Nature Reserve, 300 km north-north-east of Dryandra, the Batalling area in the Central Forest Region 50 km south-west of Dryandra, Karakamia Sanctuary near Perth and at Yookamurra Sanctuary in the Murray mallee district of South Australia.

The Numbat Recovery Team was established in 1993. In 1993-94 its major task was to oversee the production of the Numbat Recovery Plan. The implementation of this plan will orchestrate the continued increase in the number of populations and total Numbat numbers. This is the second annual report of the Numbat Recovery Team.

MEMBERSHIP

The membership of the Numbat Recovery Team in 1994 was as follows:

Tony Friend (Chair)	CALM Division of Science and Information
Rob Brazell	CALM Collie District, Central Forest Region
Paul Brown	CALM Swan Region
Andrew Burbidge	CALM WA Threatened Species and Communities Unit
Peter Copley	SA Department of Environment and Natural Resources
Bob Hagen	CALM Southern Forest Region
Graham Hall	Perth Zoo
David Mitchell	CALM Wheatbelt Region
Ray Nias	World Wide Fund for Nature Australia
Sally Stephens	Australian Nature Conservation Agency, Endangered Species Program

MEETINGS

The Recovery Team met in Western Australia twice during 1994. Meeting 3 was held at Perth Zoo on 26 July 1994. Meeting 4 was held at CALM's Irabina Centre at Dryandra Woodland on 7 December 1994.

RECOVERY PLAN STATUS AND FUNDING

The Numbat Recovery Plan was completed and submitted to ANCA in May 1994 as an application for funding under the Endangered Species Program in 1994/95. The Recovery Plan establishes a series of actions to be carried out over the 10 years from 1995-2004. This application has been successful, and the funding requested has been granted in full. The first year's ANCA funding totals $70200 for work to be carried out in 1995.

RECOVERY IN PROGRESS

The actions listed in the Recovery Plan commence in 1995, although some constitute a continuation of Numbat conservation projects initiated before that time. The progress of these projects during 1994 is reported in the following section.

1. Population monitoring

1.1 Dryandra

Between November 1992 and November 1993 the numbat population at Dryandra apparently suffered a severe decline. In 1992, the sighting rate recorded in the annual survey, a standard set of driven circuits in the main block of Dryandra comprising 385 km in total, was 11.4 sightings per 100 km driven. By November 1993, the sighting rate had declined to 5.5 per 100 km. In the survey carried out during November 1994, 4.2 numbats were sighted per 100 km. The difference between the 1993 and 1994 sighting rates is not statistically significant, as was the change between 1992 and 1993. Population levels appear to have steadied after the crash of 1993.

Sighting rates during driven surveys in Montague Block, where baiting is carried out every two months, rather than monthly as in the rest of Dryandra, have shown a slow but steady increase since baiting commenced in 1989. 1989: 1.1 /100 km; 1990: 2.3 /100 km; 1991 & 1992: no surveys; 1993: 3.4 /100 km; 1994: 4.5 /100 km.

1.2 Perup

A driven survey of the Perup Numbat population was carried out for the first time in December 1993, resulting in a sighting rate of 0.95 sightings/100 km. Track closures since that time have meant that it is not possible to repeat the survey. Recent numbat work in the Perup-Kingston area has concentrated on the establishment of a study of the impact of logging on movements and use of refuges by numbats, to be carried out in 1995 as part of the Numbat Recovery Plan. A new survey transect will be established in late 1995 or early 1996.

Sighting reports from the adjacent Kingston and Perup areas of State forest indicate that numbats are still widespread there.

1.3 Boyagin

Driven surveys were carried out at Boyagin in the east block (2000 ha), where numbats were re-introduced to the reserve in 1985-87, and in the west block (3000 ha), into which numbats have moved of their own accord across 0.5-1 km of intervening farmland. The sighting rate in the east block has fallen from 5.5 sightings/100 km in November 1993 to 1.7 /100 km in November 1994. In the west block, the sighting rate is still quite low: 0.5 /100 km in 1993 and 1.0 /100 km in 1994.

In November 1994, diggings searches were carried out at 22 selected monitoring sites in the eastern block and at 200 metre intervals along most tracks in the western block. These searches showed that numbats have maintained their distribution in the eastern block and have extended their occupation of suitable habitat in the western block since November 1993.

1.4 Other areas

Monitoring at Karroun Hill, Batalling and Tutanning in 1994 has been limited to checking the progress of radio-collared animals. Under the actions listed in the Recovery Plan, however, long-term monitoring programs will be set up at those sites as well. Due to the sparse road system at Karroun Hill, population monitoring there will probably be limited to the establishment of a series of sites at which the presence or absence of diggings is monitored annually. At Tutanning and at Batalling annual driven surveys will be used to monitor numbat numbers.

2. Current translocation sites

2.1 Karroun Hill

1994 started with 13 radio-collared animals at Karroun Hill (four translocated in 1993, two translocated earlier, one adult and six young newly captured on site). Four stopped transmitting, seven were predated (five of these had been translocated from Dryandra, two were young born at Karroun Hill) and two were still alive at the end of the year. These were both young born on site.

While monitoring radio-collared animals casts a gloomy picture, the frequency of diggings in areas where no radio-collared animals are resident indicates that numbats are present at least in low numbers in the area near Karroun Hill. Females remote from radio-collared males produce litters each year, implying that there are other males present.

Given that some numbats have been taken by cats at Karroun Hill, that cats are certainly present and that a cat bait is currently under development by CALM it was decided to cease translocations to Karroun Hill until cats could be controlled at an operational scale. In 1994, no numbats were translocated to Karroun Hill, but three young were captured and fitted with radio-collars.

2.2 Batalling

A low recapture rate at Batalling again in 1994 has given little information on the success of the re-introduction there. Seventeen radio-collared animals were present at the end of 1993 (eleven had been translocated from Dryandra, two were Dryandra animals released from the captive breeding colony at Perth Zoo and four were young of an injured female raised in captivity). Nine were located in 1994. Of these, three were known to be alive at the end of the year, the signal of one was lost and five were predated, two by a raptor and three by chuditch.

The 1994 release was set up as an experiment to compare the survival of ten Zoo-bred young numbats with the survival of ten wild animals translocated directly from Dryandra. In addition, three adult numbats released there the previous year and five young collared on site are present. As chuditch occurrence at Batalling is patchy, and previous releases had been in an area of high chuditch density, a new release site was used in 1994. Driven surveys will be established in 1995 to supplement the monitoring using radio-collars.

2.3 Yookamurra Sanctuary

At Yookamurra, although sixteen young were recorded in March 1994, only one young was captured and collared in October. Six radio-collared adults are known to remain alive and their progress is being monitored by Yookamurra staff.

2.4 Tutanning Nature Reserve

It was proposed to translocate 20 numbats from Dryandra to Tutanning (2000 ha) in 1994. When the driven survey at Dryandra in November 1994 showed that the numbat population had not increased since 1993, it became apparent that the removal of 30-40 animals from the wild might have a deleterious effect on the recovery of the population. Only one animal from Dryandra was translocated to Tutanning, but six captive-bred young from Perth Zoo were released there as well. Two young born at Tutanning were captured and radio-collared in October.

2.5 Karakamia Sanctuary

A management plan for Karakamia Sanctuary near Gidgegannup north-east of Perth includes the establishment of numbats within the 160 ha fenced area. Two female numbats and a male numbat from Dryandra were radio-collared and released there. Karakamia staff are responsible for monitoring the progress of the animals.

3. Research

3.1 Genetic studies

Following the promising results of preliminary DNA amplification trials at the University of Queensland using numbat ear tissue, it was resolved to use this method to examine inter- and intra-population variation using the Perup and Dryandra populations. While a large number of samples of Dryandra numbats has been collected, more samples are required from Perup. Further material will be collected from the Perup-Kingston area in February-March 1995. The tissue samples will then be submitted to University of Queensland for analysis.

3.2 Research into causes of decline at Dryandra

In 1994, an investigation into the causes of the decline in the Dryandra Numbat population was carried out. This work focussed on the possibility of increased predation through rises in numbers of cats or foxes, or the possibility of disease.

Fox increase at Dryandra

An unusually high number of fox sightings was reported in Dryandra during March and April 1994. The fox-baiting program, which had been reduced in mid-1993, was returned in June 1994 to its original prescription. Regular spotlighting surveys were implemented in May 1994 to monitor exotic predator and nocturnal native mammal numbers and to compare these with data collected on the same survey routes by Jack Kinnear and Mike Onus of CALM in 1989-90. One fox was sighted on the survey prior to the return to the previous baiting intensity, and none have been seen in subsequent surveys.

Monitoring individual numbats at Dryandra

The population decrease observed at Dryandra in 1993 reduced numbat numbers by half within a year. This phenomenon clearly involved a substantial mortality. In order to gain some insight into the cause of mortality if the decline continued, a sample of seven numbats was radio-collared in May. Only two of these animals had died by the end of the year. The male was resident on the woodland-farmland boundary, and was taken by an unidentified predator. The female had unfortunately been caught in a log by the collar. The results of the Dryandra driven survey indicate that the rate of population decline in 1993 has not continued into 1994, and the survival of the radio-collared animals bears this out. The program of monitoring individual numbats at Dryandra will continue. Nine more individuals were radio-collared at Dryandra at the end of 1994 for this purpose.

Disease studies

As two animals translocated to Yookamurra in late 1993 were found in post mortem to be infected by an acanthocephalan parasite that can cause death, the possibility exists that an outbreak of infection by this species caused the population decline.

A veterinarian specialising in wildlife disease, Stephanie Haigh, was employed on contract during 1994 to carry out post mortems on all available numbat specimens to ascertain the incidence of the parasite. Russ Hobbs of Murdoch University collaborated in this study. Amongst 23 specimens examined, seven were found to be infected. None of the 8 animals that died before 1990 were infected. Seven out of 12 post 1989 animals were infected. Three of the seven had significant pathology as a result of infection. The only Perup animal was free of this parasite.

Standard techniques (faecal flotation and faecal smears) were found to be ineffective in screening numbats for this parasite. Alternative methods are being tried. Currently there is no proven method to test for its presence in living animals. An important recommendation from this study is that animals from Dryandra should be wormed (by injection) before translocation.

Preliminary conclusions

The picture that is emerging from the results of the driven surveys is that the decline is a function of high population density. The decline in the east block of Boyagin followed the return of the baiting regime to its previous high intensity. Declines have not been recorded in Montague block at Dryandra or the west block of Boyagin, both of which are in the early stages of population growth. This may implicate the parasite, which only seems to be present when numbat population numbers are high. Another possibility is that the carrying capacity of the habitat has been exceeded and the population crash is due to shortage of food or some other resource. Monitoring of the condition of Dryandra animals and causes of mortality in 1995 and the development of a parasite screening method should cast light upon factors now operating.

4. Captive breeding

Building on the successes of 1993, the Perth Zoo captive colony numbats gave birth to 32 young, although only 19 survived to independence. This was still a spectacular effort and is a credit to the skill and hard work of the Perth Zoo staff. Management of the genetics of the captive colony required that most of the 19 young were released, so a greater number were available than anticipated.

CONCLUSIONS

Given the importance of the Dryandra numbat population to the conservation of numbats, the population decline that occurred there in 1993 caused considerable concern. While the cause has not been firmly established, it appears that the decline has slowed or halted. A similar decline does not appear to have occurred in other populations, with the possible exception of that in the east block of Boyagin Nature Reserve. Close monitoring of the Dryandra population is warranted, and precautions such as worming of Dryandra animals before translocation should be taken. Alternative sources of animals for translocation, such as the captive breeding colony and the Perup population, are being more closely examined.