

Northern giant petrel population size on Antipodes Island

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Introduction

Northern giant petrels (*Macronectes halli*) have a southern circumpolar distribution and breed on subantarctic islands between 44°S and 54°S. They had a total breeding population of about 11,500 pairs in 2000 (Patterson et al. 2008) and appeared to be increasing at some locations and decreasing at others (Woehler et al. 2001; Patterson et al. 2008). The causes of population change have not often been identified but, human disturbance, introduced predators, and fisheries activities are possible causes (Environment Australia 2001; Wiltshire & Scofield 2000; Patterson et al. 2008). In the New Zealand region northern giant petrels breed on the Chatham Islands group, Campbell, Auckland and Antipodes Islands and an island in Port Pegasus, Stewart Island (Heather and Robertson 2015). The size of the population was estimated roughly at the Chathams in 1993 (Robertson and Sawyer 1994) and counts have been undertaken at Campbell Island in 1995/96 (Wiltshire & Scofield 2000), Auckland Islands in 2015/16 (Parker et al. 2016) and Antipodes Island in 1995 (Tennyson et al. 2002) and 2000 (Wiltshire & Hamilton 2003). Only at Macquarie has the population been regularly monitored (ACAP 2010).

Giant petrel colonies often move between seasons (Voisin 1968; Wiltshire & Scofield 2000) and thus population trend can only be detected when the whole of an island group is surveyed within one season – a substantial undertaking on a large remote subantarctic island. Although Antipodes is a remote island, it is small compared to the other subantarctic islands on which northern giant petrels nest and all the giant petrels nesting on Antipodes can be counted within a few days. As well as the two previous counts of all nesting giant petrels on Antipodes Island the population was estimated and mapped once in 1969 (Warham & Bell 1979) and the number of northern giant petrel nests have been recorded during annual visits to the island by scientific parties since 1994. Although giant petrel colonies move between seasons, they mostly do not move far (pers. obs.), and the records of locations of giant petrel colonies provide a focus for searching the island.

The aim of this study was to estimate the 2020-21 breeding population of northern giant petrels on Antipodes Is by counting all pre-fledging chicks and to compare this count to earlier counts in order to detect any long-term trend.

Methods

Pre-fledging northern giant petrel chicks were counted between 20/12/2020 and 1/2/2021 by visiting previously recorded colonies and likely sites, on foot, using binoculars or using a drone (Fig 1). All sites at which northern giant petrels had previously been recorded were inspected, as well as much of the island's easily accessible country (Fig 1). Since northern giant petrel colonies move from season to season (Voisin 1968; Wiltshire & Scofield 2000.), but are often within a few hundred metres of the previous year's location (pers. obs.) we searched not only the places where northern giant petrel nests had been previously found, but in the country surrounding earlier sightings.

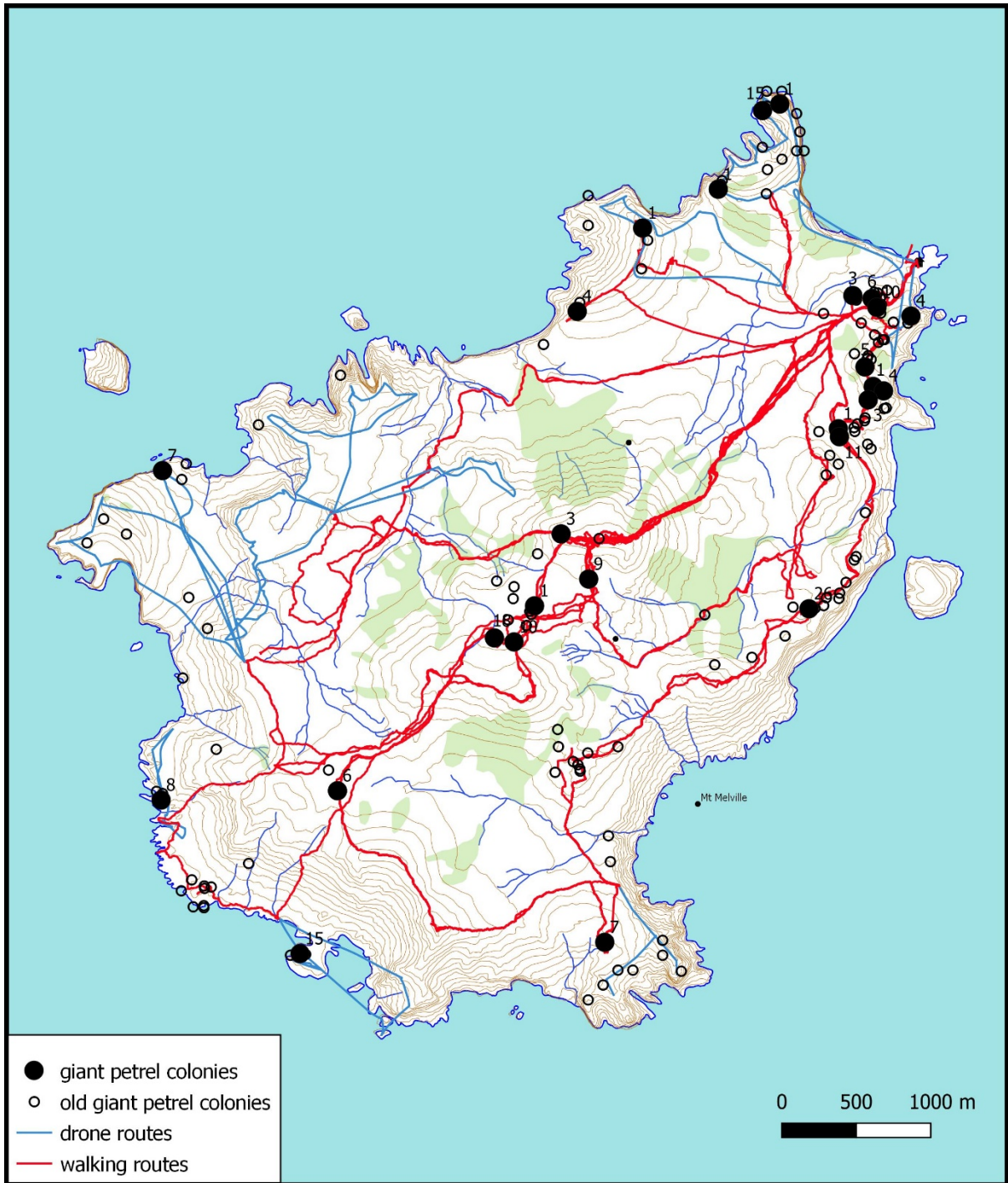


Figure 1. Sites visited and number of pre-fledging northern giant petrels found on Antipodes Island between 20/12/2020 and 22/1/2021.

Results

We counted 180 pre-fledging chicks in 26 colonies (Fig 1). We spent approximately 4.5 days looking for northern giant petrels, less than Wiltshire and Hamilton (2003), but we used a drone which enabled us to survey country in a few minutes which would have taken hours to visit on foot. We probably achieved a similar coverage to Wiltshire & Hamilton (2003). It is possible that we missed a few isolated nests and small colonies, as would have the earlier surveyors.



Discussion

All of the northern giant petrel counts undertaken on Antipodes Island have been of pre-fledging chicks and reflect not only the number of pairs that bred that year but also their nesting success, which is variable (Voisin 1988.). Counts of nests soon after laying would provide a better index of population size and change, but northern giant petrels lay in winter when Antipodes, and the other subantarctic islands, are rarely visited.

Nesting success on nearby Macquarie Island has varied from 55.7%– 69.8% (mean = 63.8%). Applying these figures as corrections to our counts suggests that there has been a real increase in northern giant petrel abundance since 2000 (Table 1). Warham and Bell (1979) estimated there were 320 breeding pairs in 1969 and while it is not possible to make a useful comparison between their estimate and our count we can at least say that the number of pairs nesting on the island has not changed dramatically over the last 50 years.

Table 1. Counts of pre-fledging chicks and estimate numbers of pairs of northern giant petrels on Antipodes Island.

Year	Nests counted	Estimated pairs	Lower limit	Upper limit	Source
1969		320			Warham & Bell 1979
1995	132	207	189	237	Tennyson et al 2002
2000	130	204	186	233	Wiltshire & Hamilton 2003
2021	180	282	258	323	This study

The use of a drone enabled us to cover more ground than we would have on foot and our survey took less time and we are more confident that we have missed few if any birds than we would be if we had not used the drone.

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