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SHORT NOTE

Snow petrel (*Pagodroma nivea*) records from Macquarie Island

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The snow petrel (*Pagodroma nivea*) is confined the Antarctic surface waters (ASW) south of the Antarctic polar front (APF; sometimes known as the Antarctic convergence). This species rarely travels more than a few kilometres from the pack ice (Watson *et al*. 1971). The Antarctic polar frontal zone (APFZ) occurs immediately north of the APF where the ASW mixes with the warmer subantarctic surface water. The Kerguelen Islands (49°00′S, 69°00′E) are considered to be in this zone and there is one record of snow petrel from there (Tollu 1967). There are also a number of unpublished sight records in the APFZ between 50° and 55°S (P.C. Harper *in* Watson 1971).

In Australian territorial waters the snow petrel has been reliably recorded only once, on Heard Island (53°06′S, 72°31′E) in the winter of 1949 (Gilchrist 1952). Heard Island is generally accepted as being south of the APF and when this observation was made the sea surface temperature was -0.22°C and pack ice was 300-400 kms from the island. This sight record was of three birds feeding beyond the breakers in the backwash extending into a bay. Previously, the species had been recorded north of the generally accepted boundaries of the APFZ only in the Falkland Islands (51°45′S, 59°00′W; Saunders & Salvin 1896, Wace 1921, Bennett 1926; Lowe & Kinnear 1930).

Distribution records from the Indian and Pacific Oceans that may be north of the APFZ mapped in Watson *et al*. (1971) are problematic. The most northerly records (*c*. 51°-52°S) are from Cook's voyages (Forster 1777; Beaglehole 1955-1967) and although Cook was a great navigator, we argue the accuracy of his latitudinal positions made at sea were not accurate enough to warrant such precise mapping. A position (55°05′S, 42°55′E; Routh 1949) is the most northerly published record at sea in the Indian Ocean although there are, apparently, a number of unverified sight records within the APFZ between 50° and 55°S (Woehler *et al*.1990).

There are no confirmed records of snow petrels from Australian or New Zealand waters. In this note we report the first records of snow petrel from the Australian territory of Macquarie Island (54°37′S, 158°48′E) and waters within 200 nautical miles of the island.

On 7 October 1994, two snow petrels were sighted 180 nautical miles south-west of Macquarie Island. As our ship crossed the APFZ at about 13:00 EST (03:00 GMT) a single all-white petrel approached from the rear of the vessel and flew parallel with the bridge wing at a height of 12 m asl. for two-three minutes before peeling off and following in the wake. The position then was 54°17′S, 155°18′E. Excellent viewing conditions made identification straight forward with the white plumage combined with the wedge-shaped tail being diagnostic and even the dark patch behind the eye (caused by a number of small black bristles) was easily visible. Less than 10 mins. later, two birds fitting the description of the first, approached the ship and thereafter accompanied it, off and on, for the rest of the day.

These were all-white *Pterodroma*-like petrels slightly smaller than accompanying cape petrels (*Daption capense*) with a slimmer build and narrower wings. A small dark smudge was present immediately behind the dark eye. The tail was broad and slightly wedge-shaped and usually held spread. The bill was black and the legs appeared dark pink. The possibility that they were albino cape petrels was considered at the time of the observation. This likelihood was discounted as the birds observed had dark bills (not pink, *cf*. Reid (1993)) and were smaller than the accompanying cape petrels with a more buoyant flight and had obviously wedge-shaped tails. The Birds Australia rarities committee has accepted this record as the third Australian record of snow petrel (Submission 228; http://users.bigpond.net.au/palliser/barc/barc-home.html)

We have recovered two specimens on Macquarie Island. The first was on 15 July 1994 when AW picked up the partially eaten corpse above Windsor Bay, below the slopes of Mt Haswell (54°46′S, 158°49′E). This was a fresh specimen but missing its head and feathers and skin of the belly and mantle. The wing measured 255 mm (flattened chord method), tarsus 32.9 mm, mid toe and claw 42.9 mm; these measurements indicate this specimen is likely to be the small subspecies *P. n. nivea* (Marchant & Higgins 1990).

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The second specimen was found on 15 March 1995 when RPS recovered a pair of wings and parts of the adjoining sternum of a snow petrel on a grassy clearing near Eagle Point, approximately 500 metres inland at 54°31′S, 158° 53′E. The specimen's condition, with green algae and dirt colouring the wings suggested that it had been dead a number of seasons before being found. The wing measured 260 mm, indicating this too was of the small subspecies.

The Birds Australia rarities committee accepted these specimens as the third and fourth Australian records of snow petrel and the specimen remains have been deposited in the collection of the Tasmanian Museum and Art Gallery (B4668 and B4669 respectively).

The three records reported here are all from north of the generally accepted boundaries of the APFZ. Considering the reliance of snow petrels on Antarctic surface waters, their occurrence so far north of the generally accepted boundaries of the APFZ is most unusual. The 1991 - 1993 El Niño-Southern Oscillation episode, combined with the effects of Mount Pinatubo's 1991 eruption, caused noticeable cooling in the southern ocean between 1991 and 1994. This cooling was not only manifested by surface seawater temperature cooling in the waters around New Zealand (Basher & Thompson 1996), but also in the global tropospheric temperature (Dutton & Christy 1992). It is possible that the cumulative effects of this period of global cooling allowed a significant movement in the surface water of the APFZ in the winter of 1994 thus making conditions favourable for snow petrels in waters they had not previously been recorded in.

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