

Report on a conservation dog-survey for breeding petrels on Mana Island, December 2024

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Summary

A certified seabird conservation dog (Miro) was used to search for burrow-nesting petrels on Mana Island 9–11 December 2024. We searched about 1.5 ha on the plateau edge and upper coastal slope between South Point and just north of Shearwater Point in the southwest of the island. This included the two sites where four species of petrels were translocated to between 1997 and 2021, and where acoustic attraction systems to lure seabirds have been installed since 1993. The priority species for the survey were fluttering shearwater (pakahā, *Puffinus gavia*) and fairy prion (tītī wainui, *Pachyptila turtur*), to determine whether either of these two species were breeding away from the artificial burrows that were used for chick translocations. Miro located burrows of both these species, plus numerous burrows of common diving petrel (kuaka, *Pelecanoides urinatrix*) and sooty shearwater (tītī, *Ardenna grisea*), and one little penguin (kororā, *Eudyptula minor*) that was on the edge of the South Point fluttering shearwater colony. The most significant findings of the survey were four fluttering shearwater chicks found in burrows 45 to 70 metres from the nearest artificial burrows, and that sooty shearwaters were breeding further south and lower down the coastal slope than previously recognised.

Introduction

Mana Island, west of Wellington, is the site of one of the world's most complex seabird restoration projects (Galatowitsch 2012; Woodworth 2013; Butler *et al.* 2014; Spatz *et al.* 2023). Between 1997 and 2021, a total of 1,152 chicks of four petrel species were translocated to the island, and hand-fed until they were fully-feathered and ready to depart to sea (Miskelly 2023). At least 992 of these translocated chicks are thought to have fledged, and many of them returned to Mana Island as adults one to eight years later. Three of the species now have well-established colonies on Mana Island, though the colonies remain small (but growing).

The two sites used for seabird translocations on Mana Island are both on the edge of the plateau at the southwest of the island, above South Point and 400 m north of there at Shearwater Point (= the Petrel Station). Common diving petrels (kuaka, *Pelecanoides urinatrix*) were translocated to the Petrel Station in 1997–99 (Miskelly & Taylor 2004), fairy prions (tītī wainui, *Pachyptila turtur*) were translocated to the Petrel Station in 2002–04 and again in 2015 & 2016 (Miskelly & Gummer 2013; Miskelly 2023), fluttering shearwaters (pakahā, *Puffinus gavia*) were translocated to the Petrel Station in 2006 and South Point in 2007 & 2008 (Miskelly *et al.* 2009; Gummer & Adams 2010), and white-faced storm petrels (takahikare, *Pelagodroma marina*) were translocated to the Petrel Station in 2019–21 (Mitchell & McKoy 2021). There is a natural colony of about 100 pairs of sooty shearwater (tītī,

Ardenna grisea) centred on Shearwater Point (Miskelly 2023). There is also a smaller sooty shearwater colony east of the trig, beyond the area that we surveyed.

Acoustic attraction systems to attract all four translocated petrel species have run almost continuously at the Petrel Station since 1993. An acoustic attraction system playing calls of fluttering shearwater was installed at South Point in 2006 and removed in 2021, once the colony there was well established.

Diving petrels are well-established on Mana Island, with breeding burrows scattered along at least 1.7 km of the western slopes, between South Point and Lance's Gully (Miskelly *et al.* 2004; Miskelly 2023). In contrast, fairy prions and fluttering shearwaters were not known to have established breeding burrows much beyond the sites that they were translocated to (Miskelly 2023, 2024). As of November 2024, all 13 known fairy prion breeding burrows on Mana Island were in artificial burrows, as were 48 of 49 fluttering shearwater breeding burrows (Miskelly 2024).

The main aim of our survey was to search for additional breeding burrows for fairy prion and fluttering shearwater (i.e. pairs that were breeding in natural burrows that had not been found by researchers monitoring birds at South Point and Shearwater Point). Secondary aims included searching for evidence of breeding by white-faced storm petrels, locating additional diving petrel breeding burrows near Shearwater Point (to include in the sample of pairs that are regularly monitored), and searching for sooty shearwater breeding burrows beyond known clusters of burrows.

Study site and methods

We arrived on Mana Island early afternoon on 8 December. Severe gales that afternoon meant that we did not begin the survey until 9 December. Three days were spent at the study site (Fig. 1), with search effort as follows:

- 9 December 3.5 hours searching around and north of South Point fluttering shearwater colony; 2 hours searching around Petrel Station; Colin returned for 2 hours at night, mainly targeting breeding adults at two fluttering shearwater breeding burrows found that day.
- 10 December 5.5 hours searching north and south of Petrel Station; Colin returned for 1.3 hours at night, mainly targeting breeding adults at a fluttering shearwater breeding burrow found that day.
- 11 December 3 hours searching west and north of South Point fluttering shearwater colony.

An estimated 1.5 ha was searched, from South Point to 150 m north-east of the Petrel Station (search effort of 8 h per ha = 0.125 ha/h). Search effort was targeted around the edges of the clusters of artificial burrows at South Point and the Petrel Station, and along the edge of the plateau and top of the coastal slope connecting the two sites. We largely avoided the main clusters of known sooty shearwater burrows (Fig. 2), although we recorded the location of unmarked sooty shearwater burrows found beyond these clusters (the known burrows had been marked with numbered tags by PhD student Etienne Ossona De Mendez). The survey included the site where an acoustic attraction system targeting storm petrels was installed from 2010 to 2018 (i.e. about 120 m north-east of the Petrel Station).

We worked as a team of three, reliant on the keen nose of Miro, a 4-year-old German short-haired pointer cross conservation dog certified to search for protected seabirds. His most frequent target species is little penguin (kororā, *Eudyptula minor*), but he has previously searched for black petrel (tākoketai, *Procellaria parkinsoni*) and Cook’s petrel (tītī, *Pterodroma cookii*) on Aotea / Great Barrier Island, and for grey-faced petrel (ōi, *Pt. gouldi*) near Auckland.

Strong, swirling northerly winds were blowing throughout all 3 days of the survey, which was less than ideal for a dog following a scent trail.

Results

Fluttering shearwater | pakahā

Miro lead us to ten natural burrows or cavities that we interpreted (or confirmed) as fluttering shearwater burrows (Fig. 3). Eight of these sites were within 70 m of the South Point fluttering shearwater colony, and two were just south of and below the main sooty shearwater colony, about 45 m from the nearest known fluttering shearwater burrow (in burrow FP99). Four of the burrows contained chicks (Table 1).

Table 1. Fluttering shearwater chicks located and banded in natural burrows on Mana Island 9–11 December 2024.

Band no.	Burrow no.	Date	Weight (g)	Wing (mm)	Parents
X-18692	PG03	9 Dec 24	154	48	X-17642 and unbanded (now X-18693)
X-18694	PG05	9 Dec 24	220	52	X-18768 and unbanded (now X-18695)
X-18696	PG06	10 Dec 24	320	90	Unknown
X-18697	PG10	11 Dec 24	237	49	Unknown

The four adults attending the first two chicks found (at burrows PG03 & PG05) were all caught at night on 9 Dec 2024 (Table 1). Two were unbanded; the other two had been banded as chicks at South Point in 2017-18 (X-18768) and 2018-19 (X-17642) and so were 6 & 7 years old. Fluttering shearwaters on Mana Island are rarely known to breed successfully before 5 years old, or be found back at the colony before 3 years old (Helen Gummer pers. comm. to CM), and so these two pairings have not been together long enough to produce any of the unbanded adult fluttering shearwaters so far handled on Mana Island (Table 2). However, it is possible that the unbanded adults at these burrows had one or more mate before their current mates. We do not yet know the identity of the four adults associated with burrows PG06 & PG10.

Table 2. Unbanded adult fluttering shearwaters captured on Mana Island by year.

Year	No. caught
2009	3
2017	4
2019	2
2020	2
2021	4
2022	2
2023	1
2024	*3
Total	21

*2 of these were caught at breeding burrows on 9 Dec 2024

Fairy prion | tītī wainui

The only fairy prion burrows found by Miro were the 13 known breeding burrows near the Petrel Station.

Diving petrel | kuaka

Miro found about 17 diving petrel burrows beyond the monitored sites. Most diving petrel chicks fledge from Cook Strait colonies before the second week of December, and so most of the burrows were vacated (or they were too deep or narrow to reach the nest chamber). Diving petrel burrows were mainly identified by their small entrances (usually in rocky sites) and the presence of small contour feathers. However, we banded two chicks near fledging on 10 December (D-226102 & D-226103) at burrows below and south of the main sooty shearwater colony.

White-faced storm petrel | takahikare

Miro searched over and around all the WFSP artificial burrows on 9 December, and the (former) northern acoustic attraction site on 10 December, without indicating the presence of any petrels.

Sooty shearwater | tītī

We located and tagged ten sooty shearwater burrows that were beyond known clusters of sooty shearwater burrows (Fig. 2). We did not investigate the burrows once they were confirmed to be sooty shearwater, but noted eggs in five of them, and a banded bird (Z-20672) attending one of the eggs. GPS co-ordinates and site descriptions for these burrows have been provided to Etienne Ossona De Mendez.

Little penguin | kororā

A single little penguin was in a burrow under New Zealand spinach (*Tetragonia tetragonoides*) at the lower southern corner of the South Point fluttering shearwater colony on 11 December. The burrow was only 2 m below burrow FS92, at about 70 m asl.

Discussion

This survey confirmed that a few fluttering shearwaters have excavated natural burrows away from the monitored artificial burrows on Mana Island and are producing chicks. It is not known if any of the four breeding burrows found in December 2024 produced any of the unbanded adult fluttering shearwaters caught on Mana Island between 2017 and 2024. However, the two confirmed pairs are too recent to have produced any returned adults (i.e. any chicks that they might have fledged in the last year or two are not expected back at the colony until at least next year).

The timing of the survey (which was postponed from late October) turned out to be ideal for the two primary target species (fluttering shearwater and fairy prion) as most diving petrel chicks had fledged, meaning there were fewer 'low priority' scent trails to distract the dog. However, sooty shearwaters were incubating eggs, making it difficult to detect any target birds that might have had nests within sooty shearwater nest clusters (which we avoided, as they provided too many scent sources, which would likely confuse the dog or our ability to interpret his responses).

The persistent strong northerly winds on all three days of the survey may have contributed to our failure to find natural fairy prion burrows, if any exist close to the known nests in artificial burrows. Whenever we tried to search dense vegetation near the fairy prion colony, Miro led us to known

burrows. We don't know if this should be interpreted as there being no natural burrows on the colony edge, or whether dense vegetation and swirling scents made any natural burrows difficult to find.

Recommendations

1. The four confirmed and six suspected fluttering shearwater burrows found in December 2024 should be monitored during the courtship and incubation period next year to identify breeding birds.
2. Chicks produced by pairs in these burrows should be banded each year, so that they can be identified if they recruit to other monitored burrows.
3. Dog-surveys should be scheduled for early December approximately every 3 years, to aid monitoring of colony establishment of fairy prions and white-faced storm petrels, and to locate additional fluttering shearwater burrows. Alternatively if a time in winter could be determined to target returning shearwaters and prions to the colony, this may also be a good time to detect new birds and burrows, and avoid cross over with diving petrels and sooty shearwaters. This has worked well with grey-faced petrels returning in April/May to clean out burrows and re-establish pair bonds. There is a lot of scent for the dog as the birds are spending more time on the ground, and often 2 birds home in the day.
4. Anyone going down the slopes monitoring the new fluttering shearwater and sooty shearwater burrows needs to be very careful they do not inadvertently step or crush unknown burrows. This could occur enroute to, and when trying to locate the monitored burrows. Many of the smaller burrows are hidden under vegetation and are very close to each other.
5. Given that some of the occupied fluttering shearwater burrows were found on the morning we departed the island, time constraints meant that this slope (directly west from the artificial burrows) was not surveyed completely. It is likely that there are more fluttering shearwater burrows here (there were definitely more sooty shearwater and diving petrels below PG 10).

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Maps prepared by Jaz Hamilton using QGIS 3.40.1., based on Porirua City Council aerial imagery, January 2024 (10 cm pixel resolution), sourced from LINZ Data Service, and licensed for reuse under CC BY 4.0.

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