THE BIRDS OF ROTHERA, ADELAIDE ISLAND, ANTARCTIC PENINSULA

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SUMMARY

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The current status of birds at Rothera, Adelaide Land, Antarctica is presented. Of the 23 species recorded, Snow Petrel *Pagodroma nivea*, Wilson's Storm Petrel *Oceanites oceanicus*, Antarctic Shag or Cormorant *Phalocrocorax atriceps bransfieldensis*, South Polar Skua *Catharacta maccormicki*, Kelp Gull *Larus dominicanus* and Antarctic Tern *Sterna vittatta* breed and of the remaining species eight are represented by less than five records each. This relatively low species richness is consistent with the high latitude. Continued monitoring is encouraged, in particular to assess distributional changes associated with climatic variation.

INTRODUCTION

The British Antarctic Survey base at Rothera Point, Adelaide Island (67°34'S, 68°08'W) (Fig. 1) is a relatively large and expanding scientific research station. The original base was constructed in 1975, a major expansion was completed in 1988, and a crushed rock runway added in 1992. Early in 1997 a new laboratory complex and accommodation block were installed, increasing the capacity to a maximum of 120 scientists and support staff in summer with a wintering complement of up to 20.

From November 1995 to end of March 1998 daily records were kept of all bird observations in the Rothera area. The recording area includes the area north to MacKay Point, west to Reptile Ridge, south to Leonie and Anchorage Islands and east to Killingbeck Island (Fig. 1), although the majority of records are from Rothera Point itself. Prior to 1995, there was no regular or systematic recording of birds, although some details are available from reports of anecdotal observations made by base personnel since 1977 (see Milius 1996a).

The aim of this paper is to assess the current status of birds occurring in the Rothera area, to provide baseline species abundance data for any future studies and to collate the existing records for this area.

SYSTEMATIC LIST: BREEDING SPECIES

Snow Petrel *Pagodroma nivea*

Breeds in small numbers. Recent observations agree with Hobson (1993) who recorded them throughout the year around Rothera Point, though less often in early and mid summer. It is very likely that they breed on some of the rock outcrops in the Rothera area.

Wilson's Storm Petrel *Oceanites oceanicus*

Breeds in small numbers on Rothera Point, probably <15 pairs, although it also breeds on many (maybe all) of the other local islands in Ryder Bay, e.g. Lagoon Island (S. Brockington pers. comm.). Birds return in late November or early December (based on records for six years); these dates are consistent with those reported by Roberts (1940) for a range of sites on the Antarctic Peninsula. Although records are few, their departure would appear to be during April, although one was seen as late as 3 May 1997. Counts of more than 10 birds are uncommon, although over 100 were seen together on 20 December 1996.

Antarctic Shag *Phalacrocorax atriceps bransfieldensis*

Up to 24 pairs of the Antarctic Shag or Cormorant breed on a small rock just to the north of Killingbeck Island, *c*. six pairs on the north end of Killingbeck Island and *c*. 50 pairs on another small rock close to Lagoon Island (Fig. 1), although the exact numbers vary considerably between years (e.g. seven, zero and two pairs, respectively in 1997/98). Antarctic Shags can be seen at all times of the year, although their presence in winter is likely to be dependent on sea-ice conditions. Between late March and late June 1996, large flocks containing 300–400 adult and juvenile birds were frequently seen with over 1000 recorded on 22 June, indicating that more than just the local breeding population was present.

South Polar Skua *Catharacta maccormicki*

Breeds at Rothera Point. The population of *c*. 12 pairs has been monitored annually since the 1988/89 season and for two earlier years in the 1970s. The population size has remained fairly stable, with variable breeding success. Full details are available in Fenton (1976), Fletcher (1978), Morton (1989, 1990), Love (1991, 1992), Osborne (1993), Hodges & Morton (1994), Jones & Bailey (1995), and Milius (1996b, 1997, 1998). Additionally, birds breed on most of the other islands in Ryder Bay (Lagoon, Leonie, Killingbeck, Anchorage) and at least one incubating pair has been observed on Reptile Ridge (Fig.1).

The spring return to Rothera usually falls between 15 and 25

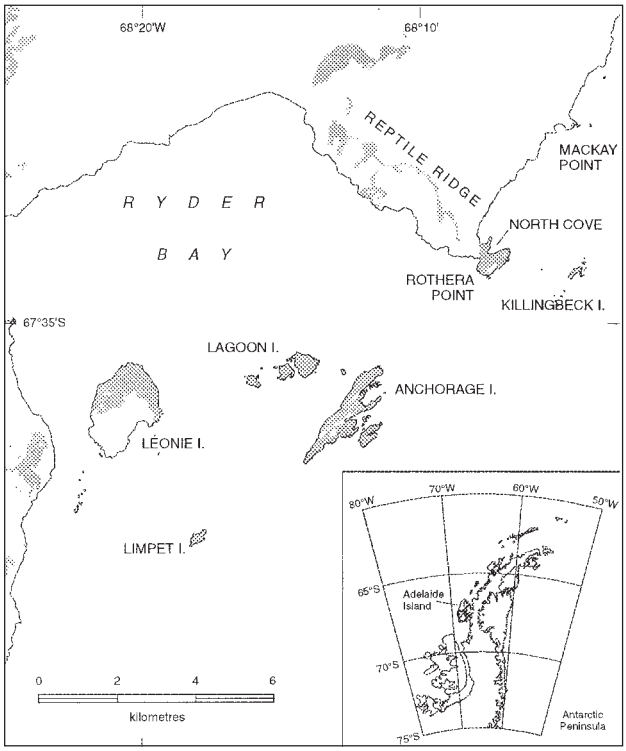

Fig. 1. *The Rothera area, showing places mentioned in the text.*

October (mean date 20 October) with departure in late April/early May, the latest birds likely to be migrants from farther south. Two winter records exist; a bird close to the base on 12 September 1993 and one reported about one kilometre from Killingbeck Island on 13 August 1996.

Kelp Gull *Larus dominicanus*

The Rothera Point breeding population varies from zero to four pairs with four pairs in 1995/96 fledging nine young and only two pairs breeding in 1996/97. In at least one year since the establishment of the base (1977/78), none attempted to breed (Fletcher 1978). It also breeds on the other local islands (Killingbeck, Lagoon, Anchorage and in larger numbers on Leonie, Fig. 1). Large numbers of non-breeding birds have been recorded in North Cove over the summer months. The numbers here dropped dramatically between the 1995/96 and 1996/97 seasons, as shown in Figure 2, almost certainly due to the closure of the temporary contractors' accommodation, situated adjacent, from which a considerable amount of waste food was available.

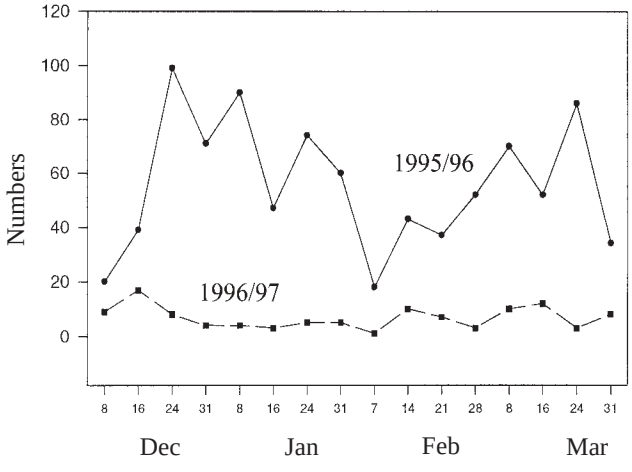

Fig. 2. *Numbers of Kelp Gulls in North Cove during the summers of 1995/96 and 1996/97, showing the decrease in numbers between the two years.*

In winter, Kelp Gulls are the most regularly recorded species at Rothera, being absent on very few days. It would, however, appear that the winter population has decreased following the departure of the dogs in the 1993/94 summer. During the 1994 winter (i.e. the first without dogs) a large proportion of the gull population perished (M. Jones pers. comm.). It seems that in previous years they had fed largely by scavenging from the remains of seal carcasses prepared as food for dogs, which were no longer available after the removal of the dogs in 1994. In 1997, only a single individual was regularly seen scavenging around the base between mid June and late September.

Antarctic Tern *Sterna vittata*

Breeds locally, formerly bred on Rothera Point. Bred on Killingbeck Island and Reptile Ridge in 1995/96, 1996/97 and 1997/98 and on Lagoon Island in 1995/6 (Fig. 1). Also reported as breeding on Anchorage Island (Lewis-Smith 1995). About 60 terns, some of which were on nests, were noted on Rothera Point in February 1962 (Killingbeck 1963) and Willey (1969) reported a nesting colony of 100+ birds at Rothera Point on 16 January 1969. When plans for the establishment of Rothera base were underway it was noted that 'a special effort must be made to preserve the existing tern colony as these birds are very susceptible to human disturbance' (Lewis-Smith 1975). However, it appears that any efforts in this direction were unsuccessful. Birds are seen commonly around the Point between late September/early October and March and far more rarely in winter. Between April and August they were recorded on seven days in 1996 (six in July before the ice became extensive) and four in 1997 (the latest 9 May). There was one previous record for this time of year, and whereas open water is likely to be very important in determining their presence at this season, more time was spent recording birds in 1996 and 1997 than in previous years.

SYSTEMATIC LIST: NON-BREEDING SPECIES

Emperor Penguin *Aptenodytes forsteri*

Rare, although almost annual visitor, seldom more than single birds seen although a group of 19 was recorded on 7 November 1977 (Fletcher 1978). Nearly all records fall between August and November (Fig. 3).

Adélie Penguin *Pygoscelis adeliae*

Common visitor. Seen almost daily during the summer months (late October to March) and less frequently, but still regularly, throughout the remainder of the year. In summer, counts are generally around 20, but vary greatly; the largest being 92 on 21 March 1989, *c*. 100 on 27 October 1995 and 120 on 27 March 1997. Winter occurrence is probably largely dependent on sea ice coverage; available records suggest that they become quite scarce when the sea ice is at its most extensive. During February and March, many of the birds present come ashore to moult. From late February to April, a very small number of first-year birds are regularly recorded, although during the winter almost all birds are

adults. However, first-year birds have been seen on 18 June 1986, 10–14 June 1996 and 5 June 1997. These records are of particular interest as it is generally considered that young birds winter farther north than adults (Marchant & Higgins 1990, Williams 1995).

Two flipper-banded birds were recorded in February 1998. One was banded as a chick in 1996 on King George Island, South Shetlands and the other as a breeding adult from Torgersen Island (64°46'S, 64°05'W) in the Palmer Station study area in 1995, where it had again raised two chicks in 1998. The latter represents the first Palmer-banded Adélie Penguin to be recorded away from its immediate study area (W.R. Fraser pers. comm.). Between 9 November 1997 and 20 January 1998 a pair built and occupied a nest on Shag Rock (adjacent to Killingbeck Island), although they failed to lay eggs.

Chinstrap Penguin *Pygoscelis antarctica*

Rare, almost annual, summer visitor. Records usually involve single birds between January and March (Fig. 3), although there are records from the former Adelaide Island base (67°46'S, 69°55'W) from April (Bravington 1976), May and November (Willey 1969). In 1998 two birds moulted on Rothera Point, the first time this has been observed there.

Gentoo Penguin *Pygoscelis papua*

One was seen in North Cove on 8 January 1997 (I.L. Boyd pers. comm.). Breeds as far south as Petermann Island (65°11'S, 64°10'W) (Woehler 1993).

Macaroni Penguin *Eudyptes chrysolophus*

A moulting, first-year bird was seen on Shag Rock (adjacent to Killingbeck Island) on 22 March 1998. Other records from the region are of one on 'Cona Islet' (= Cone Island?) (67°41'S, 69°10'W) in February 1962 (Killingbeck 1963) and another close to the former Adelaide Island base (67°46'S, 69°55'W) on 14 March 1975 (Bravington 1976).

Black-browed Albatross *Thalassarche melanophrys*

There are six records, all between February and April (Fig. 3). Four are from 1997 (including one of two birds together) when there were five research/supply vessels in the area.

Southern Giant Petrel *Macronectes giganteus*

During the period November 1995 to March 1998 the species was fairly common throughout the year with most records being of one or two birds although nine were recorded on 1 September 1980. Fletcher (1978) recorded the species as an 'infrequent visitor'.

Antarctic Fulmar *Fulmarus glacialoides*

Annual spring (October/November) and autumn (March) migrant, infrequent in summer, the period June to August is the only time for which there are no records (Fig. 3). Groups of 10–20 are fairly common, the largest count being an estimate (considered conservative) of over 500 passing through to the south-west of Rothera Point on 12 October 1996.

Cape Petrel *Daption capense*

The Cape or Pintado Petrel was an uncommon, almost annual visitor. Seldom more than single birds are seen, though a flock of *c.* 20 on 10 December 1996 was a notable exception. Birds can be seen at any time of the year with January, June and November being the only months with no records (Fig. 3). As with the Black-browed Albatross, sightings in the Rothera area are likely to be influenced by the presence of ships.

Antarctic Petrel *Thalassoica antarctica*

This species can occur at any time of the year, although the majority of records occurs between July and October (Fig. 3). Records were usually of single birds, or groups of less than 10 but *c.* 150 were seen on 28 April 1997.

Black-necked Swan *Cygnus melanocoryphus*

One was seen off the south end of Rothera Point on 8 January 1996. It was in very poor condition and died the same day. The first record of the species in Antarctica was from Charlotte Bay, South Shetlands in the summer of 1916/17 (Bennett 1926). There were several sightings over the 1988/89 summer (Orgeira & Fogliatto 1991) ranging from the South Shetland Islands, through various localities on the Peninsula, to as far south as San Martin Station (68°08'S, 67°04'W), the latter being the most southerly record for the species. Numbers involved ranged from one to 11 individuals.

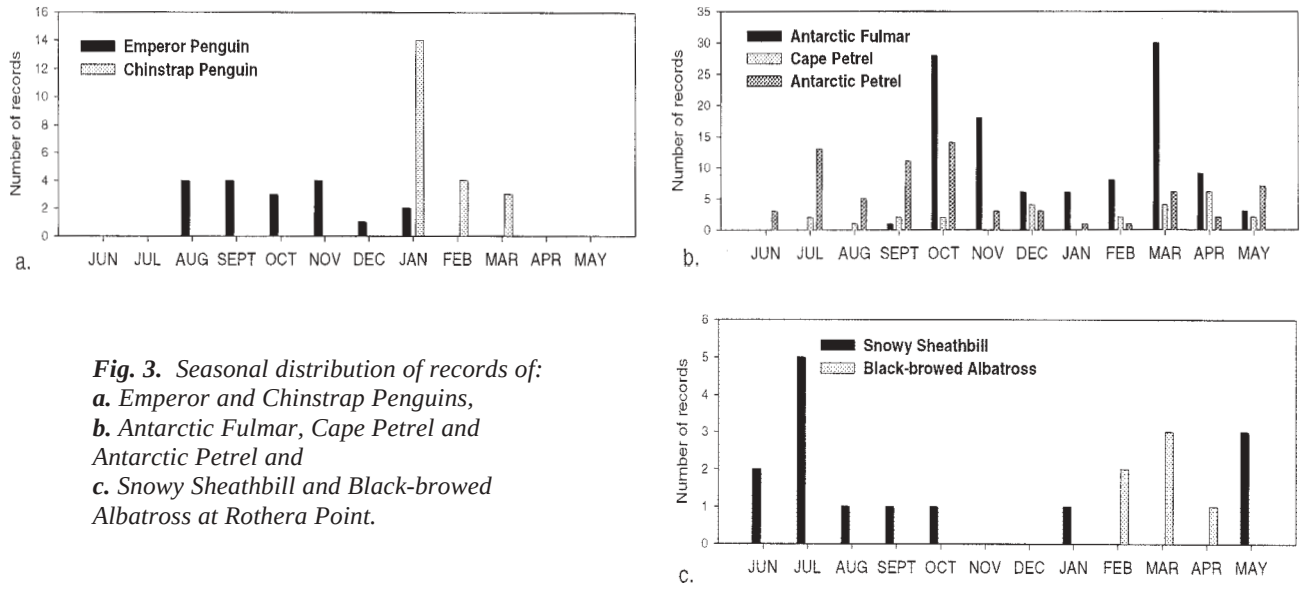

Fig. 3. *Seasonal distribution of records of:*
a. *Emperor and Chinstrap Penguins,*
b. *Antarctic Fulmar, Cape Petrel and Antarctic Petrel and*
c. *Snowy Sheathbill and Black-browed Albatross at Rothera Point.*

TABLE 1

The total number of breeding species at locations in the Antarctic Peninsula /Scotia Sea region

Location	Latitude	Breeding species	Source
South Georgia	54°03'S	30	Prince & Croxall 1996
Signy Island	60°43'S	16	Rootes 1988
Elephant Island	61°02'S	17	Furse 1979
Palmer	64°45'S	14	Parmelee 1992
Rothera	67°34'S	6	This paper

More recently, birds have been seen at Faraday Station (now Vernadsky) (65°15'S, 64°16'W) during December 1994 (F. Hindle pers. comm.), at Hovgaard Island (65°08'S, 64°08'W) on 4 January 1995 (R. Burton *in litt*.), at Husvik, South Georgia on 19 December 1995 (Taylor & Humpidge 1996) and at Aitcho Island, South Shetlands (62°24'S, 59°47'W) on 12 January 1996 (R. Burton *in litt*.).

South Georgia/Yellow-billed Pintail *Anas georgica*

A single record exists of one on 13 October 1979 (Jewell 1979), but few details are available. Of the two recognised subspecies, the South Georgia Pintail *A .g. georgica* breeds in South Georgia and the Yellow-billed Pintail *A. g. spinicauda* in the Falkland Islands and South America. It is perhaps likely that the bird seen at Rothera would have been of the latter species, given its distribution and more migratory habits. At least one recorded close to Palmer Station (64°46'S, 64°03'W) has been ascribed to this subspecies (Parmelee 1992). The species has also been recorded at Deception Island (62°57'S, 60°38'W) (Bennett 1926) and King George Island (62°18'S, 58°41'W) (Cordier *et al.* 1983) in the South Shetland Islands.

Pectoral Sandpiper *Calidris melanotos*

A single bird was observed and photographed during 5–9 January 1978 near Rothera base (Fletcher 1978). It fed in small pools of water which had accumulated large quantities of debris from piles of seal meat, then kept for dog food. The species winters to *c.* 50°S in Argentina and has been recorded in the Falkland Islands (Woods 1988) and South Georgia (Prince & Croxall 1996).

Snowy Sheathbill *Chionis alba*

An uncommon winter visitor, of 14 records, all but one fall between May and October (with July being the most popular month, Fig. 3), all but two were single birds.

Subantarctic Skua *Catharacta antarctica*

Due to the difficulty of distinguishing the Subantarctic or Brown Skua from the South Polar Skua, there has been confusion as to which species of skua occur at Rothera Point, although recent detailed inspection suggests all the birds breeding at Rothera Point between 1995–1998 were South Polar Skuas. However, at least one Subantarctic Skua has been recorded in this time. A bird bearing an American band (1067–25095) which had been banded as a nestling on Humble Island (64°46'S, 64°05'W) in January 1981 was recorded between *c*. 13 November 1995 and 2 December 1995, also (although less regularly) between 9 November 1996 and 20 March 1997 and again between 12 November 1997 and 16 January 1998. It represents one of the most southerly confirmed records of the species (W.R. Fraser pers. comm.).

Pomarine Skua *Stercorarius pomarinus*

One was recorded at Leonie Island by the British Graham Land Expedition on 22 February 1937 (Beck 1968). Slightly farther afield, single birds have been seen near Neny Island (68°12'S, 67°02'W) on 24 December 1946 and, presumably the same individual, on 12 January 1947 (Beck 1968); on 21 January 1963 near Carvajal (67°46'S, 69°55'W) (Killingbeck 1963) and in the vicinity of San Martin (68°07'S, 67°07'W) during the summer of 1994/95 (Lewis-Smith 1995).

Arctic Tern *Sterna paradisaea*

A group of four Arctic Terns was seen on 13 March 1998; identified by the whiteness of the breast and belly and the broad white trailing edge to the secondaries (Harrison 1985). They were aged as second-summer birds by the whiteness of the underparts and the lack of a dark carpal bar which would have been present in first-summer birds (Malling Olsen & Larsson 1995).

Between 7–9 March 1989 an estimated 7600 were recorded moving north close to Horseshoe Island (67°51'S, 67°12'W) on what was considered to be a regular migration route (Gudmundsson *et al.* 1991). In March of 1996, 1997 and 1998 several groups of up to ten birds were recorded flying north past Rothera Point. There is a high likelihood that these were Arctic Terns, although they were too distant to allow for positive identification.

DISCUSSION

A total of 23 bird species has been recorded in the Rothera area up to the end of this study, of which only six breed locally. The Rothera area is the most southerly locality in the Antarctic Peninsula region for which such a checklist has been compiled and comparison with localities farther north show a clear decrease in the number of breeding species with increasing latitude (Table 1). Due to the incomplete nature of the data available from the Rothera area prior to November 1995 it is not possible to draw any firm conclusions about population trends. In order to obtain more detailed conclusions on the changing status of birds in the area detailed observations are required over a longer period of time. This report provides a useful baseline for such work, which should facilitate future assess-

ment of changes in bird populations, whether related to global warming or other climatic changes, the effects of which may be more evident at extreme latitudes.

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