WOYLIE RECOVERY TEAM

ANNUAL REPORT

1993

by Tony Start

for

The Woylie Recovery Team

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SUMMARY

This is the second annual report of the Recovery Team established to oversee the implementation of a plan to recover woylies in South Australia and Western Australia. The team met twice, in July and in December.

There have been some changes to the team: Keith Morris has joined it as he will be working with woylies in three areas, Stephanie Maxwell has replaced Sally Stephens as ANCA's representative (although Sally attended both 1993 meetings) and CALM's Swan Region has been invited to nominate a member because translocations are planned into sites within that Region.

During 1993 a second edition of the plan has been written. The reasons for the revision as well as a summary of the plan objectives, recovery criteria, required actions and costs are presented in this report.

The objective of the first plan was "Down listing to vulnerable within 10 years...." The second edition has a life of two years from January 1994. The team intends to review the status of the woylie in December 1995, and hopes that by then it can recommend down-listing.

Some of the actions during 1993 and the application for funding for 1994 were based on elements of the second edition. ANCA has agreed to the new funding requirements for 1994.

In Western Australia known woylie populations have thrived. Preparation has been made to research the effects of various forest management practices on the species so that prescriptions can be varied, if necessary, to allow recovery of the species across all land tenure types. This research will commence in early 1994. This is particularly pertinent to CALM plans to commence fox control (Operation Foxglove) over much of the northern Jarrah forest. Preparation has also been made for translocation of woylies to Julimar Conservation Park.

In South Australia, populations were monitored (and blood samples taken for genetic analysis) on the four islands inhabited by woylies. All were thriving although two populations on islands with carrying capacities of 20 to 30 animals have a doubtful long-term viability. The Yookamurra population is being monitored by Sanctuary staff with the help of SADELM.

Preparations are more or less complete for the translocation of WA woylies to the mainland at Venus Bay peninsula, South Australia, and more WA animals will be introduced to the two large island populations if the results of genetic analysis indicates a high loss of variability compared to wild WA stocks (all SA animals originated from WA and have been through bottle-necks)

INTRODUCTION

This is the second annual report of the Recovery Team established to oversee the implementation of a plan to recover woylies in South Australia and Western Australia.

The first edition of the recovery plan was written under contract to the Australian Nature Conservation Agency (ANCA, formerly ANPWS) by the Department of Conservation and Land Management (CALM) in collaboration with the South Australian Department of Environment and Land Management (SADELM). It had a life of 10 years commencing in 1992 and covered recovery of the species in Western Australia and South Australia.

The objective was "Down listing to vulnerable within 10 years by protecting mainland populations from exotic predators and competition, maintaining island populations and establishing new populations on the mainland" and the Recovery Criterion for the first two years was to establish exotic predator control over existing populations. Longer term criteria included establishing additional populations.

ANCA has funded the plan through its Endangered Species Program commencing with a contract (17 February 1992) to CALM to implement the actions specified for 1992. The actions of the Recovery Team during 1992 were reported in the first Annual Report (December 1992).

During 1993 a second edition of the plan has been written. The reasons for the new edition as well as a summary of the plan objectives, recovery criteria, required actions and costs are presented in this report. The revised plan has yet to be presented to the Executives of the participating Agencies for ratification. This will be done in 1994.

The second edition has a life of two years from January 1994. The team believes that it will be able to review the status of the woylie in December 1995, and hopes that by then it can recommend down-grading.

Some of the actions during 1993 and the application for funding for 1994 were based on elements of the second edition the agreed to by team. ANCA has offered contracts recognising the new funding requirements for 1994.

Other activities undertaken in 1993 that relate to the conservation and recovery of woylies are also reported here. They are arranged under the headings of the actions detailed in the second edition of the plan.

THE RECOVERY TEAM

Membership

During 1993 there have been some changes to the Recovery Team. Membership at the end of the year was;

Tony Start (Chair)	CALM, Division of Science and Information.
David Armstrong	SADELM, contracted to implement the recovery plan in SA
Andrew Burbidge	CALM, WA Threatened Species & Communities Unit
Bob Hagen	CALM, Southern Forest Region
Brian Macmahon	CALM, Wheatbelt Region

Stephanie Maxwell	ANCA, Endangered Species Program. (replaced S. Stephens in November)
Keith Morris	CALM, Division of Science and Information.
John Skillen	CALM, Central Forest Region
John Watson	CALM, South Coast Region
Gordon Wyre	CALM, Division of Nature Conservation

Sally Stephens (ANCA Endangered Species Program) was replaced by Stephanie Maxwell in November 1993. However as Ms Maxwell was unable to attend the December 15 recovery Team meeting Ms Stephens represented ANCA.

Keith Morris was invited to become a member at the 27 July meeting (which he attended) because he is (or will become) involved in Woylie translocation and monitoring at three sites.

At the 15 December meeting it was decided to invite CALM's Swan Region to nominate a member to the team because the 2nd edition of the Plan includes a translocation to a site in the region and there are proposals under fox research programs to introduce woylies to other areas in the Region. The latter is additional to but complements the recovery plan actions.

Meetings

The recovery team met twice during the year:

27 July 1993 at CALM's Wildlife Research Centre, Woodvale, WA.

15 December 1993 at CALM's Field Study Centre at Batalling. This meeting was hosted by Collie District in CALM's Central Forest Region. It was notable because all members were able to handle live, wild Woylies caught in the near by Batalling Forest.

Observers at the second meeting were:

Paul Brown	CALM Swan Region
Peter Copley	SANPWS
Christina McDonald	Adelaide Zoo
Ray Nias	WWFA

THE SECOND EDITION OF THE RECOVERY PLAN.

Summary of status and distribution of woylies when the first edition was written.

Bettongia penicillata is listed as "Endangered" (ANZECC, SA National Parks and Wildlife Act and in the Action Plan for Australian Monotremes and Marsupials) and "Threatened" (WA Wildlife Conservation Act).

It once occurred across most of non-tropical mainland Australia west of the Dividing Range. It thrived in all mainland States and was very common over

much of its range (selling "by the dozen at about nine pence a head for coursing on Sunday afternoons" in South Australia). There were two subspecies, typical *B. p. penicillata* in eastern Australia and *B. p. ogilbyi* in the south west. (*B. p. tropica* is now regarded as a full species.)

When the Plan was written woylies were only known to persist in the wild in south west WA. (Dryandra State Forest, Perup State Forest and Tutanning Nature Reserve; there was a presumed introduced population at Batalling State Forest and unconfirmed reports from Fitzgerald River National Park).

In SA there were introduced populations on four islands (WA stock) and there were unconfirmed reports of wild animals on the Eyre peninsula. It is considered very unlikely that the latter persist.

Typical *B. p. penicillata* of the eastern Australian mainland is presumed extinct. All known surviving populations are *B. p. ogilbyi* of south west WA.

The need for a second edition of the plan.

In late 1992 it became evident to the Team that the plan needed substantial revision. This was foreshadowed in the recovery Team report for 1992. A draft of the second edition was considered at the July 1993 Recovery Team Meeting and a final draft approved, subject to some minor adjustments at the December 1993 meeting. It still requires ratification by SADELM, CALM and ANCA executives, although funding for 1993 to SA was varied to meet some of the changed circumstances and the estimates for 1994 to both States (approved by ANCA) were based on the costing in the second edition. Reasons for a revision were indicated in the 1992 Report, but more water has flowed under the bridge since then so they are updated here.

1. Additional populations of woylies have been discovered or established in Western Australia. Wild populations have been found at Kingston Forest and at Lake Muir, about 20 km west and south-east of Perup respectively. It is possible that woylies occur through the intervening areas. They have also been introduced to Boyagin Nature Reserve (near Dryandra) in WA and Yookamurra Sanctuary in SA under different programs.

2. The Kingston Forest site was programmed for sustainable timber harvesting in 1992. The harvest has been postponed and a research project to study the impact of forest operations on a range of conservation values, including woylie populations, has been initiated. The results will be used to modify prescriptions, if necessary, so that plans for large scale fox control programs in the forest biome will benefit woylies in all land tenure types (see below). It is noteworthy that woylies have been captured in areas near Kingston Forest that were logged about six years previously.

3. CALM is about to commence widespread fox control in the northern jarrah forests (Operation Foxglove.) This will provide an opportunity to markedly increase the range of the species.

4. The first edition proposed Karroun Hill Nature Reserve and Fitzgerald River National Park as likely sites to establish new populations by translocation.

CALM has been translocating numbats to Karroun Hill for some time. Although fox control has been effective, feral cats have turned out to be a problem there. This contrasts with sites in the south west forests where threatened species respond well to fox control alone. CALM is researching cat control with funding assistance from ANCA. It would be inappropriate to plan a woylie translocation to this site before the problem is resolved.

CALM is baiting foxes and monitoring recovery of fauna in an extensive portion of Fitzgerald River National Park. Woylies have not yet been confirmed present in the Park, but if they are found to be there it would be preferable not to translocate to that site.

There are other sites where predator control has been effected and management is aimed at recovery of threatened species. Introduction of woylies would further the reconstruction of the natural fauna. Julimar Conservation Park, a chuditch and brush-tailed possum translocation site, is an obvious choice.

5. Changes to the translocation program and, particularly, the need to establish the extent of the population in southern forests (Lake Muir, Perup, Kingston) have changed the funding requirements in WA.

6. In South Australia, SADELM found it necessary to employ a person to carry out work in that State. That increased the costs of implementing parts of the Recovery Plan.

7. Techniques for re-introduction to the mainland in SA were revised. With a change in regulations allowing the use of 1080 baits and with the difficulty of designing and maintaining a wire fence it was decided that a "bait fence" and regular baiting in the reserve would be more effective and more economical. That decision changed cost estimates.

Evidence now suggests that the status of the species is significantly better than had been thought before. Further, there are excellent prospects for improvement. **The Recovery Team considers that it will soon be able to review the conservation status of the species.**

However, before that can be done, some outstanding recovery actions need to be carried out and more information is needed. These factors include more translocations (particularly to the SA mainland at Venus Bay), better understanding of the status of some of the populations (particularly in the Southern Forest Region of WA), better knowledge of the genetic status of translocated populations (particularly the South Australian island populations) and the development of management guidelines for timber harvesting so that Woylies are able to expand their range in State Forest in WA.

The Second Edition of the Recovery Plan has a two year life-span, 1994-1995. It details the additional work and contains detailed costing for those years. The conservation status of the Woylie will be reviewed in 1995

Given satisfactory outcomes, by December 1995 it may be possible to recommend a change in status of Woylies from Endangered to Vulnerable, or even its removal from threatened species lists, and shorten the period that this Recovery Plan need operate. Such a decision might allow scarce threatened-species funds to be redirected to higher priority areas.

The Recovery Team acknowledges the efforts and hard work of the authors of the first edition of the Recovery Plan, which provided the basis for work carried out during 1992 and 1993.

Summary of the second edition

The following is a summary of the second edition.

Recovery Plan objectives.

By the end of 1995:

1. Determine the current wild distribution of the Woylie in Western Australia.

2. Establish a population of Woylies on a mainland area in South Australia without using predator-proof fences.

3. Develop prescriptions for the maintenance and extension of Woylie populations in multiple-use forest in Western Australia.

4. Ensure that translocated Woylie populations maintain genetic variability.

5. Prepare a recommended revision of the conservation status of the Woylie, using internationally accepted criteria.

Recovery criteria:

Western Australia

1. Maintenance of at least six populations of Woylies, each extending over at least 1 500 ha at densities that, when trapped using standard techniques, provide a minimum 20% trap success rate.

2. Clarification of the status of the Woylie in conservation reserves and State Forests of the south west of WA.

3. Establishment of experiments to determine the effects of timber harvesting (at Kingston Forest) and fuel-reduction prescribed burning (at Batalling Forest) on Woylies.

South Australia

1. Maintenance of two island populations, on Wedge and St. Peter Islands.

2. Establishment of at least one mainland population in addition to the Yookamurra population.

Both States.

1. Established monitoring programs (to include genetic diversity) and action plans to address any adverse trends detected by monitoring for these populations.

Actions needed:

The following actions will be overseen by a Recovery Team composed of people from CALM, SADELM, ANCA and other organisations relevant to the recovery process.

1. Exotic predator control

2. Population survey and monitoring

3. Range expansion (where feasible) and translocation

4. Determine the effects of forest management practices

5. Genetic assessment and re-stocking.

TABLE 1. Cost of recovery (1993 prices)

AGENCY	1994	1995	TOTAL
ESP (WA)	22 000	9 500	31 500
ESP (SA)	80 000	52 400	132 400
ESP (sub-total)	102 000	61 900	163 900
CALM	113 000	103 000	216 000
SADELM	9 000	18 000	27 000
TOTAL	224 000	182 900	406 900

PROGRESS ON SPECIFIED ACTIONS DURING 1993.

The second edition has five Action Categories (see above) which encompass or expand the four in the first edition. This report addresses all five although some aspects of some are of little importance to the past year. Numbering of actions is the same as in the Recovery Plan.

3.1 Exotic predator control.

Western Australia.

Exotic predator (primarily fox) control using 1080 has been continued at Batalling and Dryandra Forests, Tutanning and Boyagin Nature Reserves and a large part of Fitzgerald River National Park.

Fox baiting has been carried out for two years at Julimar Forest as an action under the Chuditch Recovery Plan. This will be the site for woylie translocation in March or April 1994.

The Perup State Forest is not regularly baited. Species such as woylies and numbats have persisted in reasonable numbers without predator control The Agricultural Protection Board continues baiting the boundaries with agricultural land and areas between Perup and Lake Muir to prevent Dingo incursion from the south coast to agricultural areas.

South Australia.

There are no exotic predators on the islands that have woylies. However predator control is a prerequisite for re-introduction to Venus Bay Peninsula (programmed for March or April 1994). Rabbits were also abundant on the peninsula. They were a source of food for predators and would have competed with woylies, besides modifying habitat.

A rabbit fence was constructed across the isthmus outside the reserve in February 1993. Rabbits were baited a week before fox baits were laid. This maximised the opportunity for secondary poisoning of foxes eating dead rabbits. Since then there has been regular (approximately 2-monthly) replacement of fox baits and rabbit control.

One hundred and seventy fox bait stations have been established at 200m intervals along tracks, accessible beaches and fence lines. Baits containing 1080 are procured from the Agricultural Protection Board of WA and are identical to those used for fox control in WA. The effectiveness of these programs are illustrated by Fig 3.

During September two feral cats were trapped in 15 trap-nights with jaw traps beside buried rabbit baits. This caused some concern about possible increase in cat numbers following fox control. However only one more was caught in 104 trap-nights in December.

3.2 Population survey and monitoring.

Western Australia.

Standardised monitoring has continued at Batalling where capture rates have risen to 10.24% in the baited area of Batalling Forest and persist (0.25%) in the adjacent Godfrey and Leach Forest blocks (October 1993).

TABLE 2. Woylie capture rates at Batalling Forest.
(Data provided by K.D. Morris.)

DATE	% TRAP SUCCESS (BAITED AREA)	% TRAP SUCCESS (ADJACENT AREA)
December 1990	0.41	n/a
March 1991	1.50	n/a
November 1991	0.95	0.00
February 1992	4.34	0.25
October 1992	8.65	0.50
February 1993	7.35	0.00
October 1993	10.24	0.25

NOTE Fox baiting commenced Feb. 1991

Standard monitoring has not been carried out at other sites, but observation shows woylies to be abundant at Perup and Dryandra and present at all other sites. The revised plan provides for standard trapping lines to be established at all sites in 1994. This will follow the methods used at Batalling Forest.

South Australia.

At Yookamurra formalised monitoring commenced on 24 August 1993 with David Armstrong working alongside Sanctuary staff. The program comprised 25 traps set over four nights (100 trap-nights). Twelve animals (=12% trap success) were caught (four female carrying pouch young, five males and three of unknown sex).

Venus Bay A Island was visited in February 1993. Thirty one animals were caught over two nights for 89 trap-nights (44% trap success). Only four had not been previously captured. Eight of the 22 animals caught on night two were recaptures from night one (ie there were 39 captures). It seems the population has reached equilibrium with the available resources.

Baird Bay Island was visited in February 1993. There were twenty eight captures over two nights for 70 trap-nights (40% trap success). Only seven had not been previously captured. One third of the animals caught on night two were recaptures from night one. It seems the population has reached equilibrium with the available resources.

Wedge Island was trapped in May 1993. This was the first time it has been systematically trapped since the release of the founder stock in 1983. One hundred and twenty two trap-nights yielded 59 captures (48% trap success), 41 males, 17 females and one of unknown sex. The male bias had been noted on the two previous, informal monitoring trips.

St. Peter Island was trapped in March 1993. One hundred and fifty trap-nights yielded 56 captures (37% trap success). Although the newly established formal monitoring sites are within 2 km of the 1989 release site, the whole island (3439 ha) except 20% with dense mutton bird colonies, had numerous recent signs of woylies.

3.3 Range expansion (where feasible) and translocation

South Australia.

Venus Bay Peninsular has been prepared to receive translocated animals in early 1994. Plans have also been made to translocate additional animals to Wedge and St. Peter Islands if the results of the genetic analysis indicates that there would be an advantage in doing so.

Western Australia.

In WA the revised plan has identified a new site, Julimar Forest, which has been used successfully for chuditch translocation and needs no further preparation before receiving woylies. Subject to approval it is planned to release 25 animals from Dryandra in March or early April 1994. It is also probable that CALM's fox research team will apply to translocate woylies into areas that will be baited in the northern jarrah forest.

3.4 Determine the effects of forest management practices

This action was not present in the first edition of the plan because woylies were not known from forests designated for timber harvesting. A research proposal comprising a series of integrated experiments on the effects of forest management practices, including timber harvesting, on a range of conservation

values have been prepared and submitted to CALM's Science and Information Division. The program has been approved and funded. It will commence early in 1994.

3.5 Genetic assessment and re-stocking.

Blood samples have been collected from ten animals on Wedge Island, Island A (Venus Bay) and Unnamed Island (Baird Bay) and fifteen animals from St. Peter Island. They are stored at Curtin University with samples from Tutanning (28) and Batalling (20) collected previously.

Researchers at Curtin University have had difficulty finding an effective probe for DNA analysis of these (and other marsupial) samples. However they have now identified a good probe that gives fifteen bands for woylies. Analysis will commence in early in 1994 (David Groth - Curtin University; pers. comm.).

If analysis of the samples from Wedge and/or St. Peter Islands indicate that the populations would benefit from increased genetic variability, additional animals from wild populations in WA will be translocated into those populations, probably in March/April 1994.

CONCLUSION

The year has been one of taking stock and preparation. The most important achievement has been the revision of the Recovery Plan. The most significant aspect of that has been the realisation that the Team should be able to review the status of woylies in two years time, cutting six years off the time-table set in the first edition. If all goes according to expectation the woylie could be the first marsupial to be recovered to the level of the criteria established in recovery plans.