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ENVIRONMENT AUSTRALIA
BIODIVERSITY SECTION
THREATENED SPECIES AND COMMUNITIES UNIT

PROJECT NO 351

**IMPLEMENTATION OF THE
NUMBAT RECOVERY PLAN**

Progress Report

July 1997

Tony Friend
Department of Conservation and Land Management

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FOREWORD

The minutes of Meeting 9 of the Numbat Recovery Team, held on 5 June 1997 constitute the progress report due to be submitted to Environment Australia by 15 August 1997 under the Scope of Project 351 for 1997.

NUMBAT RECOVERY TEAM

MINUTES, MEETING 9

5 June 1997, WA Wildlife Research Centre, Woodvale

Present: Tony Friend (CALM, Science & Information) Chair
Rob Brazell (CALM, Mornington District)
Bob Hagan (CALM, Southern Forest Region)
Murray Love (CALM, Mundaring District)
Vicky Power (Perth Zoo)
Mike Scanlon (CALM, Science & Information)
Neil Thomas (CALM, Science & Information)
Denise True (Threatened Species Network/WWFA, Perth)

1. Welcome and Apologies Tony Friend welcomed Recovery Team members to the meeting. There were apologies from Peter Copley (SADENR), Andrew Burbidge (WATSCU), David Mitchell (Swan Region) for whom Murray Love attended, Brett Beecham (recently appointed Wheatbelt Regional ecologist) and Anne Duncan (Environment Australia project officer for the Numbats Recovery Plan Implementation project).

2. Minutes of Meeting 8

The minutes of Meeting 8 were accepted.

Matters arising from the minutes:

Cat control at Boyagin and Tutanning to guard against predation following the impact of RCD - no action has been taken by district staff but rabbit numbers have not fallen as predicted.

Mapping numbat habitat at KHNR - Tony said that no action has been taken as this has had to be given lower priority. The proposal to link this project with Western Mining Corporation sponsorship of Western Shield has not progressed because WMC have not given CALM an answer on the funding applied for. He suggested that a separate proposal should be put to WMC.

Bob Hagan said that CALM has been working with Graham Bennett at the Leeuwin Centre using remote sensing to compare vegetation subjected to different burning patterns. This work has shown that autumn edging and spring burning can be easily separated on satellite imagery. This may be helpful in mapping numbat habitat at Karroun Hill.

ACTION: Bob Hagan will talk to Graham Bennett about the possibility of using this technology to map vegetation types that are used by numbats in the Karroun Hill area. He will drop Tony a note on the result of his investigation.

RESPONSIBILITY: Bob Hagan

Tony proposed postponing the programmed 1997 translocation to Karroun Hill while further work on mapping numbat habitat at Karroun Hill can be done. A proposal to

use remote sensing to do this mapping will be formulated if Bob's investigations prove fruitful.

ACTION: This proposal would be finalised at the November recovery team meeting.

RESPONSIBILITY: Tony Friend

Environment Australia funding: Tony said that EA had confirmed that the numbat recovery plan implementation project was only funded initially for 3 years from January 1995 and consequently the project is up for review during 1997. Further funding has been applied for in the current round but that the application is subject to the review.

3. Reports on recovery work in progress

CALM Science and Information Division

Tony Friend gave details of the last six months of SID's work on the Recovery Plan implementation. A summary of the results of monitoring radio-collared animals in existing populations and reintroduction areas up to June 1997 was provided (Tables 1-3 attached to these minutes).

Dryandra monitoring

At the April 1997 driven survey there was a slight decrease in numbers at Dryandra since April last year (XXX sightings/100 km in 1996 v. XXX/100 km in 1997). In November 1996, although numbers had also been slightly down on November 1995, it had been possible to capture 37 animals for the reintroduction program. However, it is clear that additional sources of animals must be sought for future translocations.

Perup/Kingston monitoring

Mike Scanlon reported on the Perup/Kingston monitoring. A driving survey was carried out in February with the assistance of Brian Whittred from CALM Manjimup District, who proved very helpful. Five sightings were made, giving a sighting rate of 1.45 sightings/100 km. This compares well with February 1996, when only one sighting was made, at a sighting rate of 0.3/100 km. There are currently two animals collared at Perup/Kingston (a male and a female with four pouch young). Last year two females were collared, one with one pouch young and one with none. Bob Hagan reported that during burning at Keninup (the northernmost cell of Perup), a number of sightings were made and neighbouring farmers had reported frequent recent numbat sightings.

Boyagin monitoring

No work has been done at Boyagin since the annual driven and diggings surveys in October/November 1996.

Karroun Hill

No further work has been carried out at Karroun Hill since April 1996. At that stage sign of numbats was found at all major areas where numbats were resident during the period when radio-collared numbats were being monitored.

Batalling

The last release at Batalling was in December 1995, when nine animals were released there. Neil Thomas reported on the monitoring program at Batalling, which he has been running with the assistance of Ross Sturges. Four of the nine were not located after release (ie moved outside the search area or suffered transmitter failure). Long distance dispersal seems to be a feature of jarrah forest numbat releases, judging from Batalling and Hills Forest experiences. Two of the nine numbats released are still alive and transmitting in June 1997. Neil collared one litter of four young and two are still alive and transmitting. Thus there is still some information coming in from radio-monitoring.

The diggings survey planned for Batalling was carried out in January 1997. Numbat diggings were not found to be widespread in the area. The search concentrated on the roads within five kilometres of the two release sites (on Varis and Steed Roads) and generally speaking, few diggings were found except where radio-collared numbats were known to be. However, lots of diggings were found in a wandoo area to the north-east of the Batalling Block. This, together with the results of the Hills Forest release, indicates firstly that long-range dispersal of animals after release is to be expected in the forest (ie lack of success in finding many animals after release is due to dispersal out of the search area, not simply transmitter failure), and secondly that wandoo on the eastern side of the main forest block may be the most promising areas in the northern and central forest for reintroductions.

Tutanning

Neil Thomas reported on the regular driven survey at Tutanning in March 1997, when 4 sightings were made at rate of 1.8 sightings/100 km as compared with 0.9 sightings/100 km in March 1996. Increased predation by cats and raptors expected following the arrival of RCD does not appear to have been a factor affecting numbat numbers. In fact rabbit numbers have increased after an initial decrease, and numbat numbers have increased over the year during which RCD arrived.

Dragon Rocks

Neil Thomas reported on the situation at Dragon Rocks, eighteen months after the first release there. Seven of the 20 numbats released in December 1995 are still being monitored. Twelve young were collared in October-November 1996 and another 17 animals were translocated from Dryandra to Dragon Rocks in December 1996. Currently 24 animals are still alive and transmitting, including 15 females with 49 attached young between them. The survival of numbats at Dragon Rocks is much higher than at any other site, past or present. There is now a major logistical problem of how to maintain radio-collars on so many animals and how to collar the young.

Tony had thought his original estimate of 650 animals for the carrying capacity of Dragon Rocks may have been ambitious, being based on the density of numbats at Dryandra, but now it doesn't seem so unreasonable, as numbats are inhabiting most woodland types; mallee types as well as salmon gum and mallet woodland. Potential habitat probably covers about half of the reserve.

Hills Forest

Tony reported on the Hills Forest translocation. The recovery plan specifies a "northern jarrah forest" site for translocation commencing in 1996. A release site near Mount Dale in the Dale Conservation Park was chosen and in early December 1996 twenty numbats from Dryandra were released there. Tony commenced searching for translocated animals by light aircraft in March, somewhat later than usual because he had given priority to searching for animals at Dragon Rocks, where transmitters were due to run out of life earlier. He has now carried out a large amount of flying in searches over the northern jarrah forest (20-30 in all), covering a large area, across the entire width of the forest belt and from the York Road in the north to beyond the Albany Highway. This search area measures about 50 km east-west and 50km north-south. He only found seven of the 20 animals released and those animals were widely dispersed over the area. One was west of Mundaring Weir on the western side of the forest, one was in forest next to farmland on the eastern side and the others were scattered in between. In ground searches, one was not found and subsequently not found from the air, one was found dead (probably bird predation) and five are alive and transmitting, all well away from each other. One female had moved about 10km between flights. Three are in wandoo woodland, three are in jarrah woodland. Surviving animals include three males and two females without young.

The survival of the translocated animals is therefore quite good (five out of six) but their wide dispersal has caused lack of breeding and the translocation cannot be seen as a success.

Over winter, animals will be moved so that males and females are closer together. Previous attempts to shift animals in winter have succeeded in that they have stayed close to the release site. It is likely that as males are in better sites, the two females will be moved to the two eastern males and the male near Mundaring Weir will be left there.

Mundaring District staff have been giving SID valuable assistance in finding radio-collared numbats on the ground.

Karakamia

The last of the three animals introduced into Karakamia in December 1994, a female called Samantha was found dead recently, under circumstances which indicated that she was taken by a raptor. This is not certain as the collar was unmarked. Another possibility is that she was taken by the chuditch which turned up recently inside the fence, although this is less likely as chuditch seem to chew at the collars of radio-

collared prey. The fauna at Karakamia is going from strength to strength - woylies, bandicoots and ringtail possums are increasing.

Karakamia could be a source of animals for translocation, but one problem has been that the females tend to nurse their young in old rabbit warrens, making it very difficult to capture them for collaring as they escape along the tunnels during excavation.

Genetic work

No results of the comparison of DNA from Dryandra versus Perup numbats has been received yet. Luca Fumagalli has been working on this project since July 1996 and visited WA in early December to see a numbat. He has had problems isolating DNA from numbat tissue and has asked us to collect tissue into another medium (DMSO) in the hope of avoiding this problem. Luca has had an extension of six months until the end of 1997.

CALM Regions

Wheatbelt Region

There was no report from the Wheatbelt Region or Districts.

Southern Forest Region

Bob had already mentioned the burning program over 2000 ha in the Keninup Block during which time a number of numbats were seen and reported by CALM staff and neighbours. Some cage trapping has been done in the Perup and had good results finding good numbers of chuditch.

Mornington District, Central Forest Region

There was some discussion about whether localised baiting should be carried on around animals that have dispersed outside the baited area. This was endorsed in principle but because this was mainly a problem in the jarrah forest and the unbaited areas were generally part of the "No baiting" control area for Foxglove fauna monitoring strategy and that it is essential that this regime be continued for the duration of the experiment. Tony suggested that bringing animals back into the baited area should be the strategy generally used. Bob Hagan suggested that it would be useful for internal justification of operations such as spot baiting to calculate the value of captive breeding a numbat for release. Tony asked Vicky to see if that information could be provided and said he would calculate the cost of baiting and capturing an animal for translocation. Denise warned that if these figures were made public they could be used in a negative way. This was acknowledged by the meeting.

Swan Region

Apart from the Hills Forest translocation already discussed, there was no further report from Swan Region. Tony told the meeting about two public field days he had conducted in April as part of the Hills Forest Go Bush! program.

Perth Zoo

A report on the new research program recently commenced by Perth Zoo under Mark Bradley's leadership was provided (attached to these minutes). Vicky Power

In the 1997 breeding season the Zoo undertook to develop a more reliable breeding protocol than in previous years. The results of the urine monitoring done indicated that numbats are seasonally polyoestrous also the development of the auxiliary sex gland of the male was significant in the fertility of the male. Some females had several oestrus cycles, up to four in one case. Oestrus cycles were judged by Mark Bradley on slides prepared by Vicky after collection of urine at two-weekly intervals. Older males produced sperm in the urine early in the breeding season but younger ones didn't produce sperm until later in the season. Oestrus is independent of the presence of the male.

Eight young were produced, a great improvement over the last two years, during which two and zero young were produced. However, the number of young per litter is small amongst this year's crop. Most of this year's captive-bred litters comprise only one young, which is very different from the wild situation, where about 85% of litters comprise four young. The reasons behind this require further research. Next year the Zoo will be looking at the effect of diet on breeding. Provision of termites is again a problem over winter. The Zoo are negotiating a contract with Termi-Mesh to provide termites for the numbats.

Vicky said that the reasons behind the zoo's success this year were closer monitoring including urine analysis compared with the last few years, reducing the amount of swapping of males between females, as they take a while to settle into a new enclosure, increased accountability by the numbat keeper, the adoption of a plan from before the breeding season and a team approach.

One of the captive females (studbook number 93), approximately 4 years old, died on 3 June 1997 due to sand impaction in the gut. She had habitually eaten sand and was even put on leaf litter for six weeks and she would dig around looking for any sand she could eat. This appears to be a behavioural problem that occurs in a few individuals.

Tony reported that two old captive-bred females (studbook nos. 24 and 25) were transferred in March from Perth Zoo to the Alice Springs Desert Park for display. Termite supply is *Mastotermes darwinensis* being brought down in damp cardboard from Darwin, where they are collected easily. The numbats are being well displayed and are the stars of the show at the Desert Park.

South Australia

Yookamurra

No major developments concerning the numbats at Yookamurra. Another male animal had been collared and there is a now collared female with young.

There has been a crash in the boodie numbers at Yookamurra. Low numbers of woylies are still being caught, but although good numbers of boodies had been caught earlier, none were captured in the last trapping session. The boodies in the 2 ha compound within the sanctuary were still alive but were not breeding, as they had been at the time last year. This was possibly due to recent low rainfall, but it was also possibly due to occasional visits by a fox which had a large impact on the predator naive boodies but not such a large impact on woylies and numbats. More intensive monitoring for foxes was being done.

The South Australian Government had received an application from Earth Sanctuaries to export six numbats, six woylies and six boodies to NSW. This was presumably for release at Scotia Sanctuary. No official approach had been made to CALM about this and no answer had been given to ES yet. Tony will keep the team informed of any developments.

Denise suggested that since there were plans to spread numbats further afield, the recovery plan might be given a national rather than a Western Australian focus during the next review. This could also be reflected in the membership of the recovery team.

4. Translocation program for 1997

Tony presented a new proposal for the translocation program for 1997. The recovery plan prescribes for 1997 the third translocation to Dragon Rocks, the second translocation to a northern jarrah forest site (ie Dale CP) and the first of a new series of translocations to Karroun Hill NR. There were several reasons to alter this program. Firstly, it would require 60 numbats, and with no definite sources of animals other than Dryandra, recent indications were that it would be very difficult to obtain this number. Secondly, survival at Dragon Rocks had been so high that another 20 animals were probably not required as there were enough animals would be logistical difficulties maintaining collars on the surviving adults and young, let alone another 20 new animals. For the purposes of monitoring, there were already sufficient animals available at Dragon Rocks and 20 animals could probably be used more effectively elsewhere. Thirdly, as had been foreshadowed, it would be desirable to postpone a new series of translocations to Karroun Hill to allow time for remote sensing work to be done in order to establish a meaningful monitoring strategy there.

The reasons for the success at Dragon Rocks appear to be related to the mosaic of shrubland and woodland there, providing both refuge and feeding habitat for the numbats. The vegetation of the low-altitude areas in the Stirling Range National Park conforms to this general description and there are other assets for the support of a translocation such as on-park staff. Tony proposed that the 1997 translocation program comprise a further release at a site at Hills Forest where the existing animals were settled and the first of three annual releases at the Stirling Range NP. This program would require only 40 animals in 1997. Karroun Hill should remain a priority for next year as an extension of baiting from 40 000 ha to 300 000 ha was in the forward planning for the Western Shield baiting program. The issue of continuing the translocation into the northern jarrah forest despite the lack of success was discussed at length. It was agreed that the benefits of having numbats back in an area close to Perth were numerous and that as there was strong Departmental support for this aspect

of the translocation program, the Hills Forest translocation should be persisted with for another year, with as intensive monitoring as is possible. Tony would put a proposal to Roger Armstrong to try to raise more money for aerial searches.

Bob Hagan suggested that Swan Region ecologist should be asked to provide a map of potential release sites in the northern jarrah forest that met a series of criteria, such as wandoo valleys, not recently burnt or about to be burnt, within the baited area. Tony will take this up with Dave Mitchell. Bob also suggested that location of animals from the air should commence earlier to give a better indication of the fate on animals. The problem of losing touch with animals should be discussed further and other approaches should be examined.

Neil Thomas raised the issue that a release of chuditch at the Stirling Range under the Western Shield program was scheduled for 1998. This was seen as a problem as chuditch had been found to prey on numbats at Batalling and they would probably gave an impact on the early stages of the numbat reintroduction. Tony would approach the Western Shield co-ordination group to see if the chuditch release could be postponed for 3-5 years.

The team agreed to the revised translocation proposal on the condition that the chuditch release at Stirling Range was postponed. Tony will prepare a translocation proposal for the release of numbats at the Stirling Range.

ACTION: 1) Seek the postponement of the chuditch release at the Stirling Range,
2) to prepare a translocation proposal for numbats to the Stirling Range,
3) to prepare a proposal for extra funding for flying over Hills Forest in early 1998 and submit it to Roger Armstrong, and
4) to make an approach to Dave Mitchell to draw up a map showing potential release sites in the northern jarrah forest.

RESPONSIBILITY: Tony Friend

5. Recovery program review

Tony reported that Stephanie Maxwell and Andrew Burbidge had confirmed that the numbat recovery plan was up for review during 1997. An application for renewal of the numbat recovery plan funding had been submitted with the current batch of NHT (including ESP) applications. This application was for the remainder of the recovery plan (seven years), although it was only likely to be funded either for three or five years at a time. The success of the application was dependent on the review. The deadline for the review had just been announced as 31 October 1997, but as Tony would only be back from long service leave on 13 October, Anne Duncan had advised him that if an extension was required, to write a letter immediately. On his return to work, he would commence the production of a review document according to the format provided by ESU. The team agreed to the proposal that a special recovery team meeting should be held in late October. The review document would be discussed and finalized at that meeting then Tony would complete it for submission by mid-November. The meeting was set for 30 and 31 October 1997 at Dryandra. It was suggested that a CALM person from outside the recovery team should be asked to

facilitate the meeting. John Blyth from WATSCU was suggested as a possible facilitator.

Tony asked members of the team to go through the recovery plan between now and October and make suggestions for changes. This could be helpful for the review and for the revision of the plan which would follow.

ACTION: Meeting to be organized, potential facilitator to be approached. Team members to go through the present recovery plan and suggest corrections, changes and updating.

RESPONSIBILITY: Tony Friend, team members.

6. Publication of the recovery plan

Andrew Burbidge had asked that the issue of the publication of the recovery plan be raised at this meeting. Tony suggested that as a revision of the plan should follow the review, publication of the new plan would be the next step. Discussions at the review meeting should acknowledge that the plan was about to be revised and suggest changes if necessary. Once the plan was revised it should be submitted to Corporate Executive for approval. On approval it should be published. A first draft of the revised plan would be ready for discussion at the recovery team meeting in November.

ACTION: Preparation of draft revised plan by end of November, distribution for comment within CALM. Incorporation of comment by Christmas, submission to Corporate Executive for approval.

RESPONSIBILITY: Tony Friend, recovery team members.

7. Other business

There was no other business.

8. Next meeting

The next regular recovery team meeting will be held in November 1997. Before that, a review meeting will be held at Dryandra on 30 and 31 October 1997.

The meeting was closed at 12.30 pm.

Distribution:

Mark Bradley	David Mitchell
Rob Brazell	Ray Nias
Brett Beecham	Peter Orell
Andrew Burbidge	Vicky Power
Anne Duncan	Mike Scanlon
Peter Copley	Andre Schmitz
Tony Friend	Neil Thomas
Bob Hagan	Denise True
Murray Love	Gordon Wyre

TABLE 1. Results of monitoring radio-collared numbats at Dryandra and Perup over the period January-June 1997.

Origin	Collared	Known dead	Signal lost	Translocated	Alive and transmitting
DRYANDRA					
Collared at 1 January 1997	4	2	1		1
Adults collared during 1997	6	0	0		6
Total	10	2	1	0	7
PERUP					
Adults collared during 1997	2				2
Total	2	0	0	0	2

TABLE 2. Results of monitoring radio-collared numbats at sites of previous reintroductions over the period December 1995-June 1997.

Site and origin	Collared	Known dead	Signal (or collar) lost	Translocated	Alive and transmitting
BATALLING					
Adults resident at 1/1/96	0				0
Young bred on site 1995	0				0
Translocated from Dryandra Dec 1995	9	2	5 (1 slipped collar)		2
Young bred on site 1996	4	1	1		2
Total	13	3	6	0	4
TUTANNING					
Adults resident at 1/1/96	0				0
Translocated from Dryandra via Perth Zoo during 1996	1	1			0
Adults collared during 1996	1	1			0
Translocated from Karakamia	1	1			0
Total	3	3	0	0	0

TABLE 3. Results of monitoring radio-collared numbats at reintroduction sites over the period December 1995-June 1997.

Site and origin	Collared	Known dead	Signal (or collar) lost	Translocated	Alive and transmitting
DRAGON ROCKS					
Translocated from Dryandra Dec. 1995	20	7	7 (1 slipped collar)		6
Young bred on site 1996	12	1	3		8
Translocated from Dryandra Dec. 1965	17	4	3		10
Total	49	12	13		24
HILLS FOREST					
Translocated from Dryandra Dec. 1996	20	1	14		5