

MARINE ORNITHOLOGY

Vol. 23 No. 2

1995

BREEDING DISTRIBUTION OF THE SNOW PETREL *PAGODROMA NIVEA*

J.P. CROXALL¹, W.K. STEELE², S.J. McINNES¹ & P.A. PRINCE¹

¹*British Antarctic Survey, National Environmental Research Council, High Cross, Madingley Road, Cambridge CB3 0ET, United Kingdom*

²*Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch 7700, South Africa*

Received 15 February 1994, accepted 14 April 1995

SUMMARY

CROXALL, J.P., STEELE, W.K., McINNES, S.J. & PRINCE, P.A. 1995. Breeding distribution of the Snow Petrel *Pagodroma nivea*. *Marine Ornithology* 23: 69–99.

The Snow Petrel *Pagodroma nivea* is endemic to Antarctica and the Southern Ocean, with a circumpolar breeding distribution. A comprehensive review of both the published literature and unpublished records revealed that Snow Petrels have been reported breeding at 298 localities, all of which are mapped. Breeding has been confirmed at 195 of these localities, is probable at 38 and considered only possible at 57 localities. Reports of breeding, or suspected breeding, by Snow Petrels at a further eight localities were not confirmed by subsequent investigation. Estimates of breeding population are available for only 108 of these colonies, thus it is not possible to estimate the total breeding population of Snow Petrels. However, counts of birds at sea suggest that the species' population must be in the order of several millions. Additional relevant data from Snow Petrel breeding localities should be forwarded to the SCAR Bird Biology Subcommittee to enable this initial database to be updated.

INTRODUCTION

Published data on the breeding distribution of Antarctic seabirds, except for penguins (Woehler 1993), are very limited. This is unfortunate at a time when there is much activity in revising the nature and coverage of Antarctic protected areas (to ensure that important sites for all elements of the biota are afforded adequate protection) (Antarctic Treaty Consultative Meeting 1993), and growing concern at the potential disturbance that may be

caused by increasing numbers of tourists (Smith & Spletstoesser 1994). Lack of knowledge of the location of breeding colonies of Antarctic seabirds and of baseline data on the sizes of breeding populations at these sites will significantly detract from the ability to ensure appropriate protection and to monitor changes.

As a consequence of this situation, the Scientific Committee on Antarctic Research (SCAR) Bird Biology Subcommittee is encouraging the documenting and pub-

lication of all available data on distribution and abundance of Antarctic seabirds. Publication of the recent review of Antarctic penguins (Woehler 1993) was the culmination of nearly a decade of such efforts. This paper is the first modern attempt at a comprehensive summary of current knowledge for any of the flying seabirds of the Antarctic region. The last region-wide review of breeding sites was by Watson *et al.* (1971), but very few data for Snow Petrels *Pagodroma nivea* were then available. Subsequently, new information for various sectors of Antarctica has become available (e.g. Croxall *et al.* 1984, Harper *et al.* 1984, Woehler & Johnstone 1991, Greenfield & Smellie 1992, Chastel *et al.* in press) but no overall synthesis has yet been attempted.

The Snow Petrel is endemic to Antarctica and the surrounding Southern Ocean and is circumpolar in distribution (e.g. Loy 1962, Harrison 1983). An unusual feature is that it occurs in two forms of different size (*P. n. nivea* and *P. n. major*) which are sympatric at some breeding sites (Isenmann 1970, Cowan 1981, van Franeker *et al.* 1990, Marchant & Higgins 1990). The origin, status and significance of these two forms still remains controversial (see Croxall 1982, Jouventin & Viot 1985, Haftorn *et al.* 1988).

The species is a specialist forager and only occurs where there is some degree of sea-ice cover (e.g. Ainley & Jacobs 1981, Griffiths 1983, Ainley *et al.* 1984, Ainley *et al.* 1986), generally just north of the closed pack-ice. This means that Snow Petrels are usually most abundant in summer at latitudes south of 63°S (Szijj 1967, Ainley & Jacobs 1981, Griffiths 1983, Hunt & Veit 1983, Ainley *et al.* 1984, Ainley *et al.* 1986, Bretagnolle & Thomas 1990). Snow Petrels breed at islands and, on the Antarctic mainland, areas of exposed rock which may be as much as 300 km from the open sea during the breeding season (Løvenskiold 1960). The main studies of this species at its breeding grounds are by Brown (1966) in the Australian Antarctic Territory; Chastel *et al.* (in press) at Terre Adélie; Maher (1962) near Cape Hallett; Pryor (1968) at Haswell Island; and Ryan & Watkins (1989) in Dronning Maud Land. Diet studies (Falla 1937, Bierman & Voous 1950, Brown 1966, Griffiths 1983, Ridoux & Offredo 1989, Ainley *et al.* 1992, van Franeker & Williams 1992) have indicated that Antarctic Krill *Euphausia superba* is a major component of the diet during the breeding season, mainly directly but also indirectly as prey of fish and squid components of their diet. Concern about relationships between krill predators and their prey in the light of levels and areas of commercial krill harvesting highlights another reason for requir-

ing accurate information on the distribution and abundance of Snow Petrels.

METHODS

A detailed review was undertaken of the published literature and of all unpublished data held in the archives of the British Antarctic Survey. The original sources for the review of Snow Petrel breeding localities by Watson *et al.* (1971) were rechecked. Furthermore, an appeal for unpublished information was made to Antarctic ornithologists by the SCAR Bird Biology Subcommittee.

The paucity of quantitative data on Snow Petrel breeding populations and the variable nature of the data that are available made it impossible to define the accuracy of counts, as was done in the review of Antarctic and Subantarctic penguins (Woehler 1993). Thus, breeding localities were classified only into confirmed, probable and possible on the basis of statements by authors of the original reports. Confirmed breeding localities were taken as those where the observer categorically stated that breeding occurred, and these observations of breeding activities were carried out in December, January or February.

Unless it was possible to distinguish between discrete colonies, breeding localities within 10 km of each other were taken as one site. Official place names have been taken from Alberts (1981) and unofficial place names are enclosed in inverted commas. Longitudinal and latitudinal positions have been taken from the original report of the presence of Snow Petrels or, where not provided there, from Alberts (1981) supplemented by the Gazetteer of the British Antarctic Territory (2nd Edition, Her Majesty's Stationery Office 1993) and the Gazetteer of the Falkland Island Dependencies (South Georgia and South Shetland Islands) (Her Majesty's Stationery Office 1977). Many data for South Georgia were collected on the basis of, or are only referable to, 5-km grid squares (based on South Georgia DOS map 372A).

RESULTS

Table 1 details the position, and counts where available, of all 298 localities where breeding of Snow Petrels has been reported or suspected. Breeding has been confirmed at 195 (65%) of these localities, while it is considered "probable" at 38 localities and only "possible" at a further 57 sites. Eight localities where breeding was reported to occur, or was suspected, were not confirmed

during later visits.

A report of breeding at "Beaver Lake", Mac.Robertson Land (Brown 1966) has not been included because it was based on a record of a chick in October and chicks are only present at breeding colonies between December and March (e.g. Brown 1966, Maher 1962, Ryan & Watkins 1989). Although the species breeds at the South Orkney Islands and at the Elephant and Clarence Islands group (Table 1) there are no confirmed records for the South Shetland Islands proper. At Deception Island (62°57'S, 60°38'W), no Snow Petrels were seen during a four-month visit between November 1987 and February 1988 (L. Greenfield pers. comm.). The only known record is by Bird (1965), who observed a pair perched in an inaccessible rock cleft on the cliffs to the north of "South East Point" on 3 December 1965, where they were seen again 14 days later. Krylov & Popov (1978) state that Snow Petrels did not nest at Fildes Peninsula, King George Island (62°12'S, 58°58'W).

Snow Petrel breeding localities are relatively evenly distributed around the coast and islands of Antarctica (Figs 1 to 15). The most northerly colony site is at Cape North, South Georgia (No. 225; Table 1), which lies at 53°58'S and the farthest south confirmed breeding locality is at Genghis Hills (No. 98; Table 1), Shackleton Range, in Coats Land at 80°44'S. However, the colony farthest inland is in the Tottanfjella, Dronning Maud Land (No. 7; Table 1), which is situated over 300 km from the open sea during the breeding season (Ardus 1964, Bowra *et al.* 1966).

Owing to the limited access to most Snow Petrel breeding localities and the extreme difficulty in obtaining an accurate census of breeding pairs at these sites, there are few accurate censuses of Snow Petrel colonies (Table 1). Counts or rough estimates are available for only 108 (55%) of the 195 confirmed breeding localities. Colony size appears to range from single pairs at the Orvinfjella, Dronning Maud Land, and Mount Haskel and Mount Denucé on the Antarctic Peninsula (Nos 23, 145 and 146; Table 1), to an estimated 20 000 pairs at Laurie Island, South Orkney Islands (No. 211; Table 1). Average colony size is small and only 15 colonies are of 1 000 or more breeding pairs (Nos 2, 7, 9, 17, 19, 24, 35, 37, 38, 39, 52, 61, 68, 85 and 211; Table 1).

DISCUSSION

It is not possible at present even to estimate the world breeding population size of the Snow Petrel. This is

because of the lack of accurate census data which, in turn, is due to the difficulty of access to many breeding localities and the difficulty in counting nests at these sites. Of the colonies reported here, population estimates are available for only 108 of these, with a minimum total of only some 63 000 pairs (Table 1). However, on the basis of counts of birds at sea, Ainley *et al.* (1984) estimated the Snow Petrel population for the Ross Sea area to be nearly two million birds and Cooper & Woehler (1994) estimated the Prydz Bay population to be some 1.7 million during summer. Whereas there are a number of problems with this method of determining population size, these estimates suggest that the world population must be in the order of several million birds.

This further highlights the paucity of data available on breeding sites and population sizes of Snow Petrels, even for many of the more accessible and well known sites. It is important to remedy these deficiencies in order to have reliable baseline data against which to assess future population change and the potential influence on this of commercial exploitation of krill and of human disturbance and pollution. Snow Petrels are nervous birds and are easily disturbed while incubating. The species breeds at a number of sites readily accessible to visitors, including sites in close proximity to some existing bases. Better information on the location and size of breeding populations of these sites is a particular requirement if effective precautionary conservation action becomes desirable. We request that additional relevant data from Snow Petrel sites and populations should be forwarded to the SCAR Bird Biology Subcommittee to enable this database to be updated.

ACKNOWLEDGEMENTS

We thank Vincent Bretagnolle, J.R. Clarke, John Cooper, Damian Gore, Laurie Greenfield, Tony Howard, Jan van Franeker, Peter Hodum, Michelle Leishman, Fridtjof Mehlum, Alastair Moyes, Sally and Jerome Poncet, M. Portanger, Nils Røv, Uli Wand, Christy Wild and Eric Woehler for submitting data and/or constructive comments on early drafts of this paper. JPC, SJM and PAP would particularly like to thank the many members of the British Antarctic Survey, past and present, who contributed unpublished data and Sally and Jerome Poncet for their invaluable contribution to the recent surveys. Financial and logistic support provided to WKS by the South African Department of Environmental Affairs and Tourism, through the South African Committee for Antarctic Research, is gratefully acknowledged. Tony Sylvester kindly produced the maps.

TABLE 1
LOCATION AND POPULATION ESTIMATE FOR KNOWN AND SUSPECTED SNOW PETREL
***PAGODROMA NIVEA* BREEDING LOCALITIES**

Locality	Latitude	Longitude	Grid Square (South Georgia only)	Date	Maximum census or estimate of breeding pairs	Reference
BOUVETOYA						
<i>Fig. 2</i>						
1	Cape Circoncision	54°24'S	03°18'E	Nov 1958	breed	(Solyanik 1964)
DRONNING MAUD LAND						
2	Utpostane, Vestfjella (two sites)	73°55'S	15°30'W	Jan 1977	c. 2 000	(Sømme 1977, B. Barstad & B. Luktvasslimo pers. comm.)
3	central Vestfjella (several sites)	73°45'S	15°00'W	Jan 1977	518	(Sømme 1977)
4	Basen, Vestfjella	73°03'S	13°24'W	1991/92	c. 100	(Sømme 1977, Larsson 1989, Thor 1992)
5	Plogen, Vestfjella	73°00'S	13°00'W	1968/69	possibly breed	(Sømme 1977)
6	Tottan Hills	72°02'S	12°25'W	1961/62	c. 250	(Thurston 1961)
7	“Peak K”, Tottanfjella	74°48'S	12°10'W	1963/64	1 000s	(Ardus 1964, Bowra <i>et al.</i> 1966)
8	Scharffenbergbotnen, Heimefrontfjella	74°35'S	11°13'W	1992/93	“many”	(M. Portanger pers. comm, B. Barstad & B. Luktvasslimo pers. comm.)
9	central Heimefrontfjella (two sites)	74°35'S	11°00'W	1963/64	1 000s	(Bowra <i>et al.</i> 1966)

10	Johnsbrotet, Ahlmannryggen (three sites)	71°20'S	04°10'W	1991-93	>109	(Krynauw <i>et al.</i> 1983, WKS)
11	Boreas/Passat, Ahlmannryggen (two sites)	71°18'S	03°57'W	Jan 1992	>70	(Dalenius & Wilson 1958, La Grange 1962, WKS)
12	Robertskollen, Ahlmannryggen (three sites)	71°27'S	03°15'W	1987/88	509	(La Grange 1962, Krynauw <i>et al.</i> 1983, Ryan & Watkins 1989)
13	Ekberget, H.U. Sverdrupfjella	72°17'S	00°21'W	1950-52	possibly breed not confirmed	(Dalenius & Wilson 1958) (Ryan & Watkins 1988)
14	Brattskarvet, H.U. Sverdrupfjella	72°07'S	01°25'E	1971	breed	(Mehlum 1986)
15	Stornupen	72°11'S	02°23'E	1991	breed	(Ohta 1993)
16	Jutulsessen, Gjelsvikfjella	72°03'S	02°40'E	1991	2 100	(Ohta 1993)
17	Remplingem Mühlig-Hofmannfjella	72°05'S	04°18'E	1991	300	(Løvenskiold 1960, Ohta 1993)
18	Skigarden, Mühlig-Hofmannfjella	71°55'S	04°350'E	1991	100	(Løvenskiold 1960, Ohta 1993)
19	Svarthamaren, Mühlig-Hofmannfjella	71°53'S	05°10'E	1991/92	c. 10 000	(Konovalov 1964, Mehlum <i>et al.</i> 1988, Røv 1990, N. Røv pers. comm.)
19a	Kviholten	71°48'S	05°02'E	1991	100	(Løvenskiold 1960, Ohta 1993)
20	Orvinfjella (two sites)	71°55'S	09°00'E	Jan 1959	60	(Løvenskiold 1960)
21	Orvinfjella (two sites)	71°55'S	09°50'E	Jan 1959	breed	(Løvenskiold 1960)
22	Schirmacher Oasis	70°47'S	11°40'E	1959/60	breed	(Konovalov 1964)
23	Orvinfjella	71°30'S	11°45'E	Jan 1959	1	(Løvenskiold 1960)
24	Lake Untersee, Wohlthatmassivet (several sites)	71°21'S	13°28'E	Dec 1983	c. 10 000	(Konovalov 1964, Hiller <i>et al.</i> 1988)
25	Pinvinane, Sor-Rondane Mountains	72°00'S	25°00'E	1959-61	100s	(Loy 1962, Mehlum <i>et al.</i> 1988)
26	Ongul Island (Syowa Base)	69°01'S	39°32'E	?	breed	(Watson <i>et al.</i> 1971, Mehlum <i>et al.</i> 1988)

ENDERBY & MACROBERTSON LANDS

Fig. 3

27	Casey Bay	67°30'S	48°00'E	1961	breed	(Woehler & Johnstone 1991)
28	Mt Biscoe	66°13'S	51°22'E	1985/86	possibly breed	(Bassett <i>et al.</i> 1990)

29	Proclamation Island	65°51'S	53°41'E	Jan 1930	breed	(Falla 1937, Brown 1966)
30	Taylor Rookery	67°27'S	60°52'E	?	breed	(Bonner & Smith 1985)
31	Giganteus Island, Rookery Islands	67°37'S	62°32'E	?	breed	(Bonner & Smith 1985)
32	Bechervaise Island	67°35'S	62°49'E	?	breed	(E.J.Woehler pers. comm.)
33	Masson Range, Framnes Mountains	67°48'S	62°50'E	1958/59	breed	(Brown 1966)
34	Mt Henderson, Framnes Mountains	67°43'S	63°05'E	1986/87	100s	(J.A. van Franeker pers. comm.)
35	Horseshoe Harbour (Mawson Station)	67°36'S	62°53'E	1962–72	1 103	(Brown 1966, Woehler & Johnstone 1991)
36	Amery Oasis, Prince Charles Mountains	70°14'S	65°51'E	1989/90	>5	(Heatwole <i>et al.</i> 1991)
37	Scullin Monolith	67°48'S	66°42'E	1987	1 200	(Falla 1937, Woehler & Johnstone 1991)
38	Pagodroma Gorge, Prince Charles Mountains	70°50'S	68°06'E	1990/91	1 000s	(E.J. Woehler pers. comm.)

PRINCESS ELIZABETH LAND

39	Larseman Hills	69°24'S	76°13'E	1981	1 000s	(Woehler & Johnstone 1991, Zipan & Norman 1993)
40	Svenner Islands	69°02'S	76°50'E	?	breed	(Woehler & Johnstone 1991)
41	Rauer Islands	68°51'S	77°50'E	1991/92	>200	(Green & Johnstone 1986, N. van den Brink pers. comm.)
42	Islands off Broad Peninsula, Vestfold Hills (12 sites)	68°35'S	77°58'E	1989/90	>90	(Johnstone <i>et al.</i> 1973, P. Hodum pers. comm.)
43	Broad Peninsula, Vestfold Hills (several sites)	68°34'S	78°15'E	1960s–70s	breed	(Brown 1966, Johnstone <i>et al.</i> 1973)
44	Mule Peninsula & Mule Island, Vestfold Hills (several sites)	68°38'S	77°58'E	1960s–70s	breed	(Brown 1966, Johnstone <i>et al.</i> 1973)
45	Long Fjord, Vestfold Hills (several sites)	68°33'S	78°15'E	1988–93	169	(Johnstone <i>et al.</i> 1973, D. Gore, M. Leishman & C. Wild unpubl. data, P. Hodum pers. comm.)

DAVIS SEA AREA

46	Gaussberg	66°48'S	89°12'E	1956	breed	(Falla 1937, Woehler & Johnstone 1991)
47	Haswell Island	66°32'S	92°59'E	Dec 1962	700	(Falla 1937, Pryor 1968, Starck 1980)

WILKES LAND

48	coast between Haswell Island & Bunger Hills		?		breed	(Watson <i>et al.</i> 1971)
49	David Island	66°25'S	98°47'E	Dec 1912	breed	(Falla 1937)
50	Bunger Hills	66°17'S	100°47'E	?	breed	(Watson <i>et al.</i> 1971, Bolshiyarov <i>et al.</i> 1990, Woehler & Johnstone 1991)
51	Davis Islands	66°40'S	108°25'E	1960	30	(Woehler & Johnstone 1991)
<i>Fig. 4</i>						
52	Ardery Island, Windmill Islands	66°20'S	110°25'E	1984-87	>1 000	(Orton 1963, Cowan 1981, van Franeker <i>et al.</i> 1990, J.A. van Franeker pers. comm.)
53	Odbert Island, Windmill Islands	66°20'S	110°25'E	1984-87	>100	(Orton 1963, Cowan 1981, van Franeker <i>et al.</i> 1990, J.A. van Franeker pers. comm.)
54	Frazier Islands	66°20'S	110°25'E	1984/85	breed	(J.A. van Franeker pers. comm.)
55	Peterson Island and Browning Peninsula	66°20'S	110°25'E	1984/85	breed	(J.A. van Franeker pers. comm.)
56	Herring Island	66°20'S	110°25'E	1984/85	breed	(J.A. van Franeker pers. comm.)
57	Reeves' Hill, Casey Station area	66°17'S	110°31'E	1989/90	c. 70	(Murray & Luders 1990, E.J. Woehler pers. comm.)
58	Whitney Point, Casey Station area	66°15'S	110°32'E	1989/90	c. 5	(Murray & Luders 1990, E.J. Woehler pers. comm.)
59	Budnick Hill, Casey Station area	66°17'S	110°32'E	1989/90	10	(Murray & Luders 1990,

60	Balaena Islands	66°01'S	111°06'E	1956	breed	E.J. Woehler pers. comm.) (Woehler & Johnstone 1991)
TERRE ADELIE						
61	Pointe Géologie Archipelago	66°40'S	140°01'E	1990s	c. 1 000	(Cendron 1953, Prevost 1964, Guillotin & Jouventin 1980, Thomas 1986)
62	Cap Bienvenue	66°43'S	140°31'E	1990s	breed	(Cendron 1953, Thomas 1986)
63	Cap Jules	66°44'S	140°55'E	1990s	breed	(Cendron 1953, Thomas 1986, V.Bretagnolle pers. comm.)

ROSS SEA AREA

Fig. 5

64	Cape Denison	67°00'S	142°40'E	Jan 1982	34	(Falla 1937, Ensor & Bassett 1987)
65	Stilwell Island/Cape Pigeon Rocks	66°59'S	143°47'E	Jan 1982	10	(Falla 1937, Ensor & Bassett 1987)
66	Horn Bluff	68°19'S	149°37'E	1912	breed	(Falla 1937)
67	Morozumi Range	71°36'S	161°50'E	1967/68 Nov 1985	possibly breed not confirmed	(Dow & Neall 1968) (Greenfield & Smellie 1992)
68	Sabrina Island, Balleny Islands	66°53'S	163°19'E	Jan 1983	>5 000	(Hatherton <i>et al.</i> 1965, Harper <i>et al.</i> 1984, Robertson <i>et al.</i> 1980)
69	Scott Island	67°24'S	179°55'E	Feb 1967	breed	(Harper 1972, Harper <i>et al.</i> 1984)
70	Duke of York Island	71°37'S	170°04'E	1912 Dec 1982	breed not confirmed	(Watson <i>et al.</i> 1971) (Greenfield & Smellie 1992)
71	Cape Adare	71°18'S	170°09'E	Dec 1961	breed	(Murphy 1936, Reid 1962, Ricker 1964)
72	Edisto Inlet	72°20'S	170°05'E	Dec 1982 1960/61	not confirmed >110	(Greenfield & Smellie 1992) (Harrington 1960, Maher)

73	Felsite Island	72°26'S	169°49'E	Dec 1961	“abundant”	1962, Ricker 1964) (Harrington 1960, Maher 1962, Ricker 1964)
74	Crater Cirque	72°38'S	169°22'E	Dec 1958	breed	(Harrington 1960, Ricker 1964)
Fig. 6						
75	Cape Washington	74°39'S	165°25'W	Dec 1984	>27	(Greenfield & Smellie 1992)
76	Washington Ridge, Rockefeller Mountains	78°06'S	154°48'W	Dec 1934	“large numbers”	(Siple & Lindsey 1937, Perkins 1945, Broady <i>et al.</i> 1989)
77	Mt Paterson, Rockefeller Mountains	78°02'S	154°36'W	1987/88	100s	(Perkins 1945, Broady <i>et al.</i> 1989)
MARIE BYRD LAND						
78	Mt Saunders, Fosdick Mountains	76°53'S	145°42'W	?	breed	(Harper <i>et al.</i> 1984)
79	Marujupu Peak, Fosdick Mountains	76°31'S	145°37'W	1940/41	breed	(Perkins 1945)
80	Mt McCoy, Fosdick Mountains	75°52'S	141°10'W	1990/91	>100	(Greenfield & Smellie 1992)
81	Mt Prince, Perry Range	75°58'S	134°11'W	Dec 1990	>100	(Strandtmann 1978, Greenfield & Smellie 1992, L. Greenfield pers. com.)
82	Kennel Peak, Demas Range	75°01'S	133°44'W	Dec 1990	>60	(Greenfield & Smellie 1992)
83	Western Martin Peninsula	74°11'S	115°05'W	1991/92	possibly breed	(R.J. Pankhurst <i>in litt.</i> to JPC)
84	“Petrel Nunatak”, Mt Murphy	75°23'S	111°14'W	1990/91	<100	(Greenfield & Smellie 1992)
85	“Notebook Cliffs”, Mt Murphy	75°23'S	111°06'W	1990/91	>1000	(Greenfield & Smellie 1992)
86	Sechrist Peak, Mt Murphy	75°23'S	111°02'W	1990/91	<100	(Greenfield & Smellie 1992)
87	Hedlin Nunatak, Mt Murphy	75°19'S	111°17'W	1990/91	<50	(Greenfield & Smellie 1992)
88	Kay Peak, Mt Murphy	75°14'S	110°57'W	1990/91	<50	(Greenfield & Smellie 1992)
89	“Aubyn Ridge”, Mt Murphy	75°14'S	110°49'W	1990/91	<50	(Greenfield & Smellie 1992)

ELLSWORTH LAND

Fig. 7

90	Mt Nickens	73°56'S	100°20'W	1968/69	possibly breed	(R. Allen <i>in litt.</i> to J.W. Thomson)
91	Mt Moses	74°33'S	90°11'W	1968/69	possibly breed	(R. Allen <i>in litt.</i> to J.W. Thomson)
92	Mt McCann, Snow Mountains	73°34'S	77°37'W	1984/85	possibly breed	(J.W. Thomson <i>in litt.</i> to JPC)
93	Fitzgerald Bluffs	74°03'S	77°20'W	1984/85	possibly breed	(J.W. Thomson <i>in litt.</i> to JPC)
94	Mt Thornton, Snow Mountains	73°34'S	77°07'W	1984/85	possibly breed	(J.W. Thomson <i>in litt.</i> to JPC)
95	Mt Benkert, Snow Mountains	73°38'S	76°40'W	1984/85	breed	(J.W. Thomson <i>in litt.</i> to JPC)

COATS LAND

Fig. 8

96	Mt Provender, Shackleton Range	80°23'S	29°55'W	Jan 1971	breed	(Wright & Wyeth 1971, Wyeth 1971, Marsh & Holden 1978)
97	Mt Skidmore, Shackleton Range	80°19'S	28°57'W	1968/69	possibly breed	(Skidmore 1968)
98	Genghis Hills, Shackleton Range	80°44'S	28°02'W	1968/69	possibly breed	(Skidmore 1968)
99	“Skiltvakta”, Shackleton Range	80°30'S	19°01'W	1967/68	possibly breed	(Noble 1968)
100	Mt Faraway, Theron Mountains	79°12'S	28°50'W	Jan 1967	breed	(Fuchs & Hillary 1960)
101	NE Coalseam Cliffs	79°10'S	28°50'W	1967	10–20	(Noble 1968)
102	Maro Cliff	79°04'S	28°30'W	?	possibly breed	(Brook & Beck 1972)
103	W of Jefferies Glacier	79°02'S	28°05'W	?	possibly breed	(Brook & Beck 1972)
104	SW Lenton Bluff	79°00'S	28°13'W	1966	10–20	(Noble 1968, Brook & Beck 1972)
105	W of Goldsmith Glacier	78°57'S	27°30'W	1966-68	c. 62	(Noble 1968, Brook & Beck 1972)

ANTARCTIC PENINSULA

Fig. 10

106	Mussorgsky Peaks, Beethoven Peninsula, Alexander Island	71°30'S	73°19'W	Dec 1970	breed	(C.M. Bell BAS records)
107	Stephenson Nunatak, Alexander Island	72°08'S	69°08'W	Dec 1949	breed	(Eklund 1945, Fuchs & Adie 1949)

108	Planet Heights, Alexander Island	71°13'S	68°47'W	1985/86	possibly breed	(A. Crame & S. Grice BAS records)
109	Ablation Point, Alexander Island	70°48'S	68°21'W	1949/50	probably breed	(Fuchs & Adie 1949)
110	Lully Foothills, Alexander Island	70°46'S	69°32'W	Dec 1974	breed	(C.W. Edwards & C. Knott in Barrett 1974)
111	Unnamed Nunatak, Lully Foothills, Alexander Island	70°43'S	69°34'W	1973/74	5	(C.W. Edwards in Lawther & MacAllister 1973)
112	“Saltire Glacier”, Lully Foothills, Alexander Island	70°52'S	69°37'W	1973/74	5	(C.W. Edwards in Lawther & MacAllister 1973)
113	Belemnite Point, Alexander Island	70°39'S	68°32'W	Oct 1973	4	(Lawther & MacAllister 1973)
114	Lamina Peak, Alexander Island	70°32'S	68°44'W	1973/74	c. 100	(C.W. Edwards in Lawther & MacAllister 1973)
115	“Petrel Point”, Mt Lepus	70°38'S	67°18'W	1969/70	100s	(R.C. Pashley & P.J. Rowe BAS records)
116	Mt Courtauld	70°20'S	67°30'W	1969/70	100s	(R.C. Pashley & P.J. Rowe BAS records)
117	Cape Walcott	69°05'S	63°19'W	Nov 1973	>100	(Lawther & MacAllister 1973)
118	Athene Glacier	68°56'S	64°12'W	Dec 1974	4	(B. Dijkstra in Barrett 1974)
119	Cronus Glacier	68°51'S	63°55'W	Dec 1974	15	(B. Dijkstra in Barrett 1974)
120	Victory Nunatak	68°45'S	64°22'W	Dec 1974	100	(B. Dijkstra in Barrett 1974)
121	Kay Nunatak	68°41'S	64°40'W	1974/75	10	(B. Dijkstra in Barrett 1974)
122	Brindle Cliffs	69°23'S	68°33'W	Jan 1990	probably breed (<10)	(S. & J. Poncet <i>in litt.</i>)
123	Mica Island	69°20'S	68°36'W	Jan 1990	possibly breed	(S. & J. Poncet <i>in litt.</i>)
124	Terra Firma Islands	68°42'S	67°32'W	1978/79	possibly breed	(Poncet & Poncet 1978)
125	Refuge Islands	68°21'S	67°10'W	1978/79	possibly breed	(Poncet & Poncet 1978)
126	S of Neny Fjord	68°16'S	66°50'W	1978/79	possibly breed	(Stonehouse 1948, Poncet & Poncet 1978)
127	Roman Four Promontory	68°13'S	66°56'W	Nov 1968	6	(Stonehouse 1948, Norman 1968)
128	Neny Island	68°12'S	67°02'W	1945/46	c. 100	(Eklund 1945, Freeman 1946, Stonehouse 1948)
129	Trail Inlet	68°10'S	65°35'W	Jan 1975	14	(Barrett 1974)

Fig. 11

130	Camp Point	67°58'S	67°19'W	1968/69	possibly breed	(Norman 1968)
131	Lagotellerie Island	67°53'S	67°24'W	1958/59	possibly breed	(McGowan 1958)
132	Broken Island	67°49'S	66°57'W	1956/57	possibly breed	(Scotland 1956)
133	Square Bay	67°51'S	67°00'W	1945/46	breed	(Freeman 1946)
134	Nicholl Head	67°47'S	67°05'W	1956-58	possibly breed	(Scotland 1956, Procter 1957)
135	Perplex Ridge, Pourquoi Pas Island	67°39'S	67°43'W	Feb 1986	100s	(S. & J. Poncet <i>in litt.</i>)
136	Lainez Point, Pourquoi Pas Island	67°41'S	67°49'W	1957/58	possibly breed	(Procter 1957)
	Lainez Point – Swash Reef	67°34'S	67°33'W	Feb 1986	100s	(S. & J. Poncet <i>in litt.</i>)
137	Conseil Hill, Pourquoi Pas Island	67°36'S	67°28'W	Feb 1986	possibly breed	(S. & J. Poncet <i>in litt.</i>)
138	Guebriant Islands	67°48'S	68°25'W	1962/63	possibly breed	(Killingbeck 1962)
139	Mt Liotard	67°37'S	68°35'W	1962/63	probably breed	(Killingbeck 1962)
140	Stork Ridge, Rothera Point	67°31'S	68°12'W	1976/77	breed	(Killingbeck 1962, Norman 1968, Fletcher 1977)
141	Cape Saenz	67°33'S	67°39'W	1958/59	possibly breed	(McGowan 1958)
142	Hansen Island	67°06'S	67°37'W	Feb 1984	possibly breed	(S. & J. Poncet <i>in litt.</i>)
143	“Schmidt Point”, Crystal Sound	66°55'S	67°02'W	Jan 1990	probably breed	(S. & J. Poncet <i>in litt.</i>)
144	Holdfast Point	66°48'S	66°36'W	Feb 1984	probably breed	(S. & J. Poncet <i>in litt.</i>)
145	nunatak to NW of Mt Haskel	66°45'S	64°16'W	1977/78	1	(M. Sharpe & A. Saunders in Fletcher 1977)
146	NE Mt Denucé	66°43'S	64°12'W	1977/78	1	(M. Sharpe & A. Saunders in Fletcher 1977)
147	Anderson Glacier	66°22'S	64°06'W	Dec 1963	c. 80–100	(Tindal 1963)
148	Cape Casey	66°22'S	63°45'W	Dec 1963	c. 30	(Tindal 1963)
149	Unnamed Nunatak	66°15'S	62°55'W	1977/78	breed	(M. Sharpe & A. Saunders in Fletcher 1977)
150	Eden Glacier	66°12'S	63°15'W	Dec 1963	>12	(Tindal 1963)
151	Lizard Island	65°41'S	64°27'W	Jan 1990	possibly breed	(S. & J. Poncet <i>in litt.</i>)
152	Starbuck Glacier	65°37'S	62°25'W	1963/64	probably breed	(Tindal 1963)

Fig. 12

153	Cape Pérez	65°24'S	64°06'W	1979/80	breed	(Saunders 1979)
154	Mt Demaria	65°17'S	64°08'W	1959/60	possibly breed	(Smith 1959, Potts 1962)
				1974/75	not confirmed	(Rodger 1974)
155	Mt Balch	65°15'S	63°59'W	1962/63	“large numbers”	(Thomas 1960, Potts 1962, Lewis 1963)
156	Argentine Islands	65°15'S	64°17'W	?	breed	(Watson <i>et al.</i> 1971)
				1960s–80s	not confirmed	(P. Kinnear <i>in litt.</i> to JPC, A.S. Rodger pers. comm. to JPC)
157	nunatak to SE of Skontorp Cove	64°54'S	62°51'W	1957/58	possibly breed	(Araya 1965)
158	Almirante Brown Station	64°53'S	62°51'W	1962/63	possibly breed	(Araya 1965)
159	Spigot Peak	64°38'S	62°34'W	Dec 1989	10s	(S. & J. Poncet <i>in litt.</i>)
160	Mt Français, Anvers Island	64°38'S	63°26'W	1957/58	possibly breed	(Wylie 1957)
				1975/76	not confirmed	(Parmalee <i>et al.</i> 1977)
161	Andrews Point to Ryswyck Point, Anvers Island	64°30'S 64°34'S	62°55'W to 62°50'W	Jan 1987	possibly breed	(S. & J. Poncet <i>in litt.</i>)
162	Brabant Island	64°15'S	62°20'W	1984/85	probably breed	(Furse 1986)
162a	Cape Roux to Cape Cockburn, Brabant Island	64°01'S	62°18'W to 62°28'W	Feb 1987	possibly breed	(S. & J. Poncet <i>in litt.</i>)
163	Davis Island	64°06'S	62°04'W	Dec 1988	low 100s	(S. & J. Poncet <i>in litt.</i>)
164	Cierva Point	64°09'S	60°58'W	Jan 1957	2	(Novatti 1978)
165	Cape Wollaston, Trinity Island	63°40'S	60°47'W	Jan 1987	probably breed	(S. & J. Poncet <i>in litt.</i>)
166	Mt Lombard	64°31'S	59°40'W	Jan 1981	“dozens”	(Lewis 1980)
167	Marescot Point	63°29'S	58°35'W	Feb 1990	possibly breed	(S. & J. Poncet <i>in litt.</i>)
168	Lockyer Island	64°27'S	57°37'W	1902/03	breed	(Andersson 1905)
169	Cockburn Island	64°12'S	56°51'W	1902/03	breed	(Ross 1847, Andersson 1905)
170	Röhss Bay, James Ross Island	64°05'S	58°08'W	1985/86	“many”	(A.N. Cain BAS records)
171	Lagrelus Point, James Ross Island	63°55'S	58°18'W	1945/46	breed	(Taylor 1945)
172	Carlson Island	63°53'S	58°16'W	1945/46	possibly breed	(Lamb 1945, Taylor 1945)
173	“Marr Island”	63°56'S	58°15'W	1945/46	possibly breed	(Lamb 1945, Taylor 1945)

174	Red Island	63°44'S	57°52'W	1945/46	possibly breed	(Lamb 1945, Taylor 1945)
175	Mahogany Bluff, Vega Island	63°53'S	57°13'W	1902/03	breed	(Andersson 1905)
176	Cape Gordon, Vega Island	63°51'S	57°03'W	Dec 1945	breed	(Marshall 1945)
177	Devil Island	63°48'S	57°17'W	1945/46	breed	(Marshall 1945)
178	Eagle Island	63°40'S	57°29'W	1945/46	possibly breed	(Lamb 1945, Taylor 1945)
179	Duse Bay	63°34'S	57°15'W	1902/03	possibly breed	(Andersson 1905)
180	Andersson Island	63°35'S	56°35'W	1902/03	breed	(Andersson 1905)
181	Paulet Island	63°55'S	46°44'W	Jan 1992	300	(C. Verheyden pers. comm. to S. Poncet)
182	Joinville Island	63°15'S	55°45'W	1956/57	possibly breed	(Taylor 1956)

ELEPHANT AND CLARENCE ISLANDS GROUP

183	Bridgeman Island	62°03'S	56°45'W	1970/71	c. 5	(Furse 1978)
184	Elephant Island	61°08'S	55°07'W	1970/71	c. 50	(Furse & Bruce 1979)

SOUTH ORKNEY ISLANDS

Fig. 13

185	Inaccessible Islands	60°34'S	46°44'W	Dec 1986	possibly breed	(S. & J. Poncet <i>in litt.</i>)
186	Sandefjord Bay, Coronation Island	60°37'S	46°02'W	1956/57	breed	(Ardley 1936, P.A. Cordall BAS records)
187	Olivine Point, Coronation Island	60°40'S	45°29'W	Jan 1965	>2	(Smith 1965)
188	Palmer Bay, Coronation Island	60°37'S	45°20'W	1957/58	breed	(Hall 1957)
189	Mt Noble, Coronation Island	60°39'S	45°16'W	1957/58	breed	(Hall 1957)
190	Pulpit Mountain, Coronation Island	60°41'S	45°13'W	1957/58	breed	(Hall 1957)
191	East Cape, Coronation Island	60°38'S	45°11'W	1957/58	breed	(Hall 1957)
192	“Red Flag Hill”, Coronation Island	60°40'S	45°09'W	1957/58	breed	(Hall 1957)
193	“The Tower”, Coronation Island	60°38'S	45°12'W	1957/58	breed	(Hall 1957)
194	SW Gibbon Bay, Coronation Island	60°39'S	45°11'W	1957/58	breed	(Hall 1957)
195	The Turret, Coronation Island (two sites)	60°40'S	45°09'W	1957/58	breed	(Hall 1957)
196	The Divide, Coronation Island	60°44'S	45°10'W	1957/58	breed	(Hall 1957)

197	Saunders Point, Coronation Island	60°42'S	45°19'W	Dec 1964	c. 12–15	(Smith 1965)
198	Matthews Islands, Coronation Island	60°45'S	45°09'W	Jan 1965	“many”	(Smith 1965, R.I.L. Smith BAS records)
199	Signy Island	60°43'S	45°38'W	1985	195	(Laws 1949, Scotland 1958, Hoogesteger 1972, Rootes 1988, BAS records)
200	Moe Island (five sites)	60°44'S	45°41'W	1957/58	34	(Hall 1957)
201	“Camp Peninsula”, Powell Island	60°41'S	45°02'W	1955/56	breed	(C.D. Scotland BAS records)
202	crag in inland of “Cow Point”, Powell Island	60°40'S	45°01'W	1957/58	breed	(Hall 1957)
203	Whale Skerries, Powell Island	60°42'S	45°06'W	1957/58	breed	(Hall 1957)
204	northern cliffs, Powell Island	60°38'S	45°01'W	Dec 1983	possibly breed	(S. & J. Poncet <i>in litt.</i>)
205	east coast, Powell Island	60°42'S	45°01'W	Dec 1983	<10	(S. & J. Poncet <i>in litt.</i>)
206	Ellefsen Harbour, Powell Island	60°44'S	45°02'W	1932/33	breed	(Ardley 1936)
207	Michelsen Island	60°44'S	45°02'W	1957/58	breed	(Scotland 1958)
208	Fredriksen Island	60°44'S	45°00'W	1964/65	breed	(Ardley 1936, Hall 1957, Smith 1965)
209	Saddle Island	60°37'S	44°50'W	1903/04	breed	(Clarke 1906)
210	Weddell Islands	60°38'S	44°50'W	1932/33	breed	(Ardley 1936)
211	Laurie Island	60°44'S	44°37'W	1903/04	c. 20 000	(Clarke 1906, Wilton <i>et al.</i> 1908, Choyce 1947)

SOUTH SANDWICH ISLANDS

Fig. 14

212	Thule Island	59°27'S	27°22'W	1978/79	probably breed	(Harper 1966, Cordier <i>et al.</i> 1981)
213	Bellingshausen Island	59°26'S	27°05'W	1963/64	probably breed	(Holdgate & Baker 1979)
214	Montagu Island	58°25'S	26°20'W	1963/64	breed	(Ivanov 1959, Holdgate & Baker 1979)
215	Saunders Island	57°47'S	26°27'W	1982/83	200	(Cowan 1983, D. Puleston <i>in litt.</i> to JPC)
216	Candlemas Island	57°04'S	26°41'W	1982/83	breed	(D. Puleston <i>in litt.</i> to JPC)
217	Vindication Island	57°06'S	26°46'W	1956/57	breed	(Wilkinson 1957)

218	Visokoi Island	56°42'S	27°09'W		1955/56	breed	(Wilkinson 1956)
219	Leskov Island	56°40'S	28°08'W		1907/08	probably breed	(Larsen 1908)

SOUTH GEORGIA

Fig. 15

222	“East Islet”, Willis Islands	54°00'S	38°12'W	B2	1987/88	breed	(P. Prince & S. Poncet unpubl. data)
223	Bird Island	54°00'S	38°03'W	A4	1980s	1–2	(Croxall & Prince 1980)
					1990s	not confirmed	(P. Prince & S. Poncet unpubl. data)
224	Snow Peak	54°01'S	37°SS'W	B5	1976/77	breed	(G. Thomas, T.S. McCann, L. Kearsley BAS records)
225	Cape North	53°58'S	37°44'W	A8	1987/88	probably breed	(P. Prince & S. Poncet unpubl. data)
226	Wales Head	54°00'S	37°34'W	B10	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
227	NE of MacDonald Cove	54°00'S	37°29'W	A11	1987/88	10s	(P. Prince & S. Poncet unpubl. data)
228	Prince Olav Harbour	54°04'S	37°08'W	D16	1987/88	probably breed	(P. Prince & S. Poncet unpubl. data)
229	SE of Possession Bay	54°07'S	37°08'W	D16	1964/65	>2	(A. Down BAS records)
230	E of Possession Bay	54°05'S	37°04'W	C17	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
231	W of Crean Glacier	54°10'S	37°01'W	E17	1964/65	>5	(A. Down BAS records)
232	W of Fortuna Bay	54°07'S	36°48'W	D20	1964/65	>5	(A. Down BAS records)
233	S of Hercules Bay	54°07'S	36°40'W	D22	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
234	Stromness, Husvik	54°10'S	36°43'W	E21	1987/88	10s	(P. Prince & S. Poncet unpubl. data)
235	above Konig Glacier	54°11'S	36°48'W	F21	1987/88	breed	(P. Prince & S. Poncet unpubl. data)
236	Three Brothers area (three sites)	54°16'S	36°48'W	H20	1964/65	>5	(A. Down BAS records)
237	Mt Sugartop	54°22'S	36°38'W	J22	1964/65	10s–100s	(A. Down BAS records)
238	Maiviken area	54°14'S	36°30'W	G24	1980/81	probably breed	(S. Hunter BAS records)
239	Grytviken	54°17'S	36°31'W	H24	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
240	above Hestesletten	54°18'S	36°30'W	H24	1979/80	possibly breed	(S. Hunter BAS records)
241	W of Nordenskjold Glacier	54°20'S	36°24'W	I25	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
242	Barff Point	54°14'S	36°24'W	G25	1973–76	probably breed	(N. Leader-Williams BAS records)
243	Barff Peninsula	54°15'S	36°20'W	G26	1973–76	probably breed	(N. Leader-Williams BAS records)
244	Barff Peninsula	54°18'S	36°20'W	H26	1973–76	probably breed	(N. Leader-Williams BAS records)
245	Barff Peninsula	54°18'S	36°18'W	H27	1973–76	probably breed	(N. Leader-Williams BAS records)

246	E Nordenskjold	54°20'S	36°20'W	I26	1973–76	breed	(N. Leader-Williams BAS records)
247	Sorling Valley	54°22'S	36°18'W	I27	1973–76	probably breed	(N. Leader-Williams BAS records)
248	Tijuca Point	54°21'S	36°13'W	I28	1986/87	breed	(P. Prince & S. Poncet unpubl. data)
249	Hound Bay	54°22'S	36°12'W	J27	1973–76	probably breed	(N. Leader-Williams BAS records)
250	Luisa Bay	54°23'S	36°10'W	J28	1973–76	10s	(N. Leader-Williams BAS records)
251	St Andrews Bay	54°26'S	36°10'W	K28	1973–76	10s	(N. Leader-Williams BAS records)
252	Mt Kling	54°30'S	36°18'W	K27	1973–76	probably breed	(N. Leader-Williams BAS records)
253	Nordenskjold Peak	54°29'S	36°21'W	L26	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
254	N of Brogger Glacier	54°32'S	36°23'W	M25	1976/77	possibly breed	(A. Burkitt, B. Mair BAS records)
255	Mt Krokisius	54°30'S	36°03'W	L29	1973–76	10s	(N. Leader-Williams BAS records)
256	Calf Head	54°28'S	36°02'W	L30	1973–76	10s	(N. Leader-Williams BAS records)
257	Moltke Harbour	54°31'S	36°03'W	M30	1986/87	breed	(P. Prince & S. Poncet unpubl. data)
258	Little Moltke Harbour	54°32'S	36°04'W	M29	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
260	Cape Vahsel	54°45'S	35°47'W	R33	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
261	Cooper Bay	54°47'S	35°48'W	S33	1986/87	10s	(P. Prince & S. Poncet unpubl. data)
262	Cooper Island	54°49'S	35°47'W	T33-1	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
263	Drygalski Fjord	54°49'S	36°05'W	S30	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
264	Trendall Crag	54°48'S	35°59'W	S31	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
265	Larsen Harbour	54°50'S	36°00'W	T30	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
266	S side of Larsen Harbour	54°50'S	35°59'W	T31	1975/76	breed	(A. Burkitt, B. Mair BAS records)
267	Natriss Head	54°51'S	35°56'W	T31	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
268	Rumbolds Point (Island)	54°52'S	35°59'W	U31	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
269	Doubtful Bay, Smaaland Cove	54°52'S	36°03'W	U30	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
270	Cape Disappointment	54°53'S	36°07'W	U29	1972/73	>3	(J. Tallwin BAS records)
271	Green Island	54°53'S	36°06'W	U29-1	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
272	Paradise Beach	54°50'S	36°10'W	T28	1972/73	>1	(J. Tallwin BAS records)
273	Drygalski Fjord	54°49'S	36°10'W	S29	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
274	Ranvik	54°48'S	36°15'W	S27	1986/87	c. 50	(P. Prince & S. Poncet unpubl. data)
275	E of Diaz Cove	54°45'S	36°18'W	R27	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
276	S of Wheeler Glacier	54°36'S	36°21'W	O25	1972/73	>1	(J. Tallwin BAS records)
277	Leon Head	54°33'S	36°30'W	N24	1976/77	breed	(A. Burkitt, B. Mair BAS records)
278	Rocky Bay	54°29'S	36°40'W	L22	1976/77	breed	(J. Hall BAS records)

279	Ducloz Head	54°31'S	36°38'W	M22	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
280	Larvik	54°22'S	36°54'W	J19	1975/76	possibly breed	(C. Johnson BAS records)
281	Jacobsen Bight	54°25'S	36°51'W	J20	1976/77	breed	(D.I.M. MacDonald BAS records)
282	Annenkov Island	54°29'S	37°04'W	L16-1	1986-88	probably breed	(P. Prince & S. Poncet unpubl. data)
283	Annenkov Island	54°29'S	37°03'W	L17	1976/77	10s	(A. Burkitt, B. Mair BAS records)
284	Fanning Ridge	54°20'S	37°01'W	I16/17	1986/87	possibly breed	(P. Prince & S. Poncet unpubl. data)
285	Shallop Cove	54°13'S	37°20'W	F13	1976/77	possibly breed	(D.I.M. MacDonald BAS records)
286	Cape Rosa	54°11'S	37°25'W	E12	1986-88	possibly breed	(P. Prince & S. Poncet unpubl. data)
287	S of Cape Rosa	54°11'S	37°25'W	F12	1986-88	probably breed	(P. Prince & S. Poncet unpubl. data)
288	S of King Haakon Bay	43°09'S	37°20'W	E13	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
289	N of Samuel Island	54°11'S	37°37'W	E9	1976/77	breed	(J. Hall BAS records)
290	Nilse Hullett	54°10'S	37°35'W	E10	1976/77	breed	(J. Hall BAS records)
291	Ice Fjord	54°04'S	37°41'W	C8	1986/87	probably breed	(P. Prince & S. Poncet unpubl. data)
292	N of Romerof Head	54°03'S	37°52'W	B6	1981/82	possibly breed	(P. Martin BAS records)
293	Schlieper Bay	54°03'S	37°50'W	B7	1976/77	possibly breed	(G. Thomas BAS records)
294	Hesse Peak	54°02'S	38°00'W	B4	1972/73	probably breed	(M.R. Payne BAS records)
295	SW Cape Paryadin	54°04'S	38°01'W	C4	1986/87	10s	(P. Prince & S. Poncet unpubl. data)
296	SE Cape Paryadin	54°04'S	38°00'W	C5	1976/77	breed	(G. Thomas, T.S. McCann BAS records)

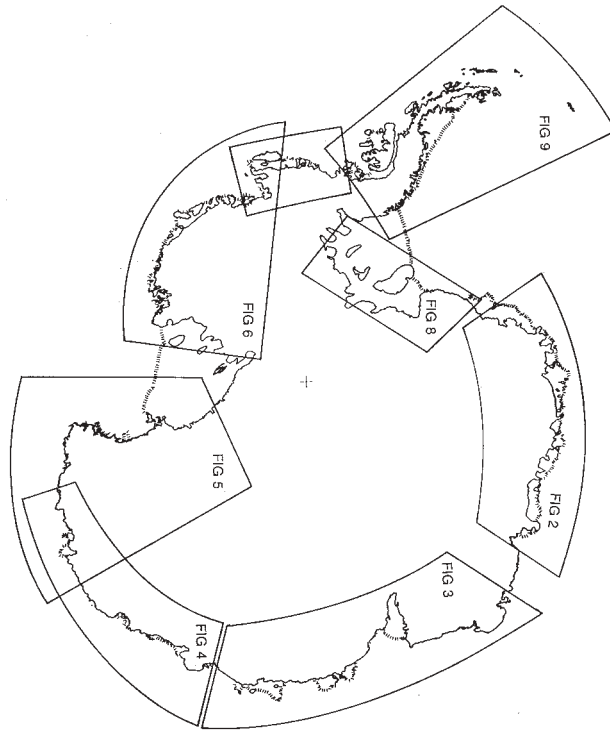


Figure 1. Antarctica, indicating areas covered by detailed maps showing location of Snow Petrel breeding sites.

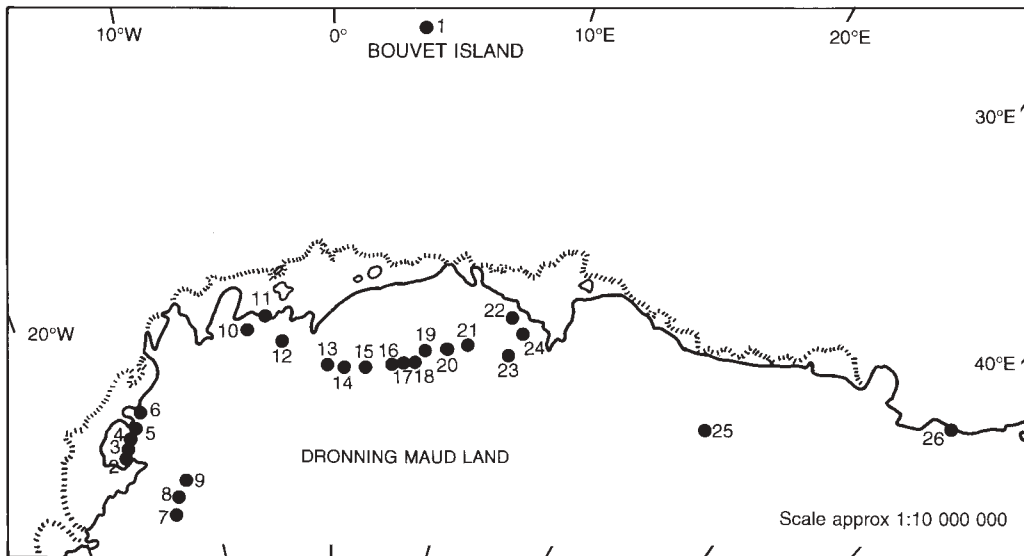


Figure 2. Location of Snow Petrel breeding sites at Bouvet Island and Dronning Maud Land (see Table 1 for details).

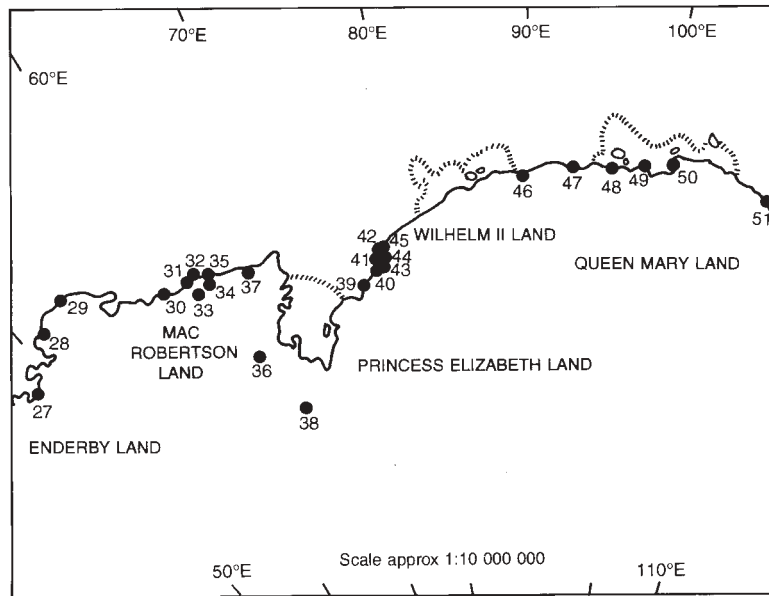


Figure 3. Location of Snow Petrel breeding sites in the western Australian Antarctic Territory (see Table 1 for details).

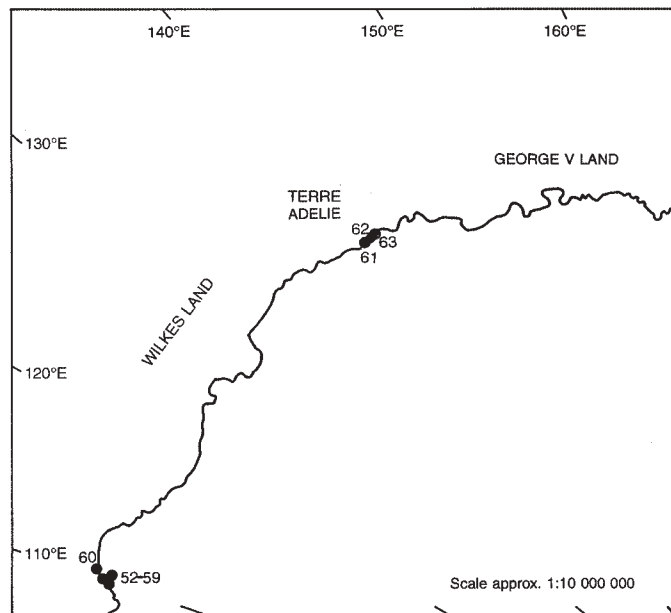


Figure 4. Location of Snow Petrel breeding sites in Wilkes Land and Terre Adélie (see Table 1 for details).

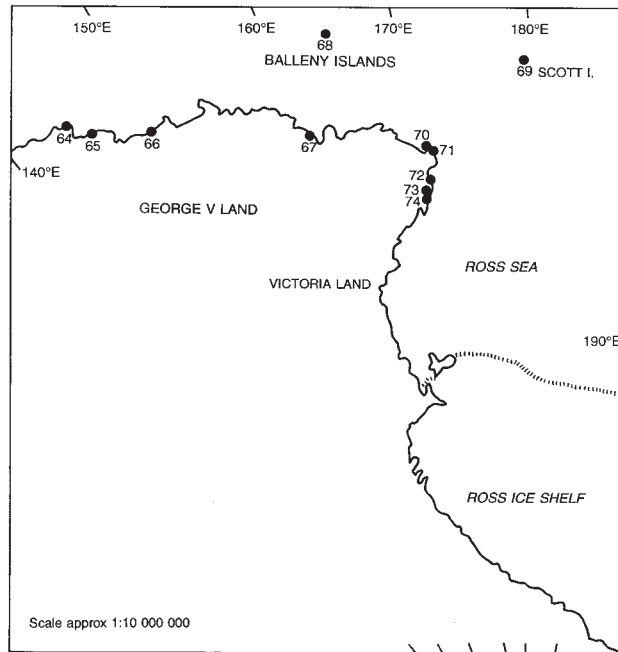


Figure 5. Location of Snow Petrel breeding sites in the Ross Sea area and George V Land (see Table 1 for details).

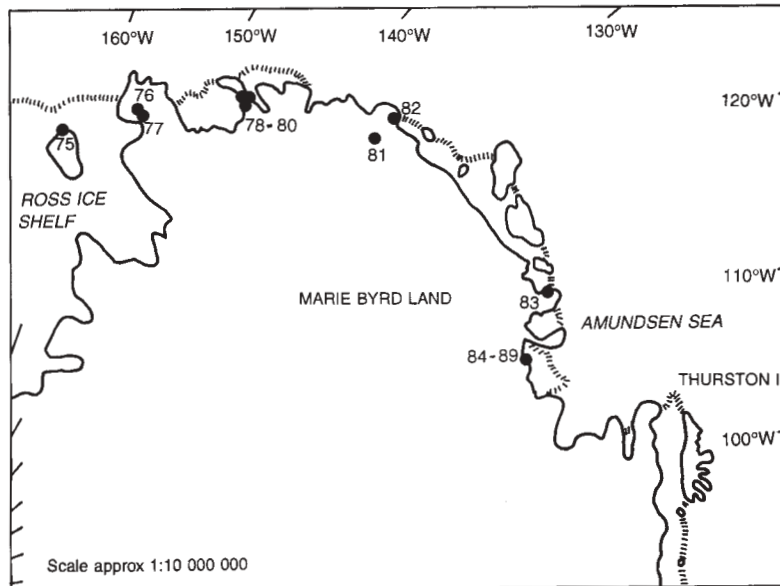


Figure 6. Location of Snow Petrel breeding sites in Marie Byrd Land (see Table 1 for details).

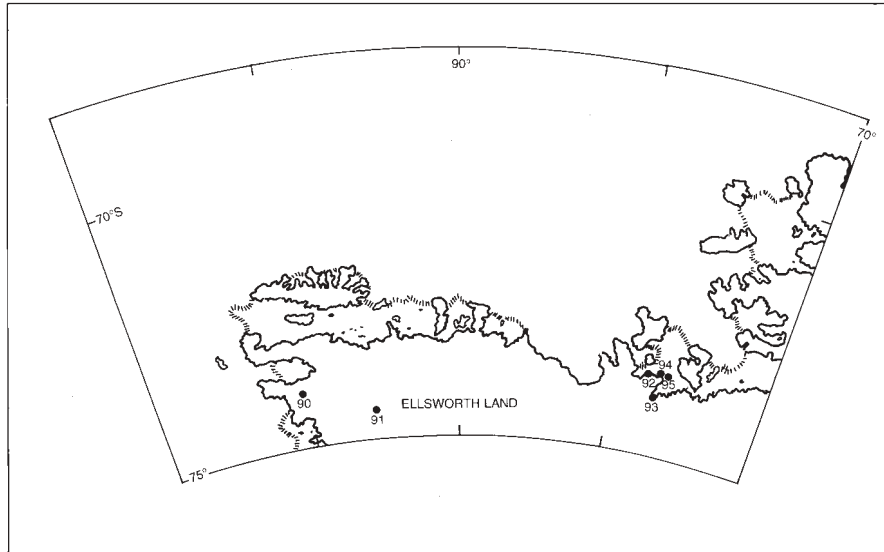


Figure 7. Location of Snow Petrel breeding sites in Ellsworth Land (see Table 1 for details).

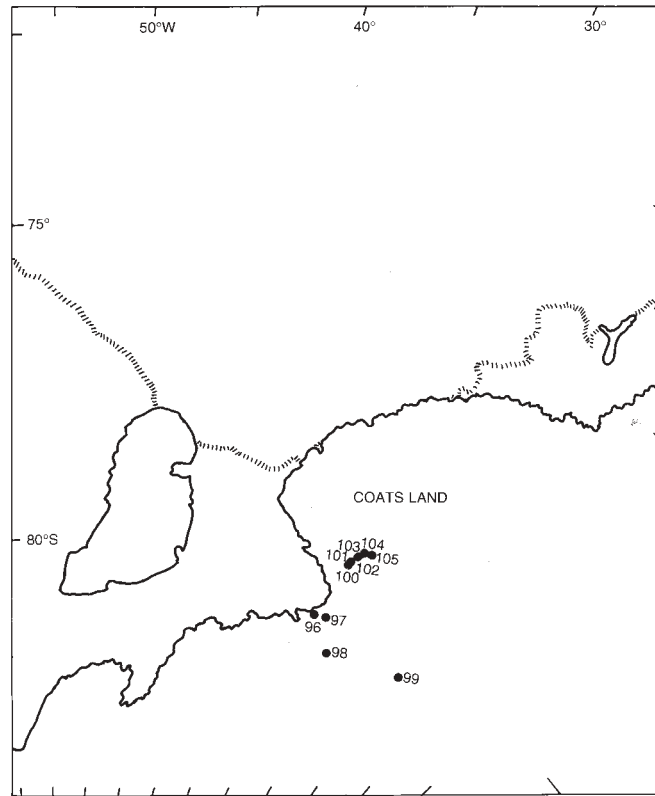


Figure 8. Location of Snow Petrel breeding sites in Coats Land (see Table 1 for details).

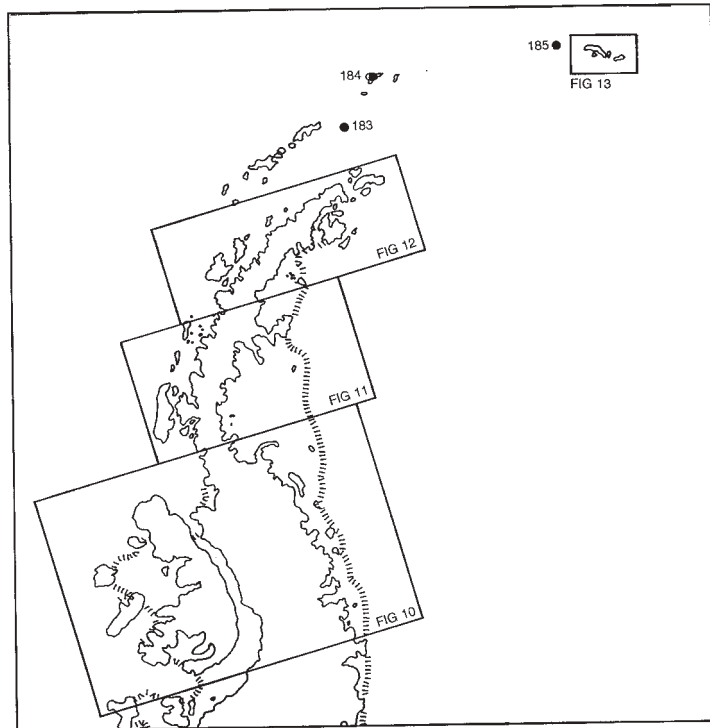


Figure 9. Antarctic Peninsula, indicating areas covered by more detailed maps, and location of Snow Petrel breeding sites in the South Shetland Islands (see Table 1 for details).

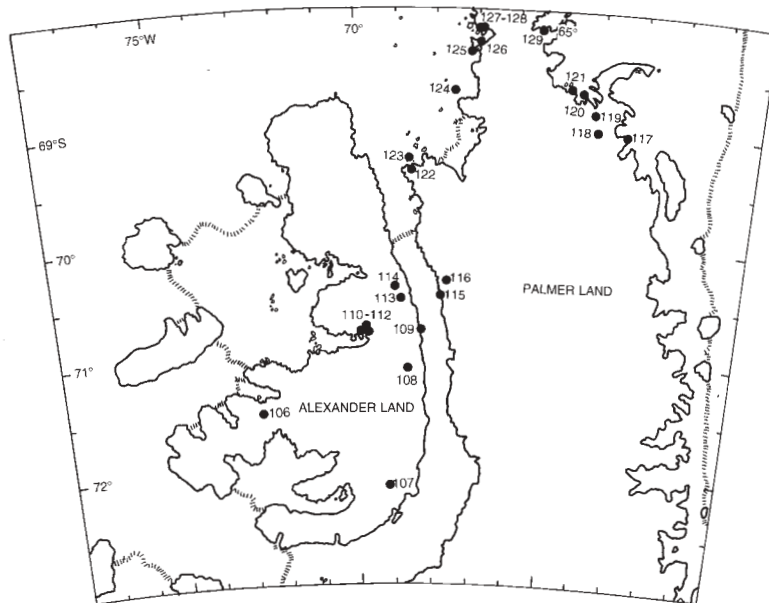


Figure 10. Location of Snow Petrel breeding sites in the southern Antarctic Peninsula, including Alexander Island and Palmer Land (see Table 1 for details).

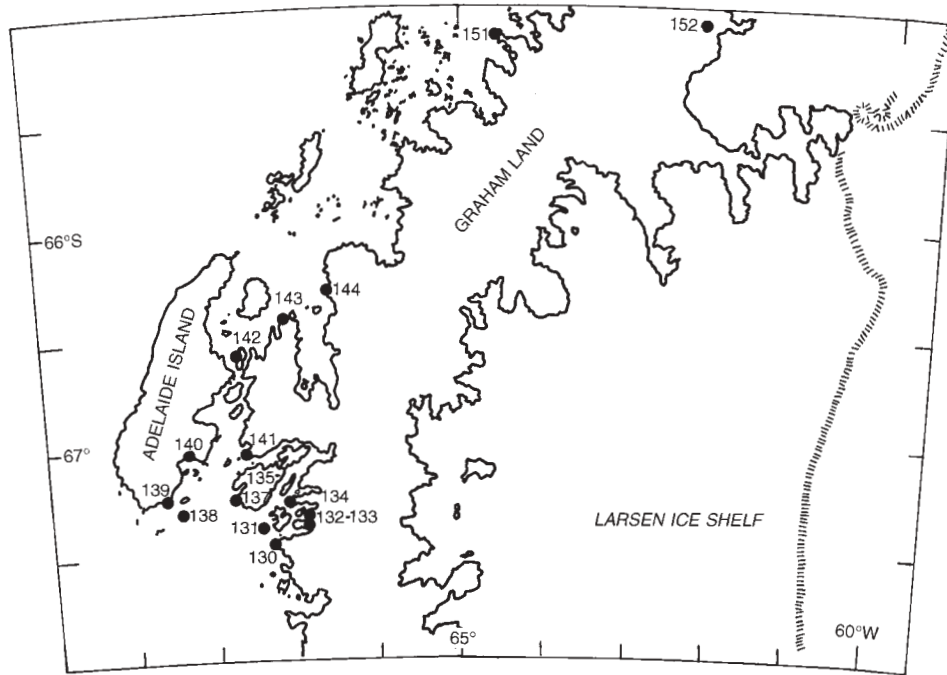


Figure 11. Location of Snow Petrel breeding sites in the central Antarctic Peninsula, including Adelaide Island and Graham Land (see Table 1 for details).

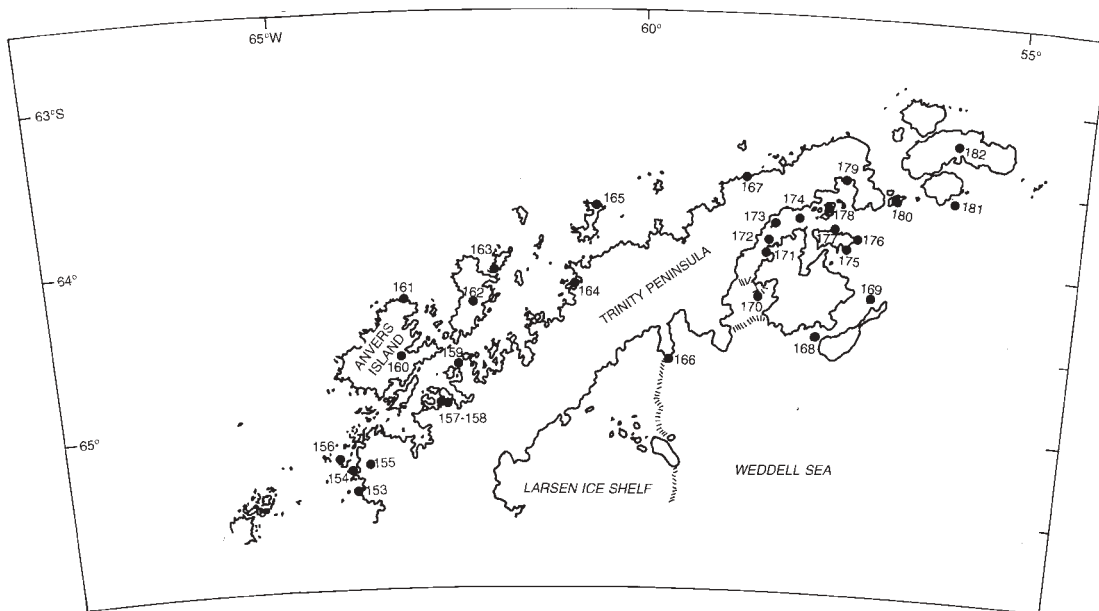


Figure 12. Location of Snow Petrel breeding sites in the northern Antarctic Peninsula, including Anvers Island and Trinity Peninsula (see Table 1 for details).

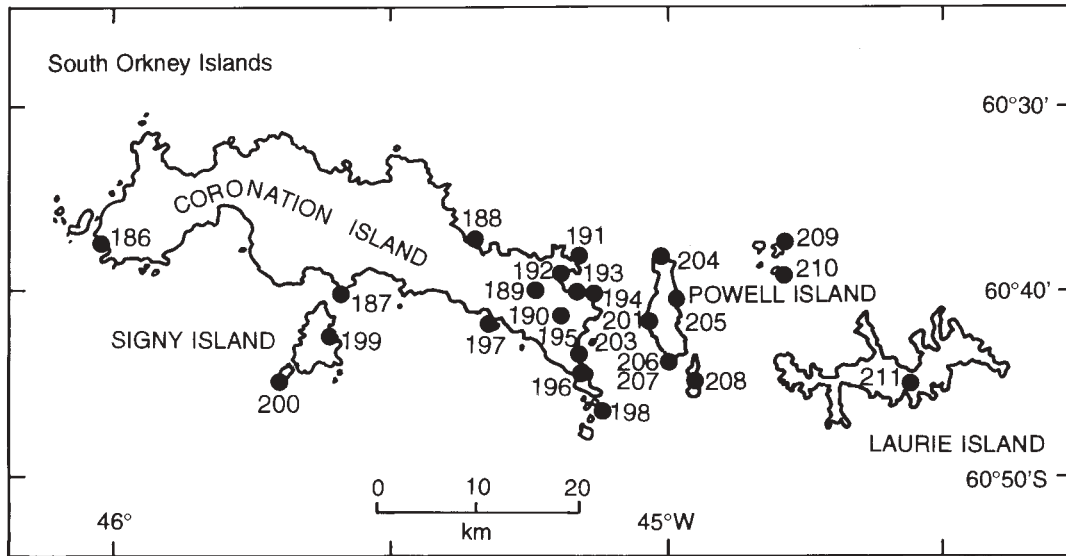


Figure 13. Location of Snow Petrel breeding sites in the South Orkney Islands (see Table 1 for details).

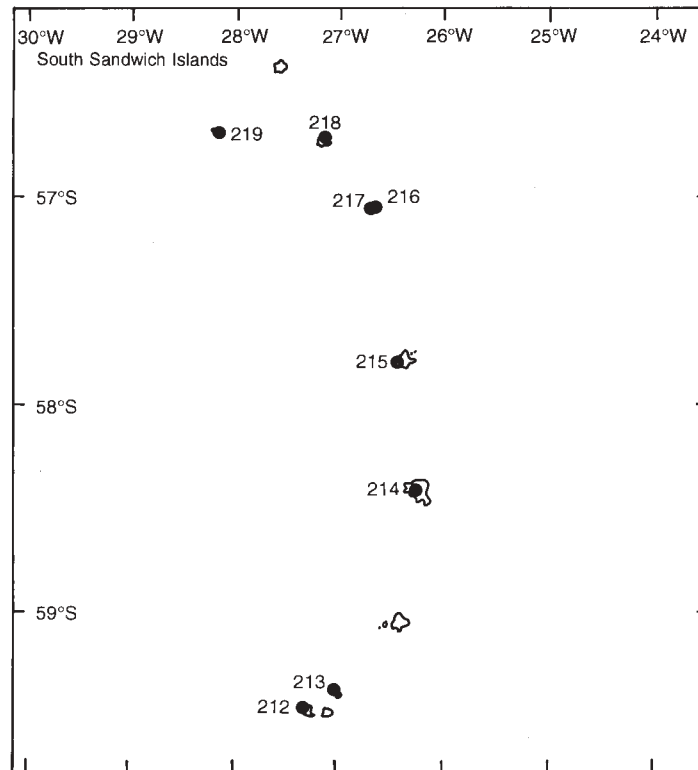


Figure 14. Location of Snow Petrel breeding sites in the South Sandwich Islands (see Table 1 for details).

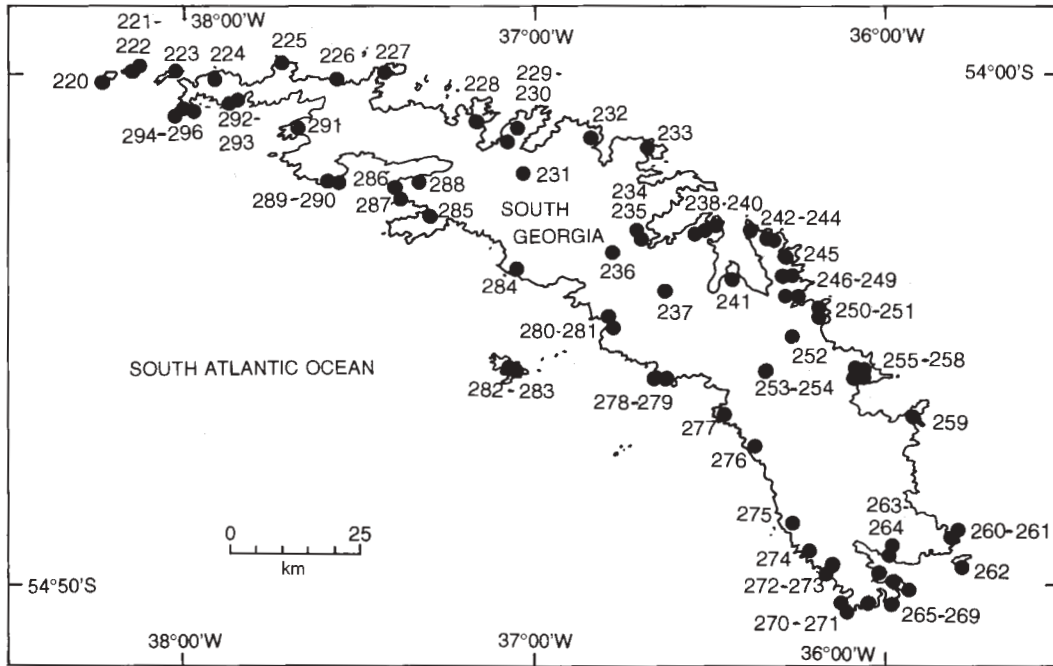


Figure 15. Location of Snow Petrel breeding sites in South Georgia (see Table 1 for details).

REFERENCES

- AINLEY, D.G., FRASER, W.R. & RIBIC, C.A. 1986. AMERIEZ 1986: oceanic factors affecting the occurrence of seabirds in the Scotia and Weddell Seas. *Antarct. J. U. S.* 22(5): 172-173.
- AINLEY, D.G. & JACOBS, S.S. 1981. Seabird affinities for ocean and ice boundaries in the Antarctic. *Deep Sea Res.* 28: 1173-1185.
- AINLEY, D.G., O'CONNOR, E.F. & BOEKELHEIDE, R.J. 1984. The marine ecology of birds in the Ross Sea, Antarctica. *Orn. Monogr.* 32: 1-97.
- AINLEY, D.G., RIBIC, C.A. & FRASER, W.R. 1992. Does prey preference affect habitat choice in Antarctic seabirds? *Mar. Ecol. Prog. Ser.* 90: 207-221.
- ALBERTS, F.G. (Ed.). 1981. Geographic names of the Antarctic. Washington: National Science Foundation.
- ANDERSSON, K.A. 1905. Das höhere Tierleben im antarktischen Gebiete. *Wiss. Ergebn. schwed. Südpolarexped.* 5, Vol. II: 19-57.
- ANTARCTIC TREATY CONSULTATIVE MEETING. 1993. Protocol on Environmental Protection to the Antarctic Treaty. *Sci. Comm. Antarct. Res. Bull.* 10: 1-20.
- ARAYA, B. 1965. Notas preliminares sobre ornitología de la Antártica chilena. *Rev. Biol. Mar.* 12: 161-74.
- ARDLEY, R.A.B. 1936. The birds of the South Orkney Islands. *Discovery Rpts* 12: 349-376, pls. X-XII.
- ARDUS, D.A. 1964. Some observations at the Tottanfjella, Dronning Maud Land. *Br. Antarct. Surv. Bull.* 3: 17-20.
- BARRETT, R.G. 1974. Biology report, Base E. Br. Antarct. Surv. internal report AD6/2E/1974/N.
- BASSETT, J.A., WOHLER, E.J., ENSOR, P.H., KERRY, K.R. & JOHNSTONE, G.W. 1990. Adélie Penguins and Antarctic Petrels at Mount Biscoe, western Enderby Land, Antarctica. *Emu* 90: 58-60.
- BIERMAN, W.H. & VOOUS, K.H. 1950. Birds observed and collected during the whaling expeditions of the Willem Barendsz in the Antarctic, 1946-47 and 1947-48. *Ardea* 37, extra number, 1-132.
- BIRD, P.G. 1965. Bird report, Deception, 1965. Br. Antarct. Surv. internal report AD6/2B/1965/Q.
- BOLSHIYANOV, D., VERKULICH, S., KLOKOV, V., MAKEEV, V. & ARSLANOV, H. 1990. Radiocarbon datings of sediments from the Bunger Oasis (east Antarctica). In: Wand, U. & Strauch, G. (Eds). Proceedings of the 5th Working Meeting, Isotopes in Nature, Leipzig, September 1989. Leipzig: Zfi. pp. 47-52.
- BONNER, W.N. & SMITH, R.I.L. (Eds). 1985. Conservation areas in the Antarctic. Cambridge: Scientific Committee on Antarctic Research, International Council of Scientific Unions.
- BOWRA, G.T., HOLDGATE, M.W. & TILBROOK, P.J. 1966. Biological investigations in Tottanfjella and central Heimefrontfjella. *Br. Antarct. Surv. Bull.* 9: 63-70.
- BRETAGNOLLE, V. & THOMAS, T. 1990. Seabird distribution between Tasmania and Adélie Land (Antarctica), and comparison with nearby Antarctic sectors. *Emu* 90: 97-107.
- BROADY, P.A., ADAMS, C.J., CLEARY, P.J. & WEAVER, S.D. 1989. Ornithological observations at Edward VII Peninsula, Antarctica, in 1987-88. *Notornis* 36: 53-61.
- BROOK, D. & BECK, J.R. 1972. Antarctic Petrels, Snow Petrels and South Polar Skuas breeding in the Theron Mountains. *Br. Antarct. Surv. Bull.* 27: 131-137.
- BROWN, D.A. 1966. Breeding biology of the Snow Petrel (*Pagodroma nivea* (Forster)). *ANARE Sci. Rep. Ser. B*(1) 89: 1-63.
- CENDRON, J. 1953. Notes sur les oiseaux de la Terre Adélie. *Oiseau* 23: 212-220.
- CHASTEL, O., WEIMERSKIRCH, H. & JOUVENTIN, P. In press. High annual variability in reproductive success and survival of an Antarctic seabird, the Snow Petrel *Pagodroma nivea*: a 27-year study. *Oecologia*.
- CHOYCE, M.A. 1947. Observations on seals and birds. Br. Antarct. Surv. internal report AD6/2C/1946/N.
- CLARKE, W.E. 1906. Ornithological results of the Scottish National Antarctic Expedition II, on the birds of the South Orkney Islands. *Ibis Series* 8, Vol. 6: 145-187.
- COOPER, J. & WOHLER, E.J. 1994. Consumption of Antarctic Krill (*Euphausia superba*) by seabirds during summer in the Prydz Bay region, Antarctica. In: El-Sayed, S.Z. (Ed.). Southern Ocean ecology: the BIOMASS perspective. Cambridge: Cambridge University Press. pp. 247-260.
- CORDIER, J.R., MENDEZ, A., MOUGIN, J.L. & VISBEEK, G. 1981. Les oiseaux de l'île Thule, archipel des Sandwich de Sud (59°28'S, 27°20'W). *Oiseau* 51: 149-60.
- COWAN, A.N. 1981. Size variation in the Snow Petrel (*Pagodroma nivea*). *Notornis* 28: 169-188.
- COWAN, A.N. 1983. "Large" Snow Petrels (*Pagodroma nivea*) breeding at the South Sandwich Islands. *Notornis* 30: 250-252.
- CROXALL, J.P. 1982. Sexual dimorphism in Snow Petrels *Pagodroma nivea*. *Notornis* 29: 171-180.
- CROXALL, J.P. & PRINCE, P.A. 1980. Food, feeding ecology and ecological segregation of seabirds at South Georgia. *Biol. J. Linn. Soc. Lond.* 14: 103-131.

- CROXALL, J.P., PRINCE, P.A., HUNTER, I., MCINNES, S.J. & COPESTAKE, P.G. 1984. The seabirds of the Antarctic Peninsula, islands of the Scotia Sea, and Antarctic continent between 80°W and 20°W: their status and conservation. In: Croxall, J.P., Evans, P.G.H. & Schreiber, R.W. (Eds). Status and conservation of the world's seabirds. *Int. Council Bird Preserv. Tech. Publ.* 2: 637–666.
- DALENIUS, P. & WILSON, O. 1958. On the soil fauna of the Antarctic and of the sub-Antarctic islands. The Oribatidae (Acari). *Ark. Zool., Ser. 2*, 11, Nr 23: 393–425.
- DOW, J.A.S. & NEALL, V.E. 1968. Biological observations from the Rennick Glacier region, Antarctica, 1967–68. *Notornis* 15: 117–119.
- EKLUND, C.R. 1945. Condensed ornithology report, East Base, Palmer Land. *Proc. Am. Phil. Soc.* 89: 299–304.
- ENSOR, P.H. & BASSETT, J.A. 1987. The breeding status of Adélie Penguins and other birds on the coast of George V Land, Antarctica. *ANARE Res. Notes* 50: 1–16.
- FALLA, R.A. 1937. Birds. *BANZARE Rpt. Ser. B*, 2: 1–288.
- FLETCHER, D.D.W. 1977. Biology report, Rothera 1977. Br. Antarct. Surv. internal report AD6/2R/1977/N.
- FREEMAN, R.L. 1946. Ornithological report, Base E. Br. Antarct. Surv. internal report AD6/2E/1968/Q.
- FUCHS, V.E. & ADIE, R.J. 1949. Sledge journey to Alexander Land and King George VI Sound. Br. Antarct. Surv. internal report AD6/2E/1949/K4.
- FUCHS, V.E. & HILLARY, E. 1958. The crossing of Antarctica. The Commonwealth Trans-Antarctic Expedition 1955–58. London: Cassell.
- FURSE, C. 1986. Antarctic Year: Brabant Island Expedition. London: Croom Helm.
- FURSE, J.R. 1978. Joint Services Expedition to the Elephant Island group, 1976–77. Unpublished report.
- FURSE, J.R. & BRUCE, G. 1979. Ornithology report. In: Burley, M.K. (Ed.). Joint Services Expedition: Elephant Island, 1970–71. London: Ministry of Defence. Annex F, FI–FII.
- GREEN, K. & JOHNSTONE, G.W. 1986. Breeding distribution and abundance of surface-nesting petrels in the Rauer Islands, East Antarctica. *ANARE Res. Notes* 35: 1–54.
- GREENFIELD, L.G. & SMELLIE, J.M. 1992. Known, new and probable Snow Petrel breeding locations in the Ross Dependency and Marie Byrd Land. *Notornis* 39: 119–124.
- GRIFFITHS, A.M. 1983. Factors affecting the distribution of the Snow Petrel (*Pagodroma nivea*) and Antarctic Petrel (*Thalassoica antarctica*). *Ardea* 71: 145–150.
- GUILLOTIN, M. & JOUVENTIN, P. 1980. Le pétrel des neiges a Pointe Géologie. *Gerfaut* 70: 51–72.
- HAFTORN, S., MEHLUM, F. & BECH, C. 1988. Size variation in the Snow Petrel *Pagodroma nivea*. *Notornis* 35: 109–116.
- HALL, A.B. 1957. The breeding birds of Moe Island. Br. Antarct. Surv. internal report AD6/2H/1956/Q6.
- HARPER, P.C. 1966. New Zealand ornithologist on “Eltanin”. *Antarctic (Wellington)*, 4(8): 389–390.
- HARPER, P.C. 1972. The field identification and distribution of the Thin-billed Prion (*Pachyptila belcheri*) and the Antarctic Prion (*Pachyptila desolata*). *Notornis* 19: 140–175.
- HARPER, P.C., KNOX, G.A., SPURR, E.B., TAYLOR, R.H., WILSON, G.J. & YOUNG, E.C. 1984. Status and conservation of birds in the Ross Sea sector of Antarctica. In: Croxall, J.P., Evans, P.G.H. & Schreiber, R.W. (Eds). Status and conservation of the world's seabirds. *Int. Council Bird Preserv. Tech. Publ.* 2: 593–608.
- HARRINGTON, H.J. 1960. Adélie Penguin rookeries in the Ross Sea region. *Notornis* 9: 33–39.
- HARRISON, P. 1983. Seabirds. An identification guide. Beckenham: Croom Helm.
- HATHERTON, T., DAWSON, E.W. & KINSKY, F.C. 1965. Balleny Islands reconnaissance expedition, 1964. *N.Z. J. Geol. Geophys.* 8: 164–179.
- HEATWOLE, H., BETTS, M., WEBB, J. & CROSTHWAITE, P. 1991. Birds of the northern Prince Charles Mountains, Antarctica. *Corella* 15: 120–122.
- HILLER, A., WAND, U., KAMPF, H. & STACKEBRANDT, W. 1988. Occupation of the Antarctic Continent by petrels during the past 35 000 years: inferences from a ¹⁴C study of stomach oil deposits. *Polar Biol.* 9: 69–77.
- HOLDGATE, M.W. 1963. Observations of birds and seals at Anvers Island, Palmer Archipelago, in 1955–57. *Br. Antarct. Surv. Bull.* 2: 45–51.
- HOLDGATE, M.W. & BAKER, P.E. 1979. The South Sandwich Islands: I. General description. *Br. Antarct. Surv. Sci. Rep.* 91: 1–76.
- HOOGESTEGGER, J. 1972. Ornithological report (Signy). Br. Antarct. Surv. internal report AD6/2H/1972/Q.
- HUNT, G.L. & VEIT, R.R. 1983. Marine bird distribution in Antarctic waters. *Antarct. J. U.S.* 18: 167–169.
- ISENMANN, P. 1970. Contribution a la biologie de reproduction du pétrel des neiges (*Pagodroma nivea* Forster). La probleme de la petite et de la grande forme. *Oiseau* 40: 99–134.
- IVANOV, A.I. 1959. Poseshiheniye ostrova Montegyu

- [A visit to Montagu Island (in Russian)]. *Inf. Byull. Sov. Antarkt. Eksped.* 11: 49–51.
- JOHNSTONE, G.W., LUGG, D.J. & BROWN, D.A. 1973. The biology of the Vestfold Hills, Antarctica. *ANARE Sci. Rep. Ser. B (Zool.)* 123: 1–62.
- JOUVENTIN, P. & VIOT, C.-R. 1985. Morphological and genetic variability of Snow Petrels *Pagodroma nivea*. *Ibis* 127: 430–441.
- KILLINGBECK, J.B. 1962. A short natural history report from Adelaide Island. Br. Antarct. Surv. internal report AD6/2T/1962/N.
- KONOVALOV, G.V. 1964. Observations of birds in Queen Maud Land. *Sov. Antarct. Exp. Inform. Bull.* 4: 156–158.
- KRYLOV, V.I. & POPOV, L.A. 1978. Nabliudeniia za ornitofaunoi o. King-Dzhordzh [Observations on King George Island birds (in Russian)]. *Sov. Antarkt. Eksped. Trudy* 69: 133–139.
- KRYNAUW, J.R., ALLEN, A., AURET, S.H. & VON BRUNN, V. 1983. A note on breeding sites of Snow Petrels (*Pagodroma nivea*) at Robertskollen, Boreas and Passat nunataks and Johnsbrotet, western Dronning Maud Land, Antarctica. *S. Afr. J. Antarct. Res.* 13: 51–53.
- LA GRANGE, J.J. 1962. Note on the birds and mammals on Marion Island and Antarctica (S.A.N.A.E.). *J. S. Afr. Biol. Soc.* 3: 27–84.
- LAMB, M. 1945. Sledging diary. Br. Antarct. Surv. records.
- LARSEN, C.A. 1908. Original report on an exploring expedition with the steam yacht “Undine” round part of South Georgia and to the South Sandwich Islands, from 5 to 21 November 1908. [Scott Polar Research Institute Collection, SPRI MS 101/97, 10pp.].
- LARSSON, K. 1989. The Wasa station – environmental aspects. In: Karlqvist, A. (Ed.). Swedish Antarctic Research Programme 1988/89: a cruise report. Stockholm: Swedish Polar Research Secretariat. pp. 39–41.
- LAWS, R.M. 1949. Preliminary biological report, Signy Island. November 1948. Br. Antarct. Surv. internal report AD6/2H/1948/N.
- LAWTHER, E. & MACALISTER, N. 1973. Biology report. Br. Antarct. Surv. internal report AD6/2E/1973/N.
- LEWIS, M.P.D. 1980. Travel report, Sledge Papa. Geology of north-east coast of Antarctic Peninsula. Br. Antarct. Surv. internal report AD6/2R/1980/K3.
- LEWIS, R. 1963. Bird report, Argentine Islands, 1963. Br. Antarct. Surv. internal report AD6/2F/1963/Q.
- LØVENSKIOLD, H.L. 1960. The Snow Petrel *Pagodroma nivea* nesting in Dronning Maud Land. *Ibis* 102: 132–134.
- LOY, W. 1962. Ornithological profile from Iceland to Antarctica. *Gerfaut* 52: 626–640.
- MAHER, W.J. 1962. Breeding biology of the Snow Petrel near Cape Hallett, Antarctica. *Condor* 64: 488–499.
- MARCHANT, S. & HIGGINS, P.J. 1990. Handbook of Australian, New Zealand and Antarctic birds, Vol. I, Part A. Melbourne: Oxford University Press.
- MARSH, P.D. & HOLDEN, G.A. 1978. Journey report of sledge dog party in Shackleton Range 1977–78. Br. Antarct. Surv. internal report AD6/2R/1978/K19.
- MARSHALL, N.B. 1945. Biological report on the second sledging journey. Br. Antarct. Surv. internal report AD6/1D/1945/N3.
- MCGOWAN, E.R. 1958. Ornithological report, Base Y, Horseshoe Island. Br. Antarct. Surv. internal report AD6/2Y/1958/Q.
- MEHLUM, F. 1986. Fugler i de norske deler av Antarktis (The bird fauna of Norwegian Antarctic territories). *Var Fuglefauna* 9: 137–144.
- MEHLUM, F., GJESSING, Y., HAFTHORN, S. & BECH, C. 1988. Census of breeding Antarctic Petrels *Thalassoica antarctica* and physical features of the breeding colony at Svarthamaren, Dronning Maud Land, with notes on breeding Snow Petrels *Pagodroma nivea* and South Polar Skuas *Catharacta maccormicki*. *Polar Res.* 6: 1–9.
- MURPHY, R.C. 1936. Oceanic birds of South America. New York: American Museum of Natural History.
- MURRAY, M.D. & LUDERS, D.J. 1990. Faunistic studies at the Windmill Islands, Wilkes Land, East Antarctica, 1959–80. *ANARE Res. Notes* 73: 1–45.
- NOBLE, P.H. 1968. Halley Bay to Shackleton Range, overland traverse. Br. Antarct. Surv. internal report AD6/2Z/1968/K8.
- NORMAN, S.M. 1968. Ornithological notes from Stonington, 1968. Br. Antarct. Surv. internal report AD6/2E/1968/Q.
- NOVATTI, R. 1978. Notas ecologicas y etologicas sobre las aves de Cabo Primavera (Costa de Danco Peninsula Antarctica). *Contrib. Inst. Antart. Argent.* 237: 25–108.
- OHTA, Y. (Ed.). 1993. Nature environment map, Gjelsvikfjella and western Mühlig-Hofmannfjella, Dronning Maud Land, Antarctica, 1:100 000. Maps 1 and 2. Norsk Polarinstitutt Temakaart 24.
- ORTON, M.N. 1963. A brief survey of the fauna of the Windmill Islands, Wilkes Land, Antarctica. *Emu* 63: 14–22.
- PARMELEE, D.F., FRASER, W.R. & NEILSON, D.R. 1977. Birds of the Palmer Station area. *Antarct. J. U.S.* 12: 14–21.
- PERKINS, J.E. 1945. Biology of Little America III, the

- west base of the United States Antarctic Service Expedition 1939-1941. *Proc. Am. Phil. Soc.* 89: 270-284.
- PONCET, S. & PONCET, J. 1978. Ornithological report, Avian Island, 1978-79. Br. Antarct. Surv. internal report AD6/2R/1978/Q.
- POTTS, F.B. 1962. Bird report, March 1961 to February 1963. Br. Antarct. Surv. internal report AD6/2F/1962/Q.
- PREVOST, J. 1964. Remarques écologiques sur quelques procellariens Antarctiques. *Oiseau* 34 (suppl.): 91-112.
- PROCTER, N. 1957. Summer sledging journey Nov-Dec 1957, Base Y. Br. Antarct. Surv. internal report AD6/2Y/1957/K17.
- PRYOR, M.E. 1968. The avifauna of Haswell Island, Antarctica. In: Austin, O.L. (Ed.). Antarctic Bird Studies. *Antarct. Res. Ser.* 12: 57-82.
- REID, B. 1962. An assessment of the size of the Cape Adare Adélie Penguin rookery and skuary - with notes on petrels. *Notornis* 10: 98-111.
- RICKER, J. 1964. Bird records for Victoria Land, 1962-63. *Emu* 64: 20-27.
- RIDOUX, V. & OFFREDO, C. 1989. Diet of five summer breeding seabirds in Adélie Land, Antarctica. *Polar Biol.* 9: 137-145.
- ROBERTSON, C.J., GILBERT, J.R. & ERIKSON, A.W. 1980. Birds and seals of the Balleny Islands, Antarctica. *Nat. Mus. N.Z. Rec.* 1: 271-279.
- RODGER, A.S. 1974. Bird report, July 1973 to June 1974. Br. Antarct. Surv. internal report AD6/2F/1974/Q.
- ROOTES, D.M. 1988. The status of birds at Signy Island, South Orkney Islands. *Br. Antarct. Surv. Bull.* 80: 87-119.
- ROSS, J.C. 1847. A voyage of discovery and research in the Southern and Antarctic regions during the years 1839-43. London: Murray.
- RØV, N. 1990. Studies of the breeding biology of Antarctic Petrel and Snow Petrel in Mühlig-Hofmannfjella, Dronning Maud Land. In: Orheim, O. (Ed.). Report of the Norwegian Antarctic Research Expedition 113: 47-51.
- RYAN, P.G. & WATKINS, B.P. 1988. Birds of the inland mountains of western Dronning Maud Land, Antarctica. *Cormorant* 16: 34-40.
- RYAN, P.G. & WATKINS, B.P. 1989. Snow Petrel breeding biology at an inland site in continental Antarctica. *Colonial Waterbirds* 12: 176-184.
- SAUNDERS, A.F. 1979. Manhaul trip to Durbaix Island and Cape Perez. Br. Antarct. Surv. internal report AD6/2F/1979/K7.
- SCOTLAND, C.D. 1956. Ornithological report (Horse-shoe Island). Br. Antarct. Surv. internal report AD6/2Y/1956/Q.
- SCOTLAND, C.D. 1958. Powell Island ornithological report. Br. Antarct. Surv. internal report AD6/2H/1957/Q2.
- SIPLE, P.A. & LINDSEY, A.A. 1937. Ornithology of the Second Byrd Antarctic Expedition. *Auk* 54: 147-159.
- SKIDMORE, M.J. 1968. Geological field notebook, November 1968-January 1969. Br. Antarct. Surv. records.
- SMITH, C.M. 1959. Bird report for 1959 to 1960. Br. Antarct. Surv. internal report AD6/2F/1959/Q.
- SMITH, R.I.L. 1965. Bird and seal observations in the South Orkneys, summer 1964-65. Br. Antarct. Surv. internal report AD6/2H/1964/N5.
- SMITH, V.L. & SPLETTSTOESSER, J. (Eds). 1994. Antarctic Tourism. *Ann. Tourism Res.* 21: 221-386.
- SOLYANIK, G.A. 1964. Some bird observations on Bouvet Island. *Sov. Antarct. Exped. Inf. Bull.* 2: 97-100.
- SØMME, L. 1977. Observations on the Snow Petrel (*Pagodroma nivea*) in Vestfjella, Dronning Maud Land. *Norsk Polarinst. Arbok* 1976: 285-292.
- STARCK, W. 1980. The avifauna of Haswell Island (east Antarctica) in summer of 1978/79. *Pol. Polar Res.* 1(2/3): 183-196.
- STONEHOUSE, B. 1948. Report on biological activities at Base E, 1948-49. Br. Antarct. Surv. internal report AD6QE/1948/N1.
- STRANDTMANN, R.W. 1978. Three Adélie Penguin colonies on the Hobbs coast, and a nesting site of the Snow Petrel, Marie Byrd Land, Antarctica. *Antarct. J. U.S.* 13: 151-153.
- SUMNER, M. 1963. Biological notes on the Tottan mountains. Br. Antarct. Surv. internal report AD6/2Z/1963/N3.
- SZIJJ, L.J. 1967. Notes on the winter distribution of birds in the western Antarctic and adjacent Pacific waters. *Auk* 84: 366-378.
- TAYLOR, A. 1945. Sledging diary. Br. Antarct. Surv. archives.
- TAYLOR, R.J.F. 1956. The birds of Joinville Island and their distribution. Br. Antarct. Surv. internal report AD6/2D/1957/Q1.
- THOMAS, R.H. 1960. Bird report for 1960 to 1961. Br. Antarct. Surv. internal report AD6/2F/1960/Q.
- THOMAS, T. 1986. L'effectif des oiseaux nicheurs de l'archipel de Pointe Géologie (Terre Adélie) et son évolution au cours des trente dernières années. *Oiseau* 56: 349-368.
- THOR, G. 1992. Biological investigations in Vestfjella and Heimefrontfjella. In: Melander, O. & Lönnroth

- Carlsson, M. (Eds). Swedish Antarctic Research Programme 1991/92: a cruise report. Stockholm: Swedish Polar Research Secretariat. pp. 54–57.
- THURSTON, M.H. 1961. Bird ringing returns, Halley Bay. Br. Antarct. Surv. internal report AD6/2Z/1961/QI.
- TINDAL, R. 1963. Larsen project 1963/64. Biological notes, sledge A. Br. Antarct. Surv. internal report AD6/2E/1963/N2.
- VAN FRANEKER, J.A., BELL, P.J. & MONTAGUE, T.L. 1990. Birds of Ardery and Odbert Islands, Windmill Islands, Antarctica. *Emu* 90: 74–80.
- VAN FRANEKER, J.A. & WILLIAMS, R. 1992. Diet of fulmarine petrels in the Windmill Islands, Wilkes Land, Antarctica: preliminary results. *Circumpolar J.* 7: 134–138.
- WATSON, G.E., ANGLE, J.P., HARPER, P.C., BRIDGE, M.A., SCHLATTER, R.P., TICKELL, W.L.N., BOYD, J.C. & BOYD, M.M. 1971. Birds of the Antarctic and Subantarctic. Antarctic Map Folio Series 14. New York: American Geophysical Union.
- WILKINSON, J.V. 1956. South Sandwich Islands – bird life. *Sea Swallow* 9: 18–20.
- WILKINSON, J.V. 1957. A second visit to the South Sandwich Islands. *Sea Swallow* 10: 22.
- WILLEY, I.M. 1968. Adelaide Island bird report. Br. Antarct. Surv. internal report AD6/2T/1968/Q.
- WILTON, D.W., PIRIE, J.H.H. & BROWN, R.N.R. 1908. Zoological log of the Scotia. *Rep. Scot. Nat. Antarct. Exped.* 4, Pt. 1.
- WOEHLER, E.J. & JOHNSTONE, G.W. 1991. Status and conservation of the seabirds of the Australian Antarctic Territory. In: Croxall, J.P. (Ed.). Seabird status and conservation: a supplement. *Int. Council Bird Preserv. Tech. Publ.* 11: 279–308.
- WOEHLER, E.J. (Ed.). 1993. The Distribution and abundance of Antarctic and Subantarctic penguins. Cambridge: Scientific Committee on Antarctic Research.
- WRIGHT, G.K. & WYETH, R.B. 1971. Shackleton Range 1970–71. Dog sledge journey – geological. Br. Antarct. Surv. internal report AD6/2Z/1970/KII.
- WYETH, R.B. 1971. Geological field notebook, West Shackleton Range 1970/71. 2 vols. Br. Antarct. Surv. archives.
- WYLIE, J.P. 1957. Biological Report, Anvers Island, 1957. Br. Antarct. Surv. internal report AD6/2N/1957/N.
- ZIPAN, W. & NORMAN, F.I. 1993. Foods of the South Polar Skua *Catharacta maccormicki* in the eastern Larseman Hills, Princess Elizabeth Land, East Antarctica. *Polar Biol.* 13: 255–262.

