

Management Plan for Antarctic Specially Protected Area No. 160

FRAZIER ISLANDS, WINDMILL ISLANDS, WILKES LAND, EAST ANTARCTICA

Introduction

The Frazier Islands consists of a group of three islands located approximately 16 km offshore from the Australian Casey station, in East Antarctica (see Map A). The islands support the largest of only four known breeding colonies of Southern Giant Petrels *Macronectes giganteus* on continental Antarctica, and were designated as an Antarctic Specially Protected Area under Measure 2 (2003) for the sanctuary of the birds.

Following their discovery in 1955, the Southern Giant Petrel colonies at the Frazier Islands were visited intermittently during the period mid-January to late March. The aim of these visits was usually the banding of Southern Giant Petrel chicks. Weather permitting, counts of the chicks present were made but were often restricted to Nelly Island. Thus, the early data available do not offer the information needed for an analysis of possible changes in the status of the population. In more recent years, occupied nests were counted in December, usually covering all three islands. The indication is that the breeding population, especially at Dewart Island, may be increasing.

Apart from visits for seabird observations, the Frazier Islands have been visited very infrequently. Twenty three visits, or on average one visit every two years, have occurred since the late 1950s (see Appendix 1). In the mid-1980s, a formal management strategy was implemented to minimise human disturbance to breeding colonies of Southern Giant Petrels in the vicinity of Australia's Antarctic stations. The Australian Antarctic Division restricted access by Australian Antarctic program participants so that census visits occurred once in every three- to five-year period and implemented tight administrative controls over visits for other purposes. The census interval was considered an appropriate compromise between the risk of disturbance to breeding birds from monitoring activities and the need to obtain population data. Current thinking suggests it is desirable to provide for more frequent censuses, if conducted in an appropriate manner, to allow more detailed understanding of population status and trends.

A recent ostensible increase in the breeding population of Southern Giant Petrels at the Frazier Islands, combined with the apparent positive effects of the existing protective measures, suggests that continued and formalised protection of Southern Giant Petrel breeding colonies is warranted. Long-term protection and monitoring of Southern Giant Petrels at the Frazier Islands will contribute to the development of appropriate regional and global conservation strategies for the species and will provide information for comparisons with populations elsewhere.

This revised Management Plan reaffirms the values of the original designation and accords with Annex V of the Protocol on Environmental Protection.

1. Description of Values to be Protected

The Area is primarily designated to protect the breeding colony of Southern Giant Petrels, which is the largest known in the continental Antarctic.

In the late 1980s the world breeding population of Southern Giant Petrels was estimated at 38,000 pairs. Declines in the 1990s appear to have stabilised and, while some populations appear to be decreasing and others are stable, the major colonies appear to be increasing. Recognising this global trend, but mindful of the potential continuing threat posed by demersal longline fisheries, the IUCN in 2007 down-listed the species from Vulnerable to Near Threatened.

The Southern Giant Petrel is also listed in Annex 1 of the Agreement on the Conservation of Albatrosses and Petrels (ACAP), a multilateral agreement which seeks to conserve albatrosses and petrels by coordinating international activity to mitigate known threats to their populations, and in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals.

In East Antarctica, Southern Giant Petrels are uncommon as they are at the southern limit of their distribution range. The most recent estimate of the population at the Frazier Islands was 274 breeding pairs in 2005/06. Colonies are found on all three of the islands in the group (Nelly, Dewart and Charlton Islands – Map B), the largest being located on Dewart Island.

The Frazier Islands are one of only four known breeding localities of Southern Giant Petrels around the coastline of continental Antarctica and are the only known site in nearly 3000 km of coastline between Davis station and Dumont d'Urville. The other three continental breeding colonies are located near the Australian stations of Mawson (Giganteus Island, Rookery Islands, ASPA 102) and Davis (Hawker Island, ASPA 167), and near the French station Dumont d'Urville (Pointe-Géologie Archipelago, ASPA 120). The Southern Giant Petrels on the Antarctic continent comprise less than 1% of the global breeding population. The current population for continental Antarctica is estimated at approximately 320 pairs, comprised of 3 pairs on Giganteus Island, 25 pairs on Hawker Island, 16 pairs at Pointe Géologie archipelago (Terre Adélie) and approximately 270 pairs on the Frazier Islands. However, incidental observations at the coast near Mawson station indicate there may be additional colonies that have not been discovered yet.

The breeding season for Southern Giant Petrels at the Frazier Islands usually commences between late October and mid November, and extends through to April with the birds' departure northward for the winter. Banded chicks from the Frazier Islands dispersed throughout the Southern Hemisphere and have previously been recovered in New Zealand, South America, Easter Island, and South Africa within nine months of departure.

2. Aims and Objectives

Management of the Frazier Islands aims to:

- minimise human disturbance to the breeding colonies of Southern Giant Petrels to assist further the protection of the population in the wild;
- conserve the Frazier Islands as a reference area for future comparative studies with other breeding populations of Southern Giant Petrels; and
- minimise the possibility of the introduction of alien plants, animals and microbes to the Frazier Islands.

3. Management Activities

The following management activities shall be undertaken to protect the values of the Area:

- where practicable, at least one research visit should be conducted to census the Southern Giant Petrels and other seabird populations in each 5 year period, to enable assessment of breeding populations. These visits should be conducted by a team including at least one bird biologist associated with a national Antarctic program or someone with relevant scientific skills and experience;
- information about the location of the Area and the restrictions that apply shall be produced and prominently displayed at Casey station. Copies of this Management Plan shall be available at the station. Informative material and the Management Plan shall be provided to ships visiting the vicinity;
- the Management Plan shall be reviewed at least every five years and updated/modified as required.

4. Period of Designation

Designation is for an indefinite period.

5. Maps

Map A: Windmill Islands, showing location of the Frazier Islands and protected areas within the region

Map specifications:

Projection: UTM Zone 49

Horizontal Datum: WGS84

Map B: Frazier Islands, Antarctic Specially Protected Area showing distribution of seabird nesting sites.

Map Specifications:

Projection: UTM Zone 49

Horizontal Datum: WGS84

6. Description of the Area

6(i) Geographical co-ordinates, boundary markers and natural features

The Frazier Islands are located at latitude 66°14'S, longitude 110°10'E (Map A). The three islands (Nelly, Dewart and Charlton) lie in the eastern part of Vincennes Bay approximately 16 km to the west north west of Casey station. Nelly Island is the largest of the three islands (approximately 0.35 km² in area), and was named for the presence of several colonies of Southern Giant Petrels or "Nellies". The Area comprises the entire terrestrial area of the three islands, with the seaward boundary at the low water mark (Map B). The total area of the Antarctic Specially Protected Area is approximately 0.6 km². There are no boundary markers.

Nelly Island supports the largest and most varied avian community of the three islands, with records indicating that Snow Petrels (*Pagodroma nivea*), Cape Petrels (*Daption capense*), Antarctic Petrels (*Thalassoica antarctica*), Wilson's Storm-Petrels (*Oceanites oceanicus*), Southern Fulmars (*Fulmarus glacialisoides*), and South Polar Skuas (*Catharacta maccormicki*) all nest on the island. South Polar Skua nests have also been observed on Dewart Island (Appendix 2, Map B).

In 1961/62, 100 Adélie Penguin (*Pygoscelis adeliae*) nests were reported in one colony on Nelly Island. During the 1989/90 season, three colonies were recorded on the northwest ridge of Nelly Island with a total of 554 nests. The increase corresponds with those recorded for most other Adélie Penguin populations in the Windmill Islands region during the period from 1959/60 to 1989/90. In the 2001/02 season, approximately 1,000 pairs were estimated to be nesting on Nelly Island. A brief inspection of the Adélie penguin colonies in 2005/06 suggested that the breeding population continues to increase.

Recorded sightings of marine mammals at the Frazier Islands are scarce. In 1968 three Weddell Seals (*Leptonychotes weddellii*) were observed on an ice floe located between Nelly and Dewart Islands. An Orca (Killer Whale: *Orcinus orca*) was also sighted offshore from the islands during the same year, and a small pod was sighted during 2005/06. A few Leopard Seals (*Hydrurga leptonyx*) were sighted on sea ice near Nelly Island and a small number of Weddell Seals were recorded on the sea ice near the Frazier Islands in the 2001/02 season (Appendix 2).

Vegetation recorded at Nelly Island comprises at least 11 species, including lichens *Buellia frigida*, *Usnea antarctica*, *Rhizoplaca melanophthalma*, *Candelariella flava* a terrestrial alga *Prasiola crispa*, an indeterminate green crust which is thought to be 'a mixture of fungal hyphae and green alga *Desmococcus olivaceus*', and several species of snow algae including *Chlorococcum* sp., *Chloromonas polyptera*, *Chlorosarcina antarctica*, *Prasiococcus calcarius* (Appendix 2). There are no published records of terrestrial invertebrates on the Frazier Islands; however, no surveys have been undertaken.

The topography of the Frazier Islands is characterised by steep cliffs rising from the sea. The highest peak on Nelly Island is approximately 65 metres. There is a broad 'U' shaped ice-filled valley on both Nelly and Dewart Islands.

The geology of the Frazier Islands is typical of the Windmill Islands group and is characterised by the layered schists and finely crenulated gneisses of the Windmill metamorphics. The geological character of the Frazier Islands developed as a result of two phases of metamorphism at 1400-1310 Ma and about 1200 Ma of pre-existing volcanics, greywacke and shale. On Nelly Island there are steep cliffs of biotite and gneiss. A red sandstone erratic is located in the 'U' shaped valley on Nelly Island below the 30m contour. Highly polished glacial striae in the gneisses provide evidence of recent glaciation and indicate the former direction of ice flow of 265° and 280° T. Surface sediments consist of fine gravelly sand located in bedrock depressions.

The climate at the Frazier Islands is characteristic of that experienced at the Windmill Islands and other Antarctic coastal locations in the region. At Casey station, located 16 kilometres to the east south eastESE of the Frazier Islands group, mean temperatures are 0.3°C for the warmest month and -14.9°C for the coldest month. Precipitation is low and the high albedo of the exposed rock surfaces results in persistent ice-free areas that provide attractive nesting sites for the avifauna.

6(ii) Special Zones within the Area

There are no special zones within the Area.

6(iii) Location of Structures within the Area

There are no structures within or adjacent to the Area and none are to be erected.

6(iv) Location of other Protected Areas within close proximity

The following Protected Areas are located on the Budd Coast near the Frazier Islands (see Map A):

- ASPA No. 135, North-east Bailey Peninsula (66°17'S, 110°32'E);
- ASPA No. 136, Clark Peninsula (66°15'S, 110°36'E); and,
- ASPA No. 103, Ardery Island and Odbert Island (66°22'S, 110°30'E).

7. Permit conditions

Entry to the Area is prohibited except in accordance with a Permit issued by an appropriate national authority.

Permits shall include a condition requiring that the Permit or a copy shall be carried at all times when within the Area. Additional conditions, consistent with the objectives and provisions of the Management Plan, may be included by the issuing authority. The principal Permit Holder for each Permit issued should be required to submit to the Permit issuing authority a visit report detailing all activities undertaken within the Area, and include all census data obtained during the visit.

7(i) Access to and movement within or over the Area

- Vehicles are prohibited within the Area.
- The only permitted access to the Frazier Islands is by watercraft. Landings must be made at the designated sites as marked on Map B. Boats used to visit the islands must be left at the shoreline and movement within the Area is by foot only. Only personnel who are required to carry out scientific/management work in the Area should leave the landing site;
- Any movement within the Area is to be consistent with the minimum approach distances to nesting birds specified in Appendix 3. Persons shall not approach closer than is necessary to obtain census data or biological data from any nesting Southern Giant Petrels, and in no case closer than 20 m;
- To reduce disturbance to wildlife, noise levels including verbal communication are to be kept to a minimum. The use of motor-driven tools and any other activity likely to generate noise and thereby cause disturbance to nesting birds is prohibited within the Area during the breeding period for Southern Giant Petrels (1 October to 30 April);
- Landing of aircraft in the Area is prohibited at any time; and
- Clothing (particularly all footwear) and field equipment shall be thoroughly cleaned before entering the Area.

7(ii) Activities which are, or may be conducted within the Area, including restrictions on time and place

Permits to enter the Area during the non-breeding period for Southern Giant Petrels (1 May to 30 September), may be issued for compelling scientific research that cannot be undertaken elsewhere, or for essential management purposes consistent with the objectives and provisions of this Management Plan. Permits are only to be issued for activities that will not jeopardise the ecological or scientific values of the Area, or interfere with existing scientific studies.

Permits to enter the Area during the breeding period for Southern Giant Petrels (1 October to 30 April) may be issued for the purpose of conducting censuses. The Permit issuing authority is to refer to the provision under the first dot point of section 3 of this Management Plan when issuing Permits. Wherever practicable, censuses are to be conducted from outside the Giant Petrel colonies. In most cases there are vantage points from where the nesting giant petrels may be counted. Access to the Area should be limited to the minimum amount of time reasonably required to undertake the census. Boat operators and other support personnel should remain at the landing site for safety reasons.

7(iii) Installation, modification, or removal of structures

No permanent structures are to be erected in the Area.

7(iv) Location of field camps

Camping is prohibited in the Area except in an emergency.

7(v) Restrictions on materials and organisms that may be brought into the Area

- Fuel is not to be depoted on the islands. Boat refuelling is permitted at shoreline landing sites. A small amount of fuel is permitted for an emergency stove.
- The only poultry products that may be brought into the Area are pasteurized egg powder, stock cubes, powdered soups and canned soups .
- No herbicides or pesticides are to be brought into the Area.
- Any chemical which may be introduced for compelling scientific purposes as authorised in a Permit shall be removed from the Area, at or before the conclusion of the activity for which the Permit was granted. The use of radio-nuclides or stable isotopes is prohibited.
- No animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions shall be taken against accidental introductions. All equipment and clothing should be thoroughly cleaned before entering the Area.

7(vi) Taking of, or harmful interference with, native flora and fauna

Taking of, or harmful interference with, native flora and fauna, is prohibited unless specifically authorised by permit issued in accordance with Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty.

Disturbance of Southern Giant Petrels should be avoided at all times. Visitors should be alert to changes in wildlife behaviour, especially changes in posture or vocalisation. If birds are showing signs of wanting to leave the nest, all persons should retreat immediately.

7(vii) Collection or removal of anything not brought into the Area by the Permit Holder

Material may only be collected or removed from the Area as authorised in a Permit and should be limited to the minimum necessary to meet scientific or management needs.

Material of human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit Holder or otherwise authorised, may be removed unless the impact of the removal is likely to be greater than leaving the material *in situ*. If such material is found, the appropriate national authority must be notified. Where possible, photographic documentation should be obtained and included with site visit report.

7(viii) Disposal of waste

No wastes, including human wastes, are to be deposited or left in the Area.

7(ix) Measures that may be necessary to ensure that the aims and objectives of the management plan continue to be met

A census of Southern Giant Petrels should be conducted at least once in each 5 year period. Censuses of other species may be undertaken during these visits provided no additional disturbance is caused to the Southern Giant Petrels.

All GPS data obtained for specific sites of long-term monitoring shall be registered in the Antarctic Master Directory, through the appropriate national authority.

7(x) Requirement for reports

Parties should ensure that the principal Permit Holder for each permit issued submits to the appropriate national authority a report on activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form contained in Appendix 4 of the *Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas* appended to Resolution 2 (1998). Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction in sufficient detail to allow evaluation of the effectiveness of the Plan of Management. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, for the purpose of any review of the Management Plan and in organising the scientific use of the Area. A copy of the report should be forwarded to the Party responsible for development of the Management Plan to assist in management of the Area, and monitoring of bird populations. Additionally, visit reports should provide detailed information on census data, locations of any new colonies or nests not previously recorded, a brief summary of research findings and copies of photographs taken of the Area.

8. Supporting documentation

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Appendix 1: Southern Giant Petrel populations at the Frazier Islands, Antarctica

Note: To the extent possible, each observation below has been validated by a review of the primary data records. The comments indicate where variations from published literature were identified. Further consideration of each observation would be required before using any of these data in analyses.

Date	Nelly Island	Dewart Island	Charlton Island	Source	Comment
21, 22 Jan. 1956	250 N	not visited	not visited	Unpublished data: J Bunt 2008 pers. comm.; Law (1958)	Counted at four separate rookeries on higher parts of Nelly Island. Notes say that most nests contained chicks. Many of these nests could be old nests.
24-5 Jan. 1959	25 N	not visited	not visited	Unpublished data: Bird log Magga Dan-Wilkes & Oates Land Voyage (Jan-Mar 1959); Unpublished data: Biology report for Wilkes, (1959/60-1960-61), R Penny.	It is not clear whether these observations are all chicks, but Penny comments that some of them were chicks.
15 Dec. 1959	60 A	not visited	not visited	Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton; Creuwels <i>et al.</i> (2005)	20 other birds were associated with nests.
12 Feb. 1960	46 C	not visited	not visited	Unpublished data: Biology report for Wilkes, (1959/60-1960-61), R Penny; Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton.	Orton reports that there were 47 chicks on Nelly Island when in fact it was 46 (Penny 1960).
15 Dec. 1960	not visited	60 N	not visited	Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton; Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	20 other birds were associated with nests. Woehler <i>et al.</i> (1990) and Creuwels <i>et al.</i> (2005) have both quoted directly from R. Penny's unpublished report.
22 Mar. 1961	34 C	10 C	no data	Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton; Unpublished data: Biology: Giant Petrel Wilkes report (1961); Creuwels <i>et al.</i> (2005)	All chicks observed on Nelly Island were banded. Only a subset of the chicks observed at Dewart Island were banded.
23 Nov. 1962	11 eggs	not visited	not visited	Unpublished data: Davis and Mawson station biology log records (1962)	This count appears to have been a subset of the population only.

Date	Nelly Island	Dewart Island	Charlton Island	Source	Comment
21 Jan. 1964	10 C	not visited	not visited	Unpublished data: Wilkes station report, biology log records (1964), L.G. Murray	Birds were observed on the north-east ridge, with about 20 occupied nests in this area, and more on the lower area on the southern side of the ridge. There were many old and uninhabited nests.
7 Mar. 1968	72	no data	not visited	Unpublished data: Bird Log Nella Dan (1967-8) Vol. 1; Shaughessey (1971); Murray & Luders (1990)	This count is the total for all four rookeries found on Nelly Island. There is a map of their location in the field notes.
20, 21 Jan. 1972	52 C	53 C	10-20 N (aerial survey only)	Murray (1972)	Land survey primarily for banding. 49 of 52 chicks seen were banded on Nelly Island. 51 of 53 chicks seen were banded on Dewart Island. Please note counts quoted in Murray & Luders (1990) are incorrect.
31 Jan. 1974	27 BC	no data	no data	Unpublished data: Biology report for Casey (1974) A. Jones; Murray & Luders (1990); Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	All peer-reviewed papers appear to have reported an incorrect count of a total of 76, however only 27 chicks were banded in this season.
13-17 Feb. 1977	27 C	43 C	no data	Cowan (1979); Murray & Luders (1990); Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	All peer-reviewed papers appear to have reported the wrong count. Cowan is the original reference, where data has gone straight to peer-reviewed publication.
25 Jan. 1978	48 C	48 C	6 C	Cowan (1979); Murray & Luders (1990); Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	
30 Jan., 2 Feb. 1979	35 (method unknown)	46 (method unknown)	5 (method unknown)	Murray & Luders (1990); Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	The earliest reference to this work is Murray & Luders (1990), but they did not do the original counts. For Nelly, Woehler <i>et al.</i> (1990) and Creuwels <i>et al.</i> (2005) further report the chick count as 37 and not 35 as reported in Murray & Luders (1990). Further work is required to know which figure reflects the correct count. K. de Jong's original data is unable to be located.
18 Jan. 1980	43 C	10 (method unknown)	no data	Murray & Luders (1990); Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	Original data not located. Creuwels <i>et al.</i> (2005) note that the census data from Dewart Island and Charlton Island are confused with banding data.

Date	Nelly Island	Dewart Island	Charlton Island	Source	Comment
28 & 29 Nov. 1983	63 AON	68 AON	9 AON	Unpublished data: Casey station report (1983); Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	Woehler <i>et al.</i> (1990) conducted the survey.
25 & 26 Jan 1984	52 (method unknown)	not visited	not visited	Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	Original data not located.
3, 6 Mar. 1985	64 C	69 C	no data	Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	Original data not located.
14 Feb. 1986	59	50	9	Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	Census type cannot be attributed to any island. Original data not located.
23 Dec. 1989	73 AON	106 AON	14 AON	Woehler <i>et al.</i> (1990); Creuwels <i>et al.</i> (2005)	Apparently occupied nests (AON) may contain a proportion of failed or non-breeding nest sites (Creuwels <i>et al.</i> 2005).
18 Feb. 1996	11 C	not visited	not visited	Creuwels <i>et al.</i> (2005)	
23 Dec. 1997	96 AON	104 AON	21 AON	Creuwels <i>et al.</i> (2005)	Apparently occupied nests (AON) may contain a proportion of failed or non-breeding nest sites (Creuwels <i>et al.</i> 2005).
26 Dec. 1998	95 AON	103 AON	17 AON	Creuwels <i>et al.</i> (2005)	
14 Mar. 1999	66 C	82 C	11 C	Creuwels <i>et al.</i> (2005)	
26 Dec. 2001	93 AON	135 AON	20 AON	Creuwels <i>et al.</i> (2005)	
14 Dec. 2005	110 ON	149 ON	25 ON	Unpublished data: E.J. Woehler	

'A' = count of adults, 'AON' = apparently occupied nests, 'BC' = banded chicks, 'C' = count of chicks, 'N' = count of nests, 'ON' = occupied nests

Appendix 2: Biota recorded at the Frazier Islands

	Nelly Island	Dewart Island	Charlton Island
Seabirds			
Adélie Penguins (<i>Pygoscelis adeliae</i>)	c.>1400 (2005)		
Antarctic Petrel (<i>Thalassoica antarctica</i>)	P		
Cape Petrel (<i>Daption capense</i>)	P	P (2001)	P (2001)
Snow Petrel (<i>Pagodroma nivea</i>)	P	P	
Southern Giant Petrel (<i>Macronectes giganteus</i>)	100N (2005)	149N (2005)	25N (2005)
Wilson's Storm Petrels (<i>Oceanites oceanicus</i>)	P		
South Polar Skua (<i>Catharacta maccormicki</i>)	1N (2005)	1N (2005)	
Southern Fulmar (<i>Fulmarus glacialoides</i>)	P	P	
Mammals			
Leopard Seal (<i>Hydrurga leptonyx</i>)	X (2001)		
Weddell Seal (<i>Leptonychotes weddellii</i>)	X (2001)		
Orca (Killer Whale: <i>Orcinus orca</i>)	Small pod observed close to island (2005)		
Lichens			
<i>Buellia frigida</i>	R		
<i>Usnea antarctica</i>	R		
<i>Rhizoplaca melanophthalma</i>	R		
<i>Candelariella flava</i>	R	R	
Moss			
<i>Bryum pseudotriquetrum</i>	R		
Algae			
Indeterminate green crust	F		
<i>Prasiola crispa</i>	F		
<i>Chlorococcum</i> sp.	F		
<i>Chloromonas polyptera</i>	F		
<i>Chlorosarcina antarctica</i>	R		
<i>Prasiococcus calcarius</i>	F		

Census data for breeding seabirds provided where available, 'P' indicates recorded breeding seabirds but no census data available, 2001 indicates observations in December 2001 visit, 2005 indicates observations from December 2005 visit, 'X' indicates recorded on or near the island, 'N' a count of nests, 'R' rare, and 'F' frequent. Data compiled from records held by the Australian Antarctic Data Centre, ANARE records 1968, Appendix 1, Melick *et al.* 1994, Seppelt, R. pers. comm., Ling, H. pers. comm., Woehler, E.J. pers. comm., and Woehler, E.J. and Olivier, F. unpublished data (December 2001), Woehler, E.J. unpublished data (December 2005).

Appendix 3: Minimum wildlife approach distances

The minimum (closest) approach distances as set out below are to be maintained when approaching any wildlife on, or in the vicinity of the Frazier Islands unless a closer approach distance is authorised in a Permit. These distances are a guide and should an activity disturb wildlife, a greater distance is to be maintained.

Species	Approach distance (on foot)
Giant petrels	100m
Other penguins in colonies Moulting penguins Seals with pups Seal pups on their own Prions and petrels on nest South polar skua on nest	30m
Penguins on sea ice Non breeding adult seals	5m

Notes:

1. Includes Cape Petrels, Antarctic Petrels, Wilson’s Storm Petrels, Snow Petrels and Southern Fulmars.