

The first confirmed modern record for Pycroft's Petrel in Australia

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A record of a Pycroft's Petrel *Pterodroma pycrofti* in an artificial nest box on Broughton Island highlights the value of programs to remove feral animals from islands which host colonies of breeding seabirds. Pycroft's Petrel breeds on a relatively small number of New Zealand islands. Its presence on Broughton Island during the species' usual breeding season suggests it may have been prospecting for nesting sites.

INTRODUCTION

Broughton Island (32° 37'S, 152° 19'E) is located on the New South Wales coast, 16 km northeast of the entrance to Port Stephens. It is an important seabird breeding location, hosting many tens of thousands of Wedge-tailed Shearwater *Ardenna pacifica* pairs each year plus lesser numbers of Short-tailed Shearwater *Ardenna tenuirostris* and Little Penguin *Eudyptula minor* (Carlile *et al.* 2012; Carlile *et al.* 2022). A programme to eradicate feral rabbits and rats on the island was conducted in 2009 (Priddel *et al.* 2011).

In 2009 a pair of Gould's Petrel *Pterodroma gouldi* bred on the island (Carlile *et al.* 2012). Although several hundred pairs breed on two nearby islands, Cabbage Tree Island and Boondelbah Island (Carlile & Priddel 2004; Priddel & Carlile 2004), it was the first known record from Broughton Island for this species, which is classified as Endangered under the Commonwealth Environment Protection and Biodiversity Conservation Act. To encourage more Gould's Petrel to breed on Broughton Island, six artificial nest boxes and a call-playback system were installed near the island's highest point, Pinkatop, in mid-2017. Those nest boxes now are regularly visited by Gould's Petrel and there have been several successful breeding events (Stuart *et al.* in prep.).

OBSERVATIONS

During the Hunter Bird Observers Club's regular visits to monitor the bird population of Broughton Island (see Stuart *et al.* 2017 for an overview of the monitoring program), we inspect the nest boxes for any Gould's Petrel breeding activity. In the afternoon of 25 October 2019, we found an adult

Gould's Petrel in one box. Another box had two birds – an adult Gould's Petrel and a second, smaller seabird. This second individual was noticeably paler than the Gould's Petrel, and also had a white underbody and mostly white underwing with narrow black border and carpal bar.

At that time, we were uncertain about the identity of the second bird. We took a series of photos of its head, wing and underwing, and also photos of the two birds side by side for comparison (**Figures 1 and 2**). Overnight, we sent photos to two seabird experts, who then circulated them to others. The plumage characteristics indicated one of the paler 'Cookilaria' species of *Pterodroma* petrel; the feedback was that the unknown bird possibly was a Pycroft's Petrel *P. pycrofti*. At the time of our record, the Pycroft's Petrel did not appear on the modern checklist of Australian birds.

The next morning, 26 October, we returned to the nest box with measuring equipment. The two Gould's Petrel adults had departed; however, the unknown bird was still present in the same nest box as on the previous day. We collected biometric measurements and took more photos.

We considered there to be five contender *Pterodroma* species: Gould's Petrel, Pycroft's Petrel, Cook's Petrel *P. cookii*, De Filippi's Petrel *P. defilippiana* and Stejneger's Petrel *P. longirostris*. Cook's Petrel is often recorded in Australian waters; there are sixteen confirmed records for the species in the Birds Australia Records Committee (BARC) archives. This number of records means that Cook's Petrel it is no longer on the BARC review list. There are no previous confirmed records of Pycroft's Petrel or De Filippi's Petrel in Australian waters. There are three confirmed records in BARC's archives of Stejneger's Petrel.



Figure 1. The Pycroft's Petrel (a) and a Gould's Petrel (b) after their temporary removal from an artificial nest box on Broughton Island on 25 October 2019 (photos: Alan Stuart).



Figure 2. The Pycroft's Petrel after its temporary removal from an artificial nest box on Broughton Island on 26 October 2019: (a) upper wing (b) underwing (photos: Alan Stuart).

In **Table 1** we compare the relevant biometric information for the Broughton Island bird with the five contender species. Gould's Petrel, Cook's Petrel and De Filippi's Petrel could be eliminated by the wing measurement. Additionally, the ratio of wing length to bill length based upon the published biometric data for Cook's Petrel and Pycroft's Petrel

(Marchant & Higgins 1990) eliminated the former and was fully consistent with the latter (**Figure 3**).

Whilst the wing, bill and tarsus measurements of the Broughton Island bird were within the range for Stejneger's Petrel, this species could be eliminated based on plumage characteristics.

Table 1. *Pterodroma* petrels: measurement ranges of contender species¹

	Wing (mm)	Bill (mm)	Tarsus (mm)	Weight (g)
Broughton Island bird	216	24.4	28.5	140
Pycroft's Petrel	207-229	22.5-25.8	26.9-30.8	127.5-201.0
Gould's Petrel	222-224	24.6-25.5	29.2-30.3	170-220
Cook's Petrel	223-245	24.4-29.9	27.9-32.0	112-250
De Filippi's Petrel	229-241	28.5-29	29-31	—
Stejneger's Petrel	198-230	22.8-26	26.3-30.1	—

¹Sources: Marchant & Higgins (1990); Murphy (1936).

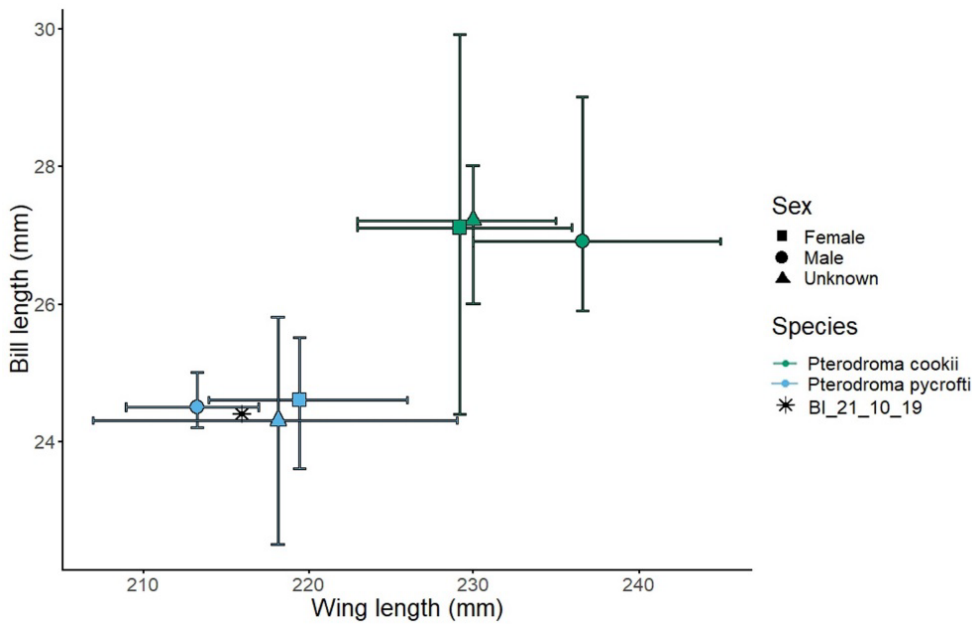


Figure 3. Plots of the ratios of wing length and bill length for Cook's Petrel and Pycroft's Petrel (based on published data in Marchant & Higgins 1990) and for the Broughton Island bird (diagram produced by S. Gorta).

We submitted a report to BARC for review by a panel of experts. Our submission was unanimously accepted, based upon the combination of biometric measurements and plumage detail, as the first confirmed modern record for Pycroft's Petrel in Australia (BARC 2020).

DISCUSSION

Pycroft's Petrel formerly bred on Norfolk Island but became extinct there in *c.*1800 following Polynesian settlement (Holdaway & Anderson 2001). There also are sub-fossil records from Lord Howe Island (McAllan *et al.* 2004). Thus, there have been no confirmed records for Pycroft's Petrel in Australia for more than 200 years.

The species is listed as globally Vulnerable by IUCN due to its restricted breeding range. It is now only known to breed on twelve islands off the north-eastern coast of New Zealand (predominantly in the Mercury, Hen and Chicken, and Poor Knights island groups), with the majority of the population breeding on just one of those, Red Mercury Island (BirdLife International 2023). The total breeding population is estimated at 5,000-10,000 pairs, within a total population of 30,000-40,000 individuals.

The population of Pycroft's Petrel has expanded in recent years – for example Red Mercury Island had 1,000-2,000 pairs in 1989-1991 and 2,000-3,000

pairs in 1998, while surveys in 2010 indicated that the population had expanded to 5,000-10,000 pairs (BirdLife International 2023). Probably the main factor behind the population increase has been the removal of feral animals, especially Polynesian Rat *Rattus exulans*. There have also been some chick relocations from Red Mercury Island to other islands (BirdLife International 2023).

Pycroft's Petrel has not been recorded foraging in Australian waters in modern times. Two at-sea reports of the species have been submitted to BARC – for single birds seen off Swansea in October 2002 and off Bremer Bay (near Albany WA) in February 2018. Neither report was accepted by BARC, as other similar species could not be categorically excluded.

Studies utilising geolocators have shown that, when not breeding, Pycroft's Petrel disperse to the central and eastern tropical Pacific (BirdLife International 2023). However, in May 2005 a banded adult was found offshore of Papua New Guinea (PNG), which may indicate that some birds spend the non-breeding season in the PNG region, although the timing of the recovery does not rule out the possibility of a passing migrant (BirdLife International 2023). However, the PNG and Broughton Island records, considered together, suggest that westerly movements by Pycroft's Petrel may be more common than previously thought.

The 2019 record from Broughton Island is particularly significant since it was of a bird in a nesting cavity. The record was made during the breeding season for Pycroft's Petrel which extends from October to April. Whilst Pycroft's Petrel usually digs its own burrow in well-drained soil rather than using a pre-existing cavity (BirdLife International 2023), the presence of the bird in the nest box over at least two days during the breeding season for the species at its NZ breeding sites suggests it was prospecting for a nest site. This suggests that Pycroft's Petrel could potentially expand its breeding range, and that sightings of the species in Australian waters may increase in future.

The Broughton Island record highlights the importance of removal of feral predators from seabird-breeding islands. These actions have allowed the Pycroft's Petrel world population to increase and allowed Gould's Petrel to start breeding on Broughton Island. Gould's Petrel had not been recorded on Broughton Island prior to rodent removal. The 2019 record also demonstrates the value of establishing supplementary nesting habitat for seabirds – both to aid in the recovery of extant seabird populations and to facilitate nest-site prospecting by other species of seabird.

The 2019 record also shows the value of regular monitoring at seabird colonies so as to identify the arrival/establishment of new species, especially at sites where active island restoration has taken place. And, given that visits by humans to what typically are remote sites will be infrequent, thus missing out on records of short-staying seabirds, there seems to be a potential role for supplementary electronic monitoring (such as using trail cameras and remote acoustic recorders).

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