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TRANSLOCATION PROPOSAL

1. Summary

This proposal seeks to translocate 40 woylies (*Bettongia penicillata*) from Dryandra Woodland to each of 5 sites within the northern jarrah/wandoo forest of Western Australia. The 5 release sites are within the area covered by CALM's Operation Foxglove - an operational program to control foxes within 550,000ha of jarrah and wandoo forest. The translocation proposal forms part of Operation Foxglove's research component aimed at determining efficient and cost effective 1080 baiting prescriptions for large areas of forested land.

The proposal incorporates measures to ameliorate the impact of fox predation on translocated woylies through selection of release sites that meet what has been considered (in the absence of fox control) preferred habitat criteria. Site selection has resulted in comparability across all 5 proposed release sites. Therefore the importance of site selection in the absence of fox control and at varying levels of fox control can be assessed.

The translocation will enhance the conservation status of the woylie by establishing additional populations within the northern jarrah forest and will provide relevant information for future translocations.

The translocation is seen as a re-introduction (or repatriation) of the woylie. The proposed release sites are all within the eastern fringe of the jarrah/wandoo forest. The release site habitat is similar in structure and floristics to the habitat of the westernmost extant wheatbelt populations and comparable with the currently occupied habitat at Perup Nature Reserve and Batalling Forest Block. In the case of Batalling, the woylie population is thought to have either survived in refuge in this habitat and the population supplemented by a re-introduction in 1983, or to be descendants from the 1983 re-introduction exclusively. Whatever the case, the Batalling population was able to maintain a self-sustaining population, albeit at low density, in the absence of 1080 baiting for fox control. Since the commencement of 1080 baiting at Batalling the population has shown a steady increase in abundance and area occupied.

2. Proponent

Paul de Tores,
Research Scientist,
Department of Conservation and Land Management,
Science and Information Division,
Wildlife Research Centre,
Ocean Reef Rd, Woodvale.

3. Background

The distribution, conservation status and biology of *B. penicillata* have been addressed in the Woylie Recovery Plan (Start *et al.* 1994).

The former distribution of the woylie is thought to have covered most of mainland Australia, south of the tropics, covering a wide range of vegetation types (Troughton 1957; Burbidge and Fuller 1984; Burbidge *et al.* 1988; Start *et al.* 1994). Records (presumably from fossil or sub-fossil remains/cave deposits) show its distribution to have been as far west as Mammoth Cave (Leeuwin-Naturaliste National Park) (Kitchener and Vicker 1981). It is therefore probable that its former distribution included the eastern fringe of the northern jarrah forest.

Its current distribution, excluding translocated populations, is restricted to Dryandra Woodland, Perup Nature Reserve (and the immediately surrounding forest areas of Kingston and Lake Muir) and Tutanning Nature Reserve, with unconfirmed reportings from Fitzgerald River National Park.

In Western Australia, translocated populations exist at Batalling Forest Block and Boyagin Nature Reserve. A translocation is proposed to Julimar Conservation Park.

In South Australia, translocated populations exist at 3 islands (Venus Bay Island A, Wedge Island and St. Peter Island) and at 2 mainland locations (Yookamurra Sanctuary and Venus Bay Nature Reserve) (A. Start pers. comm.; Start *et al.* 1994). All of the South Australian populations originated from Western Australia (Start *et al.* 1994).

The conservation status of *B. penicillata* is listed as threatened (W.A. Wildlife Conservation Act) and endangered (Commonwealth Endangered Species Protection Act).

The decline in range and distribution of *B. penicillata* is documented (see Christensen 1980a; Christensen 1980b; Start *et al.*. 1994) and is thought to have been part of the general decline in Critical Weight Range (CWR) fauna that occurred sometime in the early 1930s to 1940s and from the early 1970s (Christensen 1980a; Burbidge and McKenzie 1989).

Research undertaken at Perup Nature Reserve (then state forest) (Christensen 1978; Christensen 1980a) indicated that areas occupied by the woylie could be defined by site-vegetation types, namely:

- well drained, fairly deep sandy soils (and consequently the presence of hypogean fungi which forms a major part of the woylie's diet);
- the combination of ground cover density of 50-80% with 20-40% bare ground in the vicinity of nesting areas; and
- the presence of *Gastrolobium*.

The subsequent translocation to Batalling Forest Block which met the site requirements above, indicated that *B. penicillata* can survive at such sites, albeit at low density, in the absence of 1080 baiting for fox control.

It is important to note that this habitat description, or niche, should be seen as the realised niche, i.e. the niche occupied at that time and in the absence of fox control. Given what is known of the woylie's former distribution, in the presence of fox control there may be a completely different set of factors from those identified by Christensen (1980a) that limit the woylie's distribution.

4. The Translocation

4.1 General

The translocation is proposed to assess the effectiveness of three different fox baiting frequencies. It will also complement the Woylie Recovery Plan.

The proposed work will allow the development of prescriptions (in terms of the 1080 baiting requirements) for translocation to, and maintenance of translocated populations within, multiple use forests in Western Australia. It will determine the degree to which 1080 baiting for fox control (in terms of 1080 baiting frequency) is required when site-vegetation requirements are met.

4.2 Specific Aims

The proposal seeks to translocate *B. penicillata* to 5 sites within the northern jarrah/wandoo forest where the site requirements as identified by Christensen (1980a) are met. The specific aims are to:

- assess the frequency of 1080 baiting that will be sufficient to reduce the fox population density to a level where translocated *B. penicillata* will establish self-sustaining populations; and
- establish *B. penicillata* populations within the northern jarrah forest and enhance the species conservation status.

4.3 The Source Population, Numbers Involved and Conservation Genetics

It is proposed to translocate 40 *B. penicillata* of randomly trapped age class at a female:male ratio of 28:12 from Dryandra Woodland to each of 5 sites within the northern jarrah forest.

The 28:12 ratio assumes male polygamy. The ratio is consistent with the female:male ratio of the Boyagin Nature Reserve translocation (J. Kinnear pers. comm.), where recent trapping has shown an expansion of the area occupied by woylies (J. Courtenay pers. comm.).

Females appear to discard large pouch young more readily than small pouch young. Therefore, to minimise chances of mortality through discarding of pouch young, females chosen for translocation will be those without pouch young, or with small, naked pouch young.

Recent DNA analysis has shown there is considerable genetic variability within the Tutanning Nature Reserve woylie population. Analysis of genetic variability is proposed for the Perup and Dryandra populations (Start *et al.* 1994). Given this, only one area will be sourced for this proposed translocation and Woylies will not be bled at the time of translocation. However, if after three years of monitoring, results indicate a decrease in population size, individuals from each forest translocation site will be bled and samples analysed to determine the degree of genetic variability. If results indicate a loss in genetic variability, supplementary translocations will be considered, sourcing one or more areas. The source area for additional stocking (if required) will be decided after genetic comparisons between the existing populations clarify the degree of genetic variability. This is an action of the Woylie Recovery Plan.

Dryandra is the proposed source for translocations to South Australia, Julimar Conservation Park and the northern jarrah forest (this proposal). The number of individuals proposed for each of the 5 translocation sites in this proposal is restricted to 40 to reduce the impact of removal of animals from Dryandra.

By using Dryandra as the sole source and maintaining a commitment to the recently initiated long-term monitoring of woylie populations at Dryandra, Perup and Tutanning, the impact of removal of woylies from Dryandra can be assessed.

The Dryandra population is also preferred as the source because of:

- the proximity to release sites and therefore greater likelihood of the source (Dryandra) population being similar in genetic make-up to *B. penicillata* populations formerly within the northern jarrah forest;
- the proximity to release sites, therefore minimal transport time and consequently reduced stress associated with time spent in captivity. This negates the need for an interim holding area and holding period; and
- CALM's increased understanding of the resident (Dryandra) population indicates a high population density, with trap success as high as 90% in some areas this year (J. Courtenay pers. comm.).

4.4 *The Release Sites*

A description and the current land tenure status of each of the 5 release sites is given in table 1. Figure 1 shows the 1080 baiting treatment areas and the location of all translocation release sites.

One of the 5 proposed release sites is an unbaited area within Stene Forest Block (proposed National Park). Releasing in an unbaited site will provide a control and hence significantly enhance the design of the translocation and monitoring program. The unbaited area will allow assessment of the relative value of site selection (meeting specified criteria) and 1080 baiting for fox control.

The concept of releasing in an unbaited area has been discussed at Animal Experimentation Ethics Committee (AEEC) meetings. It has been given support in principle. In this circumstance, with the goal and prospect of down-grading the conservation status of the woylie from threatened to vulnerable by the end of 1995 (the period covered by the current Recovery Plan), release of woylies into an unbaited area is seen not as a conservation status issue, but an animal welfare issue.

4.5 *Staging of the Translocation*

Staging of the translocation is outlined in table 1, with an initial translocation of 40 individuals to George Forest Block, Dwellingup District (proposed Conservation Park) (CALM 1994) scheduled for November 1994.

This is within the 6 baitings per year treatment, i.e. within the most intensively baited area of the northern jarrah forest.

This initial translocation will enable assessment of the release site at a minimum level of fox predation. Subject to satisfactory survival, subsequent releases will be in March/April 1995 at the additional 4 release sites (see monitoring below and attached SPP (SPP 93/0157) for monitoring procedures to assess "satisfactory survival").

4.6 *Monitoring*

Monitoring will be undertaken by SID staff as part of Operation Foxglove.

Twice yearly trapping sessions will be conducted at grid sites established at each translocation release site. Ten individuals will be radio-collared from each of the 40 *B. penicillata* at each release site. Intensive monitoring will be undertaken to determine survivorship. Intensive monitoring is currently funded until July 1996, as outlined in the attached SPP (SPP 93/0157).

An additional 10 *B. penicillata* at Dryandra will be radio-collared and monitored. Intensive monitoring will be undertaken to determine survivorship. Survivorship results from Dryandra will be compared with each northern jarrah forest treatment area.

5. Funding

Funding will be met by ANCA, CRC(VBC) and CALM (SID) as outlined in the attached SPP (SPP 93/0157).

6. Endorsement/Approval

Endorsed by:

.....
Head, Bio-Conservation Group

7/Nov/94
.....
Date

Approved by:

.....
Director, WATSCU

.....
Date

.....
Director, Nature Conservation

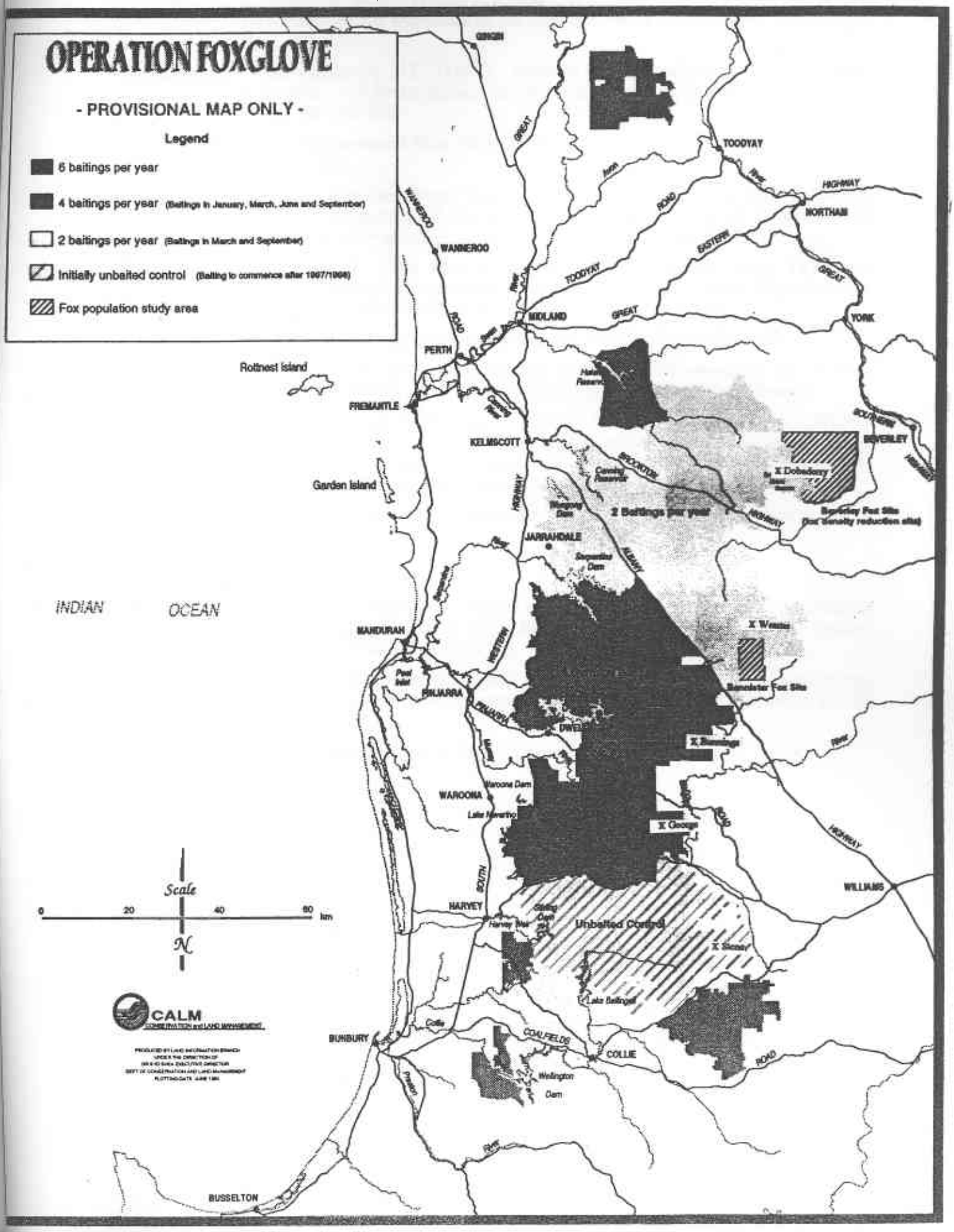
.....
Date

Table 1: ***Bettongia penicillata*** **Translocation Release Sites within the Northern Jarrah Forest of Western Australia** (see figure 1 for release site locations)

Site Name	1080 Baiting Treatment and Description of Site	Land Tenure	Proposed Translocation Date
George	Perimeter site in 6 times per year baiting treatment. Fox control in abutting agricultural land is as described for Wearne site.	Currently State Forest. Proposed Conservation Park.	November 1994
Dobaderry	Perimeter site in 2 times per year baiting treatment. Site abuts the Beverley fox density reduction research site where the resident fox population should be retained at 20-25% of its pre-control density as part of the CRC fox research program (see attached research proposal of Thomson and Marlow).	Conservation Park.	March/April 1995
Wearne	Perimeter site in 2 times per year baiting treatment. Site abuts agricultural land where some fox control may occur but at a level far less than the intensive fox density reduction undertaken at Beverley.	State Forest.	March/April 1995
Bunnings	Perimeter site in 4 times per year baiting treatment. Fox control in abutting agricultural land is as described for Wearne site.	Private Property.	March/April 1995
Stene	Perimeter site in unbaited control. Fox control in abutting agricultural land is as described for Wearne site.	Currently State Forest. Proposed National Park.	March/April 1995

Figure 1: Operation Foxglove 1080 baiting treatment areas and the location of proposed woylie translocation release sites.

X: proposed woylie release site



7. References

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Kitchener, D.J. and Vicker, E. (1981). *Catalogue of Modern Mammals in the Western Australian Museum 1895 to 1981.* Perth: Western Australian Museum.

Start, A.N., Burbidge, A.A. and Armstrong, D. (1994). Woylie Recovery Plan. Wildlife Management Program No 16. Unpublished report of the Western Australian Department of Conservation and Land Management and South Australian Department of Environment and Natural Resources.

Troughton, E. (1957) *Furred Animals of Australia.* Sydney: Angus and Robertson.

8. Attachments

1. Science Project Plan SPP 93/0157. *Control and Ecology of the Red Fox in Western Australia - Native fauna response to 1080 baiting over large areas at three baiting frequencies.* Proponent: P de Tores (CALM).
2. Cooperative Research Centre for Biological Control of Vertebrate Pests Populations. Research Proposal. *Fox population dynamics in W.A.* Proponent: P. Thomson (APB) and N. Marlow (CALM).
3. Letter of agreement of involvement in Operation Foxglove from Bunnings Treefarms.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

BIO-CONSERVATION GROUP
SPECIES CONSERVATION SECTION

memo

To: Andrew Burbidge, Director, WATSCU

From: Paul de Tores

Date: 07 November 1994

Subject: **Translocation Proposal for *Bettongia penicillata.***

Andrew,

Submitted for your comment and endorsement/approval is the revised version of the Translocation Proposal (TP) for the woylie, *Bettongia penicillata.*

The TP involves a staged translocation of *B. penicillata* from Dryandra Woodland to 5 sites within the northern jarrah forest and is proposed to be conducted as part of Operation Foxglove.

I apologise for being unable to submit this TP three months in advance of the proposed translocation date, however, as you are aware the delay was due to the late finalising of baiting areas within the northern jarrah forest. In every other respect the TP has been prepared in accordance with the draft Policy Statement on Translocation of Threatened Flora and Fauna and is consistent with CALM's Wildlife Management Program No. 16 (the Woylie Recovery Plan, Second Edition 1994-95).

Could you please comment on the TP and, if appropriate, forward to the Director, Nature Conservation for approval.

Paul de Tores
Research Scientist

Copy:

Tony Start, A/HOG, Bio-Conservation Group, SID, Woodvale
Per Christensen, HOG, Sustainable Resources Group, SID, Manjimup
Gordon Wyre, Branch Manager, Wildlife Branch
Keith Morris, Section Manager, Species Conservation Section, SID, Woodvale

Department of Conservation and Land Management
Western Australian Threatened Species and Communities Unit

W.A. Wildlife Research Centre
Ocean Reef Road, Woodvale
PO Box 51 Wanneroo WA 6065

To: Director of Nature Conservation

Your Ref:
My Ref:
Phone: (09)405 5128
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Subject: **TRANSLOCATION PROPOSAL - *BETTONGIA PENICILLATA***

Paul de Tores has applied for permission to carry out five different translocations of Woylies (*Bettongia penicillata*) from Dryandra Woodland to areas within the northern jarrah forest. The release sites are within the area covered by CALM's Operation Foxglove and the five translocations are part of the research into the effects of fox control in jarrah forest. Specifically, the translocations are proposed to test the effectiveness of three different fox baiting frequencies.

Woylies are covered by a Recovery Plan and the proposal has the endorsement of the Chair of the Woylie Recovery Team. It has not been referred in detail to the Recovery Team; however, the Team was made aware that proposals similar to this one would be made and did not raise any objections. These proposes translocations are not part of the Recovery Plan, which provides only for a translocation to Julimar Conservation Park during 1994-1995. The draft Translocation Policy states that CALM will approve translocations only under approved Recovery Plans or IWMGs (except for emergency rescue operations). Thus, this translocation, if approved now, would be contrary to the draft Policy, unless the Recovery Plan is amended.

The TP can be considered a to be re-introduction, not an introduction.

I have discussed the TP with Paul and he has made some changes to it at my request.

Two important points with respect to this application are:

- The choice of Dryandra as a source of animals. Dryandra has abundant woylies at present and is the closest natural population to the translocation sites. The Batalling population either came from or was augmented by animals from Perup. Whether there is any significant genetic difference between Dryandra and Perup woylies is unknown; research into the genetics of the two populations is proposed as part of the Woylie Recovery Plan but the data are not yet available. If the translocations are successful, woylies may establish widely in the eastern parts of the northern jarrah forest and the progeny of the Perup and Dryandra animals will come into contact.

- The different fox-baiting regimes. It is important to note that one translocation site will not be baited for foxes. Paul discusses this issue in the TP at the bottom of page 3. His statement suggests that although such an experiment has been given 'in-principle' support by CALM's Animal Experimentation and Ethics Committee, he has not yet been give formal approval. It should also be noted that CALM will be subject to criticism if we translocate a threatened species (or for that matter any animal subject to significant predation by foxes) into an area where foxes have not been controlled. As Paul states, this is an animal welfare issue; woylies are abundant at Dryandra and Perup and should some animals be lost to foxes during this experiment it will not threaten the species.

..... over

This application raises the general issue of translocations for research that are not necessarily aimed at improving the conservation ststus of a species in the short term. The Translocation Policy does not appear to cover this issue adequately - I will look at this while reviewing public comments on it.

Please note that the draft Translocation Policy states that TPs will be refereed by at least two scientists, one from outside CALM.

I recommend that the TP be approved, subject to approval being given by the AEEC and subject to the amendment of the draft Recovery Plan. ||

ANDREW A BURBIDGE
Director, Threatened Species and Communities Unit

14 November 1994

AAB\RAREFAUN\TRANSLOC\WOYLIE

NPM noted.

Tony Start

① Copy this with (both sides) to NAB.
② Give whole to Paul de Tores to note.
③ Refer to MS - I have woylie file at present.

As discussed, this is approved subject to ⊛ above. The Rec. Plan, when formally approved & published, will have similar statement to that in Foreword of Swamp Tortoise Plan re "subject to modification ... (etc)". Nevertheless, when woylie rec. plan is submitted to Corp Exec. for formal approval, it should be amended/ updated to reflect these translocations & Op. Foxglove in general, & it should provide generally for reintroductions in fox-baited areas.

Plse advise Paul de Tores, & copy this to Andrew Burbidge.

Kerrin McNee
17/11/94