

REDISCOVERY OF GILBERT'S POTOROO, *POTOROUS TRIDACTYLUS*, IN WESTERN AUSTRALIA

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Gilbert's Potoroo was originally described by John Gould as *Hypsiprymnus gilbertii*, from a specimen collected by John Gilbert at 'King George's Sound' in 1840. Further specimens were collected by George Masters in 1866 and 1869 and William Webb between 1874 and 1879 from the Albany area and 'King George's Sound'. No modern records exist. Sub-fossil material has been recorded from cave deposits between Cape Naturalist and Cape Leeuwin (Cook 1963, Merrilees 1968, Baynes *et al.* 1975, Kabay & Start 1976). The species was 'presumed to be extinct' in Western Australia (Strahan 1983; Seebeck *et al.* 1989).

The taxonomic status of the genus *Potorous* is not clear. By 1888, five species had been named in this genus: *P. tridactylus* (Kerr 1792); *P. gilbertii* (Gould 1841); *P. platyops* (Gould 1844); *P. apicalis* (Gould 1851) and *P. rufus* (Higgins & Petterd 1884) (Johnston & Sharman 1976). Ride (1970) recognized three species: *P. apicalis* from Victoria and Tasmania; *P. platyops* from Western Australia and *P. tridactylus* from Queensland, New South Wales, north-eastern Victoria and the south-western corner of Western Australia. *P. gilbertii* was synonymized with *P. tridactylus*. Johnston & Sharman (1977) revised the taxonomy of the genus based on electrophoretic, chromosomal, breeding studies and previous morphometric results. They recognized two species, *P. tridactylus* and *P. platyops*, but considered that *P. tridactylus* should be subdivided into *P. t. tridactylus* from mainland Australia and *P. t. apicalis* from Tasmania and the Bass Strait islands. However, the lack of living animals and very few museum specimens of Gilbert's Potoroo would have made it difficult to determine precise taxonomic relationships. On the basis of current taxonomy, Gilbert's Potoroo should be referred to as *P. tridactylus* until additional studies are carried out which may warrant subspecific or specific reclassification.

Little biological or ecological data remains from the early collectors. Gilbert reported that *H. gilbertii* (*P. tridactylus*) inhabited 'dense thickets of spearwood and rank vegetation surrounding swamps or small running streams'. He also noted that 'this little animal may be said to be the constant companion of *Halmaturus brachyurus*' (*Halmaturus* is now recognised as *Setonix*, the quokka) and described how Aborigines 'often killed immense numbers of both species in a few hours' (Gould 1863), indicating that both *P. tridactylus* and *S. brachyurus* were once common in the King George Sound area.

In 1975 and 1976, an extensive search for Gilbert's Potoroo and the Broad-faced Potoroo, *P. platyops*, was conducted throughout the south west of Western Australia (Kabay & Start 1976). This was coupled with a publicity campaign seeking information about potoroo sightings. No evidence for the existence of either Gilbert's Potoroo or *P. platyops* was found.

As part of a study by EAS on population genetics of quokkas, a number of locations east of Albany were searched for *S. brachyurus*. The survey included the Two Peoples Bay Nature Reserve (34° 59' S 118° 11' E) (Fig. 1), where *S. brachyurus* is known to occur (CALM 1993). Traps were set at three sites where runways and fresh scats indicated *S. brachyurus* activity. Seventeen standard cat/possum traps (30 x 30 x 70 cm) were used and baited with apple and peanut butter.

On 1 December, 1994, after monitoring the traps over eight nights, two unusual animals were captured at one site. One was a sub-adult male (weight 265g) and the other a female (weight 965g) with a single pouch young. Although the adult female was about the size of a full grown Southern Brown Bandicoot, *Isodon obesulus*, the tail was much longer, thicker and prehensile, the claws of the pale-coloured forefeet were longer, the eyes larger and the fur much softer than *I. obesulus*. It was not one of the eleven marsupials known to occur at Two Peoples Bay

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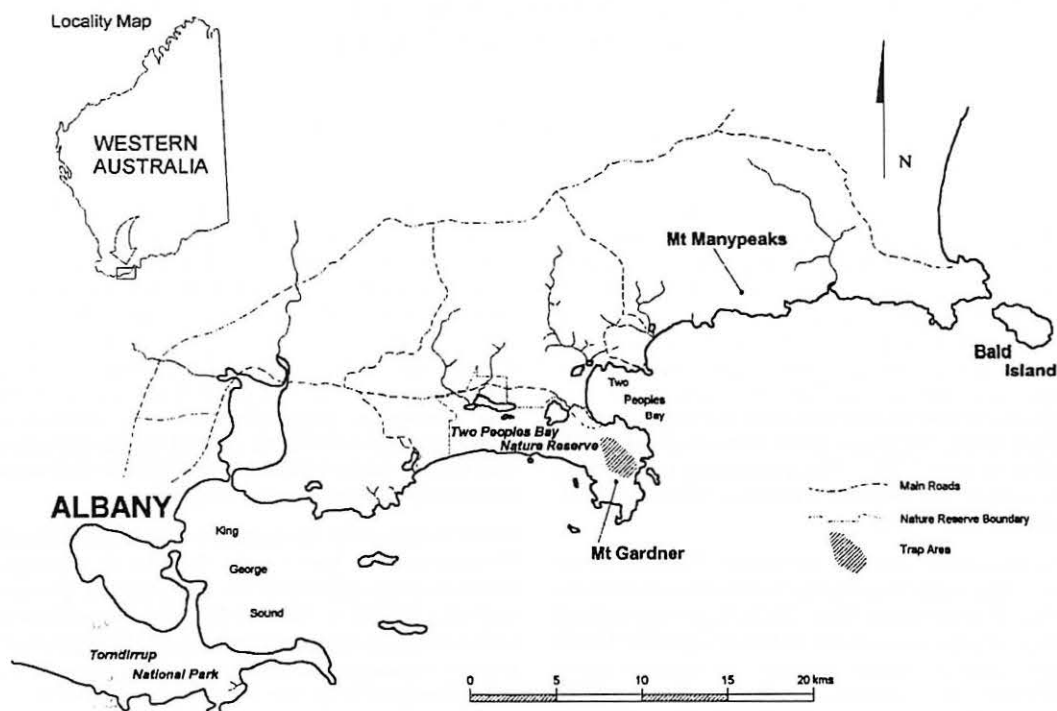


Fig 1. Map showing the location of Two Peoples Bay Nature Reserve and trapping area.

Date	Sex	Age	Weight (g)	Head length (mm)	Pes (mm)	Tail length (mm)	Body length (mm)
1/12/94	M	SA	265	66	59	168	191
1/12/94	F	A	965	89	69	221	291
2/12/94	M	A	785	82	69	227	276
6/12/94	M	A	645	78	67	190	-
7/12/94	F	A	905	83	69	215	270

Table 1. Measurements of *P. tridactylus* captured at Two Peoples Bay Nature Reserve

Nature Reserve nor any of the species currently known in the south-west of Western Australia. However, its characteristics fitted those of a potoroo and weight, head and body length, and tail length fell within the range of these measurements for *P. tridactylus* (Strahan 1983) although at the lower end of the range (Table 1.). The only potoroo historically known from the Albany area was Gilbert's Potoroo.

Trapping continued at the same site for another week and three more animals were captured, two adult males (weights 785g and 645g) and another female

(weight 905g) with a pouch young. This female had been previously captured on 30 November, but mis-identified as *I. obesulus*. This animal was recaptured about 60m from the initial capture site of 30 November. Bush-rats, *Rattus fuscipes*, and Yellow-footed Antechinus, *Antechinus flavipes*, were also captured in the area. The Western Ringtail Possum, *Pseudocheirus peregrinus occidentalis*, and the Honey Possum, *Tarsipes rostratus*, are also known from the trapped area (Alan Danks, personal observation). No *S. brachyurus* or *I. obesulus* were captured, though *I. obesulus* has been captured 50m

from the trapped area. Diggings similar to those of *I. obesulus* were common throughout the area. It is highly probable that some of these diggings were made by Gilbert's Potoroo when searching food such as hypogean fungi and invertebrates, on which other potoroos are known to feed (Claridge *et al.* 1993). Potoroo scats were found next to fresh diggings at one site.

One of the adult males was released at the site of capture, after having been fitted with a radio-collar. Preliminary tracking showed the animal consistently nested during the day within an area of approximately 0.5 ha, but moved around in an area of 3.65 ha at night. It was recaptured on 6 January 1995, 300m from its original capture location. These initial observations differ to those made by Kitchener (1973) on *P. t. apicalis*, who found that the average home range of males was 19.4 ha (range 12.0 - 34.4 ha). However, *P. t. tridactylus* from east Gippsland is thought to have a home range of 3-5 ha under optimal habitat conditions (Andrew Claridge, pers. comm.).

The trapping site is an area of heath and scrub growing on a light grey sand between two gullies. The heath consists of dense, 1m high shrubs predominantly *Melaleuca striata*, with scattered *M. thymoides*, *Dryandra formosa*, *Banksia grandis*, *Xanthorrhoea preisei* and *Lambertia uniflora* over dense patches of *Anarthria prolifera* and *A. scabra* with emergent *Casuarina trichodon* and *Hakea trifurcata*. The areas of scrub consist of taller (3-4m), dense stands of *H. elliptica*, *Eucalyptus marginata*, *E. calophylla*, *H. trifurcata*, *D. formosa* and *L. uniflora*. In the gullies, *E. megacarpa* (to 5m) and *H. elliptica* predominate with *Gastrolobium biloba*, *Chorilaena quercifolia* and *Hibbertia furfuracea* forming an understorey.

P. tridactylus is the fourth and largest mammal species to be rediscovered in Western Australia after being classified as 'presumed to be extinct'. The other three species are the Heath Rat, *Pseudomys shortridgei* (Baynes *et al.* 1987); Dibbler, *Parantechinus apicalis* (Morcombe 1967); and the Long-tailed Dunnart, *Sminthopsis longicaudata* (Burbidge & McKenzie 1976). *P. tridactylus* is within the 'Critical Weight Range' (CWR; 35-5500 g) defined by Burbidge and McKenzie (1989). This makes the rediscovery of *P. tridactylus* even more remarkable, as CWR animals are thought to suffer the greatest attrition because of their limited mobility and relatively high daily metabolic requirements.

The Noisy Scrub-bird, *Atrichornis clamosus*, was also rediscovered at Two Peoples Bay after having been thought extinct (Webster 1962). This event ultimately resulted in the formation of the 4744ha

Two Peoples Bay Nature Reserve, which contains many other species classified as Endangered (WA Wildlife Conservation Act). These include Western Ringtail Possum, *P. p. occidentalis*, Southern Brown Bandicoot, *I. obesulus*, Western Bristlebird, *Dasyornis longirostris*, Western Whipbird (Two Peoples Bay subspecies), *Psophodes nigrogularis nigrogularis* (Schodde & Mason 1991) and Australasian Bittern, *Botaurus poiciloptilus* as well as a number of rare species of plants (CALM 1993).

The potoroo has probably survived at Two Peoples Bay since last century for the same reasons that the scrub-bird did. That is, the exposed granite and deep gullies of the Mt. Gardner area formed a natural fire refuge. These topographic features have probably prevented fire from burning all the area at once. Since 1970, management of the Reserve has focussed on exclusion of fire from scrub-bird areas. The successful implementation of this policy has seen the scrub-birds thrive in the last twenty years. A regular, twice-yearly fox baiting program within the Reserve began in 1988 and the subsequent reduction in Red Fox numbers may have allowed potoroos to increase to their current levels.

Understanding more about the requirements of this animal will aid efforts to conserve and appropriately manage both the animal and its habitat. Research into a number of aspects should be initiated, including a survey and intensive trapping work to determine the size and extent of the Two Peoples Bay population as well as any new populations, determining their taxonomic status, specific habitat requirements and radio-tracking to determine home range.

A captive breeding program could be developed with the objective of using captive-bred animals for a reintroduction program if the species is not found in other locations. Protection and management of the population at Two Peoples Bay is the most important strategy to ensure the survival of Gilbert's Potoroo.

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