Antarctic Specially Protected Areas

Specially Protected Areas

Specially Protected Area No. 1

Taylor Rookery, Mac.Robertson Land, Lat 67°s, long 60°50'E

Annex B to the Agreed Measures for the Conservation of Antarctic Fauna and Flora

Description: The area consists of the whole of the northernmost rock exposure on the eastern side of Taylor Glacier. The area is shown on the attached map. Designated in Recommendation IV-1 on the grounds that Taylor Rookery contains a colony of Emperor Penguins (Aptenodytes forsteri) which is one of the few, and probably the largest, of the known colonies of this species located wholly on land.

Annex to Recommendation XVII-2

Management plan for Specially Protected Area No. 1:

Taylor Rookery, Mac Robertson Land

1. Description of values to be protected. The area was originally designated a Specially Protected Area because it contains a colony of emperor penguins (Aptenodytes forsteri) which is one of the few, and probably the largest, of the known colonies of this species located wholly on land. Almost all other emperor penguins rookeries are located on sea ice. The rookery is also important because of long-term monitoring of the population of the penguins (since 1954). The colony is ideal for counting since it is surrounded by small rocky hills which make it possible to observe every bird without entering the breeding area. A photographic census programme has been carried out annually since 1988, and it is believed that this method has resulted in almost complete accuracy of counting.

2. Aims and objectives. Management of the Area aims to:

- prevent unnecessary disturbance to the emperor penguin colony at Taylor Rookery; and
- permit research of a compelling scientific nature which cannot be undertaken elsewhere, while ensuring no significant disturbance to the ecosystem of the area including the penguin colony.

3. Management activities. The management plan and activities in the area should be kept under review to ensure that the values for which the area was designated are being fully protected. Inspection visits may be made only when considered essential for management purposes.

4. Period of designation. Designated under ATCM Recommendation IV-1 in November 1966, for an indefinite period.

5. Description of the area;

a. Geographic coordinates and natural features of the Area:

b. The Area consists of the whole of the northernmost rock exposure on the east side of Taylor Glacier, Mac Robertson Land (67°26'S; 60°50'E). The rookery is located on a low lying rock outcrop in the south west corner of a bay formed by Taylor Glacier to the west, the polar ice cap to the south and the islands surrounded by sea ice to the north and east. The Area is some 90

kilometres west of Mawson station. There is ice free terrain adjacent to the glacier on the western boundary and to the south the rock rises steeply to meet the ice of the plateau. The rock itself forms a horseshoe around a central flat area of exposed rock and moraine. This Area is covered with snow in winter and is occupied by the emperor penguins. The compressed snow melts in summer to form a shallow lake and stream which exists to the north east. The sides of the horseshoe are rounded ridges of rock which are bare and smoothed by ice.

c. Otherwise the terrain is rough and dissected with cracks and fissures. The average height of the ridges is about 30 metres. The Area also has a raised beach which is typical of several found along the coast of Mac Robertson Land. The beach is composed of locally derived pebbles, cobbles and boulders between 1 cm and 1 m across. It slopes upwards from the shoreline to a well defined platform several metres broad and 3 to 6 m above sea level.

d. There are no boundary markers since the Area is easily defined by its natural features.

e. Access to the Area. Access to the Area is only in accordance with a permit or authority issued by a Contracting Party or its authorised representative.

f. Restrictions apply to the mode of transport to and within the Area, and access points are prescribed; see Section 8 (a).

g. Location of structures including scientific stations, research and refuge facilities both within and near the Area. There are no structures within the Area and no permanent structures are permitted. A four-berth refuge is located in the Colbeck Archipelago, approximately 5 kilometres to the north-east of the Area (see Map B): Mawson Station (67°36'S, 62°53'E) is approximately 90 kilometres to the east.

h. Location of other protected areas in or near the Area. The Rookery Islands (Specially Protected Area No. 2) are located some 80 kilometres to the east of Taylor Rookery (see Map A).

6. Identification of restricted zones. Access to the emperor penguin colony, marked on Map C, is prohibited unless authorised in a permit.

7. Maps of the area. Map A shows the location of the Area in relation to the Mawson region; Map B shows the location of the field hut on the Colbeck Archipelago, and access routes to the Area; Map C shows the Area in greater detail, including the usual location of the penguin colony, and the area where all activity such as landing helicopters and installing field huts or field camps should take place, where permitted.

8. Conditions under which permits may be issued. Criteria for issuing a permit to enter the Area are that:

- it is issued for a compelling scientific purpose which can not be undertaken elsewhere;
- the actions permitted will not jeopardise the natural ecological system existing in the Area; and
- the actions permitted are in accordance with the management plan for the Area.

Conditions applying:

a. Access to and movement within the Area:

i. Whenever possible, access should be from sea ice to the east of Colbeck Archipelago, to avoid disturbance to the birds by crossing their pathways from the rookery to the sea (see Map B). Persons in the vicinity, not approaching the colony, should also be aware of the penguins pathways, and take care to cause as little disturbance to them as possible.

ii. Travel to the Area may be by oversnow vehicle, which is generally only possible during the period 1 May to 25 December, or by helicopter. Vehicle entry to the Area is prohibited. Oversnow vehicles used for transport to the

Area are to be left outside the Area, to the east, and entry must be by foot. The approach route for vehicles is marked on Map B.

iii. Helicopters are not permitted to land in the Area unless sea ice conditions outside the Area are such that it would be hazardous for aircraft to land on ice or for personnel to walk on it. If sea ice conditions are not suitable, helicopters are authorised to land in the Area, to the north-east at the point marked "H", where a headland to the south obscures the colony from view (see Map C). Map B shows the helicopter access route.

iv. The following conditions apply to the use of helicopters:
- helicopters are to approach the Area from the east over the sea ice and, where sea ice conditions permit, land outside the Area, with access being by foot (see Map B);
- overflight of the rookery is prohibited;
- when landing outside the Area, helicopters should not land, take off or fly within 500 metres of the rookery;
- if landing inside the Area is essential due to sea ice conditions helicopters should land in the north-east of the Area at the point marked "H", where a headland to the south obscures the colony from view (see Map C);
- helicopters approaching to land in the Area must fly as low as possible over the sea ice to avoid disturbing the colony; and
- helicopters are not to be refuelled within the Area.

v. There are no marked pedestrian routes within the Area; pedestrians should keep well away from the penguins unless disturbance to the penguins is authorised by permit. Movement in and around the Area should be such that, in general, the routes used by the birds are not crossed.

vi. Dogs are not to be used for transport to the Area.

b. Activities which are, or may be, conducted within the Area, including restrictions on time and place:

i. The penguins are particularly sensitive to disturbance during the following periods:
- when they are incubating eggs, from mid-May to mid-July; and
- from mid-July, when feeding chicks to mid-December, when the chicks fledge. However penguins are known to be present at the rookery during every month except February, when no recorded expeditions to the rookery have been made; restrictions therefore apply year-round.

ii. The emperor penguin colony is ideal for counting. Normally the best vantage point for viewing and photographing the penguins is a rocky headland which runs adjacent to Taylor Glacier, on the western side of the rookery. The ideal time for a census is from 22 June to 5 July, since during this time only incubating males are present, each representing one breeding pair. An ongoing photographic census programme has been carried out since 1988.

iii. Other activities which may be conducted in the Area:
- compelling scientific research which can not be undertaken elsewhere and which will not jeopardise the ecosystem of the Area; and
- compelling management activities, which if not carried out would jeopardise the values for which the Area was designated.

c. The installation, modification, and removal of structures:

No structures are to be installed in the Area unless essential for scientific purposes; any structure installed should be removed when it is no longer required. Only the minimum number of personnel necessary to install and to remove the structure should be used. Temporary field huts if permitted, should be placed well away from the penguin colony at the point marked 'X', to the north-east of the Area, where a headland to the south obscures the colony from view (see Map C).

d. The location of field camps:

See (c) above.

e. Restriction on materials and organisms which may be brought into the Area:

i. No poultry products, including dried food containing egg powder, are to be taken into the Area.

ii. No depots of food or other supplies are to be left within the Area beyond the season for which they are required.

iii. Fuel is not to be depoted in the Area, unless required by a visitor for personal use, (i.e.) for cooking/heating in a field hut, and is to be removed when no longer required.

f. The 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 the Agreed Measures for the Conservation of Antarctic Fauna and Flora, or Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty, whichever is appropriate.

g. The collection or removal of anything not brought into the Area by the permit holder:

There is to be no collection or removal of anything not brought into the Area by permit holder unless specifically authorised by permit for scientific or management purposes.

h. The disposal of waste:

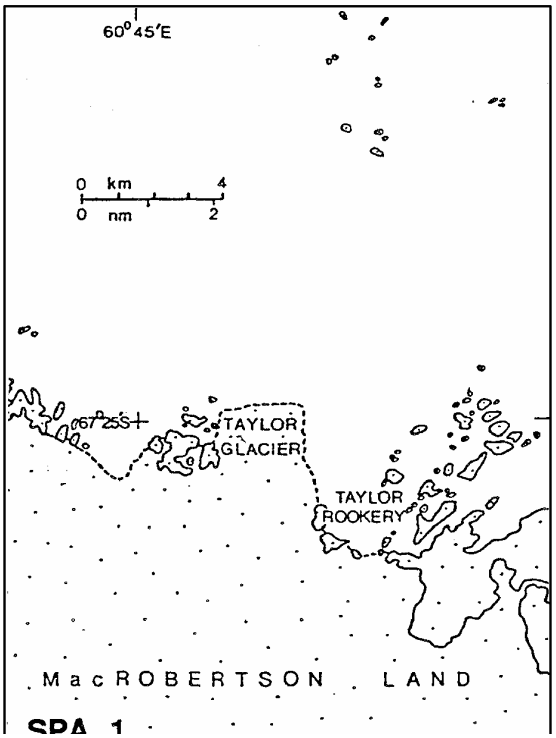
No wastes, including human wastes, are to be left in the Area.

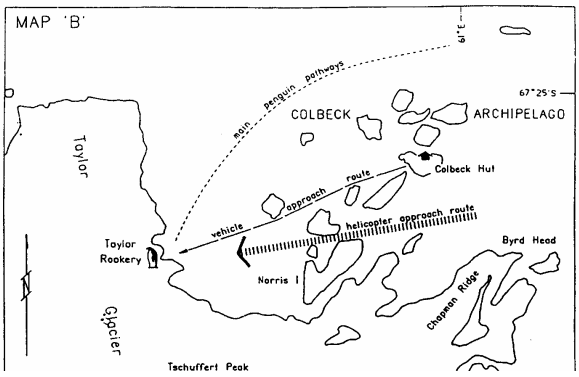
i. Measures that may be necessary to ensure that the aims and objectives of the management plan can continue to be met:

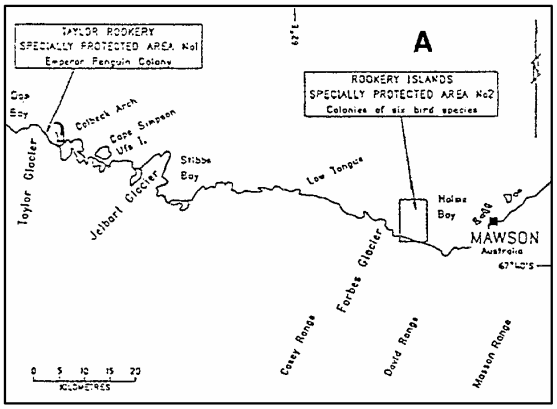
- permits should specify the maximum number of people allowed entry at any one time.
- visits to the Area should be kept to the minimum necessary to achieve the research and management objectives.
- access should be permitted where necessary to place or remove structures or equipments.

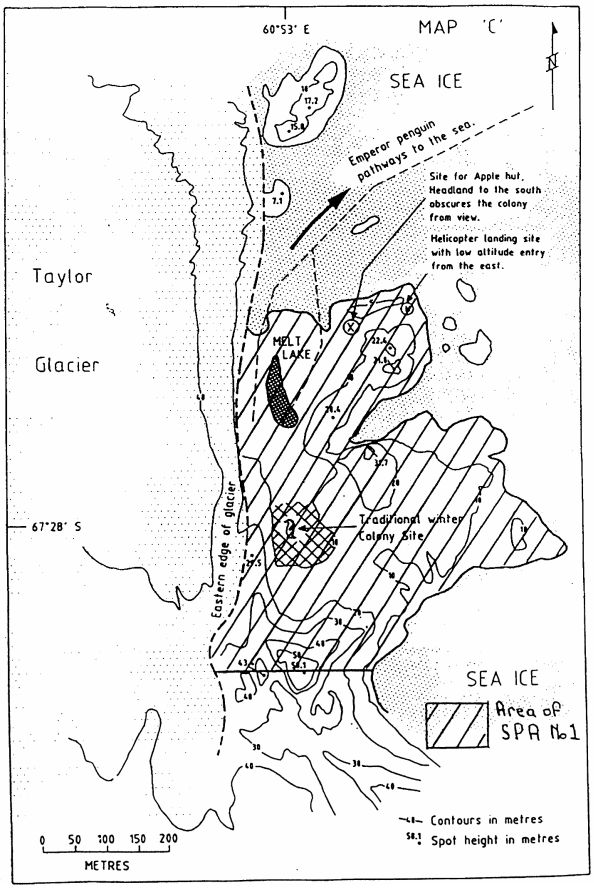
j. Requirements for reports

Each permit holder shall submit a report to the permit issuing authorities detailing the activities undetaken within the Area including a summary of research findings, and comments indicating measures taken to ensure compliance with conditions. Where appropriate, the report may make recommendations relevant to the management of the Area, in particular, as to whether the values for which the Area was designated are being adequately protected. The report should be submitted as soon as practicable after the visit to the Area has been completed.









SPA 1. Taylor Rookery. Map A shows the location of the area in relation to the Mawson region. Map B

shows the location of the field hut on Colbeck Archipelago, and access routes to the area. Map C shows the area in greater detail, including the usual location of the penguin colony, and the area where all activity such as landing helicopters and installing field huts or camps should take place, when permitted.

Specially Protected Area No 2

Rookery Islands, Holme Bay; Lat 67º3'S, long 62º33'E

Description: The area, 7 nautical miles west of Mawson, comprises the island and rocks lying within the rectangle marked on the attached map.

Designated in Recommendation IV-2 on the grounds that Rookery Islands contain breeding colonies of six bird species resident in the Mawson area, two of which, the Giant Petrel (*Macronectes giganteus*) and the Cape Pigeon (*Daption capensis*), occur nowhere else in the region and that it is of scientific importance to safeguard this unusual association of six species and to preserve a sample of their habitat.

Annex to Recommendation XVII-2

Management plan for Specially Protected Area No. 2:

Rookery Islands, Holme Bay, Mac. Robertson Land

1. Description of values to be protected. The Rookery Islands contain breeding colonies of six bird species resident in the Mawson area; Adélie penguin (*Pygoscelis adeliae)*, Cape petrel (*Daption capense*), snow petrel (*Pagodroma nivea*), southern giant petrel (*Macronectes giganteus*), Wilson's storm petrel (*Oceanites oceanicus*) and the Antarctic skua (*Catharacta maccormicki*). The southern giant petrel breeds nowhere else in the region. The designation of the Area aims to safeguard this unusual association of six species and ensure the preservation of a sample offshore island habitat.

2. Aims and objectives. Management of the Area aims to:

- maintain a reference area unmodified by human interference;
- permit research of a compelling scientific nature which can not be undertaken elsewhere, while ensuring no significant disturbance to the ecosystem of the Area and maintaining the status of the SPA as a reference area; and
- ensure that the breeding colony of southern giant petrels, which is close to the point of local extinction, is not endangered by human impacts.

3. Management activities. The management plan and activities in the Area should be kept under review to ensure that the values for which the Area was designated are being fully protected. Inspection visits may be made only when considered essential for management purposes.

4. Period of designation. Designated under ATCM Recommendation IV-1 in November 1966 for an indefinite period.

5. Description of the area

a. Geographical coordinates and natural features of the area. Rookery Islands are a group of small, islands and rocks in the south-western part of Holme Bay, Mac Robertson Land, approximately l0 kilometres to the west of the Australian station, Mawson. The Area comprises the islands and rocks lying within the rectangle marked on the Map B (see Section 7), the general location of which is latitude 67°37'S, longitude 62°33'E. There are no boundary markers delimiting the site. There are approximately 75 small islands. They range in size from small rocks which barely remain above water at high tide to the largest members of the group which are Giganteus Island (approximately 400 m long, 400 m wide and 30 m high) and Rookery Island which is of similar area but slightly more elongated. Rookery Island is the highest of the group reaching an altitude of 62 m. Raised beaches are evident on Giganteus Island. The Rookery Islands are outcrops of the Mawson Charnockite, a rock type which is found over an area of at least 2000 square kilometres along the Mawson Coast of Mac Robertson Land.

There are terrestrial algae, as yet unidentified, but no known mosses or lichens. There are no freshwater bodies on the Rookery Islands.

b. Access to the Area. Access to the Area is only in accordance with a current permit issued by a Contracting Party or its authorised representative. No access points are prescribed. Restrictions apply to the mode of transport and to the proximity of access points to breeding colonies; for this refer to Section (8).

c. Location of structures including scientific stations, research and refuge facilities both within and near the Area. There are no structures within the Area. Mawson Station (67°36'S, 62°53'E) is approximately l0 kilometres to the east.

d. Location of other protected areas in or near the Area. Taylor Rookery (Specially Protected Area No. 1) is approximately 80 kilometres west of the islands at latitude 67°26'S, longitude 60°50'E.

6. Identification of restricted zones. Access to Giganteus Island is prohibited except where a permit specifies otherwise. See 8 (a) (vi) below.

7. Maps of the area. Map A shows the location of the Rookery Islands in the Mawson area, and Map B is a more detailed Map of the Area.

8. Conditions under which permits may be granted. Criteria for issuing a permit to enter the Area are that:

- it is issued for a compelling scientific purpose which cannot be undertaken elsewhere;
- the actions permitted will not jeopardise the natural ecological system existing in the Area; and
- the actions permitted are in accordance with the management plan for the Area.

Conditions applying:

a. Access to and movement within the Area:

i. Travel may be by oversnow vehicles (depending on sea ice conditions). Visitors must ensure that vehicles are taken no closer than 200 metres from concentrations of birds and that they are always left at the shoreline.

ii. As helicopter access may at times be the only viable means of reaching the islands, and as the islands are small in size, aircraft may land within 500 metres of breeding colonies. Permission to land a helicopter may be granted for essential scientific purposes only if it can be demonstrated that disturbance will be minimal.
iii. No refuelling within the Area.
iv. Overflight of the islands is prohibited except where essential for scientific purposes. Such overflight is to be at an altitude of no less than 500 metres.
v. Dogs are not to be used for transport within the Area.
vi. Access to Giganteus Island is prohibited except for the purpose of monitoring the southern giant petrels (Macronectes giganteus) or for activities which may be conducted without threat to their population status. As the breeding colony is close to the point of local extinction and the birds are easily disturbed, the number of persons granted entry for this purpose must be strictly limited and include an experienced ornithologist.

b. Activities which are, or may be conducted within the Area, including restrictions on time and place:

i. Compelling scientific activities which cannot be conducted elsewhere.
ii. Compelling management activities, which if not carried out would jeopardise the values for which the Area was designated.

c. The installation, modification, or removal of structures. No structures including field huts, are to be installed in the Area unless essential for scientific purposes; any structure installed should be removed when no longer required. Only the minimum number of personnel necessary to install and remove the structure should be used.

d. The location of field camps. See (c) above.

e. Restrictions on material and organisms which may be brought into the Area:

i. Fuel is not to be depoted in the Area, unless required by a researcher for personal use, i.e. for cooking/heating in a field hut, and is to be removed when no longer required.
ii. No poultry products, including dried food containing egg powder, are to be taken into the Area.
iii. No food or other supplies should be left within the Area beyond the season for which they are required.

f. The 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 in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora, or Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty, whichever is appropriate.

g. The collection or removal of anything not brought into the Area by the permit holder. There is to be no collection or removal of anything not brought into the Area by the permit holder unless specifically authorised by permit for scientific or management purposes

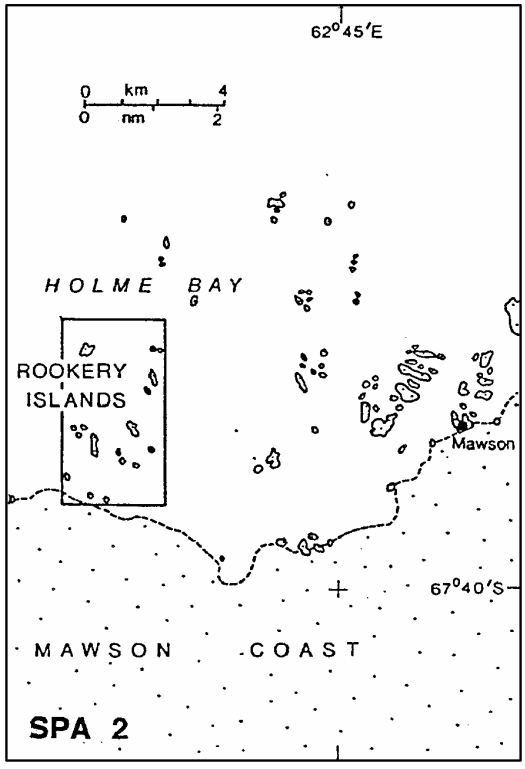
h. The disposal of waste.

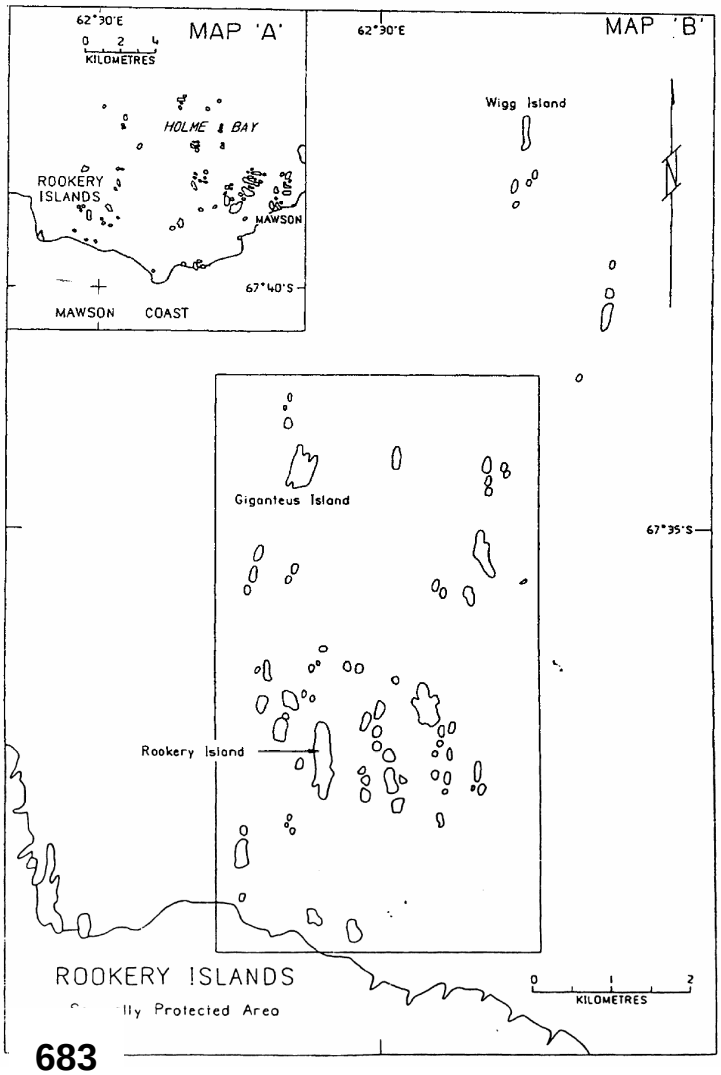
No wastes, including human wastes, are to be left in the Area.

i. Measures that may be necessary to ensure that the aims and objectives of the management plan can continue to be met:

- permits should specify the maximum numbers of personnel who may enter the Area;
- visits to the Area should be kept to the minimum necessary to achieve research and management objectives;
- access should be permitted where necessary to place or remove structures or equipments.

j. Requirements for reports. Each permit holder shall submit a report to the permit-issuing authority detailing the activities undertaken within the Area including a summary of research findings, and comments indicating measures taken to ensure compliance with conditions. Where appropriate, the report may make recommendations relevant to the management of the Area, in particular, as to whether the values for which the Area was designated are being adequately protected. The report should be submitted as soon as practicable after the visit to the Area has been completed.





SPA 2, Rookery Island. Map A shows the location of the Rookery Island in the Mawson area, and Map B is a more detailed map of the area.

Specially Protected Area No 3

Ardery Island and Odbert Island, Budd Coast: Lat 66º22'S, long 110º28'E and lat 66º22'S, long 110º33'E

Description: The area consists of Ardery Island and Odbert Island which lie off-shore in Vincennes Bay, 7 nautical miles south of Wilkes. The off-lying rocks are not included in the area. The area is shown on the attached map.

Designated in Recommendation IV-3 on the grounds that Ardery Island and Odbert Island off the Budd Coast support several breeding species of petrel and provide a sample of their habitat and that two of these species, Antarctic Petrel (*Thalassoica antarctica*) and Antarctic Fulmar (*Fulmarus glacialoides*), are of particular scientific interest.

Annex to Recommendation XVII-2

Management plan for Specially Protected Area No. 3: Ardery Island and Odbert Island, Budd Coast

1. Description of values to be protected. Ardery and Odbert islands support several breeding species of petrel and provide a sample of their habitat. There is no other readily accessible place in eastern Antarctica where the four genera of fulmarine petrels (*Thalassoica antarctica, Fulmarus glacialoides, Daption capense and Pagodroma nivea)* breed in the same place in sufficient numbers to allow comparative study. Study of these four genera at one location is of high ecological importance both from the point of view of understanding and of monitoring the Southern Ocean ecosystem. It is believed that Ardery Island is unique insofar as it is the only area in the Antarctic which harbours two different subspecies of snow petrels. Studies on morphological or ecological differences between these two subspecies are not possible anywhere else. In addition both islands have breeding populations of Wilson's storm petrels (*Oceanites oceanicus)* and Antarctic skuas (*Catharacta maccormicki*) and Odbert Island supports breeding populations of Adélie penguins (*Pygoscelis adeliae*).

2. Aims and objectives. Management of the Area aims to:

- prevent unnecessary disturbance to the colonies of petrels on Ardery and Odbert islands; and
- permit research of a compelling scientific nature which cannot be undertaken elsewhere, while ensuring that this has no significant impact on the ecosystem in the area.

3. Management activities. The management plan and activities in the Area should be kept under review to ensure that the values for which the Area was designated are being fully protected. Inspection visits may be made only when considered essential for management purposes.

4. Period of designation. Designated under Recommendation IV-3 in November l966 for an indefinite period.

5. *Description of the area.*

a. *Geographical coordinates and natural features of the Area.* Ardery Island (66°22'S, 110°28'E) and Odbert Island (66°22'S, 110°33'E) form part of the Windmill Islands group lying in the east of Vincennes Bay, off the Budd Coast (see Map A). They are located 5 km and 0.6 km respectively to the west of Robinson Ridge, south of Casey Station. Odbert Island is approximately 2.5 km long and 0.5 km wide. It has a rocky coast which rises steeply from the sea to a plateau. The highest point is 100 m above sea level. The plateau is dissected by a series of valleys which runs to the south from the high flat rim on the northern side. These valleys are snow-covered in winter. The hill tops remain essentially ice and snow free. In some years the island remains joined to Robinson Ridge on the mainland by sea ice. Ardery Island is a steep ice-free island approximately 1 km long and 0.5 km wide, with an east-west orientation. The highest point is 113 m above mean sea level.

The terrain on both islands is rugged and dissected by fissures. The cliffs are fractured and have many narrow exposed ledges which in summer are occupied by nesting sea birds. On the hillsides and plateau region, the exposed rock is ice-smoothed and the valley floors are covered with moraine. Both islands have several small tarns which are frozen in winter and filled with melt water in summer. Many of these are ephemeral and dry out towards the end of summer. Others, which are located below snow banks, are fed continuously by melt water.

b. *Access to the Area.* Access to the Area may only be in accordance with a permit or authority issued by a Contracting Party or its authorised representative.

Defined landing sites for access by sea and helicopters to Ardery and Odbert Islands are shown on Maps B and C respectively. On Ardery Island the preferred boat landing site is at Robertson Landing where there are three rock anchors present to tie down a boat or other equipment. It should be noted that all three boat landing sites marked on Map B are within 200 metres of colonies of birds, however they represent the only safe landing sites on the island and if landings are undertaken carefully there is no disturbance to the birds.

There are no defined pedestrian routes within the Area, however pedestrians should avoid disturbance of the birds at all times.

c. *Location of structures including scientific stations, research and refuge facilities both within and near the Area*. There are no structures within the Area and no permanent structures are permitted.

The islands lie approximately 12 km south of Casey Station. A four-berth refuge hut is located on Robinson's Ridge, 0.5 km from the shore.

d. *Location of other protected areas in or near the Area.* North-east Bailey Peninsula (66°17'S, 110°32'E) (Site of Special Scientific Interest No 16) and Clark Peninsula (66°15'S, 110°36'E) (Site of Special Scientific Interest No 17) lie opposite the Windmill Islands (see Map A).

6. *Identification of restricted zones.* Access to the petrel and Adélie penguin colonies marked on Maps B and C is prohibited unless authorised in a permit.

7. *Maps of the area.* Three maps of the Area are attached. Map A shows the Area and its location. Map B (Ardery Island), and Map C (Odbert Island) show preferred helicopter approaches and landing sites, landing sites for access by water and the location of the petrel and Adélie breeding colonies.

8. *Conditions under which permits may be granted.* Criteria for issuing a permit to enter the Area are

that:

- it is issued for a compelling scientific purpose which cannot be pursued elsewhere;
- the actions permitted will not jeopardise the natural ecological system existing in the Area; and
- the actions permitted are in accordance with the management plan for the Area.

Conditions applying:

a. Access to and movement within the Area:

i) Travel to the island should be by foot, oversnow vehicle or boat where possible; oversnow vehicles used to visit the islands must be left at the shoreline and movement within the area should be by foot.

ii) If access to the islands is not possibly by sea or over sea-ice, then helicopters may be used subject to the following conditions:

- overflight of the islands should be avoided at all times, except where it is considered essential for scientific purposes. In these instances, overflight must be at an altitude or horizontal distance of no less than 500 metres;
- during the breeding season of penguins and petrels, defined here as the period from 1 November to 1 April, helicopter movement to the islands should be kept to the minimum;
- refuelling is not to take place within the Area;
- only personnel who are required to carry out work in the Area should leave the helicopter;
- the approach to Ardery Island should be at a high altitude and from a southern direction as the lowest densities of birds are on the southern cliffs (see Map B);
- the approach to Odbert Island should preferably be from the south, avoiding cliff areas because of the nesting petrels (see Map C).

b. Activities which are, or may be, conducted within the Area, including restrictions on time and place:

i. Compelling scientific activities which cannot be conducted elsewhere.

ii. Compelling management activities, which if not carried out would jeopardise the values for which the Area was designated.

iii. Where activities necessitate interference with the birds care should be taken to cause the least possible disturbance, particularly during the period 1 November to 1 April.

c. The installation, modification, or removal of structures:

No structures may be erected in the Area unless essential for research purposes. Any structures installed on the islands must be removed when no longer required. Installation of a field hut on Ardery Island should take place wherever possible before 1 November when the breeding season commences and removal should be after 1 April when the fledglings have departed. Installation and removal should be by oversnow transport unless sea-ice conditions prevent this. For use of helicopters see (a) ii above.

d. The location of field camps:

If required for field work, a hut may be erected on Ardery Island at the point specified on Map B. There are 8 solid rock anchors available at this spot.

e. Restrictions on materials and organisms which may be brought into the Area:

i. Fuel is not to be depoted on the islands, unless required by a researcher for personal use, i.e. for cooking/heating etc., in a field hut on Ardery Island, and is to be removed at the same time as the hut.

ii. No poultry products, including dried food containing egg powder, are to be taken into the Area.

f. The 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 the Agreed Measures for the Conservation of Antarctic

Fauna and Flora, or Article 3 of Annex II to the Protocol on g. The collection or removal of anything not brought into the Area by the permit holder:

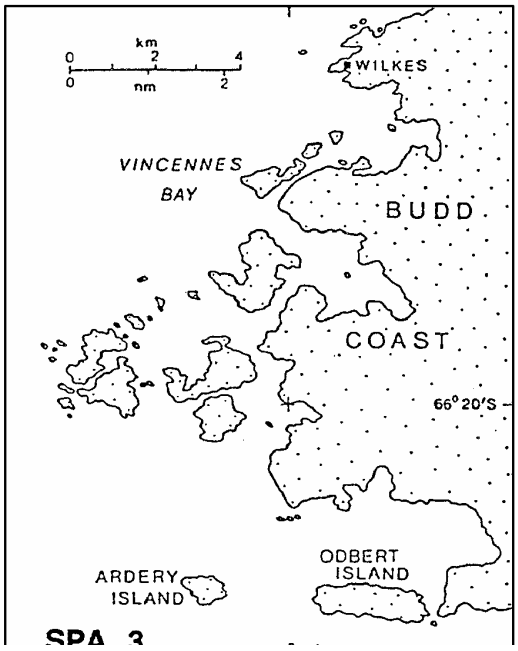
There is to be no collection or removal of anything not brought into the Area by the permit holder unless specifically authorised by permit for scientific or management purposes.

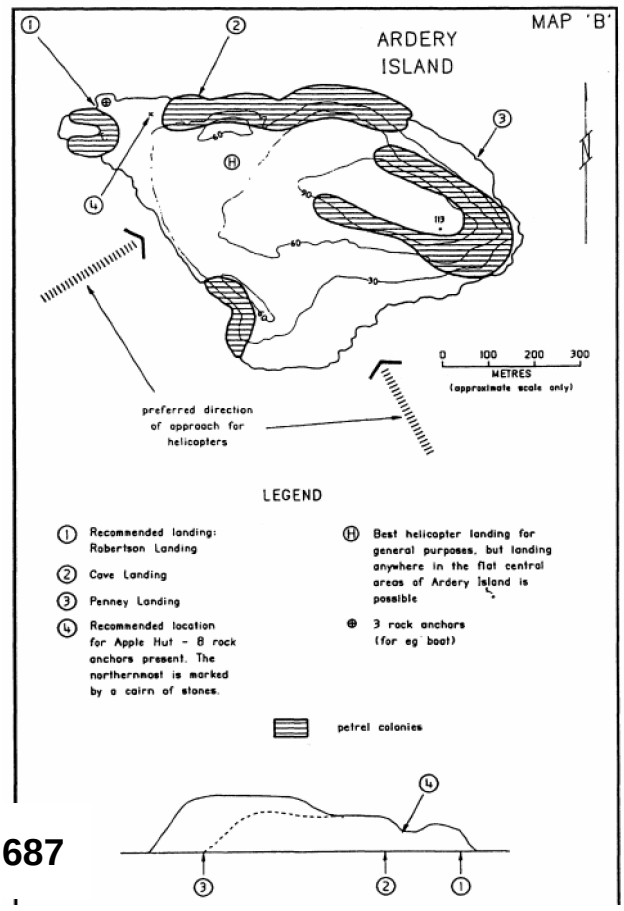
h. The disposal of waste: No wastes, including human wastes, are to be left in the Area.

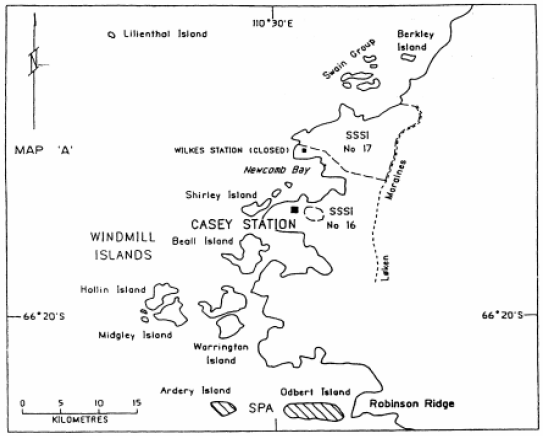
i. Measures that may be necessary to ensure that the aims and objectives of the management plan can continue to be met:

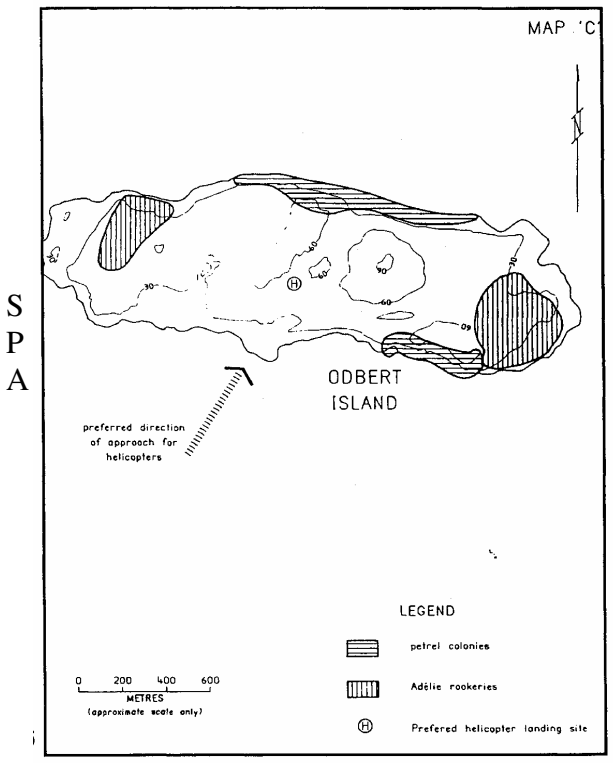
- permits should specify the maximum number of people allowed entry at any one time;
- visits to the Area should be kept to the minimum necessary to achieve the research and management objectives;
- access should be permitted where necessary to place or remove structures or equipments.

j. Requirements for reports: Each permit holder shall submit a report to the permit-issuing authority detailing the activities undertaken within the Area including a summary of research findings, and comments indicating measures taken to ensure compliance with conditions. Where appropriate, the report may make recommendations relevant to the management of the Area, in particular, as to whether the values for which the Area was designated are being adequately protected. The report should be submitted as soon as practicable after the visit to the Area has been completed.









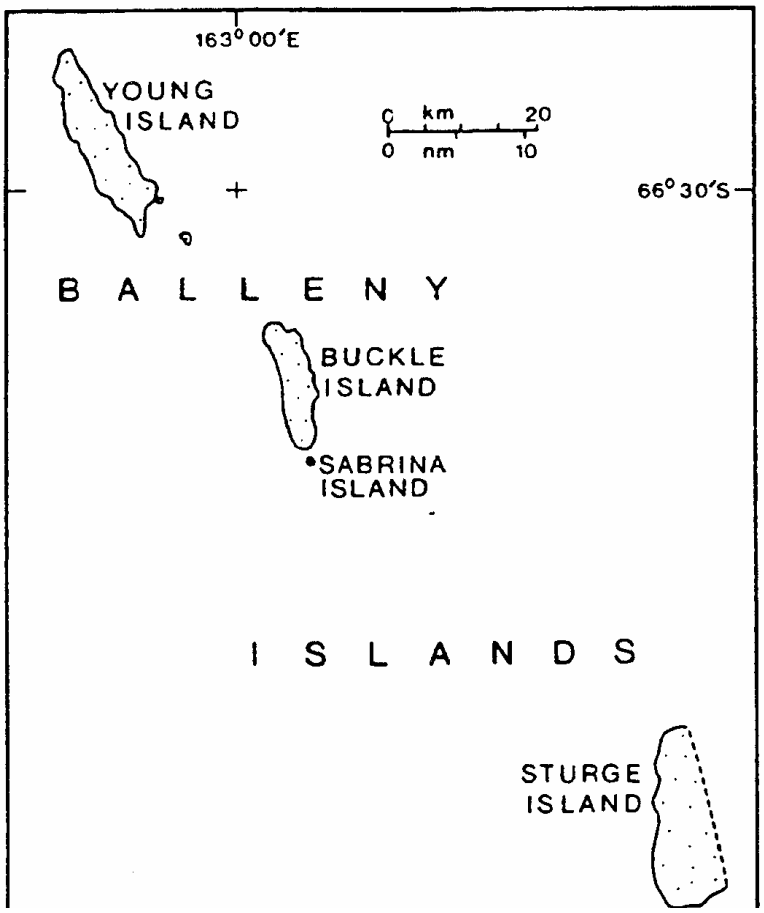
3. Ardery and Odbert Isalnds Map A shows the area and its location. Map B (Ardery Island) and Map C (Odbert Island) show preferred helicopter approaches and landing sites, landing sites for access by water, and Adelie breeding colonie

Specially Protected Area No 4

Sabrina Island, Balleny Islands: Lat 66º54'S, long 163º20'E

Description: A small island some 2 kilometres south of Buckle Island in the Balleny Islands. The area is shown on the attached map.

Designated in Recommendation IV-4 on the grounds that the Balleny Islands, as the most northerlyAntarctic land in the Ross Sea region, support fauna and flora which reflect many curcumpolar distributions at this latitude and that Sabrina Island in particular provides a representative sample of such fauna and flora.



Specially Protected Area No 5

Beaufort Island, Ross Sea: Lat 76°58'S, long 167°03'E

Description: Beaufort Island measures 6 kilometres by 3 kilometres and is located 20 nautical miles north of Ross Island. The area is shown on the attached map.

Created by Recommendation IV-5 on the grounds that Beaufort Island contains substantial and varied avifauna, that it is one of the most important breeding grounds in the region, and that it should be protected to preserve the natural ecological system as a reference area.

XXI: Annex to Measure 1(1997)

Antarctic Protected Areas System: Revised Description and Management Plan for Specially Protected Area: SPA 5 Beaufort Island

1. Description of Values to be Protected

Beaufort Island was originally designated in Recommendation IV-5 (1966, SPA No. 5) after a proposal by New Zealand on the grounds that it "contains substantial and varied avifauna, that it is one of the most important breeding grounds in the region, and that it should be protected to preserve the natural ecological system as a reference area". The Area has been set aside primarily to protect the site's ecological values and these reasons for long-term special protection still apply.

The island comprises a variety of terrain and habitats: gently sloping ice-free ground with summer ponds and small meltwater streams draining to the coast; moderately sloping ice fields covering much of the west side of the island; and steep, rugged cliffs on the eastern slopes. Recent investigations indicate the avifauna is not as varied as first thought, but there exists a large Adelie penguin (*Pygoscelis adeliae*) colony, a small breeding colony of Emperor penguins (*Aptenodytes forsteri*), and several breeding colonies of South polar skua (*Catharacta maccormicki*). The boundaries of the Area, which previously excluded the Emperor colony, have been extended to include fast-ice occupied by breeding birds.

Site visits in January 1995 and 1997 discovered and described a significant area of vegetation previously unrecorded on an ice-cored moraine bench of up to 50 m wide and 5-7 metres above the beach on the north of the island. The vegetation is exceptional both in its quantity and quality, and is the most extensive, continuous area of mosses yet known for the McMurdo Sound region. Although the area is extensive (approximately 2.5 ha), the moss community is dominated by a single species, Bryam argenteum: the essentially monospecific character of the site is also unique. The site enjoys warm summer temperatures because of its northerly aspect and shelter from southerly winds by high ice cliffs. The local microclimate, stability of the substrate and supply of water from the nearby ice-cliffs and snow banks are favourable for vegetation growth. As a result there is also a diverse community of algae, and while a detailed algal survey has not yet been undertaken, Prasiola crisps is particularly abundant throughout the site, together with a number of unicellular chlorophytes and xanthophytes (including Botrydiopsis and Pseudococcomyxa), and cyanobacteria (particularly scillatorians) mixed with the Prasiola. Green snow algae, a mixture of Chloromonas and Klebsorazidium, are present as well as the red snow algae Chlumydomonas sp., Chloromonas sp., and Chlamydomonas nivalis. This represents one of the most southerly locations where red snow algae have been observed. The exceptional plant communities at this site are fragile and vulnerable to disturbance and destruction by trampling, sampling and/or through foreign introductions. Conservation of the ecological and scientific values of this community are important reasons for special protection at Beaufort Island. As an isolated island difficult of access, the site is known to have been visited only infrequently. Beaufort Island has not been comprehensively studied or documented but is largely undisturbed by direct human activity. In particular, Beaufort Island has been exposed to fewer opportunities for direct exotic biological introductions than many other sites in the Ross Sea. The ecological, scientific and aesthetic values derived from the isolation and relatively low level of human impact are important reasons for special protection at Beaufort Island.

2. Aims and Objectives

Management at Beaufort Island aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;

- preserve the natural ecosystem as a reference area largely undisturbed by direct human activities;
- allow scientific research on the natural ecosystems, plant communities, avifauna and soils in the Area provided it is for compelling reasons which cannot be served elsewhere;
- minimise human disturbance to plant communities by preventing unnecessary sampling;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits for management purposes in support of the aims of the management plan.

3. Management Activities

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

- Markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition, and removed when no longer necessary.
- Visits shall be made as necessary to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.
- National Antarctic Programmes operating in the region shall consult together with a view to ensuring these steps are carried out.

4. Period of Designation

Designated for an indefinite period.

5. Maps and Photographs

Map A: Beaufort Island regional topographic map. The map is derived from the orthophotograph in Map B. using Map B specifications. Inset: McMurdo Sound, showing Ross Island and the location of McMurdo Station (US) and Scott Base (NZ). The nearest protected areas are SSSI-10 (Caughley Beach) and SPA-20 (New College Valley) at Cape Bird, and SSSI-1 (Cape Royds).

Map B: Beaufort Island regional orthophotograph. Orthophotograph specifications: Projection: Lambert conformal conic; Standard parallels: 1st 76°40' 00" S; 2nd 79°20' 00"S; Central Meridian: 167°00' 00" E; Latitude of Origin: 78°01' 16.211" S. Spheroid: WGS84. The original orthophotograph was prepared at 1:5000 with a positional accuracy of +2.5 m (horizontal and vertical) with an on-ground pixel resolution of 1 m. Photography: USGS/DoSLI (SN7850) 22 November 1993. [Not reproduced]

Map C: North Beaufort Island site orthophotograph. Specifications are the same as in Map B. The site of rich vegetation is indicated by hachures. The precise area of fast-ice occupied by breeding Emperor penguins is subject to variation both seasonally and inter-annually.

Map D: South Beaufort Island site orthophotograph. Specifications are the same as in Map B.

Figure 1: Perspective view of Beaufort Island from an elevation of 225 m, 900 m out from the preferred Helicopter Pad at an azimuth of 300°W.

6. Description of the Area

6(i) Geographical coordinates, boundary markers and natural features

The designated Area encompasses the whole of Beaufort Island (76°58'S, 167°00'E Map A) above the mean high water mark, and includes adjacent fast-ice occupied by breeding Emperor penguins. The 7

km by 3.2 km island rises to 771 m at Paton Peak. The west side of the island is predominantly an ice field with ice cliffs of about 20 m on the coast, while the east and south sides of the island are largely ice-free, with steep and inaccessible cliffs rising straight from the sea. In view of the isolation of Beaufort Island and the current low levels of shipping activity in the region, boundary markers and signs have not been installed to mark the Area: the need for marking should be re-evaluated at each management plan review.

Beaufort Island is one of a series of late Tertiary volcanic vents that developed along a line of weakness in the Ross Sea floor. The geology is typical of an eroded, sub-aerially produced basaltic complex, with lava flows and explosion breccias and tuffs evident. Many of the volcanic rocks have been intruded by a series of late stage basaltic dikes, and there is evidence of layered ash-fall tufts and welded spatter flows from local subsidiary cinder and spatter cones. Cadwalader Beach comprises a beach foreland and cuspate spit, backed by steep basaltic cliffs and several talus cones. A series of beach ridges, which are generally occupied by the breeding penguins, have trapped meltwater ponds and mark the growth of the beach face away from the cliffs with time. A series of raised beaches is evident at the northeastern end of the island, some with evidence (quills and guano) of former and apparently substantial penguin colonies. Sub-tidal (abrasion) platforms and massive boulders are found below the highly weathered eastern and southern cliffs. An Adelie colony of 46,000 pair (1987 count) occupies the flat area at Cadwalader Beach (Map D). Above the steep cliffs that rise behind the colony, a population of skuas (numbers unknown) nest on more gentle ice-free slopes at the edge of the permanent ice field on the west flank of the island. This ice field is punctuated mid-way by a 2 km line of rocky outcrops at an elevation of approximately 200 m. In the north the ice field broadens into an extensive flat area of less than 50 m elevation, NE of which extends an ice-free beach about 1000 m in length and 50 m wide (Map C). In January 1995 a newly-established, possibly transitory, colony of Adelie penguins (comprising 2 pairs with 3 chicks and a approximately 10-15 non-breeders) occupied the west end of this beach. Above the beach, a raised ice-cored moraine terrace (5-20 m elevation, ranging from 2-3.metres wide over most of its length but broadening to 20-50 metres at its eastern end) extends for 550 m before rising more steeply toward the unstable basaltic cliffs which persist around the entire eastern side of the island. At least three sub-fossil penguin colony deposits have been identified within the moraine terrace, each layer vertically separated by around 50-100 cm of gravels and sand, suggesting this part of the island had been occupied by a sizable breeding penguin colony in the recent past. The deposits may be useful for determining the age of former penguin colonies in the region.

A population of approximately 100 skuas (1995 count) breeds on the terrace and ice-free slopes leading toward the cliffs. The proportion of breeders to non-breeders in this population is not known, but approximately 25 and 50 chicks were counted in January 1995 and 1997 respectively.

On the fast-ice adjacent to the northern coastal reaches, a small colony of breeding Emperor penguins (1787 pairs at 1976 count; 179 pairs at 1983 count, 1355 adults at October 1994 count) is present annually between the months of approximately April to January. The size of the colony is limited by the areal extent and condition of the fast-ice, which affects the availability of breeding sites in the lee of the northern slopes of Beaufort Island. The precise location of the colony varies from year to year and the colony moves within a breeding season, but the general area of occupation is indicated on Map C. The ice-free moraine terrace on the north end of the island (Map C) also supports the richest growth of vegetation recorded on Beaufort Island. This vegetation is exceptional both in quantity and quality, and is the most extensive, continuous area of mosses yet known for the McMurdo Sound region. The site enjoys warm summer temperatures (an air temperature +13°C was recorded on 18 January 1997) because of its northerly aspect and shelter from southerly winds by a 20 m high semi-circular ice cliff. The local microclimate, stability of the ground surface and supply of water from the nearby ice-cliffs and snow banks are favourable for vegetation growth. Initially the water forms a diffuse flush but

becomes progressively entrained into rivulets that have eroded narrow valleys in the edge of the terrace. The moss community is extensive (approximately 2.5 ha), with much of the site showing 100% ground cover, dominated by a single species, Bryum argenteum. One specimen of another species, Pottia heimii, was found after an extensive search: the essentially monospecific character of the site is also unique. The Bryum occurs in scattered patches at the upper (southern) margin of the bench, adjacent to the annual drift snow at the base of the ice cliff, and more continuous mats (hummocks) occur in the middle of the bench and in areas where spreading water drainage occurs, especially at the eastern end. In the upper (southern) part of the area the Bryum is intermixed with Nostoc colonies (cyanobacterium). At lower and more northerly sites in areas of high water flow the moss may be overgrown with a brown coloured mixed cyanobacterial community, particularly in areas prone to flooding, cryoturbic disturbance and, possibly, skua activity. Bryam argenteum, produces dehiscent shoot tips which disperse the plants down stream. Evidence of this dispersal was commonly seen with B. argenteum sometimes occurring as small, and probably ephemeral, communities on the beach below the terrace. The moss community is known to support significant populations of mites, but a detailed survey of invertebrates on Beaufort Island has y et to be undertaken. The vegetation at Beaufort Island is comparable to the upper, wetter parts of the flush at Canada Glacier (SSSI-12), Taylor Valley, Victoria Land. The Canada Glacier flush has a common, second species, Pottia heimii, that grows in drier areas but this was almost completely absent at Beaufort Island. The reason for this is unknown, but could be due to substrate differences, the presence of numerous skuas occupying the drier areas at Beaufort Island, high nutrient levels in the melt water at Beaufort Island, or limited dispersal and colonization opportunities. At Botany Bay (ASPA-XYZ [ed. Note: likely to be designated ASPA 154]), Granite Harbour, Victoria Land — a warmer site than at Canada Glacier but at a similar latitude to Beaufort Island — the wetter areas are occupied by the moss *Ceratodon purpureus* or *Bryum argenteum*, so that there may be a sequence from wet to dry of *C. purpureus - B. argenteum - P. heimii*. While there is no understanding as to why C. purpureus is absent at Beaufort Island it is likely that limited dispersal and colonization opportunities, as well as water nutrient status, may be important.

There is also a diverse community of algae, and while a detailed algal survey has not yet been undertaken, *Prasiola crispa* is particularly abundant throughout the site, reflecting the high nutrient status and abundance of melt water. A number of unicellular chlorophytes and xanthophytes (including *Botrydiopsis* and *Pseudococcomyxa*) and cyanobacteria (particularly scillatorians) were found mixed with the *Prasiola*. Green snow algae, noticeable as a green band at the lower levels of snow banks above the beach and below the ice cliffs, contained a mixture of *Chloromonas* and *Klebsormidium*. The snow and ice cliffs forming the upper edge of the beach also contain a pinkish-brown deposit, consisting largely of fine silty material as well as the red snow algae *Chlamydomonas sp*., *Chloromonas sp*., and *Chlamydomonas nivalis*. This represents one of the most southerly locations where red snow algae have been observed.

During a NZ/US visit in January 1995 abandoned equipment was removed from among the Adelie colony at Cadwalader Beach. No other human impact was visually evident in 1995.

6(ii) Restricted zones within the Area
None.

6(iii) Structures within and near the Area

The only structure known to exist on the island is a signpost on a prominent rock in the Adelie colony at Cadwalader Beach (Map L). The sign, erected in 1959-60, bears the names and home-towns of seamen and the Captain of the HMNZS *Endeavour*. The sign is set in concrete and was in good condition in

January 1995. The sign is of potential historic value and should remain in situ unless there are compelling reasons for its removal, which should be kept under review.

An astronomical survey station is recorded on a map of the island compiled in 1960, but it is unknown whether any associated permanent marker exists. The station is recorded as located at the south end of the main island ridge-line divide at an altitude of 549 m (Map A).

6(iv) Location of other protected areas within close proximity of the Area

The nearest protected areas to Beaufort Island are Caughley Beach (SSSI-10) and New College Valley (SPA-20) located 35 km to the south at Cape Bird, Ross Island. Cape Royds (SSSI-1) is a further 35 km to the south (Inset: Map A)

7. Permit Conditions

Entry into the Area is prohibited except in accordance with a Permit issued by appropriate national authorities. Conditions for issuing a Permit to enter the Area are that:

- it is issued only for compelling scientific reasons that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection or review;
- the actions permitted will not jeopardise the ecological or scientific values of the Area;
- any management activities are in support of the aims of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or an authorized copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period.

7(i) Access to and movement within the Area

Land vehicles are prohibited within the Area and access shall be by small boat or by aircraft. Aircraft should land on the island only at the designated site (166°58'20" E, 76°55'50" S: Map A) on the large flat toe of ice on the north end of the island. Should snow conditions at the designated landing site at the time of visit militate against a safe aircraft landing, a suitable mid- to late-season alternative to the designated landing site may be found at the nominated northern camp site at the western end of northern beach on Beaufort Island. It is preferred that aircraft approach and depart from the designated landing site from the south or west (Map A, Figure 1). When it is found necessary to use the alternative site at the northern beach campsite, practical considerations may dictate a northern approach: when this is the case aircraft shall avoid overflight of the area east of this site indicated on Maps A-C and Figure 1. Use of smoke grenades when landing within the Area is prohibited unless absolutely necessary for safety, and all grenades should be retrieved. There are no special restrictions on where access can be gained to the island by small boat. Pilots, air or boat crew, or other people on aircraft or boats, are prohibited from moving on foot beyond the immediate vicinity of the landing site unless specifically authorised by a Permit.

Overflight of bird breeding areas lower than 750 m (or 2500 ft) is normally prohibited: the areas where these special restrictions apply are shown on Maps A-D and Figure 1. When required for essential scientific or management purposes, transient overflight down to a minimum altitude of 300 m (1000 ft) may be allowed over these areas: conduct of such overflights must be specifically authorised by Permit.

Visitors should avoid unnecessary disturbance to birds, or walking on visible vegetation. Pedestrian traffic should be kept to the minimum consistent with the objectives of any permitted activities and every reasonable effort should be made to minimise effects.

7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place

- scientific research that will not jeopardise the ecosystem of the Area and which cannot be

served elsewhere;
- essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

No structures are to be erected within the area except as specified in a Permit. All scientific equipment installed in the Area must be approved by Permit and clearly identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination of the Area. Removal of specific equipment for which the Permit has expired shall be a condition of the Permit.

7(iv) Location of field camps

Camping is permitted only at two designated sites (Maps A-D). The north camping site is located on the flat area north of the designated landing site, on a more sheltered location at the NW end of the beach, 200 m from where several pair of Adelie penguins and skuas nest (if present). The second site is located on the snow 100 m from the northern edge of the large Adelie colony at Cadwalder Beach.

7(v) Restrictions on materials and organisms which can be brought into the Area

No living animals, plant material or microorganisms shall be deliberately introduced into the Area and the precautions listed in 7(ix) below shall be taken against accidental introductions. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management 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 is not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All materials introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of their introduction into the environment is minimised.

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

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

7(vii) Collection or 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 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 removal is likely to be greater than leaving the material in situ: if this is the case the appropriate authority should be notified.

7(viii) Disposal of waste

All wastes, including all human wastes, shall be removed from the Area.

7(ix) Measures that are necessary to ensure that the aims and objectives of the Management Plan can continue to be met

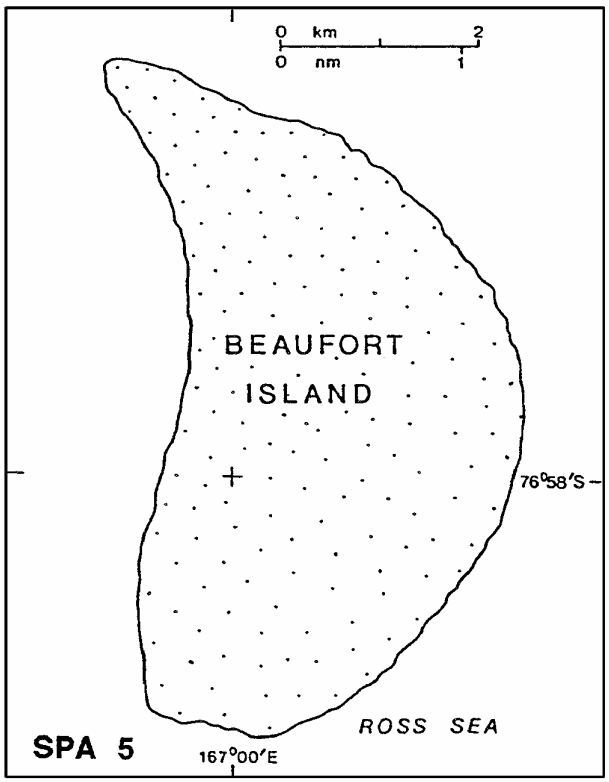
1. Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of small samples for analysis or review, or for protective measures.
2. Any specific sites of long-term monitoring shall be appropriately marked.
3. To help maintain the ecological and scientific values of the isolation and historically low

level of human impact at Beaufort Island visitors shall take special precautions against introductions. Of particular concern are microbial or vegetation introductions sourced from soils at other Antarctic sites, including stations, or from regions outside Antarctica. Visitors shall take the following measures to minimise the risk of introductions:

4. Any sampling equipment or markers brought into the Area shall be sterilised and, to the maximum extent practicable, maintained in a sterile condition before being used within the Area. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks or carry-bags) shall be thoroughly cleaned or sterilised and maintained in this condition before entering the Area;
5. Sterilisation should be by an acceptable method, such as by UV light, autoclave or by washing exposed surfaces in 70% ethanol solution in water.

7(x) Requirements for reports

Parties should ensure that the principal holder for each permit issued submit to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. 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, which should be in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the management plan and in organising the scientific use of the Area.



SPA 5, Beaufort Island.

Map D - South Beaufort Island, Specially Protected Area No. 5, site orthophotograph

0 metres 150

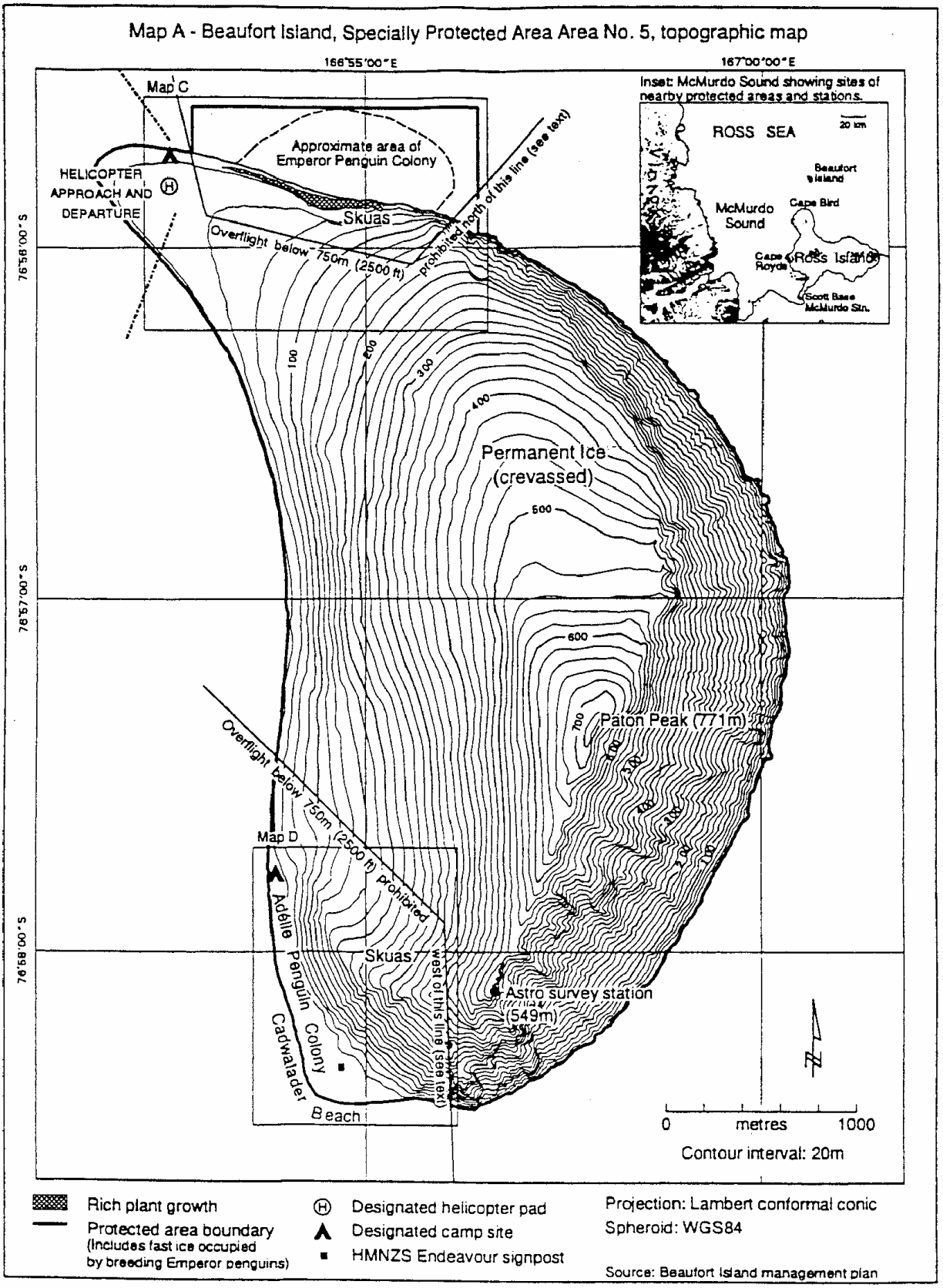
Contour interval: 20m

Boundary of Area (estimated coastline)

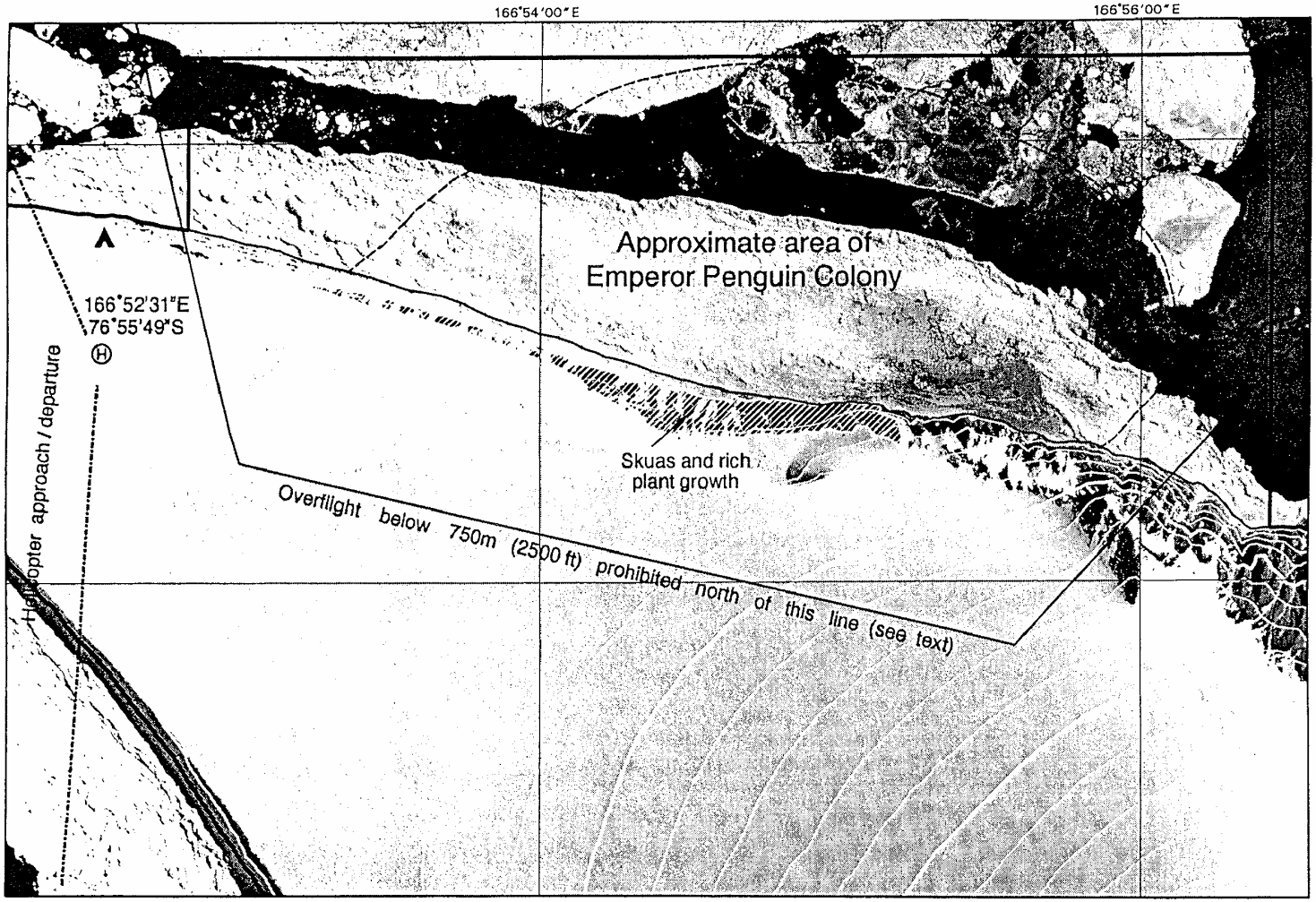
Designated camp site

HMNZS Endeavour signpost

Imagery: 22 November 1993
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Beaufort Island management plan


Map A - Beaufort Island, Specially Protected Area Area No. 5, topographic map
166°55'00"E
167°00'00"E
76°58'00"S
76°57'00"S
76°58'00"S
Map C
Approximate area of Emperor Penguin Colony
HELICOPTER APPROACH AND DEPARTURE
Skuas
Overflight below 750m (2500 ft) prohibited north of this line (see text)
Inset: McMurdo Sound showing sites of nearby protected areas and stations.
ROSS SEA
20 km
Beaufort Island
McMurdo Sound
Cape Bird
Cape Royds
Ross Island
Scott Base
McMurdo Stn.
100
200
300
400
Permanent Ice (crevassed)
500
600
700
Paton Peak (771m)
Overflight below 750m (2500 ft) prohibited
Map D
Adélie Penguin Colony
Skuas
Cadwalader Beach
west of this line (see text)
Astro survey station (549m)
0
metres
1000
Contour interval: 20m
Rich plant growth
Protected area boundary (Includes fast ice occupied by breeding Emperor penguins)
Designated helicopter pad
Designated camp site
HMNZS Endeavour signpost
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Beaufort Island management plan

Map C - North Beaufort Island, Specially Protected Area No. 5, site orthophotograph



Specially Protected Area No 6

Note: SPA 6 was designated by Recommendation IV-6 and terminated by VIII-2. Cape Crozier is now a Site of Special Scientific Interest No. 4 by VIII-4. [see under SSSI No. 4 for the text of VIII-4]

IV-6: Specially Protected Areas: Cape Crozier Ross Island

The Representatives, considering that Cape Crozier supports rich bird and mammal fauna as well as microfauna and microflora and the ecosystem depends upon a substantial mixing of marine and terrestrial elements of outstanding scientific interest, recommend to their Governments that the following be inserted in Annex B, Specially Protected Areas, of the Agreed Measures for the Conservation of Antarctic Fauna and Flora.

Specially Protected Area No 6

Cape Crozier, Ross Island: Lat 77º 32'S, long 169º 19'E

Description: The area comprises all the land on the coast of Ross Island east of a line joining the summits of Post Office Hill and Bomb Peak, north of a line which bears 90º True from Bomb Peak to the coast and north-east of a line which bears 315º True from Post Office Hill to the coast; the area is also deemed to include the locality occupied at any time by the rookery of Emperor Penguins (*Aptenodytes fosteri*) immediately adjacent thereto. Williamson Rock is also included in the area. The area is shown on the attached map.

Specially Protected Area No 7

Cape Hallett, Victoria Land: Lat 72º18'S, long 179º19'E

Description: The area between the eastern side of the road, which runs along the eastern side of Willett Cove, and the western margin of the permanent ice sheet, to the south of a line from the road to the margin of the permanent ice sheet at the latitude of the head of Willett Cove, and to the north of a line from the road to the margin of the permanent ice sheet drawn 350 metres to the south of that latitude and parallel to it. The area is shown on the attached map.

Designated in Recommendation IV-7 on the grounds that Cape Hallett includes a small patch of particularly rich and diverse vegetation which supports a variety of terrestrial fauna and that the ecosystem, which includes a rich avifauna, is of outstanding scientific interest.

XIII-13 Specially Protected Areas: Cape Hallett, Victoria Land: Extension of boundaries

The Representatives,

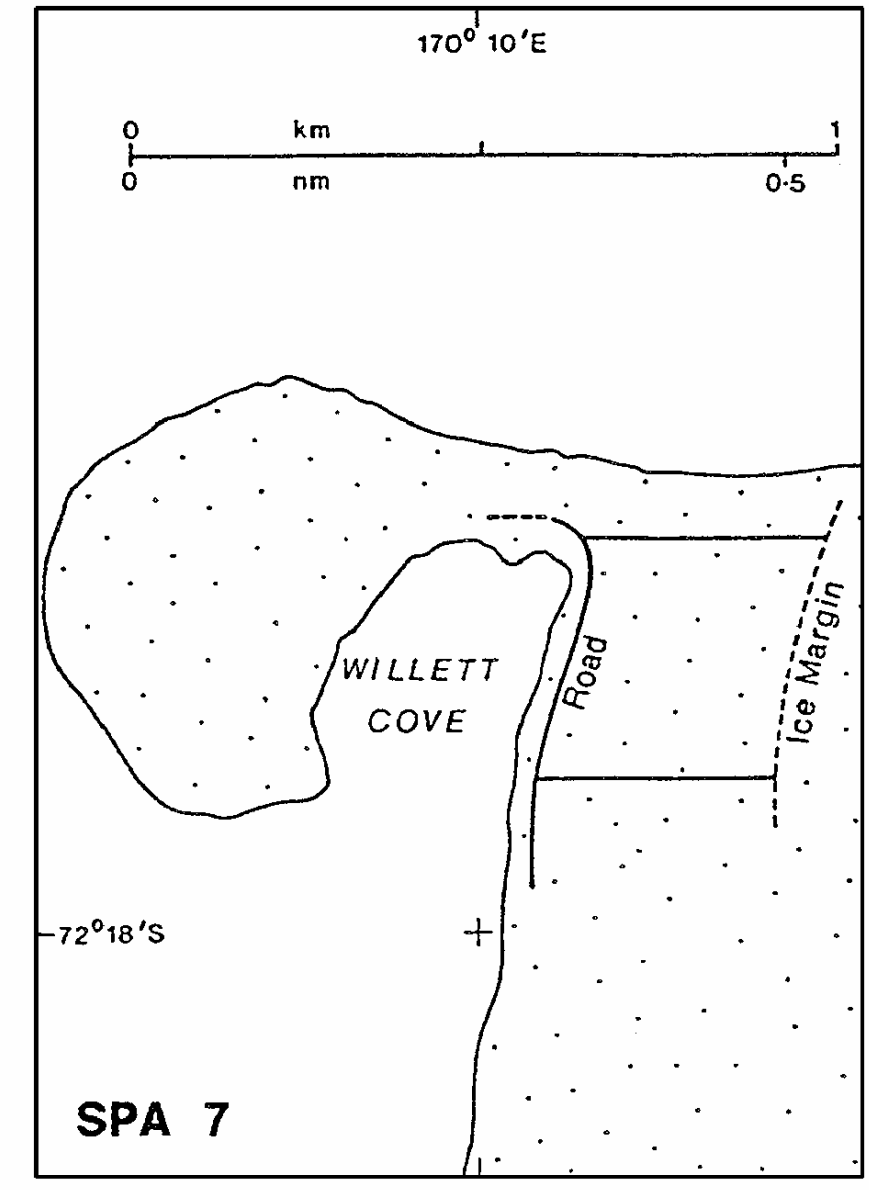
Recalling Recommendation IV-7 in accordance with which an area between the eastern side of the road, which runs along the eastern side of Willett Cove, and the western margin of the permanent ice sheet, to the south of a line from the road to the margin of the permanent ice sheet at the latitude of the head of Willett Cove, and to the north of a line from the road to the margin of the permanent ice sheet drawn 350

metres to the south of that latitude and parallel to it, was designated for insertion in Annex B, Specially Protected Areas, of the Agreed Measures for the Protection of Antarctic Fauna and Flora on the grounds that Cape Hallett includes a small patch of particularly rich and diverse vegetation which supports a variety of terrestrial fauna and that the ecosystem, which includes a rich avifauna, is of outstanding scientific interest;

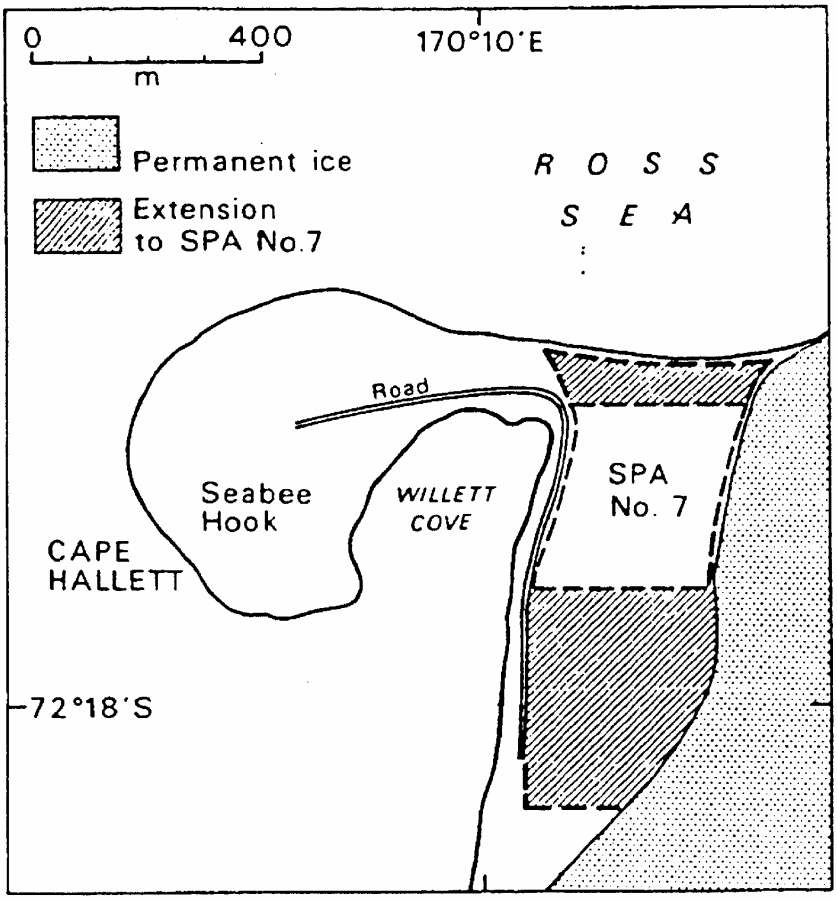
Considering that in recent years rich areas of vegetation have developed immediately outside the existing boundaries of the area; that to the south is a particularly dense and extensive stand of moss below a large permanent snow patch on the talus slope below the north end of the ice-fall; that the main moss stand is 35m across but plants are widely scattered on ridges and in gullies throughout the area; that to the north, rock outcrops and stable scree support extensive stands of dense lichen growth (especially *Xanthoria*) and mosses, that algae (*Prasiola*) are also present, and that these are some of the richest stands of vegetation in Victoria Land;

Recommend to their Governments that the Description of Specially Protected Area No 7, Cape Hallett, Victoria Land, inserted in Annex B, Specially Protected Areas, of the Agreed Measures for the Conservation of Antarctic Fauna and Flora be amended as follows:

Description: The area comprising a roughly rectangular block lies south of the northern coast of Cape Hallett between the road, which runs along the eastern side of Willett Cove and the western margin of the permanent ice sheet and to the north of an E-W line from a projection of the line of the road southward to a point 200m south of Latitude 72°18'S to the margin of the permanent ice sheet. The original area and the revised boundaries are shown on the attached map.



SPA 7, Cape Hallett: Original and revised Map



Specially Protected Area No 8

Dion Islands, Marguerite Bay, Antarctic Peninsula:

Lat 67º52'S, Long 68º43'W

Description: A group of small, rocky, low-lying islands in Marguerite Bay, about 15 kilometres south of Adelaide Island. The area is shown on the attached map.

Designated in Recommendation IV-8 on the grounds that amongst the Dion Islands is found the only colony of Emperor Penguins (*Aptenodytes forsteri*) known to exist on the west side of the Antarctic Peninsula and that the isolation of this colony from others of the same species makes it of outstanding scientific interest.

Annex to Recommendation XVI-6

Management Plan for Specially Protected Area No. 8: Dion Islands, Marguerite Bay, Antarctic Peninsula

1. Geographical location. The Dion Islands (67°52'S, 68°43'W) are a small group of low-lying rocky islands lying about 13 km south of the southern end of Adelaide Island, in the north-western part of Marguerite Bay.

2. Management Plan

i. Description of Area. The Area comprises all of the Dion Islands archipelago, which lie within an area of about 12 km^2, together with the intervening sea. The islands and islets are small, rocky and often precipitous, notably Emperor Island which is also the highest (46 m altitude). The main islands are the largest of the Courtier Islands group (c. 8 ha), Emperor Island (c. 5 ha) and the largest of the Consort Islands group (c. 3 ha). Low lying areas occur on the two largest islands. There are a few small permanent ice patches, but there are no streams or permanent pools.

ii. Reason for designation. The Area possesses the only known breeding population of Emperor penguins (*Aptenodytes forsteri*) on the west side of the Antarctic Peninsula. It is situated on a low-lying raised beach and rocky headland in the south-eastern part of Emperor Island. It is also the most northerly and probably the smallest colony (annual numbers fluctuate between about 50 and 500 pairs), and is one of only two in which breeding occurs on land (see also SPA No. 1). It is also the most isolated Emperor colony, being about 2,500 km (by sea) from the nearest other known rookery. Other breeding birds within the Area include a small colony of Adélie penguins (*Pygoscelis adeliae*) near the Emperor penguin colony, and about 200 pairs of Blue-eyed shags (*Phalacrocorax atriceps*) on the precipitous north side of the same island.

iii. Date if designation and originator. November 1966, Recommendation IV-8, by UK.

iv. Access points. None specified, but access should be from the sea; landing on Emperor Island should be at least 100 m from the Emperor penguin colony or any non-breeding aggregations of these birds.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

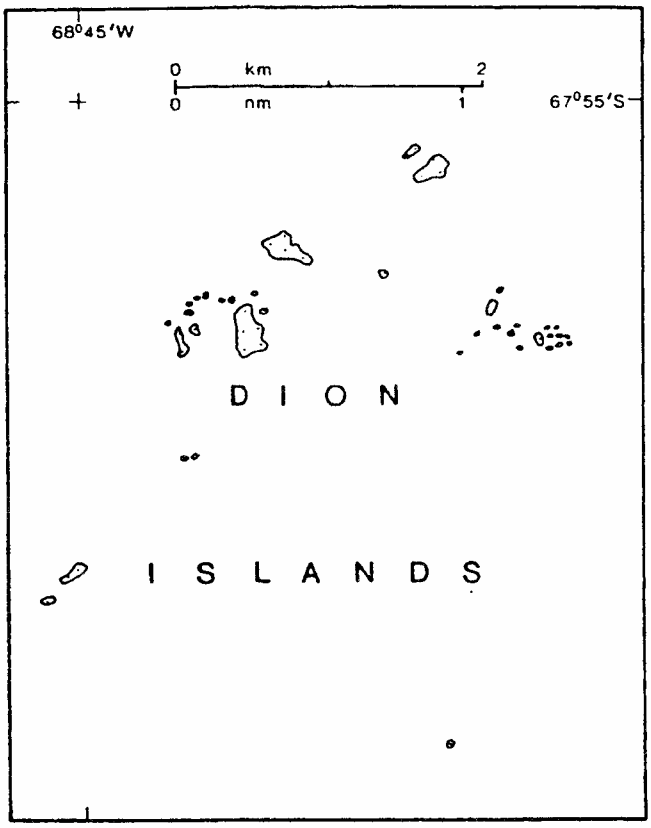
a. and a helicopter within the Area;
b. overfly the Area by any aircraft below 250 m above the highest point;
c. use any of the Area's coves, bays or intervening water for anchoring or mooring seacraft, except in accordance with the permit;
d. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such

waste must be removed from the Area;

e. This subsection was omitted in the final report.
f. leave depots of fuel, food, or any other supplies within the Area, unless they are further required within the same season, at the end of which they must be removed;
g. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird or seal, particularly Emperor penguins which pedestrians should not approach closer than 50 m, unless required as specified in the permit.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area. Inspection visits to the Area should be made at least once very five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



SPA 8, Dion Island

Specially Protected Area No 9

Green Island, Berthelot Islands, Antarctic Peninsula:

Lat 65°19'S, Long 64°10'W

Description: A small island, measuring about 600 metres by 400 metres, situated 150 metres to the north of the largest of the Berthelot Islands. The area is shown on the attached map.

Designated in Recommendation IV-9 on the grounds that the vegetation on Green island is exceptionally rich, that it is probably the most luxuriant anywhere on the west side of the Antarctic Peninsula, that in some places the humus is 2 metres thick and that this area, being of outstanding scientific interest, should be protected because it is probably one of the most diverse Antarctic ecosystems.

Annex to Recommendation XVI-6

Management Plan for Specially Protected Area No. 9: Green Island, Berthelot Islands, Antarctic Peninsula

1. Geographical location. Green Island (65°19'S, 64°10'W) is a small island on the north side of the Berthelot Islands group, lying between the north-west side of Collins Bay and Grandidier Chananel, about 3 km off the Graham Coast of the mid-west Antarctic Peninsula.

2. Management Plan

i. Description of Area. The Area comprises all of Green Island, a small rocky island lying about 0.25 km to the north of the largest of the Berthelot Islands. It is about 500m from north to south and 300 m from east to west, rising to a dome-shaped peak at about 80 m altitude. The island rises steeply on all sides, with high precipitous cliffs on the south and east sides. Along the north side is a gently sloping rock platform. There are several permanent snow patches with the largest occurring to the south and east of the summit. There are no streams or pools.

ii. Reason for designation. Green Island is extensively vegetated on the north facing slopes and has especially well-developed continuous banks of moss turf formed by *Chorisodontium aciphyllum* and *Polytrichum alpestre* which, over much of their extent, overlie peat of more than 1 m in depth. Antarctic hair grass (*Deschampsia antarctica*) is frequent in small patches near the shag colony. The island has two important bird colonies. A large Blue-eyed shag (*Phalacrocorax atriceps*) colony with about 250 nests occurs on the steep, rocky north-west corner; this is one of the largest shag colonies on the Antarctic Peninsula. There are also large numbers of Brown skuas (*Catharacta lonnbergii*) and a few South Polar skuas (*C. maccormicki*) and hybrids, but only a few of the former are known to breed.

iii. Date of designation and originaton. November 1966, Recommendation IV-9, by UK.

iv. Access points. None specified, but landings by boat or helicopter are easiest on the north side of the island.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

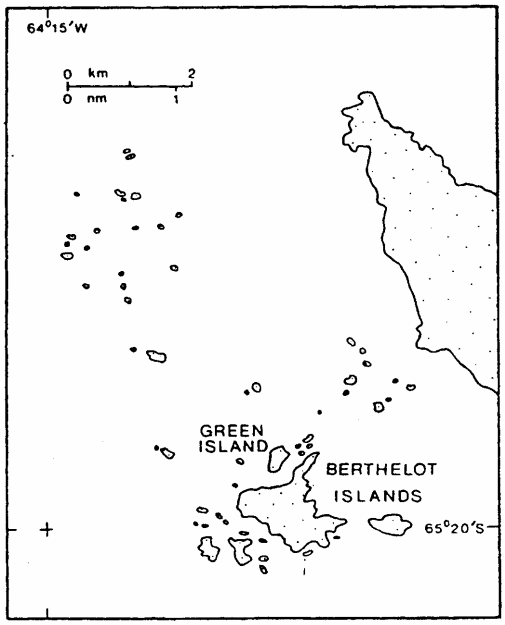
vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

a. land a helicopter within the Area, except on the rock platform near sea level on the north side of the island;
b. overfly the Area by any aircraft below 250 m above the highest point;
c. use any of the Area's coves for anchoring or mooring seacraft, except in accordance with the permit;
d. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste must be removed from the Area;
e. leave depots of fuel, food, or any other supplies within the Area, unless they are further required within the same season, at the end of which they must be removed;
f. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to cause minimal damage to the luxurient moss banks and avoid disturbance of any breeding bird or seal, unless required as specified in the permit.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits to the Area should be at least once very five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



SPA 9, Green Island

Specially Protected Area No 10

Note: SPA 10 was designated by Recommendation IV-10 and terminated by VIII-2. Byers Peninsula is now a Site of Special Scientific Interest No 6 by VIII-4. [see under SSSI No. 6 for the text of VIII-4]

IV-10: Specially Protected Areas: Byers Peninsula

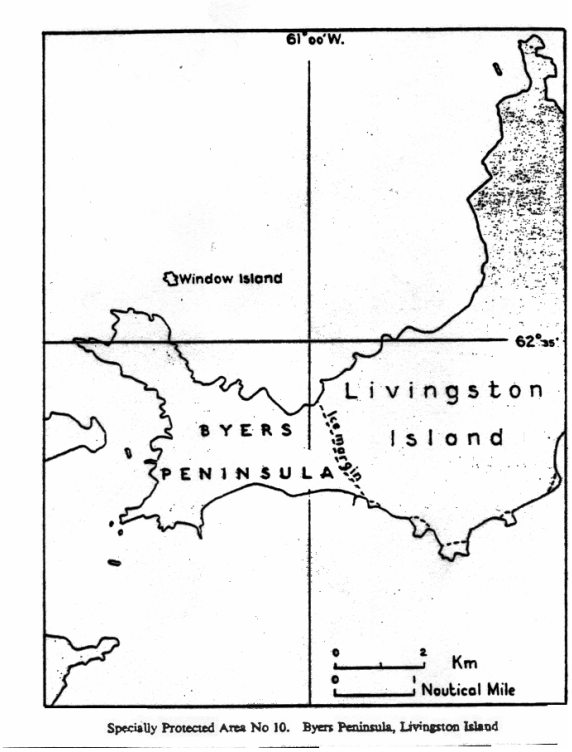
The Representatives, considering that Byers Peninsula supports considerable diversity of plant and animal life, including many invertebrates, that a substantial population of Elephant Seals (Mirounga Leonina) and small colonies of Fur Seals (Arctocephalus sp.) are found on the beaches, that Fur Seals breed on Window Island and that the close association of such a large variety of Antarctic plants and

animals and that the close association of such a large variety of Antarctic plants and animals within a relatively small area is of outstanding scientific interest recommend to their Governments that the following be inserted in Annex B, Specially Protected Areas, of the Agreed Measures for the Conservation of Antarctic Fauna and Flora:

Specially Protected Area No. 10: Byers Peninsula,

Livingston Island, South Shetland Islands: Lat 62º38'S, Long 61º05'W

Description: The ice-free peninsula lying to the west of the western margin of the permanent ice sheet on Livingston Island. The five small ice-free areas on the south coast immediately to the east are also included. Window Island is included within the area, but no other off-lying islands and rocks. The area is shown on the attached map.



Specially Protected Area No 10. Byers Peninsula, Livingston Island

Specially Protected Area No. 11

Note: SPA 11 was designated by Recommendation IV-11 and terminated by XV-7. Cape Shirreff is now a Site of Special Scientific Interest No. 32 by XV-7. [see under SSSI No. 32 for the text of XV-7]

IV-11: Specially Protected Areas: Cape Shirreff

The Representatives, considering that Cape Shirreff supports a considerable diversity of plant and animal life, including many invertebrates, that a substantial population of Elephant Seals (*Mirounga leonina*) and small colonies of Fur Seals (*Arctocephalus* sp.) are found on the beaches and that the area is of outstanding scientific interest, recommend to their Governments that the following be inserted in Annex B, Specially Protected Areas, of the Agreed Measures for the Conservation of Antarctic Fauna and Flora:

Specially Protected Area No. 11: Cape Shirreff, Livingston Island, South Shetland Islands: Lat 62°28'S, long 60°48'W

Description: The ice-free peninsula lying to the north of the northern margin of the permanent ice sheet on Livingston Island, between Barclay Bay and Hero Bay. The area is shown on the attached map. [not reproduced here]

Designated in Recommendation IV-11 on the grounds that Cape Shirreff supports a considerable diversity of plant and animal life, including many invertebrates, that a substantial population of Elephant Seals (*Mirounga leonina*) and small colonies of Fur Seals (*Arctocephalus* sp) are found on the beaches and that the area is of outstanding scientific interest.

Specially Protected Area No. 12

Note: SPA 12 was designated by Recommendation IV-12, modified by Recommendation V-5 and terminated by Recommendation VIII-2. Fildes Peninsula is now a Site of Special Scientific Interest No. 5 by virtue of VIII-4. [see under SSSI No. 5 for the text of VIII-4]

V-5: Specially Protected Areas: Fildes Peninsula

The Representatives, considering that Fildes Peninsula has several small lakes which, being ice-free in summer, are of outstanding ecological interest and that the most interesting one of them should be specially protected, recommend to their Governments that, in place of the description in Recommendation IV-12, the following be inserted in Annex B, Specially Protected Areas, of the Agreed Measures for the Conservation of Antarctic Fauna and Flora:

Specially Protected Area No. 12: Fildes Peninsula, King George Island, South Shetland Islands: Lat 62º11'S, Long 58º52'W

Description: The fresh-water lake, including the surrounding land within 100m of the shore, situated about 500m north of Suffield Point and 2.5 km east-north-east of Bellingshausen Station on Fildes Peninsula. The area is shown on the attached map. [not reproduced]

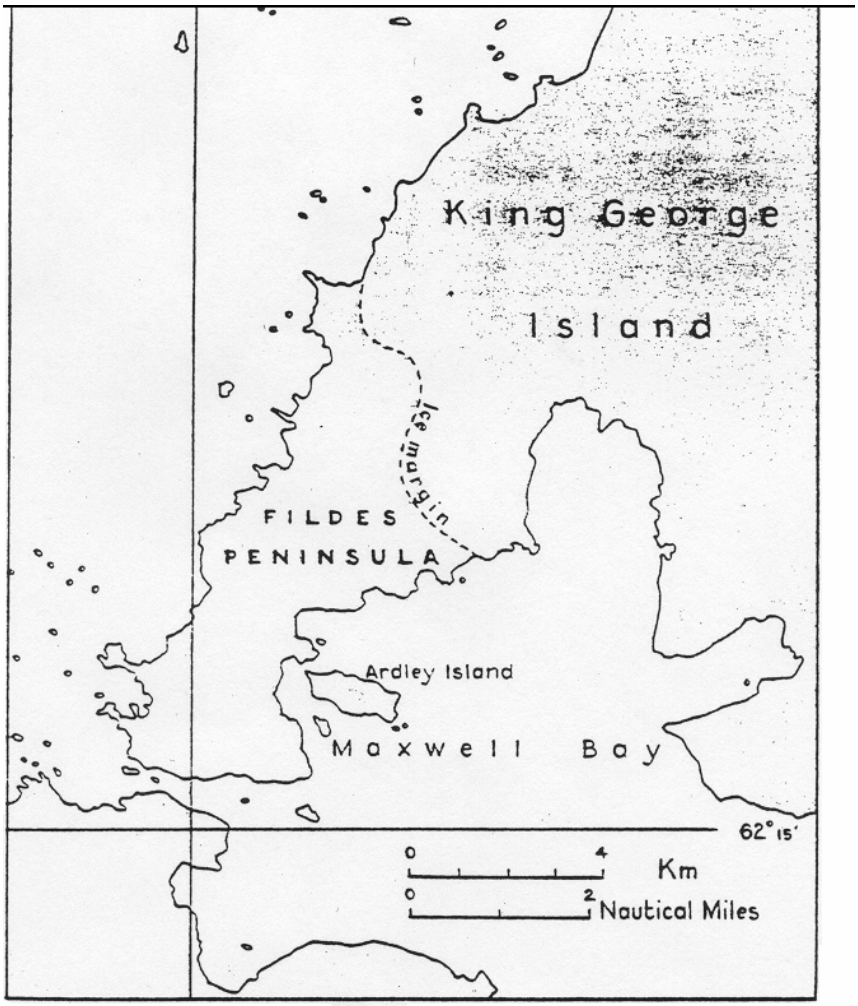
IV-12 Specially Protected Areas: Fildes Peninsula

The Representatives, considering that Fildes Peninsula is a biologically diverse region with numerous small lakes which are ice-free in summer, that it provides a representative sample of the South Shetland Islands and is an area of outstanding ecological interest, recommend to their Governments that the following be inserted in Annex B, Special Protected Areas, of the Agreed Measures for the Conservation of Antarctic Fauna and Flora:

Specially Protected Area No. 12: Fildes Peninsula,

King George Island, South Shetland Islands: Lat 62º12'S, Long 58º58'W

Description: The ice-free peninsula lying to the north-west of Maxwell Bay and west of the margin of the permanent ice sheet of King George Island, including Ardley Island but no other off-lying islands or rocks. The area is shown on the attached map.



Specially Protected Area No 12. Fildes Peninsula, King George Island

Specially Protected Area No 13

Moe Island, South Orkney Islands: Lat 60°45'S, long 45°41'W

Description: A small island about 1 kilometre long and 1 kilometre across, lying about 500 metres south-west of Signy Island, South Orkney Islands. The off-lying rocks are not included in the area. The area is shown on the attached map.

Designated in Recommendation IV-13 on the grounds that Moe Island provides a representative sample of the maritime Antarctic ecosystem, that intensive experimental research on the neighbouring Signy Island may alter its ecosystem and that Moe Island should be specially protected as a control area for future comparison.

XIX: Annex A to Measure 1 (1995)
Management Plan for Specially Protected Area (SPA) No. 13: Moe Island, South Orkney Islands

1. Description of Values to be Protected

The Area was originally designated in Recommendation IV-13 (1966, SPA No. 13) after a proposal by the United Kingdom on the grounds that Moe Island provided a representative sample of the maritime Antarctic ecosystem, that intensive experimental research on the neighbouring Signy Island might alter its ecosystem and that Moe Island should be specially protected as a control area for future comparison.

These grounds are still relevant. Whilst there is no evidence that research activities at Signy Island have significantly altered the ecosystems there, a major change has occurred in the low altitude terrestrial system as a result of the rapidly expanding Antarctic fur seal (*Arctocephalus gazelle*) population. Plant communities on nearby Signy Island have been physically disrupted by trampling by fur seals and nitrogen enrichment from the seals' excrete has resulted in replacement of bryophytes and lichens by the macro-alga *Prasiola crispa*. Low-lying lakes have been significantly affected by enriched run-off from the surrounding land. So far Moe Island has not been invaded by fur seals to any great extent and its topography makes it less likely that seals will penetrate to the more sensitive areas.

The values to be protected are those associated with the biological composition and diversity of a near-pristine example of the maritime Antarctic terrestrial and littoral marine ecosystems. In particular, Moe Island contains the greatest continuous expanses of *Chorisodontium-Polytrichum* moss turf found in the Antarctic. Moe Island has been visited on few occasions and has never been the site of occupation for periods of more than a few hours.

2. Aims and Objectives

Management of Moe Island aims to:

- avoid major changes to the structure and composition of the terrestrial vegetation, in particular the moss turf banks;
- prevent unnecessary human disturbance to the Area;
- permit research of a compelling scientific nature which cannot be served elsewhere, particularly research related to determining the differences between the ecology of an undisturbed island and that of an adjacent occupied and fur seal perturbed island.

3. Management Activities

Ensure that the biological condition of Moe Island is adequately monitored, preferably by non invasive methods, and that the sign-boards are serviced.

If fur seals were to gain access to the interior of Moe Island it would be necessary to take action to prevent damage to the vulnerable moss banks. This action would most likely consist of the erection of a seal-proof fence at the head of fine gully at the northeast of Landing Cove. Any direct management activities in the Area would be subject to an environmental impact assessment before any decision to proceed is taken.

4. Period of Designation

Designated for an indefinite period.

5. Maps

Map l shows the location of Moe Island in relation to the South Orkney Islands. Map 2 shows Moe Island in greater detail.

6. Description of the Area

6(i) Geographical coordinates, boundary markers and natural features

Moe Island, South Orkney Islands, is a small irregularly-shaped island lying 300 m off the southwestern extremity of Signy Island, from which it is separated by Fyr Channel. It is about 1.3 km from the northeast to southwest and 1 km from northwest to southeast. Its position on Admiralty Chart No. 1775, latitude 60°44'S, longitude 45°45W, does not agree closely with that in Map 2 (lat. 60°44'S, long. 45°41'W).

The island rises precipitously on the northeastern and southeastern sides to Snipe Peak (226 m altitude). There is a subsidiary summit above South Point (102 m altitude) and lower hills on each of three promontories on the western side above Corral Point (92 m), Conroy Point (39 m) and Spaull Point (56 m). Small areas of permanent ice remain on the east- and south-facing slopes with late snow lying on the steeply dipping western slopes. There are no permanent streams or pools.

The rocks are metamorphic quartz mica schists, with occasional biotite and quartz-rich beds. There is a thin bed of undifferentiated amphibolite on the northeastern coast. Much of the island is overlain with glacial drift and scree. Soils are predominantly immature deposits of fine to coarse clays and sands intermixed with gravels, stones and boulders. They are frequently sorted by freeze-thaw action in high or exposed locations into small-scale circles, polygons, stripes and lobes. There are deep accumulations of peat (up to 2m thick on western slopes), considerable expanses of the surface of which are bare and eroded.

The dominant plant communities are Andreaea-Usnea fellfield and banks of *Chorisodontium-Polytrichum* moss turf (the largest known example of this community type in the Antarctic). These moss banks constitute a major biological value and the reason for the designation of the Area. The cryptogamic flora is diverse.

The mites *Gamasellus racovitzai* and *Stereotydeus villosus* and the springtail *Cryptopygus antarcticus* are common under stones.

There were five colonies of chinstrap penguins (*Pygoscelis Antarctica*) totaling about 11,000 pairs in 1978-79. A more recent visit (February 1994) noted fewer than 100 pairs on the northern side of Landing Cove and more than a thousand on the southern side. Numerous other birds breed on the island, notably about 2000 pairs of cape petrels (*Daption capensis*) in 14 colonies (1966) and large numbers of Antarctic prions (*Pachyptila desolate*).

Weddell seals (*Leptonychotes weddellii*) and leopard seals (*Hydrurga leptonyx*) are found in the bays on the west side of the island. Increasing numbers of fur seals (*Arctocephalus gazella*), mostly juvenile males, come ashore on the north side of Landing Cove and have caused some damage to vegetation in that area. However, it is possible that the nature of the terrain will restrict these animals to this small headland where damage may intensify.

6(ii) Restricted zones within the Area

None.

6(iii) Location of structures within the Area

A marker board is located at the back of the small shingle beach in the northeast corner of Landing Cove, beyond the splash zone on top of a flat rock, to which it is bolted. The board was erected on 2 February 1994.

There is a cairn and the remains of a survey mast, erected in 1965-66, on Spaull Point. This mast is of interest for lichenometric studies and should not be removed. There are no other structures on Moe Island.

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

SPA No. 13, Moe Island, and SPA No. 14, Lynch Island, lies about 10 km north-north-east of Moe Island. SPA No. 18, North Coronation Island, lies about 19 km away on the northern side of Coronation Island. SPA No. 15, Southern Powell Island, is about 41 km to the east.

7. Permit Conditions

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

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
- the actions permitted will not jeopardize the natural ecological system in the Area
- any management activities are in support of the objectives of the Management Plan
- the Permit, or an authorised copy, must be carried within the Specially Protected Area
- a report or reports are supplied to the authority or authorities named in the Permit.

7(i) Access to and movement within the Area

There are no restrictions on landing from the sea, which is the preferred method. No special access points are specified, but landings are usually most safely made at the northeast corner of Landing Cove.

Helicopter landings should be avoided where practicable. Helicopters may land only on the col between hill 89 m and the western slope of Snipe Peak. To avoid overflying bird colonies approach should preferably be from the south, though an approach from the north is permissible.

It is forbidden to overfly the Area below 250 m altitude above the highest point except for access to the landing point specified above.

No pedestrian routes are designated but persons on foot should at all times avoid disturbances to birds or damage to vegetation and periglacial features. Vehicles are prohibited on Moe Island.

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

- Compelling scientific research which cannot be undertaken elsewhere and which will not jeopardize the ecosystem of the Area
- Essential management activities, including monitoring

7(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.

7(iv) Location of field camps

Parties should not normally camp in the Area. If this is essential for reasons of safety, tents should be erected having regard to causing the least damage to vegetation or disturbance to fauna.

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

No living animals or plant material shall be deliberately introduced into the Area.

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 a compelling scientific purpose 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.

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

This 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.

7(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, except that debris of man-made origin may be removed from the beaches of the Area and dead or pathological specimens of fauna or flora may be removed for laboratory examination.

7(viii) Disposal of waste

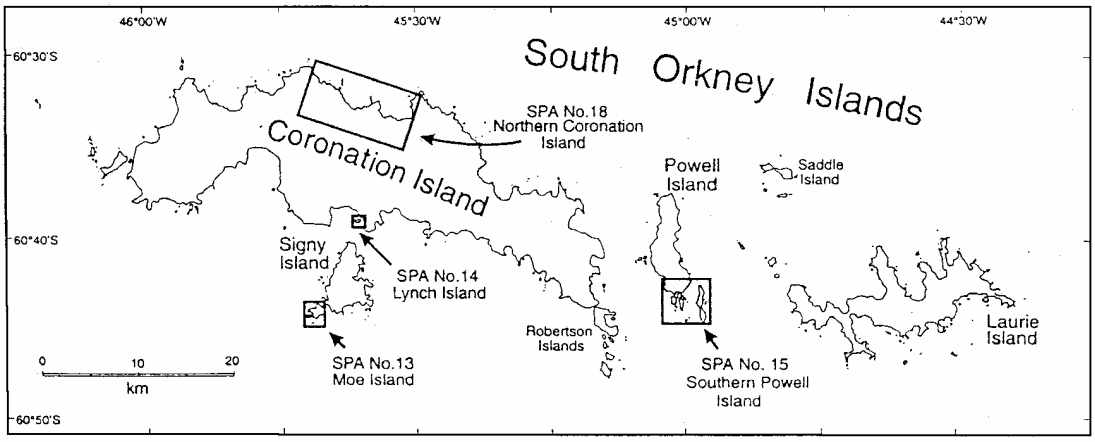
All non-human wastes shall be removed from the Area. Human waste may be deposited in the sea.

7(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 biological monitoring and site inspection activities, which may involve the collection of small amounts of plant material or small numbers of animals for analysis or audit, to erect or maintain notice boards, or protective measures.

7(x) Requirements for reports

The Principal Permit Holder for each issued Permit shall submit a report of activities conducted in the Area using the accepted 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. Such reports should be stored indefinitely and made accessible to interested Parties, SCAR, CCAMLR and COMNAP if requested, to provide the documentation of human activities within the Area necessary for good management.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South Orkney Islands
SPA No.18
Northern Coronation Island
Coronation Island
Powell Island
Saddle Island
Signy Island
SPA No.14
Lynch Island
Robertson Islands
Laurie Island
SPA No.13
Moe Island
SPA No. 15
Southern Powell Island
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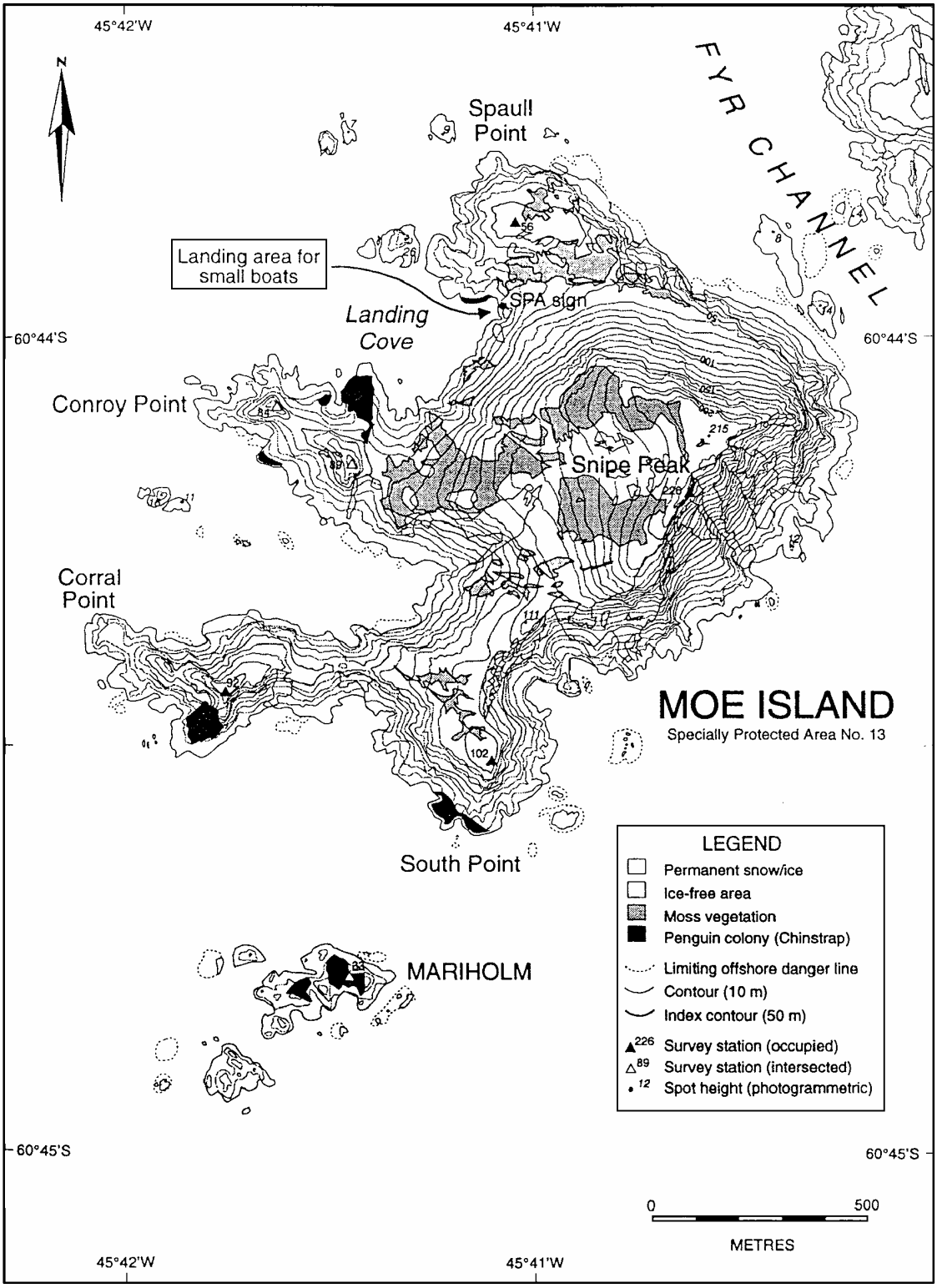


Map 2. Moe Island Specially Protected Area

Annex to Recommendation XVI-6

Management Plan for Specially Protected Area No. 13: Moe Island, South Orkney Islands

1. Geographical location. Moe Island (60°45'S, 45°41'W) is a small island lying about 0.5 km off the southwest extremity of Signy Island, South Orkney Islands, from which it is separated by Fyr Channel.

2. Management Plan

i. Description of Area. The Area is an irregularly shaped island about 1.8 km from north-east to south-west and 1 km from north-west to south-east. It rises precipitously on the north-eastern and south-eastern sides to Snipe Peak (226 m altitude); there is a subsidiary summit above South Point (102 m altitude) and lower hills on each of three promontories on the western side above Corral Point (92 m), Conroy Point (89 m) and Spaull Point (56 m). Small areas of permanent ice remain on the east and south facing slopes, with late lying snow patches on the steeply dipping western slopes. There are no streams or pools.

ii. Reason for designation. Moe Island provides an excellent representative sample of the maritime Antarctic terrestrial ecosystem, with particularly well-developed stands of vegetation typical of the South Orkney Islands. The dominant plant communities are *Andreaea-Usnea* fellfield and banks of *Chorisodontium-Polytrichum* moss turf (the main stand of which is continuous over 5 ha, including large areas of eroded peat, and represents the largest known example of this community type in the Antarctic). The cryptogamic flora and arthropod fauna are diverse. There are five colonies of Chinstrap penguins (*Pygoscelis antarctica*) totalling about 11,000 pairs. Numerous other birds breed on the island, notably about 2,000 pairs of Cape petrels (*Daption capensis*) and large numbers of Antarctic prions (*Pachyptila desolata*). Weddell seals (*Leptonychotes weddellii*) and Leopard seals (*Hydrurga leptonyx*) are sometimes frequent in the bays on the west side of the island. An increasing number of immature bull Fur seals (*Arctocephalus gazella*) come ashore on the north side of Landing Cove and are causing some damage to vegetation. However, the nature of the terrain should restrict the animals to this small headland.

Because of the long-established intensive experimental field research and the very extensive destruction of the lowland terrestrial and freshwater ecosystem caused by Fur seals on neighbouring Signy Island, Moe Island serves as an important control site with which future comparisons may be made with particular regard to biological and environmental change in the region.

iii. Date of designation and originator. November 1966, Recommendation IV-13, by UK.

iv. Access points. None specified, but preferably and most safely, from the sea at the north-east corner of Landing Cove.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

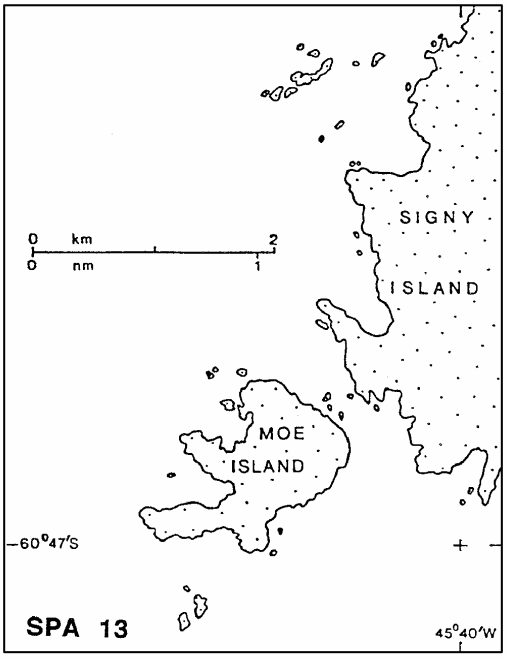
a. land a helicopter within the Area, except on the col between hill 89 m and the western slope of Snipe Peak, to the south of Landing Cove;

b. overfly the Area by any aircraft below 250 m above the highest point, except for access to the landing area specified in a., which should be directly from the cove to the north or south avoiding any seabird colonies;
c. use any of the Area's coves or bays for anchoring or mooring seacraft, except in accordance with the permit;
d. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste must be removed from the Area;
e. leave depots of fuel, food, or any other supplies within the Area, unless they are further required within the same season, at the end of which they must be removed;
f. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird or seal or stand of vegetation, unless required as specified in the permit; in particular, stands of *Polytrichum-Chorisodontium* moss banks and areas of eroding peat should be avoided wherever possible.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits to the Area should be made once every year to assess the state of the site and to monitor any significant biological or environmental changes, particularly with regard to increasing damage caused by Fur seals to the island's vegetation. Such visits should also be used to maintain boundary markers, notices, etc.



SPA 13, Moe Island

Specially Protected Area No 14

Lynch Island, South Orkney Islands: Lat 60º40'S, long 45º38'W

Description: A small island, measuring about 500 metres by 300 metres, in Marshall Bay, off the south coast of Coronation Island, South Orkney Islands. The area is shown on the attached map.

Designated in Recommendation IV-14 on the grounds that Lynch Island supports one of the most extensive and dense areas of grass (*Deschampsia antarctica*) known in the Treaty Area and that it provides an outstanding example of a rare natural ecological system.

Annex to ATSCM XII: Measure 1(2000)

Management Plan for Specially Protected Area No. 14

Lynch Island, South Orkney Islands

1. Description of values to be protected

Lynch Island (latitude 60°39'10" S, longitude 45°36'25" W; 0.1 km^2), Marshall Bay, South Orkney Islands, was originally designated as a Specially Protected Area through Recommendation IV-14 (1966, SPA No. 14) after a proposal by the United Kingdom. It was designated on the grounds that the island "supports one of the most extensive and dense areas of grass (*Deschampsia antarctica*) known in the Treaty Area and that it provides an outstanding example of a rare natural ecological system". These values were amplified and extended by Recommendation XVI-6 (1991) when a management plan for the site was adopted. This pointed out that in addition to the luxuriant growth of Antarctic hair grass *Deschampsia antarctica*, "the only other Antarctic flowering plant, Antarctic pearlwort (*Colobanthus quitensis*), is also abundant". It was further noted that while the cryptogamic vegetation is typical of the region, several species of moss found on the island [*Polytrichastrum alpinum* (=*Polytrichum alpinum*) and *Muelleriella crassifolia*] are unusually fertile for their southerly location. The shallow loam-like soil associated with the grass swards was noted to contain a rich invertebrate fauna. A rare enchytraeid worm (species as yet unidentified) was also found in moist moss in rock crevices on the northern side of the island. These values noted in the original designation and contained in the original management plan are reaffirmed in this revised management plan.

Further values not referred to originally, but mentioned in scientific descriptions of Lynch Island, are also considered important as reasons for special protection of the Area. These values are:

- It is possibly the only known location in Antarctica where *Polytrichastrum alpinum* develops sporophytes in profusion annually;
- *Polytrichum strictum* (=*Polytrichum alpestre*) occasionally produces male inflorescences in local abundance – a rare occurrence in this species in Antarctica;
- It is one of few sites where the grass *Deschampsia* is known to grow directly on *Polytrichum-Chorisodontium* moss banks;
- The rare moss *Plagiothecium ovalifolium* occurs in moist shaded rock crevices near the shore, although most of these sites have been affected by recent Antarctic fur seal (*Arctocephalus gazella*) activity;
- The population density of the arthropod community associated with *Deschampsia* on Lynch Island appears unusually high, with some measurements suggesting it is one of the highest in the world. The site also shows unusual diversity for an Antarctic site;

- One arthropod species (*Globoppia loxolineata*) is near the northernmost limit of its known distribution, and specimens collected from Lynch Island exhibited unusual morphological characteristics compared to specimens collected elsewhere in the South Orkney — Antarctic Peninsula region;
- *Chromobacterium* bacteria, yeasts and fungi are found in higher densities than on Signy Island, thought to be a result of the lower acidity of the soils associated with *Deschampsia* and the more favourable microclimate at Lynch Island;
- The shallow gravelly loam-like soil beneath the dense swards of *Deschampsia* may represent one of the most advanced soil types in the Antarctic.

Lynch Island is 2.4 km from Signy Island, the location of Signy Research Station (UK), and about 200 m from Coronation Island, the largest of the South Orkney Islands. The Area has been afforded special protection for most of the modern era of scientific activity in the region, with entry permits having been issued only for compelling scientific reasons. Thus, the island has not been subjected to frequent visits, scientific research or sampling.

Since 1983, the numbers of Antarctic fur seals in the South Orkney Islands has increased significantly, with consequent destruction of accessible areas of vegetation where the seals come ashore. Some vegetated areas on Lynch Island have been damaged, although at the time of the most recent inspection (17 February 1999) it was observed that the most luxuriant areas of grass on the northern and north-western slopes had not yet been affected. However, accessible *Polytrichum* and *Chorisodontium* moss banks and *Deschampsia* on the north-eastern and eastern sides of the island have been extensively damaged. Notwithstanding this localised destruction, to date the primary values of the island as noted above have not been significantly compromised by either human or seal access to the island. The Area therefore has potential value as a reference site against which to measure changes in comparable ecosystems which are experiencing substantial changes as a result of Antarctic fur seal activities.

The coastline boundaries of the Area have not changed in this management plan, but the Area is better defined to include the whole island above the low tide water level, excluding offshore islets and rocks.

2. Aims and objectives

Management at Lynch Island aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- protect the plant communities, especially those associated with the *Deschampsia* / *Colobanthus*, against direct disturbance by Antarctic fur seals;
- allow scientific research on the ecosystem in the Area provided it is for compelling reasons which cannot be served elsewhere;
- maintain the Area as a potential reference site against which to measure and compare changes occurring as a result of disturbance by Antarctic fur seals at nearby sites where their access is unrestricted;
- ensure that the flora and fauna are not adversely affected by excessive sampling within the Area;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits for management purposes only in support of the aims of the management plan.

3. Management activities

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

- A map showing the location of the Area (stating the special restrictions that apply) shall be

displayed prominently at Signy (UK) and Orcadas (Arg.) research stations, where copies of this management plan shall also be made available;

- A sign showing the location and boundaries of the Area with clear statements of entry restrictions should be placed on a prominent rock near the access beach on the eastern end of the northern side of the island (Map 2) to help avoid inadvertent entry;
- The values for which the Area is protected are at risk of destruction by Antarctic fur seals, which have shown a significant increase in numbers in the South Orkney Islands. At Lynch Island active management may be required in order to exclude Antarctic fur seal access to vegetated areas. This may involve the construction of fences or walls at appropriate locations;
- Markers, signs, or other structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition and removed when no longer necessary;
- Visits shall be made as necessary (no less than once every three years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

Map 1: Lynch Island Specially Protected Area No. 14 in relation to the South Orkney Islands, showing the location of Signy Research Station (UK), and the location of the other protected areas in the region (Moe Island SPA No. 13, Southern Powell Island SPA No. 15, and North Coronation Island SPA No. 18). Inset: the location of the South Orkney Islands in Antarctica.

Map 2: Lynch Island SPA No. 14 topographic map. Map specifications

Projection: Lambert Conformal Conic; Standard parallels: 1st 60° 40' 00" S; 2nd 63° 20' 00"S;

Central Meridian: 45° 26' 20" W; Latitude of Origin: 63° 20' 00" S; Spheroid: WGS84; Datum: Mean Sea Level. Horizontal accuracy of control points: ±1 m. Vertical contour interval 10 m, horizontal and vertical accuracy expected to approximately ±1 m.

Map 3: Lynch Island SPA No. 14 vegetation map. Map specifications as for Map 2.

6. Description of the Area

6(i) Geographical coordinates, boundary markers and natural features

Lynch Island (latitude 60°39'10" S, longitude 45°36'25" W; area: 0.1 km^2) is a small island situated at the eastern end of Marshall Bay in the South Orkney Islands, about 200 m south of Coronation Island and 2.4 km north of Signy Island (Map 1). The 500 m x 300 m island has low cliffs of up to 20 m in height on the south, east and west sides, dissected by boulder-filled gullies. The northern side has a low cliff below a rock terrace at about 5-8 m altitude, above which moderate slopes rise to a broad plateau at about 40-50 m, with a maximum altitude of 57 m. A beach at the eastern end of the northern coast affords easy access to relatively gentle slopes leading to the central plateau area. The coastal cliffs generally make access to the upper island by other routes difficult, although access is feasible via one or two of the gullies on the eastern and northern sides.

The designated Area comprises the entire island above the low tide level, at which the coastline is defined as the boundary of the Area (Map 2). Boundary markers have not been installed because the coast itself is a clearly defined and visually obvious boundary feature.

No meteorological data are available for Lynch Island, but conditions are broadly expected to be similar to those experienced at Signy Research Station. However, anecdotal observations suggest that significant microclimatic differences exist on Lynch Island, as the more profuse growth of plant communities would seem to attest. The island is exposed to the south-west and to katabatic and föhn winds descending from Coronation Island to the north. However, in other respects the island is relatively sheltered from regional northerly, easterly and southerly winds by Coronation Island, Cape Hansen and Signy Island respectively. The föhn effect can briefly raise local air temperatures by as much as 10°C at Signy Island. Lynch Island has often been observed to receive sunshine when the surrounding region is shrouded in low cloud. The angle of solar incidence is also relatively high on the northern side of the island because of its general slope and aspect. The above factors may be important reasons for the abundance of the two flowering plants found on the island.

The bedrock of Lynch Island consists of quartzo-feldspathic and micaceous schists of the Scotia metamorphic complex, but is poorly exposed and equivalent rocks are much better displayed in the Cape Hansen area, to the east on Coronation Island. Three main soil types have been identified on Lynch Island:

(i) an acidic (pH 3.8 – 4.5) moss peat, formed by the tall turf-forming mosses *Chorisodontium aciphyllum* and *Polytrichum strictum* (=*Polytrichum alpestre*), occurs mainly at the north-eastern end of the island. This peat reaches a depth of about 50 cm and is similar to peat on Signy Island where it reaches a depth of 2 m. Where the peat depth exceeds about 30 cm there is permafrost. In a few places where the substratum is moist, shallow peat of 10-15 cm depth (pH 4.8 ~ 5.5) has accumulated beneath the carpet-forming mosses *Warnstorfia laculosa* (=*Calliergidium austro-stramineum*) and *Sanionia uncinata* (=*Drepanocladus uncinatus*).

(ii) a shallow, gravelly loam-like soil resembling tundra brown soil occurs beneath dense swards of the grass *Deschampsia antarctica*. It is seldom more than about 30 cm in depth (pH 5.0 – 5.8) and probably represents one of the most advanced soil types in the Antarctic.

(iii) A glacial till with material ranging from fine clay (pH 5.2 – 6.0) and sand to gravel and larger stones. This covers the summit plateau and occurs in rock depressions throughout the island, as well as on parts of the rock terrace. On the plateau cryoturbation has in several places sorted the material into patterned features with small stone circles and polygons on level ground and stone stripes on sloping ground. At the north-eastern end of the island, the deposition of limpet shells (*Nacella concinna*) by gulls (*Larus dominicanus*) has resulted in a more calcareous mineral soil in rock depressions with a pH of 6.5 - 6.8.

Small temporary melt-streams occur on the slopes in summer, but there are no permanent streams or pools, and only a few small late-lying snow patches occur on the southern side of the island.

Cryptogamic and phanerogamic vegetation typical of the maritime Antarctic is found over much of the island (Map 3). The most significant aspect of the vegetation is the abundance and reproductive success of the two native Antarctic flowering plants, the Antarctic hair grass (*Deschampsia antarctica*) and Antarctic pearlwort (*Colobanthus quitensis*), found especially on the northern slopes (Map 3). Both species flower in profusion and seed viability appears to be much greater than on Signy Island. Lynch Island possesses the largest stands of *Deschampsia* and the greatest abundance of *Colobanthus* known in the South Orkney Islands

and one of the most extensive anywhere in the Antarctica Treaty Area.

On the rock terrace and moist slope rising above the northern coast, the grass forms extensive swards of up to 15 m x 50 m. These swards range from continuous stands of relatively luxuriant plants on the moister sites and ledges to small, yellowish, more isolated plants on the drier, stonier and more exposed terrain. *Colobanthus* is generally associated, but here the plants do not coalesce to form closed patches. This is one of very few sites where *Deschampsia* is known to grow directly on *Polytrichum-Chorisodontium* moss banks. Elsewhere on the island, the grass and, to a lesser extent, the pearlwort are frequent associates in other communities, especially stands of denser fellfield vegetation where there is quite high cover afforded by various mosses and lichens (particularly towards the western end of the northern terrace).

Shallow but occasionally extensive (about 50 m^2) banks of *Chorisodontium aciphyllum* and *Polytrichum strictum* are frequent at the north-eastern end of the island and, to a lesser extent, on the southern side. These are typical of the moss banks which occur on Signy Island and elsewhere in the northern maritime Antarctic, with several fruticose and crustose lichens growing epiphytically on the moss surface. In small moist depressions, there are carpets of *Warnstorfia laculosa* and *Sanionia uncinata,* with some *Warnstorfia sarmentosa* (=*Calliergon sarmentosum*) and *Cephaloziella varians* (= *C. exiliflora*). On wet soil and rock ledges, *Brachythecium austro-salebrosum* is common.

On the drier, more windswept, stonier soils and rock surfaces – notably in the plateau area – a typical open fellfield community of many bryophyte and lichen taxa form a complex mosaic. The dominant species in this locality are the lichens *Usnea antarctica* and *U. aurantiaco-atra* (=*U. fasciata*) and the moss *Andreaea depressinervis*; *Sphaerophorus globosus* and other species of *Alectoria***,** *Andreaea*, *Cladonia,* and *Stereocaulon* are also common, while *Himantormia lugubris* and *Umbilicaria antarctica* are infrequent. Crustose lichens are abundant on all rock surfaces. The mosses and macrolichens in this area are loosely attached on thin soils and are easily damaged. Large thalli of *Usnea* spp. and *Umbilicaria antarctica* are found on moist sheltered boulders and rock faces, especially on the southern side of the island.

Communities of crustose lichens occur on the cliffs above the high water mark, especially where the rock is influenced by breeding or roosting birds. The distribution of several species forms distinctive zones in relation to inundation by sea spray and exposure to wind. The best developed communities of brightly coloured ornithocoprophilous taxa occur at the western end of the island where *Caloplaca* spp., *Haematomma erythromma, Mastodia tesselata, Physcia caesia*, *Xanthoria candelaria, X. elegans,* and species of *Buellia* and *Verrucaria* are frequent. The uncommon halophilous moss *Muelleriella crassifolia* also occurs within the spray zone around the island.

The only rare moss recorded on Lynch Island is *Plagiothecium ovalifolium,* found in moist, shaded rock crevices near the shore. However, the island is possibly the only site known in the Maritime Antarctic where the moss *Polytrichastrum alpinum* develops sporophytes in profusion each year; this occurs among *Deschampsia*, *Colobanthus* and cryptogams on the northern side of the island; elsewhere in the Antarctic sporophytes are in some years very rare. Also, *Polytrichum strictum* produces male inflorescences in local abundance, a rare phenomenon in this species in the Antarctic. While the thalloid liverwort *Marchantia berteroana* is locally common on Signy Island, Lynch Island is one of very few other localities where it is known in the South Orkney Islands. Several cryptogamic species of very restricted distribution in the Antarctic, but which are locally common on Signy Island and the mainland of Coronation Island only a few hundred metres away, have not been observed at Lynch Island.

The microinvertebrate fauna associated with the rich *Deschampsia* swards described thus far comprises 13 taxa: three springtails (*Cryptopygus antarcticus*, *Friesea woyciechowskii* and *Isotoma* (*Folsomotoma*) *octooculata* (=*Parisotoma octooculata*), one mesostigmatid mite (*Gamasellus racovitzai*), two cryptostigmatid mites (*Alaskozetes antarcticus* and *Globoppia loxolineata*), and seven prostigmatid mites (*Apotriophtydeus* sp., *Ereynetes macquariensis*, *Nanorchestes berryi, Stereotydeus villosus,* and three species of *Eupodes*). The number of taxa identified is likely to increase with greater sampling. The community is dominated by the Collembolla, especially *Cryptopygus antarcticus* (84% of all arthropods extracted), with relatively large numbers of *I. octooculata*; the principal mite was an undetermined species of *Eupodes*. *Globoppia loxolineata* is near the northernmost limit of its known distribution. In general, the population density of the arthropod community of grass stands on Lynch Island appears unusually high, with some measurements suggesting it is one of the highest in the world. It also shows considerable diversity for an Antarctic site, although this observation was based on a small number of sample replicates and further sampling would be required to establish densities with greater reliability: this is difficult to achieve on Lynch Island given the very limited extent of communities available for sampling.

Lynch Island was the first site in the Antarctic where a terrestrial enchytraeid was found (in soil beneath a moss *Hennediella antarctica* on a rock ledge above the northern shore); only in a few other sites in the South Orkney Islands have these worms been found – although few samples have been gathered and the species has yet to be identified. Of the tardigrade fauna, most of the 16 individuals isolated from a sample of *Brachythecium* were *Hypsibius alpinus* and *H. pinguis* with some *H. dujardini*, while of 27 isolated from a *Prasiola crispa* sample, almost all were the latter species with a few that were other species of *Hypsibius.*

The mineral and organic soils of Lynch Island have a slightly higher pH than corresponding soils on nearby Signy Island. This higher base and nutrient status, together with the more favourable microclimate, is reflected in larger numbers of bacteria (including *Chromobacterium*), yeasts and fungi than occur in comparable soils on Signy Island. Bacterial numbers in the *Polytrichum* peat on Lynch Island are about eight times, and in the *Warnstorfia* peat about six times, greater than in corresponding Signy Island peats; yeasts and fungi are similarly much more abundant. Soil associated with the two flowering plants yielded several nematophagous fungi: in *Deschampsia* soil *Acrostalagmus goniodes*, *Cephalosporium balanoides* and *Dactylaria gracilis*; in *Colobanthus* soil, *Cephalosporium balanoides*, *Dactylaria gracilis, Dactylella stenobrocha* and *Harposporium anguillulae* were found. The basidiomycete fungi *Galerina antarctica* and *G. longinqua* occur on moist moss.

The island has no penguin colonies or substantial breeding colonies of other birds. Groups of chinstrap (*Pygoscelis antarctica*), Adélie (*P. adeliae*) and gentoo (*P. papua*) penguins and, sometimes, blue-eyed cormorants (*Phalacrocorax atriceps*) often congregate at the north-eastern and the western ends of the island. Several pairs of brown skuas (*Catharacta lonnbergii*) and at least two pairs of kelp gulls (*Larus dominicanus*) were observed in the early 1980s to nest at the north-eastern corner. A small colony of Antarctic terns (*Sterna vittata*) may also occur in this vicinity, although in February 1994 breeding was not observed. Cape petrels (*Daption capense*) and snow petrels (*Pagodroma nivea*) breed on the higher cliffs at the eastern end and along the north-western coast of the island. A few pairs of snow petrels and Wilson's storm petrels (*Oceanites oceanicus*) nest on ledges and beneath boulders on the south side of the island.

Weddell seals (*Leptonychotes weddellii*), crabeater seals (*Lobodon carcinophagus*), occasional leopard seals (*Hydrurga leptonyx*), and small groups of southern elephant seals (*Mirounga*

leonina) are regularly seen on the coast and on ice floes in the vicinity; none have been known to breed on Lynch Island. Since the early 1980s increasing numbers of Antarctic fur seals (*Arctocephalus gazella*), virtually all being immature non-breeding males, have been observed on Lynch Island, some gaining access up the more gentle north-eastern slopes to vegetated areas, where they have caused local, but severe, damage to *Polytrichum-Chorisodontium* moss banks and other communities.

Seal access to the island is principally from a beach on the NE coast. Once seals have gained access, there are no further substantial geographical impediments to their more extensive travel over the island. Groups of seals have been observed near the summit. Destruction of swards of *Deschampsia*, the feature for which the Area is primarily protected, was first reported in 1988. At the time of the most recent inspection (February 1999) it was observed that the most luxuriant areas of *Deschampsia* and *Colobanthus* on the northern and north-western slopes had not yet been affected. Accessible areas of vegetation in the eastern and north-eastern sides of the island, particularly *Polytrichum* and *Chorisodontium* moss banks, had been severely damaged by Antarctic fur seals, while *Deschampsia* had either been damaged or had died (Map 3).

6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

There are no structures present in the Area apart from several cairns marking sites used for topographical survey. A sign notifying the specially protected status of Lynch Island was erected on a prominent rock outcrop above the recommended landing beach in February 1994, but this was destroyed by strong winds. The same site should be used for a stronger replacement sign.

A small refuge is present at Shingle Cove, 2 km east, around Cape Hansen on Coronation Island. Signy Research Station (UK) is 6.4 km south at Factory Cove, Borge Bay, on Signy Island.

6(iv) Location of other protected areas within close proximity of the Area

The nearest protected areas to Lynch Island are North Coronation Island (SPA No.18) which lies about 5 km to the north, Moe Island (SPA No. 13) which is about 10 km SSW, and Southern Powell Island (SPA No. 15) which is about 35 km to the east (Map 1).

7. 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 compelling scientific reasons that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection, maintenance or review;
- the actions permitted will not jeopardise the ecological or scientific values of the Area;
- any management activities are in support of the aims and objectives of the management plan;
- the actions permitted are in accordance with the management plan;
- the Permit, or an authorised copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period.

- The appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

7(i) Access to and movement within the Area

Vehicles are prohibited within the Area and access shall be by small boat or by helicopter. Landings from the sea should be at the beach on the eastern end of the northern coast of the island (Map 2), unless specifically authorised by Permit to land elsewhere, or when landing at this location is impractical because of adverse conditions. Landing of helicopters within the Area shall be at the designated location on the rock platform (8 m) on the north-western end of the island (Map 2). Use of helicopter smoke grenades is prohibited unless absolutely necessary for safety, and all grenades should be retrieved. No special restrictions apply to the sea or air routes used to move to and from the Area.

Movement within the Area shall be on foot. Pilots, air or boat crew, or other people on aircraft or boats, are prohibited from moving on foot beyond the immediate vicinity of their landing site unless specifically authorised by Permit. All movement should be undertaken carefully so as to minimise disturbance to the soil and vegetated surfaces, walking on rocky terrain if practical, but taking care not to damage or dislodge lichens. Pedestrian traffic should be kept to the minimum consistent with the objectives of any permitted activities, and every reasonable effort should be made to minimise trampling effects.

7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place

- Scientific research that will not jeopardise the ecosystem or scientific values of the Area, and which cannot be served elsewhere;
- Essential management activities, including monitoring;

7(iii) Installation, modification or removal of structures

Structures shall not be erected within the Area except as specified in a Permit. All scientific equipment installed in the Area must be approved by Permit and clearly identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination of the Area. Removal of specific equipment for which the Permit has expired shall be a condition of the Permit.

7(iv) Location of field camps

Camping should be avoided within the Area. However, when absolutely necessary for purposes specified in the Permit, camping is allowed at the designated site at the north-western end of the island (Map 2).

7(v) Restrictions on materials and organisms which can be brought into the Area

No living animals, plant material or microorganisms shall be deliberately introduced into the Area and the precautions listed in 7(ix) below shall be taken to prevent accidental introductions. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management 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 is not to be stored in the Area, unless specifically authorised by Permit for specific scientific or management purposes. Anything introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of any introduction into the environment is minimised. If release occurs which is likely to compromise the values of the Area, removal is encouraged only where the impact of removal is not likely to be greater

than that of leaving the material *in situ*. The appropriate authority should be notified of anything released and not removed that was not included in the authorised Permit.

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

Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the Protocol on Environmental Protection to the Antarctic Treaty. Where taking or harmful interference with animals is involved, the *SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica* should be used as a minimum standard.

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

Collection or removal of anything not brought into the Area by the Permit holder shall only be in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs. Permits shall not be granted if there is a reasonable concern that the sampling proposed would take, remove or damage such quantities of soil, native flora or fauna that their distribution or abundance on Lynch Island would be significantly affected. Anything 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 removal is likely to be greater than leaving the material *in situ*: if this is the case the appropriate authority should be notified.

7(viii) Disposal of waste

All wastes, including all human wastes, shall be removed from the Area. Human wastes may be disposed of into the sea.

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

- Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of limited samples for analysis or review, or for protective measures.
- Any specific sites of long-term monitoring shall be appropriately marked.
- To help maintain the ecological and scientific values of Lynch Island special precautions shall be taken against introductions. Of concern are microbial, invertebrate or plant introductions from other Antarctic sites, including stations, or from regions outside Antarctica. All sampling equipment or markers brought into the Area shall be cleaned or sterilised. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks, carry-bags and tents) shall be thoroughly cleaned before entering the Area.

7(x) Requirements for reports

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. 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, which should be in sufficient detail to allow evaluation of the effectiveness of the management plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the management plan and in organising the scientific use of the Area.

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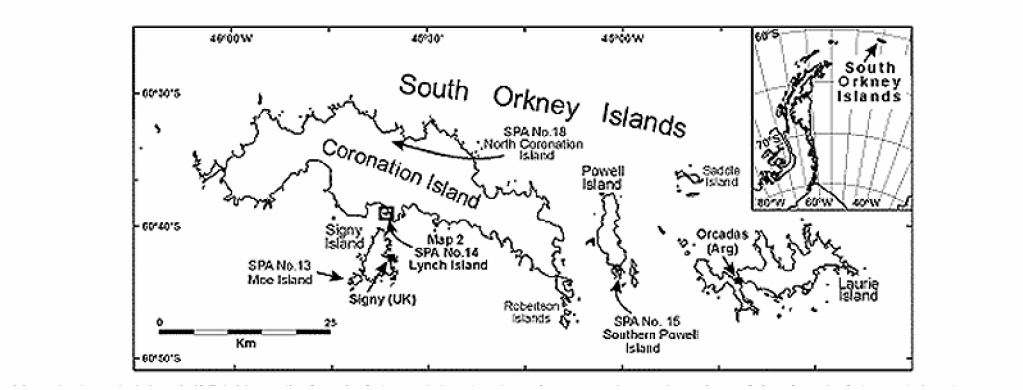
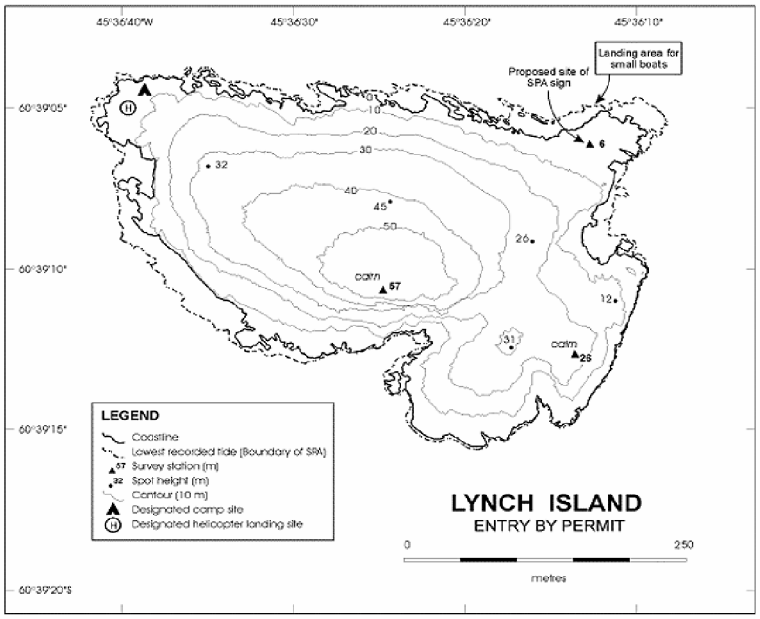
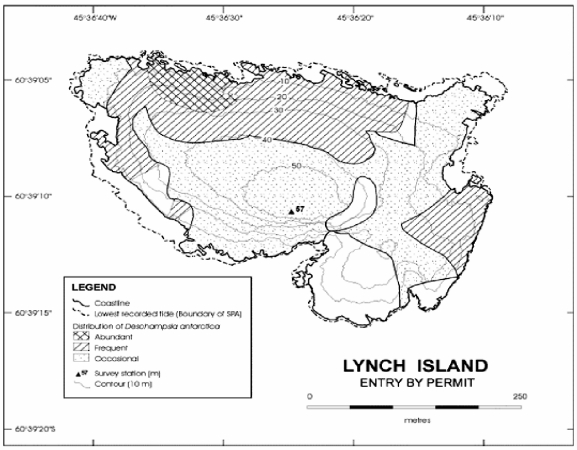


Map 2. Lynch Island (SPA No. 14) topographic map.



Map 3. Lynch Island (SPA No. 14) vegetation map.



Annex to Recommendation XVI-6

Management Plan for Specially Protected Area No. 14: Lynch Island, South Orkney Islands

1. Geographical location. Lynch Island (60°40'S, 45°38'W) is a small island situated at the east end of Marshall Bay, in the mid south coast of Coronation Island and directly to the north of Signy Island, South Orkney Islands.

2. Management Plan

i. Description of Area. The Area is a small rocky island, c. 200 m from the south coast of Coronation Island and about 500 m from east to west and 300m from north to south, rising to a flat plateau with a maximum altitude of 33 m. On the south, east and west sides there are low cliffs up to 20 m high, and boulder-filled gullies, while the northern side has a low cliff below a rock terrace at about 5-8 m altitude. There are no streams or pools, and only a few small late-lying snow patches occur on the southern side of the island.

ii. Reason for designation. Lynch Island supports one of the most extensive and dense stands of Antarctic hair grass (*Deschampsia antarctica*) known in the Treaty area. The only other Antarctic flowering plant, Antarctic pearlwort (*Colobanthus quitensis*), is also abundant. The cryptogamic vegetation is typical of the region, but several species of moss are unusually fertile here (notably *Polytrichum alpinum* and *Muelleriella crassifolia*). Beneath the grass swards on the moist north-facing slope a shallow loam-like earth resembling tundra brown soil has developed and contains a rich invertebrate fauna. Moist moss in rock crevices on the north side of the island harbours a rare terrestrial enchytraeid worm. Breeding birds are poorly represented, but most species of Antarctic seals are common around the island and occasionally ashore (particularly an increasing number of immature bull Fur seals, *Arctocephalus gazella*, which come ashore in summer).

iii. Date of designation and originator. November 1966, Recommendation IV-14, by UK

iv. Access points. Access should be from the sea, landing at a prominent low rocky promontory or the adjacent cove to the west, on the north side of the island.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a

compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeorpardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

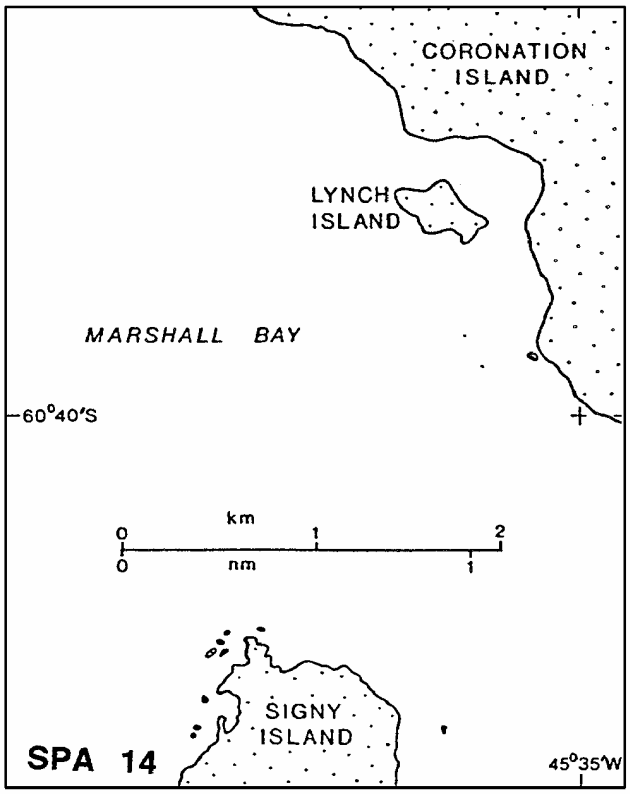
vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

a. drive any vehicle within the Area;
b. land a helicopter within the Area;
c. overfly the Area by any aircraft below 250 m above the highest point;
d. use any of the Area's coves or bays for anchoring or mooring seacraft, except in accordance with the permit;
e. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste must be removed from the Area;
f. leave depots of fuel, food, or any other supplies within the Area, unless they are further required within the same season, at the end of which they must be removed;
g. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird or seal or stand of vegetation, unless required as specified in the permit; in particular, areas of *Deschampsia* and *Colobanthus* should b e avoided wherever possible.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits to the Area should be made at least once every year to assess the state of the site and to monitor any significant biological or environmental changes, particularly with regard to increasing damage caused by Fur seals to the island's grass-dominated communities. Such visits should also be used to maintain boundary markers, notices, etc.



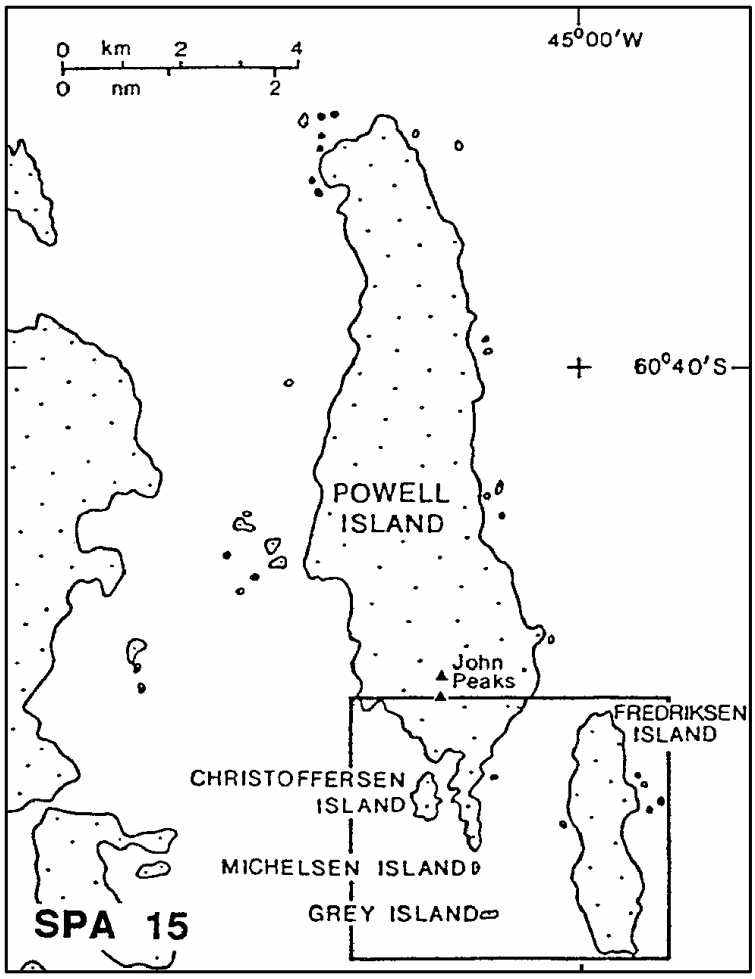
SPA 14, Lynch Island

Specially Protected Area No 15

Southern Powell Island and adjacent islands, South Orkney Islands: Lat 60°45'S, Long 45°02'W

Description: This area in the central South Orkney Islands includes that part of Powell Island which is south of the latitude of the southern summit of John Peaks, together with the whole of Fredriksen Island, Michelsen Island, Christoffersen Island, Grey Island and the unnamed islands laying within the rectangle marked on the attached map.

Designated in Recommendation IV-15 on the grounds that southern Powell Island and the adjacent islands support substantial vegetation and a considerable bird and mammal fauna, which is representative of the natural ecology of the South Orkney Islands, and which is rendered more important by the presence of the nucleus of an expanding colony of Fur Seals (*Arctocephalus tropicalis gazella*).



SPA 15, Powell Island

XIX: Annex B to Measure 1(1995)
Management Plan for Specially Protected Area (SPA) No. 15: Southern Powell Island And Adjacent Islands, South Orkney Islands

1. Description of Values to be Protected

The Area was originally designated in Recommendation IV-15 (1966, SPA No. 15) after a proposal by the United Kingdom on the grounds that Southern Powell Island and the adjacent islands support substantial vegetation and a considerable bird and mammal fauna. The Area was representative of the natural ecology of the South Orkney Islands, and was rendered more important by the nucleus of an expanding colony of Antarctic fur seals (*Arctocephalus gazelle*).

These grounds are still relevant, though the expansion of the fur seal colony is progressing only slowly.

The values to be protected are primarily those associated with the large concentrations of breeding birds and seals, and to a lesser extent, the terrestrial vegetation.

2. Aims and Objectives

Management of southern Powell Island and adjacent islands aims to:

- avoid major changes in the structure and composition of the terrestrial vegetation;
- prevent unnecessary human disturbance to the Area;
- permit research of a compelling scientific nature which cannot be served elsewhere.

3. Management Activities

Because of its use as an anchorage in the past, it is important that the signs, which identify the Area as a Specially Protected Area and point out that landing without a Permit is forbidden, are maintained.

Visits should be made as necessary to assess the biological composition of the Area, in particular the state of the fur seal colony, and to maintain sign boards.

4. Period of Designation

Designated under ATCM Recommendation IV-15 for an indefinite period.

5. Maps

Map 1 shows the location of southern Powell Island in relation to the South Orkney Islands. Map 2 shows the Area in greater detail.

6. Description of the Area

6(i) Geographical coordinates and natural features

The Area, which is centered on latitude 60°42'S and longitude 45°01'W includes all of Powell Island, South Orkney Islands, south of the latitude of the southern summit of John Peaks (375 m altitude), together with the whole of Fredriksen Island, Michelsen Island (a tidal peninsula at the southern tip of Powell Island), Christoffersen Island, Grey Island and unnamed adjacent islands. All but the Crutchley Ice Piedmont of southern Powell Island are ice-free in summer, though there are patches of semi-permanent or late-lying snow in places.

The rocks of southern Powell Island, Michelsen Island and Christoffersen stand are conglomerates of Cretaceous-Jurassic age. The two promontories to the west of John Peaks are Carboniferous greywacke-shales. There are boulders containing plant fossils in the glacial deposits around Falkland Harbour. Much of central and southern Fredriksen Island is composed of sandstone and dark phyllitic shales. The north-east, and probably most of the north, of this island is highly sheared conglomerate with laminated mudstone. The Area has a thick mantle of glacial till, strongly influenced by seabird guano.

Michelsen Island is almost devoid of land vegetation, although on the rocks here are extensive communities of lichens dominated by nitrophilous crustose species. These are also widespread on Fredriksen Island and elsewhere on bird-influenced cliffs and rocks near the shore. The most diverse vegetation on Powell Island occurs on the two promontories and associated scree west of Falkland Harbour. Here, and on Christoffersen Island and the northern part of Fredriksen Island, moss banks with underlying peat occur. Wet areas support stands of moss carpet. There are extensive areas of the nitrophilous macroalga *Prasiola crispa* associated with the penguin colonies in the area. Snow alga are prominent on the ice piedmont and snow patches in late summer.

No information is available on the arthropod fauna, but this is probably very similar to that at Signy Island. The springtails *Cryptopygus antarcticus* and *Parisotoma octoculata* and the mites *Alaskozetes antarcticus*, *Stereotydeus villosus* and *Gamasellus racovitzai* occur in great numbers beneath stones.

There are few observations on marine biota in the Area, but this is likely to be very similar to the well-researched Signy Island area. The relatively enclosed Falkland-Ellefsen Harbour area and the bay on the east side of the peninsula are highly influenced by glacial run-off from the ice Piedmont.

Large numbers of penguins and petrels breed throughout the Area. There are many thousand pairs of chinstrap penguins (*Pygoscelis Antarctica*), mostly on Fredriksen Island. Similarly large numbers of Adelie penguins (*P. adeliae*) occur principally on the southern Powell-Michelsen Island area. Here there are also several thousand pairs of gentoo penguins (*P. Papua*) and a very few scattered pairs of macaroni penguins (*Eudyptes chrysolophus*) breeding among the gentoos.

Other breeding birds include southern giant petrels (*Macronectes giganteus*), cape petrels (*Daption capensis*), snow petrels (*Pagodroma nivea*), Wilson's storm petrels (*Oceanites oceanicus*), blue-eyed shags (*Phalacrocorax Triceps*) Dominican gulls (*Laws dominicanus*), brown skuas (*Catharacta lonnbergi*), sheathbills (*Chionis alba*), and possibly Antarctic prions (*Pachyptila desolata*) and black-bellied storm petrels (*Fregatta tropica*).

Michelsen Island is the longest known breeding site in the Antarctic of fur seals since their near extermination in the nineteenth century. The number of pups born annually has increased slowly but fairly steadily from 11 in 1956 to about 60 in 1989. Thirty-four live pups were recorded in January 1994. Many non-breeding males visit the Area during the summer. Other seals are frequent on the beaches, mainly elephant seals (*Mirounga leonina*) and Weddell seals (*Leptonychotes weddelli*.). Leopard seals (*Hydmrga leptonyx*) and crabeater seals (*Lobodon carcinophagus*) are occasionally seen on ice floes.

6(ii) Restricted zones within the Area

None

6(iii) Location of structures within the Area

A marker board (erected January 1994) is positioned on southern Powell Island on top of a small rock outcrop at the back of the shingle beach on the east side of the southern promontory of the island.

On Michelsen Island the marker board (erected January 1994) is situated on a 1ow-lying rock about 50 m from the shoreline at the back of a high shingle beach at the southern tip of the island.

On Christoffersen Island the marker board (erected January 1994) is located on a small promontory on the northeastern shore of the island at the entrance to Falkland Harbour. The board is located at the back of the beach just below a small Adelie penguin rookery.

On Fredriksen Island a marker board (erected January 1994) is located at the northern end of the pebble boulder beach on the western side of the island, below a small chinstrap penguin rookery. The board is at the back of the beach on top of a small rock outcrop.

There are no other structures within the Area, but various mooring chains and rings associated with the use of Ellefsen and Falkland Harbours by floating whale factories in the 1920's are to be found on the shore.

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

SPA No 13 Moe Island, and SPA No. 14, Lynch Island, are about 35 km west by south and about 35 km west of the Area respectively SPA No. 18, North Coronation Island is about the same distance away on the northern side of Coronation Island

7. Permit Conditions

Entry into the Area is prohibited except in accordance with a Permit issued by an appropriate national authority as designated under Article 7 of Annex V of the Protocol on Environmenta1 Protection to the Antarctic Treaty.

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

- it is bowed only for a compelling scientific purpose which cannot be served elsewhere;
- the actions permitted will not jeopardise the natural ecological system in the Area;
- any management activities are in support of the objectives of this Management Plan;
- the actions permitted are in accordance with this Management Plan;
- the Permit must be carried within the Specially Protected Area;
- a report or reports are supplied to the authority or authorities named in the Permit.

7(i) Access to and movement within the Area

Anchoring within Falkland Harbour and Ellefsen Harbour is prohibited except in emergency.

No pedestrian routes are designated within the Area, but persons on foot should avoid walking on vegetated areas or disturbing wildlife wherever possible. Vehicles are not allowed in the Area.

It is forbidden to overfly the Area below 250m altitude above the highest point except for purposes of landing (when essential) on the beach on the east side of the southern most tip of Powell Island.

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

- Compelling scientific research which cannot be undertaken elsewhere essential management activities, including monitoring.

7(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.

7(iv) Location of field camps

Parties shall not camp in the Area, except in an emergency for reasons of safety. In this case, tents should be erected having regard to causing the least damage to the vegetation or disturbance to fauna.

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

No living animals or plant material shall be deliberately introduced into the Area.

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 a compelling scientific purpose 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 or 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 are to be removed when no longer required.

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

This 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.

7(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, except that debris of man-made origin may be removed from the beaches of the Area and dead or pathological specimens of fauna or flora may be removed for laboratory examinations.

7(viii) Disposal of waste

All non-human wastes shall be removed from the Area. Human waste may be deposited in the sea.

7(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 biological monitoring and site inspection activities. which may involve the collection of small amounts of plant material or small numbers of animals for analysis or audit, or to erect or maintain notice boards, or to carry out protective measures.

7(x) Requirements for reports

The principal Permit holder for each issued Permit shall submit a report of activities conducted in the Area using the accepted Visit Report form. This report all be submitted to the appropriate authority or authorities named in the Permit as on as practicable, but not later than six months after the visit has taken place.

Such reports should be stored indefinitely by the appropriate authority and made accessible to interested Parties, SCAR, CCAMLR and COMNAP if requested, to provide the documentation of human activities within the Area necessary for good management.

Annex to Recommendation XVI-6

Mangement Plan for Specially Protected Area No. 15: Southern Powell Island and adjacent islands, South Orkney Islands

1. Geographical location. Powell Island (60°45'S, 45°-2'W) is the third largest of the South Orkney Islands, lying between Coronation Island to the west and Laurie Island to the east.

2. Management Plan

i. Description of Area. The Area includes all of Powell Island south of the latitude of the southern summit of John Peaks (375 m altitude), together with Michelsen Island (a peninsula rising to 38 m altitude and separated from a long promontory at the south end of Powell Island by a low isthmus which floods at high tide) and adjacent unnamed rocky islets, Christoffersen Island (96 m altitude) to the west, Grey Island (43 m altitude) to the south, and Fredriksen Island (about 300 m altitude) to the east. All but southern Powell Island (Crutchley Ice Piedmont) are mainly ice-free in summer. All intervening sea is included within the Area.

ii. Reason for designation. The Area is of exceptional biological interest, supporting limited stands of vegetation typical of biotically influenced coastal habitats of the region, and considerable populations of a diversity of bird and seal species. The bryophyte vegetation is best developed at the extreme north-west corner of the Area on south-west Powell Island, on Christoffersen Island and locally on northern Fredriksen Island; elsewhere there are extensive nitrophilous lichen communities on the rocks and cliffs. There are several biotically contaminated melt pools and streams, especially on the beach on the east side of southern Powell Island where Crutchley Ice Piedmont is receding.

Large numbers of penguins and petrels breed thoughout the Area. There are about 50,000 breeding pairs of Chinstrap penguins (*Pygoscelis antarctica*) of which about 80% occur on Fredriksen Island, and about the same number of Adélie penguins (*P. adeliae*) of which almost all occur in the southern Powell-Michelsen Island area. There are about 3,000 pairs of Gentoo penguins (*P. papua*) breeding on the southern promontory of Powell Island, Michelsen Island and Christoffersen Island. There are also a few pairs of Macaroni penguins (*Eudyptes chrysolophus*). Other breeding birds include Southern Giant Paterls (*Macronectes giganteus*), Capte petrels (*Daption capensis*), Snow petrels (*Pagodroma nivea*), Wilson's storm petrels (*Oceanites oceanicus*), Blue-eyed shags (*Phalacrocorax atriceps*), Dominican gulls (*Larus dominicanus*), Antarctic terns (*Sterna vittata*), Brown skuas (*Catharacta lonnbergii*), Sheathbills (*Chionis alba*), and possibly Antarctic prions (*Pachyptila desolata*) and Black bellied storm petrels (*Fregatta tropica*). The isthmus between southern Powell Island and Michelsen Island is the longest-known breeding site in the Antarctic for Fur seals (*Arctocephalus gazella*) since their extermination in the nineteenth century However, the small number of pups born annually has not increased substantially; a few pups are also born on suitable beaches on Fredriksen Island. Other seals are frequent on the beaches, e.g. Elephant seals (*Mirounga leonina*), Weddell seals (*Leptonychotes weddellii*) and Leopard seals (*Hydrurga leptonyx*) and Crabeater seals (*Lobodon carcinophagus*) are occasionally seen on ice floes within the Area.

iii. Date of designation and originator. November 1966, Recommendation IV-15, by the UK

iv. Access points. None specified, but access should preferably be from the sea.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota with the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

a. drive any vehicle within the Area;
b. land a helicopter within the Area, except on the north-eastern part of the beach on the east side of the promontory of southern Powell Island providing there are no aggregations of wildlife, or on unvegetated areas in the north of Fredriksen Island, both to be at least 0.5 km from any bird or seal colonies or aggregations;
c. overfly the Area by any aircraft below 250 m above the highest point;
d. use any of the Area's coves or bays for anchoring or mooring seacraft, except in accordance with the permit; ships may anchor only in the strait between Michelsen and Fredriksen Island;
e. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such

waste must be removed from the Area;

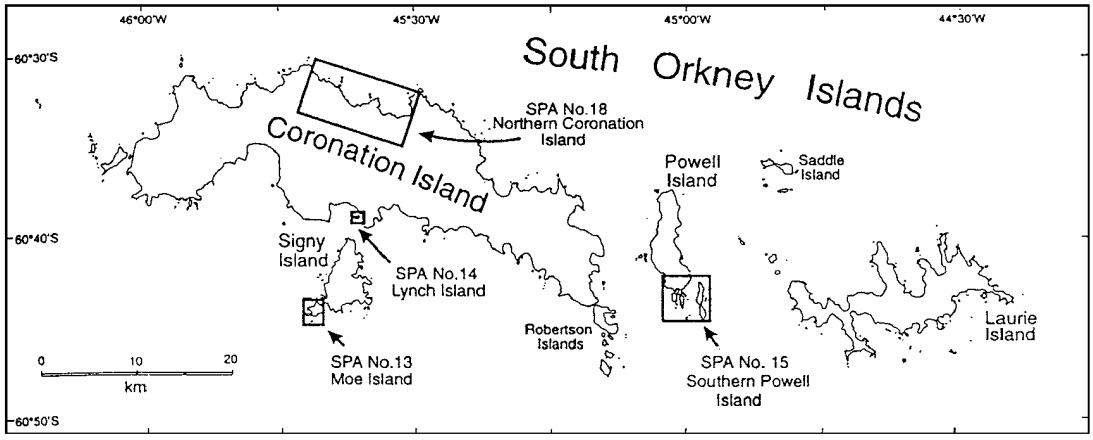
f. leave depots of fuel, food, or any other supplies within the Area, unless they are further required within the same season, at the end of which they must be removed;

g. erect any form of building within the Area.

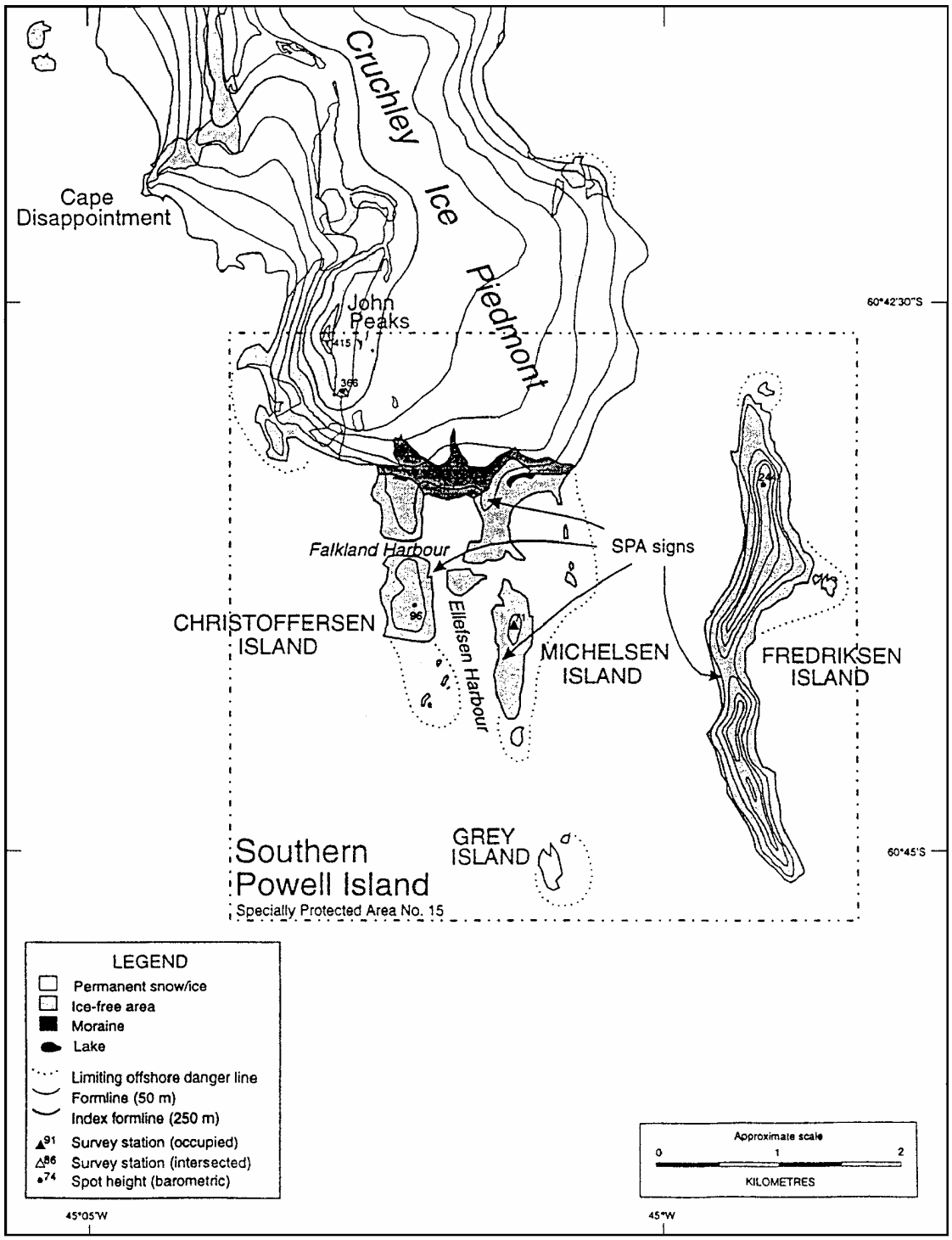
vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird (especially Giant petrels, which pedestrians should not approach closer than 100 m) or seal or stand of vegetation, unless required as specified in the permit.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits to the Area should be made at least once every five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



Map 1. Southern Powell Island and adjacent islands Specially Protected Area in relation to the South Orkney Islands



Map 2. Southern Powell Island and adjacent islands Specially Protected Area