Environment Australia
Endangered Species Program

Gilbert's Potoroo Interim Recovery Plan and Gilbert's Potoroo Interim Recovery Plan (extension)

Project Review
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1. Introduction:

Please provide a brief summary of:

- the conservation status and management situation prior to funding the current recovery plan; and
- the current situation.

Gould (1845) described Gilbert's Potoroo from specimens collected by John Gilbert in the 1840s. All early records were located near King Georges Sound, Western Australia, the site of the town of Albany. The species was thought to be extinct because no live animals were recorded after the 1870s. Subsequently, the potoroos were reorganised taxonomically (Iredale and Troughton 1938) so that Gilbert's Potoroo became a subspecies of *P. tridactylus* and the southeastern, southwestern and Tasmanian forms were conspecific.

In December 1994 five potoroos were trapped during a search for quokkas (*Setonix brachyurus*) by a Ph.D. student, Elizabeth Sinclair (Sinclair *et al.* 1996) on Mt Gardner in Two Peoples Bay Nature Reserve near Albany on the south coast of Western Australia. These animals were determined to be Gilbert's Potoroos, as described by Gould.

Interim Wildlife Management Guidelines for Gilbert's Potoroo (according to the CALM format for IWMGs) were written in February 1995 (Start and Burbidge 1995). An application for funding for three years (1995/6, 1996/7 and 1997/8) was submitted in May 1995 by the Western Australian Department of Conservation and Land Management (CALM) to the Australian Nature Conservation Agency, now Environment Australia (EA), for funding under the Endangered Species Program. The application provided an Objective, Criteria and Actions for the proposed project "Preparation and implementation of Recovery Plan for Gilbert's Potoroo *Potorous tridacylus gilbertii*". This project was approved for funding by ANCA as Project 514 under the title "Gilbert's Potoroo Interim Recovery Actions" and ran for the remainder of 1995. Only one further individual potoroo had been captured at that time.

Since then, no additional population has been discovered, although hair tube surveys at nearby locations have produced single hairs on two occasions from one site on Mt Manypeaks. Knowledge of the population on Mount Gardner and of the biology of the species has increased considerably through research on both captive and wild populations. A total of 37 animals has been recorded, nine of which were captive bred or brought into captivity as pouch young. A captive colony has been established at Two Peoples Bay NR. Taxonomic research employing genetic methodology (Sinclair and Westerman 1996) has established that Gilbert's potoroo is as distinct from the southeastern *P. tridactylus* as is the long-footed potoroo (*P. longipes*), so Gilbert's potoroo is again regarded as a full species, *P. gilbertii*.

The program was funded in 1996 as project 514 under the project title "Gilbert's Potoroo Recovery Plan (preparation and interim recovery actions)".

The Gilbert's Potoroo Recovery Plan was finalised in March 1998 and submitted to EA as an application for funding under the Endangered Species Program, for funding in 1998/99.

2. Objectives and criteria:

The objectives and criteria contained in the application for funding submitted in May 1995 were as follows:

Objective: To ensure the recovery of Gilbert's Potoroo by obtaining knowledge of the distribution and habitat of wild populations, identifying processes that threaten them and countering them as well as building up a captive colony as insurance against natural disasters.

Criteria:

1. Improved knowledge of the distribution of Gilbert's Potoroo.

2. Knowledge of the habitat (including food) requirements of (to be discovered, if any and) known populations of Gilbert's potoroo.

3. Knowledge of the processes threatening Gilbert's potoroo including predation, fire and the impact of Phytophthora caused disease and implementation of actions to reduce them.

4. Stabilisation or expansion of wild populations.

5. Existence of a thriving captive breeding colony, at least until sufficient, safe populations are known to be sure it is secure in the wild.

6. Establishment of a full Recovery Team and endorsement of a Recovery Plan to replace the Interim Recovery Team and Interim Wildlife Management Guidelines.

Discuss the following:

- progress towards meeting the Recovery Plan objectives as measured against the criteria;

1. Improved knowledge of the distribution of Gilbert's Potoroo.

Hair-arching and follow-up cage trapping on various parts of Mount Gardner and around the Two Peoples Bay has significantly increased the number of gullies in which potoroos are known to exist. No firm evidence of occurrence in other areas has come to light, despite searching.

2. Knowledge of the habitat (including food) requirements of (to be discovered, if any and) known populations of Gilbert's potoroo.

No additional populations of Gilbert's Potoroo were discovered during the term of the Interim Recovery plan. Therefore the acquisition of knowledge of the habitat of the species was limited to the Mount Gardner population. The detail of the information gathered so far is discussed under Action A2, which relates directly to this criterion.

There is a body of data that has been gathered that could elucidate habitat requirements of the species, but has not been adequately analysed. These data relate to the habitat attributes of sites where potoroos have been detected, either through

trapping or hair-tubing, and the comparison with sites where trapping or hair-tubing has been carried out without success

Radio-tracking has not been utilised to its full potential, largely because an acceptable method of attachment of transmitters has not been developed. There are other difficulties associated with radio-tracking on Mount Gardner (ie signal bounce) which must be surmounted before the method can be utilised successfully for habitat utilisation studies.

Spooling, however, has been used successfully to describe potoroo movements in great detail. This method has provided the greatest revelation of habitat preferences, albeit on a short time-scale due to the limited length of thread available.

Potentially valuable information is being gathered through the parallel study of diet through scat collection for analysis and searches for hypogeal fungi. This study has only recently started and no results are as yet available.

3. *Knowledge of the processes threatening Gilbert's potoroo including predation, fire and the impact of Phytophthora caused disease and implementation of actions to reduce them.*

This criterion has not been approached as a research project, understandably so because that would require the establishment of control and experimental areas, and thus the imposition of the suspected threatening processes on part of the Gilbert's potoroo population. With such a small population, this would be unacceptable, so the approach has been to gather information in the hope of learning through a process of inductive reasoning. The monitoring of radio-collared animals in areas subject to exotic predator control would still provide information on the reduced sources of predation, and a better knowledge of diet would allow an assessment of the *Phytophthora* susceptibility of the array of fungi in the diet. In both these cases, the new knowledge gained has been small, due to the reasons outlined under Criterion 2.

4. *Stabilisation or expansion of wild populations.*

Currently, this criterion can apply only to the Mount Gardner population. The expansion of the fox-baiting program is the primary action taken to stabilise/expand that population. Limited phosphite spraying has been carried out in order to reduce the spread of *Phytophthora* and thus limit the loss of the shrub layer due to dieback disease.

5. *Existence of a thriving captive breeding colony, at least until sufficient, safe populations are known to be sure it is secure in the wild.*

A captive colony has been established, but after a healthy birth rate in the early stages, there have been only two births in the last two years despite a captive population of 10-15 animals. It cannot be described as thriving. Currently the captive colony is not fulfilling either its primary role, to provide security for the species or its potential role, to provide a supply of new animals for translocation to a new site.

6. *Establishment of a full Recovery Team and endorsement of a Recovery Plan to replace the Interim Recovery Team and Interim Wildlife Management Guidelines.*

A Recovery Plan has been written and submitted to Environment Australia for funding under the Endangered Species Program. Endorsement by CALM is required before it can be submitted for adoption under the ESP Act.

- how progress to date indicates the likelihood of achieving the objectives which have a time frame that is beyond the current approved funding; and

The objective stated in the application for funding had no stated time frame within or beyond the current approved funding. Achievement of the objective requires "ensuring the recovery" of the species through acquiring knowledge, identifying threatening processes and countering them. This process has started, in that some knowledge on distribution and habitat has been gained. Threatening processes (perceived, rather than experimentally identified) are being countered (ie fire, predation by foxes and dieback disease). A captive colony has been established, but breeding is not routine. Progress to date does not indicate that the objective will be achieved through the current work program.

- all continuing and new threats and their likely impacts on the potential to meet the objectives; and

Gilbert's Potoroo has proved difficult to study. It is apparently trap-shy, it may live at low densities, it inhabits thickly-vegetated, rugged country and it cannot wear conventional radio-collars without injury. Its only known habitat is subject to dieback hygiene restrictions, which prevent access after rain, a frequent event in this area. Due to the difficulties in studying this species, very little hard evidence of threats has been collected.

Recovery requires the measurement of population numbers or development of a meaningful population index, so that changes in numbers can be assessed. Quantitative population assessment of Gilbert's Potoroo is not yet possible. This needs to be addressed.

- how the criteria can be amended for the next plan to incorporate the 1994 IUCN Red List Categories.

Gilbert's Potoroo was listed as Critically Endangered by Maxwell *et al.* (1996) on the basis of criteria C2b (population estimated to number less than 250 mature individuals, a continuing decline observed, projected or inferred, in mature individuals and all individuals in a single sub-population) and D (population estimated to number less than 50 mature individuals).

If the objective of the recovery plan includes downlisting the species from Critically Endangered to Endangered, under IUCN (1994) criteria C and D, continuing decline must be arrested, and/or another wild sub-population must be established and reach estimated numbers of over 50 mature individuals and the estimated total population must rise above 50 mature individuals.

The recovery criteria should then include

1) a positive or neutral population growth rate

2) the establishment of another sub-population, and
3) growth of both sub-populations to more than 50 mature individuals

Changes to objectives and criteria:

- Where changes were made to the actions that had implications for criteria and objectives (refer last point section 2), describe the changes, the reasons for making them; and the impacts and implications of these changes for the recovery of the species.

No changes were made to the objectives, criteria or actions.

3. Actions:

The format of the Interim Wildlife Management Guidelines focuses on Management Issues and Research. Actions are embedded within both of these sections and are sometimes repetitive. The Actions listed in the application to EA for the project "Preparation and implementation of Recovery Plan for Gilbert's Potoroo (*Potorous tridactylus gilbertii*)" are used as a structure within which to undertake this review.

The Interim Recovery Plan includes other actions, including fox control, fire management and dieback disease management on Two Peoples Bay that are entirely funded by CALM. These actions are seen as essential to the survival of the Mount Gardner potoroo population as well as to other values of the nature reserve, not the least of which is the continued survival of the Noisy Scrub-bird (*Atrichornis clamosus*) population. They will continue regardless and are therefore not included in this review.

Two projects were funded by EA during the 3-year period covered by this review. Project 514 "Gilbert's Potoroo Interim Recovery Plan", refers to the original actions proposed in the Interim Wildlife Management Guidelines and funded for three years commencing in June 1995. Project 559 "Gilbert's Potoroo Interim Recovery Plan (extension)" was funded for one year only, commencing in 1998.

A. PROJECT 514

Action A1. Develop techniques to more effectively detect Gilbert's Potoroo, survey known population at Two Peoples Bay and new sites.

Provide the following information:

- progress made to date;

Detection techniques: At the commencement of the project, the only method being used to detect GP was cage trapping using apple/peanut butter baits, the method used to capture the first individuals. During the course of this project, indirect methods have been tested and refined. Firstly, baits used to attract Gilbert's Potoroos (GPs) contain pistachio oil, resulting in a higher capture rate. Secondly, the well-established method of hair-tubing (Suckling 1978, Winnett and Degabrielle 1982, Scotts and Craig 1988) has been adapted be more sensitive to GPs and more appropriate to the rugged and poorly accessible terrain.

To make the hair collection more efficient, arches were used rather than the more traditional tube design. This allows the hair-collecting device to be more portable and adaptable to a variety of situations. Gilbert's Potoroo uses identifiable runways through dense vegetation and this behaviour can be exploited by setting the hair-arches in such a way that the animals move through the arch, leaving hair behind on the double-sided sticky tape on the way through. Additionally, the arches were constructed of light, strong, flexible plastic formed into the arch shape in the field by the use of wire hoops that are pushed into the soil. This light construction allows a large number of hair-arches to be carried through difficult terrain for survey purposes.

Expertise has been developed in identifying suspect hair samples microscopically. Again, these methods are well established (Brunner and Coman, Woolley and Valente) but familiarity with the hairs of the particular species found in particular areas is vital. In particular, field staff have developed expertise in distinguishing potoroo hairs from quokka hairs, as these are the easiest to confuse. Fortunately, quokkas are not highly abundant, and the presence of hairs that could be either potoroo or quokka may be used to trigger a more intensive search.

Survey of Two Peoples Bay

A hair-arch survey of likely sites in Two Peoples Bay NR was carried out in the first year of the project. This survey could be considered extensive rather than intensive, and revealed the presence of potoroos in six sites well spread over Mount Gardner. Subsequent survey work has filled in some gaps, but there is a need to undertake a more intensive hair-arch survey, both to extend the area covered and to resurvey areas of suitable habitat where no hair was recovered before. Fox control may have allowed an expansion of the area occupied by the species since 1995.

A hair-arch survey should be followed up by trapping, as has been the practice in the past, to allow a better estimate of potoroo numbers present.

Survey of new sites

Survey of new sites has been given lower priority than survey of Mount Gardner, so it has been limited to a few adjacent areas (Mt Manypeaks, Torndirrup NP, Gull Rock NR, Waychinicup NR and Norman's Beach). The most significant effort has been expended on Mount Manypeaks, following the recovery of one potoroo hair in a hair-tubing survey that was part of a different project. Another potoroo hair was recovered in follow-up hair-tubing. This result is being viewed cautiously, as a single hair could have been due to contamination by operators who also handle animals. Rigorous hygiene measures have been instigated to eliminate the possibility of contamination.

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

No schedule was established for this action, but significant progress has been made. The results of surveys on Mount Gardner and adjacent sites have not markedly changed the situation for Gilbert's Potoroo. This work has confirmed that the species exists in low numbers, and there is as yet no concrete evidence that it occurs anywhere but Two Peoples Bay.

- whether the action has been successfully completed or will be completed in the next few months;

The techniques have been developed, but the survey is ongoing.

- whether the action will be included in a subsequent plan;

The second part of this action (survey at Two Peoples Bay and adjacent sites) is included in the new Recovery Plan.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

Survey to extend the known distribution and to more accurately assess the population on Mount Gardner is a fundamental action in the species recovery. The impact of not funding it would be the loss of any ability to assess the status of the species.

- discuss whether alternative means of resourcing the action have been sought and what they were.

Honours and undergraduate students from Edith Cowan University have extended the hair-arch survey and survey trapping. A significant amount of additional fieldwork has been accomplished in this way, with no salary cost to the project beyond the research scientist's supervisory time.

Action A2: Determine the habitat requirements of Gilbert's potoroo.

Provide the following information:

- progress made to date;

Trapping and hair-arching have provided some data which could be used to assess habitat preferences, but these data have not yet been analysed.

Radio-tracking Gilbert's Potoroo has been beset by difficulties, including the tendency of standard radio-collars to cause severe chafing, and low fix accuracy due to signal bounce. The resulting data give only a broad indication of habitat usage.

Spooling has proved to be a more valuable technique in elucidating habitat usage and preferences in GPs. In 1996 an investigation of habitat use was carried out as part of an honours project (Vetten 1996). This study showed that the potoroos used a variety of floristic types and densities of vegetation, that they used runways through dense vegetation that they probably shared with quokkas, and used more open areas for foraging.

A study of the occurrence of fungi in the diet of the potoroos and in different vegetation associations at Two Peoples Bay is currently being carried out by expert volunteers with funding from WWFA. Results are not yet available, but it is hoped that together with nutritional analysis of the fruiting bodies of the hypogeal fungi, these data will indicate where the food resources of the potoroos are located.

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

This action is running to the schedules presented to EA at the beginning of each funding year. The information collected, particularly through the spooling study and through the fungi study, will provide a significantly greater understanding of the potoroos' use of habitat.

- whether the action has been successfully completed or will be completed in the next few months;

This action is ongoing, as more intensive monitoring of animal movement by radio-tracking and detailed movement tracking, for example by spooling, needs to be carried out to more accurately define potoroo habitat.

- whether the action will be included in a subsequent plan;

This action is included in the new Recovery Plan.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

The most expensive commodity required for a radio-tracking study is personnel time, so the funding of the technical officer is vital to the study. Without the purchase of the radio-tracking equipment, the study would be impossible.

- discuss whether alternative means of resourcing the action have been sought and what they were.

Undergraduate and honours students at Edith Cowan University and their supervisors have contributed greatly to this action by donating their time. Without them much less would have been done.

Action A3: Investigate threatening processes such as predation and Phytophthora-caused disease

Provide the following information:

- progress made to date;

Work carried out under this action has comprised fox control by the aerial and ground distribution of 1080 baits and the mapping of dieback-affected areas on Mount Gardner. At the beginning of the project, fox control was carried out by the distribution of eggs containing 1080. During the project, when the fox control/animal reintroduction program "Western Shield" was implemented, aerial baiting four times a year with dried meat baits commenced in addition to the egg baiting which continued through the winter.

Spraying with phosphite was originally proposed to protect Mount Gardner from further extension of diseased areas. However, detailed dieback mapping has been carried out at Two Peoples Bay since the beginning of this project. About half of the Mount Gardner area has now been surveyed and affected areas mapped. The mapping exercise has shown that dieback is much less widespread than previously thought and that spraying is not warranted at this stage. Knowledge of affected areas will also allow evaluation of the risk posed by the disease to potoroo core habitat.

The recovery of a probable potoroo hair from a dieback-infected site in 1998 was the first indication that the species may be able to occupy such habitat. This record has not been confirmed by a live capture, however.

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

Fox control under this action is running to schedule. Dieback mapping is proceeding although not scheduled. Phosphite spraying has been postponed. The mapping exercise has shown that dieback is much less widespread than previously thought and that spraying is not warranted at this stage. In the opinion of the Recovery team, the lack of spraying will not affect the survival of the potoroos in the short term, and will have no implications for other actions, or the meeting of criteria or the Objective.

- whether the action has been successfully completed or will be completed in the next few months;

This action is ongoing.

- whether the action will be included in a subsequent plan;

This action has been included in the Recovery Plan.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

Fox control is seen as vital for the continued existence of Gilbert's potoroo.

- discuss whether alternative means of resourcing the action have been sought and what they were.

Action A4: Maintenance and recruitment for captive breeding colony

Provide the following information:
progress made to date;

Four of the first five potoroos captured in December 1994, including a female with a pouch young, were the founder members of the breeding colony. A total of seven adult animals were removed from the wild to stock the captive colony. Two pouch young were brought in with these animals. There have been 6 births in captivity that survived to permanent pouch exit. The current holding (November 1998) is 13 animals (two adults have died in captivity). Breeding has slowed down lately, with two births in 1997 and only one in 1998.

Captive maintenance protocols have been developed and incorporated into a Husbandry Manual (Courtenay, unpublished). A Captive Management Plan has also been prepared (Courtenay, unpublished).

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

No schedule was established for this action, but it was hoped that the colony would be growing in number. The fact that it is not has serious implications for the meeting of

criteria and objectives. The captive colony does not bestow the security it is meant to if it is not at least maintaining itself.

- whether the action has been successfully completed or will be completed in the next few months;

This is an ongoing action.

- whether the action will be included in a subsequent plan;

This action is fundamental to the plan.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

If the captive colony was not funded, the species would lose both the potential security of a captive breeding colony, and the possibility of future translocations.

- discuss whether alternative means of resourcing the action have been sought and what they were.

Small sponsorships have helped with the captive colony. SONY (Perth) loaned a VCR and quad splitter for several months for a behavioural study.

Action A5: Genetic studies on Gilbert's potoroo

Provide the following information:

- progress made to date;

The first question posed by the rediscovery of Gilbert's Potoroo concerned its relationship with the other potoroos, especially *Potorous tridactylus*. Elizabeth Sinclair's Ph.D. work included an analysis of these relationships using allozyme electrophoresis and mitochondrial DNA sequencing. The result of this work was the demonstration that Gilbert's Potoroo was a separate species.

Since the rediscovery, all evidence has indicated that the Gilbert's Potoroo population at Two Peoples Bay is small, and that it may have been through a bottleneck and consequently have retained only low genetic variability and lost rare alleles. Sinclair (*et al.*, in press) then used microsatellite data to examine this question, but found no evidence for a genetic bottleneck.

Tissue samples are collected from all wild and captive individuals. This will allow further analyses in future, to strengthen results already found, or to undertake further analyses such as using microsatellite data to examine parentage in the wild.

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

This action is running to schedule.

- whether the action has been successfully completed or will be completed in the next few months;

Further microsatellite analysis can be completed within several months.

- whether the action will be included in a subsequent plan;

A recommendation to carry out an analysis of parentage is in the Recovery Plan.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

The action is not ongoing.

- discuss whether alternative means of resourcing the action have been sought and what they were.

All genetic work so far has been funded from other sources, such as ALCOA of Australia.

Action A6: Employment of a scientist based at Two peoples Bay.

Provide the following information:

- progress made to date;

Wes Manson was employed as the scientist in this position from March 1995 to January 1996, Jeff Middleton from January-April 1996, then Jackie Courtenay from April 1996 until July 1998. During 1998 a re-evaluation of the program and the allocation of human resources in CALMScience was conducted. The decision was made during the writing of the Recovery Plan that a senior CALM scientist would take over, with a major commitment of time to the potoroo program.

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

The implication of this change for other actions will be positive, as it will bring a greater commitment from CALM into the project.

- whether the action has been successfully completed or will be completed in the next few months;

The action is ongoing.

- whether the action will be included in a subsequent plan;

The action is ongoing, although it has been extended to include the appointment of a technical officer.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

Input from a senior scientist with close involvement in the program is seen as vital for its success. The scientist is entirely funded by CALM.

- discuss whether alternative means of resourcing the action have been sought and what they were.

Dr Courtenay's salary was half paid by Edith Cowan University until early in 1998. The new scientist's salary will be provided by CALMScience.

B. PROJECT 559

Action B1: The IRP be revised to incorporate construction of captive management facilities and technical support.

Provide the following information:

- progress made to date;

Soon after this project was funded, the Recovery Team decided that a full Recovery Plan should be written. Revision of the IRP was thus unnecessary. The RP proposes expenditure on the ongoing employment of a technical officer.

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

The action is effectively running to schedule.

- whether the action has been successfully completed or will be completed in the next few months;

This action has been carried out already

- whether the action will be included in a subsequent plan;

This action is included in Gilbert's Potoroo Recovery Plan 1998-2007.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

Extension of the breeding facilities at Two Peoples Bay will not occur if funding is not available. The present breeding facilities are full and do not allow the flexibility required for attempting different breeding combinations with the number of animals now in captivity.

- discuss whether alternative means of resourcing the action have been sought and what they were.

Alternative means of resourcing this action have not been sought.

Action B2: Construction of captive management facilities and technical staff support for Gilbert's Potoroo interim recovery actions.

Provide the following information:

- progress made to date;

Technical support has been provided for the project since March 1998, through the employment of a technical officer for the potoroo project. Construction of cage facilities was delayed during a review of the captive management of Gilbert's

potoroo. The Recovery Team will make recommendations on the expenditure of these funds at its meeting in December 1998.

- whether the action is running to schedule or if the action was **changed or dropped**, describe the implications for other actions, the meeting of criteria and objectives;

Provision of technical support: this part of the action is running to schedule.
Construction of additional cage facilities: this part of the action has been delayed. As potoroos have not bred since March 1998, overcrowding has not worsened, but the flexibility to apply experimental management methods, (eg to separate individuals, or extend the area available per individual) is still lacking. This may be having a negative impact on Action A4.

- whether the action has been successfully completed or will be completed in the next few months;

The "Provision of technical support" part of the action has been successfully carried out. Construction of additional cage facilities has not been carried out pending a review of the captive breeding program.

- whether the action will be included in a subsequent plan;

The action is included in the Gilbert's Potoroo Recovery Program 1998-2007.

- if the action is ongoing, discuss the impact of not continuing funding for it; and

The provision of technical support item is ongoing. Discontinuing funding would result in a great reduction in field work

- discuss whether alternative means of resourcing the action have been sought and what they were.

Alternative means of resourcing the action were not sought.

4. Conservation status:

This section deals with the conservation status in terms of changes to numbers of individuals, populations, threats etc. The changes need not be so significant as to lead to a revision of its ESP Act or ANZECC listing.

- Provide an assessment of the species against the 1994 IUCN Red List Categories; and

Critically Endangered. C2b,D. This assessment could be queried on the basis of a lack of quantitative data on population trends. However, there is no evidence to suggest that total numbers in the wild are over 50 animals, so the species would qualify as Critically Endangered on the basis of D alone.

- if possible, include an analysis of population change, or some index of abundance, over time and discuss the implications of this in terms of conservation status.

These data are not available.

5. Where there has been an improvement in status, describe and discuss the reasons for this, particular whether it was it a result of:

- management actions;
- improvement in the knowledge of the species to allow a more accurate assessment of status (1994 IUCN Red List Categories); or
- other factors (eg improved climatic or productive conditions, or changes in IUCN status criteria etc).

6. Alternatively, where there has been a deterioration or no change in the status, discuss:

- why the actions have not led to an improvement in status;

It is not possible to give quantitative information on population trends in Gilbert's potoroo. However, there has been no dramatic increase in the species' numbers since it was rediscovered. Low trappability poses difficulties in measuring population numbers.

- any proposed changes to overcome the problems;

A greater effort is required to set up a trapping grid for monitoring potoroo numbers. This requires an all-out effort in summer, because when the rain starts, access to the mountain will be restricted.

- impacts on status if funding is discontinued; and

If funding is discontinued, the status of the animal will be even more difficult to assess.

- whether a greater funding contribution from implementing agency or other sources been considered.

A greater funding contribution has already been made by CALM in substituting a scientist for a contract employee.

7. Knowledge/understanding of species:

- Describe improvements that have been made to the knowledge of management of the species, or other threatened species, as a result of this project.

Difficulties in studying this species have limited advances in knowledge of its conservation management. The species was found on Mount Gardner, a site protected from wildfire by its location on a peninsula projecting into the Southern Ocean. Individual were living in long-unburnt vegetation, and not in vegetation of other fire ages. Fire exclusion is a fundamental management technique at Two Peoples Bay. Exclusion of predators must be an extremely important management technique for Gilbert's Potoroo. One individual that was fitted with a radio-collar was found apparently killed by a cat. Cat control methods are becoming available, and should be applied to Mount Gardner in the near future.

A great amount of work has gone into developing captive management guidelines, and the husbandry of the captive colony is very well established now. Spooling has revealed habitat preferences and has made potoroo diggings more recognisable.

8. Publications resulting from the project.

- Please provide the publication references.

Gillen, K., Danks, A., Courtenay, J and Hickman, E. (1997). Threatened Species management on the south coast of Western Australia. *PARKS* **7(1)** : 23-30.

Sinclair, E.A., Danks, A. and Wayne, A.F. (1995). Rediscovery of Gilbert's Potoroo, *Potorous tridactylus*, in Western Australia. *Aust. Mamm.* **19** : 69-72.

Sinclair, E.A. and Westerman, M. (1997). Phylogenetic relationships within the genus *Potorous* (Marsupialia: Potoroidae) based on allozyme electrophoresis and sequence analysis of the Cytochrome *b* gene. *J. Mamm. Evol.* **4** : 147-161.