



**Above** Female Gilbert's potoroo with a juvenile.

*Photo – Jiri Lochman*

*Opposite page*

**Top right** Gilbert's potoroo pouch young still attached to its mother's teat.

**Above right** The teat of a long-nosed potoroo foster mother is inserted into the mouth of a juvenile Gilbert's potoroo.

**Right** A successfully reared Gilbert's potoroo after exiting its long-nosed potoroo foster mother's pouch.

*Photos – Tony Friend/DEC*

**I**n late 1994, the exciting news of the rediscovery of Gilbert's potoroo (*Potorous gilbertii*), a small rat-kangaroo thought to be extinct by the early 1900s, hit the headlines. This one-kilogram animal, which had only been known from a few specimens collected on the south coast of Western Australia, had clung to life in a tiny population on the slopes of Mount Gardner, in Two Peoples Bay Nature Reserve east of Albany.

Immediately, a captive Gilbert's potoroo colony was established at Two Peoples Bay Nature Reserve to insure these precious mammals against a large wildfire in the habitat—just a single lightning strike and consequent wildfire could have wiped them out. The captive colony would also enable the potoroos to be bred for translocation to new sites and thus increase their chances of long-term survival.

Staff from the then Department of Conservation and Land Management (now Department of Environment and Conservation) also started a program of searches for potoroos along the south coast. The team was later



● Two Peoples Bay Nature Reserve

complemented by a community project instigated by the Denmark Environment Centre and funded by the WWF Threatened Species Network. These searches employed hair-arches—plastic tunnels with double-sided sticky tape inside to catch hairs for identification—and concentrated on long-unburnt, dense heathland along the south coast both east and west of Two Peoples Bay.

Despite searches over 10 years, no other populations have been discovered. Meanwhile, intensive trapping of the Mount Gardner population has shown there are only 30 to 40 animals there. Females produce pouch young continuously, and new independent

young animals are found regularly, but population numbers are stable and the available habitat is fully occupied. Excess young are being produced but there is no room for them all to survive in this restricted habitat. Due to the low numbers and the vulnerability of its single population to extinction, Gilbert's potoroo is ranked under State, national and international criteria as Critically Endangered, the most threatened category available for wild populations.

# Cross-fostering Gilbert's potoroo

One of Australia's most critically endangered mammals, the Gilbert's potoroo, has new hope for life with exciting new successes in transferring pouch young to a foster mother of a different species.

by Tony Friend

The captive colony, founded from six adult potoroos brought in from the wild, along with three young in pouches of females, produced young during the first few years, with eight born between 1995 and 2001, but then the colony began to decline. Some adult animals died from old age and various health disorders and no more young were born. Husbandry conditions were varied, including how individuals were grouped or separated and changes in diet. Nutritional analysis of the fungi that Gilbert's potoroos eat in the wild is being used to improve the diet, but there has been no more breeding as yet. Drastic action was required to save these fascinating mammals.

## Fostering pouch young

Since the 1960s, it has been known that pouch young of kangaroos and wallabies can be taken from their mother's pouch and substituted for the young of another kangaroo or wallaby species. Under the right conditions, these transferred joeys adapt to the foster-mother's milk and develop to the fully furred stage, to be weaned and

become independent, just as if they had been reared by their own mothers.

The significant point here is that female kangaroos and their relatives (including potoroos) often hold an undeveloped embryo inside them, and the removal of the suckling joey triggers the embryo's development, resulting in the birth of another joey within three to four weeks. The birth rate of the donor mother can therefore be increased. When the surrogate mother belongs to a different species to the donor mother, this technique is known as cross-fostering. When an endangered species is the donor, it can result in a large increase in production of the endangered species, while a more common or easily bred species can rear the endangered species' young to independence.

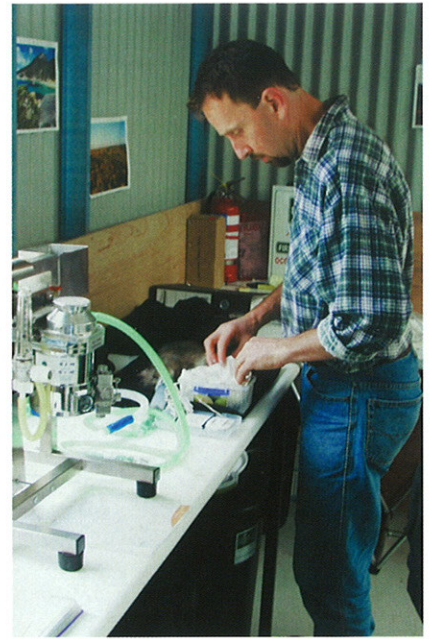
In collaboration with the Gilbert's Potoroo Recovery Team, the Royal Zoological Society of South Australia's David Taggart, a research scientist and leader in cross-fostering, carried out a research project to develop specific cross-fostering protocols for use with potoroos. He is using the technique



to increase numbers of the critically endangered Victorian brush-tailed rock-wallaby, South Australia's endangered black-footed rock-wallaby and the mainland subspecies of the tammar wallaby, with Kangaroo Island tammar wallabies and yellow-footed rock-wallabies acting as foster mothers.

David's initial work on long-nosed potoroos, woylies and boodies in South Australia showed that using long-nosed potoroo foster mothers resulted in the highest survival rate of cross-fostered young. He recommended that this species, native to south-eastern Australia, be used in a Gilbert's potoroo cross-fostering program.

For efficient cross-fostering, the transfer time between pouches must be as short as possible. A captive colony of long-nosed potoroos was needed as close as possible to Two Peoples Bay, but not on the nature reserve as the animals are not native to the area.



**Above left** Royal Zoological Society of South Australia's David Taggart measuring potoroo young.

**Above** Checking the progress of a Gilbert's potoroo in an incubator. Photos – Tony Friend/DEC



**Left** A Gilbert's potooro joey in a portable incubator awaiting cross-fostering to a long-nosed potooro surrogate mother.

**Below** Long-nosed potooroos successfully fostered Gilbert's potooro young. Photos – David Taggart

Through the generosity of a landowner in the Albany area who provided the land as well as financial support, a cross-fostering facility was built. This housed a colony of long-nosed potooroos, sourced from Warrawong Sanctuary in Adelaide, quarantined at Perth Zoo and temporarily held at Caversham Wildlife Park while the facility was being completed. Financial support from the Natural Heritage Trust through South Coast Natural Resource Management and another private donor saw the facility finished by June 2006 and the long-nosed potooroos moved in.

### Cross-fostering in WA

To date, four Gilbert's potooro pouch young have been transferred from wild mothers to long-nosed potooro foster mothers at the cross-fostering centre. Unfortunately the long-nosed potooro young which the

Gilbert's potooroos replaced were too young for hand rearing and had to be euthanased. From these transfers two Gilbert's potooroos survived to independence and were moved to the Gilbert's potooro captive colony at Two Peoples Bay. One of the other two did not survive and the other was still in her foster mother's pouch at the time of publication. The transfer that did not succeed involved the biggest size difference between the existing long-nosed pouch young and the Gilbert's potooro joey being substituted, emphasising the need to match these young closely.

The cross-fostering trial so far indicates that there is promise in this technique for Gilbert's potooro. Other strategies to increase Gilbert's potooro numbers are also being trialled, including the very successful transfer of young independent potooroos from

Mount Gardner to Bald Island, and the introduction of non-breeding captive potooroos into an extensive enclosure containing native vegetation. The recovery strategy may include cross-fostering from females in this enclosure or the use of the enclosure to 'harden up' cross-fostered young after weaning to help in their socialisation. With luck, and further cross-fostering, prospects for Gilbert's potooro's long-term future may brighten.



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- 52 Controlling feral animals in the rangelands  
New baiting techniques reduce fox, cat and wild dog numbers in the rangelands.
- 59 Feathers, fame and football  
Work to protect native birds soars a wedge-tailed eagle to stardom.

## Regulars

- 3 Contributors and Editor's letter
- 9 Bookmarks  
*If Trees Could Speak*  
*Wild Land*  
*In the Living Forest*
- 29 Endangered  
Woolly foxglove
- 30 Feature park  
Cape Le Grand National Park
- 62 Urban antics  
Karma

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