Management Plan For
Antarctic Specially Protected Area No. 104

SABRINA ISLAND, NORTHERN ROSS SEA, ANTARCTICA

Introduction

Sabrina Island, in the Balleny Archipelago, was originally designated as SPA No. 4 in Recommendation IV-4 (1966) on the grounds that "The Balleny Islands, as the most northerly Antarctic land in the Ross Sea region, support fauna and flora which reflect many circumpolar distributions at this latitude and that Sabrina Island in particular provides a representative sample of such fauna and flora."

1. Description of values to be protected

Sabrina Island has outstanding environmental and scientific value. It is a representative sample of the Balleny Islands which is the only oceanic archipelago located within the main Antarctic Coastal Current. (Peter I Island, some 4000km away, is the only other oceanic island in the Current). As such, they provide important resting and breeding habitat for seabird and seal species (see Tables 1 and 2), and are significant in circumpolar distributions of a variety of species. Being isolated and prone to difficult weather and ice conditions, the Islands have had very little human disturbance.

The Islands are the only known breeding site for chinstrap penguins (*Pygoscelis antarctica*) between Bouvetoya and Peter I Islands (a span of 264° longitude). The chinstrap nests occur within Adélie penguin (*Pygoscelis adeliae*) colonies. Adélies and chinstraps have very different breeding ranges and there are few sites where the species coexist. Sabrina Island's Adélie colony is of particular importance because it is the largest in the archipelago (and has the majority of the chinstrap pairs), and because it is growing very rapidly.

2. Aims and Objectives

Management of Sabrina Island aims to:

- Protect a representative Antarctic oceanic island from unnecessary human disturbance and exposure to biological introductions;
- avoid disturbance to a chinstrap penguin colony which is anomalous in terms of species distribution; and
- allow scientific research to better understand the Island's ecosystem.

3. Management activities

The following measures shall be taken to protect the values of the Area:

- Expeditions traveling in the vicinity of the Balleny Islands should carry a copy of this Management Plan.
- Parties should coordinate to ensure the Area and the need for permits for entry is noted on charts of the region.
- Given the difficulties of access, erection of signage does not currently seem warranted, however this should be reviewed if visits to the Area increase.

4. Period of Designation

Designated for an indefinite period.

5. Description of the Area

5(i) Geographical coordinates, boundaries and natural features of the Area

Location and general description:
The Balleny Islands are located around 325km north of the Pennell Coast, Northern Victoria Land. The Islands are the exposed portion of a volcanic seamount chain. There are three main islands and a number of smaller islands and exposed rocks. Sabrina Island is located at 66°55S, 163°19E, three kilometres off the southern end of Buckle Island (the central of the main islands). It is less than 2km across and reaches an estimated height of 180m above sea level. A volcanic plug approximately 80m high, named the Monolith, is attached to the southern end of Sabrina Island by a boulder spit. A small islet lies to the north east of Sabrina, commonly known as Chinstrap Islet.

Boundaries:
The ASPA comprises all of Sabrina Island above sea level, including the Monolith, and Chinstrap Islet.

Natural Features:
Approximately a quarter of the island is covered in permanent snow and ice, and an ice foot meets the sea at the northern end. A steep ridge runs across the island, with scoria slopes to the east and south. Sheer cliffs form the majority of the island's coast except for a cobble beach in the south west.

The scoria slopes to the east of the central ridge on the Island are occupied by Adélie and chinstrap penguin nests. The birds access their nesting sites via the beach. Sabrina has the largest of the Balleny Island penguin colonies with approximately 3770 Adélie pairs recorded in 2000 and 202 chinstrap adults and 109 chicks in 2006. Only 24 chinstrap nests were observed on Sabrina in 2000, suggesting a rapidly increasing population. Chinstrap Islet, just to the south east of Sabrina had 2298 penguin pairs in 2000, with approximately 10 chinstrap pairs recorded on the Islet in 1965 and 1984.

Cape pigeons were seen nesting on Sabrina Island in 2006 and also on the southern side of the Monolith in 1965 (although this has not been confirmed by more recent expeditions). Individual macaroni penguins have been sighted on Sabrina Island (1964, possible sighting 1973).

Various species of algae (including *Myxopycophyta*, *Xanthophyceae* (*Tribonema* spp.*)* and *Chlorophycophyta* (*prasiola* spp.*)*) have been recorded on Sabrina. Chromogenic (brightyellow) bacteria, yeasts, 14 species of *filamentous fungi*, two species of *thermophilous fungi* (*Aspergillus fumigatus* and *Chaetomium gracile*), mites (*Stereotydeus mollis, Nanorchestes antarcticus, Coccorhgidia* spp.) and nematodes have also been reported. Rock encrusting lichens, mainly *Caloplaca* or *Xanthoria* species occur on top of the main ridge.

5(ii) Access to the Area
Landings by small boat or helicopter can be made on the beach to the south west of the Island, 66°55.166'S, 163°18.599'E (see figure 1). All air movements in the vicinity of the Island should avoid disturbance to the penguin colonies as much as possible. Movement within the Area shall be by foot only.

5(iii) Location of structures within or adjacent to the Area
Although some records suggest shelters have been erected on Borradaile Island and Sabrina Island, recent visits have not identified any existing structures in or adjacent to the Area.

5 (iv) Location of other Protected Areas within close proximity
The nearest Antarctic Specially Protected Area is No. 106, Cape Hallett, approximately 675km to the south east.

6. Special Zones within the Area
There are no prohibited, restricted or specially managed zones within the Area.

7. Maps and photographs

Map A: Location of ASPA 104, Sabrina Island. Chart NZ14912 (INT9012) sourced from Land Information New Zealand, Crown Copyright Reserved. Scale: 1:300000. Projection: Mercator. Central Meridian: 161°20'00". Standard Parallel: 66°45'00".

Figure 1: Sketch Map of Sabrina Island. Reproduced with permission from Macdonald, JA., Barton, Kerry J., Metcalf, Peter. 2002. Chinstrap penguins (*Pygoscelis antarctica*) nesting on Sabrina Islet, Balleny Islands, Antarctica. *Polar Biology* 25:443-447.

Figure 2: Aerial view of penguin breeding areas, Sabrina Island. Photographer: Kerry Barton, Landcare Research New Zealand, December 2000.

Figure 3: Overview of Sabrina and neighbouring islands. Photographer: Kerry Barton, Landcare Research New Zealand, December 2000.

Figure 4: Landing beach at south west of Sabrina Island and the Monolith. Photographer: Rebecca McLeod, University of Otago, 2006.

Figure 5: Adélie and chinstrap penguins on south ridge of Sabrina Island, looking south to the Monolith. Photographer: Rebecca McLeod, University of Otago, 2006.

8. Supporting documentation

The following documents were used in preparation of this management plan:

Bradford-Grieve, Janet and Frenwick, Graham. November 2001. *A Review of the current knowledge describing the biodiversity of the Balleny Islands: Final Research Report for Ministry of Fisheries Research Projects ZBD2000/01 Objective 1 (in part).* NIWA, New Zealand.

de Lange W., Bell R. 1998. Tsunami risk from the southern flank: Balleny Islands earthquake. *Water and atmosphere*. 6(3), pp 13-15.

Macdonald, JA., Barton, Kerry J., Metcalf, Peter. 2002. Chinstrap penguins (*Pygoscelis antarctica*) nesting on Sabrina Islet, Balleny Islands, Antarctica. *Polar Biology* 25:443-447

Robertson,CJR, Gilbert, JR, Erickson, AW. 1980. Birds and Seals of the Balleny Islands, Antarctica. *National Museum of New Zealand Records* 1(16).pp 271-279

Sharp, Ben R. 2006. *Preliminary report from New Zealand research voyages to the Balleny Islands in the Ross Sea region, Antarctica, during January-March 2006.* Ministry of Fisheries, Wellington, New Zealand.

Smith, Franz. 2006. *Form 3: Format and Content of Voyage Reports: Balleny Islands Ecology Research Voyage.*

Varian, SJ. 2005. *A summary of the values of the Balleny Islands, Antarctica.* Ministry of Fisheries, Wellington, New Zealand.

9. Permit conditions

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

Conditions for issuing a permit to enter the Area are that:

- it is issued only for a compelling scientific purpose which cannot be served elsewhere, or for essential management purposes;
- the actions permitted will not jeopardize the natural ecological system in the Area;
- the actions permitted are in accordance with this Management Plan;
- the Permit, or a copy, must be carried within the Area;
- a report is supplied to the authority issuing the Permit; and
- the Permit is issued for a stated period.

9(i) Access to and movement within the Area

Landings by small boat or helicopter can be made on the beach to the south west of the Island, 66°55.166'S, 163°18.599'E (see figure 1). All air movements in the vicinity of the Island should avoid disturbance to the penguin colonies as much as possible. Movement within the Area shall be by foot only.

9(ii) Activities which may be conducted within the Area

Only scientific research or essential management activities (such as inspection, monitoring or review), in accordance with a Permit, may be conducted within the Area.

9(iii) Installation, modification or removal of structures

No structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, as specified in the Permit. Any equipment

installed should be labeled with name and country of the principal investigator and year of installation. Any such equipment should be made of materials which can withstand the environmental conditions and designed so as to pose no entrapment risk for wildlife. Removal of equipment once its purpose has been served shall be a condition of the Permit.

9(iv) Location of field camps
Field camps may be established if necessary to support permitted scientific or management activity. The camp location should be selected to minimise disturbance to wildlife as much as possible and care should be taken to secure all equipment.

9(v) Restrictions on materials and organisms that may be brought into the Area
No living animals, plant material or microorganisms shall be deliberately introduced into the Area.

All sampling equipment, footwear, outer clothing, backpacks and other equipment used or brought into the Area shall be thoroughly cleaned before entering the Area. Scrubbing footwear in a disinfectant footbath before each landing is recommended.

No poultry products, including food products containing uncooked dried eggs, shall be taken into the Area.

No herbicides or pesticides shall be brought into the Area. Any other chemicals, which may be introduced for compelling scientific, management or safety purposes specified in the Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.

Fuel, food and other materials are not to be deposited in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All such materials introduced are to be removed when no longer required. Permanent depots are not permitted.

Spill response materials appropriate to the volume of fuels or other hazardous liquids taken into the Area should be carried. Any spills should be immediately cleaned up, provided the response has less environmental impact than the spill itself.

9(vi) Taking or harmful interference with native flora and fauna
Taking or harmful interference with native flora and fauna is prohibited, except in accordance with a Permit.

Where animal taking or harmful interference is involved this should be in accordance with the SCAR Code of Conduct for Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

9(vii) Collection and removal of anything not brought into the Area by the Permit holder
Material may be collected or removed from the Area only in accordance with a Permit. Material of human origin not introduced in accordance with 9(iii) may be removed, where doing so causes less environmental impact than leaving it in place. Any such material should be noted in the visit report.

9(viii) Disposal of waste
All wastes, including human waste, shall be removed from the Area.

9(ix) Measures that may be necessary to ensure that the aims and objectives of the Management Plan continue to be met

Permits may be granted to enter the Area to carry out environmental monitoring and site inspection, which may involve the collection of small samples for analysis or audit, to erect or maintain signposts, or for other management measures.

Research within the Area has been very limited and any new information collected should be incorporated into future reviews of the Management Plan.

9(x) Requirements for reports

The Principal Permit Holder for each issued Permit shall submit a report of activities conducted in the Area including, as appropriate, the information specified in the Visit Report form suggested by SCAR. This report shall be submitted to the authority named in the Permit as soon as practicable, but not later than 6 months after the visit has taken place. Parties should retain such reports indefinitely, making them available to interested Parties (preferably publicly accessible) and including summary information in the Annual Exchange of Information.

Spills of any size should be reported to the authority named in the permit, using the COMNAP Spill Report Form as appropriate.

Map data currently available for the Area is very limited. New Zealand, as the Party responsible for review of this Management Plan, would therefore appreciate copies of data and images which could assist future management of the Area.

Table 1: Bird species recorded from the Balleny Islands
The table lists sightings recorded in expedition reports and scientific publications. Species indicated as breeding have been confirmed in recent expeditions (i.e. since 2000), those marked with S breed on Sabrina Island itself.

Common name	Species	Breeding
Adélie penguin	*Pygoscelis adeliae*	✓ S
Antarctic fulmar	*Fulmarus glacialoides*	✓
Antarctic petrel	*Thalassoica antarctica*	✓
Antarctic prion	*Pachyptila desolata*	
Antarctic tern	*Sterna paradisea*	
Black browed mollymawk	*Diomedea melanophrys*	
Cape pigeon	*Daption capense*	✓ S
Chinstrap penguin	*Pygoscelis antarctica*	✓ S
Grey-headed mollymawk	*Diomedea chrysostoma*	
Light-mantled sooty albatross	*Phoebetria palpebrata*	
Macaroni penguin	*Eudyptes chrysolphus*	
Snow petrel	*Pagodroma nivea*	✓
Sooty shearwater	*Puffinus griseus*	
Southern giant petrel	*Macronectes giganteus*	
Southern skua	*Catharacta lonnbergi*	
Wandering albatross	*Diomedea exulans*	
White chinned petrel	*Procellaria aequinoctialis*	
Wilson's storm petrel	*Oceanites oceanicus oceanicus*	

Table 2: Seal species recorded from the Balleny Islands
The table lists sightings recorded in expedition reports and scientific publications. Breeding has not been confirmed for any species.

Common name	Species
Crabeater seal	*Lobodon carcinophagus*
Elephant seal	*Mirounga leonina*
Leopard seal	*Hydrurga leptonyx*
Weddell seal	*Leptonychotes weddellii*

Map A - Location of Antarctic Specially Protected Area 104 Sabrina Island

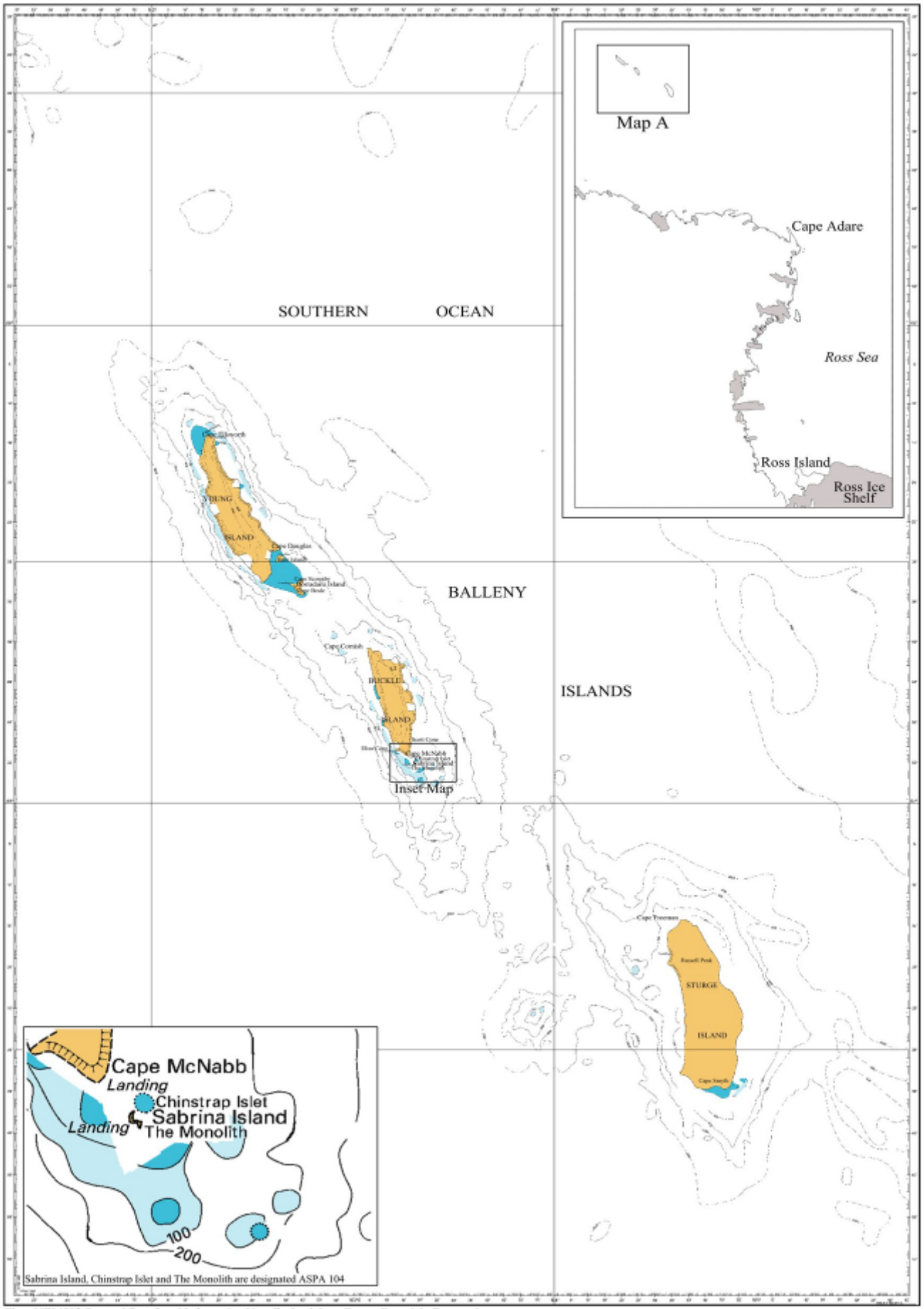
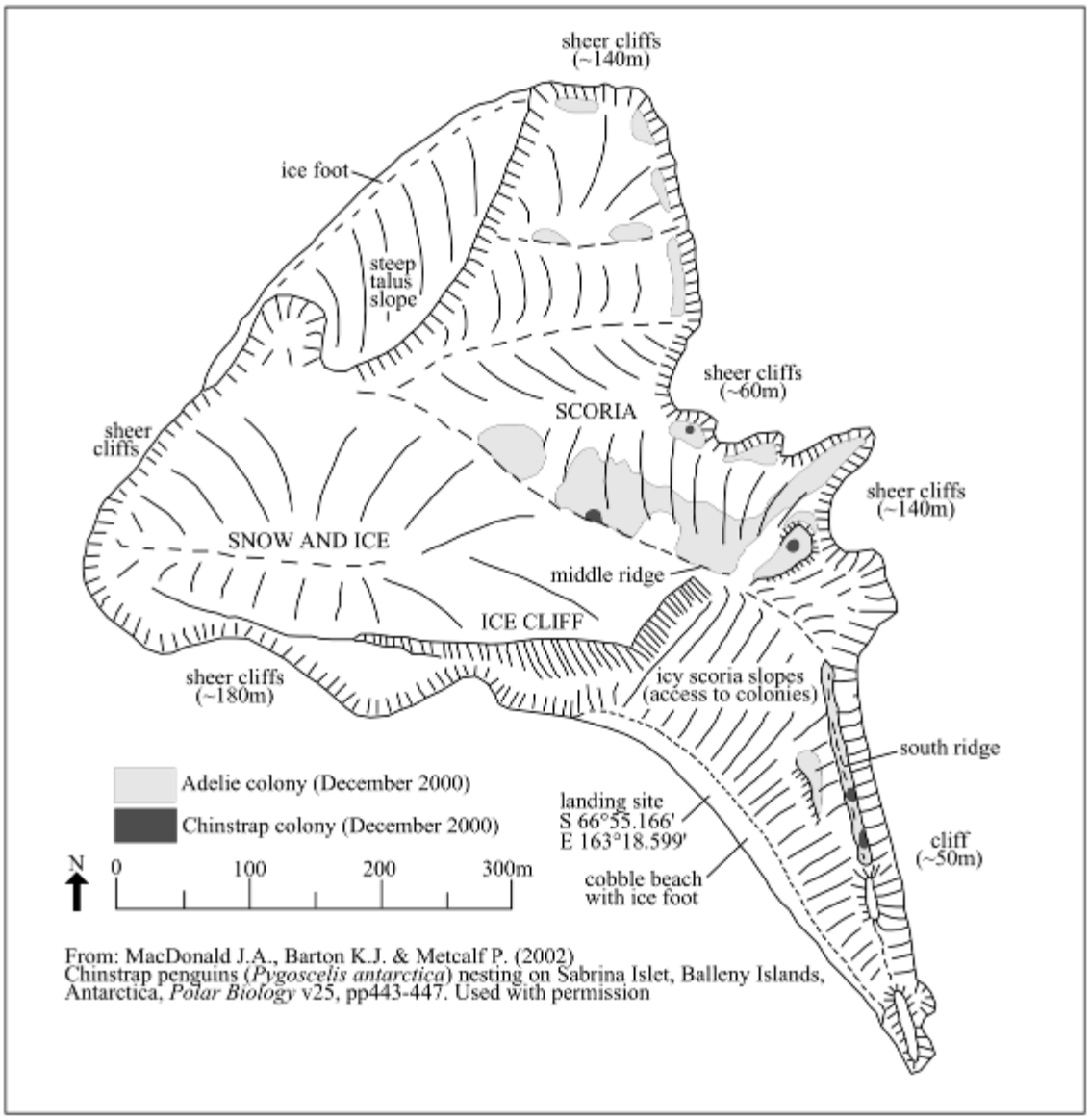


Chart NZ14912 Sourced from Land Information New Zealand data. Crown Copyright Reserved

Scale: 1:300,000
Depths and Heights in Metres

Projection: Mercator, Central Meridian: 161°20'00", Standard Parallel: 66°45'00"
Datum: WGS84

Figure 1: Sketch Map of Sabrina Island



From: MacDonald J.A., Barton K.J. & Metcalf P. (2002)
Chinstrap penguins (*Pygoscelis antarctica*) nesting on Sabrina Islet, Balleny Islands, Antarctica, *Polar Biology* v25, pp443-447. Used with permission

Figure 2: Aerial view of penguin breeding areas, Sabrina Island
Photographs: Kerry Barton, Landcare Research New Zealand, December 2000
Red shading highlights areas of penguin nesting (Adélie and chinstrap not distinguishable).
Refer to Figure 1 for location.

Figure 3: Overview of Sabrina and neighbouring islands.
Kerry Barton, Landcare Research New Zealand, December 2000.
Left to right: the Monolith, Sabrina Island, Chinstrap Island. Buckle Island in background

Figure 4: Landing beach at south west of Sabrina Island and the Monolith.
Rebecca McLeod, University of Otago, 2006.

Figure 5: Adélie and chinstrap penguins on south ridge of Sabrina Island, looking south to the Monolith
Rebecca McLeod, University of Otago, 2006.