

International Council of Scientific Unions

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INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS
SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH

SCAR BULLETIN
No 127, October 1997

**Stations of SCAR Nations operating in the Antarctic,
Winter 1997**

Stations are numbered clockwise from the Greenwich Meridian.

*Stations north of 60°S; †Stations on King George Island

Argentina

21 San Martin	68°08'S	67°06'W
30 †Jubany	62°14'S	58°40'W
34 Esperanza	63°24'S	57°00'W
35 Marambio	64°14'S	56°37'W
36 Orcadas	60°44'S	44°44'W
38 Belgrano II	77°52'S	34°37'W

Australia

9 Mawson	67°36'S	62°52'E
13 Davis	68°36'S	77°58'E
15 Casey	66°18'S	110°32'E
17 *Macquarie Island	54°30'S	158°57'E

Brazil

32 †Comandante Ferraz	62°05'S	58°24'W
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Chile

24 Capitan Arturo Prat	62°30'S	59°41'W
26 †Presidente Eduardo Frei	62°12'S	58°58'W
33 General Bernardo O'Higgins	63°19'S	57°54'W

China

25 †Great Wall	62°13'S	58°58'W
11 Zhongshan	69°22'S	76°23'E

France

8 *Alfred Faure, Is Crozet	46°26'S	51°52'E
10 *Port aux Français, Is Kerguelen	49°21'S	70°12'E
12 *Martin de Viviès, I Amsterdam	37°50'S	77°34'E
16 Dumont d'Urville	66°40'S	140°01'E

Germany

41 Neumayer	70°39'S	08°15'W
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India

2 Maitri	70°46'S	11°44'E
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Japan

5 Syowa	69°00'S	39°35'E
6 Dome Fuji	77°19'S	39°42'E

Korea

29 †King Sejong	62°13'S	58°47'W
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New Zealand

19 Scott Base	77°51'S	166°45'E
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Poland

31 †Arctowski	62°09'S	58°28'W
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Russia

3 Novolazarevskaya	70°46'S	11°50'E
7 Molodezhnaya	67°40'S	45°51'E
14 Mirny	66°33'S	93°01'E
27 †Bellingshausen	62°12'S	58°58'W

South Africa

4 *Marion Island	46°52'S	37°51'E
40 *Gough Island	40°21'S	09°52'W
42 SANAE	71°41'S	02°50'W

Ukraine

22 Vernadsky	65°15'S	64°16'W
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United Kingdom

20 Rothera	67°34'S	68°07'W
37 *Bird Island	54°00'S	38°03'W
39 Halley	75°35'S	26°15'W

United States

1 Amundsen-Scott	90°S	
18 McMurdo	77°51'S	166°40'E
23 Palmer	64°46'S	64°03'W

Uruguay

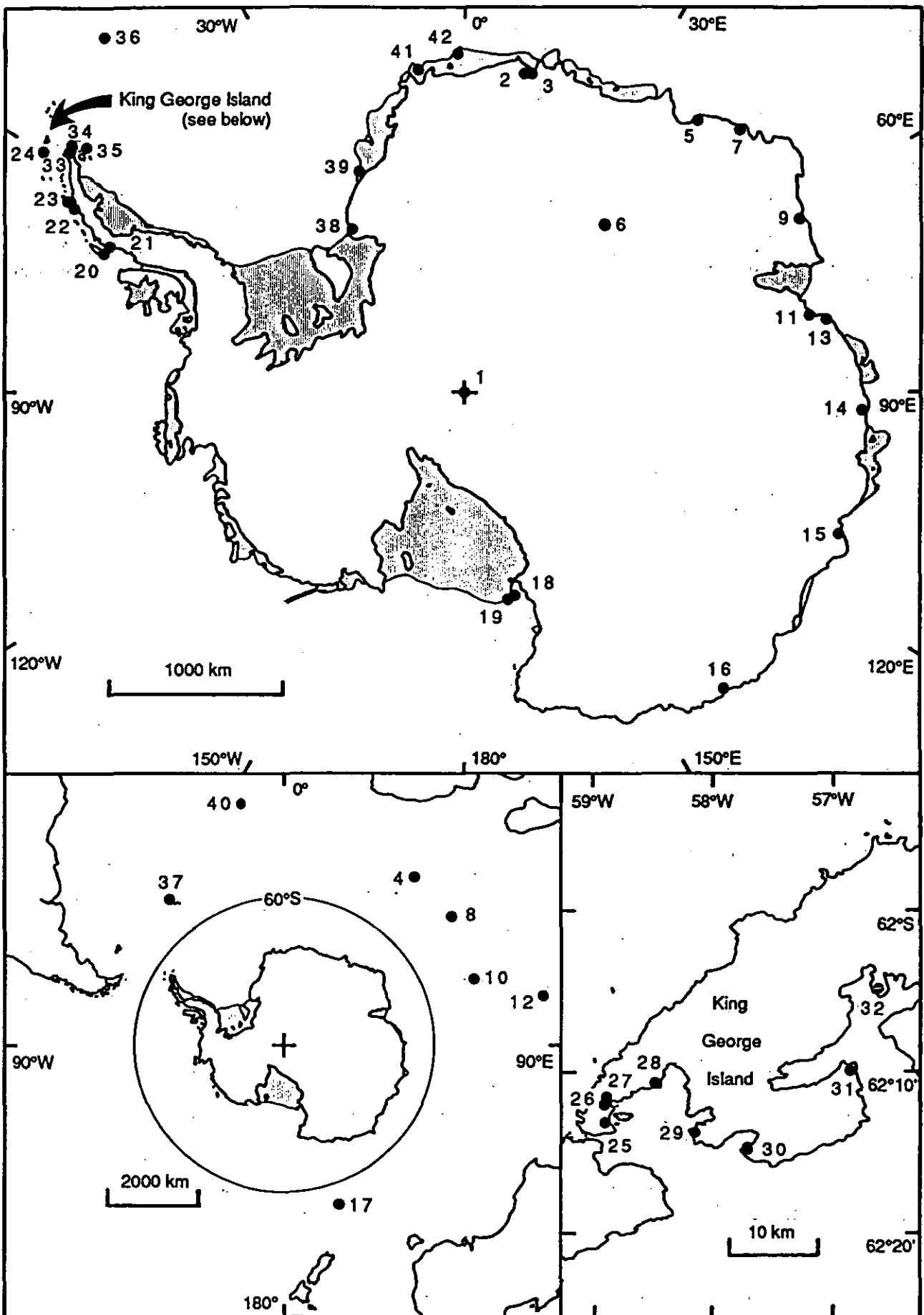
28 †Artigas	62°11'S	58°51'W
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Stations of SCAR Nations operating in the Antarctic, Winter 1997

Stations are numbered clockwise from the Greenwich Meridian.

*Stations north of 60°S: †Stations on King George Island

1	Amundsen-Scott	United States	90°S	
2	Maitri	India	70°46'S	11°44'E
3	Novolazarevskaya	Russia	70°46'S	11°50'E
4	*Marion Island	South Africa	46°52'S	37°51'E
5	Syowa	Japan	69°00'S	39°35'E
6	Dome Fuji	Japan	77°19'S	39°42'E
7	Molodezhnaya	Russia	67°40'S	45°51'E
8	*Alfred Faure, Is Crozet	France	46°26'S	51°52'E
9	Mawson	Australia	67°36'S	62°52'E
10	*Port aux Français, Is Kerguelen	France	49°21'S	70°12'E
11	Zhongshan	China	69°22'S	76°23'E
12	*Martin de Viviès, I Amsterdam	France	37°50'S	77°34'E
13	Davis	Australia	68°36'S	77°58'E
14	Mirny	Russia	66°33'S	93°01'E
15	Casey	Australia	66°18'S	110°32'E
16	Dumont d'Urville	France	66°40'S	140°01'E
17	*Macquarie Island	Australia	54°30'S	158°57'E
18	McMurdo	United States	77°51'S	166°40'E
19	Scott Base	New Zealand	77°51'S	166°45'E
20	Rothera	United Kingdom	67°34'S	68°07'W
21	San Martin	Argentina	68°08'S	67°06'W
22	Vernadsky	Ukraine	65°15'S	64°16'W
23	Palmer	United States	64°46'S	64°03'W
24	Capitan Arturo Prat	Chile	62°30'S	59°41'W
25	†Great Wall	China	62°13'S	58°58'W
26	†Presidente Eduardo Frei	Chile	62°12'S	58°58'W
27	†Bellingshausen	Russia	62°12'S	58°58'W
28	†Artigas	Uruguay	62°11'S	58°51'W
29	†King Sejong	Korea	62°13'S	58°47'W
30	†Jubany	Argentina	62°14'S	58°40'W
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36	Orcadas	Argentina	60°44'S	44°44'W
37	*Bird Island	United Kingdom	54°00'S	38°03'W
38	Belgrano II	Argentina	77°52'S	34°37'W
39	Halley	United Kingdom	75°35'S	26°15'W
40	*Gough Island	South Africa	40°21'S	09°52'W
41	Neumayer	Germany	70°39'S	08°15'W
42	SANAE	South Africa	71°41'S	2°50'W



**Resolutions and Measures adopted at the XXth Antarctic Treaty Consultative Meeting
Utrecht, The Netherlands, 29 April – 10 May 1996**

RESOLUTION I (1996)

The Representatives,

Recalling Resolution 5 (1995) on Antarctic Inspection Checklists;

Considering that under Article VII of the Antarctic Treaty inspections of remote field camps may be undertaken, and guidance in planning and carrying out such inspections might be helpful;

Recommend:

Adding the following text at the end of Checklist A

“Permanent Antarctic Stations and Associated Installations” attached to Resolution 5 (1995):

“This checklist could be used to help prepare for, and to guide, inspections of remote field camps as well as permanent stations and associated facilities. Some items on the checklist may not be relevant to the inspection of remote field camps. When planning inspections, the checklist should be examined and adapted for the particular facility to be inspected.”

RESOLUTION II (1996)

The Representatives,

Noting that Antarctica has been the subject of significant works of art, literature and music;

Recognising that the unique character of Antarctica itself represents an inspiration for protecting its values;

Recommend:

Promotion of understanding and appreciation of the values of Antarctica, in particular its scientific, aesthetic and wilderness values, including through:

- a) Educational opportunities, in particular for young persons, and
- b) The contribution of writers, artists and musicians.

RESOLUTION III (1996)

Extension of the Expiry Dates for Sites of Special Scientific Interest

The Representatives,

Recalling Recommendations VIII-3 and XII-5, and Resolution 7 (1995);

Noting that experience of the practical effect of the Management Plans for these sites has shown them to be an effective means of reducing the risks of interference with science in areas of special scientific interest; and

Conscious of the advantage of further harmonising the expiry dates of Sites of Special Scientific Interest pending the entry into force of the Protocol on Environmental Protection to the Antarctic Treaty and Annex V to that Protocol.

Recommend that:

1. The date of expiry of Sites of Special Scientific Interest numbers 13 and 20 which were considered at XIX ATCM be extended to 31 December 2000.
2. The date of expiry of Sites of Special Scientific Interest numbers 2, 23, 24, 25, 26, 27 and 28 be extended from 31 December 1997 to 31 December 2000.
3. The date of expiry of Sites of Special Scientific Interest numbers 29, 31 and 32 be extended from 31 December 1999 to 31 December 2000.
4. The Governments of the Consultative Parties should use their best endeavours to ensure, in accordance with paragraphs 3 and 4 of Recommendation VII-3, that the Management Plans for these sites are complied with.

RESOLUTION IV (1996)

Effective management and conservation of Historic Sites and Monuments

The Representatives,

Noting the need to ensure the effective management and conservation of Historic Sites or Monuments;

Aware that those who originally created Historic Sites or Monuments are not necessarily the same as the designators for the Sites or the proposers of Management Plans for some sites;

Recognising the particular historic and cultural importance of such sites to originating Parties;

Recommend that:

During the preparations for the Listing of a Historic Site or Monument, or the writing of a Site Management Plan, adequate liaison is accorded by the proposing Party with the originator of the Historic Site or Monument and other Parties, as appropriate.

RESOLUTION V (1996)

Revised renumbering of Antarctic Protected Areas

The Representatives,

Noting the requirement in Article 3(3) of Annex V that all SPAs and SSSIs designated as such by past ATCMs should, on entry into force of Annex V, be renamed and renumbered accordingly;

Acknowledging that at the XIX ATCM the Parties agreed to adopt a numbering system based on the use of three digits;

Taking account of the gaps in the existing numbering system;

Recommend that:

1. The numbering system for ASPAs annexed to this Resolution be adopted; and
2. The three-digit numbers should be introduced at the same time as an Annex V Management Plan is adopted by the ATCM for any protected area.
3. Where an SPA and SSSI are co-located that they be assigned separate numbers so as not to pre-empt any review of the Management Plans for those areas.

ANNEX

PROPOSED RENUMBERING OF ANTARCTIC PROTECTED AREAS

Existing SPAs	Existing Site No.	Proposed New Site No.	Year Annex V Management Plan adopted
'Taylor Rookery'	1	101	1992
Rookery Islands	2	102	1992
Ardery Island and Odbert Island	3	103	1992
Sabrina Island	4	104	
Beaufort Island	5	105	
Cape Crozier [redesignated as SSSI no 4]	-	-	
Cape Hallet	7	106	
Dion Islands	8	107	
Green Island	9	108	
Byers Peninsula [redesignated as SSSI no 6]	-	-	
Cape Shirreff [redesignated as SSSI no 32]	-	-	
Fildes Peninsula [redesignated as SSSI no 5]	-	-	
Moe Island	13	109	1995
Lynch Island	14	110	
Southern Powell Island	15	111	1995
Coppermine Peninsula	16	112	
Litchfield Island	17	113	
North Coronation Island	18	114	
Lagotellerie Island	19	115	
New College Valley	20	116	1992
Avian Island (was SSSI no 30)	21	117	
'Cryptogam Ridge'	22	118	
Forlidas and Davis Valley Ponds	23	119	
Pointe-Géologie Archipelago	24	120	1995
Existing SSSIs	Existing Site No.	Proposed New Site No.	Year Annex V Management Plan adopted
Cape Royds	1	121	
Arrival Heights	2	122	
Barwick Valley	3	123	

Existing SSSIs	Existing Site No.	Proposed New Site No.	Year Annex V Management Plan adopted
Cape Crozier (was SPA no 6)	4	124	
Fildes Peninsula (was SPA no 12)	5	125	
Byers Peninsula (was SPA no 10)	6	126	
Haswell Island	7	127	
Western Shore of Admiralty Bay	8	128	
Rothera Point	9	129	
Caughley Beach	10	116	
'Tramway Ridge'	11	130	1995
Canada Glacier	12	131	
Potter Peninsula	13	132	
Harmony Point	14	133	
Cierva Point	15	134	
North-east Bailey Peninsula	16	135	
Clark Peninsula	17	136	
North-west White Island	18	137	
Linnaeus Terrace	19	138	
Biscoe Point	20	139	
Parts of Deception Island	21	140	
'Yukidori Valley'	22	141	
Svarthamaren	23	142	
Summit of Mount Melbourne	24	118	
'Marine Plain'	25	143	
Chile Bay	26	144	
Port Foster	27	145	
South Bay	28	146	
Ablation Point	29	147	
Avian Island [redesignated as SPA no 21]	-	-	
Mount Flora	31	148	
Cape Shirreff (was SPA no 11)	32	149	
Ardley Island	33	150	
Lions Rump	34	151	
Western Bransfield Strait	35	152	
Dallmann Bay	36	153	

MEASURE I (1996)

Revised Description and Management Plan for Sites of Special Scientific Interest (SSSI)

The Representatives,

Recommend to their Governments the following Measure for approval in accordance with paragraph 4 of Article IX of the Antarctic Treaty.

For the Sites of Special Scientific Interest mentioned below.

- (i) the Management Plan inserted in the Annex to Recommendation XIII-8 on the Facilitation of scientific research: Sites of Special Scientific Interest be deleted;
- (ii) the relevant Management Plan of the Sites of Special Scientific Interest, annexed to this Measure, be

inserted in the Annex to Recommendation XIII-8 on the Facilitation of scientific research: Sites of Special Scientific Interest;

The Sites of Special Scientific Interest concerned are:

SSSI No 9 Rothera Point, Adelaide Island

SSSI No 19 Linnaeus Terrace, Asgaard Range, Victoria Land;

- (iii) that the Consultative Parties ensure that their nationals comply with mandatory provisions of the new Management Plans.

**Management Plan
for Site of Special Scientific Interest (SSSI) No. 9
ROTHERA POINT, ADELAIDE ISLAND**

1. Description of Values to be Protected

Rothera Point was originally designated in Recommendation XIII-8 (1985, SSSI No. 9) after a proposal by the United Kingdom that the Site would serve as a biological research site and control area against which the effects of human impact associated with the adjacent Rothera Research Station (UK) could be monitored in an Antarctic fulfilled ecosystem. The Site itself has little intrinsic nature conservation value.

2. Aims and Objectives

2. (i) Aims

Management of Rothera Point aims to:

- avoid major changes to the structure and composition of the terrestrial ecosystems, in particular to the fellfield ecosystem and breeding birds, by:
- preventing physical development within the site, and;
- limiting human access to the Site to maintain its value as a control area for environmental monitoring studies;
- allow scientific research and monitoring studies of breeding birds, terrestrial and freshwater biota, and soils, while ensuring as far as possible that the Site is protected from over-sampling;

- allow regular visits for management purposes in support of the management plan.

2. (ii) Objectives

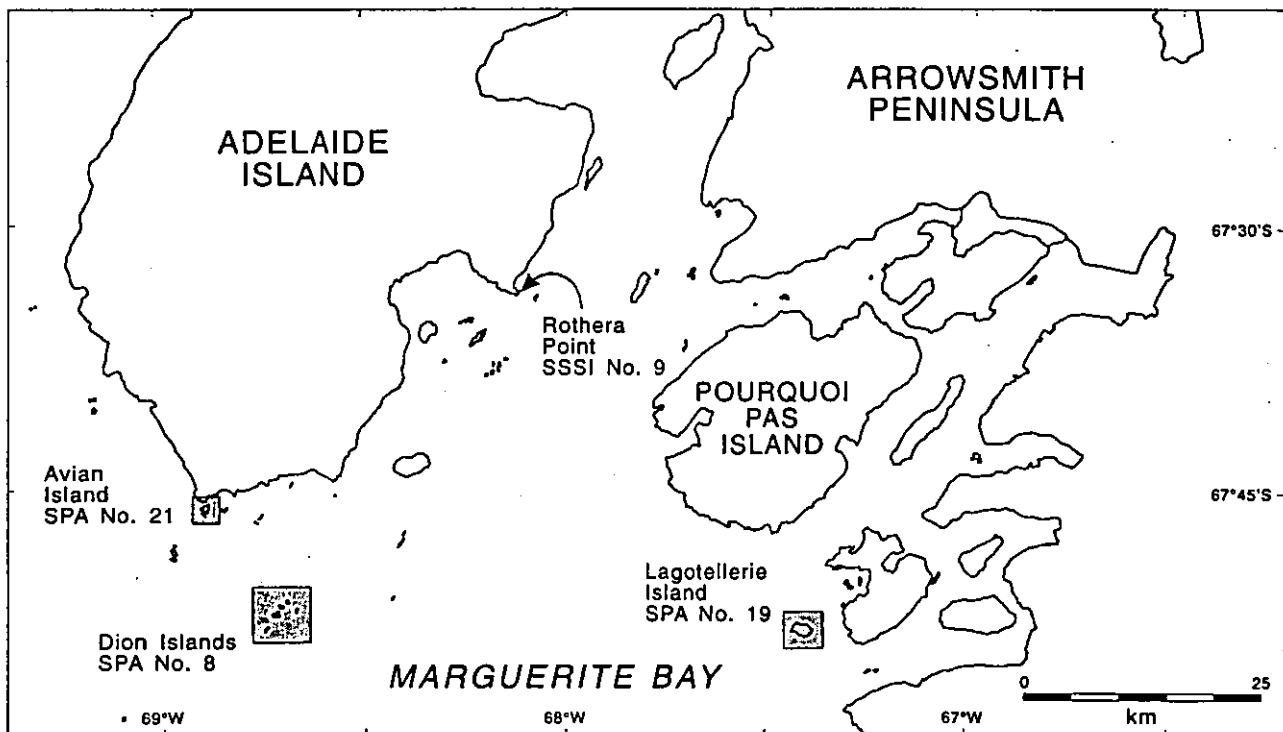
The Site is unique in Antarctica as it is the only protected area currently designated (1995) solely for its value in the monitoring of human impact. The objective is to use the Site as an unaffected control area in assessing the impact of activities undertaken at Rothera Research Station on the Antarctic environment.

The hypothesis being tested is that the activities undertaken at Rothera Research Station have not caused environmental impact within the Site.

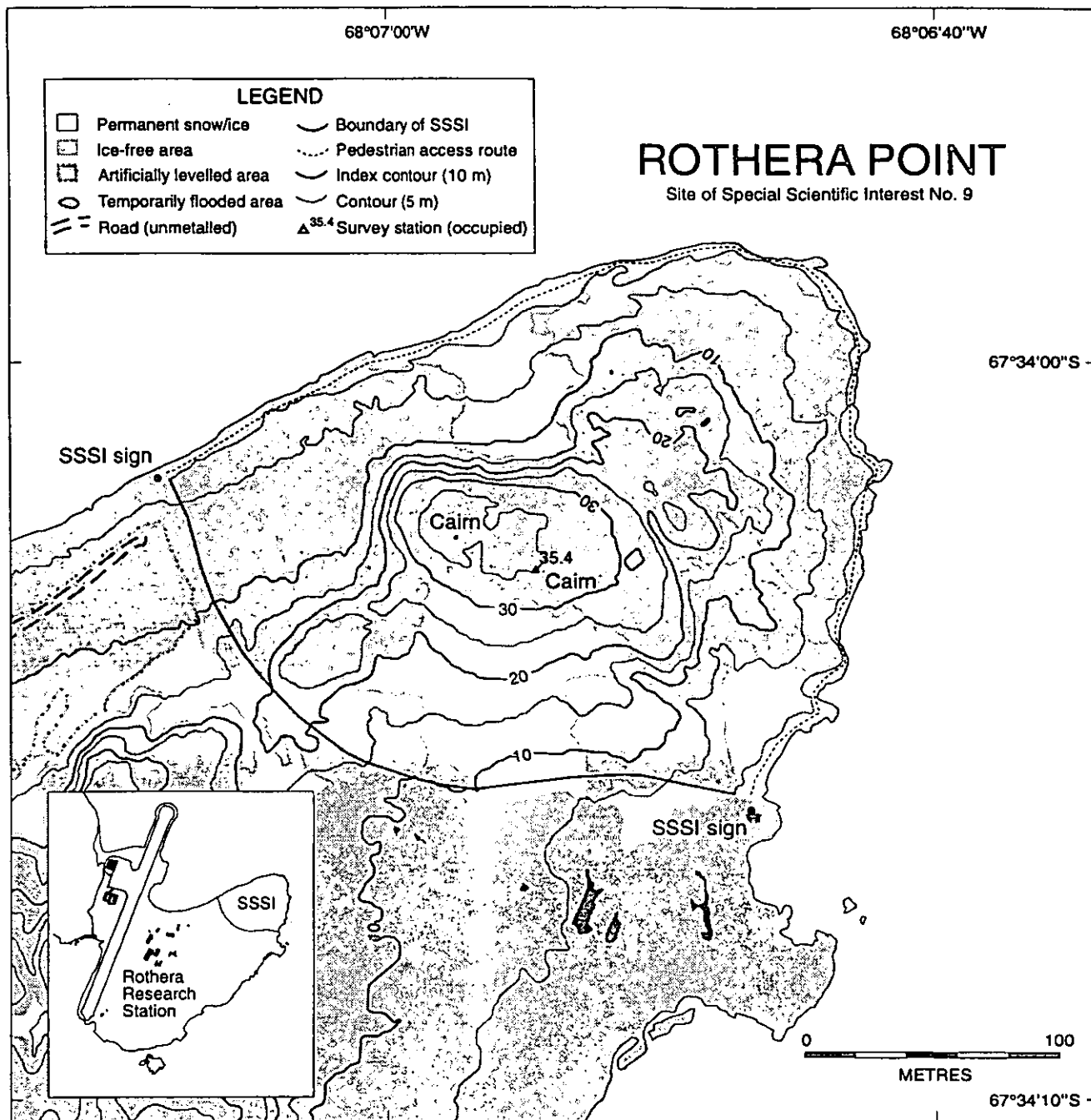
Monitoring studies undertaken by the British Antarctic Survey (BAS) began at Rothera Point in 1976, before the establishment of the station later that year, and have expanded considerably since 1989. The BAS plans to continue monitoring studies in the future.

The purposes of the monitoring programme (1995) are to:

- survey the distribution of terrestrial flora and invertebrates every decade;
- assess heavy metal concentrations in lichens every five years;
- assess petroleum hydrocarbon concentrations in gravel and soil every other year;
- survey the breeding bird population annually.



Map 1. Rothera Point Site of Special Scientific Interest (SSSI) in relation to Marguerite Bay and other nearby protected areas.



Map 2. Rothera Point Site of Special Scientific Interest.

3. Management Activities

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

- signboard illustrating the location and boundary of the Site and stating entry restrictions shall be erected at the major access points and serviced on a regular basis;
- a map showing the location and boundaries of the Site and stating entry requirements shall be displayed in a prominent position at Rothera Research Station;
- visits shall be made as necessary (no less than once every two years) to assess whether the Site continues to serve the purposes for which it was designated and to ensure management activities are adequate.

4. Period of Designation

Designation for an indefinite period.

5. Maps

Map 1 shows the location of Rothera Point in relation to northern Marguerite Bay. Map 2 shows the Site in greater detail, with an inset showing the Site in relation to Rothera Research Station.

6. Description of the Area

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

Rothera Point (lat. 67°34'S, long 68°08'W) is situated in Ryder Bay, at the south-east corner of Wright Peninsula on the

east side of Adelaide Island, south-west Antarctic Peninsula.

The Site is the north-eastern one-third of Rothera Point (Map 2), and is representative of the area as a whole. It is about 30 m from west to east and 250 m from north to south, and rises to a maximum height of 36 m. At the coast, the Site boundary is the 2.5 m contour. No upper shore, littoral or sublittoral areas of Rothera Point are therefore included within the SSSI. The southern boundary of the Site, running across Rothera Point, is marked by a line of pink fuel drums filled with concrete. The remaining boundary is unmarked. There are two signboards just outside the perimeter of the Site located at the starting points of the pedestrian access route around Rothera Point.

The Site boundary extends to the 2.5 m contour at the coast. There is unrestricted pedestrian access below this contour height around Rothera Point. The recommended pedestrian access route follows the Mean High Water Mark (MHW) and is shown on Map 2.

Small areas of permanent ice occur to the north and south of the summit of the SSSI. There are no permanent streams or pools.

The rocks are predominantly heterogeneous intrusions of diorite, granodiorite and adamellite of the mid-Cretaceous-Lower Tertiary Andean Intrusive Suite. Veins of copper ore are prominent bright green stains on the rock. Soil is restricted to small pockets of glacial till and sand on the rock bluffs. Local deeper deposits produce scattered small circles and polygons of frost sorted material. There are no extensive areas of patterned ground. Around prominent rock outcrops used as bird perches by Dominican gulls (*Larus dominicanus*) there are accumulations of recent and decaying limpet (*Nacella concinna*) shells forming patches of calcareous soil. There are no accumulations of organic matter.

There are no special or rare geological or geomorphological features in the Site.

The limited terrestrial biological interest within the Site is confined to the rock bluffs where there is locally abundant plant growth dominated by lichens. The vegetation is representative of the southern "maritime" Antarctic fellfield ecosystem and is dominated by the fruiticose lichens *Usnea antarctica*, *U sphaelata*, and *Pseudephebe minuscula*, and the foliose lichen *Umbilicaria decussata*. Numerous crustose lichens are associated, but bryophytes (mainly *Andreaea* spp) are sparse.

A single very small population of Antarctic pearlwort (*Colobanthus quitensis*) occurs below the northern cliff of the Site, whilst a few plants of Antarctic hair grass (*Deschampsia antarctica*) have become established at two locations since 1989.

The invertebrate fauna is impoverished and consists only of a few species of mites and spring-tails, of which *Halozetes belgicae* and *Cryptopygus antarcticus* are the most common.

There are no special or rare terrestrial flora and fauna in the Site.

Brown and south polar skuas (*Catharacta lonnbergii* and *C. maccormicki*) are the most abundant breeding birds found in the Site, with three pairs of skuas recorded nesting in the 1994–95 season. A pair of Dominican gulls (*Larus dominicanus*) nest in the Site. Wilson's storm petrels (*Oceanites oceanicus*) also breed, but only one nest has been found.

Rothera Research Station (UK) lies about 250 m west of the western boundary of the Site (see inset on Map 2).

6. (ii) Restricted zones within the Site

None.

6. (iii) Location of structures within the Site

A rock cairn marks the summit of the Site (36 m) and 35 m to the east south east of it there is another cairn (35.4) marking a survey station.

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

SPA No. 8, Dion Islands, Marguerite Bay, lies about 15 km south of Adelaide Island. SPA No. 19, Lagotellerie Island, Marguerite Bay, lies about 11 km south of Pourquoi Pas Island. SPA No. 21, Avian Island, Marguerite Bay, lies about 0.25 km south of the south-west tip of Adelaide Island. The locations of these SPAs are shown on Map 1.

7. Permit Conditions

Entry to the Site is prohibited without a Permit. Permits shall be issued only by appropriate national authorities, and may contain both general and specific conditions.

General conditions for issuing a Permit to enter the Site may include:

- activities limited to scientific research or monitoring purposes;
- the actions permitted will not jeopardize the ecosystem or scientific or monitoring values of the Site.
- any management activities are in support of the objectives of the Management Plan;
- the actions permitted are carried out in accordance with this Management Plan;
- the permit holder must carry the permit, or an authorized copy, within the Site.

National authorities may attach further general and specific conditions to a permit.

7. (i) Access to and movement within the Site

Access to the Site shall be on foot.

Landing of helicopters within the Site is prohibited. As far as practicable, helicopter overflight of the Site shall be avoided.

Vehicles are prohibited in the Site.

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

Activities which are or may be conducted within the Site are:

- scientific research or monitoring which will not jeopardise the ecosystems of the Site;
- essential management activities.

7. (iii) *Installation, modification or removal of structures*
No structures are to be erected in the Site, or equipment installed, except for essential scientific or management activities (eg signboards, monitoring equipment) as specified in the permit.

All scientific and monitoring equipment, including marker stakes, installed in the Site must be approved by Permit and clearly identified to show principal investigator, project and year of installation. The Permit holder must remove any scientific or monitoring equipment installed as soon as it is no longer required or on the expiry of the permit which ever is the sooner.

7. (iv) *Location of field camps*

Camping in the Site is prohibited. Accommodation may be available at Rothera Research Station.

7. (v) *Restrictions on materials and organisms which may be brought into the site*

No non-indigenous living animals, plant material, micro-organisms or soil shall be deliberately introduced into the Site.

Any hazardous substances or chemicals, including radioisotopes, which may be introduced for scientific, monitoring or management purposes specified in the Permit, shall be removed from the Site at or before the conclusion of the activity for which the Permit was granted.

Fuel, food and other materials must not be stored in the Site, unless required for essential purposes connected with the activity for which the Permit has been granted. All such materials introduced shall be removed from the Site at or before the conclusion of the activity for which the Permit was granted. Permanent depots are not permitted.

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

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

Taking of or harmful interference with native flora and fauna is prohibited, except in accordance with a Permit. Where taking of or harmful interference with animals is

involved this should be in accordance with the SCAR Code of Conduct for the use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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

Material may be collected and/or removed from the Site only in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs. Material of human origin not brought into the site by the Permit holder, or otherwise authorised, which is likely to compromise the values of the Site shall be removed unless the impact of removal is likely to be greater than leaving the material *in situ*. In the latter case the appropriate authority shall be notified.

7. (viii) *Disposal of wastes*

All wastes, including all human wastes, must be removed from the Site.

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 Site to carry out scientific research, monitoring and site inspection activities, which may involve the collection of a small number of samples for analysis, to erect or maintain signboards, or to carry out protective measures.

7. (x) *Requirements for reports*

Parties should ensure that the principal holder of 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, 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 Site.

Management Plan for Site of Special Scientific Interest (SSSI) No. 19 LINNAEUS TERRACE, ASGAARD RANGE, VICTORIA LAND

1. Description of Values to be Protected

Linnaeus Terrace was originally designated in Recommendation XIII-8 (1985, SSSI No. 19) after a proposal by the United States of America on the grounds that the Area is one of the richest known localities for the cryptoendolithic communities that colonize the Beacon Sandstone. Ex-

posed surfaces of the Beacon Sandstone are the habitat of cryptoendolithic microorganisms, which may colonize a zone of up to 10 millimetres deep below the surface of the rocks. The sandstones exhibit a range of biological and physical weathering forms, as well as trace fossils, and many of the formations are fragile and vulnerable to

disturbance and destruction by trampling and sampling. Cryptoendolithic communities are known to develop over time periods in the order of tens of thousands of years, and damaged rock surfaces would be slow to recolonize. The excellent examples of these communities found at the site are the subject of the original detailed Antarctic cryptoendolithic descriptions. As such, Linnaeus Terrace is considered a type locality with outstanding scientific values related to this ecosystem. These values, as well as the vulnerability of the site to disturbance and destruction, require that it receive long-term special protection.

2. Aims and objectives

Management at Linnaeus Terrace aims to:

- avoid degradation of, or substantial risk to, the values of the Area;
- prevent unnecessary human disturbance to the Area and protect the fragile rock formations from breakage;
- permit research on the cryptoendolithic communities while ensuring they are protected from over-sampling;
- permit visits for management purposes in support of the objectives of the management plan.

3. Management activities

Durable wind direction indicators should be erected close to the designated helicopter landing site whenever it is anticipated there will be a number of landings at the Area in a given season. These should be replaced as needed and removed when no longer required. Brightly colored markers, which should be clearly visible from the air and pose no significant threat to the environment, shall be placed to mark the helicopter landing pad.

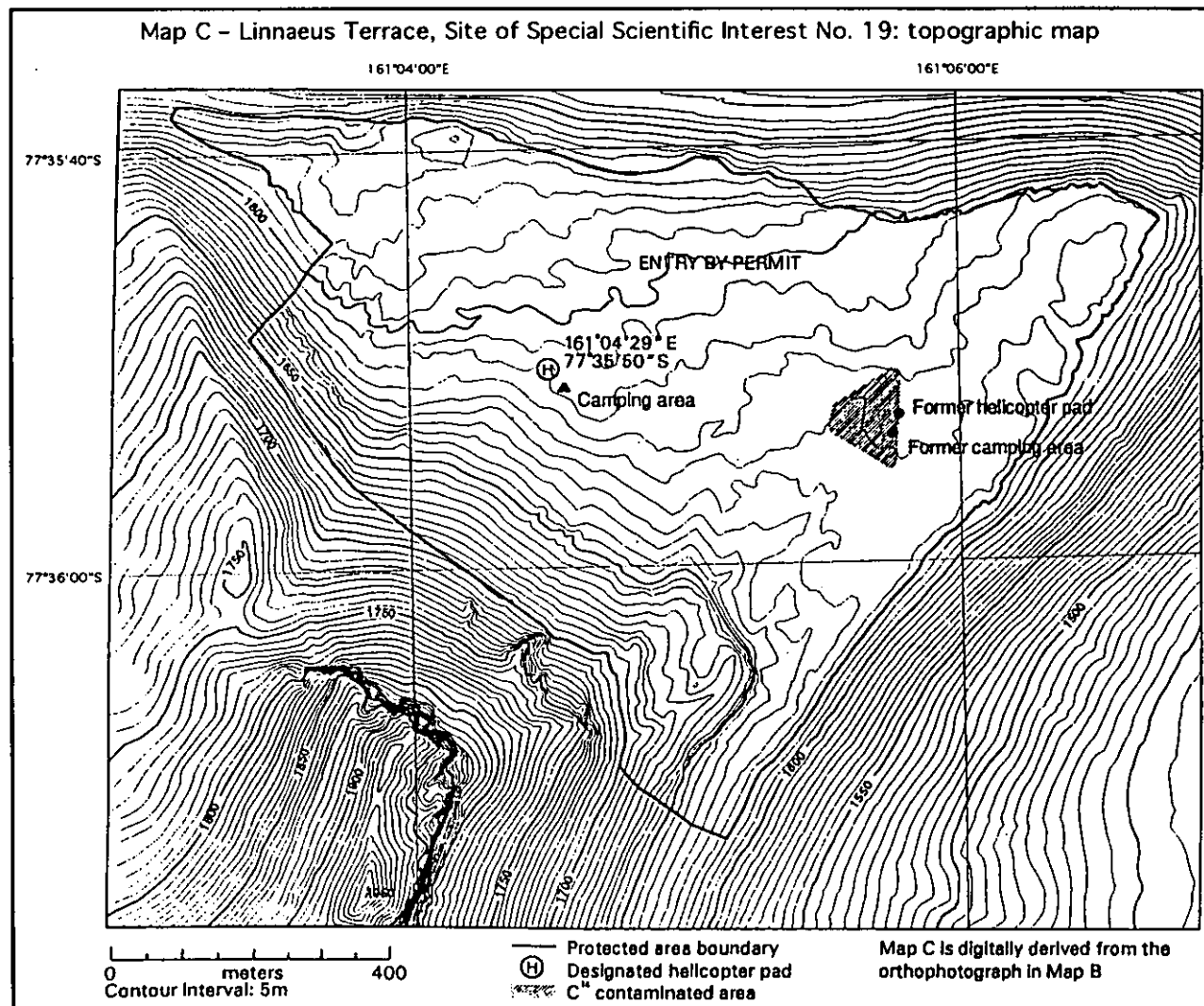
Markers or structures erected within the Area for scientific or management purposes shall be maintained in good condition.

Visits shall be made as necessary (no less than once every five 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.

National Antarctic Programs operating in the region shall consult together with a view to ensuring these steps are carried out.

4. Period of designation

Designated under ATCM Measure XX-1 for an indefinite period.



5. Maps and photographs

Map A: Linnaeus Terrace, Wright Valley, location image-map. [Not reproduced here.]

Orthophotograph specifications:

Projection: Lambert conformal conic; Standard parallels: 1st - 79°18'00" S; 2nd - 76°42'00" S.

Central Meridian: 162°30'00" E

Latitude of Origin: 78°01'16.211" S

Spheroid: WGS84; Positional accuracy of original orthophotograph at 1:10,000 is ca 2 m.

Photography USGS/DoSLI (SN7856) 22 November 1993.

Map B: Linnaeus Terrace, protected area orthophotograph. Orthophotograph specifications are the same as in Map A, except positional accuracy of original orthophotograph at 1:2,500 is ca 0.5 m. [Not reproduced here.]

Map C: Linnaeus Terrace, topographic map. Map specifications are the same as those for Map B. Contours are derived from the digital elevation model used to generate the orthophotograph in Map B.

Figure 1: Perspective view showing Linnaeus terrace above the South Fork of Wright Valley and Don Juan Pond. The perspective is from an elevation of 7000 m, 20 km out from the Area at a bearing of 65°E. [Not reproduced here.]

Figure 2: Linnaeus Terrace, perspective view, showing the boundaries of the Area and the designated helicopter pad (161°04'29" E, 77°35'50" S, elevation 1610 m). The perspective is from an elevation of 2000 m, 2300 m out from the Area at a bearing of 65°E. Image source: Maps A and B. [Not reproduced here.]

Figure 3: Photograph illustrating some of the fragile rock formations and fossils found on Linnaeus Terrace. [Not reproduced here.]

6. Description of the Area

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

Linnaeus Terrace (161°05'00" E, 77°35'50" S,) is an elevated bench of weathered Beacon Sandstone approximately 1.5 km in length and 1 km in width. It is located at the east end of the Asgaard Range, 1.5 km north of Oliver Peak (161°02'30" E, 77°36'40" S) at an elevation of about 1600 m. The Area overlooks the South Fork of the Wright Valley, is about 4 km from Don Juan Pond and 10 km from the terminus of the Wright Upper Glacier (Map A and Figure 1). The boundaries of the Area and prominent features are shown in the accompanying maps and figures.

On the ground, the lower (northern) boundary of the Area is characterized by the presence of a predominantly sandstone outcrop of approximately 3 m in height which extends for much of the length of the terrace. The lower boundary of the Area is defined as the upper edge of this outcrop, and as straight lines adjoining the visible edges where the outcrop is covered by surface talus (Figure 2). The upper (southern) boundary of the Area is character-

ized by a line of sandstone outcrop of about 2–5 m in height, occurring between the elevations of 1660–1700 m about 70 m above the general elevation of the terrace. The upper boundary of the Area is defined as the uppermost edge of this outcrop, and shall be considered a straight line between the visible edges where the outcrop is covered by surface talus (Map B, Figure 2). The west end of the Area is defined as where the terrace narrows and merges with a dolerite talus slope on the flank of the NW ridge of Oliver Peak. The boundary at the west dips steeply from where the upper outcrop disappears, following the border of the dolerite talus with the terrace sandstone down to the westernmost corner. The east boundary is defined as the 1615 m contour, which follows closely the edge of an outcrop which extends much of the width of the terrace. At the southernmost corner of the Area the terrace merges with the slopes into the valley to the east: from this point the boundary extends upward to the 1700 m contour, from where it follows the line of outcrop defining the south boundary (Map B, Figure 2).

Winter air temperature at Linnaeus Terrace ranges between -20°C and -45°C, while in January the daily mean is -5°C. Cryptoendolithic microorganisms typically colonize porous Beacon sandstones with a 0.2–0.5 mm grain size, with an apparent preference for rocks stained tan or brown by Fe³⁺-containing oxyhydroxides. A silicified crust of about 1 mm thickness on many of the rocks probably facilitates colonization by stabilizing the surface and reducing wind erosion. Three of the five described cryptoendolithic microbial communities have been found on Linnaeus Terrace: the Lichen Dominated, Red-Gloeocapsa and Chroococciopsis Communities. Linnaeus Terrace is the type locality of the endemic green algal genus *Hemichloris* and of the endemic Xanthophyceean algal species *Heterococcus endolithicus*. The Area is unusual in that so many different living and fossil endolithic communities are present within a small area. The main physical and biological features of these communities and their habitat are described in Friedmann, E I (ed), 1993, *Antarctic Microbiology*, Wiley-Liss, New York.

A small area (Map C) has been contaminated by release of the C¹⁴ radioactive isotope. While the contamination poses no significant human or environmental threat, any samples gathered within this area are considered unsuitable for scientific work using C¹⁴ techniques.

6. (ii) Restricted zones within the Area

None.

6. (iii) Structures within the Area

A number of rocks within the Area have small instruments installed into them for scientific purposes and should not be disturbed.

6. (iv) Location of other Specially Protected Areas or Sites of Special Scientific Interests within close proximity of the Area

None.

7. Permit conditions

Permits may be issued only by appropriate national authorities as designated under Annex V, Article 7 of the Protocol on Environmental Protection to the Antarctic Treaty. Conditions for issuing a Permit to enter the Area are that:

- it is issued only for scientific study of the cryptoendolithic ecosystem, or for a compelling scientific or management purpose that cannot be served elsewhere;
- the actions permitted will not jeopardize the natural ecological system or scientific values of the Area;
- any management activities are in support of the objectives 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 is supplied to the authority named in the Permit; any Permit issued shall be valid for a stated period.

7. (i) Access to and movement within the Area

Access to the Area is permitted by foot or by helicopter. No special restrictions apply to the routes used to move to and from the Area. Helicopters shall land only at the designated site at the west end of the terrace (161°04'29"E, 77°35'50"S, elevation 1610 m: Maps B and C), except when specifically authorized by Permit otherwise for a compelling scientific or management purpose. Use of helicopter smoke bombs within the Area is discouraged. When transporting permitted visitors, pilots, air crew, or passengers *en route* elsewhere on helicopters are prohibited from moving on foot beyond the immediate vicinity of the designated landing and camping sites unless specifically authorized by a Permit. Land vehicles are prohibited within the Area.

Pedestrian traffic should be kept to the minimum necessary consistent with the objectives of any permitted activities. Visitors should avoid breaking fragile rock formations.

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

- Scientific research which will not jeopardize the ecosystem of the Area;
- Essential management activities, including monitoring.

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

No structures, except boundary markers and signs, 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 the responsibility of the authority which granted the original Permit.

7. (iv) Location of field camps

Camping is permitted within the Area only at the designated site in the immediate vicinity of the helicopter landing pad (Maps B and C).

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

To avoid compromising the microbial ecosystem for which this site is protected, no living animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions should be taken against accidental introductions. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radionuclides 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. Food, fuel, and other materials are not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All such 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 minimized.

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 be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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. Material of human origin, not brought into the Area by the Permit Holder, but which is likely to compromise the values of the Area may be removed from any part of the Area.

7. (viii) Disposal of waste

All wastes, including all human wastes, must 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

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 biological material for analysis or audit, or to carry out protective measures.

7. (x) *Requirements for reports*

Parties should ensure that the principal holder of each permit issued submit to the appropriate authority a report describing the activities undertaken. Such report should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. Parties should provide summary descriptions of activities conducted by

persons subject to their jurisdiction, 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 organizing the scientific use of the Area.

MEASURE II (1996)

Antarctic Protected Area System: New Historic Sites and Monuments

The representatives,

Recalling Recommendations I-IX, V-4, VI-14, VII-9, XII-7, XIII-16 and XIV-8, Measures 4 and 5 (1995) and Resolution 8 (1995),

Recommend to their governments the following Measure for approval in accordance with paragraph 4 of Article IX of the Antarctic Treaty

to add the following historic monuments to the "List of Historic Monuments Identified and Described by the proposing Government or Governments" annexed to recommendation VII-9, thereby guaranteeing its full

protection and respect as envisaged by the Recommendations noted above.

Mikkelsen Cairn, Tryne Islands, Vestfold Hills. A rock cairn and a wooden mast erected by the landing party led by Captain Klarius Mikkelsen of the Norwegian whaling ship Thorshavn and including Karoline Mikkelsen, Captain Mikkelsen's wife, the first woman to set foot on East Antarctica. The cairn, at latitude 68°22'34"S longitude 78°24'33"E was discovered by Australian National Antarctic Research Expedition field parties in 1957 and again in 1995.

Sixth International Symposium

on

Antarctic Glaciology

(ISAG-6)

Lanzhou, People's Republic of China, 5-9 September 1998

The suggested topics include:

1. Mass balance of Antarctic ice sheet and sea level change
2. Palaeoenvironmental records from Antarctic ice cores and other sources
3. Physical and chemical processes and environmental record formation in Antarctic snow and ice
4. Sea ice and climate in the Southern Ocean
5. Ice / ocean / atmosphere interaction
6. Technical advances in snow and ice science and in cold regions research
7. Snow and ice properties and modelling of Antarctic ice masses
8. Comparison of climatic and environmental records from Antarctica and other regions

Excursions

There will be a choice of two one-week excursions. One will be to Tianshan Glaciological Station (80 km away from Urumqi, 3,800 m a.s.l.) via Donghuang Cave

Museum, and the other will be to Tibet Plateau Observation Station (Germud, Qinghai Province, 3,400 m a.s.l.) via Qinghai Lake.

For further information, contact

Secretary General of ISAG-6
Laboratory of Ice Core and Cold Regions Environment
Lanzhou Institute of Glaciology and Geocryology, CAS
Lanzhou 730000
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Scientific Committee on Antarctic Research

VII International Biology Symposium

31 August – 4 September 1998

University of Canterbury
Christchurch, New Zealand

**Antarctic Ecosystems:
models for wider ecological understanding**

Sub Themes

1. Processes at the organism level

- 1.1 Energetics
- 1.2 Ecological genetics
- 1.3 Trophic interactions
- 1.4 Nutrient dynamics

2. Adaptive Evolution

- 2.1 Life history adaptations
- 2.2 Biochemical adaptations
- 2.3 Physiological adaptations
- 2.4 Morphological adaptations

3. Large Scale Patterns and Processes

- 3.1 Faunal and floral history
- 3.2 Speciation and micro-evolution
- 3.3 Colonisation and recruitment
- 3.4 Community development

4. Long Term Change

- 4.1 Climate change
- 4.2 Sub-decadal climate variability
- 4.3 Increasing UV-B
- 4.4 Long-term ecological research

5. Human Impact

- 5.1 Environmental monitoring
- 5.2 Environmental management
- 5.3 Management of living resources
- 5.4 Pollution, ecotoxicology and introduced biota

There will be a session for papers that do not fit into the above categories.

Contact details

The Conference Organiser: VII SCAR Biology Symposium
Centre for Continuing Education
University of Canterbury
Private Bag 4800
Christchurch
New Zealand

Tel: +64 3 364 2645

Fax: +64 3 364 2057

E-mail: scarbio@cont.canterbury.ac.nz

Conference Web Site: <http://www.scar.org/scar-meetings/biology.html>

**International Arctic Science Committee
Scientific Committee on Antarctic Research
Symposium on Polar Aspects of Global Change
Tromsø, Norway
24–28 August 1998
and
Field Trip to Svalbard**

The Norwegian Polar Institute and the Polar Environmental Centre in Tromsø will be the host of an international symposium on polar aspects of global change, sponsored by the International Arctic Science Committee (IASC) and the Scientific Committee on Antarctic research (SCAR). The symposium will have a bi-polar focus and will have oral and poster sessions, as well as field trips, one of which will go to Svalbard.

Symposium topics

The intent of the Symposium is to provide a current assessment of the role of the polar regions in global change and to bring together researchers engaged in any aspect of the physical, biological or social sciences, including field measurements, remote sensing, numerical modelling or data and information processing, and analysis, in either polar region. Topics tentatively identified for the symposium include:

- Climatic trends in the Arctic and Antarctic.
- Ice sheet and glacier mass balance and sea-level
- Variability of polar snow, ice and permafrost features
- Teleconnections linking the polar regions to low and mid-latitudes
- The circum-Arctic / Antarctic palaeoenvironmental record
- Biogeochemical cycles in the Arctic and the Antarctic
- Terrestrial systems and feedbacks on climate change
- UV-B effects, biodiversity and other impacts on biota
- Socio-economic impacts of global change in polar regions

For further information, please contact:

International Symposium on Polar Aspects of Global Change
c/o Norsk Polarinstitut
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SCAR Bulletin

SCAR Bulletin, a quarterly publication of the Scientific Committee on Antarctic Research, is published on behalf of SCAR by Polar Publications, at the Scott Polar Research Institute, Cambridge. It carries reports of SCAR meetings, short summaries of SCAR Working Group and Group of Specialists meetings, notes, reviews, and articles and material from Antarctic Treaty Consultative Meetings considered to be of interest to a wide readership. Selections are reprinted as part of *Polar Record*, the journal of SPRI, and a Spanish translation is published by Instituto Antártico Argentino, Buenos Aires, Argentina.

Polar Record

Polar Record appears in January, April, July, and October each year. The Editor welcomes articles, notes, and reviews of contemporary or historic interest covering the sciences, social sciences, and humanities in polar and sub-polar regions. Recent topics have included archaeology, biogeography, botany, ecology, geography, geology, glaciology, international law, medicine, human physiology, politics, pollution chemistry, psychology, and zoology.

Articles usually appear within a year of receipt, short notes within six months. For details contact the Editor of *Polar Record*, Scott Polar Research Institute, Lensfield Road, Cambridge CB2 1ER, UK: Tel (0223) 336567.

The journal may also be used to advertise new books, forthcoming events of polar interest, etc.

Polar Record is obtainable through the publishers, Cambridge University Press, Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, and from booksellers. Subscription rates are: for individuals £47.00 (\$82.00), for institutions £76.00 (\$132.00); single copies cost £21.00 (\$37.00).

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