GILBERT'S POTOROO RECOVERY TEAM

ANNUAL REPORT

1998

by Tony Friend and Tania Butler

for

The Gilbert's Potoroo Recovery Team

Department of Conservation and Land Management
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Natural Heritage Trust
Helping Communities Helping Australia

Department of Conservation and Land Management

SUMMARY

The rediscovery of Gilbert's Potoroo in December 1994 was followed quickly by the establishment of a captive breeding colony, a sustained effort to define the extent of the potoroo population and the preparation of interim management guidelines for the species. Four years later, excellent facilities for the captive breeding colony are present but the production of young has subsided after a total recruitment of 7 new animals. Research into the reproductive physiology of the species is now under way, to complement ongoing studies of pairing behaviour.

Field studies have progressed slowly due to a range of factors, not the least of which are the dense and rugged terrain, coupled with the problems associated with the risk of spreading plant fungal disease under wet conditions.

The Recovery Plan for Gilbert's Potoroo was completed in 1998, laying out a course of action for the next ten years, with the aim of changing the classification from Critically Endangered to Endangered.

A review of the progress of the implementation of the Gilbert's Potoroo Recovery Plan was carried out in November 1998 as required and submitted to Environment Australia for assessment (Friend 1998).

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INTRODUCTION

The rediscovery of a species thought to be extinct can be justifiably the cause of great joy, being akin to a return from the dead. This happy event is accompanied, however, with a heavy responsibility: to prevent the extinction that was perhaps so near. In the case of Gilbert's Potoroo, the lack of any record for over 100 years was due to a number of factors, including its secretive nature and the dense vegetation that it prefers to inhabit. This animal is one of the few medium-sized Australian mammals that has evaded detection for such a time – a fact which provides strong evidence that its numbers are very small.

The first priority was to attempt to secure a sample of the only known population, in case of a catastrophe that might cause the loss of the species in the wild. The captive colony thus established could serve as the foundation of a captive breeding program that could provide stock for a translocation. Animals were taken from the wild for this purpose immediately and husbandry methods devised.

Many questions remained to be answered, not the least of which related to the biology of the species in the wild. A research program was commenced which was aimed at elucidating aspects of trophic relationships, habitat use, breeding biology and population genetics, fundamental to designing a recovery strategy for the species. The very rareness of the species combined with difficulties of working in the environment in which it remains have caused slow progress. But the urgency of the task and its importance have inspired those working on it to put in their best effort, even when the rewards seem a long way off. This is what will save Gilbert's Potoroo.

MEMBERSHIP

The membership of the Gilbert's Potoroo Recovery Team at the beginning of 1998 was as follows:

Kelly Gillen (Chair)	CALM South Coast Region
Andrew Burbidge	CALM, WATSCU
Jackie Courtenay	CALM/ECU Consultant
Alan Danks	CALM Albany District
Kevin Ellard	Wildlife Veterinary Services
Bruce Male	Environment Australia, Threatened Species & Communities Sectionj
Alan Needham	ECU Applied Science
Vic Smith	Representing local conservation groups
Tony Start	CALM, CALMScience

During the year Kelly Gillen transferred to Midwest Region and left the Team. Alan Danks was appointed to Kelly's former position as Nature Conservation Program Leader and also took over as Chair of the Recovery Team. Jackie Courtenay resigned her position in July but remained a member of the team. Tony Friend (CALMScience) was appointed Project Leader (Gilbert's Potoroo Project) and joined the team in November 1998. Tony Start retired from the Team in December 1988 pending his move to the Kimberley.

MEETINGS

The Recovery Team met twice during 1998. Meeting 10 was held at CALM Albany on 23 June and meeting 11 at the WA Wildlife Research Centre, Woodvale, on 17 December.

RECOVERY PLAN STATUS AND FUNDING

The Recovery Plan for Gilbert's Potoroo (Courtenay *et al.* 1998) was submitted to Environment Australia (EA) in March 1998 as an application for funding under the Endangered Species Program of the National Heritage Trust. It replaced the Interim Wildlife Management Guidelines for Gilbert's Potoroo (Start and Burbidge 1995) that were produced in February 1995 following the rediscovery of Gilbert's Potoroo in December 1994. These guidelines were given costings and submitted to EA in May 1995 as an application for funding over three years, as Gilbert's Potoroo Interim Recovery Actions. Another project application was submitted for funding in 1997 as an extension to the concurrent Interim Recovery Actions.

At the commencement of 1998 the recovery of Gilbert's Potoroo was funded by EA and CALM in accordance with two Project agreements, as follows:

1) Gilbert's Potoroo Interim Recovery Plan (extension) (funded in only one year, to April 1998) and

2) Gilbert's Potoroo Interim Recovery Plan (third year of funding, Jan 1998-Jan 1999)

Actions proposed under these agreements were as follows:

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

97.01. The IRP be revised to incorporate construction of captive management facilities and technical support.
97.02. Construction of captive management facilities and technical staff support for Gilbert's Potoroo interim recovery actions

2) Gilbert's Potoroo Interim Recovery Plan

98.01. Develop techniques to more effectively detect Gilbert's Potoroo, survey known populations at Two Peoples Bay and new sites.
98.02. Determine the habitat requirements of Gilbert's Potoroo.
98.03. Investigate threatening processes such as predation and Phytophthora-caused disease.
98.04. Maintenance and recruitment for captive breeding colony.
98.05. Genetic studies of Gilbert's Potoroo.
98.06. Employment of a scientist based at Two Peoples Bay.
98.07. Undertake a major review of the project by 31 October 1998.

The Recovery Plan for Gilbert's Potoroo establishes a five-year work program. Funding was approved for 1998/99 and an application has been sumbitted to the NHT for a further two years' funding. In 1998, therefore, work was mainly carried out in respect of Actions contained in the Interim Recovery Plan. This report relates to the actions listed above, although the Recovery Plan took over the direction of work during 1998.

IMPLEMENTATION OF INTERIM RECOVERY PLAN ACTIONS

97.01. The IRP be revised to incorporate construction of captive management facilities and technical support.

This action was carried out in the preparation of the Recovery Plan (Courtenay *et al.*, 1998).

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

A position for a Technical Officer on a one-year contract was established during 1997 and advertised. Tania Butler was the successful candidate and commenced work in mid-March 1998.

The captive breeding facilities constructed in 1995 comprised eight cages, a preparation room and an access corridor, but were designed to allow expansion in the future. Funds applied for under this action were sufficient to extend the facility by six cages. This was felt to be necessary due to the growth of the breeding colony and the need for more flexibility in accommodation.

During 1998, the Recovery Team deliberated about the possibility of handing the colony over to Perth Zoo. At this stage, plans to extend the facility at 2PB were put on hold, until a decision about the future of the breeding colony was made. At Meeting 11 in December 1998, the Team decided to continue with the breeding colony at 2PB. Consequently, the cage facilities will be extended early in 1999.

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

In the first year of the Interim Recovery Program, specialised techniques to detect potoroo presence were developed. These included the use of purpose-built "hair arches" to detect potoroo presence without the need to visit traps daily and methods to identify potoroo hair, particularly to distinguish it from quokka hair. Trapping methods were also adapted for the potoroo by the use of synthetic pistachio essence in universal bait in order to increase its attractiveness to Gilbert's Potoroo. The use of this bait additive had previously been developed by biologists studying the long-footed potoroo (*Potorous longipes*) in Victoria.

Use of these techniques continued in 1998, extending the survey of the Two Peoples Bay Nature Reserve (2PBNR) and sites outside the nature reserve.

Hair Tubing

The use of the hair-arch technique was applied to three sites within 2PBNR and one outside. The hair-tubing survey at Mt Manypeaks was the fourth conducted in the area and commenced during a trapping expedition described below. Hair arches were set on the ridge and upper slopes of Mt Manypeaks in areas remote from the trapping area that had not been hair-tubed previously, and along one of the traplines, which followed a gully where hair identified as potoroo had been recovered in Sarah Barrett's and Sarah Vetten's surveys.

Table 1. Results of hair-arch surveys during 1998.

Site	# of Hair Tubes	Analyses		Results
		Pre sort	Microscope	
"Little Beach"	112	Completed	Completed	2 potoroo hairs. Some too fine to analyse
Tick Flat Saddle	164	Completed	Completed	No potoroo hair.
Lower Firebreak	192	Completed	Most completed	3 sets of potoroo hair. A lot too fine to analyse.
Mt Manypeaks	100	Completed	¾ completed	No potoroo hair. A lot too fine to analyse.

On the basis of successful recoveries of potoroo hair at "Little Beach" (actually a site above Whalers Cove) and Lower Firebreak Gully, traplines were established in an attempt to capture potoroos.

Trapping

Trapping was carried out in seven sites during 1998, for several purposes:

a) To confirm presence of potoroos indicated at survey sites by hair tubing
b) To monitor potoroo health and abundance at known colony sites
c) To collect scats on a monthly basis for dietary analysis
d) To collect information on dispersal of young.

Table 2. Trapping effort and results during 1998.

Site	Date	Trap Nights	Potoroo #	Other Species trapped
East Fire Break	24/3/98 – 16/12/98	180	9 adult males captured (2 individuals); 1 juvenile male; and 6 adult female captures (2 individuals); 1 juvenile female	Quenda, bush rat, quokka, bobtail
Little Beach	July 98 – December 98	216	No potoroos	Quenda, bush rat, King's skink, raven, dunnart
Lower Fire Break	8/12/98 – 11/12/98	312	No potoroos	Bush rat, house mouse, quenda, quokka, dunnart, mardo, *Varanus*
Mt Gardner Road Survey	20/10/98 - 22/10/98	201	1 adult male potoroo	Quenda, dunnart, bush rat, King's skink, bristle bird, raven, bobtail
West 6	27/11/97 - 15/4/98	357	2 adult males, 1 young adult female with 15mm py	Bush rat, quenda, quokka, King's skink
Mt. Manypeaks	24/11/98 - 27/11/98	305	No potoroos	Bush rat, quenda, mardo, brushtail possum

East Firebreak

This is the most reliable trapping site and appears to be in one of the most extensive areas of suitable habitat for potoroos at 2PBNR. The trapline of 20 traps at approximately 10m intervals is placed centrally in an area dominated by *Melaleuca striata* over the sedge *Anarthria scabra*. Even so, the size of the colony here is unlikely to be greater than 20 animals, possibly less than 10. Females captured generally have pouch young or young at heel.

This area was trapped monthly for one night from March 1998 until February 1999 to obtain potoroo scats for analysis by Katie Syme as part of the WWF-funded project comprising a survey of the hypogeal fungi of 2PBNR and an investigation of the diet of Gilbert's Potoroo.

"Little Beach" and Lower Firebreak

These areas were trapped following the recovery of potoroo hair in hair-arch surveys. No potoroos were captured.

Mt Gardner Road Survey

In order to establish a regular and easily repeatable trapping protocol conforming with Western Shield monitoring procedures, a transect of 67 cage traps was set up in 1996 at permanently marked sites at 100m intervals along the Mt Gardner management track in 2PBNR. Trapping is carried for three nights in spring each year. During the October 1998 survey, one male potoroo was caught, in an area on Tick Flat where no evidence of potoroos had been detected before, but near where Sarah Vetten carried out an intensive hair-arch survey for potoroos in 1997, without success. This animal was later (during 1999) recaptured regularly in the North Firebreak, area about km away, so it appears to have been trapped while moving outside its usual home range.

West 6

This is a new site on the southwest side of the Mt Gardner peninsula discovered by Jackie Courtenay by hair tubing in late 1997. A trapline established in March 1998 yielded three new individual potoroos, a female and two males.

Torbay

Hair tubing was carried out by Bert and Barbara Main on their property near Torbay, 30 km west of Albany, following their discovery of unusual diggings. No potoroo hair was recovered.

Mt Manypeaks

Hair tubing has been carried out near the top of Mount Manypeaks on three occasions. The first was part of Sarah Barrett's mountain ecology study and a line of 10 hair tubes east of the radio-tower yielded a single "quokka/potoroo" hair that was identified as a probable potoroo hair. In January 1997 during one of the two follow-up surveys, Jackie Courtenay, Sarah Vetten and Sarah Barrett set up a line of 100 hair-arches in the same gully site. Thirty-three arches collected hair, amongst which a single potoroo hair was identified. A decision was subsequently made to carry out a trapping survey of the area, using a helicopter to transport a team, traps and camping gear to the site. This survey was to have been carried out in April 1998, but was postponed due to an early break to the season. The survey was carried out in November 1998.

Personnel: The team comprised Tania Butler (potoroo TO), Sarah Adriano (potoroo TA) Tony Friend (CALMScience), Ellen Hickman (South Coast Region), Geoff Harnett (Ranger, Albany District) and Scott Taylor (volunteer).

Equipment: 100 collapsible Mascot rat/bandicoot cage traps
3 back-pack frames for carrying traps
100 Elliott traps
150 hair-arches
3 sets of animal processing gear

Camping: Campsite in a stand of Agonis beside the radio repeater tower on one of the highest points on the Manypeaks ridge, between two granite surfaces (the helicopter landed on one of these). This was quite an exposed site, resulting in the party wearing all available clothing by darkness and very early retiring times were exercised. Cooking was by Trangia (methylated spirit burner), as bottled gas for cooking could not be carried in the helicopter. Canned and dried food formed the staple and the chief catering officer/regional flora conservation officer excelled herself in overseeing the preparation of tasty nutritious meals.

Transport: A Bell Jet Ranger supplied by Jandakot Helicopters provided transport. The personnel and equipment were carried from the car park at Two Peoples Bay to the granite surface beside the radio-tower in three flights. Personnel and some equipment were carried in the first two flights and a sling was used to carry the rest of the equipment in the last flight.

Trap deployment: Cage and Elliott traps were set together in an attempt to reduce the occupancy of cage traps by bush rats. Bait used was peanut butter, oats and pistachio essence. Three traplines were set. 30 trap sites were located in a line running southeast down beside the gully east of the radio-tower (Sarah Barrett's 201 peg). Another line of 25 trap sites was placed running east and west across the ridge and down a gully west of the radio-tower. A third line of 15 trap-sites was set in unburnt Hakea tall shrubland on the ridge top about 500m east of the 201 peg. The first two lines were operated for four nights and the third for three nights.

Trapping results: No potoroos were captured. Mammals captured included a brushtail possum, three quendas, six mardos and several hundred bush-rats. Bush-rats were only processed on the third trapline.

Cost: Helicopter costs were shared with the phosphite spraying program. The cost to the potoroo program was $7998.90. Other costs included travelling allowance for 5 CALM officers for four nights and some supporting plant costs. Terry Hales, acting ranger at Two Peoples Bay, also provided support at the ferrying site and fed the captive potoroos during the trip.

Hair-arching: Three hair-arch lines were set during the survey and collected by Tania and Sarah three weeks later. One was set along the 201 trapline and the other two in woodland 1.5 km east of the radio-tower.

Conclusion: Trapping in this site is physically difficult due to the dense vegetation and rugged terrain - even with the relatively large workforce, only a small area was covered. Only four nights trapping were carried out. Site selection was limited by distance that traps had to be carried. The trapping survey was not conclusive proof that potoroos are not on Mt Manypeaks. However, before further trapping, more extensive hairtubing should be carried out in the area.

98.02. Determine the habitat requirements of Gilbert's Potoroo.

Radio-tracking

A male potoroo captured at the West 6 site was radio-tracked during the night and tracked to rest sites during the day by Jackie Courtenay and Tania Butler in March/April 1998. The steep and rocky terrain posed serious problems, however, causing signal bounce and signal loss. The results of this radio-tracking indicated a small range of movement , less than 500m in extent.

The collar used was a Biotrack TW-3 weighing about 17g, with a rigid brass collar covered with heatshrink plastic. The collar was modified for the potoroo by covering the band with soft suede leather. Despite this, the animal's neck showed some hair loss and abrasion when he was recaptured after two weeks.

Alternative collar designs were trialed on captive potoroos. A radio-collar with a Neoprene neck-band provided by Titley Electronics was fitted to one of the males, but this stretched too easily and fell off very quickly. Transmitters with soft polypropylene collars (Sirtrack NZ) were fitted to two captive males in December 1998. One collar was fitted fairly tightly and produced hair loss after a week, whereas the slightly looser collar had not caused any hair loss or abrasion when it was removed after two weeks. However, the second collar had stretched somewhat and this could have caused problems.

Diet study

Neale Bougher (CSIRO Forestry) was engaged on a consultancy to analyse potoroo scat contents. He examined 10 scats collected from wild potoroos during 1994 and 1998 and found that over 90% of the scat content comprised fungal material. Very little remained in the scats apart from spores (see report, Bougher ,1998). The 10 most frequently occurring spores were described and illustrated and in some cases, linked to known fruiting bodies.

Katie Syme (see below) has also done some preliminary examination of potoroo scat material.

Fungi studies

Katie Syme (an expert on fungi) and the Denmark Environment Centre (DEC) successfully applied for funds ($5000) through the WWF Australia Community Conservation Grants Scheme to conduct surveys for hypogeal fungi in areas near known potoroos populations and to collect scats as the first stage of a dietary study of Gilbert's Potoroo. Commencing in March 1998, monthly visits were made by Katie and assistants from the DEC. Two types of search were conducted: a quantitative search within square-metre quadrats, and "opportunistic" searches designed to document the hypogeal fungi with fruiting bodies on the sampling date. During the survey period, the trapline at East Firebreak was opened for one night, in order to collect potoroo scats simultaneously. This study will run for 12 months.

This study will form a basis for future intensive scat analysis and will facilitate the nutritional analysis of the potoroo diet.

98.03. Investigate threatening processes such as predation and Phytophthora-caused disease.

Fox control

Due to the importance of Two Peoples Bay NR as a haven for remnant populations of threatened birds and mammals, the fox control regime is relatively intensive. A combined aerial and ground baiting operation is carried out at three-monthly intervals, and further ground baiting is carried out about halfway between the aerial baiting dates, so that baits are laid approximately every six weeks. In late autumn, eggs containing 1080 are set out, as long-lived waterproof baits in case wet weather prevents the laying of meat baits through winter, when vehicle movement is restricted due to plant disease hygiene. This fox control regime is supplemented by localised ground baiting as a response to the detection of fox sign. During 1998, aerial baiting was carried out on April 3rd, June 19th, September 30th and December 12th.
The high rate of survival of known potoroos on East Firebreak trapline, where most information has been gathered, indicates that predation of adults is a relatively rare event. This may not be true in relation to young potoroos, especially during their dispersal phase.

Phytophthora-caused disease

The WWF fungi survey sites have been selected in each of the five vegetation types identified by Vetten (1996) using the Specht classification– tall forest, heath, sedge, woodland/heath and forest/heath. At each site sampled for fungi, the dominant plant species are documented and this may provide more insight into both the requirements for occurrence of hypogeal fungi and into the potential impact of *Phytophthora cinnamomi* on potoroo habitat.

Detailed mapping of *Phytophthora* affected areas on Mount Gardner by Alan Danks and Mal Grant (CALM Albany) continued during 1998. Knowledge of the boundaries of infected areas is essential if fieldwork is to proceed under wet soil conditions as it allows hygeine measures to be performed at the boundary during movement between infected and uninfected areas. About two-thirds of the Mount Gardner area has now been mapped and it is intended that the task will be completed by the end of 1999.

98.04. Maintenance and recruitment for captive breeding colony.

At the beginning of 1998, the size of the captive colony stood at 13 individuals (7 females and 6 males, including a juvenile, male #36, first observed in the pouch on 31/12/97). The only death during the year was male #36, which died in December 1998. No live births were recorded during the year, although a very small young was found dead in female #27's pouch on 4 December. The captive potoroos are frequently observed apparently mating, but it is has not been determined if insemination is occurring regularly or at all. At the end of the year, the size of the captive colony was 12 individuals (5 males, 7 females).

Pairings

Pairings were carried out according to the draft captive management plan (Courtenay 1998).

Table 3. Pairings carried out during 1998.

Female	Preferred males ("unrelated")	Pairings Attempted		
		Male #	Dates	Outcome
#1	#3, #6, #7, #11, #28	6	6/11/97 – 23/2/98	No py
		11	23/2/98 – 13/5/98	No py
		28	13/5/98 - present	No py
#10	#3, #6, #7	3	6/11/97 – 14/1/98 13/5/98 – 12/8/98 4/9/98 - present	Py - #36 (27/12/97). No py No py
#18	#3, #7, #11, #28	11	6/11/97 – 13/5/98	No py
		6	13/5/98 – present	No py
#19	#6, #7	7	6/11/97 – 13/5/98 8/12/98 - present	No py No py
		11	13/5/98 – 23/7/98	No py. Separated and housed alone due aggression with female #27
		36 (Juvenile)	4/9/98 – 8/12/98	No py
#27	#3, #6, #7, #11, #28	7	6/11/98 – 13/5/98	No py
		11	13/5/98 - present	Dead py in pouch on 4/12/98.
#32	#6, #7	3	6/11/97 – 14/1/98 13/5/98 - present	No py No py

Behavioural studies

In 1997, Kylie Burke, an Honours student from Edith Cowan University, carried out a behavioural study of the captive potoroos, particularly aimed at describing and analysing behaviour in relation to breeding, in an effort to make positive recommendations for improving husbandry techniques and to increase breeding success. Kylie's thesis was handed in on 20 February 1998.

During her study, male #3 and female #10 conceived a pouch young (although mating was not picked up on the video footage). This pair was more sociable than the pairs that did not produce young, for instance, feeding and sitting together. It may be possible to use this finding to assess pair compatibility.

The video set-up used by Kylie had been on loan from Sony. Using funds from a BankWest *Landscope* Conservation VisaCard grant, video equipment (cameras, video recorder and quad splitter to enable four cameras to be monitored at once) was purchased and set up during the second half of 1998.

Oestrus Study

A possible explanation of the lack of breeding in the captive colony is that the females are not coming into oestrus. To investigate this possibility, an oestrus study was initiated by Kevin Ellard (Wildlife Veterinary Services) in consultation with Jackie Courtenay. Kevin was successful in applying for a WWF Community Grant to fund a study to determine if and when the captive female potoroos are coming into oestrus. In order to minimise stress on the animals, the study proposed to monitor levels of oestradiol in faeces. Analysis was to have been carried out in Italy as no Australian laboratories offered this service. However, a UWA Zoology Department student, Ernest Stead-Richardson, applied faecal hormone assay techniques in his 1998 Honours study of the oestrous cycle in chuditch at Perth Zoo. He can carry out the hormone analyses necessary for the potoroo study using the endocrinology laboratory at the Zoology Department.

A pilot study was carried out in November 1998 to trial collection methods and to provide faecal material for initial analyses. Collection of scats was carried out every third day for a 21-day period. The faeces need to be as fresh as possible to retain the initial hormone level. The pilot study involved three female potoroos. Two of the females (#1 and #10) were older and have had young in captivity, while the other (#32) was just over two years old and had not produced any pouch young. As all three were housed with males, barriers needed to be erected to separate them temporarily so that only female faeces would be collected. The food bowls were placed on large mats under vegetation so the potoroos would spend more time on the mat and faeces could be collected easily. After collection the samples were marked with the animal number and date, and frozen to prevent decrease in hormone levels, before being forwarded to the Zoology Department for analysis.

The barriers were removed after faeces had been collected so there was free access between males and females, in an attempt to minimise the level of stress.

Health issues

Following the transfer of Kevin Ellard to a position in Perth during 1998, Anne-Marie Horwitz has taken on the role of consulting vet for the potoroo captive colony.

The "sandy penis syndrome" (mentioned in previous reports, first noticed in March 1997) is an ongoing event. In January 1999, the substrate in the front 1/3 of the floor space (the roofed area closest to the door, where the food bowls are placed) of each of 4 of the pens was changed to coarse river sand in an attempt to alleviate the problem. The other four pens were maintained with the fine sand collected from the beach, which has been used since November 1997 (prior to that, fine white sand that had been excavated during the potoroo pen construction was used). The penis situation (presence of green smelly mucus-like substance under the prepuce and adhered sand on the shaft of the penis) has not changed but there does not appear to have been any inflammation of the penis during the trial period, in pens with either substrate. This syndrome continues to be observed amongst the wild males and may have been given greater significance than it deserved.

The old female #4 has been experiencing a few health problems leading up to the end of 1998. She had a malignant tumour (squamous cell carcinoma) removed from her pouch in October 1998 but it was found regrowing in November 1998. The re-growth was removed and never returned. The wound recovered quite well but the female has consistently lost weight. The tip of her tail has begun to die (necrosis), possibly due to the stress of the operations. She also had a chronic wound at the base of her tail. This took five months to heal, despite frequent cleaning of the site. During treatment of #36 and #4 during the year, the vet tried to take blood from both animals in various sites (tail, inner leg and carotid vein). Very little blood was obtained due to vein collapse.

An isolation pen was constructed during the second half of the year to enable close monitoring of individuals and to facilitate treatment.

Death of Male #36: summary

#36 was first observed in the pouch as a 10mm 'pinkie' on 31st December 1997. For the next four months he put on weight and was eating as per other captive potoroos. After this time his weight fluctuated each time he was handled, which seemed a little strange as he was a young animal and should be putting weight on. The vet was called out but no external problems could be found.

On 2/12/98 it was noted that #36 was quite disorientated. By the 4/12/98 his weight had dropped by 50 grams. He was put into a holding pen to monitor his behaviour and feeding. By 6/12/98, he had lost so much muscle tone that he could not sit up. He died that night.

A post mortem examination concluded that he had died from oxalate poisoning, as evidenced by a build up of oxalate crystals in the kidneys. #17 had died of this condition two years previously.

Analysis of the potoroo diet and of fresh plant material from cage 5, where #36 was housed, gave no indication of more than trace levels of oxalate. So far, no source of oxalate has been identified, but the investigation is continuing.

98.05. Genetic studies of Gilbert's Potoroo.

An understanding of the mating system of Gilbert's Potoroo would greatly advance our ability to design captive breeding strategies, translocation protocols and even reintroduction site selection. DNA analysis using microsatellite techniques can provide pedigrees of wild animals and thus provide information about mate fidelity, dispersal and demographic structure. DNA analysis can also give indications of population size, history of bottlenecking and exchange with other populations. Ear tissue is collected routinely from all new animals and stored for this purpose. DNA analysis to allow fingerprinting will commence in 1999.

98.06. Employment of a scientist based at Two Peoples Bay.

The Project Scientist employed under Interim Recovery Plan funding was Jackie Courtenay, who ran the project from April 1996-July 1998.

The Recovery Plan funding from EA provides salary for a Technical Officer to assist in research programs under the plan. Scientific supervision of the Recovery Plan implementation is the responsibility of CALMScience Division. During 1998, Tony Friend, a Principal Research Scientist with CALMScience with experience in conservation biology of threatened marsupials, was appointed as Project Leader, Gilbert's Potoroo Recovery Program, commencing in January 1999. Tania Butler had been appointed as the Technical Officer on the potoroo project in March 1998, with funding from EA (Gilbert's Potoroo IRP Extension).

98.07. Undertake a major review of the project by 31 October 1998.

A review of the progress of the implementation of the Gilbert's Potoroo Recovery Plan was carried out as required and submitted to Environment Australia for assessment (Friend 1998).

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ACKNOWLEDGMENTS

We acknowledge the profound contribution made by Jackie Courtenay to the recovery of Gilbert's Potoroo. It is due to her methodical approach and tireless documentation that many aspects of the husbandry of the captive colony have been recorded. She was also instrumental in involving a number of students who also made significant contributions to our knowledge of Gilbert's Potoroo. We would also like to thank the many CALM staff and unpaid volunteers who have generously given their time to assist in the field and in feeding the captive potoroos.

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