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No. 7
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**Group of Specialists on Environmental Affairs
and Conservation (GOSEAC).**

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GROUP OF SPECIALISTS ON ENVIRONMENTAL AFFAIRS AND CONSERVATION

Report of the second meeting, GOSEAC II, held in the University of São Paulo, São Paulo, Brazil, 9-13 July 1990.

The group was welcomed to the Institute of Geosciences by Professor Antonio Rocha Campos.

Group members attending this second meeting were: R Bannasch, P J Barrett, K Birkenmajer, W N Bonner (Convenor), R I Lewis Smith, H F M Logan, P Trehen, J Valencia. M A Keller was unable to attend. S B Abbott attended as a corresponding member; M De Poorter (New Zealand), E A Santos (Universidade do Rio Grande, Brazil), J R Trotte (Secretaria da CIRM, Brazil), D W H Walton British Antarctic Survey, UK) and P D Clarkson (SCAR Executive Secretary) attended as observers.

1. Opening business

The Convenor opened the meeting and welcomed S B Abbott as the first corresponding member of the group. H Miller (FRG) had also been appointed as a corresponding member but he was unable to attend the meeting. P R Condy had formally resigned from the group as he is no longer involved in Antarctic science. The Convenor introduced the observers to the group.

TERMS OF REFERENCE AND OPERATION OF THE GROUP

The Convenor restated the terms of reference, as approved by XX SCAR, which were:

1. To advise SCAR on matters directly related to environmental affairs and conservation in the SCAR area of interest, in particular:
 - identification of environmental criteria relating to research activities and associated logistic support, as well as to relevant commercial activities, and to the selection of sites for all types of stations;
 - environmental aspects of waste disposal;
 - protected areas in the Antarctic;
 - additional protective measures.
2. Through SCAR Executive the Group shall maintain links with international environmental organizations.
3. To keep the relevant Working Groups informed.

The membership of the Group had been appointed by SCAR to represent the wide range of expertise required when dealing with environmental matters. The addition of corresponding members broadened the scope of the Group.

The agenda for the meeting (Annex 1) was adopted and a work plan agreed.

2. Report of the previous meeting

The group was reminded that an extended summary report of the previous meeting had been published in *SCAR BULLETIN* No 96, (January 1990). Matters arising from the report would be taken as agenda items during the present meeting.

Publication of a report of the present meeting was discussed. It was agreed that an extended summary should be published in *SCAR BULLETIN* and that the approval of SCAR Executive should be sought to publish a narrative report for wider circulation and availability.

3. Matters arising

The proposals for protected areas at Battleship Promontory and Lions Rump would be reconsidered at this meeting. A proposal to designate all of Byers Peninsula as an SSSI had been inadvertently omitted from the minutes and would be considered again at this meeting.

A Japanese request had been received to extend the designation of SSSI No. 22 Yukidori Valley to 2002.

The remaining matters arising would all be taken under specific agenda items

4. XV Antarctic Treaty Consultative Meeting, Paris, 1989

The Convenor noted that the official printed version of XV Antarctic Treaty Consultative Meeting had only just appeared and was not yet widely available. The Group considered recommendations relating to environmental matters adopted at that meeting.

Rec XV-1. Implementation of a comprehensive system for the protection of the Antarctic environment

This would constitute the basic proposal for the Special Antarctic Treaty Consultative Meeting in Santiago. It was hoped that an invitation would be received to allow official participation by SCAR.

Rec XV-3. Waste disposal

The Group noted with satisfaction the acceptance of all the substantive proposals by SCAR on waste disposal, and in some cases, the further strengthening of individual provisions. The full implementation of this measure by all Parties would clearly take some time but progress was already being made by several Parties.

Some possible confusion might still exist on what constituted waste in some categories, especially in respect of historical waste. Questions concerning wrecked ships and aircraft, stations destroyed by volcanic eruptions and the fate of human cadavers were raised.

The Group agreed on the importance of the preparation of waste management plans. These would allow the extent of national problems in disposing of waste to be accurately assessed and ensure that progress towards implementation could be monitored

Rec XV-4. Prevention, control and response to marine pollution

The extension of pollution controls to the marine environment was welcomed. It was noted with approval that these now extended to all ships of Antarctic Treaty Parties operating in the Antarctic. The Convenor reported that the ATCM had agreed on a limited exception for small yachts in respect of the discharge of sewage and waste food, which in their case would not have to be at least 12 miles from land or ice shelves.

Not all ATCPs are members of MARPOL. The creation of the Treaty area as a special area under MARPOL cannot therefore be binding on all Parties at present. Concern was expressed about compliance with this measure by naval vessels and fishing fleets. No specific recommendations are made for how waste food should be disposed of within the Treaty area waters. It seems unlikely that all vessels, especially military ones, would have either the space or the facilities to retain all garbage on board whilst in Treaty waters.

Rec XV-5. Environmental monitoring

The request to SCAR to provide advice on environmental monitoring would require consideration later in the meeting.

Rec XV-8,9. Management plans for SPAs

The provision of management plans for Specially Protected Areas would be dealt with at this meeting.

Rec XV-10. Establishment of Specially Reserved Areas (SRAs)

The Group welcomed the establishment of Specially Reserved Areas and noted the first proposal for designation under this Measure.

Rec XV-11. Establishment of Multiple-Use Planning Areas (MPAs)

The establishment of Multiple-Use Planning Areas was expected to provide a way of resolving potential conflicts between science, logistics, and tourism, among other things. This category replaced the Antarctic Protected Area category proposed to XV ATCM by SCAR. The Group noted the first application for designation under this measure.

Rec XV-16. Comparability and accessibility of Antarctic scientific data

The Group noted that SCAR had already established an ad-hoc Committee on the Co-ordination of Antarctic Data. R I Lewis Smith was at present compiling an inventory of biological and environmental data sets for use by the Group.

Rec XV-17. Siting of Stations

The Group considered that this Measure was a combination of at least four issues: environmental impact assessment; planning; science programmes; and the attainment of Consultative status. The Group heard about a current research project to examine the use of geographical information systems (GIS) for management of Antarctic areas. The study is based around a comparison of multinational use at King George Island and single nation use at Signy Island.

The Convenor reported the intention of CCAMLR to establish CEMP monitoring sites, and suggested that these should be incorporated within the Treaty protected area classification, possibly as SSSIs.

Rec XV-21 The use of Antarctic ice

This needed further consideration. It was agreed that Dr Valencia would provide a report for the next meeting.

5. Protected Areas

5.1 Proposed new SPAs

5.1.1 Lions Rump, King George Island, South Shetland Islands

The importance of this Area lies in its representativeness of the terrestrial and littoral ecosystems of the South Shetland Islands. There is a rich and diverse flora and both native flowering plants are frequent. Twelve species of birds breed within the Area and there are large numbers of elephant and fur seals on the beaches. The principal threat to the biota is from potential visits by tourists. A management plan has been prepared and approved by the Group. Allowance is made for parties to pass through the Area to reach study sites farther inland. The description of the Area, together with the management plan and map are provided in Annex 2, and these incorporate comments from members of SCAR WG Geology.

5.1.2 Cryptogam Ridge, Mount Melbourne, Victoria Land

This is a largely ice-free area of geothermal activity colonized by mosses, liverworts, algae and micro-organisms, within SSSI No. 24 on the summit (2733 m altitude) of Mount Melbourne. The Area is one of only two high altitude geothermal sites known in Antarctica and its unique assemblage of plants, invertebrates and micro-organisms, together with its fumarolic activity, make it of extreme scientific importance requiring maximum protection from human interference. A management plan has been prepared and approved by the Group. The description of the Area, management plan and map are provided in Annex 3.

5.1.3 Avian Island, north-west Marguerite Bay, Antarctic Peninsula

This Area was designated as SSSI No. 30 (Recommendation XV-6) but, because information recently received has shown this island to be of such exceptional ornithological

importance, it is considered desirable to afford the site maximum protection. Avian Island possesses the greatest diversity and concentration of breeding birds in the Antarctic Peninsula region, including the farthest south breeding colony of southern giant petrels and one of the largest blue-eyed shag colonies in the Antarctic. The Adélie penguin colony is the largest on the Antarctic Peninsula. The Area is vulnerable to visits by tourists, private yachts and uncontrolled personnel from neighbouring research stations in Marguerite Bay. The Group approved the proposal to upgrade this site to an SPA. The description of the Area, together with the management plan and map are provided in Annex 4.

5.1.4 Forlidas Pond and Davis Valley Ponds

This proposed SPA lies within the proposed SRA North Dufek Massif. It is in two parts, one centred on Forlidas Pond, the other on a series of small ponds along the northern edge of Davis Valley. The area has been rarely visited and maximum protection is needed to safeguard the near-pristine microbiological state of these ponds and their catchments. The Group approved the proposal (Annex 5).

5.2 Proposed new SSSIs

5.2.1 Ardley Island, Maxwell Bay, King George Island, South Shetland Islands.

This Site is of exceptional biological interest, with twelve species of breeding birds (including the largest population of gentoo penguins in the South Shetland Islands archipelago), and a diverse and well-developed vegetation. Numerous intensive studies of the avifauna and vegetation have been undertaken within the site and are planned for the future by several national research groups. The Site is particularly vulnerable to disturbance and damage by visitors, notably tourists, and uncontrolled use of vehicles from nearby research stations. A "tourist area" has been designated on the north side of the island within the boundary of the Site. The Group approved the management plan. The description of the Area, together with the management plan and map are provided in Annex 6, and these incorporate comments from members of SCAR WG Geology.

5.2.2 Wright Valley, McMurdo Dry Valleys, Victoria Land

This Site is centred on a seismographic research project (Dry Valley Seismograph Project) on the slope of Wright Valley below Bull Pass, and is necessary to safeguard the extremely sensitive equipment used to detect earthquakes and other subsurface disturbances. Severe disturbance and spurious data will result from the use of vehicles and aircraft, and by pedestrians, close to the boreholes containing the sensors. The view was expressed that insufficient information on potential levels of disturbance was provided to justify the proposed extent of the site. The Group referred the proposal for further revision by the originator.

5.2.3 Battleship Promontory, Alatina Valley, Victoria Land

This Site is one of the most extensive and least disturbed of any area known to support the unique Antarctic crypto-endolithic ecosystem of micro-organisms. Although submitted at SCAR XX, it was felt that the definition of the boundary was insufficient for it to be accepted. Information has now been received which enables the helicopter landing site to be identified on the map. However, it is still not possible to identify the Site boundaries adequately, but it is intended by the US to schedule a visit to the area in the coming Antarctic season to provide the information requested. The Group approved the proposal in principle, subject to the provision of an improved map and justification of the site boundary.

5.3 Proposed amendment to existing SSSI No 6, Byers Peninsula, Livingston Island, South Shetland Islands

This Site, as approved by ATCM Recommendation VIII-4, comprises three areas of varying shape and size (but unmarked on the ground) on Byers Peninsula, but designated solely for their sedimentary and palaeontological interest. However, the entire peninsula is also of considerable biological interest, possessing several terrestrial and freshwater plants and invertebrate species which are very rare in the Antarctic, and numerous colonies of

breeding birds and seals. In addition, the Site is of exceptional historical interest, containing the greatest concentration of nineteenth century archaeological sites in Antarctica. The Group approved the proposal to extend the Site to include all of Byers Peninsula, excluding the proximal offshore islets, from the ice margin on the west side of Rotch Dome (to a point directly north of Stackpole Rocks) westwards to the western extremity of Ray Promontory. The description of the Site, together with the amended management plan and map are provided in Annex 7.

5.4 Proposed new Marine SSSIs

5.4.1 South-west Bransfield Strait

This Site occupies an area 24 by 24 km (15 by 15 nautical miles) to the south of Low Island, South Shetland Islands, extending southwards from the south-west coastline of the island.

5.4.2 East Dallmann Bay, Brabant Island

This Site lies to the west of Brabant Island, extending 32 km (20 nautical miles) from north to south and 11 km (7 nautical miles) to the west of Astrolabe Needle on Brabant Island, including all the associated coastline of that island. This area complements the only other known shallow shelf site in the locality, namely the proposed site in south-west Bransfield Strait. Both proposed Marine SSSIs have a rich and diverse benthic fauna and are of exceptional scientific interest. They are the location of a major US marine research programme involving bottom-trawling and operating from Palmer Station. The Sites require protection from potential harmful interference to safeguard both the ecosystem and the research. The Group approved both proposals, subject to editorial revisions to texts and maps (Annexes 8 and 9).

5.5 Review of SSSIs

The designations of SSSI No 4, Cape Crozier; SSSI No 5, Fildes Peninsula; SSSI No 6, Byers Peninsula; SSSI No 7, Haswell Island; SSSI No 10, Caughley Beach; SSSI No 11, Tramway Ridge; SSSI No 12, Canada Glacier; and SSSI No 18, White Island, are due to expire in 1991. These sites had been fully discussed at GOSEAC I where it was agreed that in order to facilitate continuing or proposed research the date of expiry of each site should be extended to 31 December 2001.

It was confirmed that research programmes had been active, and were planned to continue, at SSSI No 7, Haswell Island, and that the proposed extension of its designation was justified.

The management plan for SSSI No 22, Yukidori Valley, was due to expire on 31 December 1992. Confirmation of the continuation of biological research, including long-term monitoring studies, had been received and it was decided to recommend that this date be amended to 31 December 2003.

5.6 Proposed Management Plans for Existing SPAs

ATCM XV-9 recommended that, for each existing SPA, more detailed descriptions of the Area be prepared, and that a provisional Area management plan be prepared for consideration at XVI ATCM. This has been done for those SPAs in the Antarctic Peninsula to South Orkney Islands sector. The format adopted for these management plans has been developed from information categories a) to (f) in XV-9.2. The Group approved this management plan scheme and the plans proposed for SPAs Nos 8 (Dion Islands), 9 (Green Island), 13 (Moe Island), 14 (Lynch Island), 15 (South Powell Island and adjacent islands), 16 (Coppermine Peninsula), 18 (North Coronation Island), and 20 (Lagotellerie Island), together with those for the proposed SPAs at Lions Rump, Avian Island and Cryptogam Ridge (see 5.1). Management plans for the existing sites are provided in Annexes 10 - 17.

The management plan for SPA No. 17 (Litchfield Island) was withdrawn to allow US biologists, familiar with the present status of the island's environment, biota and use, to provide an input.

Attention is drawn to the provision, under the "Inspection and maintenance" of SPAs 13 and 14, to prevent destruction by a natural agent of the features for which the sites were originally designated SPAs, namely the rapidly increasing summer population of non-breeding fur seals. Such prevention could be achieved by the erection of short lengths (no more than 100 m) of fencing wire and posts to prevent access by the seals to the major area of the respective sites (as has been successfully tested on neighbouring Signy Island). However, the Group was unable to agree unanimously that environmental destruction would justify setting such a precedent although the large majority considered that active management is necessary, in certain instances, to protect the value of SPAs.

5.7 Proposed CEMP sites

These CCAMLR Ecosystem Monitoring Programme (CEMP) terrestrial sites will be on land to provide the means of carrying out monitoring studies. However, since not all ATCPs are members of CCAMLR, the Group is aware of possible conflict in research that may be undertaken by CCAMLR and by other parties. To avoid such potential conflict of interests the Group advises that consideration be given to nominating proposed CEMP sites as SSSIs under ATCM VIII-3, with management plans to be so drafted as to meet the objectives of CCAMLR.

5.8 Proposed Specially Reserved Area, North Dufek Massif

This is the first proposal for this new category of Antarctic protected area, as recommended by ATCM XV-10. The site covers an area of 48 km by about 10 km on the north side of Dufek Massif (82°S). The region contains outstanding geological, glaciological, geomorphological, aesthetic, scenic and wilderness values in near-pristine conditions; its biological attributes are largely unknown. It is considered vitally important to preserve the Area in this condition, while allowing access to scientists and non-scientists alike, under the constraints of the proposed management plan. The site includes the proposed SPA Forlidas Pond, within the north-eastern sector of the SRA. Maximum protection of these areas is recommended to safeguard the near-pristine microbiological state of these ponds and their catchments. The Group welcomed and approved this proposal (subject to the provision of an adequate map) as the first example of a SRA. It is attached as Annex 18.

5.9 Palmer Station MPA Proposal

The Group considered a draft proposal for the designation of a Multiple-use Planning Area in the Palmer Station area, south-west Anvers Island submitted by the US National Committee. This was the first examination of a proposal for this new category of area provided for by ATCM Recommendation XV-11. The Group applauded the scientific objective of ensuring that research of both Antarctic and global importance should be protected through designation of an MPA in the area concerned. However, the majority opinion was that the document would benefit from revision before being forwarded for consideration at the next Antarctic Treaty Consultative Meeting.

Opinion in the Group was divided on the question of whether the draft document provided a proper justification for designating this area as a MPA. The Group considered that additional consultation should take place among interested Parties. The view was expressed that not enough detail had been provided on the planned research activities that designation as an MPA was designed to protect and, that details of the operation and logistic support of Palmer Station were lacking. Some members thought that further clarification could be given of how the four multiple uses of the area - the operation of Palmer Station, the research programme, protected areas, and tourist operations - would be co-ordinated in the MPA.

It was felt also by some that the form of the document tabled was too lengthy to be presented in toto as the management plan for an MPA. There might be advantage in removing much of the supporting material to an information paper which could accompany a briefer and more succinct management plan conforming to the pattern set out in para 4 of Rec XV-11. This information paper might include the impressive bibliography and the 12 pages of tables of valuable information which was not, however, specifically stipulated for inclusion in a management plan in the form set out in Rec XV-11, para 4. Another view

was that the tabular material was of primary importance to the document and constituted the essence of the case for establishing this MPA.

It was unanimously the view of the Group that the designation of an MPA in the South Anvers Island area was of vital importance in securing the fruitful continuation of the existing long-term research programmes and in the establishment of the new US Long-term Ecological Research programme.

5.10 General comment on new site proposals

The Group expressed its disappointment in the poor quality of many of the maps accompanying new site proposals, a problem encountered with previous submissions. As a result of inadequate maps and also, in many instances, inadequate descriptive text, several proposals for new sites have had to be returned to their originators for revision. It is crucial to the success of each proposal being accepted by GOSEAC, so that it may be passed to SCAR for approval of designation, that a suitable scaled and co-ordinated map, with place-names where they exist, is provided which indicates as precisely as possible the location of the site in relation to major topographic features.

Proposals should always be circulated well in advance of the meeting at which they are to be considered.

5.11 Monitoring of visits to Protected Areas

At GOSEAC I it was agreed that a standardized form recording information derived from visits to protected areas would be of value in monitoring activities in such sites, and that National Committees and operators could be encouraged to use such a form. A form reporting on visits to SPAs and SRAs has been designed (Annex 19) for completion after the visit has been undertaken, in accordance with specifications stated in an appropriate permit issued for the purpose of entry into the site (Agreed Measures, Article VIII-2c). If adopted, this form could serve, on a voluntary basis, as an annual return to be included in the Antarctic Treaty Exchange of Information for the year ending the Antarctic season in which the activities were carried out. Although it is beyond SCAR's jurisdiction to design and issue permits for entry into protected areas, since these may come under national legislation, such a permit has been prepared and is offered as a model to those national operators who may wish to adopt its format.

The Group endorsed the design of these forms and welcomed the use of the Report as a means of monitoring visits to protected areas, noting that only five such visits have been documented in the annual exchanges of information during the past few years. If approved by SCAR, these forms could be made available from the SCAR Secretariat.

5.12 SCAR Ecosystem Matrix Classification

The Group discussed the extent to which the existing protected areas fill the cells of the ecosystem matrix classification. Ms Abbott was asked to prepare a brief paper on this topic for the next meeting.

6. Management of Protected Areas

6.1 Management of Protected Areas

Management plans are now required for SPAs, SRAs, and MPAs, as well as SSSIs. The Group noted that the ability of protected areas to meet conservation objectives hinges initially on the development of effective, site-specific management plans. A difficulty, noted during the discussion of Multiple-Use Planning Areas, is that such management plans should be as short and concise as possible for adoption by the Treaty. However, members of the Group noted that the ultimate goal should be to develop these so that they are of greater utility to managers and to site visitors.

At the previous GOSEAC meeting, the Group discussed the need for improvements in management plans. One of the problems is that proposals for protected areas often are not accompanied by an adequate management plan. Previously, it was decided that a handbook to assist proposers in preparing management plans would be useful. Ms Abbott described progress in developing a "Handbook on Preparation of Management Plans for Protected

Areas in the Antarctic". The handbook will consist of sections on: the objectives of area protection; possible threats to Antarctic environments; categories of Antarctic protected areas; tools for managing protected areas; and guidelines for the preparation of management plans. The Group expressed its appreciation for progress made to date on preparing this handbook, and offered suggestions for improving the text. It was suggested that a draft document be made available to the Group for review and comment, before the next meeting.

6.2 Identification of Protected Areas

The Group discussed the need to improve identification of protected areas, by designating boundaries on the ground with markers and signs and on hydrographic charts.

M De Poorter circulated a short paper by Greenpeace describing the design specifications of the signs and stanchions used by Greenpeace during 1989-90 field season to demarcate protected areas. The signs are constructed from Formica, a three-layer laminate. The stanchions are constructed from mild steel round stock of between 1.5 and 2 meters in length. English and Spanish language signs were used. The Group commended Greenpeace for taking the initiative to design and place signposts, and noted its disappointment that neither SCAR nor the Treaty had been successful in encouraging the development of an international standard sign, though several national programmes had erected signs.

The Group advocated the desirability of developing and erecting a standard sign to demarcate, as appropriate, major access points to protected areas, and that, if acceptable, such a sign be designed to include the Antarctic Treaty logo, site name and category (e.g., SPA, SRA, etc.). Also, SCAR should be urged to investigate the design, production, and placement of such signs through the COMNAPS.

The Group also discussed the desirability of requesting hydrographic offices to identify both marine and coastal terrestrial protected areas on navigational charts. It was decided that this was indeed desirable, and that one possible means of facilitating this would be to amend Pilots and sailing directions, since these are widely used guides to Antarctic waters.

6.3 Visits to Protected Areas

The Group did not have adequate time for consideration of the reports on visits to protected areas, environmental impact assessment and environmental monitoring.

7. Environmental Impact Assessment

7 & 14.1 Environmental impact assessment and environmental monitoring

The Group considered the operation of Rec XIV-2 on environmental impact assessment. Only limited evidence was available but it was possible to identify specific areas of concern.

The Group noted that few CEE documents had appeared, given the present levels of activity in the Antarctic. It is possible that this is due to differences in the interpretation of the term "significant", the key consideration in any decision to proceed to a full CEE. There was no information on the extent to which Initial Environmental Evaluations (IEEs) are done. There is no requirement to circulate, deposit or report on this part of the process.

In addition, the Group recognized that non-Consultative Parties are not bound by Treaty measures in their approach to the environment. It noted with regret the apparent disregard of environmental measures by some countries newly active in the Antarctic and some members suggested that environmental concern should be considered in assessing the acceptability of any new country as a member of SCAR.

7 & 14.2 Rothera airstrip

The Group noted that, in a report from World-Wide Fund for Nature (WWF) on the CEE for the Rothera airstrip, one major shortcoming had been identified. Action to rectify the limited fuel tank berm capacity was being undertaken by the United Kingdom. The value of the Rothera Point SSSI in monitoring impact was recognized. The Group welcomed the

initiative of the UK in inviting an independent observer to assess the implementation of a CEE.

7 & 14.3 Construction of airstrip at Dumont d'Urville

Dr Trehen presented some information on the monitoring of this project. There are three levels of impact, two of them related directly or indirectly to the construction, and the third related to the future use of the airstrip:

- i. Direct impact from construction. The number of birds killed during construction (Adélie penguins, snow petrels, Cape pigeons and Wilson's storm petrels) amounted to about 2% of the total populations of the Pointe Géologie Archipelago between 1985 and 1990. Part of this mortality was due to lack of experience with the protection provided for penguins and petrels. With more experience, this mortality will be reduced.
- ii. Indirect impact from the construction. An attempt had been made to compensate for the destruction of natural nesting areas by creating artificial nesting areas for Adélie penguins and Cape pigeons, and by creating 170 artificial nests for snow petrels. This is the first time that an attempt to restore a destroyed habitat has been carried out in Antarctic. The results of monitoring are:
 - 10% of the displaced Adélie penguins and Cape pigeons were seen on these new artificial areas in 1989/90, but without eggs being laid;
 - 20% of the artificial nests were visited by juvenile or new pairs of adult snow petrels in 1989/90, but without eggs being laid; the first significant result of this experiment will be available after the 1991/92 season;
- iii. Long term impact. The long term impact will depend mainly on the intensity of traffic on the airstrip and Dumont d'Urville base. A more complete report, including additional data, will be presented to GOSEAC III in 1991.

Some information, obtained from Greenpeace after this NGO's visit to Dumont d'Urville in February 1990, was also presented. This stressed the fact that breeding areas have been destroyed and that there has been no confirmation so far that reproduction will take place in the artificial areas. Greenpeace has expressed the opinion that construction should not proceed in the absence of such confirmation.

7 & 14.4 US Antarctic Program EIS

It was reported that the USA would produce an Environmental Impact Statement under US law to cover all of its Antarctic programme. It was expected that this would cover a wide range of future activities but it would not necessarily be in the exact format identified in ATCM Rec XIV-2.

7 & 14.5 EIA Workshop

A summary of progress was given on the planning of a workshop meeting in Italy in 1991 to discuss environmental impact methodology. The meeting is being organized by COMNAP. It was agreed to establish an *ad hoc* Group to consider environmental impact assessments and associated monitoring activities and to forward any relevant products to the workshop. The subgroup would consist of W N Bonner (Convenor), J Valencia, D W H Walton and R Bannasch. There would also be contributions from S B Abbott and K Birkenmajer. The terms of reference would be:

1. to consider those environmental impact assessments (Initial and Comprehensive) that have been made publicly available before and since ATCM Rec XIV-2 and to assess their implementation;
2. to determine what current interpretation is given to the term "significant" as used in ATCM Rec.XIV-2 and to propose how it might be interpreted for future use;
3. to consider what environmental monitoring should be undertaken to assess impacts of particular activities, how the results should be reported and their importance in evaluating the original impact assessment.

The station checklist used by Greenpeace during its Antarctic operations was examined. This checklist was developed from one originally used by US official inspection teams.

The use of a standard comprehensive checklist of this kind was strongly endorsed by the Group as a useful tool. It was noted, however, that the normal short visit to a station may not be adequate for completion of such a checklist.

The procedure of preparing cooperative impact assessments for large international projects was considered. It was agreed that the Convenor should discuss with the Convenor of the Group of Specialists on the Structure and Evolution of the Antarctic Lithosphere how this had been approached. It was noted that the Group of Specialists on Cenozoic Palaeoenvironments of the Southern High Latitudes would have a similar-sized international project for consideration in the near future.

8. Antarctic tourism

8.1 Antarctic tourism

Dr Walton addressed the Group on the issue of commercial tourism in the Antarctic, noting that activity was increasing in range and variety, and that groups other than SCAR were providing instruction and guide books. Material being distributed ranged from leaflets to thick books. He suggested that at present SCAR received too little credit for its efforts in conservation since these were not well-known outside scientific circles. He proposed that the Group should consider ways of reaching people outside the scientific community to ensure that they are aware of, and respond positively to, Treaty regulations promulgated to minimize environmental damage.

Divergent views were expressed in the discussion that followed. On the one hand some felt that for such a wide and varied audience SCAR should offer a booklet of essential information that would be effective. This would be essentially a revision of "*A Visitor's Introduction to the Antarctic and its Environment*". It was noted that although five versions of the text had been issued by different national committees it was even now not generally available in many SCAR countries. Others felt that this approach did not take into account sufficiently what people might actually read. These also felt that other approaches, such as the distribution of posters, might be used to get across the message. It was reported that a draft version of a brief leaflet would be considered at the COMNAP Meeting.

It was agreed that the Group would continue with the revision of the "*Visitor's Introduction*", to be completed in 1991 and to incorporate any changes arising from the Special ATCM. P J Barrett, K Birkenmajer and P D Clarkson would provide additional sections on the geological development and features of the Antarctic to complement the biological features already described. It was also agreed that examples of and ideas for posters suitable for conveying SCAR's role in preserving the Antarctic environment and in showing the need for such efforts should be sent to the Convenor, for consideration at the next GOSEAC meeting. Dr Walton agreed to produce some specific suggestions for other publications at the next meeting. The possibility of the production of a video for these purposes was also briefly discussed.

8.2 Tourist site guides

The Group went on to consider a specimen site guide for tourists being prepared for the northern Antarctic Peninsula sector by K Birkenmajer and R Bannasch. A partial draft was presented. A more complete version is to be available for the next meeting.

9. Collaboration with non-SCAR bodies

GOSEAC I had agreed that copies of the agenda for, and the report following, each meeting should be sent to IUCN, WWF, ASOC & CCAMLR because of the wide range of interests that these organizations represented outside SCAR. Responses to the agenda for GOSEAC II were received from all but IUCN, and were considered as agenda items arose. It was agreed to continue this practice and, in addition, to invite a nominated representative from IUCN and from ASOC to attend future GOSEAC meetings with observer status.

10. IUCN Conservation Strategy

An IUCN observer, D Elder, had been invited to address the meeting on this topic, but was unable to attend. The Convenor expressed the meeting's regret at this, and went on to explain the development of the IUCN Antarctic Conservation Strategy, which had taken place in consultation with SCAR. The strategy was embodied in a document of some 100 pages, which was still undergoing revision. However an article by Paul Dingwall, one of the compilers, had been circulated. The Group welcomed the IUCN approach, noting that it conformed closely to its own and SCAR's view on the importance of research and management in effective Antarctic conservation.

11. Introduction of non-indigenous organisms

A preliminary report was presented by Dr Walton, who drew attention to two major difficulties in collecting data on the problem:

1. Vertebrate introductions go unreported because they are likely to be introduced as pets by people knowing that they should not.
2. Introduction of microbes is hard to monitor because of their size and a lack of reliable data on the diversity of the native microbial flora.

The problem was compounded by the provision in the Agreed Measures for the introduction (by permit) of domestic animals and plants, and a lack of prohibition on the importation of soil. Both can carry microbes and invertebrates, and the latter can spread microbes if the soil they grow in is discarded. Data collection was being pursued by means of a questionnaire to individuals and institutions. Any documented reports would be welcome.

12. Abandoned stations and historic sites

There was wide-ranging discussion on the question of installations on the continent that were no longer being used. There was an increasing number of unoccupied stations, field huts and camps, as well as supply dumps from past expeditions, and these represented a degradation of the environment in both material and aesthetic terms. Commonly in the past there has been no provision for removal after the installation has served its purpose. The Group recognized that some had value as refuges or historic monuments, in which case they should be declared as such in national operations plans and under the appropriate Treaty measures. Refuges should be maintained on a regular basis, and historic monuments should be covered by a management plan. The Group noted that other installations should be removed in accordance with Rec XV-3 and that plans for restoring the site should be included in national waste management plans. However it could see problems arising from refuges becoming derelict, from lack of agreement on what constitutes a habitable refuge, and from the lack of a requirement to file management plans for historic huts. Furthermore there could be difficulties in relocating old dumps and installations in some circumstances. It was agreed that the issue would be considered more fully at the next meeting.

13. SCAR's role in conservation

13.1 Environmental advice

The Convenor recalled the discussion at GOSEAC I regarding this subject and noted that, as requested, a revision of the report of the *ad hoc* Group on Additional Protective Measures would not be coming forth from P R Condy, since he has resigned from the Group. SCAR's role in conservation was identified as:

1. assisting in the co-ordination of research;

2. initially developing the Agreed Measures for the Conservation of Antarctic Fauna and Flora, and subsequently guiding the development of almost all other ATCM recommendations regarding conservation, and
3. responding to requests from the Antarctic Treaty on conservation.

In considering ATCM Recommendation XV-1 on Comprehensive Measures for the Protection of the Antarctic Environment and Dependent and Associated Ecosystems, it was determined that the Antarctic Treaty Consultative Parties could conceivably establish a process that could materially affect the role SCAR plays in providing scientific advice on conservation measures. Therefore, the Group agreed to produce a paper, for consideration by the Special Antarctic Treaty Consultative Meeting to be held in November, 1990, embodying SCAR's suggestions on the items presented in the proposed plan of work for the meeting (Rec XV-1). In addition, the Group believes that it is essential for SCAR, if invited, to designate representatives to be present at the Special Consultative Meeting to discuss the substantive issues as they arise.

It was noted that the following were of concern: the value and importance of scientific information on the Antarctic environment for environmental decision making, both in the Antarctic and elsewhere in the world; the objectives of Antarctic conservation; the broad role for SCAR in conservation - i.e., extending beyond its role in developing protected areas concepts and proposals; the role of SCAR in making assessments of scientific proposals to determine whether they represent, "a scientific purpose that cannot be served elsewhere"; and the regularity of environmental assessments and the need for professional evaluators.

The Convenor presented a paper (Annex 20) which had been developed from earlier discussions. The paper was reviewed and finalized by the Group and approved for consideration by the SCAR Executive. It was considered that this could provide the basis for a SCAR contribution to the Special ATCM. The Group felt strongly that the value of SCAR's previous contributions to conservation clearly indicated that it was exceptionally well-placed to provide advice and initiatives in this field.

The Group expressed its appreciation to the Convenor and Dr Walton for their efforts in preparing the paper.

13.2 Directory of Antarctic biological and environmental databases

At GOSEAC I it was agreed that a directory of biological databases of environmental importance should be prepared. As a first step to achieving this, a letter was sent to all SCAR WG Biology members, IWC, CCAMLR, BIOMASS Data Centre, and BIOTAS requesting information in a questionnaire (Annex 21). This included various criteria relating to the appropriate databases, computer and operating system, output form, type of data resource, number of items listed in database, contact person, etc. Responses were received from only six of the 20 countries contacted, together with CCAMLR, BIOMASS and BIOTAS (total 27 completed forms). The information will be collated and a report presented at GOSEAC III.

14. Environmental monitoring

For discussion under this topic, see item 7 and 14.

15. Operation of the Group

The Group considered that it would need to meet again within a year, with May 1991 being considered a suitable month. Possible venues were Christchurch, New Zealand, and Washington DC, USA. The *ad hoc* Group on Environmental Assessment and Monitoring would have to meet prior to the meeting of the full group. A budget request to SCAR based on support for 10 persons for the full meeting and 4 persons for the *ad hoc* Group meeting, plus expenses for the convenor, was approved by the Group.

16. Any other business

a. Debris in the Southern Ocean

The Group was disappointed in the poor response to CCAMLR's initiative to limit the dumping of plastic debris, especially in view of the likelihood that the major source of this debris is fishing fleets. Pollution by plastics was seen to be a real problem. The Group would endorse any effort by CCAMLR to promote accurate reporting and preventative measures for marine debris.

b. Possibilities of drift netting

The Group, being aware of reports of substantial mortality of marine mammals caught in drift nets in low and middle latitudes, expressed concern at the possibility that this form of fishing might be introduced into Antarctic waters. The Convenor asked for any information on activity of this sort to be sent to him, and the Group agreed to reconsider the topic at the next meeting.

c. Australian Conservation Foundation

A letter had been received from this organization, which was believed to be affiliated to ASOC, asking SCAR to endorse three basic principles of Antarctic conservation. These were:

1. Scientific research should have priority over the human activities in the Antarctic;
2. The contribution of scientific research should be regarded as essential in the comprehensive regime for protection of the Antarctic environment and its dependent and associated ecosystems; and
3. The comprehensive regime for the protection of the Antarctic environment and its dependent and associated ecosystems should form an integral part of the Antarctic Treaty.

The Convenor had replied saying that the three principles appeared entirely in accordance with the position of the Antarctic Treaty Parties. The Treaty itself guaranteed the freedom of scientific research. It was likely that the outcome of the Special Consultative Meeting in Santiago would implicitly or explicitly embody the second principle. The *raison d'être* of the Special Consultative Meeting was to consider the position of the comprehensive regime within the Treaty, though whether as a separate convention or as an annexed measure, or in some other form, was yet to be decided. The Group agreed with this statement of the position.

d. Concentration of Stations

This issue was raised again by ASOC and recognized by the Group as a problem that resulted in unnecessary degradation of the Antarctic environment. It has been most evident on King George Island and in the Antarctic Peninsula generally but, as more countries become interested in carrying out Antarctic research, the problem may become more acute. The Groups wished to applaud those organizations that pursued effective Antarctic research programmes through the use of existing facilities and organizations, and to express their appreciation to those existing organizations who made this possible. The topic was to be again addressed at the next meeting when a report on the situation on King George Island would be available.

e. 1:1,000,000 map of Antarctica

The SCAR Executive Secretary reported that SCAR is supporting an initiative through the World Conservation Monitoring Centre for a comprehensive coastline map of Antarctica on a scale of 1:1,000,000 to be available in digital form through SCAR, and is seeking commercial sponsorship for the endeavour, which would be of great use in managing environmental data.

f. Rothera airstrip CEE

The report by Cassandra Phillips on the construction and CEE procedures of the airstrip at Rothera base was received and discussed. Her wish for an earlier start to the

environmental impact assessment was noted, though difficulties in achieving this were acknowledged in view of the time required to get public and governmental responses to the draft CEE. Concern was expressed at the poor response when the CEE was circulated, since that was the point in the process where comment would be of most value and effect.

g. Bahia Paraiso

There was some discussion on monitoring and the future activity with respect to the wreck. No role for GOSEAC could be ascertained other than to note that if salvage were to be attempted, there should be a Comprehensive Environmental Evaluation to gauge whether the risk to the environment associated with salvage exceeded that of taking no further action.

h. BIOTAS

A report was received on the BIOTAS Programme in which it was noted that there are now 350 members of the BIOTAS network world-wide. Newsletter No 4 was distributed in December 1989, but the technical manual is unlikely to be available before 1991. A new type of aerial particle sampler will be tested in the 1990-91 field season, and it is hoped that widespread deployment in Antarctica will be possible in the 1992-93 field season, providing the necessary support can be obtained from national programmes.

i. Ozone depletion and effect on biological systems

Concern was expressed on the lack of research on this topic. However, several members gave instances of programmes in the coming season, indicating that the Antarctic science community was responding. The SCAR Executive Secretary also reported that there was to be a SCOPE-sponsored meeting on this issue.

j. IGBP

The Convenor outlined the contents of a document just received on SCAR's role in IGBP. The Group expressed its appreciation of the work done by the IGBP Group.

17. Closure

The report having been unanimously adopted, the Convenor closed the meeting at 1655 on 13 July 1990. The Group wished to thank Professor Antonio Rocha Campos for his hospitality and for the facilities provided by the Instituto de Geociências, Universidade de São Paulo.

APPENDIX

GOSEAC Recommendations

XXI-GOSEAC-1 SCAR recommends that the attached management plans for proposed Specially Protected Areas at Lions Rump, King George Island; Cryptogam Ridge, Mount Melbourne, Victoria Land; and Forlidas Pond, Dufek Massif, be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-2 SCAR recommends that the attached management plan for a Site of Special Scientific Interest at Maxwell Bay, King George Island, be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-3 SCAR recommends that the attached amended management plan for SSSI No 6, Byers Peninsula, be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-4 SCAR recommends that the attached management plans for marine SSSIs at South-west Bransfield Strait and East Dallman Bay, Brabant Island, be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-5 SCAR recommends that the date of expiry of designation of SSSIs No 4, Cape Crozier; No 5, Fildes Peninsula; No 7, Haswell Island; No 10, Caughley Beach; No 11, Tramway Ridge; No 12, Canada Glacier; and No 18, White Island, be extended to 31 December 2001 and that this proposal be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-6 SCAR recommends that the date of expiry of designation of SSSI No 22, Yukidori Valley, be extended to 31 December 2003, and that this proposal be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-7 SCAR recommends that the attached management plans for SPAs No 8, Dion Islands; No 9, Green Island; No 15, South Powell Island; No 16, Coppermine Peninsula; No 18, North Coronation Island; and No 20, Lagotellerie Island, be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-8 SCAR recommends that, to avoid conflicts of research interests at terrestrial sites that might be designated as sites by the CCAMLR Ecosystem Monitoring Programme (CEMP), National Committees suggest to Governments that consideration be given at XVI ATCM to designating such sites as SSSIs in accordance with Rec VIII-3 with appropriate management plans to achieve the objectives of CEMP.

XXI-GOSEAC-9 SCAR recommends that the attached management plan for a Specially Reserved Area at North Dufek Massif be passed through National Committees to Governments for consideration at XVI ATCM.

XXI-GOSEAC-10 SCAR recommends that National Committees urge Governments to arrange that hydrographic offices, where appropriate, include on navigational charts an indication of the location of marine and coastal terrestrial Specially Protected Areas, Specially Reserved Areas, Sites of Special Scientific Interest, and Multiple-use Planning Areas.

GOSEAC II

List of Annexes

1. Agenda as adopted.
2. Proposed SPA, Lions Rump.
3. Proposed SPA, Cryptogam Ridge.
4. Proposed SPA, Avian Island.
5. Proposed SPA, Forlidas Pond.
6. Proposed SSSI, Ardley Island.
7. Proposed extension to SSSI No. 6, Byers Peninsula.
8. Proposed Marine SSSI, Western Bransfield Strait.
9. Proposed Marine SSSI, East Dallman Bay.
10. Proposed management plan SPA No. 8, Dion Islands.
11. Proposed management plan SPA No. 9, Green Island.
12. Proposed management plan SPA No. 13, Moe Island.
13. Proposed management plan SPA No. 14, Lynch Island.
14. Proposed management plan SPA No. 15, Southern Powell Island.
15. Proposed management plan SPA No. 16, Coppermine Peninsula.
16. Proposed management plan SPA No. 18, North Coronation Island.
17. Proposed management plan SPA No. 20, Lagotellerie Island.
18. Proposed SRA, North Dufek Massif.
- 19a. Draft permit to enter an SPA or SRA.
- 19b. Draft report on a visit to an SPA or SRA.
20. Environmental advice and the role of SCAR.
21. Circulated questionnaire: Directory of Antarctic Biological and Environmental Databases.

**GROUP OF SPECIALISTS ON
ENVIRONMENTAL AFFAIRS AND CONSERVATION**

Second Meeting, São Paulo, 9-13 July 1990

A G E N D A

1. Adoption of agenda and work plans; appointment of Rapporteur.
2. Report of previous meeting; 11-14 September 1989.
3. Matters arising from report of previous meeting.
4. XV Antarctic Treaty Consultative Meeting, Paris, 1989.
5. Protected Areas.
6. Management of Protected Areas.
7. Environmental Impact Assessment.
8. Tourism in the Antarctic.
9. Collaboration with non-SCAR bodies.
10. IUCN Antarctic Conservation Strategy.
11. Introduction of non-indigenous organisms into the Antarctic.
12. Abandoned installations.
13. SCAR's Role in Conservation.
14. Environmental monitoring.
15. Operation of the Group of Specialists.
16. Any other business.

Proposed Specially Protected Area, including Management Plan
Lions Rump, King George Island, South Shetland Islands

1. Geographical location

The Area is situated on the south coast of King George Bay, King George Island, South Shetland Islands, and is bounded by the following co-ordinates:

62°07'48"S, 58°09'17"W
 62°07'49"S, 58°07'14"W
 62°08'19"S, 58°07'19"W
 62°08'16"S, 58°09'15"W

2. Management plan

(i) Description of Area

The area is named after Lions Rump, a prominent rocky hill between the southern extremity of King George Bay and Lion Cove. It includes the littoral and sublittoral extending from the eastern end of "Lajkonik Rock" to the northernmost end of Twin Pinnacles Island, and from that point to the easternmost end of the columnar plug "Lions Head" to the east of White Eagle Glacier. On land the Area includes the coastline of raised beaches, freshwater pools and the streams on the south side of King George Bay and around Lion Cove, moraines and slopes leading up to the lower ice tongue of White Eagle Glacier and westward to a small moraine protruding through the ice cap south-east of Sukiennice Hills. Lions Rump comprises Tertiary lavas and tuffs with thin brown coal intercalations and silicified wood fragments. The moraine west of Lion Cove consists of several Holocene stages of glacier advance and retreat. A small refuge is situated near the shore close to the main stream within the Area, about 300 m west of Lions Rump.

(ii) Reason for Designation

The Area is representative of the terrestrial, limnological and littoral ecosystems of King George Island, possessing diverse biota and rock formations.

There is a rich flora, especially of lichens, and the two native vascular plants, *Colobanthus quitensis* and *Deschampsia antarctica*, are frequent. Twelve species of birds breed within the Area, including many colonies of three species of pygoscelid penguins, Adélie, chinstrap and gentoo. There are large numbers of elephant seals and fur seals on the beaches. It is a rich part of the coastal ecosystem which has not been disturbed by human activity, other than various biological, geological and geomorphological studies which have been undertaken within the Area.

(iii) Date of designation and originator

July 1990: Poland.

(iv) Access Points

Access from the sea should be close to the outflow of the main stream within the Area about 300 m west of Lions Rump. Helicopter landings should be restricted to the area south of the southern boundary of the Area, so as not to disturb the fauna.

(v) Entry permit requirement

Entry into the Area should be in strict accordance with a current permit, issued by the 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 jeopardize 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).

However, access to the Area shall be unlimited to parties wishing only to traverse or pass through the site to carry out bona fide scientific research inland of the Area. Such parties shall pass through the site as speedily as is reasonable and shall not disturb any part of the site. 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. Research parties passing through the site as permitted above should also report their visits in the same way.

(vi) Prohibitions

To avoid or minimize 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) anchor or moor any seacraft within the Area, 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 additional to the existing refuge within the Area.

(vii) Pedestrian routes

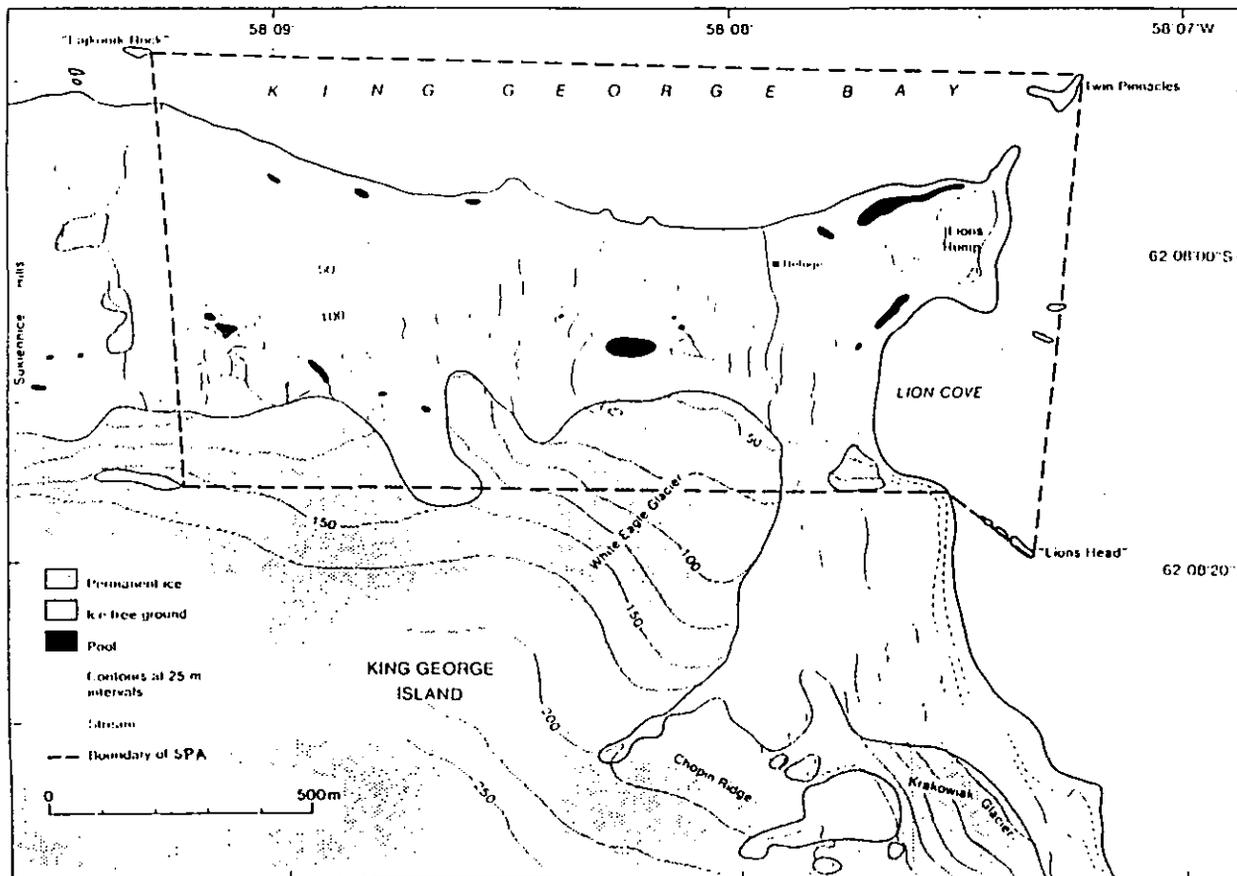
None specified, but precautions must be taken to avoid disturbance to any breeding bird or seal or stand of vegetation, unless required as specified in the permit.

(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 its state and to monitor significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



Proposed Specially Protected Area, including Management Plan

Cryptogam Ridge, Mount Melbourne, Victoria Land

1. Geographical location

Mount Melbourne (74°21'S, 164°42'E) lies between Wood Bay and Campbell Glacier, northern Victoria Land, on the western side of the Ross Sea.

2. Management Plan

(i) Description of Area

The Area includes most of Cryptogam Ridge on the southern rim of the main summit crater (2,733 m altitude), and extends about 1,200 m by 500 m. Geothermal activity occurs along about 300-400 m of the ridge and is marked by discontinuous areas of ice-free ground, surrounded by numerous ice hummocks up to 1 m high and scattered hollow ice towers up to several metres in diameter and 4 m high. The warm ice-free areas are mostly gently sloping with narrow terraces up to 1.5 m wide. More general details for the adjacent areas are given for the surrounding SSSI No. 24.

(ii) Reason for designation

The geothermal ground within the Area supports a unique community of bryophytes, algae and microbiota, including the only known occurrence in the Antarctic of the moss *Campylopus pyriformis* and the very rare continental occurrence of the liverwort *Cephaloziella exiliflora*, otherwise unknown above about 500 m elsewhere in the Antarctic. This site is comparable with the only other known high altitude geothermally influenced ice-free area near the summit of Mount Erebus. This fragile and sterile habitat is of exceptional biological interest and should be afforded maximum protection from human influence to maintain its unique pristine state.

(iii) Date of designation and originator

June 1990; New Zealand and Italy.

(iv) Access points

Access should be only from either end of Cryptogam Ridge and not from the ridge slopes.

(v) Entry permit requirement

Entry to the Area is only in strict accordance with a current permit, issued by the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardize 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 minimize human impact it is prohibited to:

- (a) enter the Area without wearing sterile protective overclothing and footwear, to be provided by the supporting national operator;
- (b) Use any sampling or other equipment within the Area which has not been first sterilized using an acceptable method;
- (c) land a helicopter within the Area; helicopters should land near the summit of Mount Melbourne only at a specified point in or adjacent to the main crater, no closer than 200 m from the boundary of the Area;
- (d) incinerate, bury or otherwise dispose of any waste, including all human waste, within the Area; all such waste must be removed from the Area;

- (e) bring into the Area any fuel or food, or leave any form of other supplies within the Area, other than markers required for monitoring studies;
- (f) erect any form of building within the Area.

(vii) Pedestrian routes

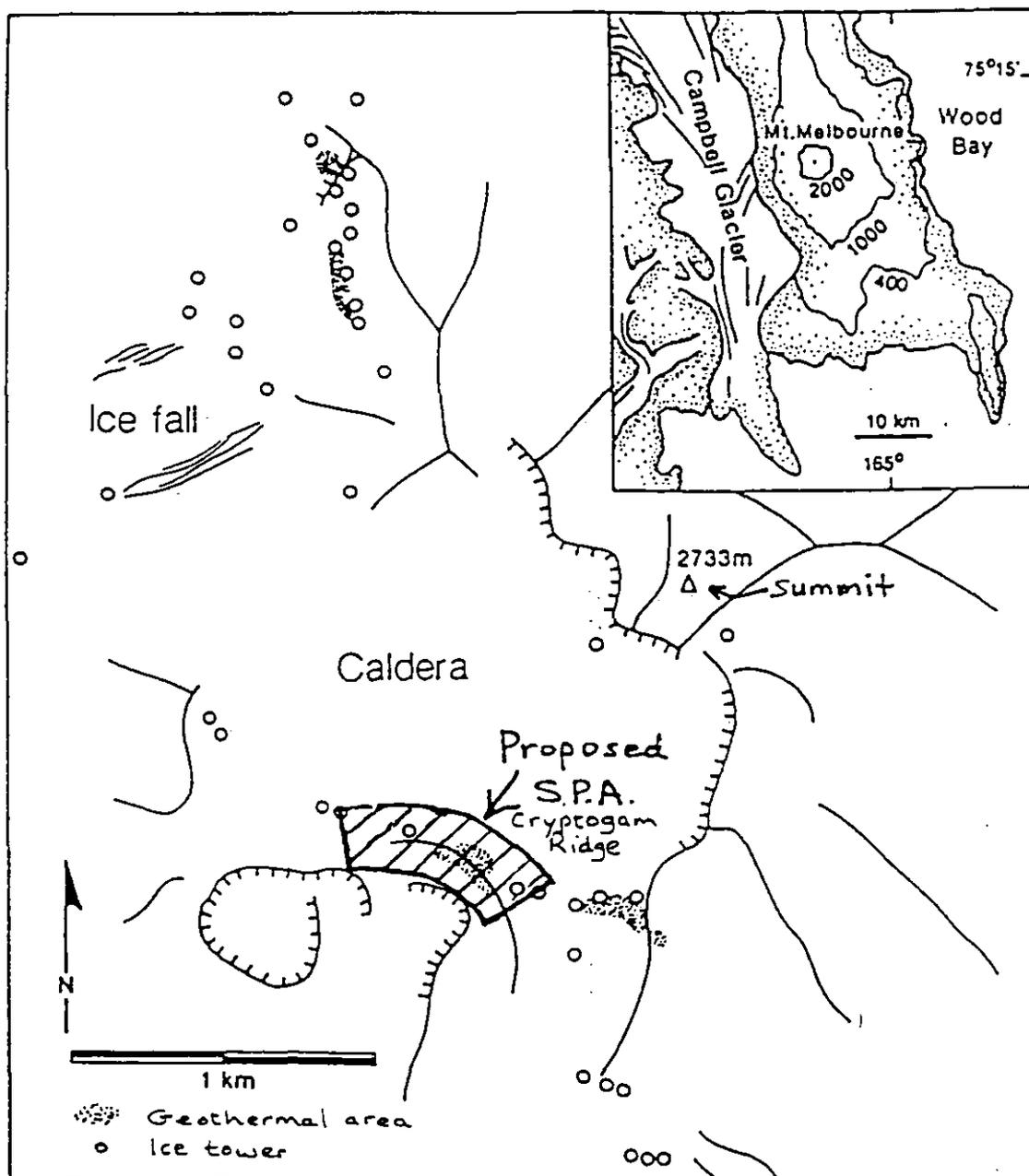
None specified, but pedestrians must not use the ridge crest as a way of access to parts of the surrounding SSSI. Extreme precaution must be taken to avoid disturbance of all ice-free ground or interference with ice structures within the Area, unless required as specified in the permit.

(viii) Scientific research and sampling

Where at all possible collections and general observations of geothermal soils and organisms should be made from positions outside the Area, unless directly related to the monitoring of Cryptogam Ridge; all activities within the Area must conform strictly with those specified in the permit to enter the Area.

(ix) Inspection and maintenance

Inspection visits should be made to the Area no more than 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.



Proposed Specially Protected Area, including Management Plan
Avian Island, North-West Marguerite Bay, Antarctic Peninsula

1. Geographical location

Avian Island (67°46'S, 68°54'W) lies 0.25 km south of the south-west tip of Adelaide Island in north-west Marguerite Bay, south-west Antarctic Peninsula.

2. Management Plan

(i) Description of Area

The Area consists of Avian Island together with its littoral zone. It is 1.45 km long by 0.8 km at its widest (total area about 49 ha), and rises to just over 40 m altitude in the south. It is almost entirely ice-free in summer. There are several shallow melt pools, the largest being on the eastern raised beach terrace. There are two small dilapidated refuge huts, one near the north-west and the other near the mid-east shores of the island.

(ii) Reason for designation

The Area is unique in the Antarctic Peninsula region for its abundance and diversity of breeding seabirds, the most important of which are: Adélie penguins (*Pygoscelis adeliae*) about 36,000 pairs; blue-eyed shags (*Phalacrocorax atriceps*) about 670 pairs; southern giant petrels (*Macronectes giganteus*) about 250 pairs; Dominican gulls (*Larus dominicanus*) about 60 pairs (total adult birds about 200); skuas (*Catharacta maccormicki*) 30 pairs (total adult birds about 200); Wilson's storm petrels (*Oceanites oceanicus*) several hundred pairs. Several other birds are frequent visitors, breeding elsewhere in Marguerite Bay. Weddell seals (*Leptonychotes weddellii*) breed in small numbers around the shores of the island, and other species of seals occasionally come ashore, particularly fur seals (*Arctocephalus gazella*) in increasing numbers during summer. Bryophyte vegetation is sparse but nitrophilous lichen communities are well-developed; vascular plants are absent. The giant petrel colony is the farthest south known breeding population and represents about a quarter of the population breeding on the entire Antarctic Peninsula. The blue-eyed shag colony is one of the largest known in the Antarctic and is very close to the southern limit of the species breeding range; it represents about 85% of the total population breeding south of the Antarctic Circle. The Adélie penguin colony is the largest on the Antarctic Peninsula and contains a third of the total population breeding in the region.

(iii) Date of designation and originator

Originally designated as SSSI No.30, November 1989, Recommendation XV-6, by UK; July 1990; UK.

(iv) Access points

Access should be from the sea as close as possible to either of the refuges.

(v) Entry permit requirement

Entry into the Area is only in strict accordance with a current permit, issued by the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardize 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 minimize human impact it is prohibited to:

- (a) drive any vehicle within the Area (over-snow vehicles used to visit the island must be left at the shoreline);
- (b) bring any dog into the Area;
- (c) land a helicopter within the Area;
- (d) overfly the Area by any aircraft below 250 m above the highest point;
- (e) use any of the Area's coves or bays for anchoring or mooring seacraft, except in accordance with the permit;
- (f) incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste must be removed from the Area;
- (g) leave depots of fuel, food, or any other supplies within the Area, except at the refuges, unless they are further required within the same season, at the end of which they must be removed.
- (h) erect any form of building within the Area, besides the restoration and maintenance of the two existing refuges.

(vii) Pedestrian routes

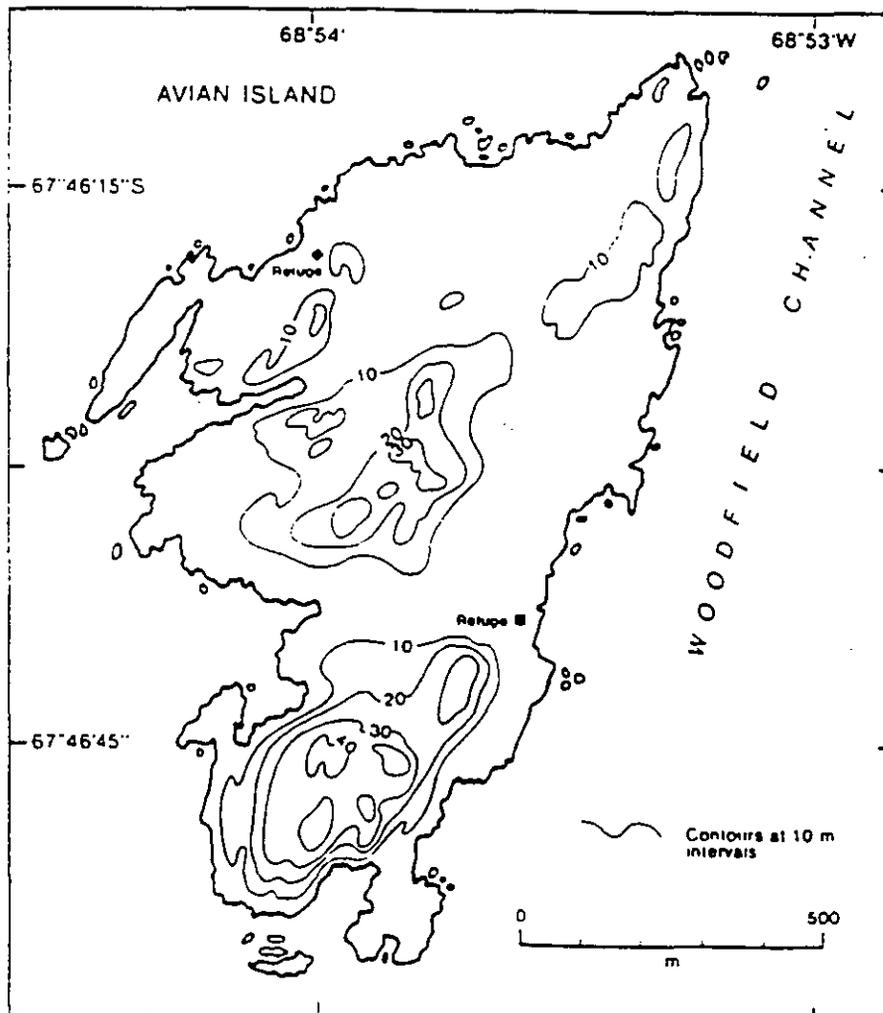
None specified, but every precaution must be taken to avoid disturbance of any breeding bird (especially giant petrels, which pedestrians should not approach closer than 100 m) or seal, unless required as specified in the permit.

(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 should be made to the Area 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.



Proposed Specially Protected Area, including Management Plan
Forlidas Pond and Davis Valley Ponds

1. Geographical Location

Forlidas Pond, about 100 m in diameter, is situated near the east end of the Dufek Massif in a small unnamed dry valley about 1 km east of the northern edge of Forlidas Ridge and about 1 km north-west of Davis Valley. The unnamed dry valley is separated from Davis Valley by a north-east trending ridge several kilometres long. The position of Forlidas Pond is 82°27'15"S, 51°21'W. The Area includes smaller ponds that occur along the ice margin at the northern edge of Davis Valley, a short distance east of Forlidas Pond.

2. Management Plan

(i) Description of Area

The Area consists of two sites, shown on the attached map, about 500 m apart:

- A. All that area within 500 m of the centre of Forlidas Pond;
- B. All that area within 500 m of the ice margin which contains several meltwater ponds along the northern edge of Davis Valley.

(ii) Reason for designation

The Area contains some of the most southerly freshwater ponds known in Antarctica containing plant life which would be threatened by possible contamination by human activity. The only visitors to Forlidas Pond have been geologists and geophysicists in 1957 and possibly one or two other parties. The ponds in Davis Valley were visited in 1978 by geologists. No botanists or zoologists have visited the Area. These ponds are located in SRA No. 1 which could attract visitors such as scientists or tourists. They should be protected as examples of unique near-pristine freshwater ecosystems and their catchments.

(iii) Date of designation and originator
June 1990, USA.

(iv) Access points
None specified.

(v) Entry permit requirement
Entry to the Area should be in strict accordance with a current permit, issued by the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardize any aspect of the natural ecosystem or its biota within the Area. 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.

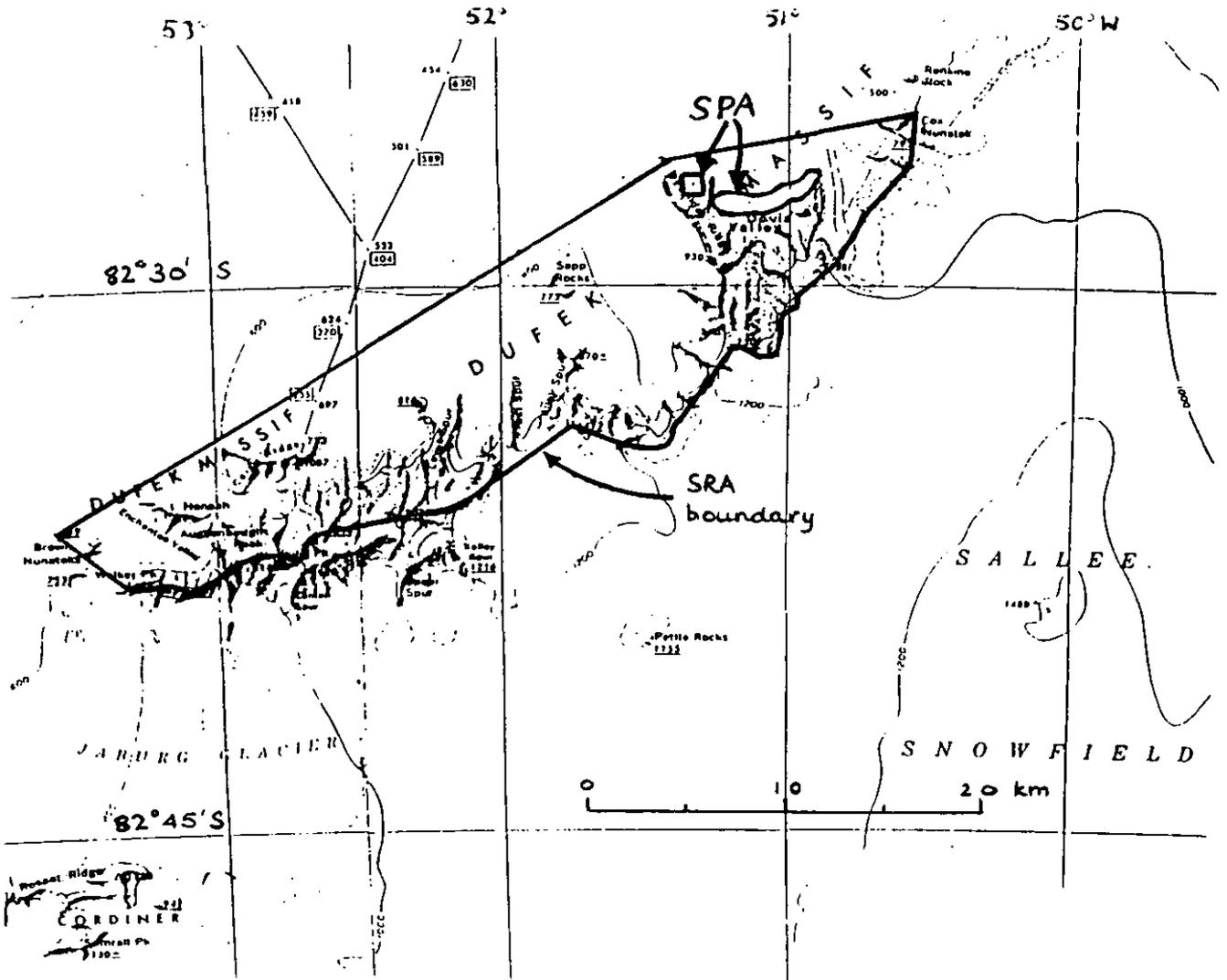
(vi) Prohibitions
None specified, but camping and the landing of helicopters should be avoided within 1 km of the Area.

(vii) Pedestrian routes
None specified, but every precaution must be taken to avoid disturbance of biota, soil, water and periglacial features, unless required as specified in the permit.

(viii) Scientific research and sampling
Taking of samples of biota or soils should be done only for a compelling scientific purpose and must conform strictly with activities specified in the permit to enter the Area.

(ix) Inspection and maintenance

Inspection visits should be made when opportunity arises to assess the state of the Area and to monitor biological and environmental changes, and to maintain boundary markers, notices, etc.



Proposed Site of Special Scientific Interest
Ardley Island, Maxwell Bay, King George Island

1. Geographical Location

Ardley Island (62°13'S, 58°56'W) is situated c. 500 m east of the coast of Fildes Peninsula, Maxwell Bay, King George Island. It is c.1 km south-east of the Soviet station Bellingshausen and the Chilean station Teniente Marsh, and c. 0.5 km east of the Chinese station Great Wall.

2. Management Plan

(i) Description of Site

The Site comprises the entire island and its associated littoral zone, including the isthmus between the island and Fildes Peninsula to the west. The island is c. 2.0 km long and 1.0 km at its widest, and rises to about 50 m altitude. It comprises mainly Tertiary andesitic-basaltic lavas and tuffs, and there are some raised beach terraces. It is snow- and ice-free in summer. There is a small (c.100 m long) freshwater pond on the south-west of the island. There is a refuge hut (FRG) near Braillard Point, and two more refuge huts (Argentina, Chile) are situated near the middle of the northern coast of the island, the latter comprising several huts.

(ii) Reason for designation

The Site is of exceptional biological interest. It has a diverse avifauna with 12 breeding species, and is of particular importance for its breeding colonies of gentoo penguins (*Pygoscelis papua*); the average number of breeding pairs is about 4,000, which is the largest concentration of Gentoos within the South Shetland Islands and probably in the Antarctic. There are also about 1,200 pairs of breeding Adélie penguins (*Pygoscelis adeliae*) and a small number of chinstrap penguins (*P. antarctica*). Other breeding species of particular importance are southern giant petrels (*Macronectes giganteus*). Wilson's storm petrels (*Oceanites oceanicus*) and black-bellied storm petrels (*Fregetta tropica*).

The island possesses some of the best-developed and most extensive plant communities in the South Shetland Islands, notably the climax fellfield ecosystem dominated by macrolichens (*Himantormia lugubris*, *Usnea* spp). Such vegetation is extremely sensitive to human intervention and is very easily damaged.

(iii) Outline of Research

Detailed ornithological and botanical research has been undertaken on Ardley Island for many years by Chilean, FRG and GDR scientists, with brief studies made also by scientists from other national stations in the area.

Results of a 10-year census and breeding study, commencing in 1979, of pygoscelid penguins have revealed large between-season fluctuations in numbers and the breeding success of each species. Also, the giant petrel breeding population has declined by about 80% in recent years. There is strong evidence that these population fluctuations are a direct response to disturbance by large numbers of visitors and to vehicles and low-flying aircraft. The effects of these impacts will continue to be monitored as an integral part of the long-term ornithological research being undertaken at this site.

Detailed investigations of the phytosociology of the island's vegetation and of the physiology of selected lichen species have been undertaken. Further terrestrial botanical, zoological and littoral research is planned. Because of the extreme importance of this area to biological research it is imperative that it is protected from the severe threat of human intervention to minimize its impact on this exceptional ecosystem.

(iv) Date of expiry of designation

31 December 2001.

(v) Access Points

None specified, although groups of more than five persons should not enter the site from the sea anywhere east of a north-south line running through the beacon on the mid-north coast of the island.

(vi) Pedestrian and vehicular routes

Pedestrian activity should be restricted whenever possible to areas with minimal vegetation, and should avoid any bird breeding sites, except as required for approved research studies. Tourists and non-scientific station and ship personnel should visit only the area designated for this purpose (see ix) in order to minimize disturbance of biota. The use of any type of vehicle, including amphibious craft on land, is not permitted. Helicopters should not land on or overfly the island below 300 m altitude. Aircraft landing at and taking off from Teniente Marsh airfield should avoid overflying the island.

(vii) Other kinds of scientific investigations which would not cause harmful interference.

Other scientific investigations may be permitted as long as they cause minimum impact on the biota and ecosystems. All markers and structures associated with field experiments must be removed as soon as the research is completed.

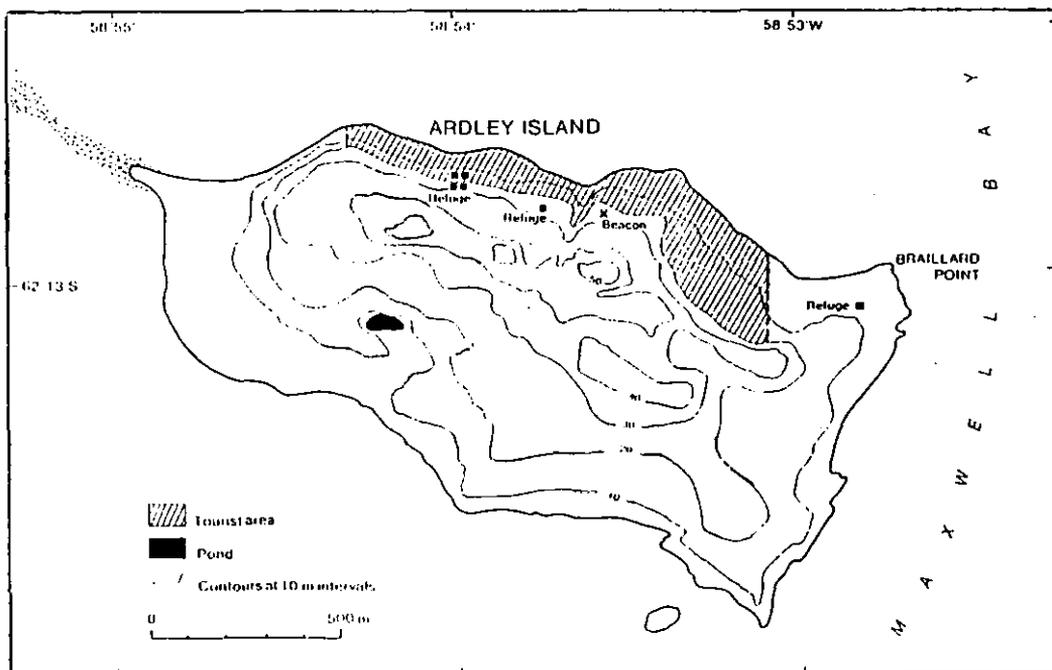
(viii) Scientific sampling

All activities involving banding, capture, killing, etc. of any bird must conform with Agreed Measures for the Conservation of Antarctic Fauna and Flora.

Any other sampling should be restricted to the minimum required for the purpose of the respective studies.

(ix) Other restraints

Large groups of visitors to the site should be limited to a maximum of 20 persons at any time. Such groups of persons should have access only to the "tourist area" marked on the map, i.e. the north coast of the island as far as 300 m west of Brailard Point and 300 m west of the Chilean refuge, up to an altitude of 20 m above sea level. Groups should be accompanied by a guide, provided from the national station approving the visit, who will be responsible for their conduct and who is fully conversant with the Site Management Plan, the Agreed Measures for the Conservation of Antarctic Fauna and Flora, and the current research programmes. There should be no access to dogs whether or not they are required for sledging purposes. All non-human waste materials should be removed from the Site and returned to the Station of origin; no combustible materials should be incinerated within the Site.



Proposed amendment to Site of Special Scientific Interest No. 6

Byers Peninsula, Livingston Island, South Shetland Islands

This Site currently comprises three areas of varying shape and size on Byers Peninsula designated solely for their sedimentary and palaeontological interest. However, the peninsula is also of considerable biological and archaeological importance. The following amended management plan is proposed:

1. Geographical Location

Byers Peninsula is an extensive, largely ice-free area at the western end of Livingston Island, South Shetland Islands, centred on lat. 62°38'S, long. 61°05'W.

2. Management Plan

(i) Description of Site

The Site comprises the entire area of Byers Peninsula extending from the ice margin on the west side of Rotch Dome (to a point directly north of Stackpole Rocks) westwards to the west end of Ray Promontory. The littoral zone of the peninsula is included within the Site. The nearby offshore islets and islands are not included in the Site. Most of the Site is low and undulating, below 100 m altitude, except for Ray Promontory which has a more rugged topography, rising to over 200 m at Penca and Start hills. Numerous volcanic plugs, lakes, pools and streams occur between Ray Promontory and the Rotch Dome ice field. Coastal areas often have broad beaches several hundred metres wide, with raised beaches behind.

(ii) Reason for designation

The fossils found in this area provide evidence of the former link between Antarctica and the other southern continents. A long-term palaeontological research programme has been in progress since the mid-1960's. It is important to protect these Jurassic and Cretaceous rocks from being used as building materials or taken as souvenirs.

The site is of special biological importance. It has a sparse but diverse flora of both calcicolous and calcifuge plants and cyanobacteria associated with the lavas and basalts, respectively. Basaltic plugs are particularly well-vegetated. Several rare cryptogams and the two native vascular plants (*Colobanthus quitensis* and *Deschampsia antarctica*) occur at several sites. There are several coastal and inland lakes, the latter having a particularly important biota, including aquatic mosses, and serve as breeding sites for the midge *Parochlus steineni*, the only native winged insect in the Antarctic and with exceptionally restricted distribution. The only other Antarctic dipteran, the apterous *Belgica antarctica*, occurs in stands of wet moss.

The site is also unique in possessing the greatest concentration of historical sites in Antarctica, namely the remains of refuges, together with contemporary artefacts, and shipwrecks of early nineteenth century sealing expeditions.

It is important that both the biological and archaeological features are also afforded protection.

(iii) Outline of research

A long-term geological and palaeontological research programme was established in 1964. The main objectives are the description of sediments and fossils found in this area. Botanical, zoological, limnological, ornithological and archaeological investigations have also been undertaken throughout the Site at various times since the late 1950s.

(iv) Date of expiry of designation

31 December 2001.

(v) Access points
None defined.

(vi) Pedestrian and vehicular routes

Vehicles should not enter the Site, except in an emergency. Helicopters should land only on unvegetated ground at least 500 m from any bird or seal concentrations, or freshwater bodies.

(vii) Other kinds of scientific investigations which would not cause harmful interference.

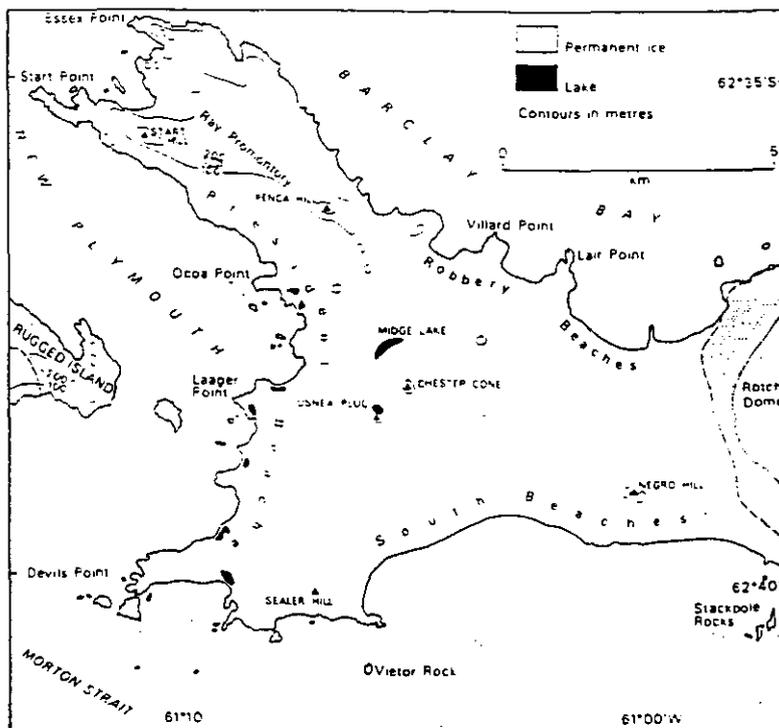
Scientific research other than archaeological, biological and geological should be kept to a minimum.

(viii) Scientific sampling

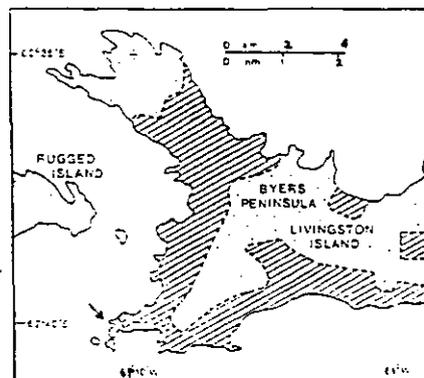
Samples of rocks or biological specimens should only be taken for compelling scientific purposes.

(ix) Other restraints

Buildings and other facilities should not be erected in the Site. All non-human waste should be removed from the area. No combustible materials should be incinerated within the Site. There should be no interference of any sealers' refuges (huts, caves, etc) nor removal of any associated artefacts (including implements, timbers, fabrics, etc) from these features or from the beaches. No skeletal remains of any animal should be moved within or removed from the Site.



ORIGINAL BOUNDARIES OF SITE



Proposed Marine Site of Special Scientific Interest

Western Bransfield Strait

1. Geographical location

The Site is located off the southern shore of Low Island, western South Shetland Islands, between latitudes 63°20'S and 63°35'S and between longitudes 61°45'W and 62°30'W (with reference to U.S. Defense Mapping Agency Hydrographic/Topographic Center, Chart No. 29121). A small portion of the Low Island landmass/snowmass projects into the northern boundary of this domain; here the northern limit of the marine SSSI will be the associated intertidal zone, extending to depths of approximately 200 m and then dropping off rapidly near the boundary limits of the marine SSSI.

2. Management Plan

(i) Description of Site

The bottom consists of a sand/mud/cobbled-rock matrix and supports a rich benthos, e.g. numerous fish species, invertebrates (sponges, anemones, annelids, molluscs, crustaceans, asteroids, ophiuroids, echinoids, holothurioids, brachiopods, tunicates), and marine plants, in several distinct communities. Fish species commonly collected near Low Island include *Notothenia gibberifrons*, *Chaenocephalus aceratus*, *Harpagifer bispinis*, *Parachaenichthys charcoti*, *Trematomus newnesi*, and *N. coriiceps neglecta*. Species rarely found at Low Island include *Psuedochaenichthys georgianus*, *Champocephalus gunnari*, and *Chionodraco rastrospinosus*. In addition, the Low Island shelf appears to be a major spawning ground for several fish species (e.g. the Antarctic cod *N. coriiceps neglecta* and the ice fish *C. aceratus*).

(ii) Reason for designation

The shallow shelf south of Low Island is one of only two known sites in the western South Shetland Islands to Palmer Archipelago region that are suitable for bottom trawling for fish and other benthic organisms. From an ecological standpoint, the Low Island site offers unique opportunities to study the composition, structure, and dynamics of several accessible marine communities. The Site and, in particular, its benthic fauna, are of exceptional scientific interest and require long-term protection from potential harmful interference.

(iii) Outline of research

Studies of this area by scientists from Palmer Station began in the early 1970s. The current research programme uses fish from Low Island to study the biochemical adaptations that enable proteins to function at low temperatures and the physiological adaptation of muscle and energy metabolism to low temperatures. These studies are conducted each year during the austral summer.

(iv) Date of expiry of designation

31 December 2001.

(v) Access points

Any boundary point may be used for entry. Free passage of ships through this area is permitted.

(vi) Pedestrian and vehicular routes

Not applicable

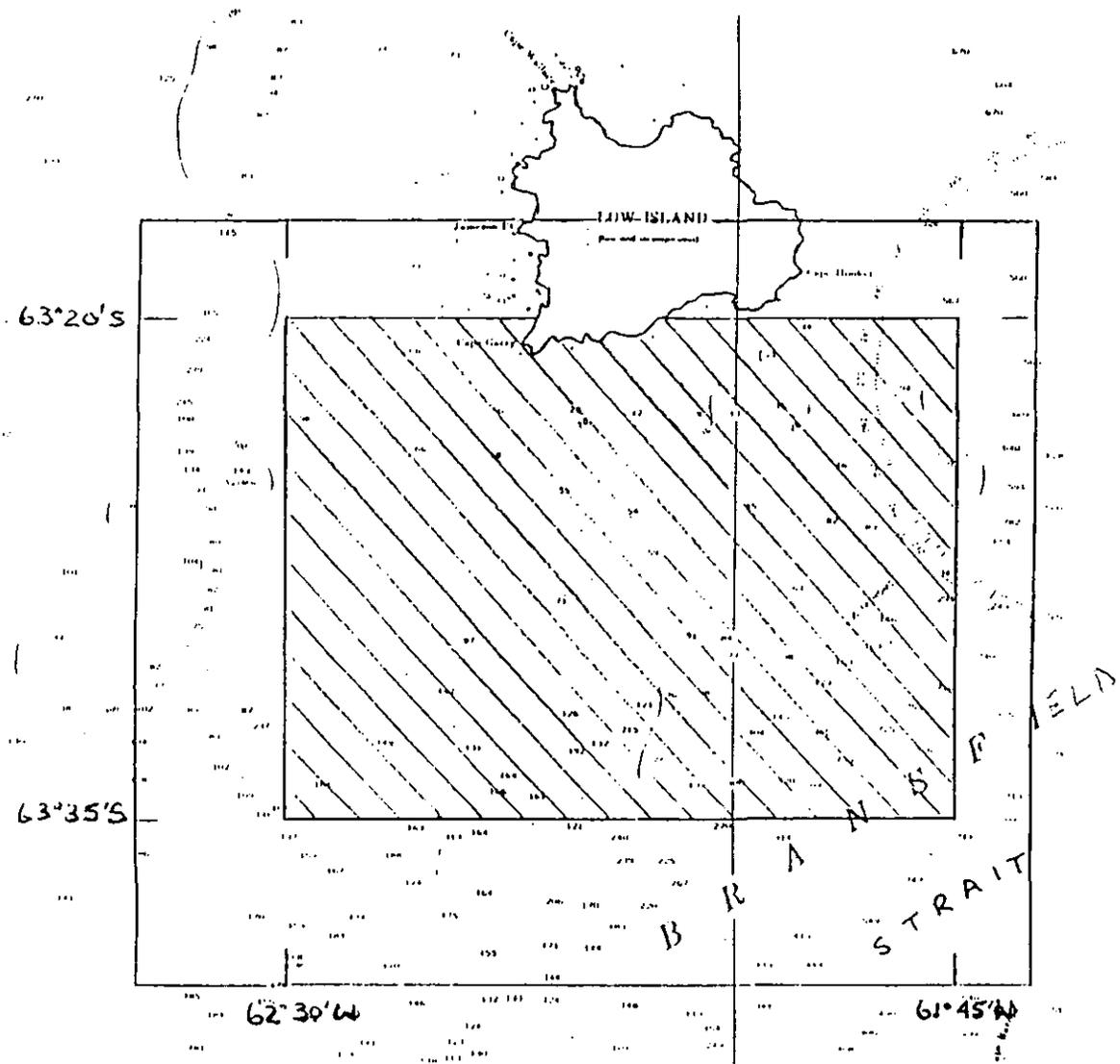
(vii) Other kinds of scientific investigations that would not cause harmful interference
Ecological studies of the composition, structure and dynamics of the marine communities would not be harmful.

(viii) Scientific sampling

Sampling of the sea floor and its benthos by any method should be restricted to the minimum necessary for research activities and should be carried out with minimal disturbance of the Site.

(ix) Other restraints

Ships should, where possible, avoid anchoring within the boundaries of the Site.



Proposed Marine Site of Special Scientific Interest

East Dallmann Bay

1. Geographical location

The Site is located in East Dallmann Bay off the western shore of Brabant Island, Palmer Archipelago, between latitudes 64°00'S and 64°50'S and from longitude 62°50'W east to the intertidal zone of the island's western shore (with reference to U.S. Defense Mapping Agency Hydrographic/Topographic Center, Chart No. 29121). West of Brabant Island the bottom forms a gently sloping shelf from the intertidal zone to depths of approximately 200 m and then drops off rapidly near the western boundary of the Site.

2. Management Plan

(i) Description of Site

The bottom consists of a sand/mud/cobbled-rock matrix. The benthic community includes numerous fish species, invertebrates (sponges, anemones, annelids, molluscs, crustaceans, asteroids, ophiuroids, echinoids, holothurioids, tunicates), and marine plants. Fish species commonly collected at East Dallmann Bay include *Notothenia gibberifrons*, *Chaenocephalus aceratus*, *Champscephalus gunnari*, *Pseudochaenichthys georgianus*, and *Chiono draco rastros spinosus*. Specimens of *Trematomus newnesi* and *Notothenia coriiceps neglecta* are very rare in this area.

(ii) Reason for designation

The shallow shelf west of East Dallmann Bay is one of only two known sites near Palmer Station that are suitable for bottom trawling for fish and other benthic organisms. The site and, in particular, its benthic fauna, are of exceptional scientific interest and require long-term protection from potential harmful interference.

(iii) Outline of research

Studies of this area by scientists from Palmer Station began in the early 1970s. The current research programme studies the biochemical adaptations that enable proteins to function at low temperatures and the physiological adaptation of muscle and energy metabolism to low temperatures.

(iv) Date of expiry of designation

31 December 2001.

(v) Access Points

Any boundary point may be used for entry. Free passage of ships through this area is permitted.

(vi) Pedestrian and vehicular routes

Not applicable.

(vii) Other kinds of scientific investigations that would not cause harmful interference.

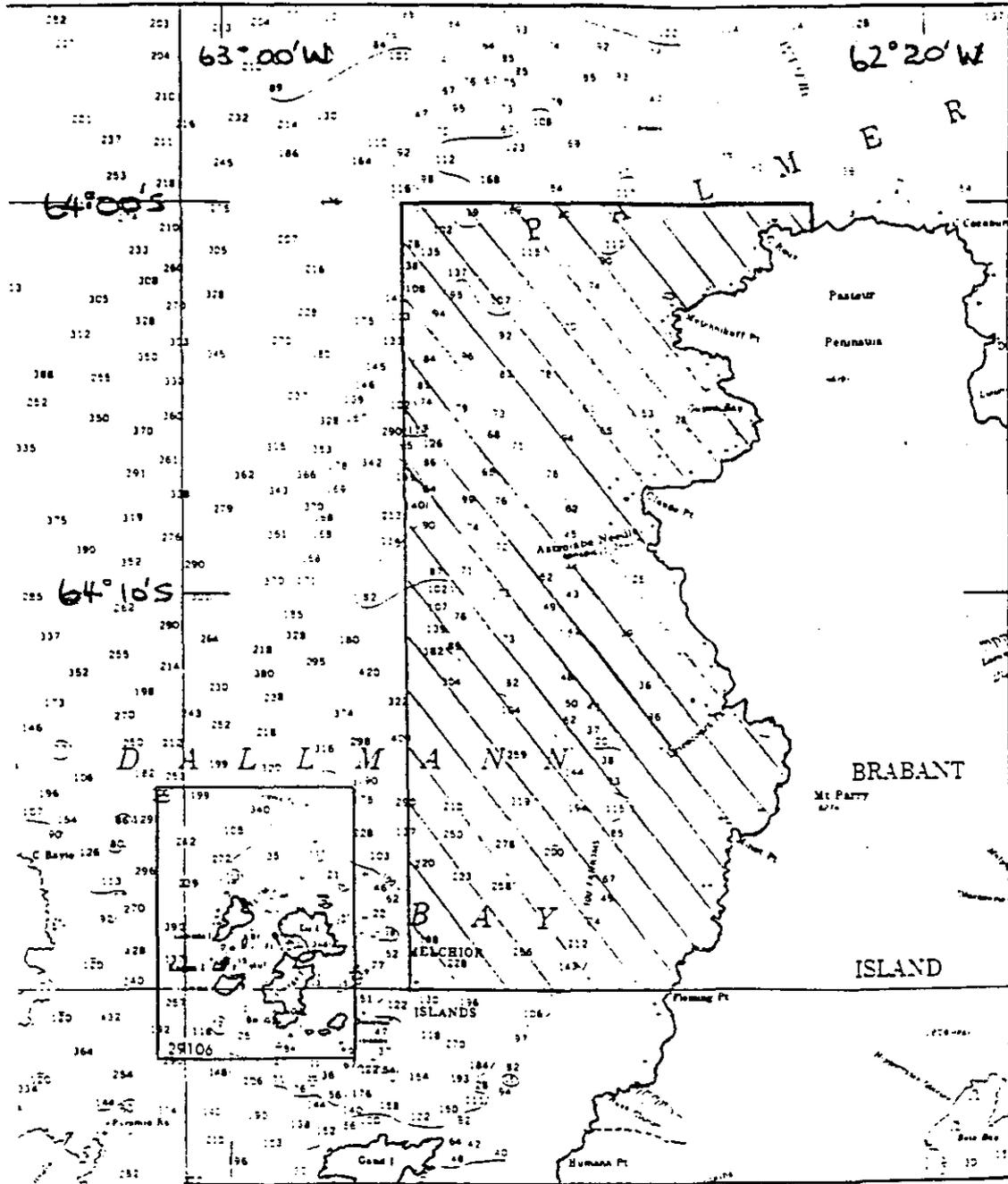
Ecological studies of the composition, structure, and dynamics of the marine communities would not be harmful.

(viii) Scientific sampling

Sampling of the sea floor and its benthos by any method should be restricted to the minimum necessary for research activities and should be carried out with minimal disturbance of the Site.

(ix) Other restraints

Ships should, where possible, avoid anchoring within the boundaries of the Site.



Proposed Management Plan for Specially Protected Area No. 8

Dion Islands, Marguerite Bay, Antarctic Peninsula

1. Geographical location

The Dion Islands (67°53'S, 68°42'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 km², 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 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 of designation and originator

November 1966, Recommendation IV-8, by U.K.

(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 the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardize 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 minimize human impact it is prohibited to:

- (a) land 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;
- (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.

(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.

Annex 11

Proposed 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 Channel, 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 500 m 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 originator

November 1966, Recommendation IV-9, by U.K.

(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 the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardize 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 minimize 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 luxuriant 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 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.

Proposed 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 south-west 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 Spaul 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 ecosystems 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 U.K.

(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 the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardize 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 minimize 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.

Annex 13

Proposed 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 300 m 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 U.K.

(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 the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardize 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 minimize 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 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 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.

Annex 14

Proposed Management 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°02'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 throughout 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 petrels (*Macronectes giganteus*), cape 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 (*Fregetta tropica*). The isthmus between southern Powell Island and Michelsen Island is the longest-known breeding site in the Antarctic for fur seals (*Arctocephalus gazella*) in the South Orkney Islands 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 U.K.

(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 the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardize 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 minimize 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 Islands;
- (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.

Proposed Management Plan for Specially Protected Area No. 16

Coppermine Peninsula, Robert Island, South Shetland Islands

1. Geographical location

Coppermine Peninsula (62°23'S, 59°42'W) is situated on the west side of Robert Island, which lies between Nelson Island to the east and Greenwich Island to the west, midway along the South Shetland Islands archipelago.

2. Management Plan

(i) Description of Area

The Area comprises all land west of a north-south line across the isthmus between Carlota Cove and Coppermine Cove, 100 m west of a small group of Chilean refuge huts. The peninsula is about 1.7 km from south-east to north-west and up to 0.6 km from north-east to south-west, and is largely surrounded by precipitous cliffs. There are three prominent low hills which reach a highest point at about 220 m. The easternmost lies close to the isthmus; there is a central hill composed of basaltic columns referred to as "Neptune's Cathedral", and the westernmost is situated above Fort William at the extreme west of the peninsula. The isthmus (mainly outside the Area) is a 250 m wide raised beach reaching about 10 m altitude. Much of the higher ground is permanently ice covered. There are numerous small streams and pools in summer.

(ii) Reason for designation

Coppermine Peninsula is a biologically rich area with a diverse biota typical of the South Shetland Islands. It supports a wide range of plant communities with associated invertebrate fauna; the vertebrate fauna is also particularly well represented. The outstanding feature of the vegetation is a 1.5 ha closed carpet of the mosses *Calliergidium austro-stramineum*, *Calliergon sarmentosum* and *Drepanocladus uncinatus*, representing one of the largest continuous moss stands in the Antarctic. It overlies a thick layer of wet moss peat. Large stands of the foliose cyanobacterium *Nostoc commune* occur on moist slopes and in depressions. A large number of bryophyte and lichen species occur within the Area, and Antarctic hair grass (*Deschampsia antarctica*) is frequent. A small colony of chinstrap penguins (*Pygoscelis antarctica*) occurs at Fort William. There are about 30 small colonies of southern giant petrels (*Macronectes giganteus*). Other breeding species include about 2,000 nests of Wilson's storm petrels (*Oceanites oceanicus*) in at least 13 colonies, up to 1,000 Antarctic terns (*Sterna vittata*) in nine colonies, 300-400 Dominican gulls (*Larus dominicanus*) in ten colonies, and numerous brown skuas (*Catharacta lonnbergii*). Seals are common around the peninsula and frequently haul out at the isthmus, notably elephant seals (*Mirounga leonina*), Weddell seals (*Leptonychotes weddellii*) and increasingly large numbers of fur seals (*Arctocephalus gazella*).

(iii) Date of designation and proposer nation

November, 1966, Recommendation IV-10, by Chile.

(iv) Access points

Access should be from the isthmus outside the Area by sea from Coppermine Cove or Carlota Cove, or by helicopter also to the east of the Area.

(v) Entry permit requirement

Entry to the Area is only in strict accordance with a current permit, issued by the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardize 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 minimize 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 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 (especially the extensive carpet of moss on the isthmus), 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 three 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.

Annex 16

Proposed Management Plan for Specially Protected Area No. 18

North Coronation Island, South Orkney Islands

1. Geographical location

Coronation Island (60°38'S, 45°35'W) is the largest of the South Orkney Islands, situated at the west end of the archipelago.

2. Management Plan

(i) Description of Area

The Area lies on the central north side of Coronation Island. It is bounded to the east by Foul Point (60°32'S, 45°29'W) and to the west by Conception Point (60°31'S, 45°41'W); the entire area of these points, together with the intervening sea, is included in the site. The eastern boundary follows a precipitous ridge 6 km southward to a position at 2,500 ft (c. 750 m) altitude immediately to the west of Mount Nivea summit (60°35'S, 45°29'W), thence west-south-westward for 5.5 km to a position at 3,000 ft (c. 900 m) altitude to the north-east of Wave Peak summit (60°37'S, 45°36'W), and from there 4 km westward across the Brisbane Heights plateau, then 4 km north-north-west to an unnamed summit at 3,532 ft (c.1,060 m) and north for 6 km to Conception Point. The summits of Mount

Nivea and Wave Peak and the col known as High Stile are outside the Area. Ommanney Bay and the unnamed bay to the west are included within the Area, south of the boundary between Conception and Foul points (11.5 km).

(ii) Reason for designation

The Area embraces areas of coastal ice-free terrain (Conception, Prong and Foul Points) with large seabird colonies and lichen-dominated cliffs, and permanent icefields (two major glaciers and ice cliffs rising to the Brisbane Heights plateau) which provide an excellent representative area of a pristine ice environment near the northern limit of the maritime Antarctic and Antarctic Treaty Area. The inter-related terrestrial, ice and marine components of the Area comprise an integrated example of the coastal permanent ice and sublittoral ecosystems typical of the maritime Antarctic environment.

(iii) Date of designation and originator

October 1985, Recommendation XIII-10, by UK.

(iv) Access points

None specified.

(v) Entry permit requirement

Entry into the Area is only in strict accordance with a current permit, issued by the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardize 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 minimize human impact it is prohibited to:

- (a) drive any vehicle within the Area;
- (b) land a helicopter within 0.5 km of any bird or seal colonies or aggregations, or on any of the icefields;
- (c) overfly Conception, Prong or Foul Points below 250 m above their respective highest points;
- (d) use any of the Area's coves or bays for anchoring or mooring seacraft, except in accordance with the permit; ships must not enter the Area;
- (e) incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste, including human waste in all ice-covered areas, 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.

(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 no more than 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.

Proposed Management Plan for Specially Protected Area No. 20

Lagotellerie Island, Marguerite Bay, Antarctic Peninsula

1. Geographical location

Lagotellerie Island (67°53'S, 67°24'W) lies about 3 km west of the southern part of Horseshoe Island, Marguerite Bay, south-west Antarctic Peninsula.

2. Management Plan

(i) Description of Area

Lagotellerie Island is about 2 km from east to west by about 1 km from north to south, and rises steeply to twin summits of c. 270 and 290 m altitude separated by a broad saddle. The north side of the island is largely snow-free with extensive low-lying ground. The south and east sides have precipitous cliffs up to 180 m high; much of the north side also has steep cliffs dissected by gullies and traversed by broad rock terraces. There are no permanent streams or pools.

(ii) Reason for designation

The island has a relatively diverse flora and luxuriant development of plant communities, representative of the southern maritime Antarctic region. The north side supports an abundance of Antarctic hair grass (*Deschampsia antarctica*) which on some of the terraces forms closed swards up to 10 m². Antarctic pearlwort (*Colobanthus quitensis*) is also frequent. Both species are close to the southern limit of their range. There is also a rich cryptogamic flora with well-developed communities containing several rare mosses and lichens. Beneath the closed grass and moss stands a rich loamy earth up to 25 cm deep has developed, with a rich invertebrate fauna and microbiota. The island is one of the southernmost sites for the apterous midge *Belgica antarctica*. There is a colony of about 1,000 pairs of Adélie penguins (*Pygoscelis adeliae*) at the south-east corner of the island. Here, there is also a small colony of about 30 pairs of blue-eyed shags (*Phalacrocorax atriceps*), which is one of the farthest south breeding sites for the species. Brown and south polar skuas (*Catharacti lonnbergii* and *C. maccormicki*) are abundant and several pairs of each nest on this island.

(iii) Date of designation and proposer nation

October 1985, Recommendation XIII-11, by U.K.

(iv) Access points

None specified.

(v) Entry permit requirement

Entry into the area is only in strict accordance with a current permit, issued by the Participating Government or its authorized representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardize 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 minimize human impact it is prohibited to:

- (a) land a helicopter within the Area, except on the low-lying unvegetated ground in the mid north side of the island and on the saddle between the two peaks;
- (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 avoid disturbance of any breeding bird or seal or stand on 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.

Proposed Specially Reserved Area

North Dufek Massif

1. Geographical Location

The Dufek Massif is situated at the north end of the Pensacola Mountains, near the southern boundary of the Filchner Ice Shelf, centred about 82°30'S, 52°00'W.

2. Management plan

(i) Description of Area

All that area north of the mountain crest from 82°36'S, 52°33'W (Brown Nunataks on the west) to 82°26'S, 50°36'W (Col Nunatak on the east) to a line from Col Nunatak to a point on the snow surface 1 km north of the north edge of Forlidas Ridge to Brown Nunataks. The length is 48 km and the width is about 10 km. The boundaries are demarcated as shown on the attached map. The area is of significant geological interest, being the lowest exposed section of the second largest layered mafic intrusion in the world. This intrusion is also exposed in the Forrestal Range and south of the SRA.

Topography: Elevations range from 500 m in Davis Valley to about 2,000 m in the highest peaks. The northern part of the Area consists of ice, the southern part of rock regolith and ice. The Dufek Massif dams the interior ice sheet, allowing the existence of several spectacular dry valleys, such as David Valley, and blue ice areas in the north part of the SRA, which are possible sites for wheeled aircraft landings.

Geology: The rock outcrops in the Area consist of the lowest exposed part of the layered mafic Dufek Intrusion. The dry valleys contain rock outcrops, small alpine glaciers, moraines and strongly developed patterned ground. Weathering of rock debris in the dry valleys has locally caused minor development of soil.

Meteorology: The Area is protected from strong southerly winds flowing off the inland Antarctic ice sheet. The climate is relatively benign for such a southerly location; mean annual temperatures being about -30°C as measured on the ice sheet at the northern edge of the Area.

Biological features: The only known biological features are the sparse lichens on rock and algae in ponds. Snow petrels have been sighted over Davis Valley and tracks of larger birds have been reported.

SPA No. , Forlidas Pond and Davis Valley Ponds, is located within the Area.

(ii) Rationale for designation

The area contains outstanding geological, glaciological, geomorphological, aesthetic, scenic and wilderness values. It is presently in a pristine condition and it is important to preserve it in this condition while allowing multiple use so as to permit access to scientists and others while protecting these values.

(iii) Permitted activities that would not jeopardize the values to be protected

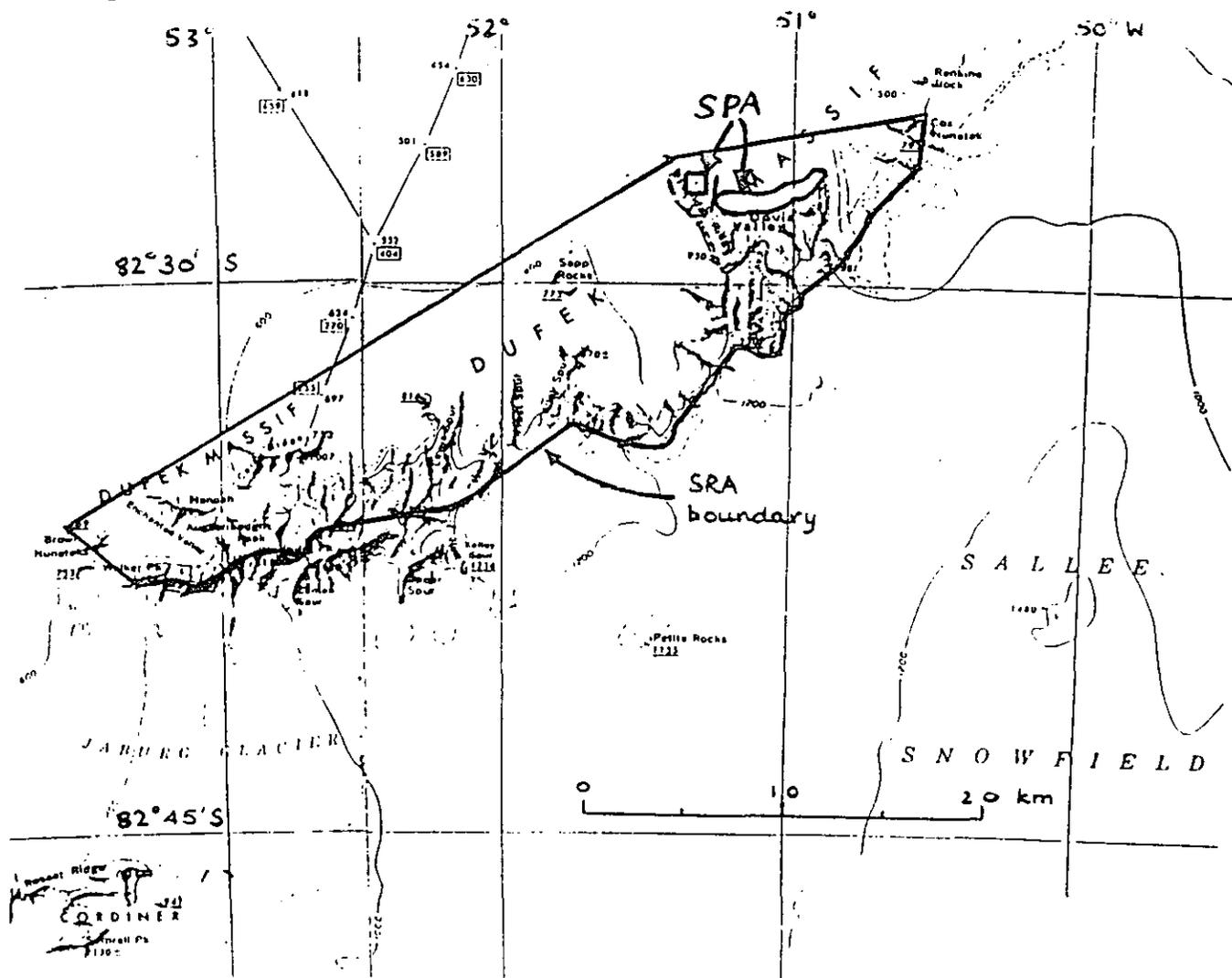
Full freedom of access to permanently ice-covered areas by tracked or wheeled vehicles, by fixed-wing aircraft, and helicopters, and by pedestrians or skiers is permitted. Access to ice-free areas, including the dry valleys is permitted to helicopters and pedestrians. Erection of tents and temporary shelters is permitted provided that they are removed after their intended use.

(iv) Prohibited activities that could adversely affect the values to be protected

Permanent structures such as buildings and stations are not to be established within the boundaries of the Area. Large shelters that may in effect become permanent fixtures when partly buried are also prohibited. (There are areas outside but adjacent to the designated Area where permanent structures could be erected without jeopardizing the values being protected). Aircraft and vehicle fuel storage facilities within the Area are prohibited. Operation of tracked or wheeled vehicles is prohibited in the dry valley areas. Formed aircraft landing facilities (including formed helicopter pads), are prohibited in the dry valley areas. Marking of natural features is prohibited. Use of smoke canisters should be avoided whenever possible. All wastes, including human wastes, must be removed from the Area. Entry to SPA No. , within the SRA, is by permit only.

(v) Steps to minimize impacts of authorized access

Equipment used for scientific research or other activities should be removed when the activity is completed. Major modifications to soil or rocks should be avoided within the Area. Minor modifications made during the course of scientific research or other activities should be restored to the original condition as near as possible after the activity is completed.



DRAFT

PERMIT TO ENTER
A SPECIALLY PROTECTED AREA OR
A SPECIALLY RESERVED AREA

To be completed before visit is undertaken, in consultation with the appropriate management plan.

Area to be visited: Name:..... No:.....

Date(s) of visit (if unknown give approximate period). Note that the permit is for 1 year only (1 July to 30 June):.....

Expected duration of visit:.....hours/days.

If visit will be for more than one day, state probable location of campsite (if possible this should be outside the Area):.....

Maximum number of persons required to enter Area (including support persons):
.....

Reason for entering Area and brief description of proposed study:.....
.....
.....
.....
.....
.....

Type and approximate number of specimens to be collected/banded/killed (Note: a separate permit is required for sampling vertebrates):.....
.....
.....

Proposed waste disposal measures:.....
.....
.....

Permit issued to (leader of visit group):.....

Affiliation of permit holder:.....

Authority issuing permit:.....

Address of issuing authority:.....
.....
.....
.....

Signature of issuing authority:.....Date:...../...../.....

Note: A report on the above visit should be included in the Antarctic Treaty annual exchange of information for the year ending the Antarctic season in which the activities were carried out.

**Extracts from
Articles of the Agreed Measures relating to the issue of permits**

All issuing authorities and leaders of visits to SPAs (i.e. the permit holders) should be conversant with the Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora (Antarctic Treaty Consultative Meeting III, Recommendation 8; Brussels, 1964).

"Permit" means formal permission in writing issued by an appropriate authority [Article II, paragraph (e)].

"Appropriate authority" means any person authorized by a Participating Government to issue permits under the Agreed Measures. The functions of an authorized person will be carried out within the framework of the Antarctic Treaty. They will be carried out exclusively in accordance with scientific principles and will have as their sole purpose the effective protection of Antarctic fauna and flora in accordance with these Agreed Measures [Article II, paragraph (d)].

"Participating Government" means any Government for which the Agreed Measures have become effective in accordance with Article XIII of these Agreed Measures [Article II, paragraph (f)].

The Participating Governments shall prepare and circulate to members of expeditions and stations information to ensure understanding and observance of the provisions of the Agreed Measures, setting forth in particular prohibited activities, and providing lists of Specially Protected Species and Specially Protected Areas [Article IV].

In addition to the prohibitions and measures of protection dealt with in other Articles of the Agreed Measures, the Participating Governments shall in Specially Protected Areas further prohibit:

- (a) the collection of any native plant, except in accordance with a permit;
- (b) the driving of any vehicle;
- (c) entry by their nationals, except in accordance with a permit issued under Article VI, or under (a) above, or in accordance with a permit for some other compelling scientific purpose [Article VIII, paragraph 2].

Each Participating Government shall prohibit within the Treaty Area the killing, wounding, capturing or molesting of any native mammal or native bird, or any attempts at any such act, except in accordance with a permit (details of which are specified in Article VI, paragraph 1).

A permit shall have effect within a Specially Protected Area provided that:

- (a) it was issued for a compelling scientific purpose which cannot be served elsewhere; and
- (b) the actions permitted thereunder will not jeopardize the natural ecological system existing in the Area [Article VIII, paragraph 4].

A permit issued under Article IV shall not have effect within a Specially Protected Area except in accordance with Article VIII, paragraph 4 (above) [Article VIII, paragraph 3].

DRAFT

**REPORT ON VISIT TO
A SPECIALLY PROTECTED AREA OR
A SPECIALLY RESERVED AREA**

To be completed after visit has been undertaken, in accordance with specifications stated in the permit.

Area visited: Name:..... No:.....

Date(s) of visit:.....

Duration of visit:.....hours/days

Access point:.....

Mode of transport used to reach access point:.....

Number of persons entering site:.....

Name of permit holder:.....

Reason for entering Area:.....

.....

.....

.....

Brief account of work achieved (including nature and numbers of specimens/samples collected):.....

.....

.....

If visit was for more than one day, state location of campsite:.....

.....

.....

Waste disposal measures employed:

.....

Comments on state of Area, recommendations, etc:.....

.....

.....

.....

Signature of permit holder:.....Date:..../..../.....

Signature of issuing authority:.....Date:..../..../.....

Address of issuing authority.....

.....

This report should be included in the Antarctic Treaty annual exchange of information for the year ending the Antarctic season in which the activities were carried out.

Environmental advice and the role of SCAR

Since the earliest days of the Antarctic Treaty scientific advice has been sought from SCAR. Especially significant was the recognition of the need for conservation and environmental protection to be soundly based on scientific research. Today, many other organizations are concerned with the issues of Antarctic conservation. SCAR, however, has the unique advantage of being supported by, and having direct access to, the international range of people, both scientists and logisticians, who actually operate in Antarctica. Through its Working Groups, Groups of Specialists and other bodies, SCAR can draw on the expertise of these people in responding to requests for advice. Because of its extensive experience of all types of activities throughout the continent, SCAR can provide advice on how to fulfil the objectives of the Treaty in protecting the Antarctic environment in ways which are also technically feasible in the unusual conditions encountered in the Antarctic.

Of particular significance in this respect has been the provision by SCAR of a definition for Antarctic conservation objectives, the development of protected areas and species, and the identification of the variety and extent of human impacts. SCAR has also considered both conceptual and practical aspects of environmental management, for example waste disposal, and their applications both temporally and spatially throughout the continent.

As part of its continuing commitment to sound and active scientific conservation, SCAR has established the interdisciplinary Group of Specialists on Environmental Affairs and Conservation to review and develop the present arrangements.

This Group has identified several fields in which improvements are possible, both in the general fulfilment of conservation objectives and in the existing system of protected areas.

All conservation requires the provision of adequate scientific and other information on which to base environmental management decisions. Modern management requires an improved exchange of information within the Treaty structure. The present Antarctic Treaty inspection system could, within a broader remit, provide one mechanism for assisting in this, as well as assessing progress towards conservation objectives and promoting consistency standards. A co-ordination of approach by Consultative Parties and a wider dissemination of information are certainly required to make this more effective.

The provision of more extensive information for all aspects of environmental evaluation and management cannot be undertaken without organized resources. Establishment of a data system for geographic and other spatial information will be a key feature of such provision. It will require the completion of internationally agreed baseline maps and gazetteers; a task currently being undertaken by the SCAR Working Group on Geodesy and Geographic Information.

The new system of environmental impact assessment (Recommendation XIV-2) is now being used. SCAR has set up an *ad hoc* group to consider the operation of this measure. The group will combine this study with a consideration of environmental monitoring as a means for developing a practical interpretation of this measure to promote both its wider and more consistent use. Environmental monitoring is fundamental to the success of this approach. Impact assessment provides a model both for predicting changes and assessing the later accuracy of the prediction. Both of these processes rely on the interpretation of monitoring data.

At present the availability of current data and information on any aspect of the Antarctic environment depends principally on the identification of suitable published material. The development of a more active process of assessment and review will require the more

extensive use of unpublished data. The preparation of inventories of available data is a task at present being undertaken by the SCAR *ad hoc* Group on the Co-ordination of Antarctic Data. In addition there is a clear requirement for a more substantive recognition of the importance of environmental monitoring both by those involved in programme planning and by those responsible for programme implementation.

The present system of protected areas reflects the growth of an increasingly sophisticated approach to conservation. The complexity of categories and definitions of protected areas makes it difficult to ensure that Antarctic field staff and other visitors fully understand conservation objectives and field practices. Two broad categories are evident in the ten types of protected area used within the Antarctic Treaty System: those based on preservation and those based on management of human activities.

Furthermore, the designation of additional categories of protected area within the Treaty area, but by other elements of the Treaty System, has potential for confusion and management conflict. One possible treatment for such sites and seal reserves would be to designate them as SSSIs under the appropriate Treaty measure. The rationalization of all these conservation categories would be a valuable long-term objective.

It is clear that a substantial educational task is still required to ensure that all visitors to Antarctica - scientists, support staff, tourists and crews of vessels including fishing vessels - are aware of all relevant environmental measures and conservation objectives. SCAR has produced "*A Visitor's Introduction to the Antarctic and its Environment*" to meet this need. Despite being translated into several languages and being widely distributed this alone is not enough. Treaty Parties need to take a more pro-active role to ensure all groups are better informed. Compliance and monitoring are key issues in success. Clear public understanding and support for conservation measures must be a priority if effective and consistent protection of the Antarctic is ever to be achieved.

The need for active conservation in the protection of Antarctica is now well-recognized. The scientific importance of the monitoring of global change, detection of global pollution and development of ecosystem modelling justifies a special effort for conservation in Antarctica. SCAR is the organization best placed to observe and report on the scientific value and effectiveness of present measures and to provide timely advice on the need for new initiatives in this field.

CIRCULATED QUESTIONNAIRE

SCAR Group of Specialists on
Environmental Affairs and ConservationDIRECTORY OF
ANTARCTIC BIOLOGICAL AND ENVIRONMENTAL DATABASES

(Please use a separate form for each Database)

1. Country:
2. Information provided by (WG Biology member):.....
3. Name (if any) of Database:
4. Location of Database (Datacentre):
5. Name (if any) of Database program:
6. Computer system and operating system (e.g. MS-DOS, VMS, UNIX, etc):
7. In what form can the Database produce its output files? (e.g. ASCII, D-BASE compatible):
8. Type of data resource:
 - 8.1 Physico-chemical
 - 8.1.1 Nature (e.g. chemical, physical, climatic, microclimatic, etc):
 - 8.1.2 Environment (e.g. rock, soil, sediment, water, snow/ice, atmosphere):
 - 8.2 Biological
 - 8.2.1 Life form (e.g. vertebrates, invertebrates, plants, micro-organisms, etc):
 - 8.2.2 Ecosystem (e.g. terrestrial, inland water, marine):
 - 8.3 Bibliographical (give subject area):
 - 8.4 Other:
9. Are data obtained as part of a monitoring programme? If YES, do they relate to environmental or ecological change or impact associated with a station or elsewhere (specify):
10. Approximate number of items listed in Database:
11. Is the Database regularly updated?:
12. Contact person in charge of Database:

Name:

Address:

Telephone:

Fax:

Telex:

Please return completed form(s) to:

Dr. R.I. Lewis Smith, British Antarctic Survey, High Cross, Madingley Road,
Cambridge, CB3 0ET, UK (or Fax: +44 223 62616) by 8 June 1990.



SCAR Report

SCAR Report is an irregular series of publications, started in 1986 to complement SCAR Bulletin. Its purpose is to provide SCAR National Committees and others directly involved in the work of SCAR with the full texts of reports of SCAR Working Group and Group of Specialists meetings, which had become too extensive to be published in the *Bulletin*, and with more comprehensive material from Antarctic Treaty meetings.

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 and humanities in polar and subpolar regions. Recent topics have included polar aspects of agriculture, archaeology, biogeography, botany, ecology, geography, geology, glaciology, international law, medicine, politics, human physiology, psychology, pollution chemistry 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, Fax (0223) 334748.

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, or from booksellers. Subscription rates for Vol 28 (1992) are: for individuals £35.00, for institutions £53.00; single copies cost £12.00.