Final Report of the Twenty-Eighth Antarctic Treaty Consultative Meeting

ANTARCTIC TREATY
CONSULTATIVE MEETING

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Stockholm, Sweden, 6 – 17 June 2005

Antarctic Treaty Consultative Meeting (28th:2005:Stockholm)

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ACRONYMS AND ABBREVIATIONS

ACAP	Agreement on the Conservation of Albatrosses and Petrels
ASOC	Antarctic and Southern Ocean Coalition
ASMA	Antarctic Specially Managed Area
ASPA	Antarctic Specially Protected Area
ATS	Antarctic Treaty System; Antarctic Treaty Secretariat
ATCM	Antarctic Treaty Consultative Meeting
ATCP	Antarctic Treaty Consultative Party
CCAMLR	Convention for the Conservation of Antarctic Marine Living Resources
CCAS	Convention for the Conservation of Antarctic Seals
CEE	Comprehensive Environmental Evaluation
CEP	Committee for Environmental Protection
COMNAP	Council of Managers of National Antarctic Programmes
EIA	Environmental Impact Assessment
HCA	Hydrographic Committee on Antarctica
HSM	Historic Site and Monument
IAATO	International Association of Antarctica Tour Operators
ICG	Intersessional Contact Group
ICSU	International Council for Science
IEE	Initial Environmental Evaluation
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IP	Information Paper
IPY	International Polar Year
IPO	IPY Program Office
IUCN	International Union for Conservation of Nature and Natural Resources – The World Conservation Union
SATCM	Special Antarctic Treaty Consultative Meeting
SCAR	Scientific Committee on Antarctic Research
SDR	Special Drawing Right
SPA	Specially Protected Area
SSSI	Site of Special Scientific Interest
UNEP	United Nations Environment Programme
WG	Working Group
WMO	World Meteorological Organization
WP	Working Paper
WTO	World Tourism Organization
WWF	Worldwide Fund for Nature

PART I

FINAL REPORT

Final Report of the Twenty-Eighth Antarctic Treaty Consultative Meeting

Stockholm, Sweden, 6 – 17 June 2005

(1) Pursuant to Article IX of the Antarctic Treaty, Representatives of the Consultative Parties (Argentina, Australia, Belgium, Brazil, Bulgaria, Chile, China, Ecuador, Finland, France, Germany, India, Italy, Japan, the Republic of Korea, the Netherlands, New Zealand, Norway, Peru, Poland, the Russian Federation, South Africa, Spain, Sweden, Ukraine, the United Kingdom of Great Britain and Northern Ireland, the United States of America and Uruguay) met in Stockholm from 6 to 17 June 2005, for the purpose of exchanging information, holding consultations, and considering and recommending to their governments measures in furtherance of the principles and objectives of the Treaty.

(2) The Meeting was also attended by Delegations of the following Contracting Parties to the Antarctic Treaty which are not Consultative Parties: Canada, the Czech Republic, Denmark, Estonia, Greece, Hungary, Romania, Slovakia, and Switzerland. A delegation from Malaysia was present by invitation of the XXVII ATCM to observe the Meeting.

(3) In accordance with Rules 2 and 31 of the Rules of Procedure, Observers from the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the Scientific Committee on Antarctic Research (SCAR), and the Council of Managers of National Antarctic Programs (COMNAP) attended the Meeting.

(4) In accordance with Rule 39 of the Rules of Procedure, Experts from the following International Organizations and Non-Governmental Organizations were invited to attend the Meeting: the Antarctic and Southern Ocean Coalition (ASOC), the International Association of Antarctica Tour Operators (IAATO), the International Hydrographic Organization (IHO) the International Maritime Organization (IMO), the Intergovernmental Oceanographic Comission (IOC), the World Conservation Union (IUCN), the World Tourism Organization (WTO), the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP).

(5) The information requirements of the host country towards the Contracting Parties, Observers and Experts were fulfilled by Secretariat Circular Notes, letters and through a website with an open as well as a password protected area.

Item 1: Opening of the Meeting

(6) In accordance with Rules 5 and 6 of the Rules of Procedure, Ambassador Greger Widgren, Head of the Swedish Delegation, opened the Meeting and proposed Ambassador Hans Corell as Chair of the ATCM. The proposal was accepted. The Chair made an opening statement in which he stressed the Antarctic spirit, a spirit of cooperation and persistence that developed during the first era of Antarctic explorations. As highest priorities for the XXVIII ATCM Ambassador Corell mentioned the conclusion of the negotiations on the Liability Annex to the Environment Protocol and the issues of tourism and bio-prospecting.

(7) The Consultative Meeting was inaugurated by the Swedish Minister of Foreign Affairs, Ms. Laila Freivalds. In her address the Minister referred to the long and intense relation of Sweden with Antarctica. Sweden had adhered to the Antarctic Treaty in 1984, and emphasizes international cooperation in its polar research program, which covers both the Arctic and the Antarctic regions. The Minister also stressed the example of Antarctica, the first and only demilitarized continent, for the cause of world peace. She referred to the fact that this was the first ATCM to be prepared by the host government in cooperation with the Antarctic Treaty Secretariat, and expressed the hope that the XXVIII ATCM would be able to adopt the Annex on Liability to the Environment Protocol. The Minister's speech is included in Annex D of this Report.

Item 2: Election of Officers and Creation of Working Groups

(8) Dr. Mike Richardson, Head of the Delegation of the United Kingdom (host country of the XXIX ATCM) was elected Vice-Chair. Ambassador Folke Löfgren was appointed Secretary General, and Mr. Stig Berglind was appointed Deputy Secretary General of the Meeting. In accordance with Rule 7 of the Rules of Procedure, Mr. Jan Huber, Executive Secretary of the Antarctic Treaty Secretariat, acted as Secretary of the Meeting.

(9) Four Working Groups were established: (i) a Working Group on Legal and Institutional Affairs, (ii) a Working Group on Operational Matters, (iii) a Working Group on the Liability Annex and (iv) a Working Group on Tourism and Non-Governmental Activities.

(10) The following Chairs of the Working Groups were elected:

i)	Legal and Institutional WG:	Professor Olav Orheim of Norway
ii)	Operational Matters WG:	Dr. José Retamales of Chile
iii)	Liability WG:	Ambassador Don MacKay of New Zealand
iv)	Tourism WG:	Mr. Michel Trinquier of France

Item 3: Adoption of the Agenda and Allocation of Items

(11) The following Agenda was adopted:

1. Opening of the meeting.
2. Election of Officers and creation of Working Groups.
3. Adoption of the Agenda and allocation of items.
4. Operation of the Antarctic Treaty System: Reports by Parties, Observers and Experts.
5. Operation of the Antarctic Treaty System: General matters.
6. Operation of the Antarctic Treaty System: Review of the Secretariat's situation.
7. Report of the Committee for Environmental Protection.
8. The Question of Liability as referred to in Article 16 of the Protocol.
9. Safety and Operations in Antarctica.
10. Relevance of Developments in the Arctic and in the Antarctic.
11. The International Polar Year 2007/2008.
12. Tourism and Non-Governmental Activities in the Antarctic Treaty Area.
13. Inspections under the Antarctic Treaty/Protocol.
14. Science Issues, particularly scientific co-operation and facilitation.
15. Operational issues.
16. Education issues.
17. Exchange of Information.
18. Biological Prospecting in Antarctica.
19. Preparation of the XXIX Meeting.

(12) The Meeting adopted the following allocation of agenda items:

- Plenary: Items 1, 2, 3, 4, 7 & 19
- Liability Working Group: Item 8
- Legal and Institutional Working Group: Items 5, 6, 17 & 18
- Tourism and Non-Governmental Activities Working Group: Item 12
- Operational Working Group: Items 9, 10, 11, 13, 14, 15, 16

The Meeting also decided to allocate draft instruments arising out of the work of the CEP, the Tourism Working Group and the Operational Working Group to the Legal and Institutional Working group for consideration of their legal and institutional aspects.

Item 4: Operation of the Antarctic Treaty System: Reports by Parties, Observers and Experts

(13) Pursuant to Recommendation XIII-2, the Meeting received reports from:

- The United States Government as the Depositary of the Antarctic Treaty;
- The Australian Government as the Depositary of the Convention on the Conservation of the Antarctic Marine Living Resources (CCAMLR);
- The Australian Government as the Depositary of the Agreement on the Conservation of Albatrosses and Petrels (ACAP);
- The United Kingdom Government as the Depositary of the Convention for the Conservation of Antarctic Seals (CCAS);
- The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR);
- The Scientific Committee on Antarctic Research (SCAR);
- The Council of Managers of National Antarctic Programs (COMNAP).

These reports are reproduced at Annex F.

(14) Pursuant to Article III-2 of the Antarctic Treaty, the Meeting also received reports from:

- The Antarctic and Southern Ocean Coalition (ASOC);
- The World Conservation Union (IUCN);
- The International Association of Antarctica Tour Operators (IAATO);
- The International Hydrographical Organization (IHO);

These reports are reproduced at Annex G.

(15) The United States in its capacity as Depositary reported on the status of the Antarctic Treaty and the Environment Protocol. The Meeting welcomed the news that the Czech Republic deposited its instrument of ratification of the Protocol on Environmental Protection on August 24, 2004. The Depositary drew the attention of the Parties concerned to the fact that a number of persons designated as Arbitrators in accordance with Article 2(1) of the Schedule to the Protocol on Environmental Protection are nearing the end of their term, since they were designated in the year 2000.

(16) Australia in its capacity as the Depositary for the Convention on the Conservation of the Antarctic Marine Living Resources (CCAMLR) reported that since the 27th ATCM, Mauritius has acceded to the Convention.

(17) In its capacity as the Depositary for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) Australia reported the accession of Peru. Chile informed the Meeting that it had also acceded.

(18) The United Kingdom, as Depositary of the Convention for the Conservation of Antarctic Seals (CCAS), reported that in recent years no new accessions to the Convention have occurred. The UK reminded the Parties to the Convention that currently not all the required information is being provided. Neither is it being provided on time or with any regularity. The accuracy of the CCAS figures is therefore being compromised.

(19) The President of SCAR introduced his report, describing the re-organisation of its committees to increase its effectiveness, the five new scientific programmes and its capacity building initiatives.

(20) Introducing its report, the representative of COMNAP gave a description of how the Council works, mainly through technical groups, to support the cooperation within the framework of the Antarctic Treaty System with practical information exchanged through the national programs.

(21) In introducing his report as observer to the ATCM, the Executive Secretary of the Commission for the Conservation Antarctic Marine Living Resources (CCAMLR) emphasized the following points:

- the illegal, unreported and unregulated (IUU) fishing of *Dissostichus spp*. (Toothfish) had declined considerably in the past season;
- the Catch Documentation Scheme for *Dissostichus spp*. had been further developed, as had the centralized vessel monitoring system (c-VMS);
- an electronic Catch Documentation Scheme (eCDS) was being developed.

(22) These developments were welcomed by the ATCM. At the same time, one delegation remarked that, although there had been a decline in the IUU fishing of Toothfish, the estimated amount of the IUU catch was still larger than the legal catch, so the Parties and the Commission were not in a position to relax their efforts to fight this practice.

(23) ASOC introduced IP 108, *Report of the Antarctic and Southern Ocean Coalition (ASOC)*. The ASOC Representative emphasized that although regulation of tourism is now being given serious consideration, significant elements of commercial tourism still await substantive discussion. ASOC attached great importance to the approval of Annex VI on Liability. Likewise, ASOC expressed the wish that the ATCM would consider the questions relating to Lake Vostok, bio-prospecting and the International Polar Year.

(24) IAATO introduced IP 95 Rev 1, *Report of the International Association of Antarctica Tour Operators 2004-2005*. IAATO remains committed to the safe and responsible management of Antarctic tourism and noted a number of accomplishments during the 2004/05 season. Amongst others, these included the installation of its tourism database, a draft accreditation scheme, the translation of Recommendation XVIII-1 into 9 languages (available on the IAATO web site) and a detailed site-use analysis. IAATO also noted fruitful cooperation with COMNAP, IHO and other organisations.

(25) In IP 18, *Report by the International Hydrographical Organization (IHO) on "Cooperation in Hydrographic Surveying and Charting of Antarctic Waters"*, the IHO emphasized the progress made in the production of INT charts of Antarctic waters and recommended increased hydrographic surveying activities by the Member

States. The Hydrographic Committee on Antarctica has set up a Hydrographic Survey Programme Working Group to intensify hydrographic survey activity in Antarctica. These activities are carried out in close cooperation with the Consultative Parties, COMNAP and IAATO. Argentina reserved its position on the Antarctic toponyms involved.

(26) The Meeting acknowledged the progress made in the production of INT Charts and endorsed the recommendations in the IHO Report. The Meeting also expressed its support for the activity of the Hydrographic Committee on Antarctica (HCA) and the work of the Hydrographic Survey Programme Working Group and invited Member States to increase their hydrographic survey activities in Antarctica. Furthermore, the Meeting urged the IHO to consider further its proposal for Maritime Shipping Routes in the Antarctic Peninsula and Ross Sea areas as an IPY initiative. Such a proposal would be important for reducing risks from shipping activities in Antarctic Treaty waters.

Item 5: Operation of the Antarctic Treaty System: General matters

Item 5 (a). Confirmation of the Recognition of Ukraine as a Consultative Party

(27) Since the XXVII ATCM, in its recognition of Ukraine as a Consultative Party, had not followed the procedure agreed to earlier, namely by way of a Decision of the ATCM, the Meeting adopted Decision 2 (2005) *Decision confirming the recognition of Ukraine as a Consultative Party*.

Item 5 (b). Intersessional Consultation

(28) Japan introduced WP 46 and WP 56 on intersessional consultation procedures, IP 103 on the scope of intersessional consultation and IP 120 with a corrected text of the Rules of Procedure. Japan noted that there was a general consensus at the XXVII ATCM on the need for a procedure by which the Executive Secretary can consult the Consultative Parties if he/she has to take actions for which under Measure 1 (2003) and related instruments he/she needs authorisation from the ATCM and which cannot wait until the next ATCM. The procedure should be:

- Simple, in the sense that the Executive Secretary should be able to contact the Consultative Parties directly;
- Efficient, in the sense that electronic means of communication should be used;
- Accountable to the Consultative Parties (the Executive Secretary should report to the ATCM all cases of intersessional consultation);
- Restricted (the procedure should be used only for those issues for which consultation or authorisation is legally required and which cannot wait until the next ATCM); and
- Based on a consensus of all Consultative Parties.

(29) WP 46 included a draft Rule 46 for the Rules of Procedure, and WP 56, which was co-sponsored by a number of Consultative Parties, included a revised draft for Rule 46. Rule 46 would prescribe the procedure to be used by the Executive Secretary for intersessional consultations.

(30) A number of Parties supported the proposal by Japan and other co-sponsoring Parties. However, one Party raised concerns about the legal consequences of such a procedure, which could imply that the ATCM existed during the intersessional period. It pointed out that the ATCM only exists during its annual meetings. Also raised was the question of what would be the status of any decisions arrived at through the intersessional consultation process. Other delegations stressed that these decisions would not have the status of Decisions of the ATCM and that, in any case, they would have to be reported to the ATCM following the consultation process.

(31) Japan presented a revised text of Rule 46 on intersessional consultation procedures and stressed that nothing had been changed in substance, but that the intent of the text was now clearer. The Meeting agreed to adopt Decision 3 (2005) *Amendments to the Rules of Procedure*.

Item 5 (c). Attendance of non-Party states in the ATCM

(32) The United Kingdom introduced WP 55, which contained XXVI ATCM/WP 18 on the subject of the attendance of non-Party States to the ATCM. Since the Rules of Procedure had changed in the meantime, the detailed changes in the Rules of Procedure proposed in XXVI ATCM/WP18 had been omitted from WP 55. The United Kingdom emphasized the benefits that the opening up of meetings to non-Party States had brought to CCAMLR, where states that had been invited as observers had later acceded to CCAMLR and even become full members. There was a large difference between this practice and that of the ATCM, which had been inviting Malaysia during the last few years to observe the Meeting, but without a regular procedure. The ATCM needed to regularize this situation.

(33) On the same topic, Chile introduced WP 54. Chile considered it a priority that those countries interested in conducting activities within the framework of the Antarctic Treaty System become Parties to the Antarctic Treaty. Accordingly, it proposed an amendment of the Rules of Procedure to permit attendance by non-Party States with an interest in the Antarctic.

(34) There was general agreement on the need for the ATCM to adopt an open attitude towards non-Party States, and support from many Parties for the proposal to adopt a procedure dealing with their attendance to the meetings. One Party reiterated its opposition stated at the XXVI ATCM to formal changes in the present ATCM Rules of Procedure. That Party stated that the Antarctic Treaty System provides a clear procedure for states to join, namely by acceding to the Antarctic Treaty. Some concern was also expressed at the possibility of states using a possible observer status to postpone acceding to the Treaty indefinitely.

(35) The Meeting concluded that the Antarctic Treaty System has always been and remains an open system, which welcomes non-Party states to join it. There is no consensus to now adopt formal procedures regulating the attendance of non-Party states at the ATCM. At the same time it was accepted that the informal practice of the last few years of inviting a specific non-Party state to observe the Meeting could continue.

Item 5 (d). Consultative Status

(36) The United Kingdom introduced WP 57, which was aimed at closing a possible ambiguity in Article 22 (4) of the Environmental Protocol, which requires that a Party is only entitled to appoint representatives to participate in Antarctic Treaty Consultative Meetings if it has ratified, accepted, approved or acceded to the Protocol. There is a possibility that Article 22 (4) could be interpreted to require only adherence to the Protocol and Annexes I - IV, whereas other Articles of the Protocol, namely Articles 9 (1) and 9 (2), make it clear that other Annexes (V and now VI) will, once effective, form an integral part of the Protocol. Therefore, Decision 2 (1997), which sets out the procedure whereby the entitlement of a Party to appoint representatives to participate in the ATCM is recognized, needed to be amended to make clear that the requirement of Article 22 (4) is that the Party in question not only has ratified, accepted, approved or acceded to the Protocol and Annexes I - IV, but also that it has approved all other Annexes which have been adopted subsequently and have become effective. The Meeting agreed to the proposal and adopted Decision 4 (2005) *Consultative Party Status.*

Item 5 (e). Review of recommendations

(37) The Executive Secretary reminded the Meeting of Paragraph 54 of the Final Report of ATCM XXVII, which had deferred the adoption of a Decision concerning the legal status of past recommendations on protected areas to the XXVIII ATCM, since there were uncertainties as to the status of various recommendations and as to the terminology to be used in describing the status of these recommendations. There had been no developments on this issue in the intervening time, and experience from recent years had shown that, although the importance of achieving more clarity about the status of recommendations had been stressed more than once by the ATCM, the pressure of other, more urgent business had so far always prevented a thorough consideration of this matter during the annual meeting.

(38) The Secretariat was developing the documentation that would be necessary for this work, which involves consideration of complex legal issues. Considering the lack of time during the regular meetings, the ATCM might consider the possibility of organizing an intersessional workshop on this issue with the legal experts of the Consultative Parties.

(39) Parties generally recognized the importance of dealing with the question of the status of recommendations and the complexity of the issues involved, but there was some hesitation to now spend much time and work on this question. Parties stressed the

importance of preparing decisions on this matter with thoroughness and care for using the right terminology. The request of the CEP for the establishment of a register of the status of protected area management plans and review dates on the CEP and ATS websites (Paragraph 187 of the CEP VIII Report) was also recalled. The Meeting was reminded of its earlier agreement that Parties, when making a proposal, should review past recommendations, measures, decisions and resolutions on the same subject carefully to determine if any will cease to be effective upon adoption/ approval of their proposal (Paragraph 20 of the XXVI ATCM Final Report). The Meeting decided that the subject would have to be addressed more thoroughly at a subsequent ATCM, and that the following documentation should be circulated by the Secretariat in good time before ATCM XXIX, and include at a minimum:

- The full text of each recommendation the status of which is in question;
- Subsequent recommendations which may have had an operative effect on the preceding recommendation; and
- Identification of the issues to be addressed.

After the ATCM has had an opportunity to review this material it will decide how to proceed.

Item 5 (f). Document Guidelines

(40) WP 43 on the document handling guidelines led to a discussion on the appropriateness of the Secretariat submitting Working Papers. The Meeting agreed that papers submitted by the Secretariat should be termed 'Secretariat Papers', with sequential numbering. These papers should be confined to either administrative matters within the purview of the Secretariat, or issues where the ATCM had directed the Secretariat to prepare documents. Secretariat Papers should always be made available in all the four languages. The next ATCM might consider formally amending the Rules of Procedure to provide for this new category of papers.

(41) On the guidelines proposed in the paper, the Meeting felt that this issue might be better dealt with in a manual to be developed by the Secretariat before the XXIX ATCM.

Item 5 (g). Enquiry Procedure Article 18

(42) Chile introduced WP 53 on the enquiry procedure of Article 18 of the Environmental Protocol. The purpose of this paper, which has been introduced in different forms at earlier meetings, is to carry out a commitment made in the Final Act of the XI Special Antarctic Treaty Consultative Meeting (Madrid, October 1991). This was to elaborate an enquiry procedure according to the provisions of Article 18 of the Environmental Protocol in order to facilitate the resolution of disputes over the interpretation of Article 3 regarding the environmental principles to be considered when planning or conducting activities in the Antarctic Treaty area. In addition to a general explanation of the background, WP 53 contained two specific proposals to

carry out this commitment: a draft Enquiry Procedure and a proposal for the CEP to develop a Guide for the Application of Article 3. Chile proposed to set up a Working Group to further consider the issue and develop a procedure.

(43) Delegations asked what kind of specific questions the proposed Enquiry procedure would deal with, and whether there were not existing mechanisms that could be used to deal with questions regarding Article 3 of the Environmental Protocol. Chile undertook to try to clarify the paper in this regard, and introduce it again at a subsequent ATCM.

Item 5 (h). Review of Annex II of the Environmental Protocol

(44) The Meeting considered the review of Annex II to the Protocol. It was recalled there had been debate at CEP VII around fundamental issues such as the scope of the revised Annex. Several delegations said there was not time at this meeting to engage in deep discussion over this issue, and that there was a need to have a clearer understanding in order to move forward. The Meeting agreed that the review of Annex II should be revisited at ATCM XXIX. Some delegations expressed concern that the CEP had discussed policy and legal matters rather than only scientific and technical issues and drafted substantial proposals for revised texts, and said that the CEP should not engage in redrafting of annexes in the future. The Chair of the CEP advised that the CEP was not currently engaging in review of other annexes.

Item 5 (i). Reinstatement of the environment

(45) The Netherlands introduced WP 72 *Scientific issues relating to the implementation of measures of reinstatement of the environment*. Many delegations were of the view that it would be useful if the CEP could consider the practicality, in the Antarctic Treaty Area, of such measures. In that context those Delegations believed that it would also be desirable if SCAR, in conjunction with COMNAP, and any other expert bodies could submit, as soon as feasible to the CEP papers on scientific and technical issues relating to measures aiming to repair or remediate damaged or destroyed components of the environment. Some other Delegations considered such examination as premature and emphasised the importance of evaluating the implementation of Annex VI and the related Decision.

Item 5 (j). Other matters

(46) The Meeting took note of the appointment by Chile of Arbitrators according to Article 2 (1) of the Schedule to the Environmental Protocol, as reported in IP 111.

(47) The Argentine delegation had noticed that document IP 65 makes reference to ships flying an alleged flag not recognized by the Argentine Republic, and to alleged authorities that are not recognized by the Argentine Republic. In that respect, the Argentine Government believed it appropriate to recall that the Malvinas, South Georgia and South Sandwich Islands, as well as the surrounding waters, are part of

the Argentine national territory. Being unlawfully occupied by the United Kingdom of Great Britain and North Ireland, those islands are subject to a sovereignty dispute between both countries that has been recognized by several international organizations. Therefore, the Argentine government rejected reference to the alleged flag and to the alleged authorities, as well as to the incorrect references to the legal and territorial status of the Malvinas, South Georgia and South Sandwich Islands and the surrounding waters, made at the meeting.

(48) In response the United Kingdom indicated that it had no doubt about its sovereignty of the Falkland Islands, South Georgia and the South Sandwich Islands and their surrounding maritime areas. In that regard the United Kingdom had no doubt about the right of the Government of the Falkland Islands to operate a shipping register for United Kingdom-flagged vessels.

(49) The Argentine delegation rejected the statement by the United Kingdom and reiterated its position. At the same time, it stated that any extra-Antarctic references in documents should be avoided in order to make discussions easier during the meetings.

Item 6: Operation of the Antarctic Treaty System: Situation of the Secretariat

Item 6 (a). Report 2004/5

(50) The Executive Secretary introduced WP 44 containing the report of the activities of the Secretariat in the financial year 2004/05 and a financial report. The first few months after his arrival in Buenos Aires had been devoted mainly to the recruitment of personnel, making general financial arrangements and setting up the IT infrastructure of the Secretariat. From February 2005 a basic operational setup had been functioning, and in the months since then the emphasis of the work of the Secretariat had been very much on the preparation of the XXVIII ATCM. The Executive Secretary stressed the development in a very short time of a data base of the documents of the XXVIII ATCM, which had already led to a much more flexible and accessible interface to the documents in the web page for the Meeting.

(51) He drew the attention of the Meeting to the passages in the report concerning the discrepancy between the Staff Regulations of the Secretariat and the Headquarters Agreement with regard to the application of Argentine labour and social welfare law. It was noted that it was unfortunate that such a serious discrepancy was discovered in agreements that had only been negotiated two years ago with the full involvement of the host government. The Meeting agreed that the issue should be solved by amending the Staff Regulations, and that the Secretariat should prepare a draft of such amendments before the next ATCM with an explanation of why they are necessary under Argentine law. Such a draft should be provided to Parties in good time, well before the next meeting.

(52) On the financial report, the Executive Secretary pointed out that the ATCM had not yet appointed the External Auditor of the Secretariat. According to Regulation 11.1 of the Financial Regulations this has to be the Auditor-General or equivalent statutory agency from a Consultative Party. Argentina introduced WP 68, in which the Comptroller's Office of the Argentine Government (Sindicatura General de la Nación, SIGEN) is proposed as External Auditor. SIGEN is the statutory agency most suitable for this task, with full capability for all the aspects of an external audit of the Secretariat's account, and it is ready to undertake the task. While welcoming the proposal, the Meeting felt that the terms of reference proposed by SIGEN were too broad, since they not only included the financial audit required under the Financial Regulations, but also reviews of information technology and legal issues which would be more properly carried out by the ATCM separately. The Meeting adopted Decision 5 (2005) *Appointment of External Auditor,* in which SIGEN is appointed the external auditor for a period of two years with a mandate to carry out a yearly financial audit of the Secretariat's financial account and to report on its findings to the ATCM.

(53) The Meeting noted and welcomed the report of the Secretariat. It was felt, however, that not enough information was given in some respects, e.g. with regard to travel expenses. The Meeting would like to have a clear listing of all travels with their purpose and a report of the results achieved. It was also remarked that not only in the financial report but also in the text part of the report it should be indicated clearly in which places there was a deviation from the programme agreed by the ATCM, with an explanation. The Executive Secretary promised to make the desired improvements in the next report of the Secretariat.

(54) Delegations asked about the tasks in the report which had been left blank. The Executive Secretary responded that, since the Secretariat had only been operational from February and the report covered the year ending in March, no activity had taken place yet under some tasks. He was confident that in next year's report there would be an account of work done to carry out all tasks mandated to the Secretariat.

(55) One delegation commented on the troubles the Secretariat had had with regard to the application of certain foreign exchange charges to the foreign remittances of the Secretariat, which were felt by the Secretariat and by the Consultative Parties to be in contravention of the Headquarters Agreement, and from which exemption was obtained after some months of negotiations. Would the exemption which was granted only apply to the bank where the Secretariat had its dollar account, the Banco de la Nación Argentina (BNA), or would it apply also to a situation in which the Secretariat decided to switch its account to another bank? If this would not be the case, there would be a question as to the freedom of the Secretariat, which is provided for in the Headquarters Agreement, to choose the most efficient and suitable bank. In practice, there had been long delays, even up to months, in the transmission of funds from the Parties to the account of the Secretariat in Buenos Aires, so the question of the choice of banks was an important one.

(56) On the problems with the transmission of funds, the Executive Secretary referred to the fact that Argentina was not a completely open foreign currency market, and therefore dollar remittances cannot go directly to BNA in Buenos Aires, but have to be made to BNA New York, which then forwards these remittances to Buenos Aires. This causes a lot of problems in practice. This, and the fact that the automatic SWIFT system for international remittances sometimes provided little space for the identification of the Party remitting the money, was the reason why the Secretariat had urged Parties to email to the Secretariat with all details of their remittances on the day they made them. This procedure would enable the Secretariat to trace the remittances as quickly as possible. The question whether the exemption from certain foreign exchange regulations would also be applicable to the Secretariat if it chose to have its dollar account at another bank the Executive Secretary was unable to answer, so it was then put to the delegation of the host country of the Secretariat. The Argentine delegation stated that BNA was a very competitive bank, but that it undertook to provide an answer to this question in due course.

(57) In connection with the financial affairs of the Secretariat, the CCAMLR Observer informed the Meeting that the balance of funds held by CCAMLR for the Antarctic Treaty Secretariat had now been transferred to the account of the Secretariat in Buenos Aires, and that the bank account used for collecting contributions for the Secretariat would be closed at 30 June 2005.

(58) A delegation drew attention to the fact that, according to the list of contributions for 2004 in Annex I of the report some Consultative Parties had so far not made any contribution. The Executive Secretary confirmed that the list in the report was complete and that there had been no other contributions in the meantime. The US contribution pledged for 2004 would be received in short order. Delegations stressed the moral obligation of the Consultative Parties to pay their contributions, as otherwise the establishment of the Secretariat would be severely hampered. Russia announced that it expected to pay its contribution for 2005 in 2006, together with its contribution for 2006. Poland stated that it would pay its contribution for 2004 and 2005 this year or the beginning of next year. Belgium stated that payment of the contribution it had pledged for 2004 had been blocked at the last stage because of legal difficulties, but that its contribution would be paid in 2005. Spain said that its voluntary contribution had been the second one to be received for the year 2004, and that its contribution for 2005 would be made during this year. Uruguay explained that there had been an economic crisis in Uruguay in 2002, from which the country was only now recovering, but that it hoped its contribution would be paid in due course. Bulgaria stated that it had paid its contribution for 2005. Finland and Norway expressed their appreciation of the explanations made by Parties who had not paid in 2004, and accordingly announced that they would pay their contribution for 2005 soon after this meeting.

(59) In connection with the Financial Report, Australia raised the matter of an inconsistency in the Financial Regulations. The regulations provide for a Working Capital Fund to ensure continuity in the Secretariat's operations, but it is not clear whether the ATCM could transfer a surplus in the budget to the Working Capital Fund. It was proposed

to amend Regulation 6.2 (a) to provide that the Working Capital Fund shall initially be financed up to the specified level by a transfer from the General Fund, and thereafter from the fund determined appropriate by the ATCM. Decision 6 (2005) *Amendments to Financial Regulations for the Secretariat of the Antarctic Treaty* was adopted by the Meeting.

(60) The Meeting expressed its appreciation to the Executive Secretary for the efficient and swift setup of the Secretariat.

Item 6 (b). Programme 2005/06

(61) Introducing WP 45, containing the Secretariat's Programme for the year 2005/6, the Executive Secretary explained that as in last year's programme and report, the proposed activities of the Secretariat had been arranged under the different tasks mandated to the Secretariat in Measure 1 (2003). Many tasks have an element of data management in them, and the establishment of the databases needed for these tasks would occupy a large part of the Secretariat's work. For that reason, the Programme included a proposal to recruit a full time Information Technology Officer to strengthen the Secretariat's capabilities in that field. As the publication of the Final Report and other documents would also require extra manpower, it was also proposed to recruit an editorial assistant. The staff foreseen at the end of this year would be roughly of the size originally planned, although the positions originally planned of Financial Manager and Office Manager had been felt to be not needed for an office of the size of the Secretariat.

(62) As to financial matters, the Executive Secretary pointed out that, if the Parties would make contributions at the same rate as in the preceding year, the budget would be roughly in balance. The programme included a proposal to set up a Special Fund to deal with the contribution for 2004 of the United States, which was in the form of a grant to strengthen the database development and documentary infrastructure. The Forecast Budget for 2006/07 (Annex 2) was compiled taking into account the inflation rates from the World Economic Outlook, namely 1.9% (the figure for industrial countries as a whole) for the international costs and 7.1% (the figure for Argentina) for the local costs of the Secretariat. The salary scale in Annex 4 had been calculated using the inflation rates indicated in the Forecast Budget approved last year, namely 3% for the international amounts and 6% for the local amounts.

(63) One delegation questioned the proposal to set up a Special Fund to deal with the US contribution for 2004, as the contribution was not additional, but in lieu of the regular contribution. This might set an unfortunate precedent for other Parties. After some discussion, the Meeting concluded that the proposal could be approved to deal with a special situation in the start-up phase of the Secretariat, but that this should not be seen as a precedent to handle regular contributions.

(64) The Meeting considered the Executive Secretary's attendance at meetings, in the context of the Draft Work Programme for 2005/2006. One delegation said that the

Secretariat's attendance at meetings of other relevant bodies, including within he Antarctic Treaty System, was an important way to raise its profile. It was noted that the CCAMLR Commission could only invite States and organizations, so the Executive Secretary of CCAMLR would need to issue a personal invitation to the Executive Secretary of the Secretariat of the Antarctic Treaty System.

(65) The Meeting agreed that within the current financial year the Executive Secretary would attend the annual meeting of COMNAP and would visit the CCAMLR Secretariat at the time of the annual meeting of the CCAMLR Commission. Furthermore, in relation to a letter received at the Secretariat of the Antarctic Treaty from ICSU/WMO inviting an ATCM observer to the IPY Joint Committee, the ATCM agreed for the Executive Secretary to attend on behalf of the Antarctic Treaty Secretariat and report back to the ATCM.

(66) His attendance at any other meetings would need to be agreed by the Consultative Parties using the intersessional consultation procedure in Rule 46 of the Rules of Procedure.

(67) With regard to the attendance at international meetings or any other event involving official international travel it was agreed to adopt the following guidelines for the Executive Secretary and Secretariat staff to follow as far as practicable. The Executive Secretary and the Secretariat staff should:

a) only attend a meeting at the invitation of that meeting, or its representatives;
b) obtain the agreement of the ATCM in advance of attending the meeting or event, either in the annual work programme, or consult the Consultative Parties intersessionally in accordance with Rule 46;
c) not represent or speak on behalf of the ATCM or Consultative Parties without their express approval; and
d) provide a report on attendance at the meeting or event to the ATCPs providing detail on information conveyed and relevant meeting or event outcomes.

(68) Several delegations raised the point of the methodology, by which the forecast budget for 2006/07 was prepared, which was the same as that in Decision 2 (2004), namely to take the full cost of interpretation and translation of the annual meeting, about US$ 400.000 at the present, into account, even though in practice the host country will continue to pay these costs in the period of provisional application of Measure 1 (2003). This methodology means a structural accumulation of surpluses. If provision should be made to absorb the cost increases that the coming into effect of Measure 1 (2003) would bring with it, it would be better to put the sum required into a Special Fund for this purpose, and remove the funds for interpretation and translation of the annual meeting from the Forecast Budget. The Meeting agreed and decided to include in its decision on the work programme and budget provisions to set up both the Special Fund agreed above (paragraph (63)) and the Special Fund to provide for the

cost of interpretation and translation of the annual meeting following the coming into effect of Measure 1 (2003).

(69) A revised version of the Work Programme of the Secretariat was prepared and approved in Decision 7 (2005) *Approval of the Work Program and budget of the Secretariat*.

(70) It was pointed out that, since the financial year runs from April to March, whereas the ATCM usually takes place in the Northern Hemisphere summer, the Meeting needs to look ahead to the programme of work of the next year as well as that of the current year. The Meeting requested the Secretariat to provide ATCM XXIX with a forward work plan well as with a forecast budget for 2007-8.

Item 7: Report of the Committee for Environmental Protection

(71) The Chair of the CEP, Dr Tony Press, presented the Report of CEP VIII to ATCM XXVIII and noted that the CEP had formally welcomed the Czech Republic to the CEP table, the Republic having ratified the Protocol on 25 August 2004.

(72) The Chair advised that the CEP had considered 37 Working Papers and 61 Information Papers, including 19 management plans for Antarctic Specially Protected Areas, 3 for Antarctic Specially Managed Areas, and two proposals for additions to the list of Historic Sites and Monuments. All papers considered are listed in Annex 2 to the CEP Report to ATCM XXVIII (Annex E).

(73) The Committee had agreed to the Secretariat providing a template on the Secretariat website to assist with the consistent submission and presentation of Annual Reports under Article 17 of the Protocol, and also to the Secretariat assisting in the production of the annual list of IEEs and CEEs by developing a searchable database. The CEP recommended to the ATCM that Resolution 6 (1995) be reviewed in the light of the establishment of the Secretariat and to change the reporting year from 1 January - 31 December to 1 April - 31 March annually to ensure that each CEP Meeting can consider activities undertaken in the preceding Austral summer.

(74) It was also considered that the Secretariat could assist the CEP and the ATCM by publishing information on the status of protected area management plans, and by making CEP meeting documents available via a searchable database.

(75) The CEP Chair reported that the CEP had considered the matter of its formal working agenda and the likely future scenarios for its work. The outcomes of discussions on what CEP must do under the Protocol and CEP Rules of Procedure, and what major issues face it now and in the future are found at Annexes 5 and 6 of the report of CEP VIII, as guides for future discussion.

(76) The Committee agreed to establish a steering committee, consisting of the chairman of the CEP, the two CEP Vice-Chairs, the Antarctic Treaty Secretariat, and the host of CEP IX, to prepare for a substantive discussion of the strategic issues facing the CEP at CEP IX and to stimulate continued discussions during the intersessional period. The United Kingdom, as host of CEP IX, offered to hold a workshop immediately before CEP IX on these issues.

(77) The CEP recommended the Management plans at Appendix 3 of the Report of CEP VIII for adoption by the ATCM. It was also recommended that the ATCM add two sites to the List of Historic Sites and Monuments (Appendix 4 of the Report of CEP VIII). The CEP also requested the ATCM to consider extending the duration of management plans which are due to expire in the near future.

(78) Two draft CEEs from the United Kingdom with respect to Halley VI (WP019) and Germany with respect to Neumayer III (IP030) were considered. The CEP considered that the draft CEEs provided comprehensive descriptions and evaluations of the proposed activities and their likely environmental impacts, and were consistent with the requirements of Annex I of the Protocol. The CEP's advice to the ATCM on the draft CEEs is contained in Appendices 1 and 2 to the CEP Report. The ATCM endorsed the CEP's advice.

(79) New Zealand noted that the CEP had considered two CEEs relating to similar activities. However the conclusions drawn in relation to the environmental impacts of these activities were different.

(80) Germany advised the Meeting that the process for evaluation of its CEE was not yet completed and that therefore the assessment made in relation to its proposed activity was not yet finalized and that the final version of the CEE would incorporate appropriate terminology regarding the significance of the environmental impacts.

(81) The Committee discussed the 'Guidelines for Environmental Impact Assessment in Antarctica' (1999), and the work of the ICG on this matter. The CEP had adopted the revised Guidelines at Annex 7 to the Report of CEP VIII and recommended, as a consequence, that Resolution 1 (1999) be amended by the ATCM.

(82) The Meeting noted that the CEP also discussed the matter of Specially Protected Species. The CEP agreed to adopt the Guidelines for CEP Consideration of Proposals for New and Revised Designations of Antarctic Specially Protected Species under Annex II of the Protocol. The ATCM endorsed the guidelines found at Annex 8 to the Report of CEP VIII.

(83) Relevant matters contained in two inspection reports were also discussed. The CEP had noted that some bulk fuel facilities currently lacked secondary containment or were provided with inadequate bunding. The CEP recommended that the ATCM adopt a Resolution on the issue of fuel storage and handling.

(84) The CEP reported that it had considered recommendations on Heavy Fuel Oil on board ships south of 60 degrees south, and recommended that the ATCM ask the IMO to examine mechanisms for restricting the use of HFO in Antarctic waters.

(85) The CEP reported also that it had considered reports from ICGs on the State of Antarctic Environment Reporting and Biological Monitoring, and had agreed that further intersessional work on Environmental Monitoring and Reporting would be undertaken (convened by Dr Yves Frenot of France). The CEP recommended that the Practical Guidelines for Environmental Monitoring in WP 26 (COMNAP) be endorsed by the ATCM and made available to all Parties for use in conjunction with the Environmental Monitoring Handbook. The ATCM endorsed these guidelines.

(86) The Meeting noted that the CEP had re-elected Ms Anna Carin Thomer (Sweden) to a second term as Vice-Chair, and had elected Dr Yves Frenot (France) to the position of second Vice-Chair.

(87) The CEP proposed to the ATCM the agenda for CEP IX contained at Appendix 5 to the CEP Report.

(88) It was noted that when approving regulations regarding the management plans for specially protected areas it would also be necessary to have good quality maps available for subsequent reproduction.

(89) In respect of Resolution 2 *Practical Guidelines for Developing and Designing Environmental Monitoring Programs in Antarctica* the CCAMLR observer noted that the CCAMLR Ecosystem Program applies standard data collection methods to monitor various Antarctic marine ecosystem indicators. Such data have been accrued over many years and could complement similar information collected subject to the above Resolution.

(90) Germany agreed that prior to tabling a draft Management Plan for Fildes Peninsula and Ardley Island (King George Island) and following a proposal by Chile an International Working Group should be established, composed of those Parties with stations and/or huts in the area, Parties with an interest in the area as well as Observers to the Antarctic Treaty. This group will discuss the issues related to the Draft Management Plan. With this purpose, Germany will carry out two international workshops, one in September 2005 and another one in January/February 2006, in order to convene the participants on this issue.

(91) The United Kingdom also noted that the representation of the ATCM at CCAMLR should be discussed as at present the ATCM is not formally represented at CCAMLR meetings. It was agreed that this issue required further discussion.

(92) The UK introduced a draft Decision regarding the interaction between the ATCM and the CCAMLR on protected areas with marine components. This was a technical revision of the understanding agreed upon in 1997/98.

(93) The Meeting noted the proposed revision to the agenda of the CEP IX and approved it.

(94) The Meeting adopted the following measures, decisions and resolutions, arising from the advice of CEP VIII:

- Measure 2 (2005) Antarctic Specially Protected Areas: Designations and Management Plans
- Measure 3 (2005) Antarctic Specially Managed Area and Antarctic Specially Protected Areas: Designation and Management Plans: Deception Island
- Measure 4 (2005) Antarctic Specially Protected Areas: Extension of Expiry Dates
- Measure 5 (2005) Antarctic Historic Sites and Monuments: Lillie Marleen Hut and Amundsen's Tent
- Decision 8 (2005) Use of Heavy Fuel Oil (HFO) in Antarctica
- Decision 9 (2005) Marine Protected Areas and Other Areas of Interest to CCAMLR
- Resolution 1 (2005) Environmental Impact Assessment: Circulation of Information
- Resolution 2 (2005) Practical Guidelines for Developing and Designing Environmental Monitoring Programs in Antarctica
- Resolution 3 (2005) Fuel Storage and Handling
- Resolution 4 (2005) Updating of Guidelines for Environmental Impact Assessment in Antarctica.

(95) The ATCM Chair thanked the Chairman of the CEP for his efficient leadership of the Committee noting the importance of the issues discussed at the meeting.

Item 8: The Question of Liability as referred to in Article 16 of the Protocol

(96) The Working Group on Liability had before it the *Chair's Revised Personal Draft of 2 June 2004* (WP 47), the *Chairman's Report on Informal Consultations Convened in New York from 13 to 15 April 2005* (IP 109), together with *Outcomes of the Informal Consultations Convened in New York from 13 to 15 April 2005* (WP 48), and *Drafting and Other Proposals Presented to the Informal Consultations Convened in New York from 13 to 15 April 2005 Which Require Further Consideration* (WP 49). Further revisions of the Chair´s draft were produced during the meeting as WP 48 Rev. 1, WP 48 Rev. 2 and WP 48 Rev. 2/Corr 1.

(97) Discussions on draft Article 9 were conducted under the coordination of Mr Mark Simonoff (USA), on the basis of the revised text from the New York intersessional (WP 48).

(98) The Working Group established an open-ended Drafting Committee, composed of representatives from each of the four language groups, in order to review and finalise

the text of the draft Annex. The Drafting Committee was chaired by Mr René Lefeber (Netherlands). The draft Annex was revised and reported back by the Drafting Committee as WP 48 Rev. 3.

(99) There was general agreement that it was appropriate to include a preamble in the draft Annex, notwithstanding the fact that a preamble had not been included in any of the existing Annexes, in order to set the Annex in the context of certain key considerations such as "the importance of preventing, minimising, and containing the impact of environmental emergencies on the Antarctic environment", the provisions of Article IV of the Antarctic Treaty, Articles 8, 15 and 16 of the Protocol, the priority accorded to the preservation of Antarctic for scientific research, and Decision 3 (2001).

(100) In the context of discussion on draft Article 1, concerning the scope of the Annex, many delegations emphasised the importance of the widest possible scope of application for the Annex. In respect of draft Article 1 in the Chairman's revised draft of 2 June 2004 (WP 47), several delegations noted that it might not be appropriate for application of the Annex to be dependent on the way in which States Parties interpreted Article VII(5). Other delegations objected to a broad approach, noting that the obligation to take response action contained in Article 15 of the Protocol was limited to activities for which notification was required under Article VII(5). In response, others noted that the obligation under Article 16 of the Protocol applied more broadly to activities taking place in the Antarctic Treaty Area and covered by the Protocol.

(101) In particular, several delegations proposed that the Annex should not be applied to the activities of fishing vessels, expressing the view that the relationship between the Protocol and activities covered by CCAMLR was regulated by the Protocol together with the Madrid Final Act, and that the issue was better addressed in that context. Several delegations were of the opposite view, and expressed their disappointment that it had not been possible to obtain agreement to include within the Annex environmental emergencies arising from the activities of such vessels, particularly given the number of such vessels operating in the Antarctic Treaty Area. These delegations expressed disagreement with the interpretation that such situations were adequately regulated by CCAMLR and so fell outside Article 16 of the Protocol. It was accordingly agreed to include a specific provision providing for other activities to be included within the scope of the Annex in the future, through the amendment procedure set out in draft Article 13.

(102) It was considered that all tourist vessels, including those not landing tourists in Antarctica, should be covered by the Annex, in order to avoid any doubt in light of possible differing interpretations of Article VII(5), and there was general support to amend draft Article 1 accordingly. In this context it was also proposed that it would be appropriate in the future to consider specifically including the overflight of tourist aircraft within the Annex.

(103) As regards draft Article 2(b) containing the definition of "environmental emergency", there was general agreement that the definition of "environmental emergency" contained in the Chairman's revised draft of 2 June 2004 (WP 47) should be amended to read "´Environmental emergency` means any accidental event which has occurred and which results in, or imminently threatens to result in,…". It was also generally agreed to amend the draft definition to clarify that the Annex would only apply to accidental events that had occurred after the Annex has become effective.

(104) There was extensive discussion of draft Articles 2(c) and (d) containing the definitions of "operator" and "operator of a Party", and general support for the proposal to separate the definitions into separate paragraphs. The definition of "operator" was further refined in order to make clear that it was not intended to include individuals carrying out, but not organising or responsible for, activities in the Antarctic Treaty area (such as, for example, the Captain of a vessel in that capacity, or individual members of an organised tourist expedition). It was also made clear that the term "operator" was not intended to include a juridical person that was a contractor or subcontractor acting on behalf of a State operator. It was understood that environmental emergencies arising from the activities of such juridical persons would be addressed through the provisions of the Annex relating to State operators.

(105) In relation to draft Article 2(f) containing the definition of "response action", there was general agreement to replace "to prevent" with "to avoid" in order to clarify that this definition applied to measures taken to avoid the impact of an environmental emergency that had already occurred, not the broader concept of preventative measures as provided for in draft Article 3.

(106) In this context, some concern was expressed with the inclusion of clean up measures in the draft definition. However, it was emphasised that the reference to clean up was in the context of measures to "avoid, minimise or contain the impact" of an environmental emergency, and was qualified by the references to "reasonable measures" and "appropriate circumstances" elsewhere in the definition. In addition, several delegations emphasised that the reference to clean up measures represented a careful compromise. In this context, some delegations expressed their disappointment that it had not been possible to reach agreement to include restorative or restitutionary measures within the definition.

(107) In the context of draft Article 5, there was support for a proposal to include an additional paragraph 1(bis) (WP 49), with the intention of enhancing notification of environmental emergencies and exchange of information in order to better enable rapid and appropriate response action to be taken. Several delegations suggested that it was not necessary to create a specific obligation to provide such notification, and that this issue could be better addressed through another mechanism, such as a Resolution. In this context, it was noted that the issue had already been addressed in the context of the general reference to notification procedures in draft Article 4(3). It was also noted that it would be appropriate to expand Resolution 6 (2003) to

include the exchange of such information. It was accordingly agreed that it was not necessary to include paragraph 1(bis) in the text.

(108) In respect of draft Article 6(2) regarding the liability of an operator in a situation where no response action had been taken, there was considerable discussion of the need to maintain maximum flexibility in the drafting of this article, given that the mechanism used to implement the obligation would vary significantly amongst States. There was general agreement to distinguish between the situation of a State and non-State operator. It was emphasised, however, that notwithstanding the particular mechanism to be adopted, it was important that the amount of payment to be made into the fund should reflect as much as possible the costs of the response action that should have been taken. The view was also expressed that payment into the fund should not be deemed as having a punitive element.

(109) Also in the context of this draft article, it was noted that the expression "should have taken prompt and effective response action but did not" was intended to encompass three situations: where no response action had been taken; where response action had been taken but it was not prompt; or where response action had been taken but it was not effective.

(110) In the context of the discussion on draft Article 7, the Netherlands, on behalf of the Parties that were also members of the European Union, made a statement confirming the understanding that only a State Party might bring an action under draft Article 6(1) (a copy of this statement is attached at Annex H). Accordingly, the text proposed in ATCM XXVII / WP 34 was withdrawn.

(111) In respect of draft Article 7(1), it was also understood that multiple actions would not be brought by the same Party against a single operator.

(112) In respect of draft Article 8, for the purposes of insurability, a view was expressed that it was important to replicate the standard IMO defences from liability, as well as an exemption for acts of terrorism. It was noted in response that the specific context of the draft Annex might make the replication of all such defences inappropriate. A specific proposal was made however to include an additional exemption to cover environmental emergencies arising from situations of armed conflict or terrorism (WP 49). In this context, it was noted that such an exemption was included in several existing maritime liability conventions, and that insurance would not be available to cover liability in such circumstances. Several delegations expressed hesitation with regard to the proposal, noting that there was no accepted definition of "terrorism", and that the exemption for armed conflict was unnecessary given that Antarctica had been preserved for peaceful purposes under the Antarctic Treaty. It was ultimately agreed to include an exemption regarding terrorism or acts of belligerency. It was also agreed to include a requirement that the operator asserting an exemption would have the burden to prove it.

(113) Also in the context of draft Article 8, there was general agreement that it was not appropriate to provide a specific exemption from liability for scientific activities. In this regard, however, it was noted by some delegations that in circumstances where an environmental emergency had been caused by a scientific activity, the amount of compensation for which an operator might be liable should take account of that fact. Some concern was also expressed that the text was taking an unduly commercial approach.

(114) In respect of draft Article 9(1), it was considered that the limits of liability in the case of an environmental emergency arising from an event involving a ship should reflect the limits of liability contained in the 1996 Protocol to the Convention on the Limitation of Liability for Maritime Claims (LLMC). In this context, regard was had to the benefit of compatibility between the draft Annex and existing liability regimes for insurance purposes.

(115) An appropriate savings clause was inserted into this article to clarify the relationship between the draft Annex and the liability or right to limit liability under existing international regimes limiting liability in respect of States that were Party to those regimes. In this context it was understood that under draft Article 7 a non-State operator would generally be sued for liability pursuant to draft Article 6(1) in the courts of the Party where the operator was incorporated or had its principal place of business or his or her habitual place of residence. A Party as a State operator would not be subject to any actions in a Party's domestic courts.

(116) In respect of draft Article 9(1)(b), several delegations supported the adoption of a higher limit of 4 million Special Drawing Rights (SDR) in respect of a land-based environmental emergency, given the special nature of the Antarctic environment. On the other hand, several delegations supported a lower limit of 2 million SDR, and emphasised the importance of basing the limit of liability in respect of a land-based environmental emergency on the worst case scenario figures advised by COMNAP, taking account of the potential that higher limits could unreasonably deter legitimate activities such as scientific research.

(117) Regarding draft Article 9(3) in response to a concern raised by a delegation, it was noted that the reference to "committed with the intent to cause such emergency, or recklessly and with knowledge that such emergency would probably result" was intended to ensure that the limits of liability were only excluded in the most serious circumstances of culpability; that is, where the harm was either done intentionally or with such recklessness and knowledge that it almost equated to intention.

(118) In the context of draft Article 9(5)(b) defining 'Special Drawing Rights', there was discussion of whether it was necessary to specify a date for conversion of SDR into national currency. The group concluded that Article 9 itself did not need to specify a date or method for ascertaining that date. However, Parties should provide a method for ascertaining the date of SDR conversion in their national laws implementing the Annex, with regard to actions specified in draft Article 7(1) and the enforcement

mechanism in draft Article 7(3). In respect of actions specified in draft Article 7(1) there was much support for specifying in national law the date of judgment as the date of conversion. In respect of arbitration under draft Articles 7(4) or 7(5), there was support for the notion that the date of conversion would best be determined in the context of the applicable procedure, and that in the case that liability under these provisions was resolved by recourse by an arbitral tribunal, the date of conversion might best be the date of the award.

(119) Regarding Article 11, with respect to the obligation to require operators to maintain adequate insurance or similar financial guarantee, it was emphasised that it was important to ensure that satisfactory insurance would be available in order to enable the Annex to operate effectively and to ensure that legitimate activities were not unintentionally or unreasonably deterred.

(120) In that context, advice was provided regarding the unavailability of insurance cover for environmental emergencies arising from armed conflict or terrorism. The point was also made that, should Parties decide to implement the liability under draft Article 6(2) by way of criminal sanction, it would in many cases be very difficult for operators to obtain insurance against such liability. There was general agreement therefore to amend draft Article 11 to clarify that the obligation to require insurance was mandatory only in respect of liability under draft Article 6(1), but that Parties could choose also to require insurance in respect of liability under draft Article 6(2) if they so wished.

(121) One delegation also expressed the view that the requirement for compulsory insurance for land-based activities might endanger the entry into force of the Annex since – at least for the time being – insurance covering the liability for land based activities under the Annex seemed not to be available. Taking into account the uncertainty as to whether such insurance would be available in the future, and acknowledging in particular the interests of operators and the insurance industry in insurance being available and the liability limit of 3 million SDR, that delegation was prepared to accept the requirement under draft Article 11(1) in order not to hinder adoption of the Annex.

(122) Some delegations expressed hesitation that, given the breadth of the proposed definition of “ship”, the limits of liability in draft Article 9(1) would also apply to very small vessels such as yachts and landing craft, which would be most unlikely to create an environmental emergency within the definition of the Annex and proposed that such vessels be exempted from the obligation to maintain insurance. In this context, it was noted that under the existing insurance market it could be difficult or prohibitive for such vessels to obtain insurance to the prescribed limit. It was noted however, that some very small vessels such as liferafts or tenders would be included within the insurance cover obtained for the primary vessel.

(123) In respect of draft Article 12, it was generally accepted that there should be no automatic right to receive reimbursement from the fund, and that the ATCM would retain the discretion in all cases whether or not to approve applications for

reimbursement. The structure of the draft article was amended in order better to reflect this approach.

(124) There was no objection to the proposal that draft Article 12(3) in the Chairman's revised draft of 2 June 2004 (WP 47) should be deleted, on the basis that any other function for the fund lay outside the scope of the Annex.

(125) The Meeting adopted Measure 1 (2005) *Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty – "Liability Arising From Environmental Emergencies"*.

(126) Bearing in mind Decision 3 (2001), and the view of several delegations that the draft Annex did not completely discharge the obligations under Article 16 of the Protocol, the Meeting also adopted Decision 1 (2005) *Annex VI on Liability Arising from Environmental Emergencies to the Protocol on Environmental Protection to the Antarctic Treaty*, in order to record the intention to review on an annual basis steps towards entry into force of the Annex and to take a decision not later than 5 years after the adoption of the Annex on the establishment of a time-frame for the resumption of negotiations, in accordance with Article 16, to elaborate further rules and procedures as may be necessary relating to liability for damage arising from activities taking place in the Antarctic Treaty Area and covered by the Protocol.

(127) The Meeting congratulated Ambassador Don McKay who directed this discussion with incredible patience and skill.

(128) Argentina stressed that adoption of the Liability Annex had been achieved thanks to consensus which is the golden rule in Antarctic cooperation. It also thanked the work done by Professor Francesco Francioni, Rudi Wolfrum, and many others who have made it possible for the Antarctic Treaty Meeting to arrive at this conclusion.

(129) Australia warmly welcomed the adoption of Annex VI and congratulated Ambassador Don McKay and the host country.

(130) The United States joined in welcoming this great achievement, considering it a true milestone in the Antarctic cooperation.

(131) Sweden expressed its warm appreciation as host country of the XXVIII ATCM for the adoption of Annex VI at this meeting.

(132) Ambassador Don McKay remarked that it had been a very long process and that very many people had been involved. He said that the spirit of camaraderie and flexibility shown during the years of negotiations had been essential to provide solutions and to enable the ATCM to get consensus on this issue. Ambassador McKay also thanked Sweden for the huge effort it had made to wrap this issue up during this meeting.

Item 9: Safety and Operations in Antarctica

(133) COMNAP introduced IP 67 Rev 1 *The use of Heavy Fuel Oil in Antarctic Waters*. The paper was presented as a response to a request at XXVII ATCM. COMNAP and IAATO had conducted a survey on the fuel used in the Antarctic Treaty area by ships currently operated or chartered by their members. The survey collected fuel information on 50 of the 72 ships operated by their members. None of the 50 ships surveyed carries Heavy Grade Oil in the Antarctic Treaty Area. Of the 50 ships:

- 6 ships carry Intermediate Fuel Oil IFO-180
- 2 ships carry lighter Intermediate Fuel Oil IFO – 040 and
- The remaining 42 ships carry a range of lighter fuel such as Diesel, Marine Gas Oil (MGO) or Marine Diesel Oil (MDO).

Fuel information was available for 3 of the 5 other ships (non-COMNAP and non-IAATO) known to operate in the Antarctic Treaty area. One of those three ships is understood to carry Heavy Grade Oil in the Antarctic Treaty area.

(134) France asked for a minor correction to be made to WP 41 *Proposal to submit a proposal to IMO to ban the presence of Heavy Fuel Oil (HFO) on board ships south of 60º South*, believing that the HFO tanker referred to in the document as *Erika* was in fact the tanker *Prestige*.

(135) The Meeting took note that the topic of Heavy Fuel Oil had been well-covered in the CEP and that a decision had been agreed by the Meeting.

(136) Germany reported on an aircraft accident with a Dornier 228-101 aircraft (POLAR4) which occurred at Rothera Research Station (UK) on 25 January 2005 during its northbound demobilization flight at the end of the 2004/2005 season. Two of the crew had been slightly injured. However, the aircraft sustained substantial structural damage to its landing gear and the fuselage. Consequently POLAR4 was dismantled and removed by vessel from Antarctica. Germany expressed their thanks to the UK and to the staff at Rothera Research Station for the very efficient assistance and helpful arrangements. Likewise the support provided by South Africa was highly appreciated. All international emergency assistance and coordination had worked very well and Germany considered it an excellent example of international cooperation.

(137) China expressed its gratitude towards the assistance received from the USA concerning the rescue of a member of a Chinese expedition travelling to Dome A in December 2004. Russia and Ukraine also expressed gratitude for international assistance received during emergency situations and expressed willingness to help other countries in similar situations.

(138) The UK introduced IP 38 *Report on the research study undertaken by the UK investigating interactions between Humans and Leopard Seals in Antarctica*. At last year's ATCM the UK informed the Meeting of the death of a marine biologist,

attacked and drowned by a Leopard Seal at Rothera Research Station in July 2003. Since this tragic incident the BAS had changed its diving procedures. A full report of the research study and the new procedures being used by BAS will be provided to COMNAP.

Item 10: Relevance of Developments in the Arctic and in the Antarctic

(139) Sweden pointed out that it was disappointed to see little discussion on the links between the Arctic and the Antarctic and stressed the importance of both regions. In this regard IPY should be seen as an opportunity to develop bi-polar links. Sweden wanted to bring the issue forward to the next meeting of the ATCM.

Item 11: The International Polar Year 2007/2008

(140) SCAR introduced IP 94 *Progress implementing the International Polar Year 2007-08*. An IPY Programme Office (IPO) has been established by ICSU and WMO at the British Antarctic Survey, Cambridge. Dr David Carlson has been appointed by ICSU and WMO as Director of the IPO.

(141) COMNAP expressed its strong interest in the progress made in the elaboration of several scientific programs by the Parties. Besides, it emphasized the need for having – as soon as possible – knowledge of the main projects proposed in order to be able to coordinate the field facilities required for implementation of projects.

(142) New Zealand thanked SCAR and Dr Carlson, as well as COMNAP, for their updates, and noted the excellent progress being made in planning for the IPY. New Zealand requested more detailed updates on the planning for IPY at the next ATCM.

(143) Japan introduced its IP 106 *Outreach activity on the Polar Research in conjunction with IPY 2007-2008*.

(144) Australia introduced IP 115 *Census of Antarctic Marine Life – A SCAR-supported field activity for IPY 2007/08*.

(145) Australia explained that the Census of Antarctic Marine Life is a 5-year project conducted under the umbrella of the Census of Marine Life, and has already commenced. Funds for scientific coordination have been obtained from the Alfred P. Sloan Foundation (New York). The project would create a baseline of data on the basis of which future assessment of change in the Southern Ocean could be made. The website for the project is *www.caml.aq.*

(146) France stated they were concerned that IPY will have a large media impact and attract more tourists to Antarctica. It stressed the importance of being prepared for

the number of tourists that might be coming, and suggested that this question should be considered by the Tourism Working Group, as well as by the CEP.

(147) IAATO thanked France for raising concerns over increased activity in this regard that may occur during IPY. IAATO members are indeed receiving requests to provide logistic support from Parties and NGOs for IPY research programmes. IAATO shares France's concerns about increased activity and will work closely with the CEP so that there is good co-operation and management during the period leading to IPY.

(148) The Russian Federation introduced IP 45 on the activities to prepare for the IPY 2007/08. Russia explained that a national committee is already working on IPY activities and offered to collaborate with other Parties on IPY projects.

(149) ASOC thanked the Russian Federation for information on the plans for IPY. ASOC asked for an update about plans for drilling at the sub-glacial lake Vostok.

(150) The Russian Federation responded that the plans are in accordance with the decisions and agreements reached at ATCM XXVI (Madrid) and that national permission for drilling another 50 meters of ice had been given. In 2005-2006 the drilling in Vostok would therefore be continued for another 50 meters of ice. This would not imply any penetration into the water region of the Vostok Lake.

(151) The ATCM noted the excellent progress made in the planning for IPY and reaffirmed its support for this exciting science initiative. Parties are urged to include the IPY core projects related to the Antarctic in national research programmes and to provide financial and logistic support for their implementation.

(152) The following Information Papers were also submitted under Agenda Item 11: IP 34 (Australia) and IP 104 (ASOC).

Item 12: Tourism and Non-Governmental Activities in the Antarctic Treaty Area

(153) The issues discussed under this agenda item were divided into four broad categories:

- Site specific guidelines;
- Land-based tourism;
- Creation of areas of special tourist interest; and
- Accreditation.

(154) Uruguay submitted IP 56 *Visitors Programme to the "Artigas" Antarctic Scientific Base* in which it described the programme as a selective, restricted programme that supports scientific projects and is conducted in a responsible manner in compliance with environmental and safety principles.

(155) IAATO introduced IP 82, *IAATO overview of Antarctic Tourism 2004-2005 Antarctic Season* and IP 95 Rev.1, *Report of the International Association of Antarctica Tour Operators 2004/2005*. It underlined that cooperation is good both with members and non-members, and that it tries to include non-member vessels in its schedules and lists of vessels. With respect to the increase in Antarctic tourism, the data needs to be interpreted with caution given improvements in data collection over the past three years. IAATO also pointed out that one should be careful in using overall figures of tourism in Antarctica, since cruising and overflights do not have the same potential environmental impact as land-based tourism. It underlined the importance of government, tour operators and NGOs working closely together. Operators presently come from 13 different countries and IAATO urged delegations to make sure that operators based in their countries follow national regulation. IAATO foresees a further increase in Antarctic tourism. It has the structure to handle the increase, but would welcome governmental regulation where appropriate.

(156) ASOC introduced IP 119 *Antarctic Tourism Graphics: an Overview of Tourism Activities in the Antarctic Treaty Area*. The document reviewed graphically the type, level, geographical distribution and trends in tourism activities in 2003-04 season, based on IAATO and *Instituto Fueguino de Turismo* (InFueTur) statistical data, Antarctic Treaty System documents and peer-reviewed academic journals. The total number of passengers, staff and crew entering the Antarctic Treaty Area during the 2003-04 season was over 43,000. Ten maps were produced showing the distribution of activities, the ten most visited sites in the region, the distribution of camping, climbing, diving and kayaking activities, the distribution of Historic Sites and Monuments (HSMs) visited by tourists and the global spread of the Antarctic tourism industry as reflected by the states in which tourists originate, Antarctic tourist operators are located, and ships engaged in Antarctic tourism are flagged.

(157) The UK introduced WP 31 *Site Guidelines for Land-Based Tourist-Visited Sites* noting that the texts of the four Site Guidelines attached to it had also been tabled at ATCMs XXVI and XXVII where they had been the subject of examination. The UK indicated two modifications had now been addressed in WP 31. The Guidelines were now addressed by a proposed free-standing Resolution, rather than the former proposal to amend Recommendation XVIII-I. In addition a derogation to address yachts had been included.

(158) The Meeting welcomed the proposal which would provide for specific management prescriptions for these sites. The Meeting agreed however that the more generic term 'visitor' was more appropriate than 'tourist'. Such a change would ensure consistency with Recommendation XVIII-I and address all who visited such sites for recreational purposes.

(159) The Meeting stressed the need for the Site Guidelines to retain flexibility. It was felt important that the Guidelines must be dynamic. They must be able to be modified with relative ease to meet changing environmental circumstances or changing patterns

of visitor pressure. In addition the Meeting believed it important that such Guidelines should be disseminated to as wide an audience as possible, especially among visitors.

(160) Accordingly Resolution 5 (2005) *Resolution on Site Guidelines,* was adopted. Furthermore the Meeting requested the Secretariat to incorporate the Site Guidelines as adopted on its website and to publish them both in hard-copy and electronic (e.g. CD-ROM) formats.

(161) Recalling the Report of the CEP, the Meeting mandated the Chairman of the CEP to establish an ICG with a nominated convenor to review, prior to ATCM XXIX, any further Site Guideline proposals as well as the Site Guideline texts already adopted. It was agreed that Site Guidelines should thereafter be kept under review by the CEP, and modified accordingly. In that regard the Meeting indicated that there would be virtue in the intersessional review process also examining IP 81 *Site Guidelines Analysis* and IP 90 *IAATO Site Specific Guidelines in the Antarctic Peninsula*.

(162) IAATO presented IP 89 *Proposed Amendments to the Standard Post-Visit Site Reports Form by the International Association of Antarctica Tour Operators (IAATO).* These site reports forms are compliant with Recommendation XVIII-1 and Resolution XIX-3. The amendments allowed for the inclusion of additional tourist activities and for direct input into the IAATO database which generates the overall tourism statistics.

(163) The Meeting welcomed IAATO's proposal noting that an amendment of these forms could not be done without a new Resolution replacing Resolution XIX-3. The Meeting approved the proposed amendments to the form and, accordingly, Resolution 6 (2005) *Antarctic Post Visit Site Report Form,* was adopted.

(164) The issue of land-based tourism was introduced by WP 038 *Protection of Antarctica's Intrinsic Values: Policy on Non-Government Activities* presented by Australia. It stressed that permanent land-based tourism facilities were not consistent with Antarctica's designation as a "natural reserve devoted to peace and science" and brought with them a number of concerns. Those concerns included inconsistencies between such developments and the designation of Antarctica as a natural reserve, the undesirability of any tourist activity that would have more than minor or transitory impact on the Antarctic environment, likely impacts on wilderness and aesthetic values of Antarctica, and the requirement to accord priority to scientific research.

(165) New Zealand, which had submitted a document on the same issue and to the same effect, WP 12 *Land Based Tourism in Antarctica*, congratulated Australia and confirmed support for its proposal. New Zealand stressed that science was given priority over other activities in the Antarctic Treaty and in the Protocol and that the requirement for a "no more than minor or transitory impact" had to be the rule for tourism. Permanent facilities such as hotels would contravene the principles of the Protocol and tourist infrastructure could seriously affect national program activities.

Responsibility for the regulation of tourism should not be left in the hands of the tourism industry.

(166) Germany introduced IP 20 *The Admissibility of Land Based Tourism in Antarctica under International Law*. Taking a legal approach it concluded that land based tourism requiring the establishment of permanent tourist facilities on the Antarctic continent was incompatible with the meaning and purpose of the Treaty System on the Antarctic continent. A few delegations declared that they would draw different legal conclusions with regard to certain contents of the paper.

(167) Delegates agreed that they shared concerns about the undesirable possible consequences of the development of such permanent and semi-permanent infrastructure. Some delegations were aware of proposals or expressions of interest in building Antarctic facilities for tourism, and many viewed it as likely that Treaty Parties would face more proposals in the near future.

(168) Some delegates also emphasised the importance of referring to the obligations in Article 3.3 of the Protocol in their entirety and noted that the correct wording is now reflected in the Preamble to Annex VI on Liability.

(169) After discussions on these issues it was acknowleged that tourism was not a prohibited activity in Antarctica, but that the issue of land based tourism involving permanent infrastructure in the Antarctic needed to be addressed.

(170) Some delegations favoured the adoption of new binding regulations prohibiting such activities, whereas some others believed that these activities could be controlled through existing instruments such as Environmental Impact Assessment procedures defined in Article 8 of and Annex I to the Protocol. Some delegations reminded Parties of the compliance obligations in Article 13 of the Protocol. Following further discussions, a number of Parties proposed a Resolution on this issue, but a consensus was not reached.

(171) While many delegations were prepared to recommend that Parties implement the Environmental Protocol in such a way as to prevent the construction of infrastructure to support activities primarily for the conduct or support of tourism, some requested a more in-depth analysis, and felt the ATCM should devote more time to discuss the issue before deciding whether or not to take binding actions. Several delegations expressed concerns about the limited time to "close the door" on such developments. Various delegations stated however that under their current domestic laws it was difficult to prohibit permanent and semi-permanent facilities for tourism and other non-governmental activities. One delegation proposed that it was open to the Parties to voluntarily decline to authorise any applications to construct permanent land-based infrastructure to support tourism and non-governmental activities. There was strong support for this approach pending the conclusion of further discussions on this matter.

(172) The Meeting agreed to re-visit this matter at ATCM XXIX.

(173) ASOC introduced IP 71 on *Some Legal Issues Posed by Antarctic Tourism* which, it suggested, included matters of jurisdiction, use or usufructuary rights and property rights. In relation to the last, ASOC pointed to the purported sale of real estate on the moon as a possible indicator that present legal assumptions may be challenged by practice. ASOC concluded by proposing a series of responses by Parties, including particular efforts to ensure that no basis for private property or use rights were created domestically, in states' Antarctic practices, or through ATCM documents such as protected area management plans.

(174) The Russian Federation introduced IP 48 *On Possible Regulation of Non-Governmental Activity in the Antarctic Treaty Area*. It stressed that regulation should be extended to all non-governmental activities and not confined to tourism. It drew the attention of the Meeting to the existence of "carriers" that refused to take responsibility for the actions in the Antarctic of the persons they transported there and did not lodge any impact evaluation or request permits for those.

(175) France introduced IP 12 *Creation of Areas of Special Tourist Interest*, noting that the issue had already been discussed in 1972, and stressed that the increase in tourism may bring Parties to considering limiting tourism to certain areas. The Meeting welcomed this paper and agreed that such an option should be kept in mind when dealing with the regulation of tourism.

(176) Uruguay submitted IP 13 *Organisational Aspects Contributing to the Establishment of an Antarctic Tourism Accreditation System* which referred to regulating and monitoring functions of the Parties.

(177) The UK introduced WP 18 *Report of the Intersessional Contact Group on Accreditation Scheme for Antarctic Tour Operators*, noting that creation of that group had probably been premature as some political issues needed to be solved first. The group had not been able to reach agreement on important points, including on whether an accreditation scheme should be voluntary or compulsory. It was not even able to agree on whether there was a need for adopting a scheme or whether existing procedures could be used. In this context the UK proposed that IAATO present its IP 96 *An Update on IAATO´s Accreditation and Audit Scheme.*

(178) IAATO presented IP 96 consisting of a brief summary of the development of its accreditation scheme and its plan to trial test the process during the 2005-06 season. IAATO's accreditation scheme addresses the growth of tourism within IAATO and Antarctica in general. It formalizes IAATO's existing guiding principles, establishes a formal compliance mechanism and ensures best practices.

(179) Several delegations complimented IAATO on the comprehensive work. Some delegations expressed interest in contributing comments to IAATO's draft document and participating in the future development of this process. IAATO agreed to keep those delegations informed on the process and will circulate a draft for comment to those delegations.

(180) In discussing the development by IAATO of an industry approach to accreditation, the Meeting agreed that there be consultations between interested delegations and IAATO in the period before ATCM XXIX. One delegation said that intersessional consultations would not be appropriate for settling the policy approach, and another queried the status of such consultations. The Meeting welcomed the proposal by Australia that this not be an intersessional contact group but that IAATO would provide copies of its proposal, as it is drafted, with a view to keeping interested delegations informed of progress in their thinking. While delegations may be invited to make suggestions, responsibility for the proposal would remain with IAATO and IAATO would present a proposal on accreditation to ATCM XXIX for detailed consideration, when the ATCM would discuss all options for accreditation.

Item 13: Inspections under the Antarctic Treaty/Protocol

(181) The United Kingdom introduced WP 32 *Report of Joint Inspections under Article VII of the Antarctic Treaty and Article 14 of the Environmental Protocol* regarding a report of a joint inspection carried out by the UK, Australia and Peru under Article VII of the Antarctic Treaty and Article 14 of the Environmental Protocol. The inspection was in the Antarctic Peninsula region. Speaking on behalf of Peru and Australia, and extending thanks to these countries for their participation and cooperation in the inspection, the UK stated that many of the elements of the Working Paper had already been addressed by the CEP (Paragraph 42-59 of the CEP Report refers). The joint inspection had visited nine permanent stations, five summer stations, one station under construction, five Historic Sites and Monuments, one tourist vessel, and three unoccupied stations.

(182) The UK explained that in accordance with Article 14 of the Environmental Protocol the inspection reports of the individual stations had been circulated to the Parties concerned for comments. This had been very useful in checking facts.

(183) The UK also highlighted the following recommendations made in the Working Paper:

a) that Parties, particularly those whose stations in Antarctica are in close proximity, should ensure that they liaise and co-operate on scientific research, as appropriate, to ensure that duplication of science is minimized and scientific priorities are addressed in the most effective manner;
b) that SCAR, in furtherance of the above, should consider undertaking an in-situ audit of scientific research in Antarctica;
c) that Parties should prepare detailed reports on their stations and other facilities in Antarctica. Such reports should be in the format of the Inspection Checklist adopted by the ATCM, reviewed and updated regularly, and placed on the website of both the Antarctic Treaty Secretariat and COMNAP.
d) that Parties should prepare, and make publicly available policy statements on tourism in relation to their Antarctic stations.

(184) The UK also desired to draw attention to the issue of unoccupied stations. The UK recommended that Parties which own unoccupied stations should consider options for them which might include their re-use, removal, transfer to another Party or conservation as a Historic Site and Monument.

(185) Ecuador explained that the Maldonado station was a summer base. An expedition had been carried out there during summer of 2004 as described in Information Papers IP 82 and IP 83. Ecuador remarked that information about the expedition and the scientific research are posted on the web as described in IP 88.

(186) Australia explained that it was a strong supporter of the Inspection System provided by the Antarctic Treaty. As Australia, due to geographical reasons, generally focuses its Antarctic-related activities on the eastern part of the continent, it has found it difficult to take part in international inspection programmes in the past. Therefore, the joint inspection with the UK and Peru had been important, enabling Australia to participate and learn about activities in the Antarctic Peninsula at first-hand. Australia endorsed the use of joint inspections by Parties, since it underscores the spirit of international co-operation in the Antarctic Treaty System.

(187) Uruguay congratulated the inspection team on its work, and commented that ECARE station has been continuously visited since its transfer from the UK. Furthermore, the site has been cleaned up, with more than 30 m^3 waste from past activities having been removed. During this year, extreme adverse meteorological conditions prevented the station from being repaired. In spite of this, cargo and supplies were left at the Artigas Base, and it is planned to continue repairing ECARE station next summer season.

(188) Argentina thanked the inspection team for the report. Argentina considered that there are in the report some minor mistakes in relation to the inspection of Argentine bases. Argentina stated that there are no references to military ranks in the names of its bases, and that the Brown Base had been classified as unoccupied although it had been occupied only a few days before the inspection. One of the Observers lacked the correct accreditation from their Government and this, although probably an administrative mistake, was inconsistent with the requirements of the Antarctic Treaty. All information of the Argentine Antarctic program is available on its web site www.antartida.gov.ar. Argentina said that important scientific data collection and sampling does not have to be done by scientists, and that qualified technicians make important contributions to research. 40% of its scientific work is done in cooperation with other Parties.

(189) In relation to the recommendation regarding guidelines on tourism at Antarctic stations, Argentina noted that Parties have different policies on tourism for their Antarctic stations and therefore different guidelines. Argentina's experience is that tour operators have always respected the guidelines established by IAATO. Argentina explained that the recommendation that SCAR should conduct an audit should be carefully considered in the ATCM if it is intended to make a change in the Inspection System.

(190) Spain expressed its gratitude for the manner in which the base inspections had been carried out and voiced strong support for international cooperation. As an example, Spain drew attention to the cooperation it has with Argentina, Uruguay, Chile, and Bulgaria. Spain supported Argentina's statement that one member of the inspection team lacked proper accreditation, and agreed that an audit by SCAR had to be discussed further.

(191) New Zealand welcomed the high quality and comprehensive coverage of the report and noted that it provided a useful snapshot of stations in the Peninsula. New Zealand also referred to the inspection of the non-governmental base on Nelson Island occupied by Czech nationals. New Zealand noted that the Czech Republic had now introduced domestic legislation to give effect to the Environmental Protocol, and sought advice from the Czech Republic as to whether this station would now be subject to the provisions of that legislation.

(192) SCAR noted with interest the recommendation in the inspection report as well as the various comments by the Parties, that it should carry out an in-situ audit. The recommendation, and the various views expressed, will be considered carefully by SCAR. However, SCAR noted that such an audit would be virtually impossible to carry out given the large number of stations in Antarctica and their widely dispersed location.

(193) Ukraine expressed its gratitude for the recommendations in the inspection report, which it is following up and implementing.

(194) Bulgaria noted that the suggestions put forth by the inspection report would be useful for its Antarctic programme. Like Spain, it stressed the excellent international cooperation in the Antarctic Peninsula, without which Bulgaria's programme would not be able to exist.

(195) Chile referred to the recommendations in the Inspection report regarding the Eduardo Frei Station and regretted that the inspection team did not visit the station to collect information. Chile explained that every activity at Frei had been sanctioned by the Chilean National Environmental Agency and this information is available on the web (*www.conama.cl* and *www.e-seia.cl*).

(196) The UK pointed out that the inspection could only provide a snapshot of activities in the Antarctic Peninsula. Since the intention was to make the inspection report as fair and objective as possible, the UK was very grateful for the comments made by several Parties. In relation to the recommendation on tourism, this was aimed at making tourism policies for Antarctic stations more transparent and widely available.

(197) Australia submitted WP 16 *Scott Base and McMurdo Station: Report of an inspection under Article VII of the Antarctic Treaty and Article 14 of the Protocol on Environmental Protection*. It had already provided a summary of the report to the CEP.

(198) Australia reported that there was full compliance with the provisions of the Antarctic Treaty at both stations inspected.

Item 14: Science Issues, particularly scientific co-operation and facilitation

(199) SCAR reported that WP 33 *De-listing Antarctic Specially Protected Species* and WP 34 *Proposal to list a Species as a Specially Protected Species under Annex II* had been reviewed at the CEP and therefore should not be discussed under this item.

(200) Romania introduced IP *61 Romanian Scientific Antarctic Activities in cooperation with China, Russia and Belgium* and IP 62 *Romanian Scientific Antarctic Activities 2005-06: Scientific Programme Summary in cooperation with Australia* and stressed that it had undertaken these activities in order to become a Consultative Party. Romania further mentioned their scientific cooperation with China, consisting of ten different projects.

(201) Australia explained it had just signed a cooperative agreement with Romania giving Romania access to the Law Base in the Larsemann Hills.

(202) Uruguay introduced IP 57 *Campaign of the Military Geographic Service in Antarctica* and IP 55 *1st Symposium about Scientific Research and Activities in Antarctica*, referring to the work on cartography developed in the Collins Glacier, a great participation of young scientists and implementation of SCAR recommendations and IPY general principles.

(203) SCAR introduced IP 85 *Biodiversity in the Antarctic* on the issue of bio-diversity in relation to its concern over the establishment of non-native species in Antarctica. It discussed recommendations on which measures to implement (with regard to ships, cargo, tourism and other pathways to Antarctica) to avoid such a development. SCAR mentioned that they foresaw continued discussion on this matter with COMNAP.

(204) Ukraine introduced IP 100 *Possibilities for environmental changes in monitoring with the assistance of tourist ship cruises staff/passenger photography in the Antarctic Peninsula Region* and expressed its hope that IAATO would be willing to cooperate on this issue.

(205) The UK referred to IP 85 *Bio-diversity in the Antarctic* by SCAR and congratulated SCAR for their presentation and paper. According to many delegates the presentation made by SCAR was of excellent standard. The UK requested that SCAR resubmit its paper to the next ATCM as a working paper to the CEP. The UK asked for clarification of the proposal in the paper to develop an Antarctic Conservation Strategy.

(206) SCAR explained that the present Conservation Strategy for Antarctica was based on IUCN and SCAR thinking of almost 20 years ago. Over the years much had happened and SCAR had now started to update the strategy. In this work SCAR

would work closely with the ATCM, CCAMLR, ACAP and others to develop a "holistic" approach to dealing with conservation issues in Antarctica. Conservation science was today a major activity worldwide and it was important that Antarctica did not lag behind.

(207) Chile expressed support for the UK proposal of a continued discussion of IP 85 *Biodiversity in the Antarctic* by SCAR at the next ATCM and introduced IP 112 *Scientific Expedition to the South Pole 2004* thanking the UK and the US for their support in the activities conducted.

(208) The Netherlands congratulated Australia and Romania on their Law-Racovita Station. According to the Dutch delegation such agreement underlines that there are alternative ways to achieve Consultative Status in the ATS by smaller countries without enough capabilities of their own, through the joint use of existing infrastructure. This alternative was applied by the Netherlands when it became a Consultative Party to the ATS some 15 years ago, without operating their own station.

(209) Argentina introduced IP 86 *Ciencia Argentina en la Antartida* describing Argentinean activities carried out during 100 years of scientific activities in Antarctica.

(210) The Russian Federation presented IP 46 *Results of Investigations under the subprogram, study and research of the Antarctic, of the federal program World Ocean in 2004* mentioning that its research program consisted of 14 projects. Russia highlighted results with regard to temperature trends in the eastern and western regions of Antarctica that contradicted the view of a general global warming. Russia also mentioned proposals for further work on the sub glacial Lake Vostok.

(211) Ecuador introduced IP 87 *Report of the scientific research during the IX expedition 8 December 2003-24 February 2004* and IP 88 *Guia Geologica de los alrededores de la Estacion Cientifica Ecuatoriana Pedro Vicente Maldonado*. Ecuador reported that among other things the expedition had produced a geological guide to the area aimed at enabling a comparative geological study between Patagonia and Antarctica, preparing it as a teaching tool for students.

(212) The following Information Papers were also submitted under Agenda Item 14: IP 1 (Poland); IP 5 (Brazil); IP 14 (India); IP 33 (Australia); IP 69 (SCAR); IP 91 (China); IP 99 (Ukraine); IP 104 (ASOC); and IP 118 (Republic of Korea).

Item 15: Operational issues

(213) Russia introduced WP 14, *Proposed Improvements to measures designated to prevent Environmental Damage in Antarctica,* indicating that in their view loopholes exist with regard to the issuing of permits for non-governmental expeditions travelling to Antarctica. Russia proposed that there should be mandatory exchange of information on any activities that any Party has authorized to take place in Antarctica. Their

experience had showed that many non-governmental expeditions go to Antarctica despite not having obtained the required permits. They stressed that their proposal was an idea aimed at stimulating discussion to enable a formal proposal to be presented by Russia at the next ATCM meeting.

(214) The UK expressed concern over the risk for duplication of work considering existing procedures with regard to exchange of information and stressed that the UK already provided all necessary information on non-governmental expeditions authorised by the UK to go to Antarctica. The UK referred to IP 15 presented by Germany and the Netherlands on the issue of creating an on line discussion forum for national permitting authorities. The UK underlined that this would provide an excellent way of finding out about whether non-governmental expeditions had been permitted or not.

(215) Germany, the Netherlands and Japan thanked Russia for their proposal and reiterated that the issue should be further discussed at the next ATCM. Japan further noted the same concern as the UK.

(216) Argentina agreed with the UK and thanked the Russian Federation for its work and pointed out that there are difficulties when private operators provide transport for tourists. In such cases one can not determine whether these people are scientists or tourists. Argentina mentioned that they had experience of non-governmental expeditions asking for humanitarian assistance in Antarctica. In such a situation it was impossible to deny assistance even though such expedition may not have appropriate permits. Argentina agreed with Russia and the UK that better tools needed to be developed.

(217) COMNAP commented that the outcome of this discussion could have far reaching consequences for national operators and expressed its willingness to assist in implementing any system that Parties might find appropriate.

(218) Germany briefly informed the Meeting of current engineering planning and provided a hand-out on the logistics concept for "Neumayer III" to all interested Parties.

(219) Belgium introduced IP 73 *New Belgian research station in the Sor Rondane, Antarctica, 2004 - 05 BELARE site survey expedition,* and stated that following a Government decision in 2004 a survey expedition had been carried out in November-December last year. Belgium would now commence its work on a draft CEE to be presented at the next ATCM.

(220) Japan offered to collaborate with Belgium in their upcoming activities on Antarctica.

(221) India introduced IP 14 *India's Antarctic Science Programme 2004-05* stating that their Antarctic programme was multi-institutional and multi-disciplinary and they welcomed the participation of other countries.

(222) India introduced IP 80 *India's Endeavor for a new Research Station in Antarctica – a Report*.

(223) The United States thanked India for its advance notice of plans concerning its Antarctic Program in the Larsemann Hills area, noting WP 27 Rev I *Draft Antarctic Specially Managed Area (ASMA Management Plan for the Larsemann Hills, East Antarctica)* submitted by Australia, China and Russia. India was encouraged to collaborate in this effort to develop the ASMA.

(224) UK thanked Belgium and India for their information papers and commented that a major recommendation of the UK/Australia/Peru joint inspection report concerned the building of new stations in Antarctica. This recommendation stated that the construction of stations at previously unoccupied sites in Antarctica should be minimized. The UK hoped that both Belgium and India would take account of this recommendation and address it when preparing the draft CEEs for their proposed new stations.

(225) The following Working Papers were also submitted under Agenda Item 15: WP 33 (SCAR); and WP 34 (SCAR).

(226) The following Information Papers were also submitted under Agenda Item 15: IP 19 (South Africa); IP 50 (Sweden); IP 51 (Sweden); IP 69 (SCAR); IP 79 (Ecuador); IP 91 (China); IP 92 (China); and IP 113 (Chile).

Item 16: Education issues

(227) The following Information Papers were submitted under Agenda Item 16: IP 34 (Australia); IP 55 (Uruguay); IP 78 (Ecuador); IP 104 (ASOC); IP 106 (Japan); and IP 114 (Chile).

Item 17: Exchange of Information

(228) Australia presented WP 29 containing the findings of the intersessional contact group that had been set up during the last ATCM.

(229) One delegation wondered whether the formalized information exchange procedure should not only include information covered by Articles III and VII of the Treaty, but also such subjects as information on permitted activities and Parties' regulations at large. Australia found this a helpful intervention. The ICG had become aware that there were additional requirements, but had made the decision not to address these issues, since they were not included in the Terms of Reference, and limited their discussions to information to be exchanged according to Resolution 6 (2001).

(230) Another delegation was concerned that there was no proper estimation of costs from an expanded, comprehensive database, and concluded that the ATCM needed to know the costs before approving such a proposal. It was further noted that various

processes are in progress within the Antarctic "family". Questions were also raised regarding specific details of the proposal.

(231) COMNAP informed the Meeting that it was reviewing all its information systems for its internal exchange of operational information. These processes have some similarity with the information exchange system proposed for the ATCM. All programs developed by the COMNAP were based on open source software and would be made available to other parties in the Antarctic system. A report on COMNAP systems and future developments was in preparation and would be circulated. COMNAP believed that the programs are not expensive to develop but that the Parties would need to analyse and define their requirements. Australia pointed out that several items already included in the budget of the Secretariat were relevant in this matter.

(232) The Meeting agreed that a new system was needed, that information will be submitted electronically, that consultation with other organizations will take place, and that the Secretariat should be charged to develop the system before the next ATCM. The Parties attached great importance to the design criteria identified in WP 29 and expressed the expectation that the desired system meet those criteria. Parties also agreed that the Secretariat should take into account appropriate existing systems in order to ensure that the desired system is developed in the most cost-effective manner possible. Decision 10 (2005) *Establishment of an Electronic Information Exchange System* was adopted.

Item 18: Biological Prospecting

(233) New Zealand presented WP 13 on Biological Prospecting in Antarctica. Sweden, the co-author of WP 13, underlined the point that the focus on Article III did not mean that other articles of the Treaty or the Protocol were considered any less important in relation to this issue. All regulations need to be considered.

(234) Spain presented IP 8, which was largely scientific, but underscored the eventual negative impacts of biological prospecting in its conclusion. In Spain, pharmaceutical companies are already researching on drugs based on Antarctic material. Spain found it to be logical to first approach the subject on a legal basis and therefore supported WP13 and was ready to co-sponsor the draft resolution attached to it. UNEP presented IP 93 on Recent Developments in Biological Prospecting Relevant to Antarctica. The paper highlights developments in five international fora, including the newly established UN General Assembly Ad Hoc Open-ended Informal Working Group and the Ad Hoc Open-ended Working group on Access and Benefit Sharing of the Convention on Biological Diversity.

(235) There was wide-ranging discussion on the issue of biological prospecting. Many delegations expressed support for the draft Resolution proposed by New Zealand

and Sweden, as it provided a good starting point for the ATCM's discussions of biological prospecting. Some expressed concern about the lack of a definition of biological prospecting, while others felt it was not necessary to have a specific definition at this point. It was underscored that other international groups – including a UN working group – were working on the same theme. Some delegations wanted to wait for the work of these other groups, while others thought it was important for the Antarctic Treaty System to take the lead on the question of biological prospecting in Antarctica. The Meeting approved Resolution 7 (2005) *Biological Prospecting in Antarctica*.

Item 19: Preparation of the XXIX Meeting

Item 19 (a). Date and Place

(236) The Meeting welcomed the kind invitation of the Government of the United Kingdom to host the XXIX Consultative Meeting in Edinburgh, June 12-23, 2006.

Item 19 (b). Invitation of International and Non-Governmental Organisations

(237) The ATCM approved the participation of ACAP at CEP IX.

(238) In accordance with the established practice, the Meeting agreed that the following organizations having scientific or technical interest in Antarctica should be invited to send experts to attend the ATCM: ACAP, ASOC, IAATO, IHO, IMO, IOC, IPY Programme Office, IUCN, UNEP, WMO and WTO.

Item 19 (c). Invitation to Third States

(239) The ATCM decided to invite the Malaysian Government to send representatives to observe the XXIX Meeting.

Item 19 (d). Preparation of the Agenda for the XXIX ATCM

(240) The Netherlands introduced WP 71 that addressed Article VII, paragraph 5 of the Antarctic Treaty as a spin-off from the liability discussion, while explaining that the issue is not limited to the question of liability. It aimed at drawing up an indicative list of activities covered by this article and to discuss this as a separate agenda item at the next ATCM. Parties agreed that this was an issue and that it could be useful to discuss it at the next ATCM. There was however, disagreement on whether it should be a separate agenda item.

(241) The Meeting approved a preliminary agenda for the XXIX ATCM. This is attached as Annex K.

Item 19 (e). SCAR's verbal presentation

(242) Taking into account the valuable oral presentations at the previous ATCM's, the Meeting decided to invite SCAR to make another verbal presentation on scientific issues relevant to the XXIX ATCM.

(243) The Meeting decided to send a message to the stations in Antarctica. The text of the message is reproduced as Annex J.

(244) The draft Final Report was adopted by the Consultative Parties and the Meeting was closed on 17 June 2005.

PART II

MEASURES, DECISIONS AND RESOLUTIONS

ANNEX A

MEASURES

Measure 1 (2005)

Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty: Liability Arising From Environmental Emergencies

The Representatives,

Recommend to their Governments that:

i. The Annex attached to this Measure form Annex VI on Liability Arising From Environmental Emergencies to the Protocol on Environmental Protection to the Antarctic Treaty;

ii. The Annex become effective upon the date on which this Measure has been approved by all Consultative Parties entitled to attend the XXVIIIth Antarctic Treaty Consultative Meeting.

Attachment: Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty.

Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty

Liability Arising From Environmental Emergencies

Preamble

The Parties,

Recognising the importance of preventing, minimising and containing the impact of environmental emergencies on the Antarctic environment and dependent and associated ecosystems;

Recalling Article 3 of the Protocol, in particular that activities shall be planned and conducted in the Antarctic Treaty area so as to accord priority to scientific research and to preserve the value of Antarctica as an area for the conduct of such research;

Recalling the obligation in Article 15 of the Protocol to provide for prompt and effective response action to environmental emergencies, and to establish contingency plans for response to incidents with potential adverse effects on the Antarctic environment or dependent and associated ecosystems;

Recalling Article 16 of the Protocol under which the Parties to the Protocol undertook consistent with the objectives of the Protocol for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems to elaborate, in one or more Annexes to the Protocol, rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by the Protocol;

Noting further Decision 3 (2001) of the XXIVth Antarctic Treaty Consultative Meeting regarding the elaboration of an Annex on the liability aspects of environmental emergencies, as a step in the establishment of a liability regime in accordance with Article 16 of the Protocol;

Having regard to Article IV of the Antarctic Treaty and Article 8 of the Protocol;

Have agreed as follows:

Article 1

Scope

This Annex shall apply to environmental emergencies in the Antarctic Treaty area which relate to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities. Measures and plans for preventing and responding to such emergencies are also included in this Annex. It shall apply to all tourist vessels that enter the Antarctic Treaty area. It shall also apply to environmental emergencies in the Antarctic Treaty area which relate to other vessels and activities as may be decided in accordance with Article 13.

Article 2

Definitions

For the purposes of this Annex:

(a) "Decision" means a Decision adopted pursuant to the Rules of Procedure of Antarctic Treaty Consultative Meetings and referred to in Decision 1 (1995) of the XIXth Antarctic Treaty Consultative Meeting;

(b) "Environmental emergency" means any accidental event that has occurred, having taken place after the entry into force of this Annex, and that results in, or imminently threatens to result in, any significant and harmful impact on the Antarctic environment;

(c) "Operator" means any natural or juridical person, whether governmental or non-governmental, which organises activities to be carried out in the Antarctic Treaty area. An operator does not include a natural person who is an employee, contractor, subcontractor, or agent of, or who is in the service of, a natural or juridical person, whether governmental or non-governmental, which organises activities to be carried out in the Antarctic Treaty area, and does not include a juridical person that is a contractor or subcontractor acting on behalf of a State operator;

(d) "Operator of the Party" means an operator that organises, in that Party's territory, activities to be carried out in the Antarctic Treaty area, and:

(i) those activities are subject to authorisation by that Party for the Antarctic Treaty area; or

(ii) in the case of a Party which does not formally authorise activities for the Antarctic Treaty area, those activities are subject to a comparable regulatory process by that Party.

The terms "its operator", "Party of the operator", and "Party of that operator" shall be interpreted in accordance with this definition;

(e) "Reasonable", as applied to preventative measures and response action, means measures or actions which are appropriate, practicable, proportionate and based on the availability of objective criteria and information, including:

(i) risks to the Antarctic environment, and the rate of its natural recovery;

(ii) risks to human life and safety; and

(iii) technological and economic feasibility;

(f) "Response action" means reasonable measures taken after an environmental emergency has occurred to avoid, minimise or contain the impact of that environmental emergency, which to that end may include clean-up in appropriate circumstances, and includes determining the extent of that emergency and its impact;

(g) "The Parties" means the States for which this Annex has become effective in accordance with Article 9 of the Protocol.

Article 3

Preventative Measures

1. Each Party shall require its operators to undertake reasonable preventative measures that are designed to reduce the risk of environmental emergencies and their potential adverse impact.

2. Preventative measures may include:

(a) specialised structures or equipment incorporated into the design and construction of facilities and means of transportation;

(b) specialised procedures incorporated into the operation or maintenance of facilities and means of transportation; and

(c) specialised training of personnel.

Article 4

Contingency Plans

1. Each Party shall require its operators to:

(a) establish contingency plans for responses to incidents with potential adverse impacts on the Antarctic environment or dependent and associated ecosystems; and

(b) co-operate in the formulation and implementation of such contingency plans.

2. Contingency plans shall include, when appropriate, the following components:

(a) procedures for conducting an assessment of the nature of the incident;

(b) notification procedures;

(c) identification and mobilisation of resources;

(d) response plans;

(e) training;

(f) record keeping; and

(g) demobilisation.

3. Each Party shall establish and implement procedures for immediate notification of, and co-operative responses to, environmental emergencies, and shall promote the use of notification procedures and co-operative response procedures by its operators that cause environmental emergencies.

Article 5

Response Action

1. Each Party shall require each of its operators to take prompt and effective response action to environmental emergencies arising from the activities of that operator.

2. In the event that an operator does not take prompt and effective response action, the Party of that operator and other Parties are encouraged to take such action, including through their agents and operators specifically authorised by them to take such action on their behalf.

3. (a) Other Parties wishing to take response action to an environmental emergency pursuant to paragraph 2 above shall notify their intention to the Party of the operator and the Secretariat of the Antarctic Treaty beforehand with a view to the Party of the operator taking response action itself, except where a threat of significant and harmful impact to the Antarctic environment is imminent and it would be reasonable in all the circumstances to take immediate response action, in which case they shall notify the Party of the operator and the Secretariat of the Antarctic Treaty as soon as possible.

(b) Such other Parties shall not take response action to an environmental emergency pursuant to paragraph 2 above, unless a threat of significant and harmful impact to the Antarctic environment is imminent and it would be reasonable in all the circumstances to take immediate response action, or the Party of the operator has failed within a reasonable time to notify the Secretariat of the Antarctic Treaty that it will take the response action itself, or where that response action has not been taken within a reasonable time after such notification.

(c) In the case that the Party of the operator takes response action itself, but is willing to be assisted by another Party or Parties, the Party of the operator shall coordinate the response action.

4. However, where it is unclear which, if any, Party is the Party of the operator or it appears that there may be more than one such Party, any Party taking response action shall make best endeavours to consult as appropriate and shall, where practicable, notify the Secretariat of the Antarctic Treaty of the circumstances.

5. Parties taking response action shall consult and coordinate their action with all other Parties taking response action, carrying out activities in the vicinity of the environmental emergency, or otherwise impacted by the environmental emergency, and shall, where practicable, take into account all relevant expert guidance which has been provided by permanent observer delegations to the Antarctic Treaty Consultative Meeting, by other organisations, or by other relevant experts.

Article 6

Liability

1. An operator that fails to take prompt and effective response action to environmental emergencies arising from its activities shall be liable to pay the costs of response action taken by Parties pursuant to Article 5(2) to such Parties.

2. (a) When a State operator should have taken prompt and effective response action but did not, and no response action was taken by any Party, the State operator shall be liable to pay the costs of the response action which should have been undertaken, into the fund referred to in Article 12.

(b) When a non-State operator should have taken prompt and effective response action but did not, and no response action was taken by any Party, the non-State operator shall be liable to pay an amount of money that reflects as much as possible the costs of the response action that should have been taken. Such money is to be paid directly to the fund referred to in Article 12, to the Party of that operator or to the Party that enforces the mechanism referred to in Article 7(3). A Party receiving such money shall make best efforts to make a contribution to the fund referred to in Article 12 which at least equals the money received from the operator.

3. Liability shall be strict.

4. When an environmental emergency arises from the activities of two or more operators, they shall be jointly and severally liable, except that an operator which establishes that only part of the environmental emergency results from its activities shall be liable in respect of that part only.

5. Notwithstanding that a Party is liable under this Article for its failure to provide for prompt and effective response action to environmental emergencies caused by its warships, naval auxiliaries, or other ships or aircraft owned or operated by it and used, for the time being, only on government non-commercial service, nothing in this Annex is intended to affect the sovereign immunity under international law of such warships, naval auxiliaries, or other ships or aircraft.

Article 7

Actions

1. Only a Party that has taken response action pursuant to Article 5(2) may bring an action against a non-State operator for liability pursuant to Article 6(1) and such action may be brought in the courts of not more than one Party where the operator is incorporated or has its principal place of business or his or her habitual place of residence. However, should the operator not be incorporated in a Party or have its principal place of business or his or her habitual place of residence in a Party, the action may be brought in the courts of the Party of the operator within the meaning of Article 2(d). Such actions for compensation shall be brought within three years of the commencement of the response action or within three years of the date on which the Party bringing the action knew or ought reasonably to have known the identity of the operator, whichever is later. In no event shall an action against a non-State operator be commenced later than 15 years after the commencement of the response action.

2. Each Party shall ensure that its courts possess the necessary jurisdiction to entertain actions under paragraph 1 above.

3. Each Party shall ensure that there is a mechanism in place under its domestic law for the enforcement of Article 6(2)(b) with respect to any of its non-State operators within the meaning of Article 2(d), as well as where possible with respect to any non-State operator that is incorporated or has its principal place of business or his or her habitual place of residence in that Party. Each Party shall inform all other Parties of this mechanism in accordance with Article 13(3) of the Protocol. Where there are multiple Parties that are capable of enforcing Article 6(2)(b) against any given non-State operator under this paragraph, such Parties should consult amongst themselves as to which Party should take enforcement action. The mechanism referred to in this paragraph shall not be invoked later than 15 years after the date the Party seeking to invoke the mechanism became aware of the environmental emergency.

4. The liability of a Party as a State operator under Article 6(1) shall be resolved only in accordance with any enquiry procedure which may be established by the Parties, the provisions of Articles 18, 19 and 20 of the Protocol and, as applicable, the Schedule to the Protocol on Arbitration.

5. (a) The liability of a Party as a State operator under Article 6(2)(a) shall be resolved only by the Antarctic Treaty Consultative Meeting and, should the question remain

unresolved, only in accordance with any enquiry procedure which may be established by the Parties, the provisions of Articles 18, 19 and 20 of the Protocol and, as applicable, the Schedule to the Protocol on Arbitration.

(b) The costs of the response action which should have been undertaken and was not, to be paid by a State operator into the fund referred to in Article 12, shall be approved by means of a Decision. The Antarctic Treaty Consultative Meeting should seek the advice of the Committee on Environmental Protection as appropriate.

6. Under this Annex, the provisions of Articles 19(4), 19(5), and 20(1) of the Protocol, and, as applicable, the Schedule to the Protocol on Arbitration, are only applicable to liability of a Party as a State operator for compensation for response action that has been undertaken to an environmental emergency or for payment into the fund.

Article 8

Exemptions from Liability

1. An operator shall not be liable pursuant to Article 6 if it proves that the environmental emergency was caused by:

(a) an act or omission necessary to protect human life or safety;

(b) an event constituting in the circumstances of Antarctica a natural disaster of an exceptional character, which could not have been reasonably foreseen, either generally or in the particular case, provided all reasonable preventative measures have been taken that are designed to reduce the risk of environmental emergencies and their potential adverse impact;

(c) an act of terrorism; or

(d) an act of belligerency against the activities of the operator.

2. A Party, or its agents or operators specifically authorised by it to take such action on its behalf, shall not be liable for an environmental emergency resulting from response action taken by it pursuant to Article 5(2) to the extent that such response action was reasonable in all the circumstances.

Article 9

Limits of Liability

1. The maximum amount for which each operator may be liable under Article 6(1) or Article 6(2), in respect of each environmental emergency, shall be as follows:

(a) for an environmental emergency arising from an event involving a ship:

(i) one million SDR for a ship with a tonnage not exceeding 2,000 tons;

(ii) for a ship with a tonnage in excess thereof, the following amount in addition to that referred to in (i) above:

- for each ton from 2,001 to 30,000 tons, 400 SDR;
- for each ton from 30,001 to 70,000 tons, 300 SDR; and
- for each ton in excess of 70,000 tons, 200 SDR;

(b) for an environmental emergency arising from an event which does not involve a ship, three million SDR.

2. (a) Notwithstanding paragraph 1(a) above, this Annex shall not affect:

(i) the liability or right to limit liability under any applicable international limitation of liability treaty; or

(ii) the application of a reservation made under any such treaty to exclude the application of the limits therein for certain claims;

provided that the applicable limits are at least as high as the following: for a ship with a tonnage not exceeding 2,000 tons, one million SDR; and for a ship with a tonnage in excess thereof, in addition, for a ship with a tonnage between 2,001 and 30,000 tons, 400 SDR for each ton; for a ship with a tonnage from 30,001 to 70,000 tons, 300 SDR for each ton; and for each ton in excess of 70,000 tons, 200 SDR for each ton.

(b) Nothing in subparagraph (a) above shall affect either the limits of liability set out in paragraph 1(a) above that apply to a Party as a State operator, or the rights and obligations of Parties that are not parties to any such treaty as mentioned above, or the application of Article 7(1) and Article 7(2).

3. Liability shall not be limited if it is proved that the environmental emergency resulted from an act or omission of the operator, committed with the intent to cause such emergency, or recklessly and with knowledge that such emergency would probably result.

4. The Antarctic Treaty Consultative Meeting shall review the limits in paragraphs 1(a) and 1(b) above every three years, or sooner at the request of any Party. Any amendments to these limits, which shall be determined after consultation amongst the Parties and on the basis of advice including scientific and technical advice, shall be made under the procedure set out in Article 13(2).

5. For the purpose of this Article:

(a) "ship" means a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms;

(b) "SDR" means the Special Drawing Rights as defined by the International Monetary Fund;

(c) a ship's tonnage shall be the gross tonnage calculated in accordance with the tonnage measurement rules contained in Annex I of the International Convention on Tonnage Measurement of Ships, 1969.

Article 10

State Liability

A Party shall not be liable for the failure of an operator, other than its State operators, to take response action to the extent that that Party took appropriate measures within its competence, including the adoption of laws and regulations, administrative actions and enforcement measures, to ensure compliance with this Annex.

Article 11

Insurance and Other Financial Security

1. Each Party shall require its operators to maintain adequate insurance or other financial security, such as the guarantee of a bank or similar financial institution, to cover liability under Article 6(1) up to the applicable limits set out in Article 9(1) and Article 9(2).

2. Each Party may require its operators to maintain adequate insurance or other financial security, such as the guarantee of a bank or similar financial institution, to cover liability under Article 6(2) up to the applicable limits set out in Article 9(1) and Article 9(2).

3. Notwithstanding paragraphs 1 and 2 above, a Party may maintain self-insurance in respect of its State operators, including those carrying out activities in the furtherance of scientific research.

Article 12

The Fund

1. The Secretariat of the Antarctic Treaty shall maintain and administer a fund, in accordance with Decisions including terms of reference to be adopted by the Parties, to provide, *inter alia*, for the reimbursement of the reasonable and justified costs incurred by a Party or Parties in taking response action pursuant to Article 5(2).

2. Any Party or Parties may make a proposal to the Antarctic Treaty Consultative Meeting for reimbursement to be paid from the fund. Such a proposal may be approved by the Antarctic Treaty Consultative Meeting, in which case it shall be approved by way of a Decision. The Antarctic Treaty Consultative Meeting may seek the advice of the Committee of Environmental Protection on such a proposal, as appropriate.

3. Special circumstances and criteria, such as: the fact that the responsible operator was an operator of the Party seeking reimbursement; the identity of the responsible operator remaining unknown or not subject to the provisions of this Annex; the unforeseen failure of the relevant insurance company or financial institution; or an exemption in Article 8 applying, shall be duly taken into account by the Antarctic Treaty Consultative Meeting under paragraph 2 above.

4. Any State or person may make voluntary contributions to the fund.

Article 13

Amendment or Modification

1. This Annex may be amended or modified by a Measure adopted in accordance with Article IX(1) of the Antarctic Treaty.

2. In the case of a Measure pursuant to Article 9(4), and in any other case unless the Measure in question specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes any extension of that period or that it is unable to approve the Measure.

3. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 or 2 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

Measure 2 (2005)

Antarctic Specially Protected Areas: Designations and Management Plans

The Representatives,

Recalling Articles 3, 5 and 6 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty, providing for the designation of Antarctic Specially Protected Areas and approval of Management Plans for those Areas;

Recalling

- Recommendation IV-1 (1966), which designated Taylor Rookery as Specially Protected Area ("SPA") No. 1;
- Recommendation IV-2 (1966), which designated Rookery Islands as SPA No. 2;
- Recommendation IV-3 (1966), which designated Ardery Island and Odbert Island as SPA No. 3;
- Recommendation IV-11 (1966), which designated Cape Shirreff as SPA No. 11;
- Recommendation XIII-8 (1985), which designated Potter Peninsula as Site of Special Scientific Interest ("SSSI") No. 13 and Harmony Point as SSSI No. 14;
- Recommendation XV-7 (1989), which redesignated SPA No. 11 (Cape Shirreff) as SSSI No. 32;
- Recommendation XVI-9 (1991), which designated Forlidas Pond and Davis Valley Ponds as SPA No. 23;
- Measure 3 (1995), which designated Pointe-Géologie Archipelago as SPA No. 24;
- Measure 2 (1997), which designated the Cape Evans site containing Historical Monuments 16 and 17 as SPA No. 25;
- Measure 1 (1998), which designated the Cape Royds site, containing Historical Monument 15, as SPA No. 27, Hut Point, containing Historical Monument No. 18, as SPA No. 28, and Cape Adare, containing Historical Monument No. 22, as SPA No. 29;
- Recommendation XVII-2 (1992) and Measure 3 (1997), which contained revised descriptions and management plans for SPA No. 1, 2 and 3, SSSI No. 13 and SSSI No. 14;

- Resolution 7 (1995), Resolution 3 (1996) and Measure 2 (2000) which extended the dates of expiry of SSSI No. 13, 14 and 32;
- Decision 1 (2002) which renamed and renumbered these Areas and Sites as Antarctic Specially Protected Areas;

Noting that the Committee for Environmental Protection has advised that two areas, namely Dakshin Gangotri Glacier, Dronning Maud Land and Scullin and Murray Monoliths, Mac. Robertson Land be designated as new Antarctic Specially Protected Areas, and has endorsed the Management Plans annexed to this Measure;

Recognising that these areas support outstanding environmental, scientific, historic, aesthetic or wilderness values, or ongoing or planned scientific research, and would benefit from special protection;

Desiring to approve Management Plans for these areas, and to replace the Management Plans for Antarctic Specially Protected Areas No. 101, 102, 103, 119, 120, 132, 133, 149, 155, 157, 158, and 159 with revised and updated Management Plans;

Noting that ASPA No. 149 contains marine areas and that the Commission for the Conservation of Antarctic Marine Living Resources approved the revised Management Plan for this Area at its 23rd meeting;

Recommend to their Governments the following Measure for approval in accordance with paragraph 1 of Article 6 of Annex V to the Protocol on Environmental Protection:

That:

1. the following be designated as Antarctic Specially Protected Areas:

(a) Antarctic Specially Protected Area No. 163: Dakshin Gangotri Glacier, Dronning Maud Land; and

(b) Antarctic Specially Protected Area No. 164: Scullin and Murray Monoliths, Mac. Robertson Land, East Antarctica;

2. the Management Plans for the following Areas, which are annexed to this Measure, be approved:

(a) Antarctic Specially Protected Area No. 101: Taylor Rookery, Mac. Robertson Land, East Antarctica;

(b) Antarctic Specially Protected Area No. 102: Rookery Islands, Mac. Robertson Land, East Antarctica;

(c) Antarctic Specially Protected Area No. 103: Ardery Island and Odbert Island, Budd Coast, Wilkes Land, East Antarctica;

(d) Antarctic Specially Protected Area No. 119: Davis Valley and Forlidas Pond, Dufek Massif;

(e) Antarctic Specially Protected Area No. 120: Pointe-Géologie, Terre Adélie;

(f) Antarctic Specially Protected Area No. 132: Potter Peninsula;

(g) Antarctic Specially Protected Area No. 133: Harmony Point;

(h) Antarctic Specially Protected Area No. 149: Cape Shirreff and San Telmo Island, Livingston Island, South Shetland Islands;

(i) Antarctic Specially Protected Area No. 155: Cape Evans, Ross Island;

(j) Antarctic Specially Protected Area No. 157: Backdoor Bay, Cape Royds, Ross Island;

(k) Antarctic Specially Protected Area No. 158: Hut Point, Ross Island;

(l) Antarctic Specially Protected Area No. 159: Cape Adare;

(m) Antarctic Specially Protected Area No. 163: Dakshin Gangotri Glacier, Dronning Maud Land; and

(n) Antarctic Specially Protected Area No. 164: Scullin and Murray Monoliths, Mac. Robertson Land, East Antarctica;

3. all prior management plans for Antarctic Specially Protected Areas No. 101, 102, 103, 119, 120, 132, 133, 149, 155, 157, 158, and 159 shall cease to be effective, or, if any such plans have not yet become effective, they are hereby withdrawn.

Management Plan for Antarctic Specially Protected Area No. 101

TAYLOR ROOKERY, MAC. ROBERTSON LAND

Introduction

Taylor Rookery (67°26'S; 60°50'E, Map A) was originally designated as Specially Protected Area No. 1, in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora, through Recommendation IV-I (1966), after a proposal by Australia. The Area was originally designated on the grounds that Taylor Rookery contains a colony of Emperor Penguins (*Aptenodytes forsteri*), which is the largest of two known colonies of this species located entirely on land. A revised description and management plan for the Area was adopted by Recommendation XVII-2 (1992) to accord with the revised format for Area Descriptions and Management Plans of Article 5 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty, adopted under Recommendation XVI-10 (1991). In accordance with Resolution XX-5 (1996) the site was redesignated and renumbered as Antarctic Specially Protected Area (ASPA) No. 101.

This revised Management Plan reaffirms the scientific values of the original designation.

1. Description of Values to be Protected

Taylor Rookery contains the largest Emperor penguin colony (Map B) known on land; almost all other emperor penguin colonies are located on sea ice. The number of breeding pairs at the colony has ranged from 2462 in 1989 to 3307 in 1990 and has averaged approximately 3000 over 15 years from 1988 to 2002. The rookery is important because of long-term monitoring of the population of the penguins (since 1954). The colony is ideal for counting since it is surrounded by small rocky hills which make it possible to observe every bird without entering the breeding area. A photographic census program has been carried out annually since 1988, and it is believed that this method has resulted in almost complete accuracy of counting.

2. Aims and Objectives

Management at Taylor Rookery aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance;
- allow research on the ecosystem and physical environment, particularly on the avifauna, provided it is for compelling reasons which cannot be served elsewhere;
- minimise the possibility of introduction of pathogens which may cause disease in bird populations within the Area;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- gather data on the population status of the emperor penguin colony on a regular basis;
- allow visits for management purposes in support of the aims of the management plan.

3. Management Activities

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

- signs illustrating the location and boundaries, with clear statements of entry restrictions, shall be placed at appropriate locations on the boundary of the Area to help avoid inadvertent entry;
- information on the location of the Area (stating special restrictions that apply) shall be displayed prominently, and a copy of this Management Plan shall be kept available, at adjacent operational research/field stations and will be provided to ships visiting the vicinity;
- markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition and removed when no longer required;
- abandoned equipment or materials shall be removed to the maximum extent possible provided doing so does not adversely impact on the values of the Area;
- visits shall be made to the Area as necessary (not less than once every five years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure that management activities are adequate; and
- the Management Plan shall be reviewed at least every five years and updated as required.

4. Period of Designation

Designated for an indefinite period.

5. Maps

The following maps are enclosed for illustrating the Area and the proposed plan:

- Map A: East Antarctica, Mac. Robertson Land, Location of Antarctic Specially Protected Area No. 101, Taylor Rookery. The inset map indicates the location in relation to the Antarctic continent.

  Map Specifications: Projection: Lambert Conical Conformal; Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level
- Map B: Antarctic Specially Protected Area No. 101, Taylor Rookery, showing Emperor Penguin Colony.

  Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level
- Map C: Antarctic Specially Protected Area No. 101, Taylor Rookery, showing Area in greater detail with landing and camping sites.

  Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level

6. Description of the Area

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

Taylor Rookery Antarctic Specially Protected Area consists of the whole of the northernmost rock exposure on the east side of Taylor Glacier, Mac. Robertson Land (67°26'S; 60°50'E). The rookery is located on a low lying rock outcrop in the south-west corner of a bay formed by Taylor Glacier to the

west, the polar ice cap to the south and the islands of the Colbeck Archipelago to the east. The Area is surrounded by sea ice to the north and east. The area is some 90 kilometres west of Mawson station.

There is ice-free terrain adjacent to the glacier on the western boundary and to the south the rock rises steeply to meet the ice of the plateau. The rock itself forms a horseshoe around a central flat area of exposed rock and moraine. This area is covered with snow in winter and is occupied by the emperor penguins. The compressed snow melts in summer to form a shallow lake and stream which exits to the north-east. The sides of the horseshoe are rounded ridges of rock which are bare and smoothed by ice. Otherwise the terrain is rough and dissected with cracks and fissures. The average height of the ridges is about 30 metres.

The area also has a raised beach which is typical of several found along the coast of Mac. Robertson Land. The beach is composed of locally derived pebbles, cobbles and boulders between 1 cm and 1 m across. It slopes upwards from the shoreline to a well defined platform several metres broad and 3 to 6 m above sea level. The Area is readily defined by its natural features.

Climate

Limited data exists for the meteorology of the Area. Conditions are probably similar to those of the Mawson station area where the mean monthly temperatures range from +0.1°C in January to -18.8°C in August, with extreme temperatures ranging from +10.6°C to -36.0°C. The mean annual wind speed is 10.9 m per second with frequent prolonged periods of strong south-easterly katabatic winds from the ice cap with mean wind speeds over 25 m per second and gusts often exceeding 50 m per second. Local sections of the coast vary in their exposure to strong winds and it is possible that slightly lower mean windspeed may exist at Taylor Rookery. Other characteristics of the weather are high cloudiness throughout the year, very low humidity, low precipitation and frequent periods of strong winds, drifting snow and low visibility associated with the passage of major low pressure systems.

Geology and Soils

The rocks at Taylor Rookery are metamorphic and probably formed from ancient metamorphic sedimentary rocks. They are mapped as garnet-biotite-quartz-felspar gneiss, granite and migmatite. The metamorphic rocks are intruded by charnockite which has yielded an isotopic age of 100 million years, thus defining a minimum age for the metamorphic rocks. Numerous shear zones intersect the banded metamorphic rocks and there are recognised traces of an old erosion surface at about 60 m altitude.

Vegetation

The flora of the Taylor Rookery consists of at least ten species of lichen (Table 1) and an unknown number of terrestrial and freshwater algae. No mosses have been recorded from the Area. The flora is comparable with the twenty six species of lichen and three species of moss, 20 of which are found on nearby Chapman Ridge and 16 from Cape Bruce on the western side of Taylor Glacier. The rock types are not conducive to colonization by lichens. Most of the lichens occurring at Taylor Rookery grow on the higher outcrops at the southern end where weathering is least.

LICHENS

Pseudephebe minuscula	*Lecidea phillipsiana*
Buellia frigida	*Physcia caesia*
Caloplaca citrina	*Xanthoria elegans*
Candelariella flava	*Xanthoria mawsonii*
Rhizoplaca melanophthalma	*Lecanora expectans*

Table 1. Plants recorded from Taylor Rookery.

Birds

The breeding site is a north-facing amphitheatre formed by the tongue of the Taylor Glacier to the west and rocky hills to the east. The penguins breed mainly on a saucer shaped depression of rock and gravel to the south of the headland, and to a lesser extent on the surface of a frozen melt lake at the northern side. Both areas are level and for most of the breeding season are covered with compressed snow on which the birds huddle to incubate during winter.

First hatchlings have been observed from mid July which suggests mid May as the onset of laying. Fledglings depart the colony from mid December to mid January and leave during the day when the weather is the warmest and the katabatic wind has subsided. Adult birds and fledglings head in a N-NE direction towards a polynya about 62 km from the colony. This ice edge reduces to approximately 25 km by mid January. The polynya appears to be a permanent feature of the Mawson Coast.

The size of the adult population appears to have remained relatively stable during the counting period. Numbers of adults ranged from 2462 in 1989 to 3307 in 1990 and averaged 3019 ± 267 over the 15 years from 1988 to 2000, with a very slight downward trend. During 2001 and 2002 the number of incubating birds appears to have recovered (Figure 1).

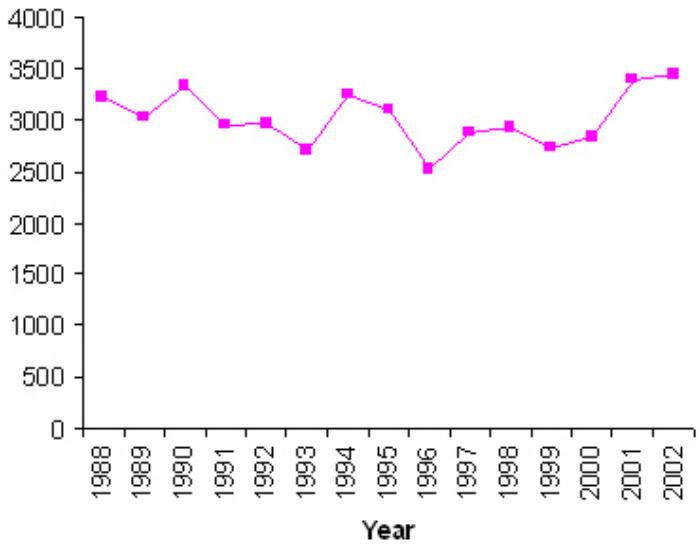


Figure 1. Numbers of breeding pairs of Emperor penguins at Taylor Glacier, 1988-2002. Vertical axis shows number of breeding pairs of birds. Horizontal axis shows bird count year.

6(ii) Special Zones within the Area

There are no special zones within the Area.

6(iii) Location of Structures within and adjacent to the Area

There are no known structures within the Area. A four-berth refuge is located in the Colbeck Archipelago, approximately 5 kilometres to the north-east of the Area (see Map B). Mawson station (67°36' S and 62°53' E) is approximately 90 kilometres to the east.

6(iv) Location of other Protected Areas in the vicinity

ASPA No. 102 Rookery Islands, Mac. Robertson Land, East Antarctica, (67°36'36.7" S and 62°32'06.7" E) is located approximately 80 kilometres east of Taylor Rookery and 10 kilometres west of Mawson station.

7. Permit Conditions

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

- it is issued only for compelling scientific reasons that cannot be served elsewhere, in particular for scientific study of the avifauna and ecosystem of the Area, or for essential management purposes consistent with plan objectives;
- the actions permitted will not jeopardise the values of the Area;
- the actions permitted are in accordance with the management plan;
- the Permit, or an authorised copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a finite period; and
- the appropriate authority should be notified of any activities or measures undertaken that were not included in the authorised Permit.

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

Whenever possible, access should be from sea ice to the east of Colbeck Archipelago, to avoid disturbance to the birds by crossing their pathways from the rookery to the sea (see Map B). Persons in the vicinity of the Area should also be aware of the penguins' pathways and take care to minimise disturbance.

Travel to the Area may be by oversnow vehicle, which is generally only possible during the period 1 May to 25 December, or by helicopter. Vehicle entry to the Area is prohibited. Oversnow vehicles used for transport to the Area are to be left outside the Area, to the east, and entry must be by foot. The approach route for vehicles is marked on Map B.

The following conditions apply to the use of helicopters:

- helicopters are to approach the Area from the east over the sea ice and, where sea ice conditions permit, land outside the Area, with access being by foot (see Map B);
- overflight of the rookery is prohibited;

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

There are no marked pedestrian routes within the Area. Unless disturbance is authorised by permit, pedestrians should keep well away from the penguins. Movement in and around the Area should avoid crossing the access routes used by the birds.

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

The penguins are particularly sensitive to disturbance during the following periods:

- from mid-May to mid-July, when they are incubating eggs; and
- from mid-July to mid-December, when adults are feeding chicks, and the chicks fledge.

Penguins are known to be present at the rookery during every month except February, when no recorded human visits to the rookery have been made. Restrictions therefore apply year-round.

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

Other activities which may be conducted in the Area:

- Compelling scientific research which cannot be undertaken elsewhere and which will not jeopardise the avifauna or the ecosystem of the Area.
- Essential management activities, including monitoring.
- Sampling, which should be the minimum required for the approved research programs.

7(iii) Installation, modification or removal of structures

Any structures erected or installed within the Area are to be specified in a Permit. Scientific markers and equipment must be secured and maintained in good condition, clearly identifying the permitting country, name of principal investigator and year of installation. All such items should be made of materials that pose minimum risk of harm to fauna and flora or of contamination of the Area.

A condition of the Permit shall be that equipment associated with the approved activity shall be removed on or before completion of the activity. Details of markers and equipment left in situ (GPS locations, description, tags, etc. and expected "use by date") should be reported to the permitting authority.

Temporary field huts if permitted, should be placed well away from the penguin colony at the point to the north-east of the Area, where a headland to the south obscures the colony from view (Map C).

7(iv) Location of field camps

A four-berth refuge is located in the Colbeck Archipelago, approximately 5 kilometres to the north-east of the Area (see Map B).

Camping is permitted within the Area and should be well away from the penguin colony, at the point to the north-east of the Area where a headland to the south obscures the colony from view (Map C).

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

- No poultry products, including dried food containing egg powder, are to be taken into the Area.
- No depots of food or other supplies are to be left within the Area beyond the season for which they are required.
- No living animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions shall be taken against accidental introductions.
- No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in a Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.
- Fuel is not to be stored in the Area unless required for essential purposes connected with the activity for which the Permit has been granted. All such fuel shall be removed at the conclusion of the permitted activity. Permanent fuel depots are not permitted.
- All material introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so as to minimise the risk of environment impacts.

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

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

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

Material may be collected or removed from the Area only in accordance with a permit and should be limited to the minimum necessary to meet scientific or management needs.

Material of human origin likely to compromise the values of the Area, and which was not brought into the Area by the Permit Holder or otherwise authorised, may be removed unless the impact of the removal is likely to be greater than leaving the material in situ: if this is the case the appropriate Authority must be notified and approval obtained.

7(viii) Disposal of waste

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

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

- Permits may be granted to enter the Area to carry out biological monitoring and Area inspection activities, which may involve the collection of samples for analysis or review; the erection or maintenance of scientific equipment and structures, and signposts; or for other protective measures.
- Any specific sites of long-term monitoring shall be appropriately marked and a GPS position obtained for lodgement with the Antarctic Data Directory System through the appropriate National Authority.
- Ornithological research shall be limited to activities that are non-invasive and non-disruptive to the breeding birds present within the Area. Surveys, including aerial photographs for the purposes of population census, shall have a high priority.
- Visitors shall take special precautions against the introduction of alien organisms to the Area. Of particular concern are pathogenic, microbial or vegetation introductions sourced from soils, flora or fauna at other Antarctic sites, including research stations, or from regions outside Antarctica. To minimise the risk of introductions, before entering the Area, visitors shall thoroughly clean footwear and any equipment to be used in the Area, particularly sampling equipment and markers.

7(x) Requirements for reports

Visit reports shall provide detailed information on all census data; locations of any new colonies or nests not previously recorded, as texts and maps; a brief summary of research findings; copies of all photographs taken of the ASPA; and comments indicating measures taken to ensure compliance with permit conditions.

The report may make recommendations relevant to the management of the Area, in particular as to whether the values for which the ASPA was designated are being adequately protected and whether management measures are effective.

The report should be submitted as soon as practicable after the visit to the ASPA has been completed, but no later than six months after the visit has occurred. A copy of the report should be made available to the permit issuing authority and the Australian Antarctic Division (if different) for the purposes of reviewing the management plan in accordance with the Antarctic Treaty system requirements. Reports should include a completed SCAR Visit Report, or such information as required by national laws. The permitting authority should maintain a record of the report for an indefinite period and shall make this available to SCAR, CCAMLR, COMNAP, and to interested parties upon request.

7(xi) Emergency provision

Exceptions to restrictions outlined in the management plan are in an emergency as specified in Article 11 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol).

8. Supporting Documentation

Budd, G.M. (1961): The biotopes of emperor penguin rookeries. In: *Emu, 61, 171-189.*

Budd, G.M. (1962): Population studies in rookeries of the Emperor Penguin Aptenodytes forsteri. *Proceedings of the Zoological Society, London 139, 365-388.*

Filson, R.B. (1966): The lichens and mosses of Mac. Robertson Land. Melbourne: Dep. Ext. Affairs, Australia (Antarc. Div.).

Horne, R.S.C. (1983): The distribution of penguin breeding colonies on the Australian Antarctic Territory, Heard Island, the McDonald Islands and Macquarie Island. *ANARE Res. Notes No. 9.*

Kirkwood, R. and Robertson, G. (1997): Seasonal change in the foraging ecology of Emperor penguins on the Mawson Coast, Antarctica. *Marine Ecology Progress Series 156: 205-223.*

Kirkwood, R. and Robertson, G. (1997): The energy assimilation efficiency of emperor penguins, Aptenodytes forsteri, fed a diet of Antarctic krill, Euphausia superba. *Physiological Zoology 70: 27-32.*

Kirkwood, R. and Robertson, G. (1997): The foraging ecology of female emperor penguins in winter. *Ecological Monographs 67: 155-176.*

Kirkwood, R. and Robertson, G. (1999): The occurrence and purpose of huddling by Emperor penguins during foraging trips. *Emu 99: 40-45.*

Longton, R. E. (1988): Biology of polar bryophytes and lichens, Cambridge University Press, Cambridge, *307-309.*

Melick, D. R., Hovenden, M. J., & Seppelt, R. D. (1994): Phytogeography of of bryophyte and lichen vegetation in the Windmill Islands, Wilkes Land, Continental Antarctica. *Vegetatio* 111: 71-87.

Øvstedal, D. O., and Lewis Smith, R. I. (2001): Lichens of Antarctica and South Georgia: A Guide to their Identification and Ecology, Cambridge University Press, Cambridge.

Robertson, G. (1990): Huddles. *Australian Geographic, 20: 76-94.*

Robertson, G. (1992): Population Size and Breeding Success of Emperor Penguins Aptenodytes forsteri at the Auster and Taylor Glacier Colonies, Mawson Coast, Antarctica. *Emu. 92: 62-71.*

Robertson, G. and Newgrain, K. (1992): Efficacy of the tritiated water and 22Na turnover methods in estimating food and energy intake by Emperor penguins Aptenodytes forsteri. *Physiological Zoology, 65: 933-951.*

Robertson, Graham G. (1994): The Foraging Ecology of Emperor Penguins (Aptenodytes Forsteri) at two Mawson Coast Colonies, Antarctica. *PhD Thesis, University of Tasmania.*

Robertson, G., Williams, R. Green, K. and Robertson, L. (1994): Diet composition of Emperor penguin chicks Aptenodytes forsteri at two Mawson Coast colonies, Antarctica. *Ibis, 136: 19-31*

Robertson, G. (1995): The foraging ecology of Emperor penguins Aptenodytes forsteri at two Mawson Coast colonies, Antarctica. *ANARE Reports 138, 139.*

Schwerdtfeger, W. (1970): The climate of the Antarctic. In: *Climates of the Polar Regions (ed. S. Orvig), pp. 253-355.*

Schwerdtfeger, W. (1984): Weather and climate of the Antarctic. In: *Climates of the Polar Regions (ed. S. Orvig), p. 261.*

Streten, N.A. (1990): A review of the climate of Mawson – a representative strong wind site in East Antarctica. *Antarctic Science 2, 79-89.*

Trail, D.S. (1970): ANARE 1961 Geological traverses on the Mac. Robertson Land and Kemp Land Coast. *Rept. Bur. Miner. Resour. Geol. Geophys. Aust. No. 135.*

Trail, D.S., McLeod, I.R., Cook, P.J., and Wallis, G.R. (1967): Geological investigations by the Australian National Antarctic Research Expeditions 1965. *Rept. Bur. Miner. Resour. Geol. Geophys. Aust. No. 118.*

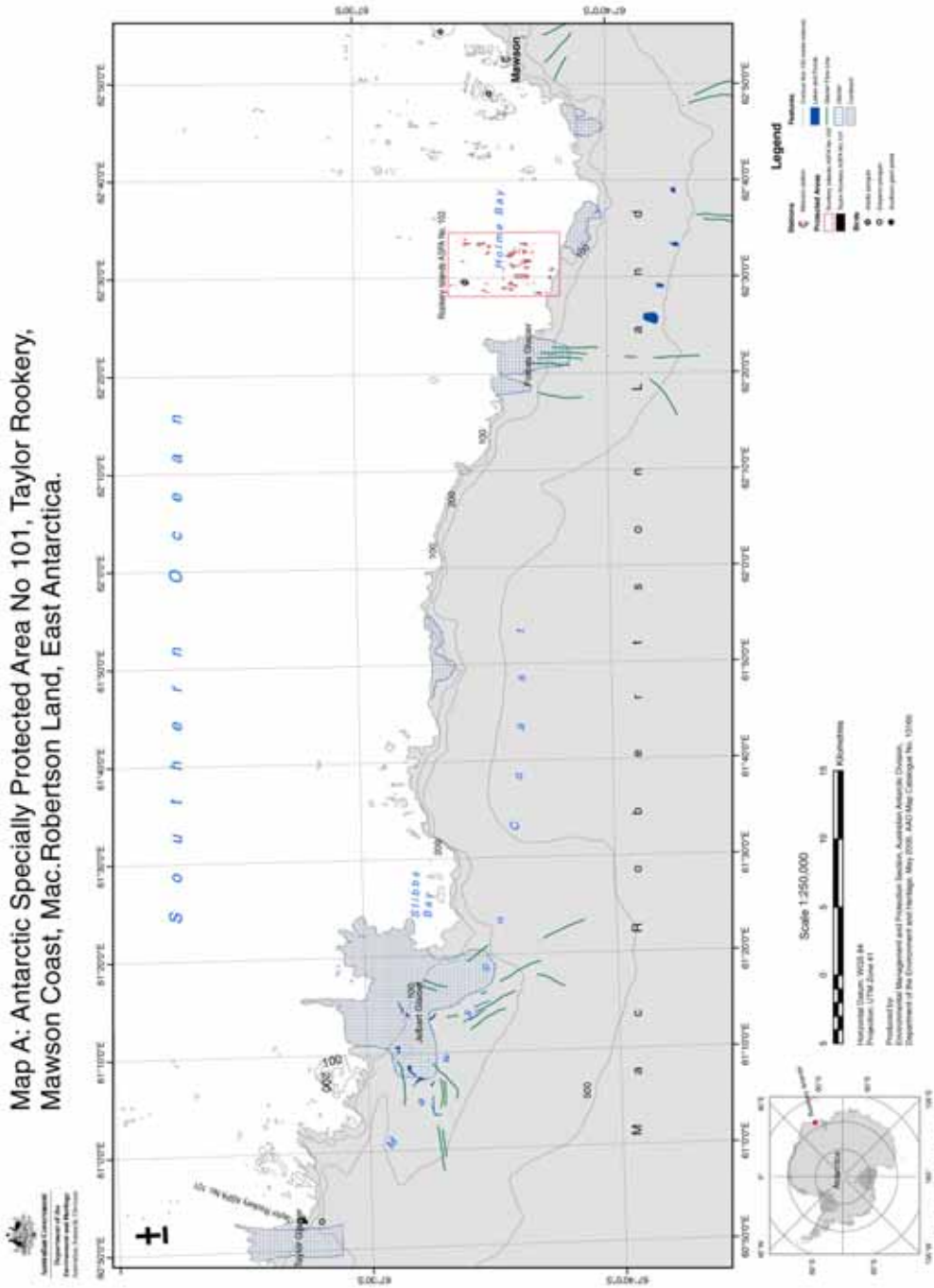
Wienecke, B., Kirkwood, R., Robertson, G. (2004): Pre-moult foraging trips and moult locations of Emperor penguins at the Mawson Coast. *Polar Biology 27: 83-91*.

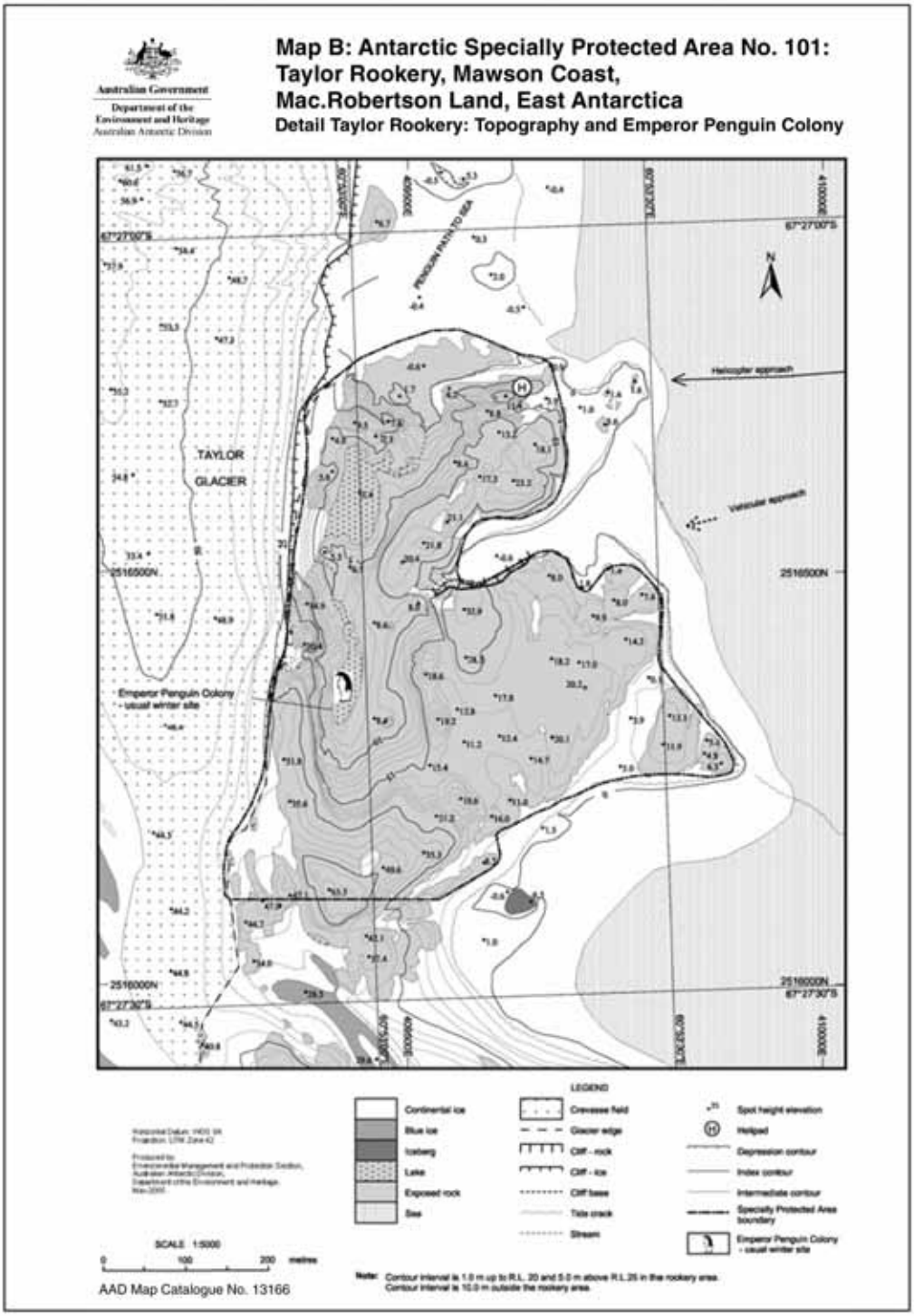
Wienecke, B.C., Robertson, G. (1997): Foraging space of emperor penguins *Aptenodytes forsteri* in Antarctic shelf waters in winter. *Marine Ecology Progress Series 159: 249-263.*

Wienecke, B. C. and Robertson, G. (1997): Foraging space of Emperor penguins Aptenodytes forsteri in Antarctic shelf waters in winter. *Marine Ecology Progress Series 159: 249-263.*

Willing, R.L. (1958): Australian discoveries of Emperor penguin rookeries in Antarctica during 1954-57. *Nature, London, 182, 1393-1394.*

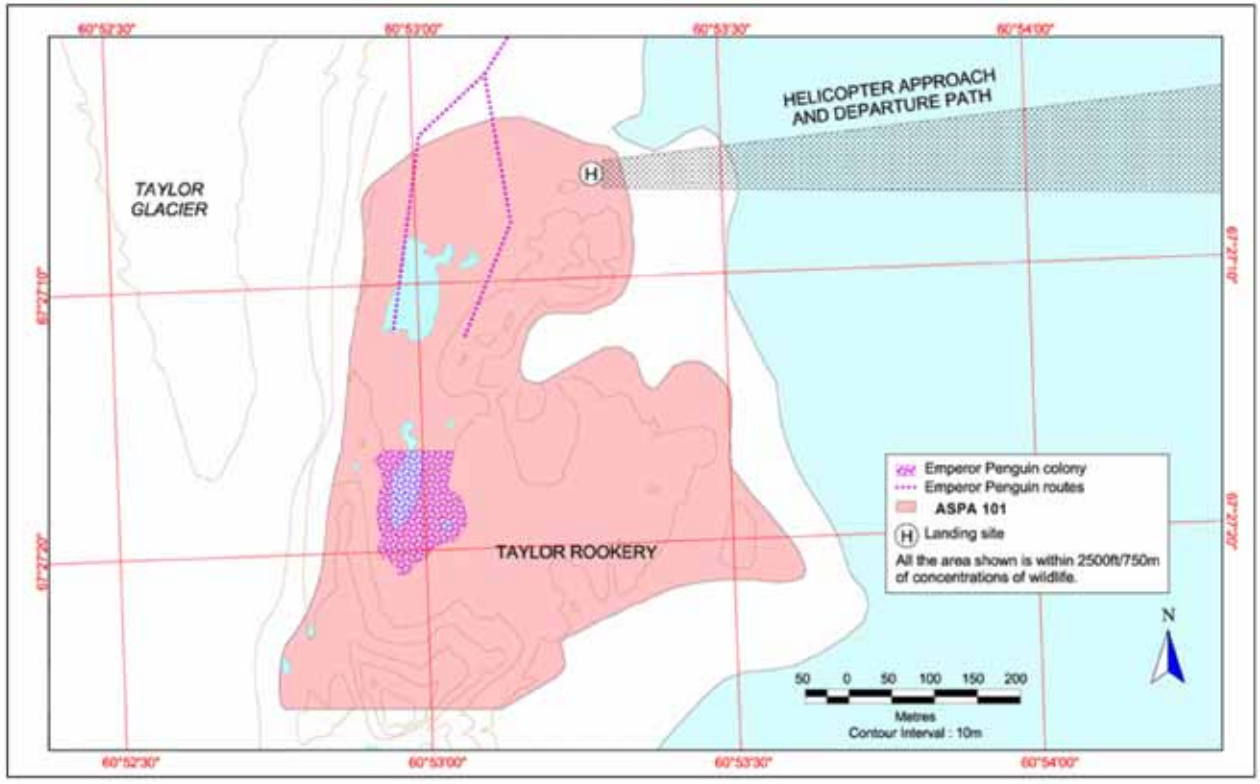
Map A: Antarctic Specially Protected Area No 101, Taylor Rookery, Mawson Coast, Mac.Robertson Land, East Antarctica.




Australian Government
Department of the Environment and Heritage
Australian Antarctic Division
Map B: Antarctic Specially Protected Area No. 101:
Taylor Rookery, Mawson Coast,
Mac.Robertson Land, East Antarctica
Detail Taylor Rookery: Topography and Emperor Penguin Colony
TAYLOR GLACIER
PENGUIN PATH TO SEA
Helicopter approach
Vehicular approach
Emperor Penguin Colony - usual winter site
67°27'00"S
67°27'30"S
2516500N
2516000N
LEGEND
Continental ice
Blue ice
Iceberg
Lake
Exposed rock
Sea
Crevasse field
Glacier edge
Cliff - rock
Cliff - ice
Cliff base
Tide crack
Stream
Spot height elevation
Helipad
Depression contour
Index contour
Intermediate contour
Specially Protected Area boundary
Emperor Penguin Colony - usual winter site
SCALE 1:5000
0 100 200 metres
AAD Map Catalogue No. 13166
Note: Contour interval is 1.0 m up to R.L. 20 and 5.0 m above R.L.25 in the rookery area.
Contour interval is 10.0 m outside the rookery area.

Map C: Antarctic Specially Protected Area No 101, Taylor Rookery, Mawson Coast, Mac.Robertson Land, East Antarctica

Helicopter Approach and Landing Site



Horizontal Datum: WGS 84
Projection: UTM Zone 41

Produced by:
Environmental Management and Protection Section, Australian Antarctic Division,
Department of the Environment and Heritage. May 2005. AAD Map Catalogue No. 13187

Management Plan for Antarctic Specially Protected Area No. 102

ROOKERY ISLANDS, HOLME BAY, MAC ROBERTSON LAND

Introduction

The Rookery Islands (67°36'36.7" S, 62°32'06.7" E, Map A) were originally designated as Specially Protected Area No. 2, in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora, through Recommendation IV-II (1966), after a proposal by Australia.

The Area was originally designated on the grounds that the Rookery Islands contain breeding colonies of all six bird species resident in the Mawson area, two of which, the southern giant petrel (*Macronectes giganteus*) and the Cape petrel (*Daption capensis*), occur nowhere else in the region, and that it is of scientific importance to safeguard this unusual assemblage of six species and to preserve a sample of the habitat.

A revised description and management plan for the Area was adopted by Recommendation XVII-2 (1992) to accord with the revised format for Area Descriptions and Management Plans of Article 5 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty, adopted under Recommendation XVI-10 (1991). In accordance with Resolution XX-5 (1996) the site was redesignated and renumbered as Antarctic Specially Protected Area (ASPA) No. 102.

This revised Management Plan reaffirms the scientific values of the original designation.

1. Description of Values to be Protected

The Rookery Islands are a group of small islands and rocks in the western part of Holme Bay, lying to the north of the Masson and David Ranges in Mac. Robertson Land, East Antarctica, at 67°36'36.7" S and 62°32'06.7" E.

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

The Rookery Islands provide a representative sample of the offshore island habitats occurring along the coast of Mac. Robertson land.

The southern giant petrel (*Macronectes giganteus*) has a world population of approximately 62,000 individuals and is inferred to have sustained a population reduction of at least 20% over the last 60 years. The species is in continued rapid decline. Giganteus Island in the Rookery Islands group is one of only four known breeding localities of southern giant petrels around the coastline of continental Antarctica. The other three continental breeding colonies are located near the Australian stations of Casey (66°13'S 110°11'E), (Frazier Islands) and Davis (68º35'S, 77º58'E) (Hawker Island), and near the French station Dumont d'Urville (66º40'S, 140º01'E) in Terre Adélie. The current population for continental Antarctica is estimated at approximately 290 pairs, comprised of 3 pairs on Giganteus

Island, 25 pairs on Hawker Island, 16 pairs at Pointe Géologie archipelago (Terre Adélie) and 248 pairs on the Frazier Islands. Southern giant petrels on the Antarctic continent comprise less than 1% of the global breeding population.

Southern giant petrels are widespread in more northerly latitudes, breeding on islands to the north-west of the Antarctic Peninsula and on islands of the Scotia Ridge. However, it is important that it should be protected at the southern limit of its breeding range.

2. Aims and Objectives

Management of the Rookery Islands aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- allow scientific research on the ecosystem and physical environment, particularly on the avifauna, provided it is for compelling reasons which cannot be served elsewhere;
- minimise the possibility of introduction of pathogens which may cause disease in bird populations within the Area;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- minimise human disturbance to southern giant petrels on Giganteus Island to assist stabilisation and recovery of the population;
- conserve Giganteus Island as a reference area for future comparative studies with other breeding populations of southern giant petrels;
- preserve the Giganteus Island, henceforth, as a highly restricted area by limiting human visitation to the island during the southern giant petrel breeding season;
- gather data on the population status of the bird species on a regular basis; and on a restricted basis for southern giant petrels; and
- allow visits for management purposes in support of the aims of the management plan.

3. Management Activities

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

- information on the location of the Area (stating special restrictions that apply) shall be displayed prominently, and a copy of this Management Plan shall be kept available, at adjacent operational research/field stations and will be provided to ships visiting the vicinity;
- markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition and removed when no longer required;
- abandoned equipment or materials shall be removed to the maximum extent possible provided doing so does not adversely impact on the values of the Area;
- the Area shall be visited as necessary, and no less than once every five years to assess whether it continues to serve the purposes for which it was designated and to ensure that management activities are adequate;
- one research visit shall be allowed to Giganteus Island in each 5 year period, to enable census and monitoring of breeding populations. These visits are to be conducted by two people, one of whom should be a bird biologist associated with an approved national program(s) or who has had previous field experience with southern giant petrels;

- clothing, particularly footwear, and field equipment shall be appropriately cleaned before entering the Area; and
- the Management Plan shall be reviewed at least every five years.

4. Period of Designation

Designation is for an indefinite period.

5. Maps

- Map A: East Antartica, Mac. Robertson Land, showing the location of the Rookery Islands Antarctic Specially Protected Area No 102, and protected areas within the region. The inset map indicates the location in relation to the Antarctic continent.

  Map specifications: Projection: UTM Zone 49; Horizontal Datum: WGS84
- Map B: East Antartica, Mac. Robertson Land, Rookery Islands Antarctic Specially Protected Area No 102. Distribution of nesting seabirds on the Rookery Islands

  Map Specifications: Projection: UTM Zone 49; Horizontal Datum: WGS84
- Map C: East Antartica, Mac. Robertson Land, Rookery Islands Antarctic Specially Protected Area No 102. Distribution of nesting seabirds on Giganteus Island.

  Map Specifications: Projection: UTM Zone 49; Horizontal Datum: WGS84

6. Description of the Area

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

The Rookery Islands are a small group of approximately 75 small islands and rocks in the south-west part of Holme Bay, Mac. Robertson Land, about 10 km to the west of the Australian station Mawson. The Area comprises the rocks and islands lying within a rectangle enclosed by following coordinates:

1	62°28’01"E	67°33’45"S
2	62°34’37"E	67°33’47"S
3	62°28’02"E	67°38’10"S
4	62°34’39"E	67°38’11"S

The general location of the Area is latitude 67°37’00.1"S, longitude 62°33’00.0"E, this is the midpoint of the area and is approximately 10 kilometres from Mawson station. There are no boundary markers delimiting the site.

Rookery Islands range in size from small rocks which barely remain above water at high tide to the larger members of the group which include Giganteus Island (approximately 400 m long, 400 m wide and 30 m high) and Rookery Island, the highest of the group, with an altitude of 62 m, and of similar area, but slightly more elongate. Raised beaches are evident on Giganteus Island.

Geology and soils

The Rookery Islands are outcrops of the Mawson charnockite, a rock type which occurs over an area of at least 2000 square kilometres along the coast of Mac. Robertson Land. The charnockites of the Rookery Islands are the fine grained variant and are comparatively poor in the mineral hypersthene but rich in garnet and biotite. The charnockites enclose abundant bands and lenses of hornfels, garnetiferous quartz and felspar-rich gneisses. There are also a number of pegmatic dykes which cut across the charnockite rocks.

Climate

Limited data exist for the meteorology of the Area. Conditions are probably similar to those of the Mawson station area where the mean monthly temperature ranges from +0.1°C in January to -18.8°C in August, with extreme temperatures ranging from +10.6°C to -36.0°C. The mean annual wind speed is 10.9 m per second with frequent prolonged periods of strong south-easterly katabatic winds from the ice cap at mean speeds over 25 m per second and gusts often exceeding 50 m per second. Mean wind speed decreases seaward with distance from the icecap, but is unlikely to be much lower at the Rookery Islands which lie quite close to the coast. Other general characteristics of the coastal Antarctic climate to which these islands are likely to be subjected are high cloudiness throughout the year, very low absolute humidity, low precipitation and frequent periods of intensified winds, drifting snow and low visibility associated with the passage of major low pressure systems.

Vegetation

No mosses or lichens have been located on any of the Rookery Islands. There are some terrestrial algae but no taxonomic identifications made. Most of the smaller islands and rocks are covered with sea spray in winter and are sometimes scoured by rafted sea ice in winter and spring. It is considered unlikely that species of moss or lichen could become established.

Inland waters

There are no freshwater bodies on the Rookery Islands.

Birds

Six species of birds breed on the Rookery Islands: Adelie penguin (*Pygoscelis adeliae)*, Cape petrel (*Dation capensis*), snow petrel (*Pagodroma nivea*), southern giant petrel (*Macronectes giganteus*), Wilson's storm petrel (*Oceanites oceanicus*) and the south polar skua (*Catharacta maccormicki*).

The giant petrels nest on Giganteus Island (Map C) but the colony is marginal and in danger of extinction. A total of 16 incubating birds were recorded in 1958 and 13 in 1967. However, only two nests were present in 1972, 4 in 1973, 2 in 1977, 1 in 1981, and 2 in 1982. There were 3 pairs in 2001. The nests of shallow mounds of stones are built on broad gravel patches on the raised beaches. The area has many old nests and several appear to be rebuilt each year but there is no evidence that they contained eggs.

Cape petrels bred on Rookery Island, a small island known as Pintado Island and located 300 m north-west of Giganteus Island, and on another small island just to the south of Pintado Island. The number of breeding pairs on each island is very small with 7 nests on Rookery Island, 12 nests on Pintado Island in 1958. No counts of nests with eggs have been made since 1958, although the numbers of adults present recorded subsequently are 69 in 1977, 48 in 1981, and 28 in 1982.

Snow petrels nest on Giganteus Island and are believed to breed on Rookery Island. The Wilson's storm petrel is frequently seen flying around the islands and is thought to breed on a number of the larger islands in the group, although no nests have been recorded.

Adelie penguins breed on 13 of the islands. The largest populations occur on Giganteus Island, where 4850 pairs were counted in December 1971, and on Rookery Island. A total of 33,000 adults were present on 10 of the islands on 17 December 1972. The number of nests was not determined.

The Cape petrel is also a rare breeding species in these islands although it is not rare in the region. Larger breeding colonies occur along the rock outcrops near Forbes Glacier 8 km to the west, and on Scullen and Murray Monoliths 100 km to the east.

6(ii) Restricted Zones within the Area

Giganteus Island is a restricted zone to afford high level of protection to southern giant petrels. Entry is restricted and may only be permitted under conditions contained elsewhere in this management plan.

6(iii) Location of Structures within the Area

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

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

Antarctic Specially Protected Area No. 101 Taylor Rookery, Mac. Robertson Land, East Antarctica, (67°26'S; 60°50'E) is located approximately 80 kilometres to the west.

7. Permit Conditions

Entry into the Area is prohibited except in accordance with a Permit issued by an appropriate national authority. Entry to Giganteus Island is not permitted at any time unless in accordance with conditions outlined below. National Antarctic Programs operating in the region shall consult with each other to ensure that the frequency of visits does not exceed that permitted in the Management Plan. Conditions for issuing a Permit to enter the Area are that:

- it is issued only for compelling scientific reasons that cannot be served elsewhere, in particular for scientific study of the avifauna and ecosystem of the Area, or for essential management purposes consistent with plan objectives such as inspection, maintenance or review;
- the actions permitted will not jeopardise the values of the Area;
- any management activities are in support of the objectives of the management plan;
- the actions permitted are in accordance with the management plan;
- the Permit, or an authorised copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period;
- the appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

Additional conditions in relation to Giganteus Island Restricted Zone:

a. Permits to enter may be issued for the non-breeding period for southern giant petrels, specifically from 1 May to 30 September.

b. During any 5 year period, only one Permit may be issued for the southern giant petrel breeding period (1 October to 30 April), for the purpose of conducting a southern giant petrel census. The Permit issuing authority is to refer to the provision under the fifth dot point of section 3 of this management plan when issuing a Permit.

c. Censuses are to be conducted from outside the southern giant petrel colony wherever practicable. In most cases there are vantage points from where the nesting birds may be counted.

d. The maximum time to be spent on Giganteus Island is 6 hours in total; however this may comprise several visits to the islands.

e. Only the two persons named in the Permit may be ashore within the Area at any time. The vehicle operator and others should remain at the shoreline.

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

Within the Area travel may be by oversnow vehicles (depending on sea ice conditions). Visitors must ensure that vehicles are taken no closer than 250 metres from concentrations of birds. Vehicles are prohibited on the islands, and must be left at the shoreline. Movement on the islands is by foot only.

Access to Giganteus Island is prohibited except for the purpose of monitoring the southern giant petrels or for activities which may be conducted without threat to their population status. As the breeding colony is close to the point of local extinction and the birds are easily disturbed, the number of persons granted entry for this purpose must be strictly limited and include an experienced ornithologist.

Persons shall not approach closer than is necessary to obtain census data or biological data from any nesting southern giant petrels, and in no case closer than 20m.

As aircraft may provide the only viable access to the islands, and as the islands are small in size, aircraft may land within 500 metres of breeding colonies except those of southern giant petrels on Giganteus Island, where landing during the southern giant petrel season is prohibited. Overflight of the islands is prohibited except where essential for scientific purposes. Such overflight is to be at an altitude of no less than 610 metres. Permission to land an aircraft may be granted for essential scientific purposes only if it can be demonstrated that disturbance will be minimal.

Aircraft may be used subject to the following conditions which apply to Giganteus Island:

- aircraft operations within 2500ft (750m) horizontally and vertically of the islands for single engine aircraft and 5000ft (1500m) horizontally and vertically for double-engine aircraft, are prohibited during the breeding season for Southern Giant Petrels (1 October to 30 April).
- aircraft (including helicopter) overflights for aerial photography within the distances specified above are allowed at intervals of 5 years, consistent with guidelines to reduce disturbance.
- No refuelling is permitted within the Area.

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

The following activities may be conducted within the Area as authorised in a Permit:

- scientific research consistent with the Management Plan for the Area that will not jeopardise the values for which the Area has been designated or the ecosystems of the Area;
- compelling management activities, including monitoring; and
- sampling, which should be the minimum required for approved research programs.

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

- Structures shall not be erected within the Area except as specified in a Permit and permanent structures or installations are prohibited.
- Small temporary refuges, hides, blinds or screens may be constructed for the purpose of scientific study of the avifauna.
- Installation (including site selection), removal, modification or maintenance of structures shall be undertaken in a manner that minimises disturbance to breeding birds.
- All scientific equipment or markers installed within the Area must be clearly identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of harm to bird populations or of contamination of the Area. Permits will require the removal of specific structures, equipment or markers before the permit expiry date.

7(iv) Location of field camps

- Camping is prohibited in the Rookery Islands ASPA except in an emergency.

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

- No poultry products, including dried food containing egg powder, are to be taken into the Area.
- No depots of food or other supplies are to be left within the Area beyond the season for which they are required.
- No living animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions shall be taken against accidental introductions.
- No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in a Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.
- Fuel is not to be stored in the Area unless required for essential purposes connected with the activity for which the Permit has been granted. Permanent fuel depots are not permitted.
- All material introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of introduction to the environment is minimized.

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

- Taking of, or harmful interference with, native flora and fauna is prohibited, except in accordance with a Permit. Where taking or harmful interference with animals is involved this should, as a minimum standard, be in accordance with the *SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica*.
- Disturbance of southern giant petrels should be avoided at all times.

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

- Material may only be collected or removed from the Area as authorised in a Permit and should be limited to the minimum necessary to meet scientific or management needs.
- Material of human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit holder or otherwise authorised, may be removed unless the impact of the removal is likely to be greater than leaving the material *in situ*. If such material is found the appropriate Authority must be notified.

7(viii) Disposal of waste

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

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

- Permits may be granted to enter the Area to carry out biological monitoring and Area inspection activities, which may involve the collection of samples for analysis or review; the erection or maintenance of scientific equipment and structures, and signposts; or for other protective measures.
- Any specific sites of long-term monitoring shall be appropriately marked and a GPS position obtained for lodgement with the Antarctic Data Directory System through the appropriate national authority.
- Ornithological research shall be limited to activities that are non-invasive and non-disruptive to the breeding seabirds present within the Area. Surveys, including aerial photographs for the purposes of population census, shall have a high priority.
- To help maintain the ecological and scientific values of the Area, visitors shall take special precautions against introductions of non-indigenous organisms. Of particular concern are pathogenic, microbial or vegetation introductions sourced from soils, flora and fauna at other Antarctic sites, including research stations, or from regions outside Antarctica. To minimise the risk of introductions, before entering the Area visitors shall thoroughly clean footwear and any equipment, particularly sampling equipment and markers to be used in the Area.
- A census of southern giant petrels on Giganteus Island should be conducted in each 5 year period. Censuses of other species may be undertaken during this visit provided no additional disturbance is caused to the southern giant petrels.
- The maximum length of time to be spent at Giganteus Island to conduct a bird census is 6 hours in total.
- Novel GPS data shall be obtained for specific sites of long-term monitoring for lodgement with the Antarctic Data Directory System through the appropriate national authority.
- On Giganteus Island, to reduce disturbance to wildlife, noise levels including verbal communication is to be kept to a minimum. The use of motor-driven tools and any other activity likely to generate noise and thereby cause disturbance to nesting birds is prohibited within the Area during the breeding period for southern giant petrels (1 October to 30 April).

7(x) Requirements for reports

Parties should ensure that the principal Permit Holder for each permit issued submits to the appropriate national authority a report on activities undertaken. Such reports should include, as appropriate, the

information identified in the Visit Report form suggested by SCAR. Parties should maintain a record of such activities and, in the Annual Exchange of Information, and should provide summary descriptions of activities conducted by persons subject to their jurisdiction, which should be in sufficient detail to allow evaluation of the effectiveness of the Management Plan.

Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be considered in any review of the Management Plan and in organising the use of the Area. A copy of the report should be forwarded to the Party responsible for development of the Management Plan (Australia) to assist in management of the Area, and the monitoring of bird populations. Visit reports should provide detailed information on census data, locations of any new colonies or nests not previously recorded, a brief summary of research findings and copies of photographs taken of the Area.

7(xi) Emergency provision

Exceptions to restrictions outlined in the management plan are in emergency as specified in Article 11 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol).

8. Supporting Documentation

Australian Antarctic Division: Environmental Code of Conduct for Australian Field Activities, *Environmental Management and Audit Unit, Australian Antarctic Division.*

Cowan, A.N. (1981): Size variation in the snow petrel. *Notornis 28: 169-188.*

Cowan, A.N. (1979): Giant Petrels at Casey. *Australian Bird Watcher 8: 66-67.*

Crohn, P.W. (1959): A contribution to the geology and glaciology of the western part of the Australian Antarctic Territory. *Bull. Bur. Miner. Resour. Geol. Geophys. Aust. No. 52.*

Croxall, J.P., Steele, W.K., McInnes, S.J., Prince, P.A. (1995): Breeding Distribution of the Snow Petrel *Pagodroma nivea*. *Marine Ornithology 23: 69-99.*

Environment Australia (2001): Recovery Plan for Albatrosses and Giant Petrels. *Prepared by Wildlife Scientific Advice, Natural Heritage Division in consultation with the Albatross and Giant Petrel Recovery Team, Canberra.*

Garnett, S.T., Crowley, G.M. (2000): The Action Plan for Australian Birds 2000. *Commonwealth of Australia, Environment Australia, Canberra*

Horne, R.S.C. (1983): The distribution of penguin breeding colonies on the Australian Antarctic Territory, Heard Island, the McDonald Island, and Macquarie Island. *ANARE Res. Notes, No. 9.*

Kizaki, K. (1972): Sequence of metamorphism and deformation in the Mawson Charnockite of East Antarctica. In Antarctic Geology and Geophysics (ed. R.J. Adie), pp. 527-530. Oslo: Universitetsforlaget,

Ingham, S.E. (1959): Banding of Giant Petrels by the Australian National Antarctic Research Expeditions, 1955-58. *Emu 59: 189-200.*

Jouventin, P., Weimerskirch, H. (1991): Changes in the population size and demography of southern seabirds: management implications. In: *Perrins, C.M., Lebreton, J.-D. and Hirons, G.J.M. Bird population studies: Relevance to conservation and management. Oxford University Press: 297-314.*

Orton, M.N. (1963): Movements of young Giant Petrels bred in Antarctica. *Emu 63: 260.*

Patterson D.L., Woehler, E.J., Croxall, J.P., Cooper, J., Poncet, S., Fraser, W.R. (in press): Breeding distribution and population status of the Northern Giant Petrel *Macronectes halli* and the Southern Giant Petrel *M. giganteus*. *Marine Ornithology*.

Sheraton, J.W. (1982): Origin of charnockitic rock of Mac. Robertson Land. In: *Antarctic Geoscience (ed. C.C. Craddock), pp. 487-489.*

Stattersfield, A.J., Capper, D.R. (2000): Threatened Birds of the World. *Birdlife International, Lynx Publications.*

Trail, D.S. (1970): ANARE 1961 Geological traverses on the Mac. Robertson and Kemp Land Coast. *Rept. Bur. Miner. Resour. Geol. Geophys. Aust. No 135.*

Trail, D.S., McLeod, I.R., Cook, P.J. & Wallis, G.R. (1967): Geological investigations by the Australian National Antarctic Research Expeditions 1965. *Rept. Bur. Miner. Resour. Geol. Geophys. Aust. No. 118.*

van Franeker, J.A., Gavrilo, M., Mehlum, F., Veit, R.R., Woehler, E.J. (1999): Distribution and Abundance of the Antarctic Petrel. *Waterbirds 22: 14-28.*

Woehler E.J., Croxall J.P. (1997): The status and trends of Antarctic and subantarctic seabirds. *Marine Ornithology 25: 43-66.*

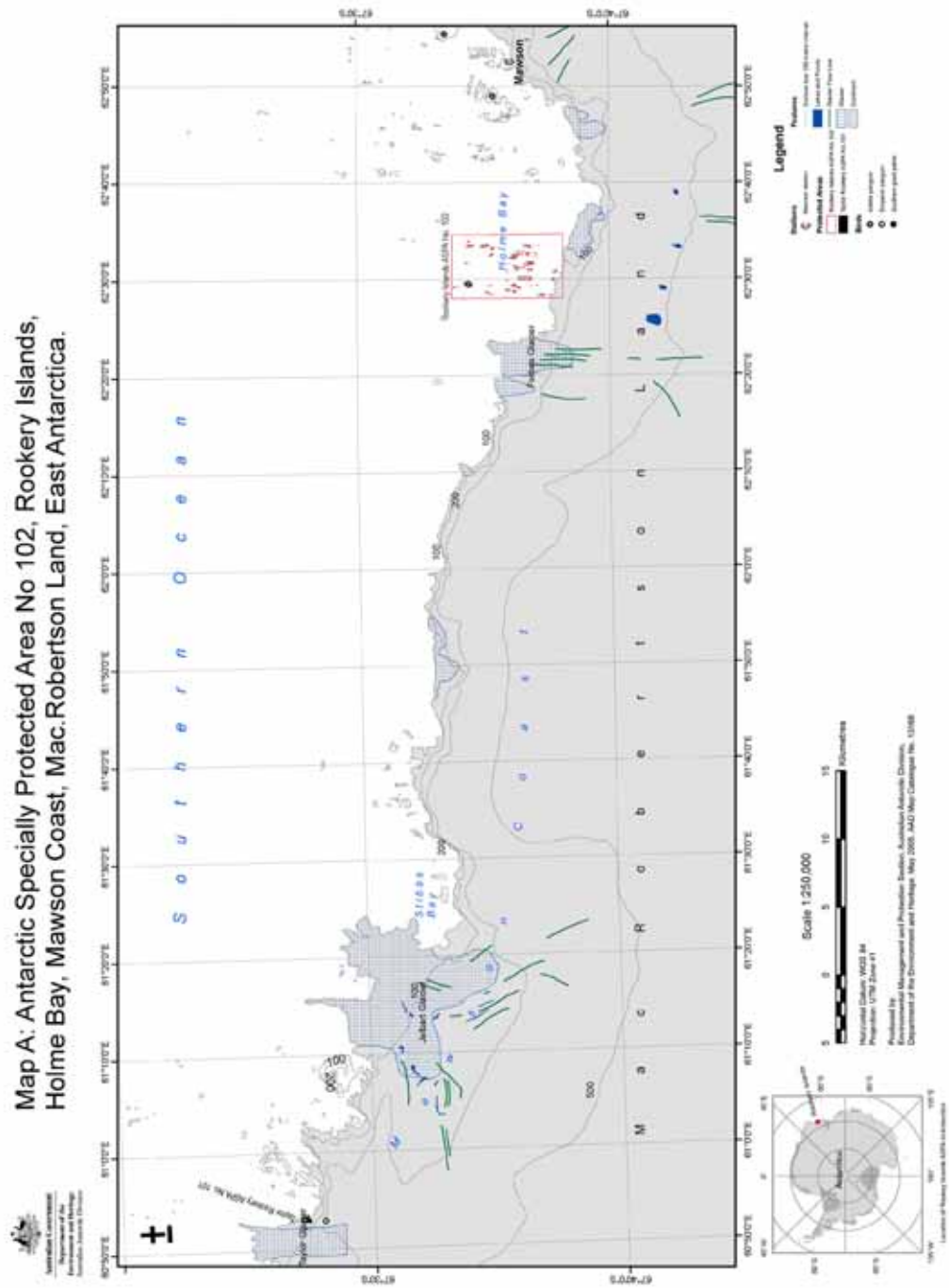
Woehler, E.J., Johnstone, G.W. (1991): Status and Conservation of the Seabirds of the Australian Antarctic Territory. In: *Croxall, J.P. (ed.) Seabird Status and Conservation: A Supplement. ICBP Technical Publication No.11: 279-308.*

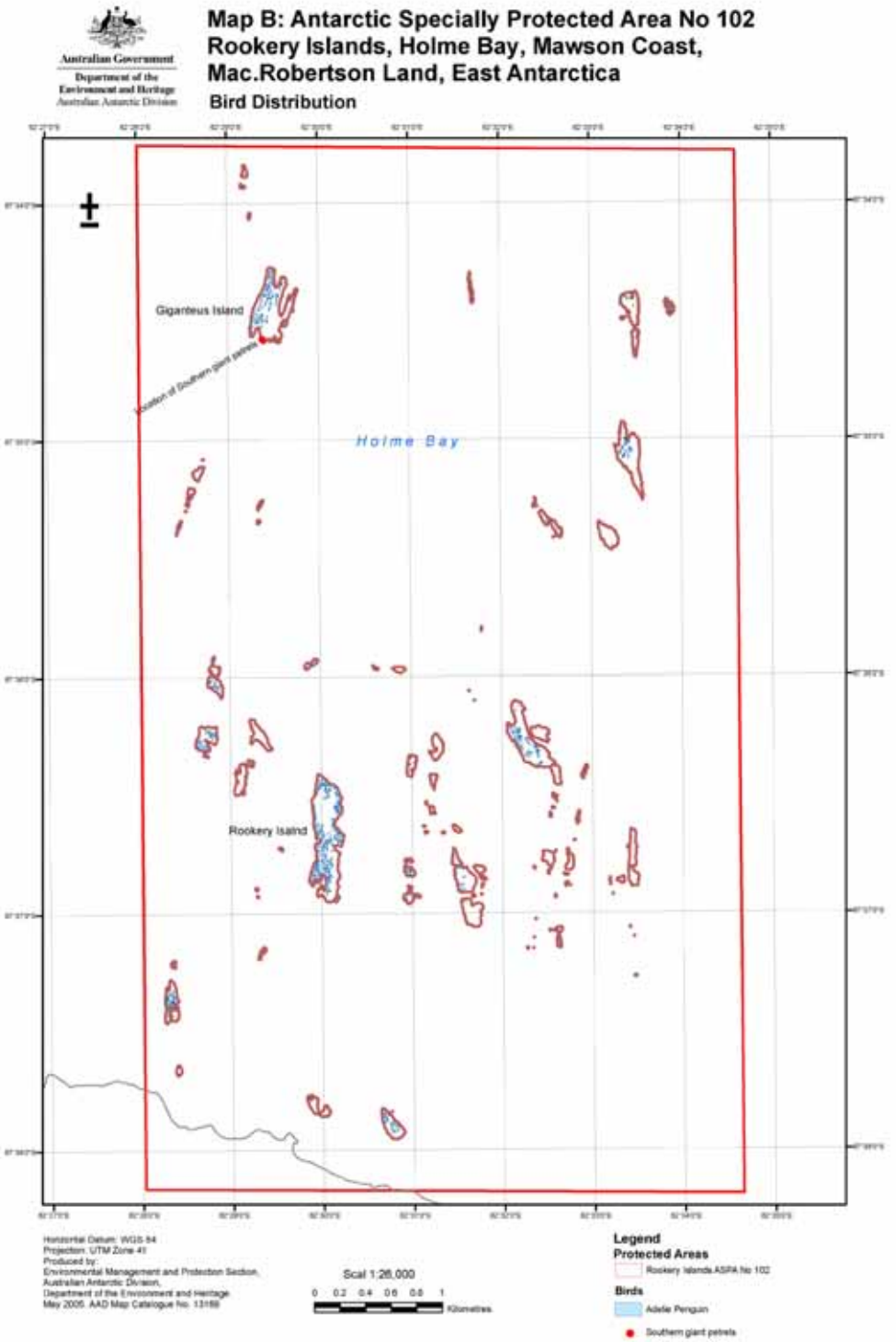
Woehler, E.J., Riddle, M.J. (2001): Long-term population trends in Southern Giant Petrels in the Southern Indian Ocean. *Poster presented at 8th SCAR Biology Symposium, Amsterdam.*

Woehler, E.J., Riddle, M.J., Ribic, C.A. (2001): Long-term population trends in Southern Giant Petrels in East Antarctica. *Proceedings 8th SCAR Biology Symposium, Amsterdam.*

Woehler, E.J., Slip, D.J., Robertson, L.M., Fullagar, P.J., Burton, H.R. (1991): The distribution, abundance and status of Adélie Penguins *Pygoscelis adeliae* at the Windmill Islands, Wilkes Land, Antarctica. *Marine Ornithology 19(1): 1-17.*

Woehler, E.J., Cooper, J., Croxall, J.P., Fraser, W.R., Kooyman, G.L., Miller, G.D., Nel, D.C., Patterson, D.L., Peter, H-U, Ribic, C.A., Salwicka, K., Trivelpiece, W.Z., Wiemerskirch, H. (2001): A Statistical Assessment of the Status and Trends of Antarctic and Subantarctic Seabirds. *SCAR/CCAMLR/NSF, 43.*

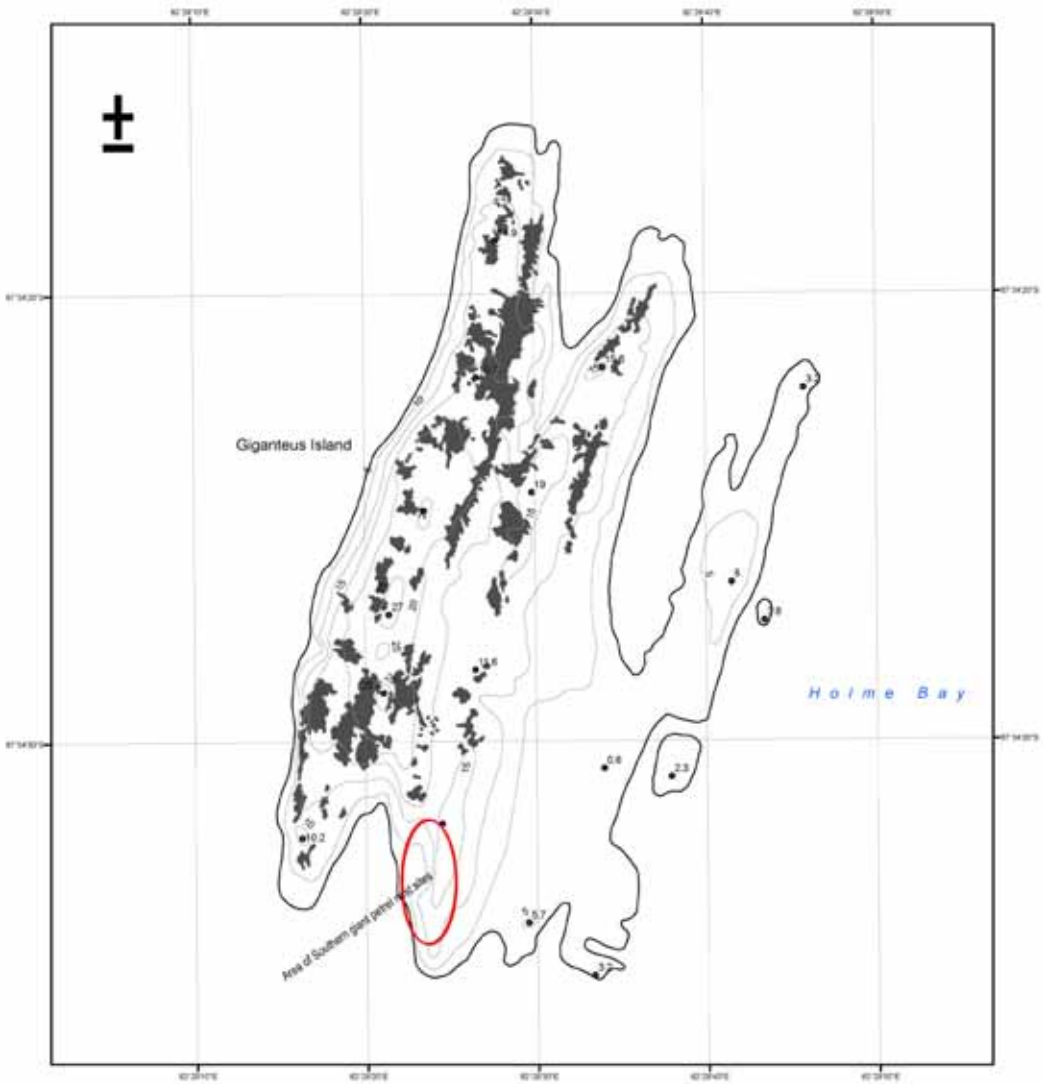

Map A: Antarctic Specially Protected Area No 102, Rookery Islands,
Holme Bay, Mawson Coast, Mac.Robertson Land, East Antarctica.
Southern Ocean
Mawson
Holme Bay
Legend
Scale 1:250,000


Map B: Antarctic Specially Protected Area No 102
Rookery Islands, Holme Bay, Mawson Coast,
Mac.Robertson Land, East Antarctica
Bird Distribution
Australian Government
Department of the Environment and Heritage
Australian Antarctic Division
Giganteus Island
Holme Bay
Rookery Island
Horizontal Datum: WGS 84
Projection: UTM Zone 41
Produced by:
Environmental Management and Protection Section,
Australian Antarctic Division,
Department of the Environment and Heritage
May 2005. AAD Map Catalogue No. 13168
Scal 1:26,000
0 0.2 0.4 0.6 0.8 1
Kilometres
Legend
Protected Areas
Rookery Islands ASPA No 102
Birds
Adelie Penguin
Southern giant petrels

Australian Government
Department of the Environment and Heritage
Australian Antarctic Division

Map C: Antarctic Specially Protected Area No. 102: Rookery Islands, Holme Bay, Mawson Coast, Mac.Robertson Land, East Antarctica

Giganteus Island: Topography and Southern Giant Petrel and Penguin Distribution.



Horizontal Datum: WGS 84
Projection: UTM Zone 41

Produced by:
Environmental Management and Protection Section,
Australian Antarctic Division,
Department of the Environment and Heritage.
May 2006. AAD Map Catalogue No. 13172

Scale 1:2,500

25 0 25 50 75 100
Metres

Legend

- Giant southern petrels
- Adelie penguin
- 5 metre contours
- Spot Height

Management Plan for Antarctic Specially Protected Area No. 103

ARDERY ISLAND AND ODBERT ISLAND, BUDD COAST

Introduction

Ardery Island and Odbert Island (66°22'S, 110°28'E and 66°22'S, 110°33'E, Map A) were originally designated as Specially Protected Area (SPA) No. 3 in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora, through Recommendation IV-III (1966), after a proposal by Australia.

The Area was designated on the grounds that the islands support several breeding species of petrel and provide an example of their habitat and that of the Antarctic Petrel (*Thalassoica antarctica*) and the Southern Fulmar (*Fulmarus glacialoides*), both of particular scientific interest.

A revised description and management plan for the Area was adopted by Recommendation XVII-2 (1992) to accord with the format for Area Descriptions and Management Plans of Article 5 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty, adopted under Recommendation XVI-10 (1991). In accordance with Resolution XX-5 (1996) the site was redesignated and renumbered as Antarctic Specially Protected Area (ASPA) No. 103.

This revised Management Plan reaffirms the scientific values of the original designation.

1. Description of Values to be Protected

Ardery Island and Odbert Island (Map B and C) support several breeding species of petrel. There is no other readily accessible place in eastern Antarctica where the four genera of fulmarine petrels (*Thalassoica antarctica, Fulmarus glacialoides, Daption capense* and *Pagodroma nivea*) breed in the same place in sufficient numbers to allow comparative study. Study of these four genera at one location is of high ecological importance in understanding and monitoring the Southern Ocean ecosystem.

It is believed that Ardery Island is unique insofar as it is the only area in the Antarctic which harbours two different subspecies of snow petrels. Studies on morphological or ecological differences between these two subspecies are not possible anywhere else. In addition both islands have breeding populations of Wilson's storm petrels (*Oceanites oceanicus*) and Antarctic skuas (*Catharacta maccormicki*) and Odbert Island supports breeding populations of Adélie penguins (*Pygoscelis adeliae*).

2. Aims and Objectives

Management of the Ardery Island and Odbert Islands ASPA aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance;
- allow scientific research on the ecosystem and physical environment, particularly on the avifauna, provided it is for compelling reasons which cannot be served elsewhere;

- minimise the possibility of introduction of pathogens which may cause disease in bird populations within the Area;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- gather data on the population status of the bird species on a regular basis;
- allow visits for management purposes in support of the aims of the management plan.

3. Management Activities

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

- signs illustrating the location and boundary of the Area, with clear statements of entry restrictions, shall be placed at appropriate locations on the boundary of the Area to help avoid inadvertent entry;
- information on the location of the Area (stating special restrictions that apply) shall be displayed prominently, and a copy of this Management Plan shall be kept available, at the adjacent Casey station and will be provided to ships visiting the vicinity;
- markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition and removed when no longer required;
- abandoned equipment or materials shall be removed to the maximum extent possible provided doing so does not adversely impact on the values of the Area;
- the Area shall be visited as necessary, and no less than once every five years, to assess whether it continues to serve the purposes for which it was designated, and to ensure that management activities are adequate; and
- the Management Plan shall be reviewed at least every five years.

4. Period of Designation

Designation is for an indefinite period.

5. Maps

- Map A: East Antarctica, Wilks Land, Location of Antarctic Specially Protected Area Ardery Island and Odbert Island, ASPA No 103. The inset map indicates the location in relation to the Antarctic continent.

  Map Specifications: Projection: Lambert Conical Conformal; Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level
- Map B: Antarctic Specially Protected Area, Ardery Island and Odbert Island, ASPA No 103, showing species distribution at Ardery Island.

  Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level
- Map C: Antarctic Specially Protected Area, Ardery Island and Odbert Island, ASPA No 103, showing species distribution at Odbert Island.

  Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level
- Map D: Antarctic Specially Protected Area, Ardery Island and Odbert Island, ASPA No 103, showing air and sea approach for Ardery Island and Odbert Island.

Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level

6. Description of the Area

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

Ardery island (66°22'S, 110°28'E) and Odbert island (66°22'S, 110°33'E) are among the southernmost of the Windmill Islands, lying in the south of Vincennes Bay, off the Budd Coast of Wilkes Land, Eastern Antarctica.

Topography

Ardery Island and Odbert Island are located 5 km and 0.6 km, respectively to the west of Robinson Ridge, south of Casey station.

Odbert Island is approximately 2.5 km long and 0.5 km wide. It has a rocky coast which rises steeply from the sea to a plateau. The highest point is 100 m altitude. The plateau is dissected by a series of valleys which run to the south from the high flat rim on the northern side. These valleys are snow covered in winter. The hill tops remain essentially ice and snow free. In some years, the island remains joined to Robinson Ridge on the mainland by sea ice.

Ardery Island is a steep ice free island approximately 1 km long and 0.5 km wide, with an east-west orientation. The highest point is 113 m above sea level.

The terrain on both islands is rugged and dissected by fissures. The cliffs are fractured and have narrow exposed ledges which in summer are occupied by nesting sea birds. On the hillsides and plateau region, the exposed rock is ice-smoothed and the valley floors are covered with moraine. The islands have undergone isostatic rebound. Moraine and solifluction debris is abundant at heights in excess of 30 metres above mean sea level but considerably less at lower altitudes.

Geology

The Windmill Islands region represent one of the eastern most outcrops of a Mesoproterozoic low-pressure granulite facies terrain that extends west to the Bunger Hills and further to the Archaean complexes in Princess Elizabeth Land, to minor exposures in the east in the Dumont d'Urville area and in Commonwealth Bay. The total outcrop areas do not exceed more than a few square kilometres. The Mesoproterozoic outcrop of the Windmill Islands and the Archaean complexes of Princess Elizabeth Land are two of the few major areas in East Antarctica that can be directly correlated with an Australian equivalent in a Gondwana reconstruction. The Mesoproterozoic facies terrain comprise a series of migmatitic metapelites and metapsammites interlayered with mafic to ultramafic and felsic sequences with rare calc-silicates, large partial melt bodies (Windmill Island supacrustals), undeformed granite, charnockite, gabbro, pegmatite, aplites and cut by easterly-trending late dolerite dykes.

Ardery Island and Odbert Island are part of the southern gradation of a metamorphic grade transition which separates the northern part of the Windmill Islands region from the southern part. The metamorphic grade ranges from amphibolite facies, sillimanite-biotite orthoclase in the north at Clark Peninsula, through biotite-cordierite-almandine granulite, to hornblende-orthopyroxene granulite at Browning Peninsula in the south.

Ardery Island and Odbert Island together with Robinson Ridge, Holl Island, Peterson Island and the Browning Peninsula are similar geologically and are composed of Ardery charnockite. Charnockites are of granitic composition but were formed under anhydrous conditions. The Ardery Charnockite of

Ardery Island and Odbert Island intrudes the Windmill metamorphics and consists of a modal assemblage of quartz + plagioclase + microline + orthopyroxene + biotite + clinopyroxene hornblende with opaques and minor zircon and apatite. An isotopic age of about 1200 million years for the Ardery charnockite has been established. The charnockite is prone to deep weathering and crumbles readily because of its mineral assemblage, whereas the metamorphic sequences of the northerly parts of the region have a much more stable mineral assemblage and crystalline structure. This difference has a significant influence on the distribution of vegetation in the Windmill Islands region with the northern rock types providing a more suitable substrate for slow growing lichens.

Soils on the islands are poorly developed and consist of little more than rock flour, moraine and eroded material. Some soils contain small amounts of organic matter derived from excreta and feathers from the seabirds.

Glaciation

The Windmill Islands region was glaciated during the Late Pleistocene. The southern region of the Windmill Islands was deglaciated by 8000 corr. yr B.P., and the northern region, including Bailey Peninsula deglaciated by 5500 corr. yr B.P. Isostatic uplift has occurred at a rate of between 0.5 and 0.6 m/100 yr, with the upper mean marine limit, featured as ice-pushed ridges, being observed at nearby Robinson Ridge at approximately 28.5 metres.

Meteorology

The climate of the Windmill Islands region is frigid-Antarctic. Conditions at Ardery Island and Odbert Island are probably similar to those of the Casey station area approximately 12 km to the north. Meteorological data for the period 1957 to 1983 from Casey station (altitude 32 m) on Bailey Peninsula show mean temperatures for the warmest and coldest months of 0.3 and -14.9°C, respectively, with extreme temperatures ranging from 9.2 to -41°C. Mean annual temperature for the period was –9.3°C.

The climate is dry with a mean annual snowfall of 195 mm year-1 (rainfall equivalent), precipitation as rain has been recorded in the summer. However, within the last decade the mean annual temperature has decreased to –9.1°C and the mean annual snowfall has increased to 230 mm year-1 (rainfall equivalent).

There is an annual average of 96 days with gale-force winds, which are predominantly easterly in direction, off the polar ice cap. Blizzards are frequent especially during winter. Snowfall is common during the winter, but the extremely strong winds scour the exposed areas. On most hill crests in the area snow gathers in the lee of rock outcrops and in depressions in the substratum. Further down the slopes snow forms deeper drifts.

Biological Features

Terrestrial

The flora of Odbert Island consists of three moss species, eleven lichen species (Table 1) and an unknown number of terrestrial and freshwater algae. The most extensive development of lichens is towards the highest elevations of the southern parts of the island in an area of ice-fractured bedrock. The algae occur in tarns, soil seepage areas and soil. Stands of Prasiola and other green algae and cyanobacteria occur below snow drifts downslope from penguin colonies towards the western part of the island.

The flora of Ardery Island comprises several species of lichen similar to those found on Odbert Island.

The only recorded invertebrates are ectoparasites of birds. Ardery Island is the type locality for the Antarctic flea *Glaciopsyllus antarcticus*, associate with the nests of Southern fulmars.

MOSSES
Bryum pseudotriquetrum (Hedw.) Gaertn., Meyer & Scherb.
Ceratodon purpureus (Hedw.) Brid.
Schistidium antarcticum (= Grimmia antarctici) (Card.) L.I.Savicz & Smirnova
LICHENS
Buellia frigida (Darb.)
Buellia soredians Filson
Buellia sp.
Caloplaca athallina Darb.
Caloplaca citrina (Hoffm.) Th. Fr.
Candelariella flava (C.W.Dodge & Baker) Castello & Nimis
*Rhizoplaca melanophthalma (*Ram.) Leuck. et Poelt
Rinodina olivaceobrunnea Dodge & Baker
Umbilicaria decussata (Vill.) Zahlbr.
Xanthoria mawsonii Dodge.
Usnea antarctica Du Rietz
ALGAE
Prasiola crispa (Lightfoot) Kützing
Prasiococcus sp.

Table 1. List of mosses, lichens and algae recorded from Odbert Island.

Lakes

Cold monomictic lakes and ponds occur throughout the Windmill Islands region in bedrock depressions and are usually ice-free during January and February. Nutrient rich lakes are found near the coast in close proximity to penguin colonies or abandoned colonies. Sterile lakes are located further inland and are fed by meltwater and local precipitation. On Ardery Island and Odbert Island there are a number of small tarns which are frozen in winter and filled with melt water in summer. Many of the tarns are ephemeral, drying out towards the end of summer. Other tarns located below snow banks are fed continuously by melt water.

Birds and Seals

Odbert island supports breeding populations of Adélie penguins (*Pygoscelis adeliae*), Cape petrels (*Daption capensis*), snow petrels (*Pagodroma nivea*), Southern fulmars (*Fulmarus glacialoides*), Wilson's storm petrels *(Oceanites oceanicus*), and south polar skuas (*Catharacta maccormicki*). Ardery island supports a similar population of the same species except for Adélie penguins. The Giant petrel *(Macronectes giganteus*) which breed on the Frazier Islands approximately 23 km to the north-west is the only species breeding in the Windmill Islands which does not breed in either Ardery Island and Odbert Island.

No seals are found on Ardery Island and Odbert Island although Weddell seals (*Leptonychotes weddellii*) are frequently observed on the sea ice around them. The main pupping area is about 3 km to the south-east between Herring Island and the Antarctic mainland. In this area disturbance of the sea ice caused by movement of the Peterson Glacier ensures open water and easy access to food. About 100 pups are born annually in the region. Elephant seals (*Mirounga leonina*) haul out a little

farther to the south on Petersen Island and on the Browning Peninsula. The numbers of these seals, which are mostly mature males, have been increasing with up to 100 seen annually. A few females have been observed.

Adélie Penguin *(Pygoscelis adeliae)*

Two large colonies of Adélie Penguins are present on Odbert Island. In 1985 an estimate of between 5,000 and 10,000 breeding pairs was made for the two colonies on the Island. Eggs start to be laid before the middle of November, the first chicks hatch around mid-December, and juveniles commence leaving the colony in early February. Although Adélie Penguins regularly come ashore on Ardery Island, none nest there.

Southern Fulmar *(Fulmarus glacialoides)*

The total population of Southern Fulmars in the Area is estimated at about 5000 breeding pairs. There are approximately 3000 occupied Southern Fulmar sites on Ardery Island, the largest colonies being located on the northern cliffs and around the eastern tip of the island. On Odbert Island most of the 2000 sites are concentrated in two large colonies on Haun Bluff and in the central north.

Southern Fulmars breed colonially on or near the cliffs and ravines. Nests were situated on small cliff ledges but also on large nearly flat terraces, some birds nest in the open, others in deep crevices or between loose rocks. First eggs appear at the beginning of December and most are laid within the next 10 days. Hatching commences in the third week of January and chicks fledge by mid-March.

Antarctic Petrel *(Thalassoica antarctica)*

On Ardery Island about 275 apparently occupied Antarctic Petrel nest sites have been located. The largest colony, on Northern Plateau, contains at least 150 sites in the main area and some 25 sites in smaller groups around. On Odbert Island 34 nests are located in a small area off the central northern cliffs. The total population has been estimated at just over 300 breeding pairs.

Most nests of Antarctic Petrels are situated on plateau-like areas or gently sloping sections of steep cliffs on the Northern Plateau, and smaller colonies around Soucek Ravine. Nests are situated very close together; isolated nesting on small ledges appears to be avoided. In late November the first Antarctic Petrels return from their pre-laying exodus and within the following week most birds have returned to lay their eggs. First hatchlings appear in the second week of January, fledging commences in late February to early March, and all chicks have left before the middle of March.

Cape Petrel *(Daption capense)*

Approximately 600 Cape Petrel occupied sites have been located on Ardery Island, mostly in small colonies on the northern cliffs. Scattered nests are present on both sides of Snowie Mountain. There are approximately 100 to 200 nesting sites on Odbert Island mostly located around the Fulmar colonies. The total population of the Cape Petrel in the Area is estimated at about 750 breeding pairs.

Cape Petrels prefer nesting sites sheltered by slightly overhanging rocks and substantial cover from the back and if possible the sides. Most nests were found in less steep parts of cliffs or along the top edges of cliffs both in colonies and small scattered groups. After returning from the pre-laying exodus, eggs start to be laid late in November, and hatching commences in the second week of January. Most chicks have fledged by the first week of March.

Snow Petrel *(Pagodroma nivea)*

The total population of Snow Petrels in the Area is estimated at over 1,100 breeding pairs. An estimated 1000 Snow petrel nesting sites were located on Ardery Island in 1990, mostly on the slopes of Snowie Mountain. Snow Petrels appear to be less abundant on Odbert Island than on Ardery with an estimate of between 100 and 1000 nesting sites. In 2003 an estimate of 752 active nests was made for Ardery Island and 824 for Odbert Island.

The Snow Petrels breed in crevices or in holes between loose rocks. Although the level of protection of nests varies considerably, these specific requirements prevent colonial nesting in many cases. Isolated nests may be found anywhere, and within colonies of other species. Suitable Snow Petrel habitat also harbours colonies of Wilson's Storm Petrels. Egg laying varies between concentrations of nests, with laying occurring within the first three weeks of December, and chicks hatching from the middle of January onwards. All are fledged in the first two weeks of March.

Wilson's Storm Petrel *(Oceanites oceanicus)*

Wilson's Storm Petrels are widely distributed, and nest in all suitable rocky areas within the Area. An estimated 1000 nesting sites have been documented for Ardery Island. The population for Odbert Island has been estimated at between 1000 and 2000 pairs, at a lower density than that of Ardery island because of the general spread of suitable rock nesting areas.

Wilson's Storm Petrels breed in deep, narrow holes. First eggs are usually observed commencing the third week of December.

South Polar Skua *(Catharacta maccormicki)*

In 1984/85, ten pairs of South Polar Skua bred on Ardery Island and possibly three more pairs held territories. A similar number was present in 1986/87, although only seven pairs produced eggs. Odbert Island probably had between 10 and 20 pairs. The distribution of South Polar Skua nests on Ardery Island reflects their dependence on petrels. Most pairs have observation points close to petrel nests, from which they can observe their food territory on the bird cliffs. On Odbert Island most nests were near the penguin rookeries.

Nests are shallow hollows in gravel, either fully in the open on flat ground or slightly protected by surrounding rocks. Territories and nest locations appear to be stable from year to year; near a nest there are usually several depressions of previous nests. Egg laying dates vary considerably, though most are concentrated around late November to early December. The first chicks are observed in the last days of December, and juveniles begin to fly by mid February.

Non-breeding bird species

Emperor Penguins (*Aptenodytes forsteri*) do not breed in the Casey area but straggling birds have been observed near Casey station and even far inland. A Chinstrap Penguin (*Pygoscelis antarctica*) was observed in January 1987 in the Adélie Penguin rookery on Whitney Point, north of Casey. Southern Giant Petrels (*Macronectes giganteus*), both adults and immatures, are regular visitors to Ardery Island. In favourable winds they fly along the bird cliffs in search of food. The species breeds on the Frazier Islands, 23 kilometres to the north-east. An emaciated juvenile Blue Petrel (*Halobaena caerulea*) arrived at Casey in March 1987. In November 1984 an adult Dominican Gull (*Larus dominicanus*) was observed in the Casey area. Groups of terns, possibly Arctic Tern (*Sterna paradisea*), have been observed in the Casey area in 1984/ 85 and in 1986/87, when a few groups of up to 100 birds were seen and heard high in the air in March.

6(ii) Restricted Zones within the Area

There are no restricted zones within the Area.

6(iii) Location of Structures within the Area

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

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

The following Protected Areas are located in the vicinity of Ardery Island and Odbert Island (see Map A):

- North-east Bailey Peninsula (66°17'S, 110°32'E) (ASPA No 135) approximately 12 km north of Ardery Island and Odbert Island;
- Clark Peninsula (66°15'S, 110°36'E) (ASPA No 136), approximately 16 km north of Ardery Island and Odbert Island;
- Frazier Islands (66°13'S 110°11'E) (ASPA No 160), approximately 23 km north-east of Ardery Island and Odbert Island.

7. Permit conditions

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

- it is issued only for compelling scientific reasons that cannot be served elsewhere, in particular for scientific study of the avifauna and ecosystem of the Area, or for essential management purposes consistent with plan objectives such as inspection, maintenance or review;
- the actions permitted will not jeopardise the values of the Area;
- any management activities are in support of the objectives of the management plan;
- the actions permitted are in accordance with the management plan;
- the Permit, or an authorised copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period; and
- the appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

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

Travel to the island should be by foot, over-snow vehicle or boat where possible. Over-snow vehicles used to visit the islands must be left at the shoreline and movement within the area should be by foot.

Defined landing sites for access by sea and helicopter to Ardery and Odbert Islands are shown on Map D. On Ardery Island the preferred boat landing site is at Robertson Landing where there are three rock anchors present to tie down a boat or other equipment. All three boat landing sites marked for Ardery Island on Map D are within 200 metres of colonies of birds, however they represent the only safe landing sites on the island and landings must be undertaken carefully so as to avoid

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

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

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

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

The following activities may be conducted within the Area as authorised in a Permit:

- compelling scientific research consistent with the Management Plan for the Area that will not jeopardise the values for which the Area has been designated or the ecosystems of the Area;
- essential management activities, including monitoring; and
- sampling, which should be the minimum required for approved research programs.

7(iii) Installation, modification or removal of structures

- No permanent structures are to be erected in the Area.
- Any structures erected or installed within the Area are to be specified in a Permit.
- Scientific markers and equipment must be secured and maintained in good condition, clearly identifying the permitting country, name of principal investigator and year of installation. All such items should be made of materials that pose minimum risk of contamination of the Area.
- A condition of the Permit shall be the removal of equipment associated with scientific research before the Permit for that research expires. Details of markers and equipment left *in situ* (GPS locations, description, tags, etc. and expected "use by date") should be reported to the permitting Authority.
- When permitted, the installation of a field hut on Ardery Island must take place before 1 November when the breeding season commences, and removal after 1 April when fledglings have departed. Installation and removal should be by over-snow transport unless sea-ice conditions prevent this.

7(iv) Location of field camps

- Camping is prohibited on Odbert Island except in emergencies.

- If required for field work, a hut may be erected on Ardery Island at the point specified on Map B. There are 8 solid rock anchors available at this location. There is a refuge hut "Robinson Ridge Hut", on the mainland, located on Robinson Ridge (66°22.4'S 110°35.2'E), approximately 800 m west of Odbert Island.

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

- No poultry products, including dried food containing egg powder, are to be taken into the Area.
- No depots of food or other supplies are to be left within the Area beyond the season for which they are required.
- No living animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions shall be taken against accidental introductions.
- No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in a Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.
- Fuel is not to be stored in the Area unless required for essential purposes connected with the activity for which the Permit has been granted. Permanent fuel depots are not permitted.
- All material introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that the risk of their introduction to the environment is minimized.

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

- Taking of or harmful interference with native flora and fauna is prohibited, except in accordance with a Permit.
- Where taking of or harmful interference with animals is involved this should, as a minimum standard, be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

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

- Material may only be collected or removed from the Area as authorised in a Permit and should be limited to the minimum necessary to meet scientific or management needs.
- Material of human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit Holder or otherwise authorised, may be removed unless the impact of the removal is likely to be greater than leaving the material *in situ*. Hif such material is found the appropriate Authority must be notified.

7(viii) Disposal of waste

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

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

- Permits may be granted to enter the Area to carry out biological monitoring and Area inspection activities, which may involve the collection of samples for analysis or review; the

erection or maintenance of scientific equipment, structures and signposts; or for other protective measures.

- Any specific sites of long-term monitoring shall be appropriately marked and a GPS position obtained for lodgement with the Antarctic Data Directory System through the appropriate National Authority.
- Ornithological research shall be limited to activities that are non-invasive and non-disruptive to the breeding seabirds present within the ASPA. Surveys, including aerial photographs for the purposes of population census, shall have a high priority.
- To help maintain the ecological and scientific values of the Area, visitors shall take special precautions against introductions. Of particular concern are pathogenic, microbial or vegetation introductions sourced from soils, flora and fauna at other Antarctic sites, including research stations, or from regions outside Antarctica. To minimise the risk of introductions, before entering the Area, visitors shall thoroughly clean footwear and any equipment, particularly sampling equipment and markers to be used in the Area.

7(x) Requirement for reports

- Parties should ensure that the principal Permit Holder for each Permit submits to the appropriate national authority a report on activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR.
- Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction, which should be in sufficient detail to allow evaluation of the effectiveness of the Plan of Management.
- Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be considered in any review of the Plan of Management and in organising the use of the Area. A copy of the report should be forwarded to the National Party responsible for development of the Management Plan (Australia) to assist in management of the Area, and monitoring of bird populations. Additionally, visit reports should provide detailed information on census data, locations of any new colonies or nests not previously recorded, a brief summary of research findings and copies of photographs taken of the Area.

7(xi) Emergency provision

Exceptions to restrictions outlined in the Management Plan are permitted in cases of emergency as specified in Article 11 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol).

8. Supporting documentation

Australian Antarctic Division (2005): Environmental Code of Conduct for Australian Field Activities, *Environmental Management and Audit Unit, Australian Antarctic Division.*

Blight, D.F. & Oliver, R.L. (1977): The metamorphic geology of the Windmill Islands, Antarctica, a preliminary account. *J. Geol. Soc. Aust, 22, 145-158.*

Blight, D.F. & Oliver, R.L. (1982): Aspects of the history of the geological history of the Windmill Islands, Antarctica. In: *Antarctic Geoscience (ed. C.C. Craddock), pp. 445-454.*

Cowan, A.N. (1979): Ornithological studies at Casey, Antarctica, 1977-1978. *Aust. Bird Watcher, 8, 69.*

Cowan, A.N. (1981): Size variation in the snow petrel. *Notornis 28: 169-188.*

Croxall, J.P., Steele, W.K., McInnes, S.J., Prince, P.A. (1995): Breeding Distribution of the Snow Petrel *Pagodroma nivea*. *Marine Ornithology 23: 69-99.*

Filson, R.B. (1974): Studies on Antarctic lichens II: Lichens from the Windmill Islands, Wilkes Land. *Muelleria, 3, 9.*

Goodwin, I.D. (1993): Holocene Deglaciation, Sea-Level Change, and the Emergence of the Windmill Islands, Budd Coast, Antarctica. *Quaternary Research 40: 70-80.*

Horne, R. (1983): The distribution of penguin breeding colonies on the Australian Antarctic Territory, Heard Island, the McDonald Islands and Macquarie Island. *ANARE Res. Notes No. 9.*

Jouventin, P., Weimerskirch, H. (1991): Changes in the population size and demography of southern seabirds: management implications. In: Perrins, C.M., Lebreton, J.-D. and Hirons, G.J.M. *Bird population studies*: *Relevance to conservation and management, 297-314.*

Keage, P. (1982): Location of Adélie penguin colonies, Windmill Islands. *Notornis, 29, 340-341.*

Luders, D.J. (1977): Behaviour of Antarctic petrels and Antarctic fulmars before laying. *Emu, 77, 208.*

McLeod, I.R. & Gregory, C.M. (1967): Geological investigations along the Antarctic coast between longitudes 108°E and 166°E. *Rept. Bur. Miner. Resour. Geol. Geophys. Aust. No. 78, pp. 30-31.*

Melick, D.R., Hovenden. M.J., Seppelt, R.D. (1994): Phytogeography of bryophyte and lichen vegetation in the Windmill Islands, Wilkes Land, Continental Antarctica. *Vegetatio 111: 71-87.*

Murray, M.D., Orton, M.N. & Penny, R.L. (1972): Recoveries of silver-grey petrels banded on Ardery Island, Windmill Islands, Antarctica. *Aust. Bird Bander, 10.*

Murray M.D., Luders D.J. (1990): Faunistic studies at the Windmill Islands, Wilkes Land, East Antarctica, 1959-80. *ANARE Research Notes 73: 1-45.*

Orton, M. R. (1963): A brief survey of the fauna of the Windmill Islands, Wilkes Land, Antarctica. *Emu, 63, 14.*

Paul, E., Stüwe, K., Teasdale, J., Worley, B. (1995): Structural and metamorphic geology of the Windmill Islands, east Antarctica: field evidence for repeated tectonothermal activity. *Australian Journal of Earth Sciences 42: 453-469.*

Phillpot, H.R. (1967): Selected surface climate data for Antarctic stations. *Commonwealth of Australia: Bureau of Meteorology.*

Robertson, R. (1961): Geology of the Windmill Islands, Antarctica. *IGY Bulletin 43: 5-8.*

Robertson , R. (1961): Preliminary report on the bedrock geology of the Windmill Islands. In: *Reports on the Geological Observations 1956-60. IEY Glaciol. Reprt. No. 4, (IEY World Data Centre 4: Glaciology). New York, American Geographical Society.*

Schwerdtfeger, W. (1970): The climate of the Antarctic. In: *Climate of Polar Regions (ed. S. Orvig), pp. 253-355.*

Schwerdtfeger, W. (1984): Weather and Climate of the Antarctic. In: *Climate of Polar Regions p.261.*

Smit, F.G.A.M. & Dunnet, G.M. (1962): A new genus and species of flea from Antarctica, (Siphonaptera: Ceratophyllidae). *Pacific Insect, 4(4), 895-903.*

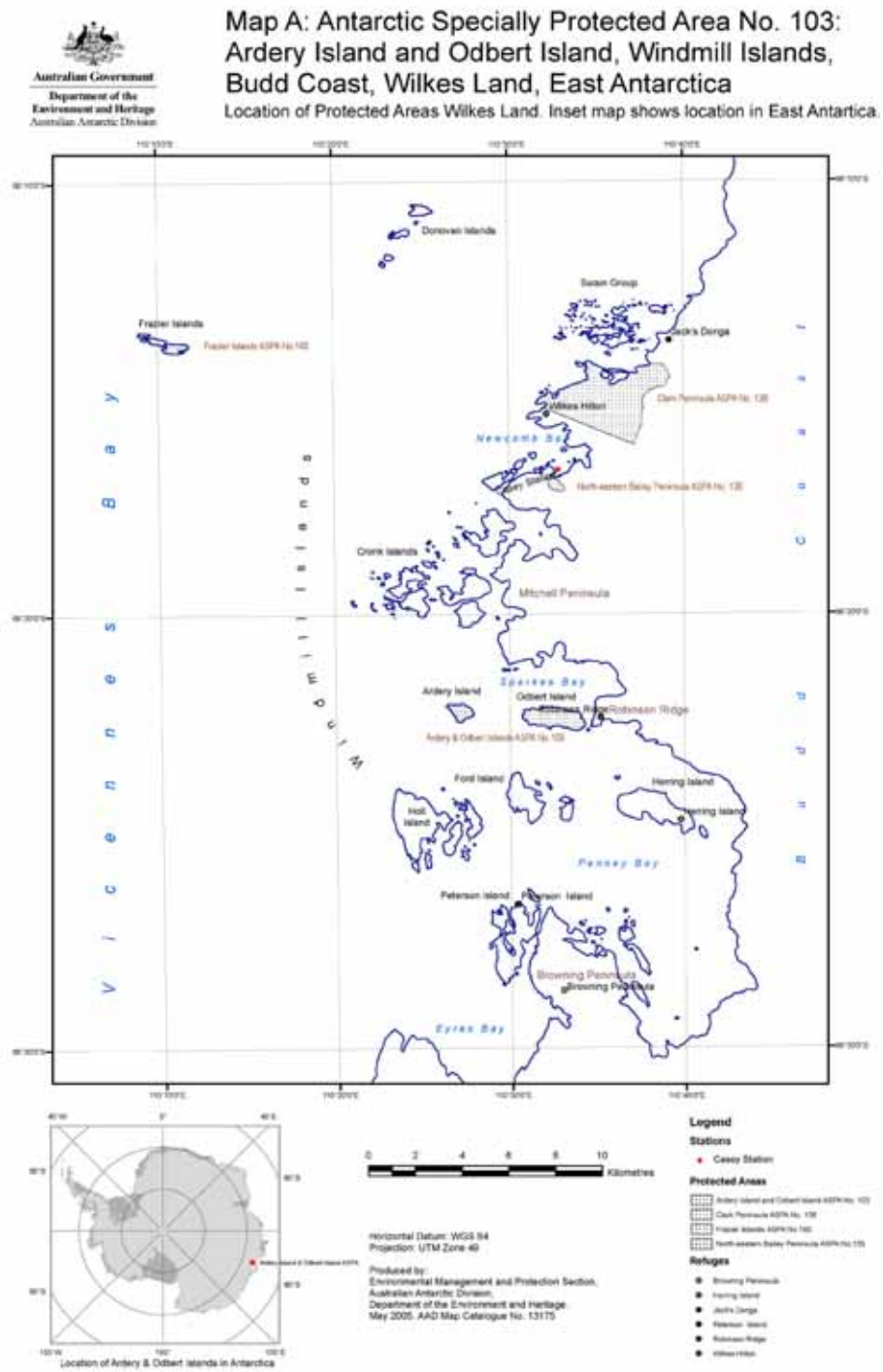
Williams, I.S., Compston W., Collerson K.D., Arriens, P.A. & Lovering J.F. (1983): A Reassessment of the age of the Windmill metamorphics, Casey area. In: *Antarctic Earth Science (ed. R.L. Oliver, P.R. James & J.B. Jago), pp. 73-76. Canberra: Australian Academy of Sciences.*

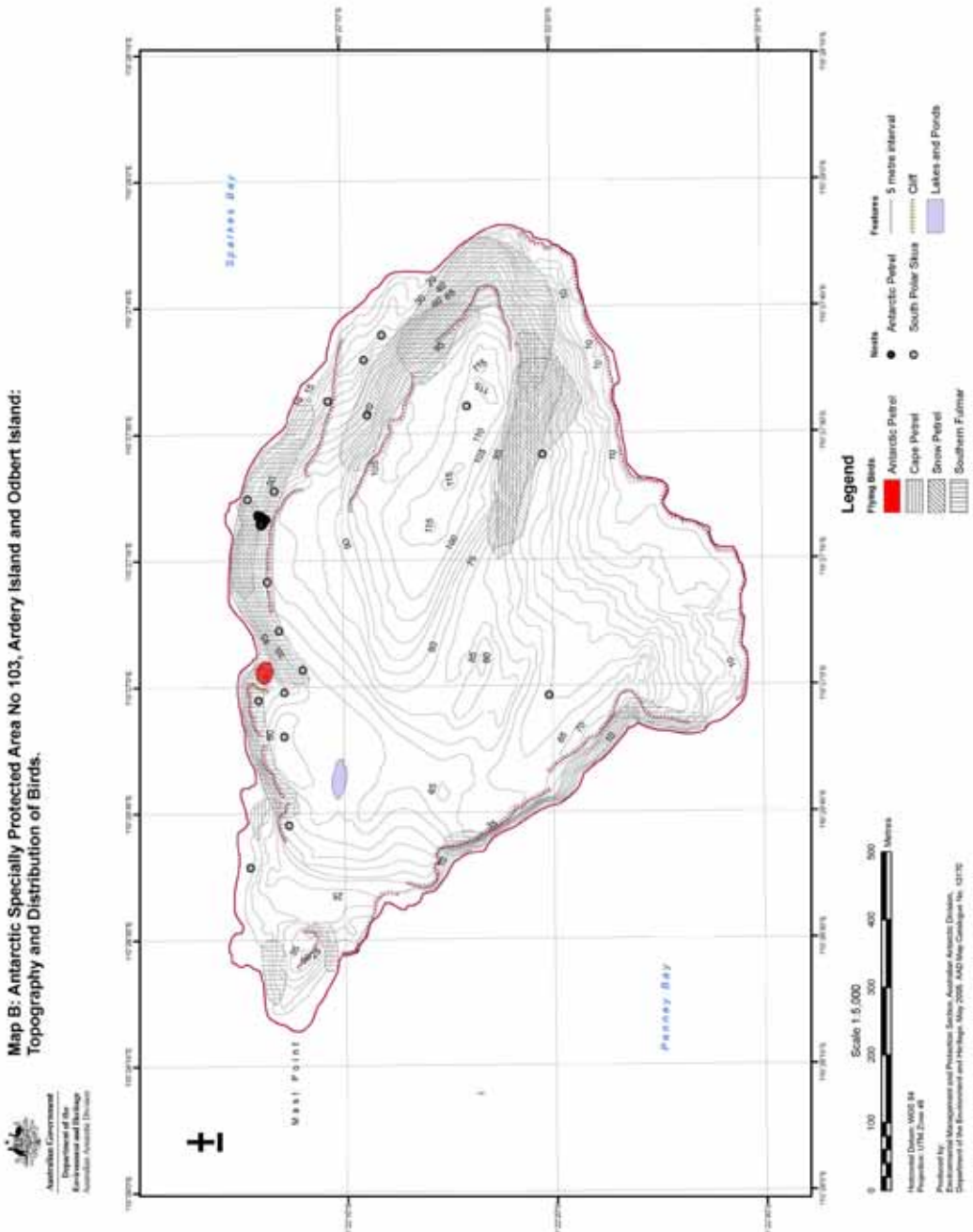
Woehler E.J., Croxall J.P. (1997): The status and trends of Antarctic and subantarctic seabirds. *Marine Ornithology* 25*: 43-66.*

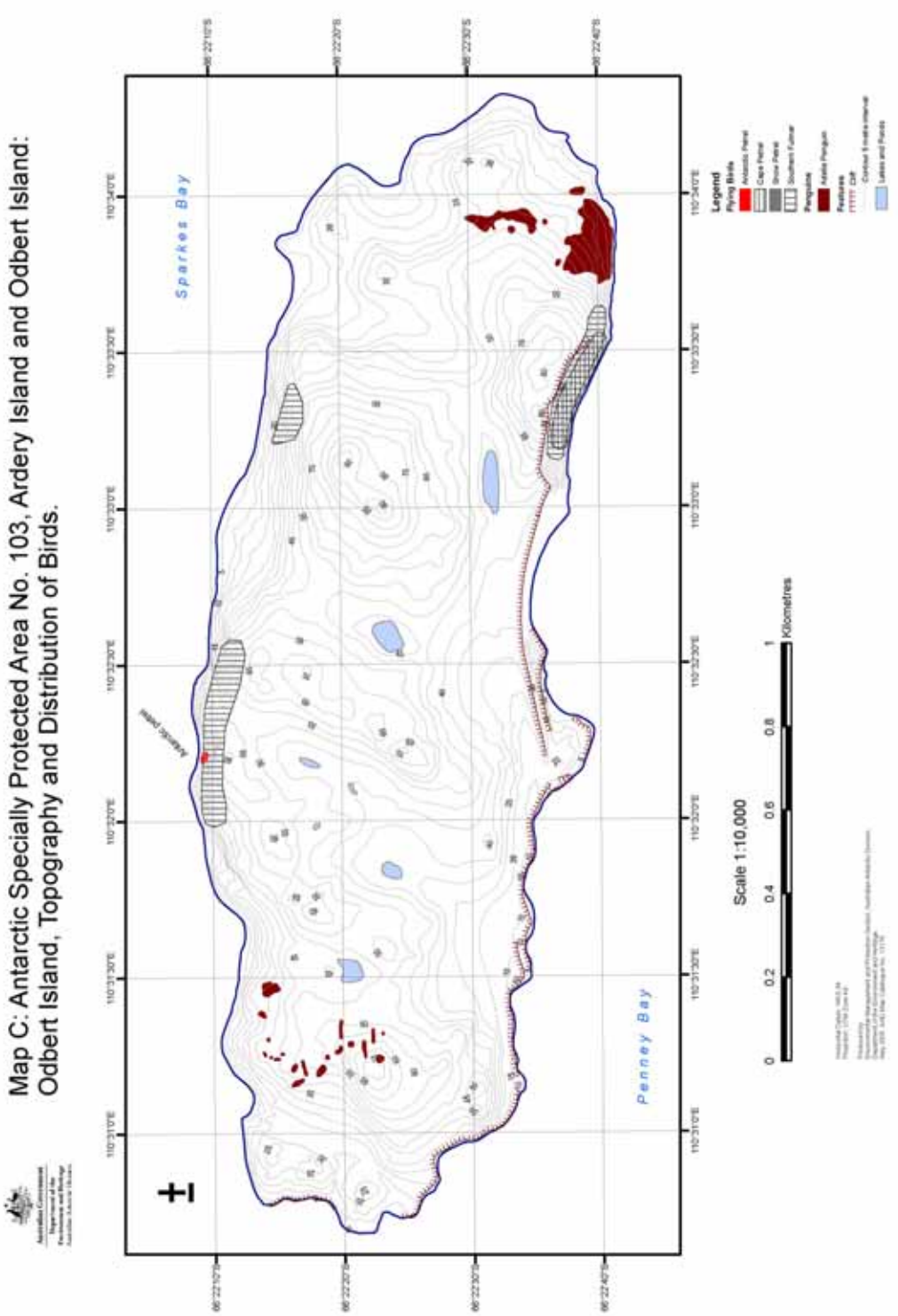
Woehler, E.J., Johnstone, G.W. (1991): Status and Conservation of the Seabirds of the Australian Antarctic Territory. In Croxall, J.P. (ed.) Seabird Status and Conservation: A Supplement. *ICBP Technical Publication No. 11: 279-308.*

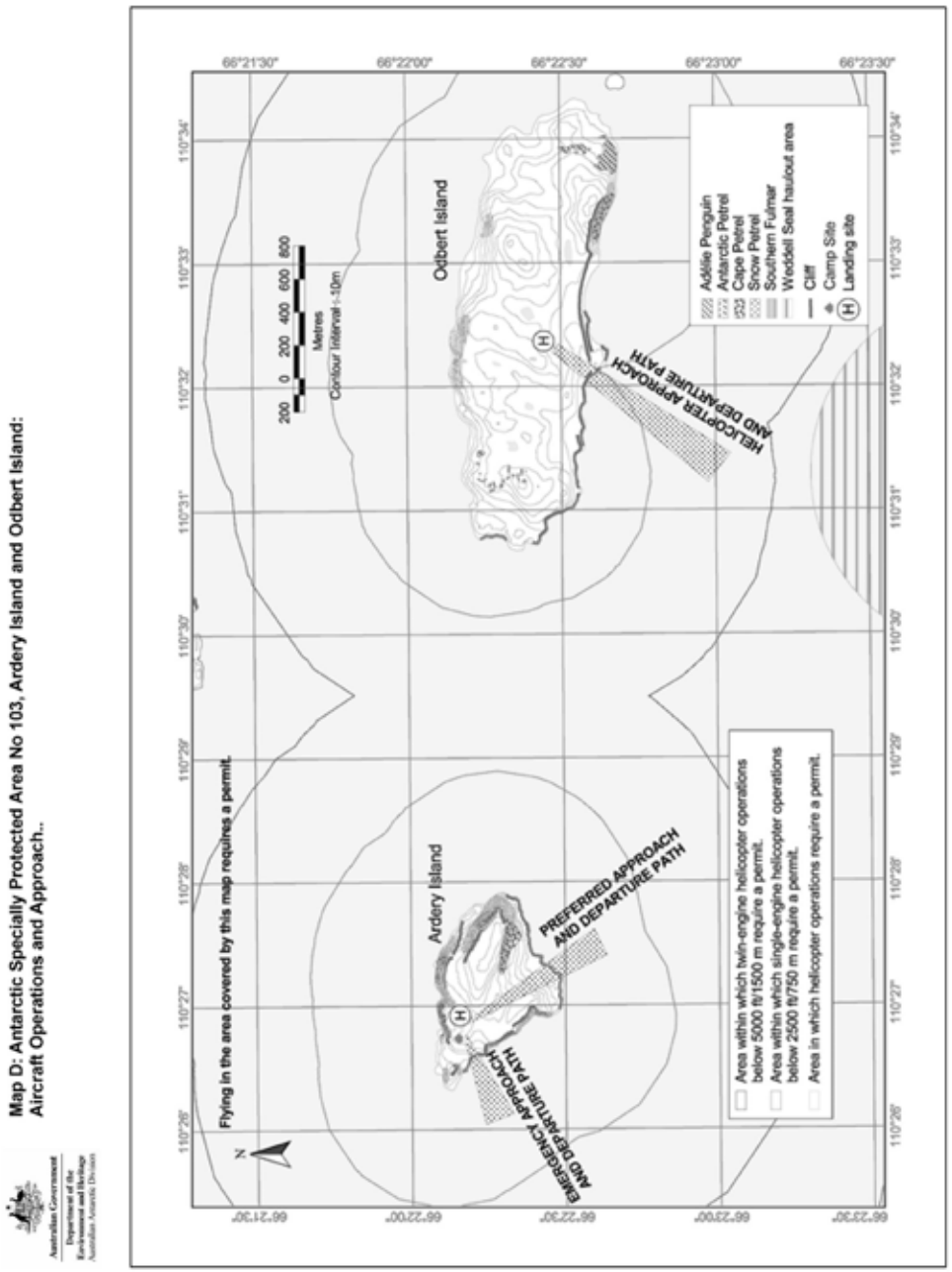
Woehler, E.J., Slip, D.J., Robertson, L.M., Fullagar, P.J., Burton, H.R. (1991): The distribution, abundance and status of Adélie Penguins *Pygoscelis adeliae* at the Windmill Islands, Wilkes Land, Antarctica. *Marine Ornithology 19(1): 1-17.*

Woehler, E.J., Cooper, J., Croxall, J.P., Fraser, W.R., Kooyman, G.L., Miller, G.D., Nel, D.C., Patterson, D.L., Peter, H-U, Ribic, C.A., Salwicka, K., Trivelpiece, W.Z., Wiemerskirch, H. (2001): A Statistical Assessment of the Status and Trends of Antarctic and Subantarctic Seabirds. *SCAR/CCAMLR/NSF, p.43.*


Australian Government
Department of the Environment and Heritage
Australian Antarctic Division
Map A: Antarctic Specially Protected Area No. 103: Ardery Island and Odbert Island, Windmill Islands, Budd Coast, Wilkes Land, East Antarctica
Location of Protected Areas Wilkes Land. Inset map shows location in East Antartica.
Donovan Islands
Swan Group
Fraser Islands
Jack's Dinga
Wilkes Hilton
Newcomb Bay
Crook Islands
Mitchell Peninsula
Spokes Bay
Ardery Island
Odbert Island
Robinson Ridge
Ford Island
Herring Island
Holl Island
Penney Bay
Peterson Island
Browning Peninsula
Eyres Bay
Vincennes Bay
Windmill Islands
Budd Coast
Location of Ardery & Odbert Islands in Antarctica
0 2 4 6 8 10 Kilometres
Horizontal Datum: WGS 84
Projection: UTM Zone 49
Produced by:
Environmental Management and Protection Section,
Australian Antarctic Division,
Department of the Environment and Heritage
May 2005. AAD Map Catalogue No. 13175
Legend
Stations
Casey Station
Protected Areas
Refuges
Browning Peninsula
Herring Island
Jack's Dinga
Peterson Island
Robinson Ridge
Wilkes Hilton


Map B: Antarctic Specially Protected Area No 103, Ardery Island and Odbert Island:
Topography and Distribution of Birds.
Australian Government
Department of the Environment and Heritage
Australian Antarctic Division
Sparkes Bay
West Point
Penney Bay
Legend
Flying Birds
Antarctic Petrel
Cape Petrel
Snow Petrel
Southern Fulmar
Nests
Antarctic Petrel
South Polar Skua
Features
5 metre interval
Cliff
Lakes and Ponds
Scale 1:5,000
100
200
300
400
500
Metres
Horizontal Datum WGS 84
Projection UTM Zone 49
Produced by:
Environmental Management and Protection Section, Australian Antarctic Division,
Department of the Environment and Heritage May 2005. AAD Map Catalogue No. 13170


Map C: Antarctic Specially Protected Area No. 103, Ardery Island and Odbert Island:
Odbert Island, Topography and Distribution of Birds.
Sparkes Bay
Penney Bay
Legend
Flying Birds
Penguins
Features
Scale 1:10,000
0
0.2
0.4
0.6
0.8
1
Kilometres


Map D: Antarctic Specially Protected Area No 103, Ardery Island and Odbert Island:
Aircraft Operations and Approach...
Australian Government
Department of the Environment and Heritage
Australian Antarctic Division
Flying in the area covered by this map requires a permit.
N
66°21'30"
66°22'00"
66°22'30"
66°23'00"
66°23'30"
110°34'
110°33'
110°32'
110°31'
110°30'
110°29'
110°28'
110°27'
110°26'
200 0 200 400 600 800
Metres
Contour interval = 10m
Ardery Island
Odbert Island
PREFERRED APPROACH AND DEPARTURE PATH
EMERGENCY APPROACH AND DEPARTURE PATH
HELICOPTER APPROACH AND DEPARTURE PATH
Adélie Penguin
Antarctic Petrel
Cape Petrel
Snow Petrel
Southern Fulmar
Weddell Seal haulout area
Cliff
Camp Site
Landing site
Area within which twin-engine helicopter operations below 5000 ft/1500 m require a permit.
Area within which single-engine helicopter operations below 2500 ft/750 m require a permit.
Area in which helicopter operations require a permit.
AAD Map Catalogue No. 13171

Management Plan for Antarctic Specially Protected Area No. 119

DAVIS VALLEY AND FORLIDAS POND, DUFEK MASSIF

1. Description of Values to be Protected

Forlidas Pond (82°27'28"S, 51°16'48"W) and several ponds along the northern ice margin of the Davis Valley (82°27'30"S, 51°05'W), in the Dufek Massif, Pensacola Mountains, were originally designated as a Specially Protected Area through Recommendation XVI-9 (1991, SPA No. 23) after a proposal by the United States of America. The Area was designated on the grounds that it "contains some of the most southerly freshwater ponds known in Antarctica containing plant life" which "should be protected as examples of unique near-pristine freshwater ecosystems and their catchments". The original Area comprised two sections approximately 500 m apart with a combined total area of around 6 km^2. It included Forlidas Pond and the meltwater ponds along the ice margin at the northern limit of the Davis Valley. The site has been rarely visited and until recently there has been little information available on the ecosystems within the Area.

This Management Plan reaffirms the original reason for designation of the Area, recognizing the ponds and their associated plant life as pristine examples of a southerly freshwater habitat. However, following a field visit made in December 2003 (Hodgson and Convey, 2004) the values identified for special protection and the boundaries for the Area have been expanded as described below.

The Davis Valley and the adjacent ice-free valleys is one of the most southerly 'dry valley' systems in Antarctica and, as of May 2005, is the most southerly protected area in Antarctica. While occupying an area of only 53 km^2, which is less than 1% of the area of the McMurdo Dry Valleys, the Area nevertheless contains the largest ice-free valley system found south of 80°S in the 90ºW-0º-90ºE half of Antarctica. Moreover, it is the only area known in this part of Antarctica where the geomorphology preserves such a detailed record of past glacial history. Some ice-free areas around the Weddell Sea region have scattered erratics and sometimes moraines, but the assemblage of drift limits, moraines, and abundant quartz-bearing erratics in the Davis Valley and associated valleys is unique and rare. The location of the Dufek Massif close to the junction between the western and the eastern Antarctic ice sheets also makes this site particularly valuable for the collection of data that can be used to constrain parameters such as the past thickness and dynamics of this sector of the Antarctic ice sheet. Such data are potentially extremely valuable for understanding the response of the Antarctic ice sheet to climate change. The Area therefore has exceptional and unique scientific value for the interpretation of past glacial events and climate in this part of Antarctica and it is important that this value is maintained.

The terrestrial ecology of the Area is impoverished but is also highly unusual, with lake and meltwater stream environments and their associated biota being rare this far south in Antarctica. As such, they provide unique opportunities for the scientific study of biological communities near the extreme limit of the occurrence of these environments. Vegetation appears to be limited to cyanobacterial mats and a very sparse occurrence of small crustose lichens. The cyanobacterial mat growth in the terrestrial locations is surprisingly extensive, and represents the best examples of this community type known this far south. The cyanobacterial community appears to survive in at least three distinct environments:

- in the permanent water bodies;
- in exposed terrestrial locations, particularly at the boundaries of sorted polygons; and
- in a series of former or seasonally dry pond beds on ice-free ground in the Davis Valley.

No arthropods or nematodes have thus far been detected in samples taken from within the Area, and the invertebrate fauna in the Area is unusually sparse. This characteristic distinguishes the Area from more northerly ice-free valley systems such as those at the Ablation Valley – Ganymede Heights (ASPA No. 147), Alexander Island, or at the McMurdo Dry Valleys (ASMA No. 2), where such communities are present. Rotifers and tardigrades have been extracted from samples taken within the Area, with the greatest numbers occurring within the former pond beds in the Davis Valley, although their diversity and abundance is also extremely limited compared with more northerly Antarctic sites (Hodgson and Convey, 2004). Further analyses of the samples obtained and identification of all taxa present are in progress, and are expected to make an important contribution to the understanding of biogeographical relationships between the different regions of Antarctica.

The Area is extremely isolated and difficult to access, and as a result has been visited by only a small number of people. Reports indicate that small field parties visited the Area in December 1957, in the 1965-66 and 1973-74 austral summer seasons, in December 1978 and in December 2003. The total number of people having visited probably numbers less than 50, with visits generally limited to a period of a few weeks or days. No structures or installations have been built within the Area, and as far as is known all equipment brought into the Area has subsequently been removed. While Hodgson and Convey (2004) reported evidence of a very limited number of human footprints and several old soil pit excavations, the Area has been exposed to few opportunities for direct human impact. The Area is believed to be one of the most pristine ice-free valley systems in Antarctica, and is therefore considered to possess outstanding potential as a reference area for microbiological studies, and it is important that these values receive long-term protection.

The site possesses outstanding wilderness and aesthetic values. The dry and weathered brown valleys of the Area are surrounded by extensive ice-fields, the margins of which fringe the valleys with dry based glacial ice of a deep blue hue. This abrupt and dramatic blue-ice margin stands in stark contrast to the stony and barren ice-free landscape of the valleys, and aesthetically is extremely striking in appearance. One of the original explorers of this area in 1957 recalled “the excitement we felt at being the first people to view and enter this magnificently scenic, pristine area.” (Behrendt, 1998: 354). Further examples of descriptions of the Area by visitors are: “[the blue ice] was towering over us ~ 150 feet – a large wave of blue. It was like being in a tidal wave that was held in suspension as we walked under it…” (Reynolds, field notes, 1978), and “I still cannot find adequate superlatives to describe the features, whether large or small, biologic or physical… [Of the] many settings that stretch the imagination…in my experience none match the northern side of the Dufek Massif, with Davis Valley as its crown jewel.” (Reynolds, pers. comm., 2000); “the most unusual [landscape] I have ever seen on any of the seven continents.” (Boyer, pers. comm., 2000); “Probably the single most remarkable environment I’ve been, either in Antarctica or elsewhere” (Convey, pers. comm., 2004). Burt (2004) described the region simply as “inspiringly awesome”.

The boundaries of the Area have been revised to include the entire ice-free region centered on the Davis Valley, including the adjacent valleys and Forlidas Pond. In general, the margins of the surrounding ice sheets form the new boundary of the Area, resulting in special protection of the region as an integrated ice-free unit that more closely approximates the valley catchments. The full catchments of the surrounding glaciers that flow into these valleys extend considerable distances from the ice-free area and do not possess many of the values related to the purpose of special protection, and are therefore excluded from the Area.

2. Aims and Objectives

Management at Forlidas Pond and Davis Valley ponds aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance and sampling in the Area;
- preserve the ecosystem as an area largely undisturbed by human activities;
- preserve the almost pristine ecosystem for its potential as a biological reference area;
- allow scientific research on the natural ecosystem and physical environment within the Area provided it is for compelling reasons which cannot be served elsewhere;
- minimize the possibility of introduction of alien plants, animals and microbes to the Area; and
- allow visits for management purposes in support of the aims of the Management Plan.

3. Management Activities

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

- Markers, signs or other structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition and removed when no longer necessary.
- Visits shall be made as necessary to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.

4. Period of Designation

Designated for an indefinite period of time.

5. Maps

- Map 1: Davis Valley and Forlidas Pond, ASPA No. 119, Dufek Massif, Pensacola Mountains: Location Map.

  Map Specifications: Projection: Lambert Conformal Conic; Standard parallels: 1st 82°S; 2nd 83°S; Central Meridian: 51°W; Latitude of Origin: 81°S; Spheroid: WGS84.

  Inset: the location of the Pensacola Mountains and Map 1 in Antarctica.
- Map 2: Davis Valley and Forlidas Pond, ASPA No. 119: Topographic map and protected area boundary.

  Map Specifications: Projection: Lambert Conformal Conic; Standard parallels: 1st 82°S; 2nd 83°S; Central Meridian: 51°W; Latitude of Origin: 81°S; Spheroid: WGS84; Vertical datum: WGS84. EGM96 MSL height differential –21 m. Contour interval 25 m. Topographic data generated by digital orthophoto and photogrammetric techniques from USGS aerial photography (TMA400, TMA908, TMA909 (1958) and TMA1498 (1964)) by the Mapping and Geographic Information Centre, British Antarctic Survey (Cziferszky *et al.* 2004). Accuracy estimates: horizontal: ±1 m; vertical: ±2 m, declining towards the south away from available ground control points. Area beyond orthophoto coverage northwest of Forlidas Pond is mapped from a georectified Terra ASTER satellite image acquired 9 November 2002. Elevation data are unavailable in this region and it is therefore of reduced spatial accuracy.

6. Description of the Area

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

General description

Davis Valley (82°28’30"S, 51°05’W) and Forlidas Pond (82°27’28"S, 51°16’48"W) are situated in the north-eastern Dufek Massif, Pensacola Mountains, part of the Transantarctic Mountain range. The Dufek Massif is situated approximately mid-way between the Support Force Glacier and the Foundation Ice Stream, two of the major glaciers draining northwards from the Polar Plateau into the Ronne and Filchner Ice Shelves. Approximately 60 km to the southeast is the Forrestal Range (also part of the Pensacola Mountains), which is separated from the Dufek Massif by the Sallee Snowfield. The Ford Ice Piedmont separates the Dufek Massif from the Ronne and Filchner Ice Shelves, about 50 km to the northwest and 70 km to the northeast respectively.

The Davis Valley is approximately five kilometers wide and seven kilometers long, with its northern extent defined by the blue ice lobes that form part of the southern margin of the Ford Ice Piedmont. It is bounded in the east by Wujek Ridge and Mount Pavlovskogo (1074 m), flanked on the outer side by a glacier draining north from the Sallee Snowfield to the Ford Ice Piedmont. The western extent of the valley is defined by Clemons Spur, Angels Peak (964 m) and Forlidas Ridge. The Edge Glacier extends approximately 4 km into the Davis Valley from the Sallee Snowfield. The southern Davis Valley is dominated by Mount Beljakova (1240 m), on the northwestern margin of the Sallee Snowfield. Several smaller valleys exist in the west of the Area, adjacent to the prominent Preslik Spur and Forlidas Ridge. Almost 75% of the region enclosed by the large surrounding ice fields is ice-free, comprising 39 km^2 of ice-free ground in total, with the remainder of the area covered by the Edge Glacier, other permanent bodies of snow / ice and several small ponds.

Forlidas Pond occupies a small unnamed dry valley separated from the Davis Valley by a tributary ridge extending north from Forlidas Ridge. Other ponds within the Area occur at various locations along the blue ice margin of the Ford Ice Piedmont, at the snout of the Edge Glacier, and at the foot of an ice lobe in the west below Angels Peak.

Boundary

The Area comprises all of the Davis Valley and the immediately adjacent ice-free valleys, including several of the valley glaciers within these catchments. The boundary predominantly follows the margins of the surrounding ice fields of the Ford Ice Piedmont and Sallee Snowfield, which enclose the ice-free area that is considered to be of outstanding value. The northern boundary extends parallel to and 500 m north from the southern margin of the Ford Ice Piedmont in the Davis Valley and in the adjacent valley containing Forlidas Pond. This is in order to provide an additional buffer of protection around the freshwater bodies of value along this glacier margin. The eastern boundary follows the ice margin east of Wujek Ridge from the Ford Ice Piedmont to Mount Pavlovskogo. The southeastern boundary extends from Mount Pavlovskogo across the Sallee Snowfield and the upper slopes of the Edge Glacier, following areas of outcrop where they exist, and again across the Sallee Snowfield to Mount Beljakova. The southern and western boundaries of the Area follow the margins of the permanent ice. The boundary encompasses a total area of 57.2 km^2.

Boundary markers have not been installed in the Area because of its remoteness, the limited opportunities for visits and the practical difficulties of maintenance. Moreover, the margins of the permanent ice fields are generally sharply defined and form a visually obvious boundary around most of the Area.

Meteorology

Several estimates of mean annual surface air temperature have been made in the Dufek Massif region from measurements taken in ice bores or crevasses at around 10 m depth. A measurement of –24.96°C was obtained 32 km due north of Forlidas Pond on the Ford Ice Piedmont in December 1957 (Pit 12, Map 1) (Aughenbaugh *et al*., 1958). Another estimate of -9°C was made in December 1978 in the Enchanted Valley (Map 1), measured in a crevasse at 8 m depth (Boyer, pers. comm., 2000).

Detailed meteorological data for the Area itself are limited to records collected over two weeks in 2003. Hodgson and Convey (2004) measured temperature and relative humidity over snow and rock surfaces at their sampling sites within the Area from 3-15 December 2003, with data recorded at 30-minute intervals. Temperatures over snow ranged from a maximum of +12.8ºC to a minimum of –14.5ºC, with an average over the period of –0.56ºC. Temperatures over rock ranged from a maximum of +16.0ºC to a minimum of –8.6ºC, with an average over the period of +0.93ºC (data over rock were only recorded from 3-11 December 2003). Relative humidity recorded over snow ranged from a maximum of 80.4% to a minimum of 10.8%, with an average over the period of 42.6%. Over rock surfaces (from 3-11 December 2003), relative humidity ranged from a maximum of 80.9% to a minimum of 5.6%, with an average over the period of 38.7%.

Data on windspeeds and directions within the Area are not available. While the ice-free area possesses many features related to wind erosion, there is some evidence to suggest that windspeeds in the locality are currently not especially high. For example, ice and snow surfaces were observed as largely free of wind-blown debris, and terrestrial cyanobacterial mats exist in-tact in exposed locations in the dry valleys (Hodgson and Convey, 2004). No precipitation data are available, although the bare ice and rock surfaces and low average relative humidity recorded by Hodgson and Convey (2004) attest to a dry environment of low precipitation.

Geology, geomorphology and Soils

The Dufek Massif is characterized by layered bands of cumulate rock belonging to the Dufek intrusion, thought to be one of the largest layered gabbro intrusions in the world (Behrendt *et al*., 1974; 1980; Ferris *et al.*, 1998). This is exposed in the Davis Valley as the light- to medium-gray, medium-grained Aughenbaugh gabbro, which is the lowest exposed part of the Middle Jurassic Dufek intrusion (Ford *et al.*, 1978).

The Davis Valley primarily consists of minimally weathered talus and glacial till of both local and exotic origin. In particular there appears to be an abundance of erratics of Dover Sandstone, one of several metasedimentary layers disrupted by the Dufek intrusion. An extensive glacial geomorphological record is evident, showing at least three major glacial and two major interglacial events (Boyer, 1979). Features include overlapping valley-glacier moraines, ice sheet moraines, lake shorelines, lateral glacial channels, ice eroded surfaces, well-developed patterned ground and erratics. The complex glacial, glaciofluvial and lacustrine history provides evidence for very old sub-polar or temperate-type valley glaciation, a former ice sheet level as much as 400 m higher than today, and the multiple advance and retreat of local alpine ice since the last major ice advance (Boyer, 1979; Hodgson and Convey, 2004). Measurements made of the geomorphology and samples taken by Hodgson and Convey (2004) will be used to establish a glacial chronology for the region and to constrain past ice sheet thickness. This research aims to establish how the chronology in this region correlates with that for other parts of Antarctica, and in particular whether it matches that for the McMurdo Dry Valleys (million-year time-scales) or whether the record is entirely Late Quaternary (millennial time-scales). As such, the site is considered to be extremely important for climate and ice-sheet history research, since it is the only site known where such an extensive and well-developed suite of geomorphological features is present in this part of Antarctica and this far south.

Soils are not well-developed in the Area and generally lack a significant organic component. Parker *et al.* (1982) collected a soil that was light brown in color, resulting from gravel weathering predominantly to muscovite. The soil comprised sand (81%) with silt (14%) and clay (5%), a composition different from other sites in the Pensacola Mountains where the clay proportions of six samples ranges from 0.4% to 1.6%. The soil sample from the Davis Valley had a pH of 6.4 (Parker, *et al*., 1982).

Lakes, ponds and streams

Forlidas Pond is a perennially frozen, shallow, round lake that was estimated to be approximately 100 m in diameter in 1957 (Behrendt, 1998). In December 2003 the lake was measured by Hodgson and Convey (2004) as 90.3 m in diameter from shoreline to shoreline on a transect azimuth of 306º (magnetic). At this time it was frozen almost completely to its base, with a thin layer of hypersaline slush at the lake bottom, and a freshwater meltwater moat that was partly ice free and partly covered by 10-15 cm of ice (Hodgson and Convey, 2004). Depth was measured as between 1.63 to 1.83 m, and average conductivity and temperature was 142.02 mS cm-1 and -7.67ºC respectively. The salinity of the bottom-water in Forlidas Pond is thus around four times greater than seawater. Hodgson and Convey (2004) data report a remnant pro-glacial lake near the margin of the Ford Ice Piedmont, 900 m from Forlidas Pond. Their data also show evidence of a series of former shorelines up to 144 m from and 17 m higher than the present level of Forlidas Pond. Boyer (pers. comm., 2000) reported that a second pond was visible in this valley in 1978 from the vantage of Forlidas Ridge, which probably refers to an ephemeral meltwater pond that occurs where the valley meets the Ford Ice Piedmont.

A series of small meltwater ponds occurs along the blue-ice margin of the northern Davis Valley. Two were observed at 82º 27.4'S, 50º 58'W and 82º 27.5'S, 51º 02'W in 1978, although their exact size, depth and other physical characteristics are unknown (Boyer, pers. comm. 2000). Two further ponds were described and mapped in this vicinity in December 2003, located at 82º 27.5'S, 51º 05.5'W and 82º 27.55' S, 51º 07' W (Map 2) (Hodgson and Convey, 2004). A pro-glacial pond was also observed in 1978 at the margin of the ice sheet in the west of the Area below Angels Peak (Map 1: 82º29.6'S, 51º14'W), although its physical characteristics are unknown (Boyer, pers. comm., 2000). The pro-glacial lake at the snout of the Edge Glacier is the largest within the Area, but it differs from the others in that, apart from at the margins where moats form seasonally, it is permanently frozen to the bottom. Cyanobacterial mat development in this lake is therefore limited to the perimeter and adjacent shoreline.

Little information exists on streams within the Area. Dry stream channels and water erosion features are evident within the ice-free area, although only small glacial melt streams on the Edge Glacier have thus far been reported as flowing in December (Hodgson and Convey, 2004). The apparent lack of melt streams may be because all visits to date have been made in the month of December, possibly before streams become more active. The presence of sizeable lake moats, the temperatures recorded by Hodgson and Convey (2004), as well as the biological and the geomorphological evidence, suggest that it is probable that at least some streams become active later in the season from melting snow, although perhaps not on an annual basis.

Biology

Visible biota is extremely limited within the Area, and vegetation appears to be restricted to cyanobacterial mats, found both in lakes and in patches on the surface of ice-free ground, and a very sparse occurrence of small crustose lichens. Previous anecdotal reports of the possible occurrence of mosses within the Area could not be substantiated by Hodgson and Convey (2004), and it is probable that the rich cyanobacterial mat growth was earlier mistaken for bryophytes by non-specialists. Neuburg *et al.* (1959) observed yellow and black lichens growing sparsely in sheltered places in the Davis Valley, while Hodgson and Convey (2004) observed several lichen forms growing deep within the crevices of boulders, although species observed have not yet been identified.

The cyanobacterial community appears to survive in at least three distinct environments:

a. in the permanent water bodies, particularly at the bottom and moat of Forlidas Pond and at the bottom and edges of the shallow ponds near the northern ice margin in the Davis Valley, which are extensively covered by a red-brown cyanobacterial mat. Cyanobacterial mat growth is also evident in the moat and seasonally wetted perimeter of the proglacial lake at the snout of the Edge Glacier;

b. in exposed terrestrial locations, particularly at the edge of larger rocks forming the boundary of sorted polygons, where a foliose mid-brown form has developed to depths of at least 10-15 cm;

c. in a series of former dry pond beds in the Davis Valley, which have extensive areas of almost continuous cyanobacterial mat on the former pool floors (two of up to c. 50 m in diameter). These depressions tend to accumulate winter snow which later ablates, providing a protected and moist environment where the cyanobacterial community can grow in relatively greater abundance than elsewhere.

Of the cyanobacterial community growing in permanent water bodies, Neuburg *et al.* (1959) identified cyanobacteria growing on the bottom of Forlidas Pond as *Phormidium incrustatum* and *P. retzii*. Hodgson and Convey (2004) characterized the mat at Forlidas Pond as red-brown in color, and noted that sheets of mat regularly become detached from the bottom and gradually move up through the ice, both here and at other ponds. Sometimes meltwater forms around the fragments within the ice as they move upwards, also carrying faunal (tardigrade, rotifer) communities with them. The aquatic cyanobacterial mats in the permanent ponds were actively photosynthesising, as evidenced by gas bubbles trapped against the lower ice surfaces. On reaching the surface, mat material is blown into moats or onto the local shoreline, or further afield. Cyanobacterial mats have formed and survive on the shoreline above the lake ice level, and may become flooded as lake water levels vary over the season and meltwater seeps into the ponds. Fossil examples of this type of mat were also found buried under boulders and flat stones between the present and previous (higher) shorelines of several of the ponds (Hodgson and Convey, 2004).

The second form of cyanobacterial community was particularly well-developed at a proglacial lake bed and in the mid-valley floor in the valley containing Forlidas Pond, and in Davis Valley near a large snow gully (path of the ephemeral meltwater stream) descending into the lake at the snout of the Edge Glacier (Hodgson and Convey, 2004). Nearly all of these mats observed were dry, although those near to melting snow were damp and lower thalli were often deep green in color. Sporadic snow melt was considered the most likely main source of water for these mats, at least in Forlidas Valley.

The third growth form of cyanobacterial mat occurs in the Davis Valley in a series of at least four former or dry pond beds between the Ford Ice Piedmont margin and the most recent retreat moraine crossing the valley, and a further pond bed is present on top of a large moraine on the eastern side of the valley. Extensive areas of dried cyanobacterial mat occur on the former pool beds, with two being almost continuous and of up to c. 50 m in diameter. The growth form also occurs in many of the adjacent small gullies between polygons or other cryoturbation features, which often have the appearance of temporary drainage features. Extractions from samples taken from within these areas were found to yield the greatest numbers of rotifers and tardigrades of any taken within the Area, showing these areas to be biologically productive, which necessitates a source of liquid water. In December 2003 very little snow was evident on the valley floor, prompting Hodgson and Convey (2004) to reason that the source of moisture may be from a considerable increase in melt later in the season flowing off the local ice sheet in the upper valley, or from local ice-cored moraines. Although this process was not occurring during their visit, footprints and shallow soil survey pits remaining from one of the previous parties (i.e. 25-46 years old) indicated that some ground was moist or

waterlogged at the time of the earlier visit. Seasonal inundation by liquid water would explain the extensiveness and integrity of this cyanobacterial community, and its apparent resilience to the potential ravages of polar winds, as well as the relative abundance of invertebrates extracted from samples taken from within these areas.

The invertebrate fauna within the Area is impoverished, with both the diversity and abundance of organisms being extremely limited compared to more northerly Antarctic sites (Hodgson and Convey, 2004). The invertebrate communities consist of rotifers and tardigrades, with a complete absence of nematodes or arthropods from samples taken, even from the most biologically productive sites within the Area. Extractions generated predominantly rotifers, with more limited number of tardigrades, and numbers for both were very low in comparison with similar extractions from other Antarctic locations. Surprisingly, the most productive sites for these organisms were not the aquatic environments of the permanent lakes, but the former pond beds in the Davis Valley as noted above. Research on the microbial biology of the Area is continuing, with samples collected being examined by a team of microbiologists, protozoologists and molecular biologists at the British Antarctic Survey (Hodgson and Convey, 2004). These studies are expected to provide an integrated overview of the microbial ecology of this site near the extreme limit of terrestrial habitats in the world.

Viable yeast species have been recorded in the soil, along with the algae *Oscillatoria* sp., *Trebouxia* sp. and *Heterococcus* sp. (Parker *et al.*, 1982). Chasmoendolithic microorganisms have been recorded in rocks in the Dufek Massif (Friedmann, 1977), although Hodgson and Convey (2004) found no evidence of their presence within the Area and noted that rock-types most favorable for the occurrence of endolithic organisms are not widespread.

Human activities and impact

There have been few visits to the Area and human impacts are believed to be minimal (Table 1). Because of its remoteness and the infrequency of visits, it is one of the few ice-free areas of Antarctica where the compiled record of past human activity at the site is almost complete. The almost pristine condition of the environment contributes to the extremely high value of the Area and is an important reason for its special protection.

The key characteristics of visits recorded to the Area are summarized in Table 1, which should be updated as required (see Section 7(x)). Past camps have generally been on the ice sheet outside of the Area. Previous parties removed all wastes from the Area, with the possible exception of small quantities of human wastes. In 2003 all wastes including all human wastes were removed, both from within the Area and from the party's adjacent campsite on the Ford Ice Piedmont (Map 2). Hodgson and Convey (2004) noted that in December 2003 the evidence of previous visits was limited to a number of footprints and several shallow soil excavations in the Davis Valley.

Table 1. Known visits to the Davis Valley and adjacent ice-free valleys within the Area.

Party	No. pers	Org	Purpose	Dates	Duration (days)	Locations visited	Camp	Transport
Aughenbaugh Behrendt Neuburg Thiel Walker	5	IGY (US)	Geology Geophysics	Dec 1957	?	FIP, DV, FP, FR	FIP west of FR	Sno-Cat traverse to FIP, thence on foot
Ford ?	?	USGS	Geology	Dec 1965 – Jan 1966	?	?	?	Numerous helicopter landings in Dufek Massif
Ford ?	?	USGS	Geology	Summer 1973-74	?	?	?	?
Ford ?	?	USGS	Geology	Summer 1976-77	?	?	?	?
Russian ?	?	?	Geology?	Summer 1976-77	?	?	?	?
Boyer Reynolds	2	USGS	Geology	12 Dec 1978	2	FIP, DV	EV	Toboggan from EV to ice margin, thence on foot
Ford Boyer Reynolds Carl?	4	USGS	Geology	14 Dec 1978	4	FIP, DV, FR, AP	EV	Toboggan from EV to ice margin, thence on foot
Hodgson Convey Burt	3	BAS (UK)	Biology Liminology Glacial geo-morphology	3-15 Dec 2003	13	FIP, DV, FP, FR, AP	FIP 1.9km north of FP	Twin Otter to FIP, thence on foot.
TOTALS	**?**				**?**			

Key:

FIP – Ford Ice Piedmont	DV – Davis Valley	FP – Forlidas Pond	FR – Forlidas Ridge	AP – Angels Peak
CS – Clemons Spur	PS – Preslik Spur	MB – Mt Beljakova	MP – Mt Pavlovskogo	EV – Enchanted Valley

6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

No structures, installations or caches are known to exist within the Area.

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

There are no other protected areas nearby, with the nearest being Ablation Valley – Ganymede Heights (ASPA No. 147), Alexander Island, which is approximately 1300 km to the north-west.

7. Permit conditions

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

- it is issued only for compelling scientific reasons that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection or review;
- the actions permitted will not jeopardize the physical, ecological, scientific or aesthetic and wilderness values of the Area, nor the pristine value of the Area and its potential as a largely undisturbed biological reference site;
- any management activities are in support of the objectives of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or a copy, shall be carried within the Area;
- a visit report shall be supplied to the authority, or authorities, named in the Permit;
- permits shall be issued for a stated period.

7(i) Access to and movement within the Area

- Landing of aircraft is prohibited within the Area and overflight below 100 m above ground level is prohibited.
- Vehicles are prohibited within the Area.
- Access into and movement within the Area shall be on foot.
- No special restrictions apply to the means of access, or air or land routes used, to move to and from the icefields surrounding the boundaries of the Area.
- Access into the Area should be at a practicable point close to sites of study to minimize the amount of the Area that needs to be traversed. The terrain and crevassing generally makes such access most practical from the Ford Ice Piedmont in the north.
- Pedestrian routes should avoid lakes, ponds, former pond beds, stream beds, areas of damp ground and areas of soft sediments or sedimentary features. Care should be exercised to avoid damage to any areas of cyanobacterial mat growth, in particular to the extensive areas found in former pond beds in Davis Valley.
- Pedestrian traffic should be kept to the minimum necessary consistent with the objectives of any permitted activities and every reasonable effort should be made to minimize effects.

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

- Research that will not jeopardize the scientific or ecosystem values of the Area, or its pristine value and potential as a reference site, and which cannot be served elsewhere;
- Essential management activities, including monitoring;
- The appropriate authority should be notified of any activities/measures undertaken that were not included in the authorized Permit.

7(iii) Installation, modification or removal of structures

- Structures shall not be erected within the Area except as specified in a Permit.
- Permanent structures are prohibited.
- All scientific equipment installed in the Area must be approved by Permit.

- Should equipment be intended to remain within the Area for a duration of more than one season it shall clearly be identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination of the Area.
- Removal of structures, equipment or markers for which the period specified in the Permit has expired shall be a condition of the Permit.

7(iv) Location of field camps

- Camping within the Area is prohibited.
- Suitable camp sites have been proven to the north and west of the Area on the Ford Ice Piedmont (Map 2), and also in the Enchanted Valley (Map 1).

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

- No living animals, plant material or microorganisms shall be deliberately introduced into the Area and the precautions listed in 7(ix) below shall be taken against accidental introductions.
- No herbicides or pesticides shall be brought into the Area.
- Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in the Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.
- Fuel is not to be stored in the Area, unless specifically authorized by Permit for scientific or management purposes.
- Anything introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of their introduction into the environment is minimized.
- If release occurs which is likely to compromise the values of the Area, removal is encouraged only where the impact of removal is not likely to be greater than that of leaving the material *in situ*.
- The appropriate authority should be notified of any materials released and not removed that were not included in the authorized Permit.

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

- Taking or harmful interference with native flora or fauna is prohibited, except in accordance with a separate permit issued under Article 3 of Annex II to the Madrid Protocol by the appropriate national authority specifically for that purpose. Where animal taking or harmful interference is involved this should, as a minimum standard, be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

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

- Material may be collected or removed from the Area only in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs. Permits shall not be granted if there is a reasonable concern that the sampling proposed would take, remove or damage such quantities of soil, native flora or fauna that their distribution or abundance within the Area would be significantly affected.

- Material of human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit Holder or otherwise authorized, may be removed unless the impact of removal is likely to be greater than leaving the material *in situ*: if this is the case the appropriate authority should be notified.

7(viii) Disposal of waste

- All wastes, including water used for any human purpose and including all human wastes, shall be removed from the Area. Individuals or groups shall carry appropriate containers for human waste and gray water so that they may be safely transported and removed from the Area.

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

- Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of limited samples for analysis or review, or for protective measures.
- Any specific sites of long-term monitoring shall be appropriately marked.
- To help maintain the ecological and scientific values derived from the relatively low level of human impact at Davis Valley and Forlidas Pond, visitors shall take special precautions against introductions. Of concern are microbial, invertebrate or plant introductions sourced from other Antarctic sites, including stations, or from regions outside Antarctica. To minimize the risk of introductions, visitors shall thoroughly clean footwear and any equipment to be used in the area – particularly sampling equipment and markers – before entering the Area.
- To reduce the risk of microbial contamination, the exposed surfaces of footwear, sampling equipment and markers should be sterilized before use within the Area. Sterilization should be by an acceptable method, such as by washing in 70% ethanol solution in water or in a commercially available solution such as 'Virkon'.
- A comprehensive Code of Conduct and *Guidelines for Conduct of Scientific Research* have been developed for use within the McMurdo Dry Valleys (ASMA No. 2), much of which is relevant as guidance for activities within the dry valley system in this region. Visitors shall consult these guidelines and should apply them where appropriate to the conduct of scientific research and other activities within the Area.

7(x) Requirements for reports

- Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR.
- Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction, which should be in sufficient detail to allow evaluation of the effectiveness of the Management Plan.
- Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the Management Plan and in organizing the scientific use of the Area.

8. Supporting Documentation

Aughenbaugh, N., Neuburg, H. and Walker P. (1958): Report 825-1-Part I, October 1958, USNC-IGY Antarctic Glaciological Data Field Work 1957 and 1958. *Ohio State University Research Foundation. Source: World Data Center for Glaciology at Boulder, Colorado.* (ftp://sidads.colorado.edu/pub/DATASETS/AGDC/antarctic_10m_temps/ells-filchner_57.txt).

Behrendt, J.C., Henderson, J.R., Meister, L. and Rambo, W.K. (1974): Geophysical investigations of the Pensacola Mountains and Adjacent Glacierized areas of Antarctica. *U.S. Geological Survey Professional Paper 844.*

Behrendt, J.C., Drewry, D.J., Jankowski, E., and Grim, M.S. (1980): Aeromagnetic and radio echo ice-sounding measurements show much greater area of the Dufek intrusion, Antarctica. *Science 209: 1014-1017.*

Behrendt, J.C. (1998): Innocents on the Ice; a memoir of Antarctic Exploration, 1957. *University Press of Colorado, Boulder.*

Boyer, S.J. (1979): Glacial geologic observations in the Dufek Massif and Forrestal Range, 1978-79. *Antarctic Journal of the United States 14 (5): 46-48.*

Burt, R. (2004). Travel Report - Sledge Bravo 2003-2004. SAGES-10K & BIRESA: Field trip to the lakes and dry valleys in the Dufek Massif and the Shackleton Mountains. *Unpublished BAS Internal Report Ref. R/2003/K1. British Antarctic Survey, Cambridge.*

Cziferszky, A., Fox, A., Hodgson, D. and Convey, P. (2004): Unpublished topographic base map for Davis Valley, Dufek Massif, Pensacola Mountains. *Mapping and Geographic Information Centre, British Antarctic Survey, Cambridge.*

Ferris, J., Johnson, A. and Storey, B. (1998): Form and extent of the Dufek intrusion, Antarctica, from newly compiled aeromagnetic data. *Earth and Planetary Science Letters 154: 185-202.*

Ford, A.B. (1976): Stratigraphy of the layered gabbroic Dufek intrusion, Antarctica. *Contributions to stratigraphy: Geological Survey Bulletin 1405-D.*

Ford, A.B., Schmidt, D.L. and Boyd, W.W. (1978): Geologic map of the Davis Valley quadrangle and part of the Cordiner Peaks quadrangle, Pensacola Mountains, Antarctica. *U.S Geologic Survey Antarctic Geological Map A-10.*

Ford, A.B. (1990): The Dufek intrusion of Antarctica. Antarctic Research Series 51. *American Geophysical Union, Washington, DC.: 15-32.*

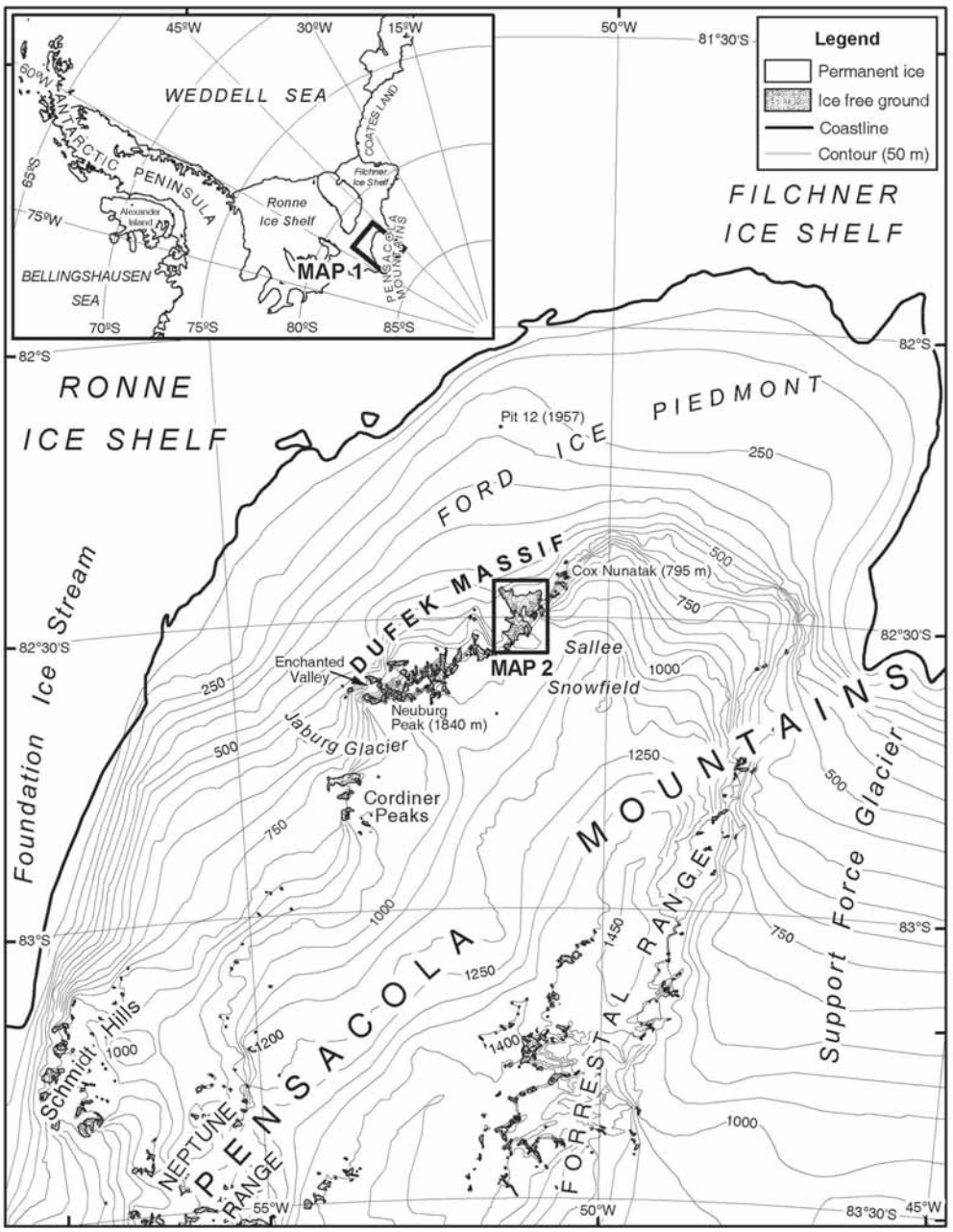
Friedmann, E.I. (1977): Microorganisms in Antarctic desert rocks from dry valleys and Dufek Massif. *Antarctic Journal of the United States 12 (5): 26-29.*

Hodgson, D. and Convey, P. 2004. Scientific Report - Sledge Bravo (2003-2004): BAS Signals in Antarctica of Past Global Changes: Dufek Massif – Pensacola Mountains; Mount Gass – Shackleton Mountains. DRAFT. *Unpublished BAS Internal Report Ref. R/2003/NT1. British Antarctic Survey, Cambridge.*

Neuburg, H., Theil, E., Walker, P.T., Behrendt, J.C and Aughenbaugh, N.B. (1959): The Filchner Ice Shelf. *Annals of the Association of American Geographers 49: 110-119.*

Parker, B.C., Boyer, S., Allnutt, F.C.T., Seaburg, K.G., Wharton, R.A. and Simmons, G.M. (1982): Soils from the Pensacola Mountains, Antarctica: physical, chemical and biological characteristics. *Soil Biology and Biochemistry 14: 265-271.*

Parker, B.C., Ford, A.B., Allnutt, T., Bishop, B. and Wendt, S. (1977): Baseline microbiological data for soils of the Dufek Massif. *Antarctic Journal of the United States 12 (5): 24-26.*



Projection: Lambert Conformal Conic; Central Meridian 51°W; 1st Std Parallel 82°S; 2nd Std Parallel 83°S; Latitude of Origin 81°S; Spheroid: WGS84; Contour interval: 50 m.
Data source: SCAR Antarctic Digital Database v.4.1 (2004)

Map 1. Davis Valley and Forlidas Pond ASPA No. 119, Dufek Massif, Pensacola Mountains: Location map

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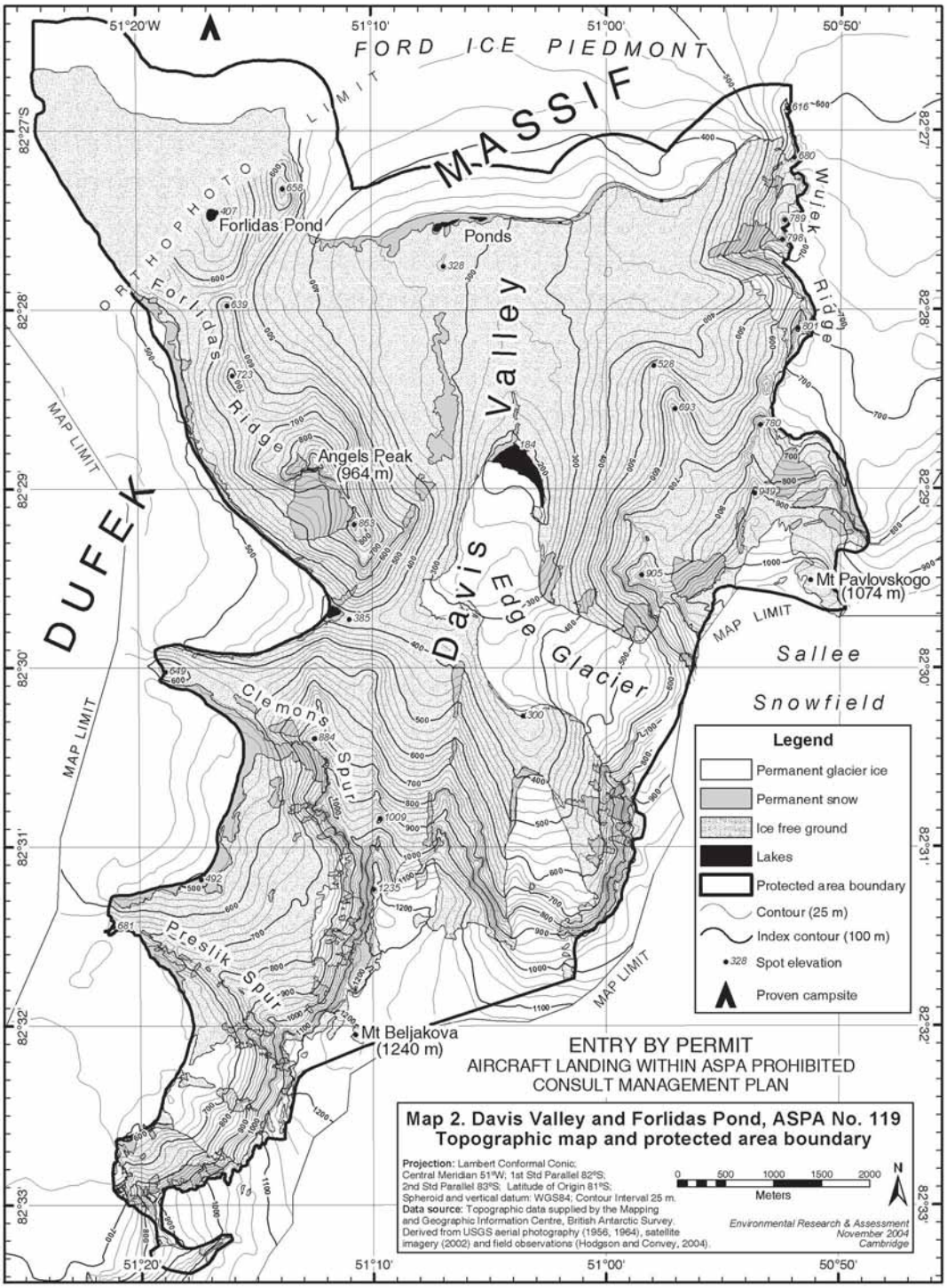
November 2004
Environmental Research & Assessment


FORD ICE PIEDMONT
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Forlidas Pond
Ponds
Forlidas Ridge
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Davis Valley
Wiek Ridge
DUFEK
MAP LIMIT
Davis Edge Glacier
Clemons Spur
Preslik Spur
Mt Beljakova (1240 m)
Mt Pavlovskogo (1074 m)
Sallee Snowfield
Legend
Permanent glacier ice
Permanent snow
Ice free ground
Lakes
Protected area boundary
Contour (25 m)
Index contour (100 m)
Spot elevation
Proven campsite
ENTRY BY PERMIT
AIRCRAFT LANDING WITHIN ASPA PROHIBITED
CONSULT MANAGEMENT PLAN
Map 2. Davis Valley and Forlidas Pond, ASPA No. 119
Topographic map and protected area boundary
Projection: Lambert Conformal Conic;
Central Meridian 51°W; 1st Std Parallel 82°S;
2nd Std Parallel 83°S; Latitude of Origin 81°S;
Spheroid and vertical datum: WGS84; Contour Interval 25 m.
Data source: Topographic data supplied by the Mapping and Geographic Information Centre, British Antarctic Survey. Derived from USGS aerial photography (1956, 1964), satellite imagery (2002) and field observations (Hodgson and Convey, 2004).
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Environmental Research & Assessment
November 2004
Cambridge

Management Plan for Antarctic Specially Protected Area No. 120

POINTE-GÉOLOGIE ARCHIPELAGO, TERRE ADÉLIE

Jean Rostand, Le Mauguen (former Alexis Carrel), Lamarck and Claude Bernard Islands, The Good Doctor's Nunatak and breeding site of Emperor Penguins

1. Description of Values to be Protected

In 1995, four islands, a nunatak and a breeding ground for emperor penguins were classified as an Antarctic Specially Protected Area (Measure 3 (1995), XIX ATCM, Seoul) because they were a representative example of terrestrial Antarctic ecosystems from a biological, geological and aesthetics perspective. A species of marine mammal, the Weddell seal (*Leptonychotes weddelli)* and various species of birds breed in the area: emperor penguin (*Aptenodytes forsteri*); Antarctic skua (*Catharacta maccormicki*); Adélie penguins (*Pygoscelis adeliae*); Wilson's petrel (*Oceanites oceanicus*); giant petrel *(Macronectes giganteus*); snow petrel (*Pagodrama nivea*), cape petrel (*Daption capense*).

Well-marked hills display asymmetrical transverse profiles with gently dipping northern slopes compared to the steeper southern ones. The terrain is affected by numerous cracks and fractures leading to very rough surfaces. The basement rocks consist mainly of sillimanite, cordierite and garnet-rich gneisses which are intruded by abundant dikes of pink anatexites. The lowest parts of the islands are covered by morainic boulders with a heterogenous granulometry (from a few cm to more than a m across).

Long-term research and monitoring programs of birds and marine mammals have been going on for a long time already (since 1952 or 1964 according to the species). A database implemented in 1981 is directed by the Centre d'Etudes Biologiques de Chize (CEBC-CNRS). Human scientific presence may be estimated at around 4 people for a few hours, twice a month in the protected area.

Among the approximately 30 emperor penguin breeding sites on record, this is the only one located adjacent to a permanent station. It is therefore a providential spot to study this species and its environment.

2. Aims and Objectives

Management of the Cape Géologie Specially Protected Area aims at:

- preventing disturbance in the area due to the proximity of the station;
- preventing disturbance in the area due to the growing number of cruising ships: although the 335 registered tourists visiting the Dumont d'Urville station over the past five years have caused no visible impact on the environment, especially on the avifauna, stringent protection measures must be taken;
- allowing research of a compelling scientific nature which cannot be carried out elsewhere;
- avoiding any major changes to the structure and composition of flora and fauna and the association of different species of vertebrates harbored in the area, which is one of the most representative for both faunistic and scientific interest on Adélie Coast;

- permit scientific research in the field of marine and terrestrial biology, i.e., ethology, ecology, physiology and biochemistry, especially projects related to demographic monitoring and impact assessment of surrounding human activities, including tourism;
- permit research in geology with particular attention to the scheduling of visits when thermo-mechanical sampling means are required.

3. Management Activities

The present management plan is kept under periodical review to ensure that the values of the Antarctic Specially Protected Area are wholly protected. Any activity carried out in the area undergoes an environmental impact assessment before being undertaken.

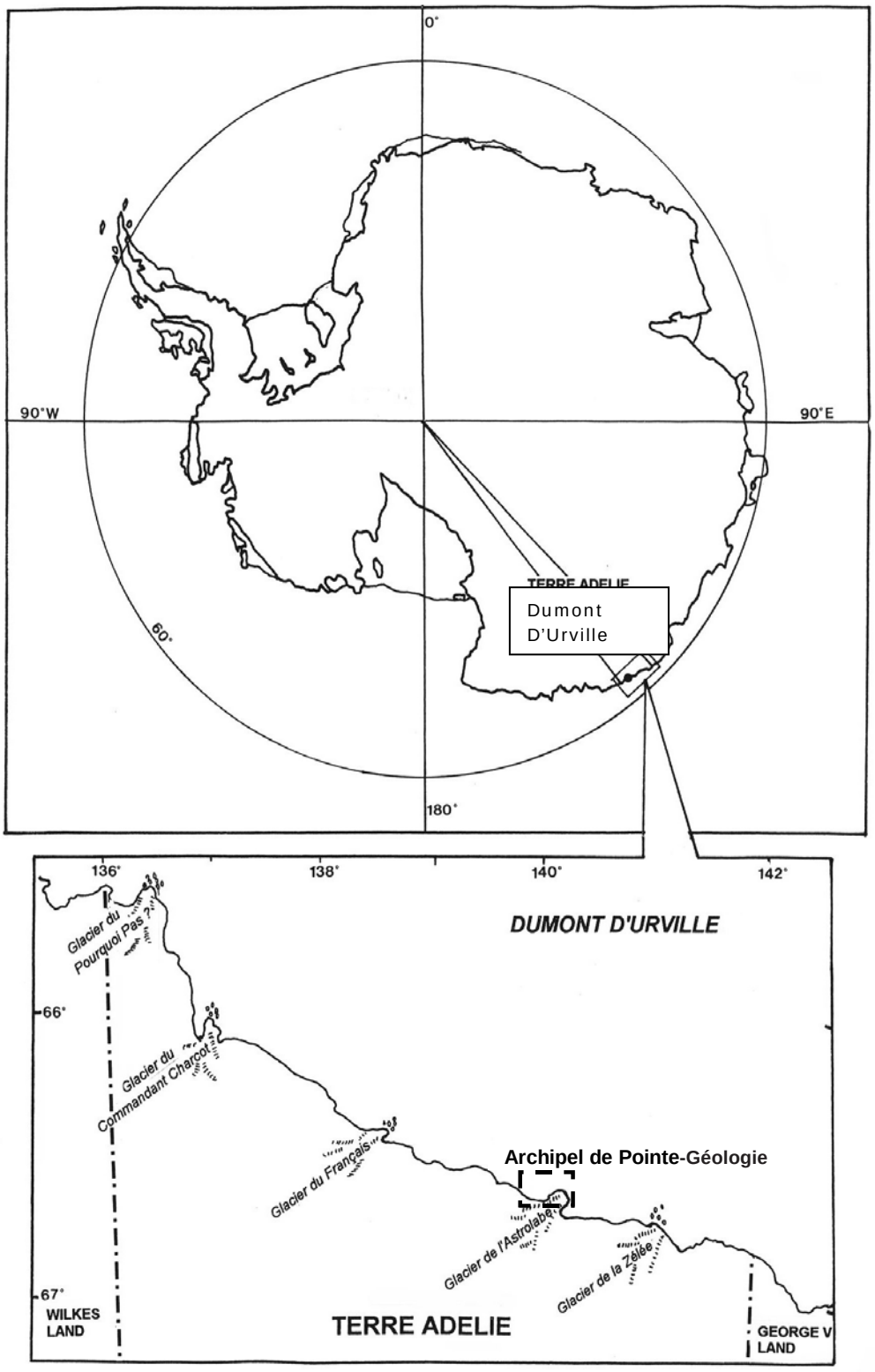
4. Period of Designation

The Area remains an Antarctic Specially Protected Area (ASPA) for an indefinite period.

5. Maps

The Cape Geology Archipelago map shows the boundaries of the Antarctic Specially Protected Area inside the archipelago with dotted lines.

Carte 1. Location of terre Adélie in the Antarctic.



6. Description of the Area

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

The Jean Rostand, Le Mauguen (formerly Alexis Carrel), Lamarck and Claude Bernard islands, the 'Bon Docteur' Nunatak and the Emperor penguins breeding colony are located in the heart of the Cape Geology Archipelago, coastal area of Adélie Coast (66°39'30" - 66°40'30"S; 140°- 140°02'E).

Table 1. Annual breeding area of seabird couples on the Specially Protected Area (SPA). The population breeding within the SPA is being compared to that of the Cape Geology (PG) population (Micol & Jouventin, 2001. Long term population trends in seven Antarctic seabirds at Cape Geology (Terre Adélie). *Polar Biology* 24:175-185; Thomas, 1986. L'effectif des oiseaux nicheurs de l'archipel de Cape Geology (Terre Adélie) et son évolution au cours des trente dernières années. *L'oiseau RFO* 56:349-368, pour les pétrels de Wilson*).

Islands	Emperor penguin	Adelie penguin	South Polar skua	Snow petrel	Cape petrel	Wilson's storm petrel *	Southern giant petrel
C. Bernard	--	5033	5	169	248	178	--
Lamarck	--	1479	1	34	36	45	--
J. Rostand	--	6825	5	98	32	35	6
Le Mauguen (formerly Alexis Carrel)	--	4991	10	23	2	72	
Nunatak	---	2520	2	7	--	41	--
Emperor penguin	2740	--	--	--	--	--	--
TOTAL	2740	20848	23	331	318	371	6
% SPA/PG	100	58	62	38	70	31	75

Table 2. Presence of birds on breeding grounds.

	Emperor penguin	Adelie penguin	South Polar skua	Snow petrel	Cape petrel	Wilson's storm petrel *	Southern giant petrel
First arrival	March	October	October	September	October	November	July
First egg laying	May	November	November	November	November	December	October
Last departure	January	March	March	March	March	March	April

Table 3. Sensitivity to disturbance caused by human beings and status of the Cape Geology populations.

	Emperor penguin	Adelie penguin	South Polar skua	Snow petrel	Cape petrel	Wilson's storm petrel *	Southern giant petrel
Sensitivity to disturbance caused by human beings*	High	Medium	Medium	Medium	High	High	High
Status between 1952 and 1984	Diminishing	Stable	Stable	?	?	?	Diminishing
Status between 1984 and 2000	Stable	Increasing	Increasing	Stable	Stable	?	Stable

* Micol & Jouventin, 2001 (Table 1, refer.)

The area consists of the southernmost rock outcrops of Cape Geology Archipelago, between Petrel Island and the Western edge of Astrolabe Glacier. It is a very large ice-free ground on Adélie Coast.

As a whole, the surface of the rock outcrops does not exceed 2 km^2. The highest points are distributed along North-East-South-West ridges (C. Bernard Island: 47.6 m; J Rostand Island 36.39 m; Le Mauguen (formerly Alexis Carrel) Island: 28.24 m Nunatak: 28.50 m).

During the summer, only the Southern flanks of the islands are still covered by firns.

The area has clear natural boundary markers. However, markers will be set up in the Nunatak at a later stage.

No tracks or roads exist in the area.

6(ii) Identification of restricted or prohibited zones

Access to any part of the area is prohibited unless authorized by a permit. Location of breeding colonies is shown on the map. Birds are present from October to March, except for the emperor penguins, which breed in winter (Table 2). Their sensitivity to human disturbance varies depending on the species (Table 3). The establishment of the Dumont d'Urville station has resulted in a drastic decrease of the populations of emperor penguins and southern giant petrels in the Cape Geology Archipelago. Conversely, the significant decrease of emperor penguins by the end of the 1970s seems to have been due to long weather anomalies between 1976 and 1982. Since 1995, the breeding areas of these two species have been protected and the populations are now stable (Table 3). No one, except Permit Holders, is allowed to approach or to disturb the emperor penguin colony in any manner during the breeding season, from April to mid-December when the chicks fledge.

The particularly sensitive emperor penguins are also to be protected beyond the boundaries of this breeding area since the colony is not always located on the same spot.

The South-Eastern part of Jean Rostand Island is designated as a restricted area in order to preserve the remaining breeding colony of southern giant petrels. Access to this restricted area is strictly prohibited during the breeding period, from August to February. Access is restricted to one ornithologist, holding a Permit, to the extent spelled out in the present paragraph, i.e. once a year when chicks are being banded, for the purposes of monitoring the population. The boundary of the restricted area is defined by the NE-SW ridge going through the 33.10 m and 36.39 m marks North West of the colony, marked on the floor with stakes. This condition shall hold for an indefinite period, but it may be subject to re-evaluation every time the Management Plan is reviewed.

6(iii) Location of structures in the Area

Prévost hut and a shelter are located on Rostand Island. There are no other buildings anywhere else in the Area.

7. Permit Conditions

- Entry into the Area is prohibited except in accordance with a Permit issued by an appropriate national authority.
- Permits may be granted to carry out various scientific research, site monitoring or inspection activities entailing sampling of biological material or animals in small quantities. For each single entry and length of stay, permits will authorize the scope of the tasks to be undertaken, their time-span and the maximum number of people commissioned to enter the Area.

7(i) Access to and movement within the Area

- No helicopters or terrestrial vehicles are authorized within the Area.
- No overflights over the Area, either by helicopters or other airplanes are authorized.
- Access to the Area is only permitted by foot or by zodiacs (in summer). However, very rare departures of terrestrial vehicles from the Nunatak are allowed, but only when sea-ice conditions hinder from proceeding otherwise and with special attention to the presence of birds in the Area.
- Access to the Area is restricted to ornithologists holding a Permit and to the 2 or 3 people who must accompany them for safety reasons.
- Access to and movement within the Area shall, in any case, be limited, in order to avoid unnecessary disturbance to birds, especially by crossing their pathways and to ensure that breeding areas or their access are not damaged or endangered.

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

- compelling scientific activities which cannot be conducted elsewhere and essential management activities provided special care is bestowed on both the emperor penguins and the southern giant petrels located in the restricted area (*see para 6.ii*);
- visitors granted access to the Area by a Permit shall ensure that their visit will cause no disturbances to the monitoring programs under way.

7(iii) Installation, modification or removal of structures

- No structures are to be erected or scientific equipment installed in the Area except for compelling scientific reasons or management activities as authorized by the competent authorities in the framework of the urbanistic and public domaniality regulations in force.

7(iv) The location of field camps

- Only safety tents should be erected when security reasons so require it provided all precautions have been taken in order to avoid damaging or disturbing the fauna.

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

- According to the provisions set forth in Annex II to the Madrid Protocol, no living animals or plant materials, poultry products, including dried eggs, shall be introduced into the Area.
- No chemicals shall be brought into the Area, except chemicals which may be introduced for a compelling scientific purpose as specified in the Permit. Any chemical introduced shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted
- Fuel, food and other materials are not to be stored in the Area, unless required for compelling purposes connected with the activity for which the Permit has been granted. Such materials are to be removed when no longer required. Permanent storage is not permitted.

7(vi) The taking of or harmful interference with flora and fauna

- Taking of or harmful interference with native flora and fauna is prohibited except in accordance with a Permit. If an activity is determined as having less than a minor or transitory impact, it should be carried out in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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

- Collection or removal of anything not brought into the Area by a Permit Holder is prohibited unless otherwise specified in the Permit for scientific or management purposes.
- Debris of manmade origin may be removed from the Area and dead or pathological specimens of fauna or flora may be removed for laboratory examination.

7(viii) Disposal of waste

- All waste produced, except for waste water, must be removed from the Area.

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

- Visits to the Area shall be restricted to scientific and management objectives only.

7(x) Requirements for reports of visits to the Area

- Parties should ensure that the principal Holder of each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR.
- Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction, in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should, wherever possible, deposit original or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be taken into consideration both when reviewing the Management Plan and when organizing the scientific manipulation of the Area.

Management Plan for Antarctic Specially Protected Area No. 132

POTTER PENINSULA, KING GEORGE ISLAND (ISLA 25 DE MAYO), SOUTH SHETLAND ISLANDS

1. Description of Values to be Protected

This area was originally designated as Site of Special Scientific Interest No. 13 in Antarctic Treaty Consultative Meeting (ATCM) Recommendation XIII-8 after a proposal by Argentina, because of its diverse and extensive vegetation and fauna, which constitutes a representative sample of the Antarctic ecosystem.

During the XXI Antarctic Treaty Consultative Meeting (Christchurch, 1997), a revised Management Plan was adopted for the Area, following the format established by Annex V to the Madrid Protocol and according to Measure 3 (1997). During the XXV Antarctic Treaty Consultative Meeting (Warsaw, 2002) and once the Annex entered into force, the *Site of Special Scientific Interest* No. 13 became, by virtue of Measure 1 (2002), *Antarctic Specially Protected Area* No. 132.

The original goals for designating this Area are still relevant. The coastal areas host important bird colonies, marine mammal breeding areas and diverse vegetal species. Scientific research programs on the breeding ecology of elephant seals and birds have are being carried out in the area since 1982. These include the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) *Ecosystem Monitoring Program*, as well as basic research that must be developed without interference from other activities. The anthropic disturbance could jeopardize the long term studies carried out there, especially during the breeding season.

2. Aims and Objectives

Management of ASPA No. 132 aims at:

- avoiding major changes in the structure and composition of the flora and fauna communities;
- preventing unnecessary human disturbance;
- permitting the development of the scientific research that cannot be carried out elsewhere, as well as the continuity of ongoing long term biological studies established in the Area; and
- permitting the development of any other scientific research provided it does not compromise the values for which the Area is being protected.

3. Management Activities

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

- the staff to be posted at Jubany Base will be specifically trained on the conditions of the Management Plan;

- the circulation will only take place on vegetation-free areas and taking a wide berth from the fauna, except when the scientific projects specifically mention otherwise and provided the corresponding harmful interference permits have been issued;
- collection of samples will be limited to the minimum required for the authorized scientific research plans;
- visits shall be made as necessary to ensure management and maintenance measures are adequate; and
- all markers, signs and structures erected within the Area for scientific or management purposes will be properly secured and maintained in good condition.

4. Period of Designation

Designated for an indefinite period.

5. Maps

Maps 1 and 3 are attached at the end of the present Management Plan as annexes. Map 1 shows the location of Potter Peninsula (25 de Mayo/King George Island) in relation to the Antarctic Peninsula. Map 2 shows the location of the Potter Peninsula in relation to the 25 de Mayo/King George Island and Nelson Island. Map 3 shows the Protected Area in greater detail. Map 4 shows the distribution of bird and mammal concentrations in the ASPA.

6. Description of the Area

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

Geographical coordinates and boundaries

This Area is located on the east coast of Bahía Guardia Nacional / Maxwell Bay, southwest of King George (25 de Mayo/Rey Jorge) Island, between the southern tip of Mirounga Point (Northwest of Potter Peninsula) and the outcrop known as "Spur 7", on the northeastern border of Stranger Point. The area occupies all of the coastal strip up to the border of the cliff, which reaches heights of 15-50 m. This coastal strip has a variable width, stretching up to 500 m from the shore at low tide water levels. The area is mainly made of raised beaches, largely covered with mid-size pebbles, basaltic structures and lateral and terminal moraines. The shoreline is very irregular and it has a number of small bays shaped among rocky headlands.

Natural features

The area encompasses important scientific values due to the presence of groups of breeding elephant seals (*Hydrurga leptonyx*), and non-breeding groups of Antarctic fur seals (*Arctocephalus gazella*) and occasionally of Weddell seals (*Leptonychotes weddelli*), crabeater seals (*Lobodon carcinophagus*) and leopard seals. During the breeding season there are around 500 elephant seals around, and during the fledging season, between 200 and 600. The non-breeding groups of Antarctic fur seals can add up to 300 individuals, although that figure may vary considerably from one year to the next.

Also present are significant colonies of gentoo penguins (*Pygoscelis papua*) and Adélie penguins (*Pygoscelis adeliae*), each of them with an approximate population of 4,000 pairs. Penguin colonies are mainly distributed around Stranger Point, from the vicinity of Elefante refuge to Spur 7. Within the ASPA, the population of storm petrels (by large *Oceanites oceanicus* and, to a much lesser extent, the *Fregetta tropica*) reaches some 200 pairs. Antarctic terns (*Sterna vittata*), southern giant petrels (*Macronectes giganteus*) and skuas (*Catharacta sp.*) also breed in the area, although their populations are, in all cases, less than 100 pairs each. Southern giant petrels nesting sites concentrate on the western side of the ASPA. As some of the nesting sites around Potter peninsula change their position over time, population figures are estimations and may introduce some degree of inaccuracy, depending on the year considered.

Map 4 shows the distribution of mammal concentrations, penguin colonies and southern giant petrel nesting sites in the ASPA. Due to the above mentioned variability of nesting sites, the fact that some of them are widely scattered around the ASPA, and the scale of the map, the position of other bird colonies were not included in Map 4.

There is a relatively abundant development of vegetal communities in the Area, dominated by lichens, especially in the boulder area close to the beaches and mosses, on the flat surfaces of former beaches. The long term research and monitoring programs could be jeopardized by accidental anthropical disturbance, which might end up by destroying the vegetation and the soils, as well as the disturbance of nesting birds and breeding mammals.

6(ii) Restricted zones within the Area

None.

6(iii) Location of structures within the Area

There is a small Argentine refuge (called Elefante) located around 1,000 m northeast from Point Stranger, often used as a resting area by groups of scientists. The refuge occupies a surface of around 25 m² and its capacity has been calculated for 2.

Outside the Area there is also a small shelter (called Albatros), on the cliff overlooking the eastern shore, around 50 m high from the beach and less than one km E-SE from the Elefante Refuge. As far as Jubany Base facilities are concerned, they are located around 500 m from the access area to the ASPA, from the inner portion of Potter Cove.

Likewise, there are two signs, both of them on Mirounga Point, warning about the entrance to the Protected Area.

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

- ASPA No. 125, Fildes Peninsula, King George Island (25 de Mayo/Rey Jorge), South Shetland islands lies about 20km to the east.
- ASPA No. 128, Western Shore of Admiralty Bay, King George Island (25 de Mayo/Rey Jorge), South Shetland Islands lies about 10 km northeast.
- ASPA No. 133, Harmony Point, Nelson Island, lies about 30 km west-southwest.

7. Permit Conditions

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

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

- it is issued only for scientific purposes, in accordance with the objectives of the Management Plan that cannot be served elsewhere;
- the actions permitted will not jeopardize the natural ecological system in the Area;
- any management activities (inspection, maintenance or revision) are in support of the objectives of the Management Plan;
- the actions permitted are in accordance with this Management Plan;
- the Permit, or authorized copy, is carried by the main scientist authorized to enter the Area; and
- a report be supplied to the appropriate national authority mentioned in the Permit.

7(i) Access to and movements within the Area

- Any access to the Area will be possible with a Permit delivered by an appropriate national authority, and it will only be issued for activities in agreement with the present Management Plan.
- Access to the Area will preferably be on foot. Access to the area is possible from the northern tip, close to the Jubany base helipad, or behind the southern slope of the Three Brothers hill. Access to the Area by sea onto the beaches should be avoided when there is fauna present, especially during the breeding season.
- No vehicles whatsoever are allowed to circulate inside the Area, with the exception of those indispensable for maintaining the shelter. In such a case, access to the ASPA will be through a gentle slope close to the Albatros refuge, and vehicles should be driven avoiding vegetated areas and bird and mammal concentrations. As far as practicable, maintenance activities should be limited to non-breeding seasons.
- Operation of aircraft over the ASPA shall follow, as a minimum standard, the provisions contained in Resolution 2 (2004), "Guidelines for the operation of aircraft over bird colonies". As a general rule, no aircraft is allowed to fly over the ASPA below 610 m (2000 ft), except in cases of emergency or aeronavigational safety.
- If deemed necessary, and only based on scientific and conservation reasons, access to certain bird nesting sites and mammal colonies may include more restricted conditions between the end of October and the beginning of December. This period is considered particularly sensitive because it is concomitant with the egg-laying of the penguins and breast feeding of the elephant seals.
- Tourism or any other recreational activity is not permitted. Movements within the Area will be made without disturbing the fauna and flora, especially during the breeding season.

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

- scientific research which cannot be conducted elsewhere and which will not jeopardize the natural ecosystem of the Area.

- essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

- No additional structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, and with a proper Permit.
- Any scientific equipment to be installed in the Area, as well as any research device, shall be approved in a Permit and clearly labelled, indicating the country, name of principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination of the Area or risk of disturbing the vegetation or the fauna.
- No research traces are to remain once the Permit has expired. If a specific project cannot be finished within the timeframe specified in the Permit, an extension of the validity of the Permit shall be requested, authorizing those elements to remain there.

7(iv) Location of field camps

- The Parties using the Area will normally be accommodated at Jubany Base.
- When necessary for scientific reasons, the Elefante shelter (located inside the Area) may be used, or the Albatros shelter (outside the Area, though very close).
- Tents will be allowed only to store scientific instruments or equipment or if they are to be used as an observation post.

7(v) Restriction on material and organisms which may be brought into the Area

- No living animals or plant material shall be deliberately introduced into the Area.
- No uncooked poultry products shall be introduced into the Area.
- No herbicides or pesticides shall be brought into the Area. Any other chemicals, which shall be introduced with the corresponding Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted. The purpose and type of chemicals shall be documented as well as possible for other scientists to be informed.
- Fuel, food and other material are not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted, provided it is stored inside the shelter or close to it.

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

- All forms of taking or harmful interference are prohibited, except in accordance with a Permit. Where an activity involves taking or harmful interference, it should be carried out in accordance with the SCAR Code of Conduct for Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.
- Information on taking and harmful interference will be duly exchanged through the Antarctic Treaty Information Exchange system and its record shall, as a minimum standard, be lodged with the Antarctic Master Directory or, in Argentina, at the National Antarctic Data Center (Centro de Datos Nacionales Antárticos).
- Scientists who take samples of any kind will provide evidence that they are familiar with prior taking of samples in order to minimize the risk of a potential duplication.

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

- Any material of the Area may be collected and/or removed from the Area only according to a Permit. Removal of dead biological specimens for scientific purposes must not exceed levels that deteriorate the nutritional base of local scavengers and with the sole purpose of performing pathological analyses.

7(viii) Disposal of waste

- All non-physiological waste shall be removed from the Area. Wastewater and liquid domestic waste may be dumped into the sea, in accordance with Article 5 of Annex III to the Madrid Protocol.
- Waste generated as a consequence of research activities carried out in the Area may be temporarily stored next to the Elefante shelter awaiting removal. Such waste must be stowed away according to Annex III to the Madrid Protocol, labeled as trash and secured against accidental loss.

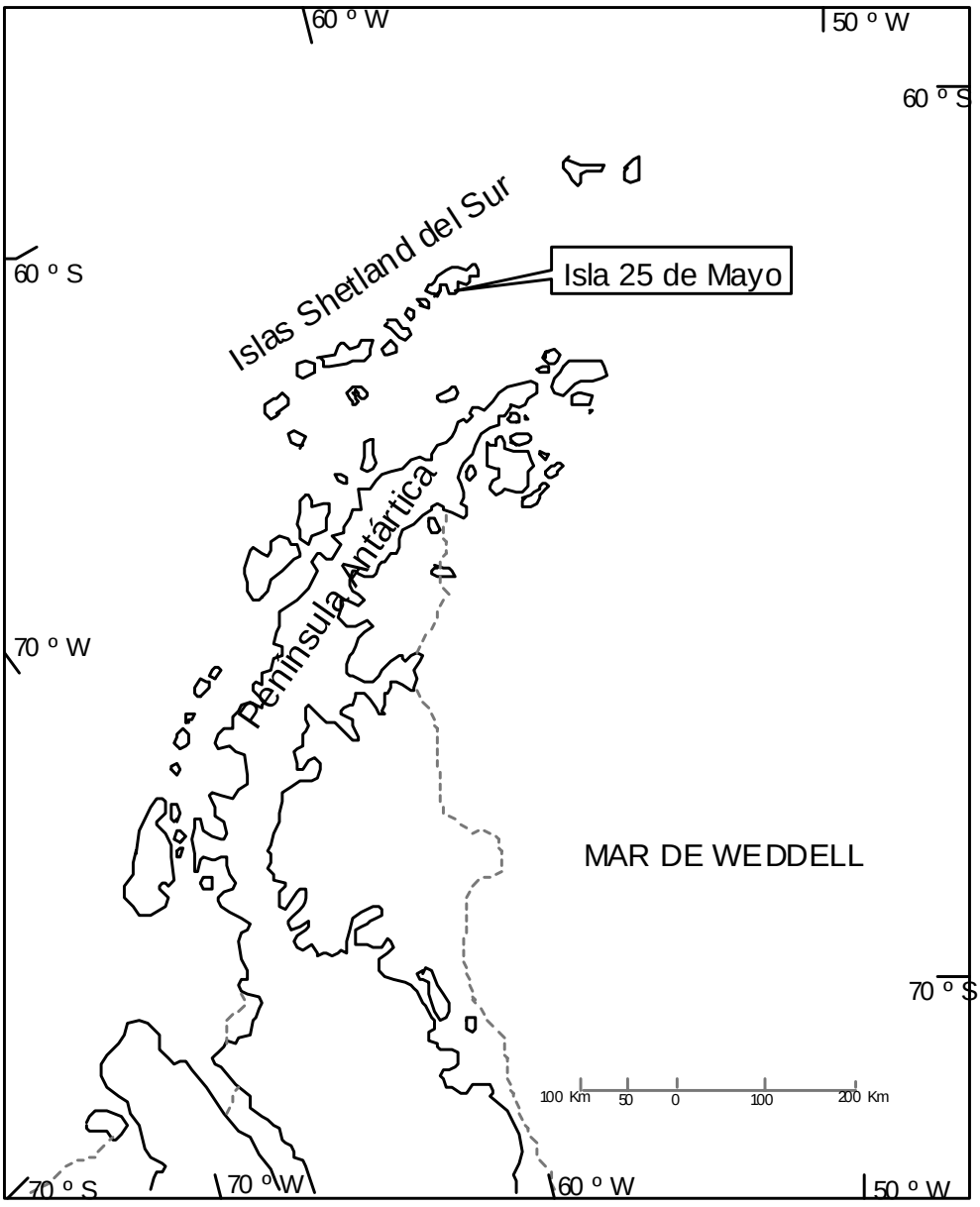
7(ix) Measures that may be necessary to ensure that the aims and objectives of the Management Plan continue to be met

- Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, including the collection of plant material and animals for scientific purposes, to erect or maintain notice boards and any other management measures.
- All scientific structures and instrumentation, including research markers, installed in the Area must be authorized in a permit and clearly identified by country, name of principal researcher and year of installation.
- Research markers and structures must be removed at or before the expiry of the Permit. If specific scientific projects cannot be concluded within the permitted time, applications must be made for an extension to leave the items *in situ*.
- When it is necessary for scientific purposes, signs can be installed at the locations where experiments are being carried out.

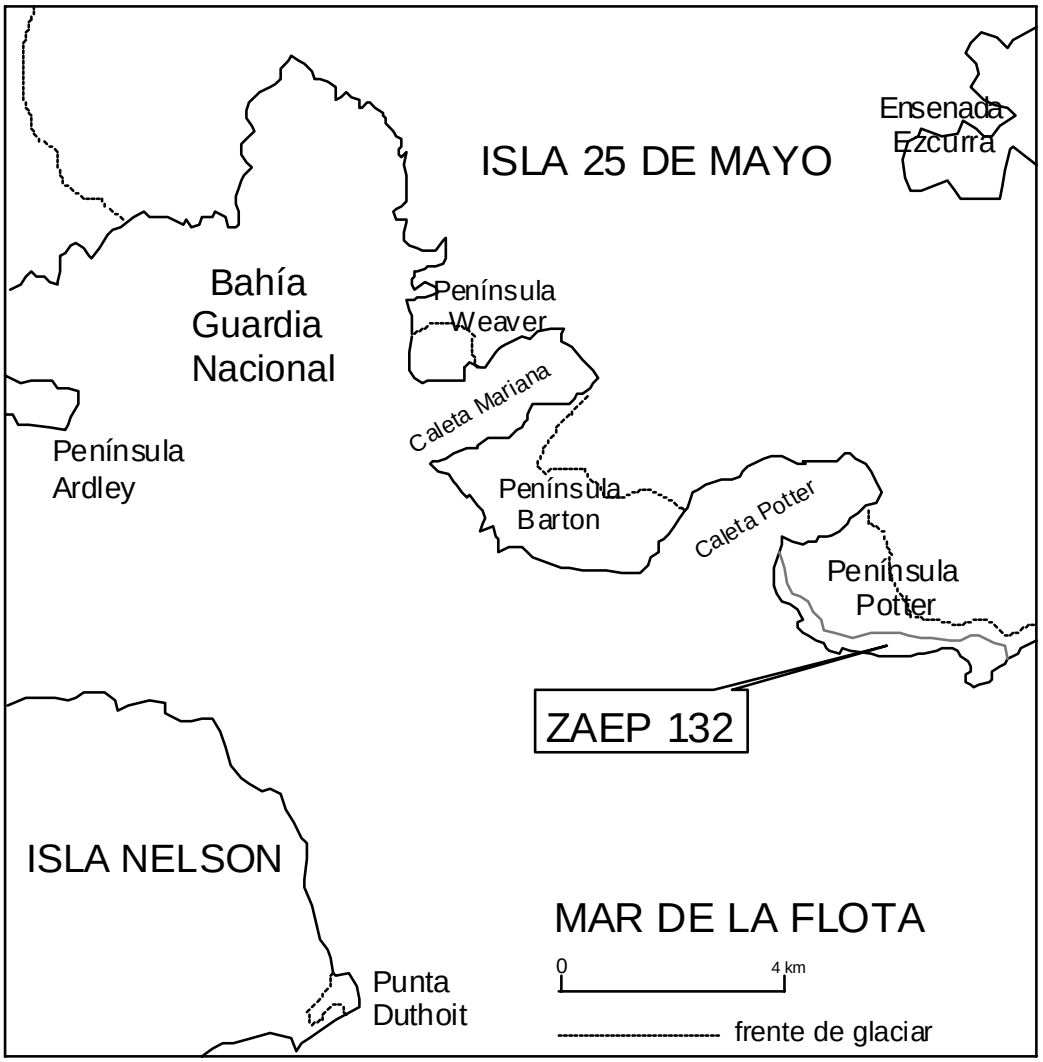
7(x) Requirements for reports

The principal Permit Holder for each Permit issued shall submit a report of activities conducted in the Area once the activity has been finalized. Such a report shall use the form submitted together with the Permit, and then sent to the authority that issued the Permit. The records of ASPA permits and post-visit reports will be Exchanged with the other Consultative Parties, as part of the Information Exchange system, as specified in Article 1 of Annex V. Such reports should be stored and made accessible to all interested Parties, SCAR, CCAMLR, and COMNAP, to provide the necessary information on human activities within the Area needed for proper management to be carried out.

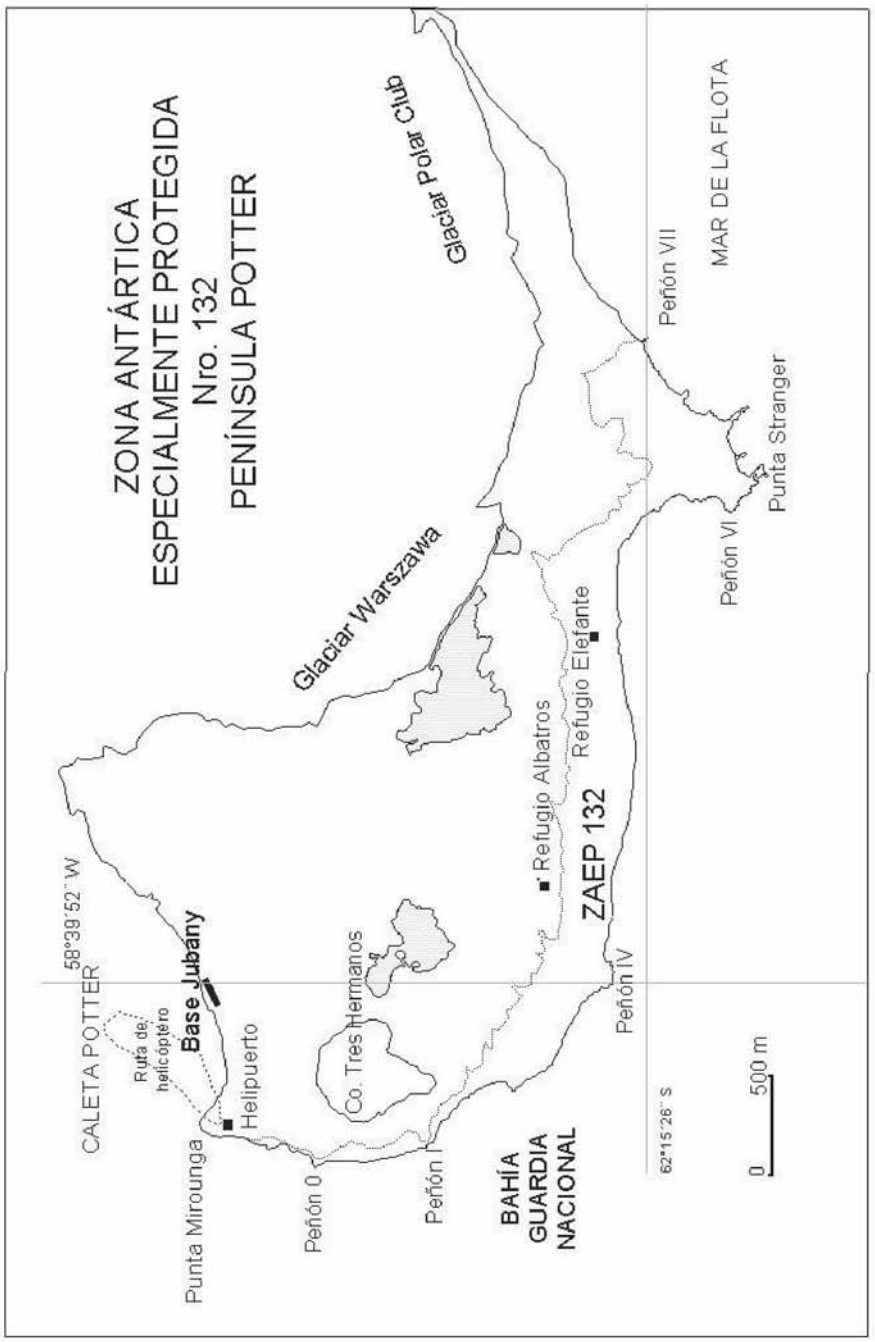
Map 1: General location of Antarctic Specially Protected Area No. 132, Potter Peninsula (King George Island), in relation to the Antarctic Peninsula.



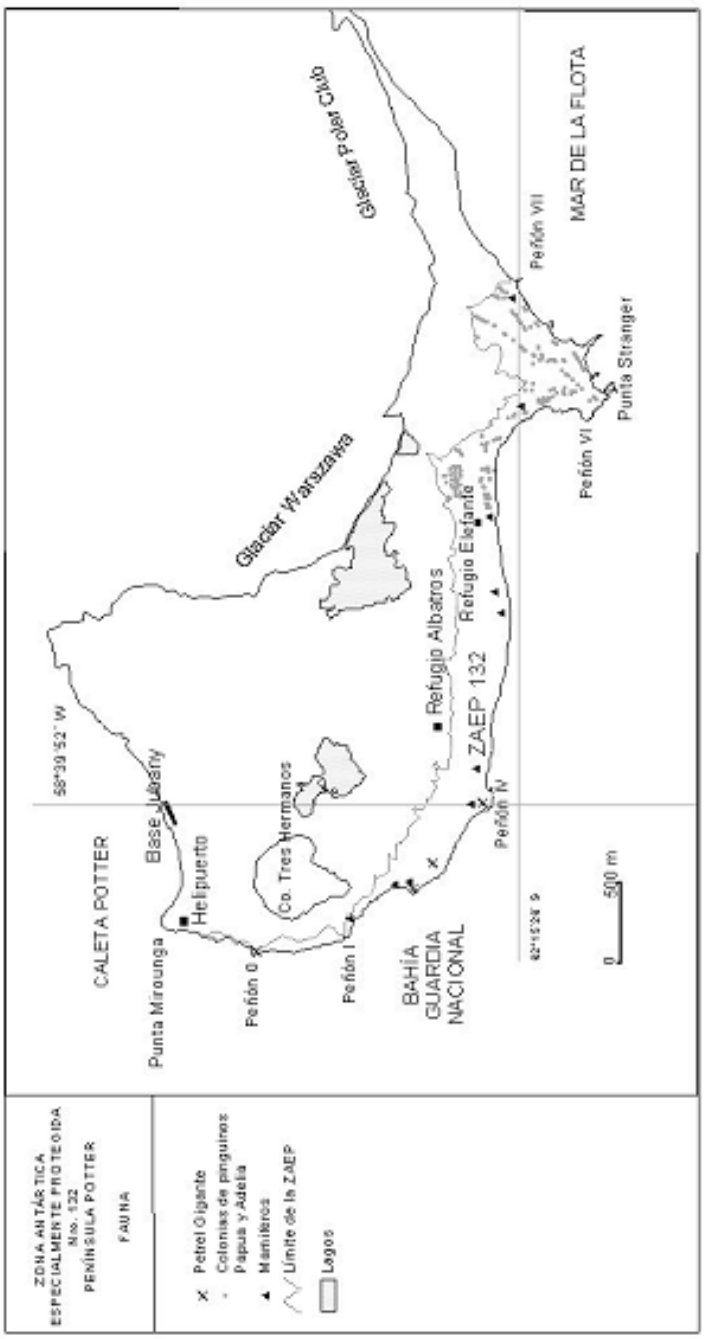
Map 2: Location of Antarctic Specially Protected Area No. 132, Potter Peninsula, in relation to King George and Nelson Islands.



Map 3: Antarctic Specially Protected Area No. 132, Potter Peninsula (ASPA boundaries in finely dotted-gray lines; unnamed lakes in light gray).



Map 4: Distribution of bird and mammal concentrations in the Antartic Specially Protected Area No. 132.



Management Plan for Antarctic Specially Protected Area No. 133

HARMONY POINT, NELSON ISLAND, SOUTH SHETLAND ISLANDS

1. Description of Values to be Protected

This Area (62° 18' S; 59° 14' W) was originally designated as Site of Special Scientific Interest (SSSI) No. 14 in Antarctic Treaty Consultative Meeting (ATCM) Recommendation XIII-8 after a proposal by Argentina and Chile, because of its diverse bird community and extensive and varied terrestrial vegetation cover.

During the XXI Antarctic Treaty Consultative Meeting (Christchurch, 1997), a revised Management Plan was adopted for the Area, following the format established by Annex V to the Madrid Protocol and according to Measure 3 (1997). During the XXV Antarctic Treaty Consultative Meeting (Warsaw, 2002) and once the Annex entered into force, the *Site of Special Scientific Interest* No. 14 became, by virtue of Measure 1 (2002), *Antarctic Specially Protected Area* No. 133.

The values to be protected in the Area are related to the composition and biological diversity of the site. The Area is an excellent example of the maritime Antarctic communities of birds and land ecosystems present in the South Shetland Islands, allowing to carry out long term research programs without damage or harmful interference.

Ice-free land supports large breeding colonies of 12 seabird species, among which we find one of the largest single colonies of chinstrap penguin (*Pygoscelis antarctica*) of Antarctica. The Area supports a large giant petrel colony (*Macronectes giganteus*) colony, a species which is highly sensitive to any kind of human disturbance and is decreasing in many sites in Antarctica. The seabird colonies are still important for scientific purposes. There is copious vegetation that has grown over different types of soils and characterized by the presence of moss, lichens and fungi. To a lesser extent, it is possible to find two species of vascular plants. As vegetation is one of the factors responsible for soil formation, in protecting the Area one makes sure the development of future research linked to the soils and the flora present in the Area are guaranteed.

2. Aims and Objectives

Management of ASPA No. 133 aims at:

- preserving the community of birds and the terrestrial ecosystem;
- preventing unnecessary human disturbance;
- permitting scientific research on birds and the terrestrial ecosystem without any interferences, in order to provide a baseline for the study of natural variability; and
- permitting the development of any other scientific research provided it does not compromise the values for which the Area is being protected.

3. Management Activities

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

- the staff to be posted at Harmony Point will be specifically trained on the conditions of the Management Plan;
- the circulation will only take place on vegetation-free areas and taking a wide berth from the fauna, except when the scientific projects specifically mention otherwise and provided the corresponding harmful interference permits have been issued;
- collection of samples will be limited to the minimum required for the authorized scientific research plans;
- visits shall be made as necessary to ensure management and maintenance measures are adequate; and
- all markers, signs and structures erected within the Area for scientific or management purposes will be properly secured and maintained in good condition.

4. Period of Designation

Designated for an indefinite period.

5. Maps

Maps 1 and 3 are attached at the end of the present Management Plan. Map 1 shows the location of Nelson Island in relation to the South Shetland Islands and the Antarctic Peninsula. Map 2 shows the location of ASPA No. 133 on Nelson Island. Map 3 shows the extent of the Area, including Harmony Point and the Toe, while Map 4 shows the distribution of bird concentrations at Harmony Point.

6. Description of the Area

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

Geographical coordinates and boundaries

This Area is located on the west coast of Nelson Island, between King George (25 de Mayo/Rey Jorge) Island to the Northeast and Robert Island to the Southwest (62° 18' S; 59° 14' W) and includes Harmony Point and the Toe, the adjacent ice and surrounding marine zone within the rectangle shows on Maps 2 and 3.

Natural features

Geomorphologically, Harmony Point presents three well defined units: an andesitic plateau, coastal and shelf outcrops and ancient sea levels. The plateau reaches 40 m above sea level and its area is covered by detritus resulting from the action of erosion agents on andesitic rocks, with a well-developed vegetation of mosses and lichens.

There are three successive raised paleobeaches, between the coast and the glacier. The paleobeaches are defined by pebble accumulations of variable height in some instances and the development of soil in others.

Lakes and streams with a limited flow appear on the undulations. Some isolated andesitic rocks and ancient nunataks can be seen outside the limits of the glacier, evidencing that the past extension of the glacier covered Harmony Point.

The Area holds breeding colonies of 12 species: 3347 pairs of gentoo penguins (*Pygoscelis papua*), 89685 pairs of chinstrap penguins (*Pygoscelis antarctica*), 746 pairs of southern giant petrels (*Macronectes giganteus*), 479 pairs of cape petrel (*Daption capense*), 45 pairs of blue eyed shag (*Phalacrocorax atriceps*), 144 pairs of snowy sheathbill (*Chionis alba*), 71 pairs of skuas (61 pairs of Antarctic skuas (*Catharacta antarctica*) and 11 of Polar skuas), 128 pairs of Dominican gull (*Larus dominicanus*) and between 100 and 150 individuals of Antarctic terns (*Sterna vittata*).

Other seabirds nesting in the Area are the Wilson's storm petrel (*Oceanites oceanicus*) and the black-bellied storm petrel (*Fregetta tropica*). Together they represent around 1000 pairs. Map 4 shows the distribution of bird concentrations at Harmony Point.

There are usually 3 species of mammals in the Area: the Weddell seal (*Leptonychotes weddelli*), the elephant seal (*Mirounga leonina*) and the Antarctic fur seal (*Arctocephalus gazella*). Occasionally some individual crabeater seals (*Lobodon carcinophagus*) have also been seen. The number of mammals in the area varies. The maximum numbers of Antarctic fur seals, Weddell seals and elephant seals are 320, 550 and 100 respectively. The Weddell seals usually breed in the Area in high figures, reaching up to 60 females with their pups in a single season. Births of fur and elephant seals have also been recorded, although the numbers there are much lower.

There are some extensive areas covered by a very rich and diverse development of bryophytes and lichen-dominated plant communities (presently being classified), including, although to a lesser degree, two vascular plant species (*Deschampsia antarctica* and *Colobanthus quitensis*), especially in the areas less affected by recent anthropic perturbation or breeding activities. Moss turf subformations are located in wind protected and moist places, whilst lichen-dominated subformations occur in places with a high wind exposure. Five soil orders have been identified so far in the Area, according to the taxonomic system: Soil Taxonomy (1999): Histosols (Hydric Cryfibrists), Entisols (Lithic Criorthents), Spodosols (Oxiaquic Humicryods), Mollisols (Lithic Haplocryolls) and Inceptisols (Lithic Eutrocryepts e Histic Cryaquepts).

6(ii) Restricted zones within the Area

There are no prohibited zones within the Area, but access to bird breeding areas should be restricted during the breeding season (September to March). In order to avoid damage to the vegetation, access on foot should take place on sectors deprived of vegetal coverage.

6(iii) Location of structures within the Area

There is a small refuge used by the scientific teams, and a storage building (with approximate surfaces of 30 m² and 12 m² respectively). The installations are used only during spring and summer. There is a Chilean radio beacon for navigating at the westernmost tip of Harmony Point and an Argentine one at the Toe.

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

- ASPA No. 112, Coppermine Peninsula, Robert Island, South Shetland Islands lies about 30 km south west.
- ASPA No. 125, Fildes Peninsula, King George Island (25 de Mayo/Rey Jorge), South Shetland Islands lies about 23 km north-north-east.
- ASPA No. 128, Western Shore of Admiralty Bay, King George Island (25 de Mayo/Rey Jorge), South Shetland Islands lies about 45 km east-north-east.

- ASPA No. 132, Potter Peninsula, King George Island (25 de Mayo/Rey Jorge), South Shetland Islands lies about 30 km east-north-east.

7. Permit Conditions

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

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

- it is issued only for scientific purposes, in accordance with the objectives of the Management Plan that cannot be served elsewhere;
- the actions permitted will not jeopardize the natural ecological system in the Area;
- any management activities (inspection, maintenance or revision) are in support of the objectives of the Management Plan;
- the actions permitted are in accordance with this Management Plan;
- the Permit, or authorized copy, is carried by the main scientist authorized to enter the Area; and
- a report be supplied to the appropriate national authority mentioned in the Permit.

7(i) Access to and movements within the Area

- Any access to the Area will be possible with a Permit delivered by an appropriate national authority, and it will only be issued for activities in agreement with the present Management Plan.
- Access to Harmony Point area will preferably take place from the sea. The appropriate landing site is almost in front of the shelter, at the end of the cove, on a well protected sand beach with no significant presence of fauna. Access to the navigation beacon located in the west most tip of Harmony Point is only permitted by boat, with landings taking place at the south of the beacon. No access points are specified for the Toe although access is limited to inflatable boats.
- Small aircraft are allowed to land on the glacier, and helicopters are entitled to land but they must not fly over the Area, especially the bird breeding areas. Approach for landing is to take place over the sea, and the landing spot is to be close to the shelter. Map 3 shows the flight path. Operation of aircraft over the ASPA shall follow, as a minimum standard, the provisions contained in Resolution 2 (2004), "Guidelines for the operation of aircraft over bird colonies". As a general rule, no aircraft is allowed to fly over the ASPA below 610 m (2000 ft), except for accessing the Area as specified above and in cases of emergency.
- Tourism and any other recreational activities are not allowed. Movements within the Area are to take place on pre-established routes, particularly during the breeding season. Vehicles are prohibited in the Area.

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

- scientific research which cannot be conducted elsewhere and which will not jeopardize the ecosystem of the Area;
- essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

- No additional structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, and with a proper Permit.
- Any scientific equipment to be installed in the Area, as well as any research artifact, shall be approved in a Permit and clearly labeled, indicating the country, name of principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination of the Area or risk of disturbing the vegetation or the fauna.
- No research traces are to remain once the Permit has expired. If a specific project cannot be finished within the timeframe specified in the Permit, an extension of the validity of the Permit shall be requested, authorizing those elements to remain there.

7(iv) Location of field camps

- If it is necessary to install tents they will have to be located in the immediate vicinity of the existing shelter. No other locations shall be used for this purpose, in order to restrict the human impact.
- Such an exclusion is not valid for installing tents with scientific instruments or materials, or those that are used as an observation base.

7(v) Restriction on material and organisms which may be brought into the Area

- No living animals or plant material shall be deliberately introduced into the Area.
- No herbicides or pesticides shall be brought into the Area. Any other chemicals, which shall be introduced with the corresponding Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted. The purpose and type of chemicals shall be documented as well as possible for other scientists to be informed.
- Fuel, food and other material are not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted, provided it is stored inside the shelter or close to it.

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

- All forms of taking or harmful interference are prohibited, except in accordance with a Permit. Where an activity involves taking or harmful interference, it should be carried out in accordance with the SCAR *Code of Conduct for Use of Animals for Scientific Purposes in Antarctica*, as a minimum standard.
- Information on taking and harmful interference will be duly exchanged through the Antarctic Treaty Information Exchange System and its record shall, as a minimum standard, be lodged with the *Antarctic Master Directory* or, in Argentina, at the National Antarctic Data Center (*Centro de Datos Nacionales Antárticos*).
- Scientists who take samples of any kind will provide evidence that they are familiar with prior taking of samples in order to minimize the risk of a potential duplication.

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

- Any material of the Area may be collected and/or removed from the Area only according to a permit. Removal of dead biological specimens for scientific purposes must not exceed

levels that deteriorate the nutritional base of local scavengers and with the sole purpose of performing pathological analyses.

7(viii) Disposal of waste

- All non-physiological waste shall be removed from the Area. Wastewater and liquid domestic waste may be dumped into the sea, in accordance with Article 5 of Annex III to the Madrid Protocol.
- Waste generated as a consequence of research activities carried out in the Area may be temporarily stored next to the shelter awaiting removal. Such waste must be stowed away according to Annex III to the Madrid Protocol, labeled as trash and secured against accidental loss.

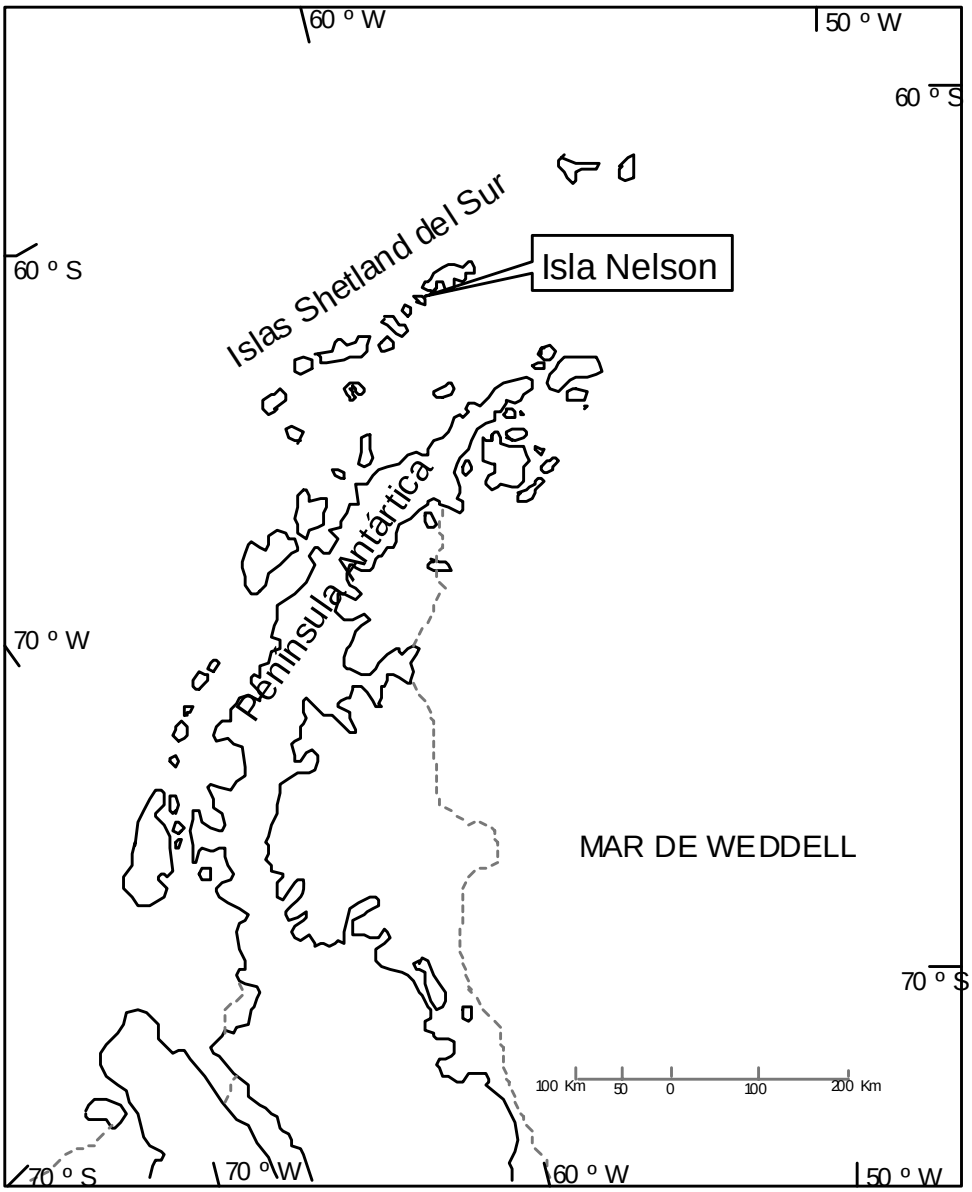
7(ix) Measures that may be necessary to ensure that the aims and objectives of the Management Plan continue to be met

- Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, including the collection of plant material and animals for scientific purposes, to erect or maintain notice boards and any other management measures.
- All scientific structures and instrumentation, including research markers, installed in the Area must be authorized in a Permit and clearly identified by country, name of principal researcher and year of installation. Research markers and structures must be removed at or before the expiry of the Permit.
- If specific scientific projects cannot be concluded within the permitted time, applications must be made for an extension to leave the items *in situ*. When it is necessary for scientific purposes, signs can be installed at the locations where experiments are being carried out.

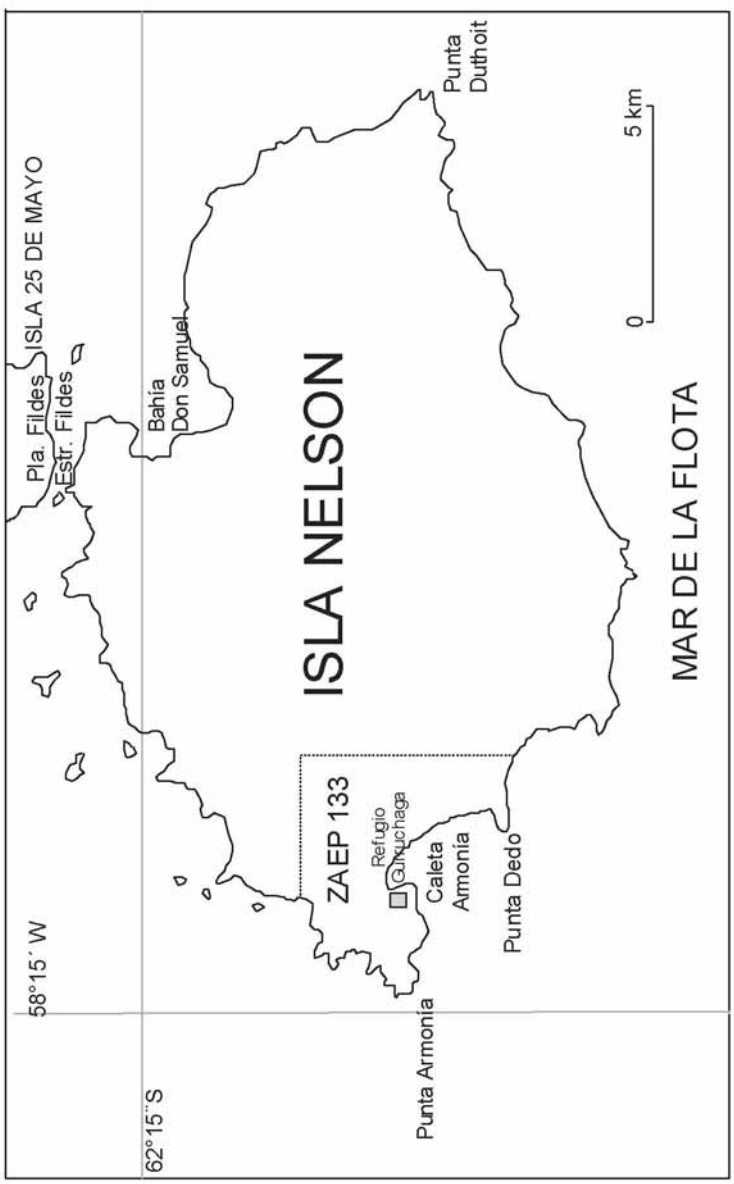
7(x) Requirements for reports

The principal Permit Holder for each Permit issued shall submit a report of activities conducted in the Area once the activity has been finalized. Such a report shall use the form submitted together with the Permit, and then sent to the authority that issued the Permit. The records of ASPA permits and post-visit reports will be exchanged with the other Consultative Parties, as part of the Information Exchange System, as specified in Article 1 of Annex V. Such reports should be stored and made accessible to all interested Parties, SCAR, CCAMLR and COMNAP, to provide the necessary information on human activities within the Area needed for proper management to be carried out.

Map 1: Location of Nelson Island in relation to the South Shetland Islands and the Antarctic Peninsula.

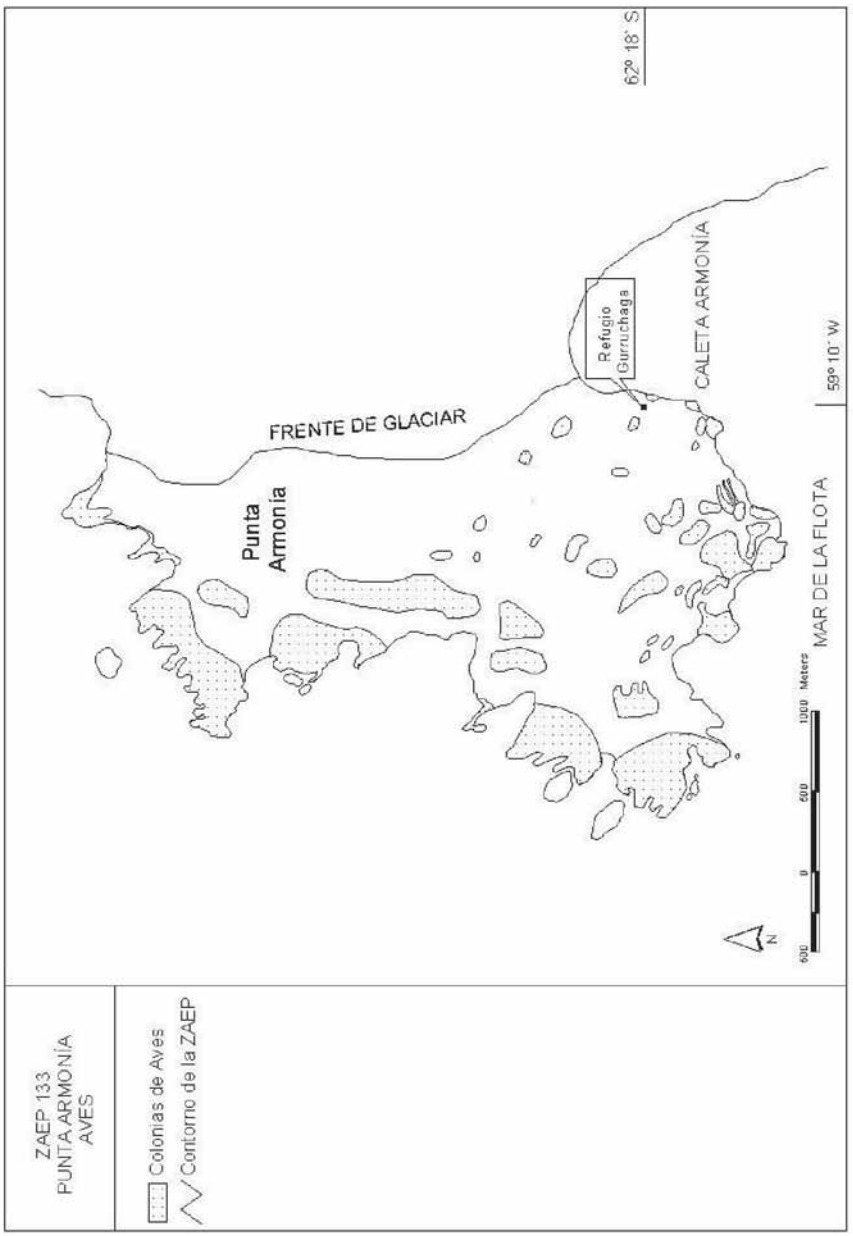


Map 2: Location of Antarctic Specially Protected Area No. 133 on Nelson Island.



Map 3: Details of Antarctic Specially Protected Area No. 133, including Harmony Point and the Toe.

Map 4: Bird concentrations in Harmony Point.



Management Plan for Antarctic Specially Protected Area No. 149

CAPE SHIRREFF AND SAN TELMO ISLAND, LIVINGSTON ISLAND, SOUTH SHETLAND ISLANDS

1. Description of values to be protected

Cape Shirreff (62°27'30" S, 60°47'17" W, a peninsula of approximately 3.1 km^2), Livingston Island, South Shetland Islands, was originally designated as Specially Protected Area (SPA) No.11 through Recommendation IV-11 (1966) following the initiative of Chile in the light of results from the first census of Pinnipedia carried out in the South Shetland Islands (Aguayo and Torres, 1966). Formal proposal of the SPA was made by the United States of America. The Area included the ice-free ground of the Cape Shirreff peninsula north of the Livingston Island ice cap margin. Values protected under the original designation included the diversity of plant and animal life, many invertebrates, a substantial population of southern elephant seals (*Mirounga leonina*) and a small colony of Antarctic fur seals (*Arctocephalus gazella*).

Following designation, the size of the Cape Shirreff Antarctic fur seal colony increased to a level at which biological research could be undertaken without threatening continued increase. A survey of the South Shetland Islands and the Antarctic Peninsula identified Cape Shirreff – San Telmo Island as the most suitable site to monitor Antarctic fur seal colonies that could be affected by fisheries around the South Shetland Islands. In order to accommodate the monitoring program the SPA was redesignated as Site of Special Scientific Interest (SSSI) No. 32 through Recommendation XV-7 (1989) following a joint proposal by Chile, the United Kingdom and the United States of America. Designation was on the grounds that the "presence of both Antarctic fur seal and penguin colonies, and of krill fisheries within the foraging range of these species, make this a critical site for inclusion in the ecosystem monitoring network being established to help meet the objectives of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). The purpose of the designation is to allow planned research and monitoring to proceed, while avoiding or reducing, to the greatest extent possible, other activities which could interfere with or affect the results of the research and monitoring programme or alter the natural features of the Site". The boundaries were enlarged to include San Telmo Island and associated nearby islets. Following a proposal prepared by Chile and USA, the Area was subsequently designated as CCAMLR Ecosystem Monitoring Program (CEMP) Site No. 2 through CCAMLR Conservation Measure 82/XIII (1994), with boundaries identical to SSSI No. 32.

The current Management Plan reaffirms the exceptional scientific and monitoring values associated with the large and diverse populations of seabirds and pinnipeds which breed within the Area, and in particular those of the Antarctic fur seal colony. The Antarctic fur seal colony is the largest in the Antarctic Peninsula region and is the most southerly that is large enough to study growth, survival, diet, reproduction parameters: it numbered around 20,000 individuals in 2003-2004. Monitoring of the Antarctic fur seal colony began in 1965 (Aguayo and Torres, 1966; 1967) and seasonal data are available from 1991, making this one of the longest continuous Antarctic fur seal monitoring programs. As part of the CEMP, monitoring is established to detect and avoid possible adverse effects of fisheries on dependant species such as pinnipeds and seabirds, as well as target species such as Antarctic krill (*Euphausia superba*). Long-term studies are assessing and monitoring the survival, feeding ecology, growth, condition, reproduction, behavior, vital rates, and abundance of pinnipeds and seabirds that breed within the Area. Data from these studies will be compared alongside

environmental and other biological data and fisheries statistics in order to help identify possible cause-effect relationships between fisheries and pinniped and seabird populations.

In 2001 imprints of megaflora were discovered in rocks incorporated within moraines of the Livingston Island glacier (Palma-Heldt *et al.*, in review 2004) (Map 2). The fossiliferous rocks are of two different ages, and early interpretations suggest the rocks may assist understanding relationships between nearby fossil localities at Williams Point and Byers Peninsula, also on Livingston Island (Map 1). Studies of the fossils are on-going and it is important that they are protected from over-sampling.

The original values of the protected area associated with the plant and invertebrate communities cannot be confirmed as primary reasons for special protection of the Area because there is a lack of data available describing the communities.

The boundaries of the Area designated under Recommendation XV-7 have been revised in this Management Plan to include a larger marine component and also to incorporate the two new sites where plant fossils were discovered (Maps 1 and 2). The designated Area (9.7 km^2) comprises the entire Cape Shirreff peninsula north of the permanent Livingston Island ice cap, the San Telmo Island group, and the surrounding and intervening marine area enclosed within 100 m of the coast of the Cape Shirreff peninsula and of the outer islets of the San Telmo Island group. The boundary extends from the San Telmo Island group to the south of Mercury Bluff, and includes the adjacent part of the Livingston Island permanent ice cap where the fossil discoveries were recently made.

2. Aims and objectives

Management at Cape Shirreff aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance;
- avoid activities that would harm or interfere with CEMP research and monitoring activities;
- allow scientific research on the ecosystem and physical environment in the Area associated with the CEMP;
- allow other scientific research within the Area provided it is for compelling reasons which cannot be served elsewhere and provided it will not compromise the values for which the Area is protected;
- allow archaeological research and measures for artifact protection, while protecting the historic artifacts present within the Area from unnecessary destruction, disturbance, or removal;
- minimize the possibility of introduction of alien plants, animals and microbes to the Area; and
- allow visits for management purposes in support of the aims of the management plan.

3. Management activities

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

- Copies of this management plan, including maps of the Area, shall be made available at the following locations:
  a. accommodation facilities at Cape Shirreff;
  b. Saint Kliment Ohridski Station (Bulgaria), Hurd Peninsula, Livingston Island;

c. Arturo Prat Station (Chile), Discovery Bay/Chile Bay, Greenwich Island; and

d. Base Juan Carlos I (Spain), Hurd Peninsula, Livingston Island.

- A sign showing the location and boundaries of the Area with clear statements of entry restrictions should be placed at Módulo Beach to help avoid inadvertent entry.
- Markers, signs or other structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition.
- Visits shall be made as necessary (no less than once every five years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.

4. Period of Designation

Designated for an indefinite period.

5. Maps

- Map 1: Cape Shirreff and San Telmo Island, ASPA No. 149, in relation to Livingston Island, showing the location of Base Juan Carlos I (Spain) and Saint Kliment Ohridiski Station (Bulgaria), and the location of the closest protected area, Byers Peninsula (ASPA No. 126), also on Livingston Island.

  Map specifications: Projection: Lambert Conformal Conic; Spheroid: WGS84; Standard parallels: 1st 60°00' S; 2nd 64°00' S; Central Meridian: 60°45' W; Latitude of Origin: 62°00' S; Horizontal accuracy: < ±200 m. Bathymetric contour interval 50 m and 500 m; vertical accuracy unknown. Data sources: land features from SCAR Antarctic Digital Database v. 4.0 (2002); bathymetry supplied by D. Demer & AMLR, NOAA, USA (2002).

  Inset: the location of Map 1 in relation to the South Shetland Islands and the Antarctic Peninsula.
- Map 2: Cape Shirreff and San Telmo Island, ASPA No. 149, protected area boundary and access guidelines.

  Map specifications: as per Map 1, except the vertical contour interval is 10 m and the horizontal accuracy is expected to be greater than ±5 m. Data source: from digital data supplied by Instituto Antártico Chileno (INACH) (2002) (Torres *et al*., 2001).
- Map 3: Cape Shirreff, ASPA No. 149: breeding wildlife and human features.

  Map specifications and data source: as per Map 2 with the exception of the vertical contour interval, which is 5 m.

6. Description of the Area

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

General description

Cape Shirreff (62°27'30" S, 60°47'17" W) is situated on the northern coast of Livingston Island, the second largest of the South Shetland Islands, between Barclay Bay and Hero Bay (Map 1). The cape lies at the northern extremity of an ice-free peninsula of low-lying, hilly relief. To the west of the

peninsula lies Shirreff Cove, to the east Black Point, and to the south lies the permanent ice cap of Livingston Island. The peninsula has an area of approximately 3.1 km², being 2.6 km from north to south and ranging from 0.5 to 1.5 km from east to west. The interior of the peninsula comprises a series of raised beaches and both rounded and steep-sided hills, rising to a high point at Toqui Hill (82 m) in the central northern part of the peninsula. The western coast is formed by almost continuous cliffs 10 to 15 m high, while the eastern coast has extensive sand and gravel beaches.

A small group of low-lying, rocky islets lie approximately 1200 m west of the Cape Shirreff peninsula, forming the western enclosure of Shirreff Cove. San Telmo Island, the largest of the group, is 950 m in length, up to 200 m in width, and of approximately 0.1 km² in area. There is a sand and pebble beach on the southeastern coast of San Telmo Island, separated from a sand beach to the north by two irregular cliffs and narrow pebble beaches.

Boundaries

The designated Area comprises the entire Cape Shirreff peninsula north of the permanent Livingston Island ice cap, the San Telmo Island group, and the surrounding and intervening marine area (Map 2). The marine boundary encloses an area that extends 100 m from, and parallel to, the outer coastline of the Cape Shirreff peninsula and the San Telmo Island group. In the north, the marine boundary extends from the northwestern extremity of the Cape Shirreff peninsula to the southwest for 1.4 km to the San Telmo Island group, enclosing the intervening sea within Shirreff Cove. The western boundary extends southwards for 1.8 km from 62°28' S to 62°29' S, passing around the western shore of a small island and proceeding a further 1.2 km south-east to the shore of Livingston Island at 62°28'30" S, which is approximately 300 m south of Mercury Bluff. From this point on the coast, the southern boundary extends approximately 300 m due east to 60°49' W, from where it proceeds in a northeasterly direction parallel to the coast for approximately 2 km to the ice sheet margin at 60°47' W. The southern boundary then extends due east for 600 m to the eastern coast. The eastern boundary is marine, following the eastern coastline 100 m from the shore. The boundary encompasses an area of 9.7 km² (Map 2).

Meteorology

Meteorological records for Cape Shirreff have been collected for a number of years by Chilean and US scientists. Data for recent summer seasons (4 Dec - 24 Feb, 1998-99, 1999-2000 and 2000-01) recorded a mean daily air temperature of between 2.0°C and 2.5°C (Goebel et al. 2000; 2001). Precipitation recorded in these seasons (21 Dec - 24 Feb) ranged from 56.0 mm (recorded on 36 days in 2000-01) to 59.6 mm (recorded on 43 days in 1998-99). Year-round meteorological data have not been collected at Cape Shirreff. The peninsula is snow-covered for much of the year, but is usually mostly snow-free by the end of the summer. The peninsula is particularly exposed to weather from the Drake Passage in the north and northwest, the directions from which winds prevail.

Geology, Geomorphology and soils

The geology at Cape Shirreff has not been studied in detail. The Cape Shirreff peninsula is predominantly a raised marine platform, 46 to 53 m above sea level, formed of inclined lava flows belonging to the Younger Volcanic Group of the Middle Jurassic to Lower Cretaceous (Bonner and Smith, 1985). The rocks are volcanic and volcaniclastic, including greenish andesite, basalt lavas, tuffs and agglomerates. The bedrock is largely covered by weathered rock and glacial deposits. Two lower platforms, covered with rounded water-worn pebbles, occur at elevations of approximately 7-9 m and 12-15 m a.s.l (Hobbs, 1968).

A fossilized wood specimen belonging to the *Araucariaceae* family (*Araucarioxylon sp*.) was recorded from Cape Shirreff (Torres, 1993). It is similar to fossils found at Byers Peninsula (ASPA No. 126), a

site with rich fossil flora and fauna 20 km to the southwest. Several fossil specimens have also been found at the northern extremity of the Cape Shirreff peninsula. In 2001-02 fossiliferous rocks of two different ages were discovered incorporated within frontal and lateral moraines of the Livingston Island glacier (Palma-Heldt et al., in review 2004) (Map 2). Rocks in the first group are assigned to the Carnian-Lias (Upper Triassic-Lower Jurassic), and the dominant plant taxa are *Cladophlebis oblonga* Halle, *C. antarctica* Nathorst, *Taeniopteris* Brongniart, *Goeppertella neuqueniana* Herbst, *Coniopteris cf. hymenophylloides* Brongniart, S*phenopteris metzgerioides* Harris, and *S. anderssonii* Halle. The second group consists of rocks assigned to the Lower Cretaceous, and is dominated by conifers from the Araucareaceae Family and *Ptilophyllum acutifolium* Morris.

There is little information on the soils of Cape Shirreff. They are mainly fine ash and scoria and are highly porous. The soils support a sparse vegetation and are enriched by bird and seal colonies which inhabit the Area.

Streams and lakes

There is one permanent lake on Cape Shirreff, located north and at the base of Toqui Hill (Map 3). The lake is approximately 2-3 m deep and 12 m long at full capacity, diminishing in size after February (Torres, 1995). Moss banks grow on surrounding slopes. There are also several ephemeral ponds and streams on the peninsula, fed by snow-melt, especially in January and February. The largest of the streams is found draining southwestern slopes toward the coast at Yamana Beach.

Vegetation and invertebrates

Although a comprehensive survey of the vegetation communities at Cape Shirreff has not been undertaken, Cape Shirreff appears to be less well vegetated than many other sites in the South Shetland Islands. Observations to date have recorded one grass, five species of moss, six of lichen, one fungi and one nitrophilous macroalgae (Torres, 1995).

Patches of Antarctic hairgrass (*Deschampsia antarctica*) can be found in some valleys, often growing with mosses. Mosses are predominantly found inland from the coast. In a valley running northwest from Half Moon Beach, there is a moderately well-developed wet moss carpet of *Warnstorfia laculosa* (=*Calliergidium austro-stramineum,* also =*Calliergon sarmentosum*) (Bonner 1989, in Heap, 1994). In areas with better drainage, *Sanionia uncinata* (=*Drepanocladus uncinatus*) and *Polytrichastrum alpinum* (=*Polytrichum alpinum*) are found. The raised beach areas and some higher plateaus have extensive stands of the foliose nitrophilous macroalga *Prasiola crispa*, which is characteristic of areas enriched by animal excreta and has been observed to replace moss-lichen associations damaged by fur seals (Bonner 1989, in Heap, 1994).

The six lichen species thus far described at Cape Shirreff are *Caloplaca* spp, *Umbilicaria antarctica*, *Usnea antarctica*, *U. fasciata*, *Xanthoria candelaria* and *X. elegans*. The fruticose species *Umbilicaria antarctica*, *Usnea antarctica* and *U. fasciata* form dense growths on cliff faces and on the tops of steep rocks (Bonner 1989, in Heap, 1994). The bright yellow and orange crustose lichens *Caloplaca* spp, *Xanthoria candelaria* and *X. elegans* are common beneath bird colonies and are also present with the fruticose species. The identity of the single recorded fungal species is unknown.

The invertebrate fauna at Cape Shirreff has not been described.

Breeding birds

The avifauna of Cape Shirreff is diverse, with ten species known to breed within the Area, and several non-breeding species present. Chinstrap (*Pygoscelis antarctica*) and gentoo (*P. papua*) penguins breed within the Area; Adélie penguins (*P. adeliae*) have not been observed to breed on Cape Shirreff or San Telmo Island, although are widely distributed throughout the region. Both the chinstrap

and gentoo penguins are found in small colonies on the northeastern and northwestern coasts of Cape Shirreff peninsula (Map 3). In 2000-01 there were 29 active breeding sub-colonies – 16 chinstrap, seven gentoo, and six with both species (Taft et al. 2001) – although the number of the sub-colonies and their composition show some inter-annual variation. In general, the chinstrap penguins nest on higher escarpments, although are also found breeding on small promontories near the shore. Gentoo penguins tend to breed on more gentle slopes and rounded promontories. Data available on penguin numbers are presented in Table 1.

Several other species breed within the Area (Map 3), although data on numbers are intermittent. Kelp gulls (*Larus domincanus*) and brown skuas (*Catharacta loennbergi*) nest in abundance along the entire coastline of the Area. In 2000 there were 25 and 22 breeding pairs of these species respectively (Wayne Trivelpiece, U.S. Antarctic Marine Living Resources Program, pers. comm. 2000; Saxer et al. 2003; Shill et al. 2003; Taft et al. 2001). Sheathbills (*Chionis alba*) nest in two places: one pair has been recorded nesting on the western coast of the Cape Shirreff peninsula; a second pair has been observed breeding among rocks at the northern beach on San Telmo Island, near an Antarctic fur seal breeding site (Daniel Torres, Instituto Antartico Chileno, pers. comm. 2002). Antarctic terns (*Sterna vittata*) breed in several locations, which have been observed to vary from year to year. Since 1990-91 a small colony of approximately 11 pairs of Antarctic shags (*Phalacrocorax [atriceps] bransfieldensis*) has been observed breeding on Yeco Rocks, on the western coast of the peninsula (Torres, 1995). Cape petrels (*Daption capense*) breed on cliffs on the western coast of the Area; 14 pairs were recorded in January 1993, nine in January 1994, three in January 1995 and eight in 1999. Wilson's storm petrels (*Oceanites oceanicus*) also breed on the western coast of the Area. Black-bellied storm petrels (*Fregetta tropica*) have been observed to breed near the field camp on the eastern coast. A large number of non-breeding southern giant petrels (*Macronectes giganteus*) frequent the Area in the summer, although a report of a breeding colony on the peninsula (Bonner 1989, in Heap 1994) is incorrect (Daniel Torres, Instituto Antartico Chileno, pers. comm. 2002). Other bird species recorded but not breeding within the Area include macaroni penguins (*Eudyptes chrysolophus*), king penguins (*Aptenodytes patagonicus*) snow petrels (*Pagadroma nivea*), white-rumped sandpipers (*Calidris fuscicollis*), black-necked swan (*Cygnus melanocorypha*), and the heron *Bubulcus ibis* (Torres, 1995; Olavarría et al., 1999).

Table 1: Chinstrap (*Pygoscelis antarctica*) and gentoo (*P. papua*) penguin numbers at Cape Shirreff.

Year	Chinstrap (pairs)	Gentoo (pairs)	Source
1958	2000 (N3[1])	200-500 (N1[1])	Croxall and Kirkwood, 1979
1981	2164 (A4)	843 (A4)	Sallaberry and Schlatter, 1983 [2]
1987	5200 (A3)	300 (N4)	Woehler, 1993
1997	6907 (N1)	682 (N1)	Hucke-Gaete *et al.* 1997a
1999-00	7744 (N1)	922 (N1)	AMLR data, Carten *et al.* 2001
2000-01	7212 (N1)	1043 (N1)	AMLR data, Taft *et al.* 2001

1. Alphanumeric code refers to the type of count, as in Woehler (1993).

2. Reported data did not specify species. It has been assumed that the higher number referred to Chinstrap penguins. Data were reported as individuals, which have been halved to derive 'pairs' in the table.

Breeding mammals

Cape Shirreff and San Telmo Island are presently the site of the largest known breeding colony of the Antarctic fur seal (*Arctocephalus gazella*) in the Antarctic Peninsula region. Antarctic fur seals were once abundant throughout the South Shetland Islands but were hunted to local extinction between 1820 and 1824. The next observation of Antarctic fur seals at Cape Shirreff was on 14 January 1958, when 27 animals were recorded, including seven juveniles (Tufft, 1958). The following season, on 31 January 1959, a group of seven adult males, one female and one male pup were recorded, along with one dead male pup. A second female arrived three days later, and by mid-March 32 Antarctic fur seals were present. The colony has continued to increase in size, as shown in Table 2. Antarctic fur seal breeding sites at Cape Shirreff are concentrated around the coastline of the northern half of the peninsula (Map 3). At San Telmo Island, breeding is concentrated at either end of the island, with juveniles commonly found near the middle (Torres, 1995). A small number of southern elephant seals (*Mirounga leonina*) breed in October on beaches Half Moon Bay (U.S. Antarctic Marine Living Resources Program, pers. comm. 2000; Daniel Torres, Instituto Antartico Chileno, pers. comm. 2002). On 2 Nov 1999, 34 pups were counted on beaches below Condor Hill (U.S. Antarctic Marine Living Resources Program, unpublished data). Groups of non-breeding southern elephant seals are also present, while isolated animals, mainly juveniles, may be found on various beaches. Weddell seals (*Leptonychotes weddelli*), leopard seals (*Hydrurga leptonyx)*, and crabeater seals (*Lobodon carcinophagus*) have been observed on the Cape Shirreff peninsula Bengtson et al., 1990; Oliva et al., 1988; Torres, 1995). Monitoring of *H. leptonyx* predation on the *A. gazell*a pup population was initiated in 2001-02 and was recorded during the 2003-04 Antarctic season (Vera et al., 2004).

Table 2: Antarctic fur seal (*Arctocephalus gazella*) numbers at Cape Shirreff and San Telmo Island.

	Cape Shirreff			San Telmo Island			Whole Area Totals		
	Adults	Pups	Subtotal	Adults	Pups	Subtotal	Adults	Pups	All
1965-66[1]						N/a	38	12	50
1972-73[1]						N/a	1441	300	1741
1986-87[1]	2430	718	3148	3906	1875	5781	6336	2593	8929
1991-92[1]	4771	2973	7744	684	2340	3024	5455	5313	10768
1992-93[1]	5277	3672	8949	2243	2050	4293	7520	5722	13242
1993-94[1]	5868	3474	9342	3214	2583	5797	9082	6057	15139
1994-95[1]	7020	4036	11056	2702	2083	4785	9722	6119	15841
1995-96[1]	7251	4968	12219	3212	2684	5896	10463	7652	18115
1996-97[1]	6901	5689	12590	3765	3326	7091	10666	9015	19681
1997-98[2]	5531	4943	10474	3205	2808	6013	8736	7751	16487
1998-99[3]	8218	5497	13715	2481	3027*	5508*	10699*	8524*	19223*
1999-00[4]	8267	5865	14132	3308	2699	6007	11575	8564	20139
2000-01[5]	9289	5951	15240	2444	2328	4772*	11733*	8279	20012*
2001-02[6]	8389	6453	14842	4224	2124	6348*	12613*	8577	21190*
2002-03[7]	5232	5408	10640	7604	3505*	11109*	12836*	8913*	21749*

N/a : Not available. * Data based on modelled projections.

Sources: (1) Hucke-Gaete et al., 1997b; (2) Hucke-Gaete et al., 1998; (3) Hucke-Gaete et al., 1999; (4) Vallejos et al., 2000; (5) Hucke-Gaete et al., 2001; (6) Acevedo et al., 2002; (7) Vallejos et al., 2003.

Marine environment

The seafloor surrounding the Cape Shirreff peninsula slopes relatively gently from the coast, reaching depths of 50 m approximately 2-3 km from the shore and 100 m at about 6-11 km (Map 1). This relatively shallow and broad submarine ridge extends to the NW for about 24 km before dropping more steeply at the continental shelf edge. The ridge is about 20 km in width and flanked either side by canyons reaching depths of around 300-400 m. Little published information is available on the nearshore marine environment within the Area. There is abundant macroalgae present in the intertidal zone. The limpet *Nacella concinna* is common, as elsewhere in the South Shetland Islands.

Historical features

Intensive sealing at Cape Shirreff between 1820 and 1824 exterminated almost the entire local populations of Antarctic fur seals and southern elephant seals (Smith and Simpson, 1987). In January 1821 60–75 British sealers were recorded living ashore at Cape Shirreff and 95,000 skins were taken during the 1821-22 season. Evidence of the sealers' occupation remains, with ruins of at least one sealers' hut in the northwestern region of the peninsula, and the shoreline of several bays is littered with timbers and sections of wrecked sealers' vessels. Other evidence of sealing activity includes the remains of stoves, pieces of glass bottles, a wooden harpoon, and a handcrafted bone figure, etc. (Torres and Aguayo, 1993). Fildes (1821) reported that sealers found spars and an anchor stock from the Spanish ship San Telmo on Half Moon Beach around the time she was lost. The ship sank in the Drake Passage at around 62°S on 4 September 1819, with 644 persons aboard (Headland, 1989; Pinochet de la Barra, 1991). These were possibly the first people to die in Antarctica, and the event remains the greatest single loss of life yet to occur south of 60°S. A cairn has been erected on the northwestern coast of Cape Shirreff peninsula to commemorate the loss, which is designated as Historic Monument No. 59 (Map 3).

The remains of a camp were found close to the site of present camp facilities (Torres and Aguayo, 1993). On the evidence of the script on items found at the site, the camp is believed to be of Russian origin and date from the 1940-50s, although its exact origins have yet to be determined. Items found include parts of an antenna, electrical wires, tools, boots, nails, battery cells, canned food, and a wooden box covered by a pyramid of stones. Several notes in Russian, dating from later visits, were found in this box.

In January 1985 a human skull was found at Yamana Beach (Torres, 1992), determined to be that of a young woman (Constantinescu and Torres, 1995). In January 1987 part of a human femur was found on the ground surface nearby, inland from Yamana Beach. After a careful surface survey, no other remains were evident at that time. However, in January 1991, another part of a femur was found in close proximity to the site of the earlier (1987) find. In January 1993 an archaeological survey was carried out in the area, although no further human remains were found. The original samples were dated as from approximately 175 years BP, and it was hypothesised they belong to a single individual; DNA analyses are planned to determine whether this is the case (Torres, 1999).

Human activities and impact

The modern era of human activity at Cape Shirreff has been largely confined to science. During the past three decades, the population of Antarctic fur seals in the South Shetland Islands grew to a level at which tagging and other research could be undertaken without threatening the continued existence and growth of the local population. Chilean studies on Cape Shirreff began in 1965 (Aguayo and Torres, 1966, 1967), with a more intensive program initiated by Chilean scientists in 1982, including an ongoing Antarctic fur seal tagging program (Cattan et al., 1982; Torres, 1984; Oliva et al., 1987). United States investigators have conducted pinniped and seabird surveys at Cape Shirreff and San Telmo Island since 1986-87 (Bengtson et al., 1990).

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CEMP studies at Cape Shirreff began in the mid-1980s, initiated by Chilean and US scientists. Cape Shirreff was designated as a CEMP Site in 1994 to protect the site from damage or disturbance that could adversely affect long-term CEMP monitoring. As part of the CEMP, long-term studies are assessing and monitoring the feeding ecology, growth and condition, reproductive success, behavior, vital rates, and abundance of pinnipeds and seabirds that breed in the Area. The results of these studies will be compared with environmental data, offshore sampling data, and fishery statistics to identify possible cause-effect relationships between krill fisheries and pinniped and seabird populations.

Brucella and herpes virus antibodies were detected in tissue samples taken from Antarctic fur seals at Cape Shirreff over summer seasons from 1998-2001, and Brucella antibodies were also detected in Weddell seal tissue (Blank et al, 1999; Blank et al., 2001a & b). Studies on the mortality of *A. gazella* pups from diseases began in the 2003-04 Antarctic season (Torres and Valdenegro, 2004).

Plastic rubbish was first reported at Cape Shirreff by Torres and Gajardo (1985), and marine debris monitoring studies have been carried out regularly since 1992 (Torres and Jorquera, 1995). Recent surveys have yielded large numbers of articles, mostly of plastic. For example, the 2000-01 season survey recorded a total of 1,774 articles with a total weight of 124.5 kg, almost 98% of which were of plastic and the remainder being of glass, metal and paper. These quantities are comparable to the 1996-97 survey (Torres et al. 1997). It is significant that 34% of the plastic items found in 2000-01 were packing bands, representing approximately 589 bands. Of these, 40 were uncut and another 48 had been knotted into a loop, in contravention of CCAMLR Conservation Measure 63/XV and Annex IV of the Madrid Protocol. Several articles found in this survey were oiled, and some plastic articles were partially burnt. Antarctic fur seal entanglement in marine debris has been recorded frequently at Cape Shirreff (Torres, 1990; Hucke-Gaete et al. 1997c), primarily in fishing equipment such as nylon ropes, net fragments and packing bands. Between 1987-97 a total of 20 Antarctic fur seals were recorded with 'neck collars'. Plastic fibers are also found in kelp gull and chinstrap penguin nests (Torres and Jorquera, 1992), as well as those of sheathbills (Torres and Jorquera, 1994).

6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

A semi-permanent summer-only research camp has been established on the eastern coast of the Cape Shirreff peninsula, located at the base of Condor Hill (62°28'12" S, 60°46'17" W) (Map 3). Buildings for the camp remain *in situ* year-round. In 2001 the camp comprised a four-person fiberglass cabin (Chile), known as 'Guillermo Mann', and three additional small buildings with accommodation for six known as Cape Shirreff Field Station (US). The Chilean cabin was installed in 1990-91, while the US camp was established in 1996-97. Toilet facilities and storage areas are also present, and tents are erected seasonally nearby as required. The remains of a camp, believed to be of Russian origin, are present near the Chilean and US camps. In other parts of the peninsula, sparse evidence may be found of 19th Century sealers' camps (Smith and Simpson, 1987; Torres, 1993; Stehberg and Lucero, 1996). A cairn (Historic Monument No. 59) has been erected on Gaviota Hill on the northwestern coast to commemorate the loss of those aboard the *San Telmo* in 1819 (Map 3). In 1998-99 a 5x7 m bird observation / emergency hut (62°27'41" S, 60°47'28" W) was installed by US scientists on the northern slopes of Enrique Hill above Bahamonde Beach, close to the penguin colonies (Map 3).

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

The nearest protected areas to Cape Shirreff are Byers Peninsula (ASPA No. 126), which lies about 20 km to the southwest; Port Foster (ASPA No. 145, Deception Island) and other parts of Deception Island (ASPA No. 140), which are approximately 30 km to the south; and 'Chile Bay' (Discovery Bay) (ASPA No. 144), which lies about 30 km to the east at Greenwich Island (Map 1). CEMP Site No. 1 Seal Islands (60°59'S, 55°23'W), the only other CEMP site in the vicinity, is located 325 km to the northeast, 7 km north of Elephant Island.

7. Permit conditions

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

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

7(i) Access to and movement within the Area

Access to the Area shall be by small boat, by helicopter, on foot or by vehicle.

BOAT ACCESS

Access by small boats should be at either of the following locations (Map 2):

- the eastern coast of the peninsula at El Módulo Beach, 300 m north of the camp facilities, where a deep channel enables relatively easy access;
- the northern end of Half Moon Beach, on the eastern coast of the peninsula;
- the northern end of Yámana Beach, on the western coast (suitable at high tide only);
- the southern end of the northern beach on San Telmo Island.

Access by small boat at other locations around the coast is allowed, provided this is consistent with the purposes for which a Permit has been granted. Two anchorages have been identified close to the Area; 1600 m north-east of the main camp facilities and approximately 800 m north of San Telmo Island [note: these remain in need of confirmation – positions in the CEMP plan do not conform with those on CEMP maps]. Visitors should, where practicable, avoid landing where pinniped or seabird colonies are present on or near the coast.

AIRCRAFT ACCESS AND OVERFLIGHT

Because of the widespread presence of pinnipeds and seabirds over the Cape Shirreff peninsula during the breeding season (1 November – 31 March), access to the Area by aircraft in this period is strongly discouraged. Where possible and by preference, access should be by small boat. All restrictions on aircraft access and overflight stipulated in this plan shall apply during the period 1 November – 31 March. When necessary for purposes consistent with plan objectives and alternative means of access are unavailable or impractical, aircraft may operate and land within the Area according to strict observance of the following conditions:

- All overflight of the Area for purposes other than access shall be conducted according to the height restrictions imposed in the following table:

Minimum overflight heights within the Area according to aircraft type

Aircraft type	Number of Engines	Minimum height above ground	
		Feet	Meters
Helicopter	1	*2460*	750
Helicopter	2	*3300*	1000
Fixed-wing	1 or 2	*1500*	450
Fixed-wing	4	*3300*	1000

- Helicopter access is prohibited within the Area north of 62°28' S (Map 2), or north of 62°29' S and west of 60°48' W, which includes the areas where the greatest concentrations of wildlife are found;
- Helicopter landing is permitted at two designated sites (Map 2). The landing sites with their coordinates are described as follows:
  - (A) the summit of Condor Hill (50 m, or ~150 ft) (62°46’27"S, 60°28’17"W), which is the preferred landing site for most purposes; and
  - (B) on the wide flat area on Ancho Pass (25 m), situated between Condor Hill and Selknam Hill (62°46’48"S, 60°28’16"W).
- The designated aircraft approach route is from the south over the Livingston Island ice cap, proceeding from the permanent ice edge north along the main ridgeline of the peninsula for 1200 m (~ 0.65 n. mi.) towards Selknam Hill (50 m, or ~150 ft). From here aircraft should proceed east across Ancho Pass (where landing is permitted, when appropriate) for 700 m (~ 0.4 n. mi.) direct to the summit of Condor Hill (50 m, or ~150 ft). Aircraft should avoid overflight of the hut and beach areas on the eastern side of Condor Hill. The departure route is identical in reverse;
- Weather with a low cloud ceiling often prevails at Cape Shirreff, particularly in the vicinity of the permanent ice cap, which can make snow/ice ground definition difficult to discern from the air. On-site personnel who may be advising on local conditions before aircraft approaches should be aware that a minimum cloud base of 150 m (500 ft) AMSL over the approach zone of the Livingston Island ice cap is necessary in order for access guidelines to be followed;
- Use of smoke grenades to indicate wind direction is prohibited within the Area unless absolutely necessary for safety, and any grenades used should be retrieved.

VEHICLE ACCESS AND USE

Access by vehicle over land may be made to the boundary to the Area. Access by vehicle over sea ice may be made to the shore within the Area. Vehicles are permitted to operate on land only in the coastal zone between Módulo Beach and the Chilean/US camp facilities (Map 3). The use of vehicles elsewhere within the Area is prohibited.

FOOT ACCESS AND MOVEMENT WITHIN THE AREA

With the exception of the restricted use of vehicles described above, movement on land within the Area shall be on foot. Pilots, air, boat or vehicle crew, or other people in aircraft, boats, or vehicles are prohibited from moving on foot beyond the immediate vicinity of their landing site or the hut facilities unless specifically authorised by Permit. Visitors should move carefully so as to minimize disturbance to flora, fauna, and soils, and should walk on snow or rocky terrain if practical, but taking care not to damage lichens. Pedestrian traffic should be kept to the minimum consistent with the objectives of any permitted activities and every reasonable effort should be made to minimize effects.

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

- Scientific research that will not jeopardize the values of the Area, in particular those associated with the CEMP;
- Essential management activities, including monitoring;
- Restrictions on times and places at which activities may be conducted apply within the Area, and are specified in the relevant sections of this management plan;
- The appropriate authority should be notified of any activities/measures undertaken that were not included in the authorized Permit.

7(iii) Installation, modification or removal of structures

- Structures shall not be erected within the Area except as specified in a Permit.
- The principal camp facilities shall be limited to the area within 200 m of the existing Chilean and US field camps (Map 3).
- Small temporary hides, blinds or screens may be constructed for the purpose of facilitating scientific study of the fauna.
- All structures, scientific equipment or markers installed in the Area must be approved by Permit for a specified period, and adequately identified by country, name of the responsible investigator or agency, and year of installation. All such items should be made of materials that pose minimal risk of harm to fauna or of contamination of the Area. Installation, maintenance, modification or removal of structures shall be undertaken in a manner that minimizes disturbance to flora and fauna, preferably avoiding the main breeding season (1 November–1 March).
- Removal of structures, equipment, hides or markers for which the period specified in the Permit has expired shall be a condition of the Permit.

7(iv) Location of field camps

- Camping is permitted within 200 m of the facilities of the Chilean and US field camps, on the eastern coast of the Cape Shirreff peninsula (Map 3).
- The US bird observation hut on the northern slopes of Enrique Hill (62°27’41" S, 60°47’28" W) may be used for temporary overnight camping for research purposes, although should not be used as a semi-permanent camp.
- Camping is permitted on San Telmo Island when necessary for purposes consistent with plan objectives. The preferred camping location is at the southern end of the northern beach on the island.
- Camping is prohibited elsewhere within the Area.

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

- No living animals, plant material or microorganisms shall be deliberately introduced into the Area and the precautions listed in 7(ix) below shall be taken against accidental introductions.
- Dressed poultry should be free of disease or infection before shipment to the Area and, if introduced to the Area for food, all parts and wastes of poultry shall be completely removed from the Area and incinerated or boiled long enough to kill any potentially infective bacteria or viruses.
- No herbicides or pesticides shall be brought into the Area.
- Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in the Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.
- Fuel is not to be stored in the Area, unless specifically authorized by Permit for scientific or management purposes.
- Anything introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of their introduction into the environment is minimized.
- If release occurs which is likely to compromise the values of the Area, removal is encouraged only where the impact of removal is not likely to be greater than that of leaving the material *in situ*.

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

- Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the Protocol on Environmental Protection to the Antarctic Treaty.
- Where taking or harmful interference with animals is involved, the *SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica* should be used as a minimum standard. CEMP research programs in progress within the Area should be consulted before other Permits for taking or harmful interference with animals are granted.

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

- Collection or removal of anything not brought into the Area by the Permit holder shall only be in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs.
- Anything of human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit Holder or otherwise authorized, may be removed unless the impact of removal is likely to be greater than leaving.

7(viii) Disposal of waste

- All wastes shall be removed from the Area, except human wastes, which may be removed from the Area or disposed of into the sea.

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

- Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of limited samples for analysis or review, or for protective measures.
- Any specific sites of long-term monitoring that are vulnerable to inadvertent disturbance should be appropriately marked.
- To help maintain the scientific values found at Cape Shirreff and San Telmo Island visitors shall take special precautions against introductions. Of concern are pathogenic, microbial or plant introductions sourced from other Antarctic sites, including stations, or from regions outside Antarctica. Visitors shall ensure that sampling equipment or markers brought into the Area are clean. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks, carry-bags and tents) shall be thoroughly cleaned before entering the Area.
- To avoid interference with long-term research and monitoring activities or possible duplication of effort, persons planning new projects within the Area should consult with established programs working at Cape Shirreff, such as those of Chile and the US, before initiating the work.
- In view of the fact that geological sampling is both permanent and of cumulative impact, visitors removing geological samples from the Area shall complete a record describing the geological type, quantity and location of samples taken, which should, at a minimum, be deposited with their National Antarctic Data Centre or with the Antarctic Master Directory.

7(x) Requirements for reports

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

8. References Documents

Acevedo, J., Vallejos, V., Vargas, R., Torres, J.P. and Torres, D. 2002. Informe científico. ECA XXXVIII (2001/2002). Proyecto INACH 018 "Estudios ecológicos sobre el lobo fino antártico, Arctocephalus gazella", cabo Shirreff, isla Livingston, Shetland del Sur, Antártica. *Ministerio de Relaciones Exteriores, Instituto Antártico Chileno. Nº Ingreso 642/710, 11.ABR.2002*.

Agnew, A.J. 1997. Review: the CCAMLR Ecosystem Monitoring Programme. *Antarctic Science 9 (3): 235-242.*

Aguayo, A. 1978. The present status of the Antarctic fur seal *Arctocephalus gazella* at the South Shetland Islands. *Polar Record 19: 167-176.*

Aguayo, A. and Torres, D. 1966. A first census of Pinnipedia in the South Shetland Islands and other observations on marine mammals. In: *SCAR / SCOR / IAPO / IUBS Symposium on Antarctic Oceanography, Santiago, Chile, 13-16 September 1966, Section 4: Coastal Waters: 166 168.*

Aguayo, A. and Torres, D. 1967. Observaciones sobre mamiferos marinos durante la Vigésima Comisión Antártica Chilena. Primer censo de pinípedos en las Islas Shetland del Sur. *Revta. Biol. Mar., 13(1): 1 57.*

Aguayo, A. and Torres, D. 1993. Análisis de los censos de *Arctocephalus gazella* efectuados en el Sitio de Especial Interés Científico No. 32, isla Livingston, Antártica. *Serie Científica Instituto Antártico Chileno 43: 87-91.*

Bengston, J.L., Ferm, L.M., Härkönen, T.J. and Stewart, B.S. 1990. Abundance of Antarctic fur seals in the South Shetland Islands, Antarctica, during the 1986/87 austral summer. In: Kerry, K. and Hempel, G. (Eds). *Antarctic Ecosystems, Proceedings of the Fifth SCAR Symposium on Antarctic Biology. Springer Verlag, Berlin: 265 270.*

Blank, O., Retamal, P., Torres D. and Abalos, P. 1999. First record of *Brucella* spp. antibodies in *Arctocephalus gazella* and *Leptonychotes weddelli* from Cape Shirreff, Livingston Island, Antarctica. (SC-CAMLR-XVIII/BG/17.) *CCAMLR Scientific Abstracts: 5.*

Blank, O., Retamal, P., Abalos P. and Torres, D. 2001a. Additional data on anti-*Brucella* antibodies in *Arctocephalus gazella* from Cape Shirreff, Livingston Island, Antarctica. *CCAMLR Science 8 (2001): 147-154.*

Blank, O., Montt, J.M., Celedón M. and Torres, D. 2001b. Herpes virus antobodies in *Arctocephalus gazella* from Cape Shirreff, Livingston Island, Antarctica. *WG-EMM- 01/59.*

Bonner, W.N. and Smith, R.I.L. (Eds) 1985. Conservation areas in the Antarctic. *SCAR, Cambridge: 59-63.*

Carten, T.M., Taft, M., Trivelpiece W.Z. and Holt, R.S. 2001. Seabird research at Cape Shirreff, Livingston Island, Antarctica, 1999/2000. In: *Lipsky, J. (ed) AMLR (Antarctic Marine Living Resources) 1999-2000 Field Season Report, Ch. 7. Antarctic Ecosystem Research Division, Southwest Fisheries Science Center, La Jolla, California.*

Cattan, P., Yánez, J., Torres, D., Gajardo, M. and Cárdenas, J. 1982. Censo, marcaje y estructura poblacional del lobo fino antártico *Arctocephalus gazella* (Peters, 1875) en las islas Shetland del Sur, Chile. *Serie Científica Instituto Antártico Chileno 29: 31 38.*

CCAMLR, 1997. Management plan for the protection of Cape Shirreff and the San Telmo Islands, South Shetland Islands, as a site included in the CCAMLR Ecosystem Monitoring Program. In: *Schedule of Conservation Measures in Force 1996/97: 51-64.*

Constantinescu, F. and Torres, D. 1995. Análisis bioantropológico de un cráneo humano hallado en cabo Shirreff, isla Livingston, Antártica. *Ser. Cient. INACH 45: 89-99.*

Croxall, J.P. and Kirkwood, E.D. 1979. The distribution of penguins on the Antarctic Peninsula and the islands of the Scotia Sea. *British Antarctic Survey, Cambridge.*

Everett, K.R. 1971. Observations on the glacial history of Livingston Island. *Arctic 24(1): 41-50.*

Fildes, R. 1821. A journal of a voyage from Liverpool towards New South Shetland on a sealing and sea elephant adventure kept on board Brig Robert of Liverpool, Robert Fildes, 13 August - 26 December 1821. *MS 101/1, Scott Polar Research Institute, Cambridge.*

Goebel, M.E., Rutishauser, M., Parker, B., Banks, A., Costa, D.P., Gales, N. and Holt, R.S. 2001a. Pinniped research at Cape Shirreff, Livingston Island, Antarctica, 1999/2000. In: *Lipsky, J. (ed) AMLR (Antarctic Marine Living Resources) 1999-2000 Field Season Report, Ch. 8. Antarctic Ecosystem Research Division, Southwest Fisheries Science Center, La Jolla, California.*

Goebel, M.E., Parker, B., Banks, A., Costa, D.P., Pister, B. and Holt, R.S. 2001b. Pinniped research at Cape Shirreff, Livingston Island, Antarctica, 2000/2001. In: *Lipsky, J. (ed) AMLR (Antarctic Marine Living Resources) 2000-01 Field Season Report, Ch. 8. Antarctic Ecosystem Research Division, Southwest Fisheries Science Center, La Jolla, California.*

Garcia, M., Aguayo, A. and Torres, D. 1995. Aspectos conductuales de los machos de lobo fino antartico, *Arctocephalus gazella* en Cabo Shirreff, isla Livingston, Antártica, durante la fase de apareamiento. *Serie Científica Instituto Antártico Chileno 45: 101-112.*

Harris, C.M. 2001. Revision of management plans for Antarctic protected areas originally proposed by the United States of America and the United Kingdom: Field visit report. *Internal report for the National Science Foundation, US, and the Foreign and Commonwealth Office, UK. Environmental Research and Assessment, Cambridge.*

Headland, R. 1989. Chronological list of Antarctic expeditions and related historical events*. Cambridge University Press, Cambridge.*

Heap, J. (ed) 1994. Handbook of the Antarctic Treaty System. 8th Edn. *U.S. Department of State, Washington.*

Hobbs, G.J. 1968. The geology of the South Shetland Islands. IV. The geology of Livingston Island. *British Antarctic Survey Scientific Reports 47.*

Hucke-Gaete, R., Acevedo, J., Osman, L., Vargas, R., Blank, O. and Torres, D. 2001. Informe científico. ECA XXXVII (2000/2001). *Proyecto 018 "Estudios ecológicos sobre el lobo fino antártico, Arctocephalus gazella", cabo Shirreff, isla Livingston, Shetland del Sur, Antártica.*

Hucke-Gaete, R., Torres, D., Aguayo, A., and Vallejos, V. 1998. Decline of Arctocephalus gazella population at SSSI No. 32, South Shetlands, Antarctica (1997/98 season): a discussion of possible causes. *WG-EMM-98/17. August 1998. Kochin. 10: 16–19*

Hucke-Gaete, R, Torres, D., and Vallejos, V. 1997a. Population size and distribution of *Pygoscelis antarctica* and *P. papua* at Cape Shirreff, Livingston Island, Antarctica (1996/97 Season). *CCAMLR WG-EMM-97/62.*

Hucke-Gaete, R, Torres, D., Vallejos, V. and Aguayo, A. 1997b. Population size and distribution of *Arctocephalus gazella* at SSSI No. 32, Livingston Island, Antarctica (1996/97 Season). *CCAMLR WG-EMM-97/62.*

Hucke-Gaete, R, Torres, D., and Vallejos, V. 1997c. Entanglement of Antarctic fur seals, *Arctocephalus gazella*, by marine debris at Cape Shirreff and San Telmo Islets, Livingston Island, Antarctica:1998-1997. *Serie Científica Instituto Antártico Chileno 47: 123-135.*

Olavarría, C., Coria, N., Schlatter, R., Hucke-Gaete, R., Vallejos, V., Godoy, C., Torres D. and Aguayo, A. 1999. Cisnes de cuello negro, *Cygnus melanocoripha* (Molina, 1782) en el área de las islas Shetland del Sur y península Antártica. *Serie Científica Instituto Antártico Chileno 49: 79-87.*

Oliva, D., Durán, R, Gajardo, M. and Torres, D. 1987. Numerical changes in the population of the Antarctic fur seal *Arctocephalus gazella* at two localities of the South Shetland Islands. *Serie Científica Instituto Antártico Chileno 36: 135-144.*

Oliva, D., Durán, R, Gajardo, M. and Torres, D. 1988. Population structure and harem size groups of the Antarctic fur seal *Arctocephalus gazella* Cape Shirreff, Livingston Island, South Shetland Islands. *Meeting of the SCAR Group of Specialists on Seals, Hobart, Tasmania, Australia. Biomass Report Series, 59: 39.*

Palma-Heldt, S., Leppe, M., Fernandoy, F. and Moisan, P. [in review 2004]. Mesozoic paleoflora from Cape Shirreff, Livingston Island, Antactic Peninsula. *Submited to Antarctic Science in October 2003.*

Pinochet de la Barra, O. 1991. El misterio del "San Telmo". ¿Náufragos españoles pisaron por primera vez la Antártida? *Revista Historia (Madrid), 16(18): 31-36.*

Sallaberry, M. and Schlatter, R. 1983. Estimacíon del número de pingüinos en el Archipiélago de las Shetland del Sur. *Serie Científica Instituto Antártico Chileno 30: 87-91.*

Saxer, I.M., Scheffler, D.A., and Trivelpiece W.Z. 2003. Seabird research at Cape Shirreff. In: *Lipsky, J. (ed) AMLR (Antarctic Marine Living Resources) 2001/2002 Field Season Report. Ch. 6. Antarctic Ecosystem Research Division, Southwest Fisheries Science Center, La Jolla, California. NOAA-TM-NMFS-SWFSC-350.*

Shill, L.F., Antolos, M., and Trivelpiece W.Z. 2003. Seabird research at Cape Shirreff. In: *Lipsky, J. (ed) AMLR (Antarctic Marine Living Resources) 2002/2003 Field Season Report, Ch. 6. Antarctic Ecosystem Research Division, Southwest Fisheries Science Center, La Jolla, California. NOAA-TM-NMFS-SWFSC-355.*

Smith, R.I.L. and Simpson, H.W. 1987. Early Nineteeth Century sealers' refuges on Livingston Island, South Shetland Islands. *British Antarctic Survey Bulletin 74: 49-72.*

Stehberg, R. and V. Lucero, 1996. Excavaciones arqueológicas en playa Yámana, cabo Shirreff, isla Livingston, Shetland del Sur, Antártica. *Serie Científica Instituto Antártico Chileno 46: 59-81.*

Taft, M.R., Saxer, I.M., and Trivelpiece W.Z 2001. Seabird research at Cape Shirreff, Livingston Island, Antarctica, 2000/2001. In: *Lipsky, J. (ed) AMLR (Antarctic Marine Living Resources) 2000-01 Field Season Report, Ch. 7. Antarctic Ecosystem Research Division, Southwest Fisheries Science Center, La Jolla, California. NOAA-TM-NMFS-SWFSC-314.*

Torres, D. 1984. Síntesis de actividades, resultados y proyecciones de las investigaciones chilenas sobre pinípedos antarcticos. *Boletín Antártico Chileno 4(1): 33-34.*

Torres, D. 1990. Collares plásticos en lobos finos antárticos: Otra evidencia de contaminación. *Boletín Antártico Chileno 10(1): 20-22 .*

Torres, D. 1992. ¿Cráneo indígena en cabo Shirreff? Un estudio en desarrollo. *Boletín Antártico Chileno* **11**(2): 2-6.

Torres, D. 1994. Synthesis of CEMP activities carried out at Cape Shirreff. *Report to CCAMLR WG-CEMP 94/28.*

Torres, D. 1995. Antecedentes y proyecciones científicas de los estudios en el SEIC No. 32 y Sitio CEMP "Cabo Shirreff e islotes San Telmo", isla Livingston, Antártica. *Serie Científica Instituto Antártico Chileno 45: 143-169.*

Torres, D. 1999. Observations on ca. 175-Year Old Human Remains from Antarctica (Cape Shirreff, Livingston Island, South Shetlands). *International Journal of Circumpolar Health 58: 72-83.*

Torres, D. and Aguayo, A. 1993. Impacto antrópico en cabo Shirreff, isla Livingston, Antártica. *Serie Científica Instituto Antártico Chileno 43: 93-108.*

Torres, D. and Gajardo, M. 1985. Información preliminar sobre desechos plásticos hallados en cabo Shirreff, isla Livingston, Shetland del Sur, Chile. *Boletín Antártico Chileno 5(2): 12-13.*

Torres, D. and Jorquera, D. 1992. Analysis of Marine Debris found at Cape Shirreff, Livingston Island, South Shetlands, Antarctica. *SC-CAMLR/BG/7, 12 pp. CCAMLR, Hobart, Australia.*

Torres, D. and Jorquera, D. 1994. Marine Debris Collected at Cape Shirreff, Livinston Island, during the Antarctic Season 1993/94. *CCMALR-XIII/BG/17, 10 pp. 18 October 1994. Hobart, Australia.*

Torres, D. and Jorquera, D. 1995. Línea de base para el seguimiento de los desechos marinos en cabo Shirreff, isla Livingston, Antártica. *Serie Científica Instituto Antártico Chileno 45: 131-141.*

Torres, D., Jaña, R., Encina, L., and Vicuña, P. 2001. Cartografía digital de cabo Shirreff, isla Livingston, Antártica: un avance importante. *Boletín Antártico Chileno 20 (2): 4-6.*

Torres, D., Jorquera, D., Vallejos, V., Hucke-Gaete, R. and Zarate, S. 1997. Beach debris survey at Cape Shirreff, Livingston Island, during the Antarctic season 1996/97. *Serie Científica Instituto Antártico Chileno 47: 137-147.*

Torres, D.E. and Valdenegro V. 2004. Nuevos registros de mortalidad y necropsias de cachorros de lobo fino antártico, Arctocephalus gazella, en cabo Shirreff, sila Livingston, Antártica. *Boletín Antártico Chileno 23 (1).*

Torres, D., Vallejos, V., Acevedo, J., Hucke-Gaete, R. and Zarate, S. 1998. Registros biologicos atípico en cabo Shirreff, isla Livingston, Antártica. *Boletín Antártico Chileno 17 (1): 17-19.*

Torres, D., Vallejos, V., Acevedo, J., Blank, O., Hucke-Gaete, R. and Tirado, S. 1999. Actividades realizadas en cabo Shirreff, isla Livingston, en temporada 1998/99. *Boletín Antártico Chileno 18 (1): 29-32.*

Torres, T. 1993. Primer hallazgo de madera fósil en Cabo Shirreff, isla Livingston, Antártica. *Serie Científica Instituto Antártico Chileno 43: 31-39.*

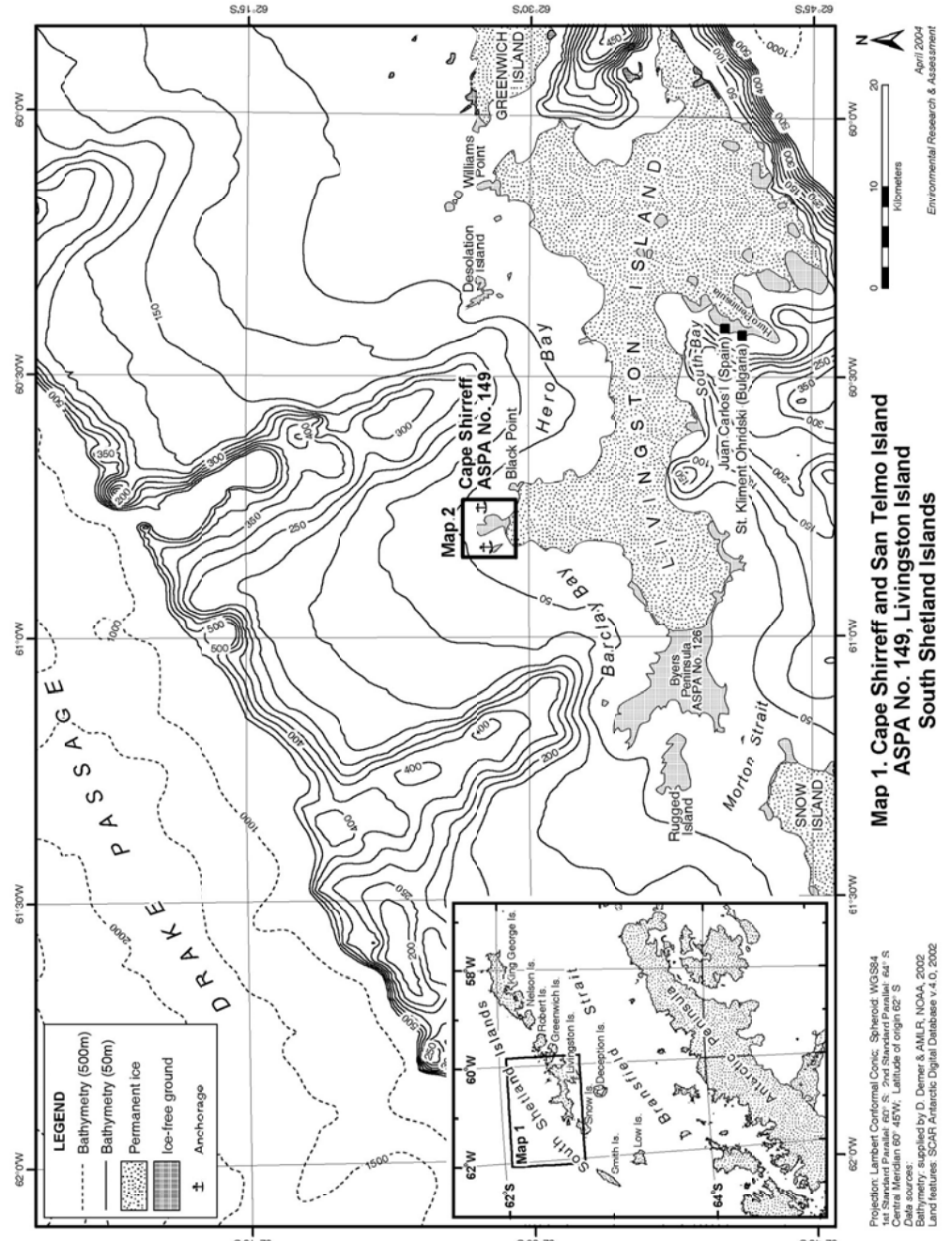
Tufft, R. 1958. Preliminary biology report Livingston Island summer survey. *Unpublished British Antarctic Survey report, BAS Archives Ref. AD6/2D/1957/N2.*

Vallejos, V., Acevedo, J., Blank, O., Osman, L. and Torres, D. 2000. Informe científico-logístico. ECA XXXVI (1999/2000). Proyecto 018 "Estudios ecológicos sobre el lobo fino antártico, Arctocephalus gazella", cabo Shirreff, archipiélago de las Shetland del Sur, Antártica. *Ministerio de Relaciones Exteriores, Instituto Antártico Chileno. Nº Ingreso 642/712, 19 ABR.2000.*

Vallejos, V., Osman, L., Vargas, R., Vera, C. and Torres, D. 2003. Informe científico. ECA XXXIX (2002/2003). Proyecto INACH 018 "Estudios ecológicos sobre el lobo fino antártico, Arctocephalus gazella", cabo Shirreff, isla Livingston, Shetland del Sur, Antártica. *Ministerio de Relaciones Exteriores, Instituto Antártico Chileno.*

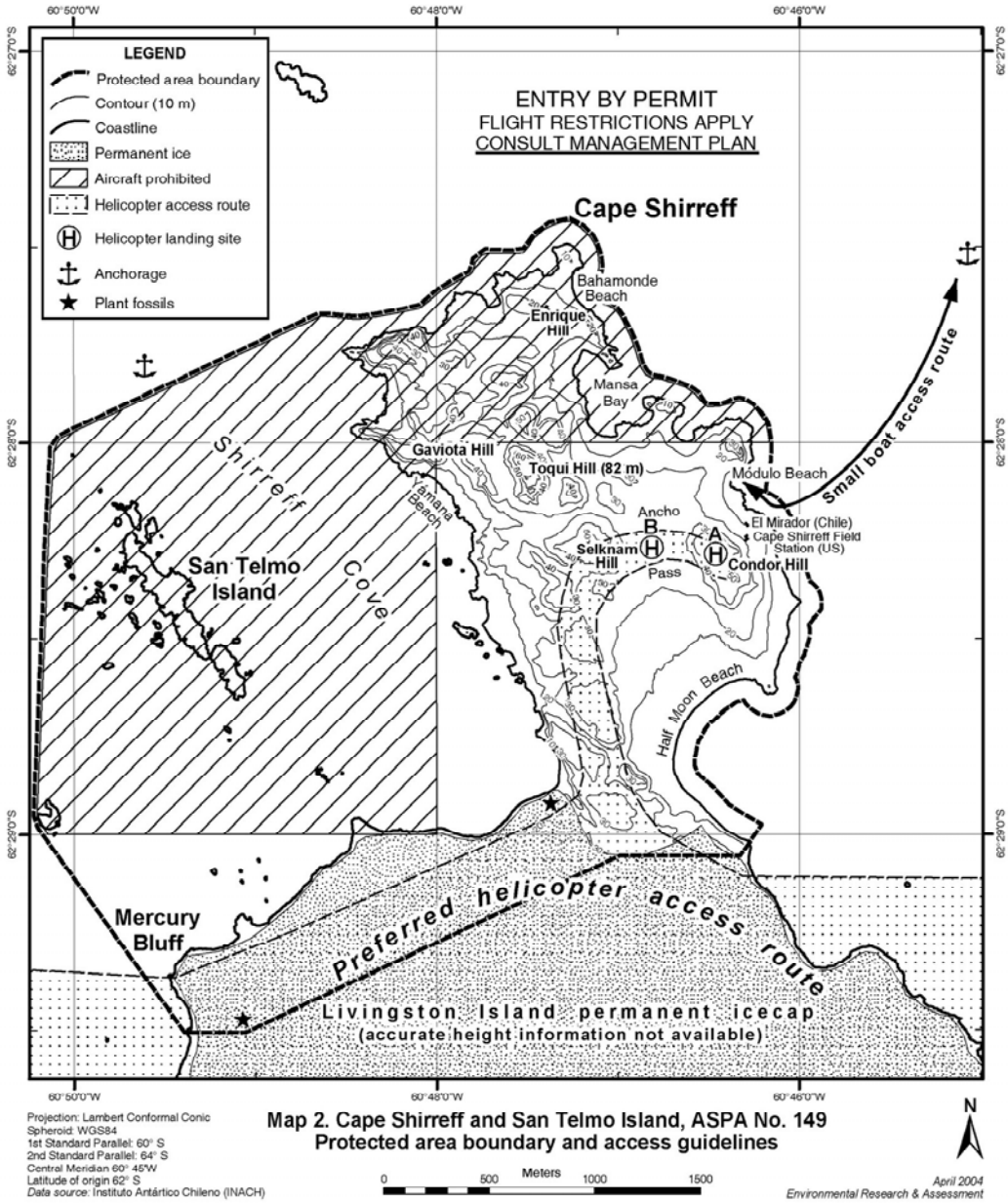
Vera, C., Vargas, R. and Torres, D. 2004. El impacto de la foca leopardo en la población de cachorros de lobo fino antártico en cabo Shirreff, Antártica, durante la temporada 2003/2004. Boletín Antártico Chileno 23 (1).

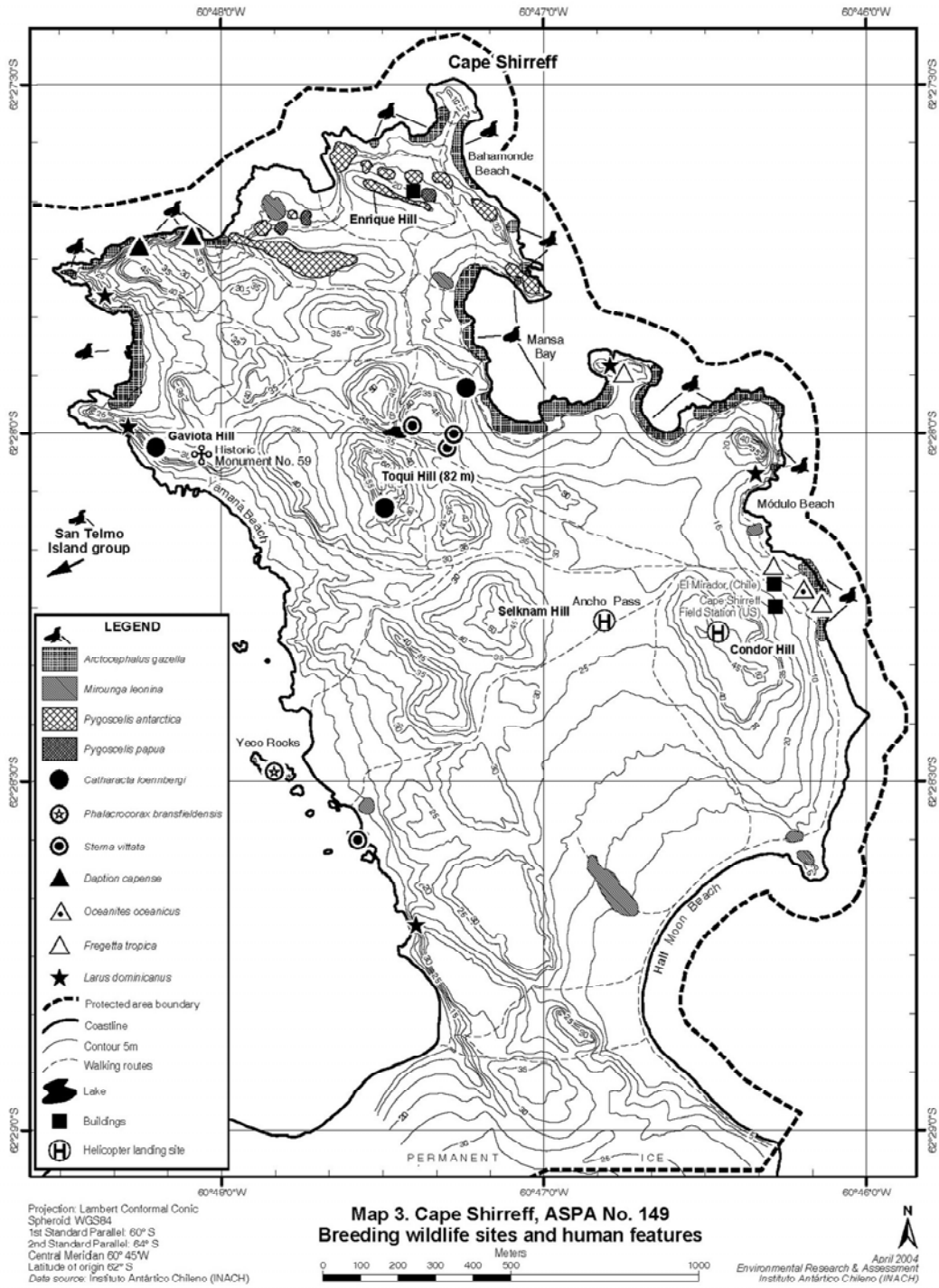
Woehler, E.J. (ed) 1993. The distribution and abundance of Antarctic and sub-Antarctic penguins. *SCAR, Cambridge.*



Map 1. Cape Shirreff and San Telmo Island
ASPA No. 149, Livingston Island
South Shetland Islands

Projection: Lambert Conformal Conic; Spheroid: WGS84
1st Standard Parallel: 62° S, 2nd Standard Parallel: 64° S,
Central Meridian: 60° 45'W, Latitude of origin: 62° S
Data sources:
Bathymetry: supplied by D. Demer & AMLR, NOAA, 2002
Land features: SCAR Antarctic Digital Database v 4.0, 2002


60°50'0"W
60°48'0"W
60°46'0"W
62°27'0"S
62°28'0"S
62°29'0"S
LEGEND
Protected area boundary
Contour (10 m)
Coastline
Permanent ice
Aircraft prohibited
Helicopter access route
Helicopter landing site
Anchorage
Plant fossils
ENTRY BY PERMIT
FLIGHT RESTRICTIONS APPLY
CONSULT MANAGEMENT PLAN
Cape Shirreff
Bahamonde Beach
Enrique Hill
Mansa Bay
Gaviota Hill
Toqui Hill (82 m)
Módulo Beach
Small boat access route
Amand Beach
Ancho
El Mirador (Chile)
Cape Shirreff Field Station (US)
Selknam Hill
Condor Hill
Pass
Shirreff Cove
San Telmo Island
Half Moon Beach
Mercury Bluff
Preferred helicopter access route
Livingston Island permanent icecap
(accurate height information not available)
Projection: Lambert Conformal Conic
Spheroid: WGS84
1st Standard Parallel: 60° S
2nd Standard Parallel: 64° S
Central Meridian 60° 45'W
Latitude of origin 62° S
Data source: Instituto Antártico Chileno (INACH)
Map 2. Cape Shirreff and San Telmo Island, ASPA No. 149
Protected area boundary and access guidelines
0
500
1000
1500
Meters
N
April 2004
Environmental Research & Assessment


60°48'0"W
60°47'0"W
60°46'0"W
62°27'30"S
62°28'0"S
62°28'30"S
62°29'0"S
Cape Shirreff
Bahamonde Beach
Enrique Hill
Mansa Bay
Gaviota Hill
Historic Monument No. 59
Toqui Hill (82 m)
Yamana Beach
San Telmo Island group
Módulo Beach
El Mirador (Chile)
Cape Shirreff Field Station (US)
Ancho Pass
Selknam Hill
Condor Hill
Yeco Rooks
Hall Moon Beach
PERMANENT ICE
LEGEND
Arctocephalus gazella
Mirounga leonina
Pygoscelis antarctica
Pygoscelis papua
Catharacta lonnbergi
Phalacrocorax bransfieldensis
Sterna vittata
Daption capense
Oceanites oceanicus
Pregetta tropica
Larus dominicanus
Protected area boundary
Coastline
Contour 5m
Walking routes
Lake
Buildings
Helicopter landing site
Projection: Lambert Conformal Conic
Spheroid: WGS84
1st Standard Parallel: 60° S
2nd Standard Parallel: 64° S
Central Meridian 60° 45'W
Latitude of origin 62° S
Data source: Instituto Antártico Chileno (INACH)
Map 3. Cape Shirreff, ASPA No. 149
Breeding wildlife sites and human features
Meters
0 100 200 300 400 500 1000
N
April 2004
Environmental Research & Assessment
Instituto Antártico Chileno (INACH)

Management Plan for Antarctic Specially Protected Area No. 155

CAPE EVANS, ROSS ISLAND

(including Historic Sites and Monuments Nos. 16 and 17,
the historic *Terra Nova* hut of Captain R F Scott and its precincts)

1. Description of Values to be Protected

The significant historic value of this Area was formally recognised when it was listed as Historic Site and Monument No 16 and 17 in Recommendation 9 (1972). An area containing both sites was designated as Specially Protected Area No. 25 in Measure 2 (1997) and redesignated as Antarctic Specially Protected Area 155 in Decision 1 (2002).

The *Terra Nova* hut (Historic Site and Monument No. 16) is the largest of the historic huts in the Ross Sea region. It was built in January 1911 by the British Antarctic *Terra Nova* Expedition of 1910-1913, led by Captain Robert Falcon Scott, RN. It was subsequently used as a base by the Ross Sea party of Sir Ernest Shackleton's Imperial Trans-Antarctic Expedition of 1914-1917.

Historic Site and Monument No. 17 contains the Cross on Wind Vane Hill, (erected in the memory of three members of Shackleton's Ross Sea party who died in 1916). In addition to this, the anchors of the ship *Aurora* from the Imperial Trans-Antarctic Expedition, an instrument shelter, several supply dumps and dog kennels, and numerous artefacts are distributed around the site.

Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna are associated with the *Terra Nova* Expedition based at this site. The data collected can provide a bench mark against which to compare current measurements. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica therefore contribute to both the historic and scientific value of the site.

The Cape Evans site is one of the principal sites of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration, and as such, has considerable historical significance.

2. Aims and Objectives

The aim of this Management Plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the Plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the area through planned conservation work which may include:
  a. an annual 'on-site' maintenance programme,
  b. a programme of monitoring the condition of artefacts and structures, and the factors which affect them, and
  c. conservation of artefacts to be conducted on and off site;

- allow management activities which support the protection of the values and features of the Area including:
  a. mapping and otherwise recording the disposition of historic items in the hut environs, and
  b. recording other relevant historic data; and
- prevent unnecessary human disturbance to the Area, its features and artefacts through managed access to the Terra Nova hut.

3. Management Activities

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

- A regular programme of conservation work shall be undertaken on the *Terra Nova* hut and associated artefacts in the Area.
- Systematic monitoring shall be put in place to assess the impacts of present visitor limits, and the results and any related management recommendations included in reviews of this Management Plan.
- Visits shall be made as necessary for management purposes.
- National Antarctic Programmes operating in, or those with an interest in, the Area shall consult together with a view to ensuring the above management activities are implemented.

4. Period of designation

Designated for an indefinite period.

5. Maps

- Map A: Cape Evans regional map. This map shows the boundaries of the proposed Antarctic Specially Protected Areas with significant topographical features, approaches, field camp sites and helicopter landing sites. It also shows the approximate location of significant historical items within the area. *Inset:* Ross Island showing sites of nearby protected areas and stations.
- Map B: Cape Evans site map. This map shows the approximate location of specific historic artefacts and sites within the Area.

6. Description of the Area

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

Cape Evans is a small, triangular shaped, ice-free area in the south west of Ross Island, 10 kilometres to the south of Cape Royds and 22 kilometres to the north of Hut Point Peninsula on Ross Island. The ice-free area is composed of till-covered basalt bedrock. The designated Area is located on the north western coast of Cape Evans adjacent to Home Beach and centred on Scott's *Terra Nova* hut.

The boundaries of the ASPA are:

- South: a line extending east from a point at 77º 38' 15.47" S, 166º 25' 9.48" E – 20 metres south of the cross on Wind Vane Hill;
- South/west: a line from the reference point above extended to follow the crest of the small ridge descending in a north westerly direction to the shoreline at 77º 38' 11.50" S, 166º 24' 49.47" E;
- North/west: by the shoreline of Home Beach;
- North/east: by the line of the outlet stream from Skua Lake to Home Beach at 77º 38' 4.89" S, 166º 25' 13.46" E;
- East: by the line extending south from the western edge of Skua Lake at 77º 38' 5.96" S, 166º 25' 35.74" E – to intersect with the southern boundary at 77º 38' 15.48" S, 166º 25' 35.68" E.

Skuas (*Catharacta maccormicki*) nest on Cape Evans and Adelie penguins (*Pygoscelis adeliae*) from the rookery at Cape Royds may occasionally transit the Area. Weddell seals have also been seen hauled up on Home Beach.

6(ii) Access to the Area

When safe conditions exist, vehicle approach to the Area can be made across the sea ice. Vehicles should not be taken onto the land. During open water, landings by boat may be made directly in front of the hut at Home Beach. Helicopter landings may be made at either of the existing designated landing sites marked on Maps 1 and 2. One site is approximately 100 metres to the north of the hut, just outside the Area. The other is located adjacent to the New Zealand refuge hut approximately 250 metres beyond the south western boundary of the Area.

6(iii) Location of structures within and adjacent to the Area

All structures located within the Area are of historic origin, although a temporary, modern protective enclosure around the magnetic hut remains in place. A major feature of the Area is Scott's Terra Nova hut located on the north western coast of Cape Evans at Home Beach. The hut is surrounded by many historic relics including the anchors from the Aurora, dog skeletons, instrument shelters, dog line, meteorological screen, fuel dump, magnetic hut, coal, stores, rubbish dumps and flag pole. A memorial cross to three members of Shackleton's Ross Sea party of 1914-1917 stands on West Vane Hill. All these features are included within the boundaries of the Area.

A New Zealand refuge hut, camp site and helicopter landing site are situated approximately 250 m to the south west of the Area.

The Greenpeace year-round World Park Base was sited to the north east of Scott's hut from 1987 to 1992. No visible sign of the base remains.

6(iv) Location of other Protected Areas in the vicinity

- ASPA 121 (previously SSSI No. 1) and
- ASPA 157 (SPA No. 27), Cape Royds are 10 kilometres north of Cape Evans.
- ASPA 122 (SSSI No. 2), Arrival Heights and
- ASPA 158 (SPA No. 28), Hut Point are approximately 20 kilometres south of Cape Evans at Hut Point Peninsula.
- ASPA 130 (SSSI No. 11), Tramway Ridge is approximately 20 kilometres east of Cape Evans.

All sites are located on Ross Island.

6(v) Special Zones within the Area

There are no special zones within the Area.

7. Terms and Conditions for Entry Permits

Entry to the Area is prohibited except in accordance with a Permit. Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A Permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Area shall consult together and with groups and organisations interested in visiting the Area to ensure that visitor numbers are not exceeded.

Permits to enter the site may be issued for a stated period for:

- activities related to conservation, research and/or monitoring purposes;
- management activities in support of the objectives of the Plan;
- activities related to educational or recreational activities including tourism, providing they do not conflict with the objectives of this Plan.

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

- Control of movement within the Area is necessary to prevent damage caused by crowding around the many vulnerable features within the Area. The maximum number in the Area at any time (including guides and those within the hut) shall be: **40 people**.
- Control of numbers within the hut is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number within the hut at any time (including guides) shall be: **12 people**.
- Avoidance of cumulative impacts on the interior of the hut requires an annual limit on visitor numbers. The effects of the current visitor levels (average 1489 per year between 1998 and 2004) suggest that a significant increase could cause significant adverse impacts. The maximum annual number of visitors shall be: **2,000 people**.
- These limits have been set based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, archaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitor numbers would be detrimental to the values to be protected. An ongoing monitoring programme to assess the effects of visitors is required to provide the basis for future reviews of the Management Plan, in particular whether the current limits on numbers of visitors are appropriate.
- Adequate supervision of visits to the Area is necessary to prevent damage caused by crowding and by actions inconsistent with the Code of Conduct set out in section 7(ii). All tourism, educational and recreational visits must be supervised by an experienced guide nominated by the operator (refer section 7(ix)).
- Helicopter landings are prohibited within the Area as they have the potential to damage the site by blowing scoria and ice particles and to accelerate the abrasion of the hut and surrounding artefacts. Vehicles are prohibited within the Area. Refer to 6(ii) for recommended approaches and landing sites.

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

Activities which may be conducted within the Area include:

- visits for conservation purposes;
- educational and/or recreational visits including tourism; and
- scientific activity which does not detract from the values of the Area.

Visitors should adhere to the following Code of Conduct, except where conservation, research, monitoring or management activities specified in the Permit require otherwise:

- To reduce floor abrasion, thoroughly clean grit and scoria, ice and snow from boots using the brushes provided before entering the hut;
- Remove any clothing made wet by sea water, and any sea ice crystals from boots, as salt particles accelerate corrosion of metal objects;
- Do not touch, move or sit on any items or furniture in the huts - handling artefacts causes damage;
- As many areas are cramped and artefacts can be accidentally bumped, do not wear packs inside;
- When moving around the sites, take great care not to tread on any items which may be obscured by snow;
- Use of combustion style lanterns, naked flames or smoking in or around the huts is strictly forbidden as fire is a major risk; and
- Visits should be recorded in the book provided. This allows times and levels of visitation to be correlated with temperature and humidity data automatically logged inside the hut.

7(iii) Installation, modification or removal of structures

- No new structures are to be erected in the Area, or scientific equipment installed, except for conservation activities as specified in section 3.
- No historic structure shall be removed from the Area, unless specified in a Permit issued in accordance with the provisions of section 7(vii).

7(iv) Location of field camps

- Use of the historic hut for living purposes is not permitted. Camping is prohibited in the Area under any circumstances.
- An existing field camp site is associated with the two New Zealand field shelters located 250 m south west of the Area and should be used by all parties intending to camp in this area.

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

- No living animals, plant material, micro-organisms or soil shall be introduced to the Area. No food products shall be taken into the Area.
- Chemicals may only be introduced for permitted scientific or conservation purposes. Chemicals (including fuel) or other materials are not to be left in the Area, unless required for essential purposes connected with the conservation of the historic structures or associated relics.

- All materials are to be removed when no longer required and before a date to be specified in the relevant Permit.

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

- This activity is prohibited except in accordance with a Permit issued by the appropriate national authority specifically for that purpose under Article 3, Annex II to the Protocol on Environmental Protection.
- Where animal taking or harmful interference is involved, this should, as a minimum standard, be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

7(vii) Collection or removal of anything not imported by the Permit Holder

- Material may be collected and removed from the Area for conservation reasons consistent with the objectives of this Plan only when specified in a Permit issued by the appropriate national authority.
- Materials which pose a threat to the environment or human health may be removed from the Area for disposal, in accordance with a Permit, where they meet one or more of the following criteria:
  - (i) the artefact presents a threat to the environment, wildlife or human health and safety;
  - (ii) it is in such poor condition that it is not reasonably possible to conserve it;
  - (iii) it does not contribute in any significant way to our understanding of the hut, its occupants or the history of Antarctica;
  - (iv) it does not contribute to, or it detracts from, the visual qualities of the site or the hut, and/or;
  - (v) it is not a unique or rare item;

  and where such action is:
  - (i) undertaken by parties with appropriate heritage conservation expertise; and
  - (ii) part of an overall plan for conservation work at the site.
- National authorities should ensure that any removal of artefacts and assessment against the above criteria is carried out by personnel with appropriate heritage conservation expertise.
- Artefacts judged to be of high historic value, which cannot be conserved on site with currently available techniques, may be removed in accordance with a Permit for storage in a controlled environment until such time as they can safely be returned to the Area.
- Samples of soil and other natural materials may be removed for scientific purposes only in accordance with an appropriate Permit.

7(viii) Disposal of waste

- All human waste, grey water and other waste generated by work parties or visitors shall be removed from the Area.

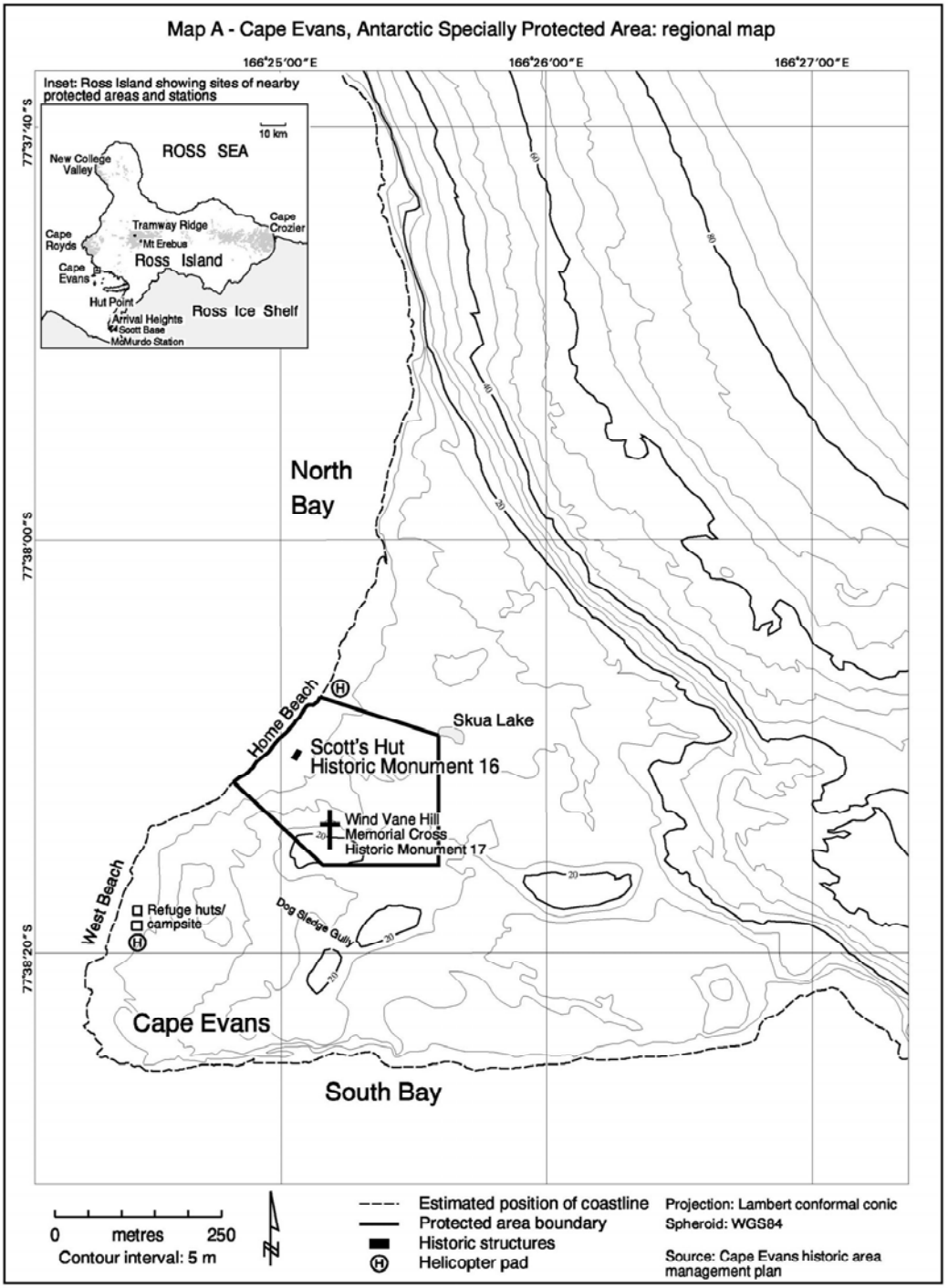
7(ix) Measures that may be necessary to ensure that the aims and objectives of the Management Plan continue to be met

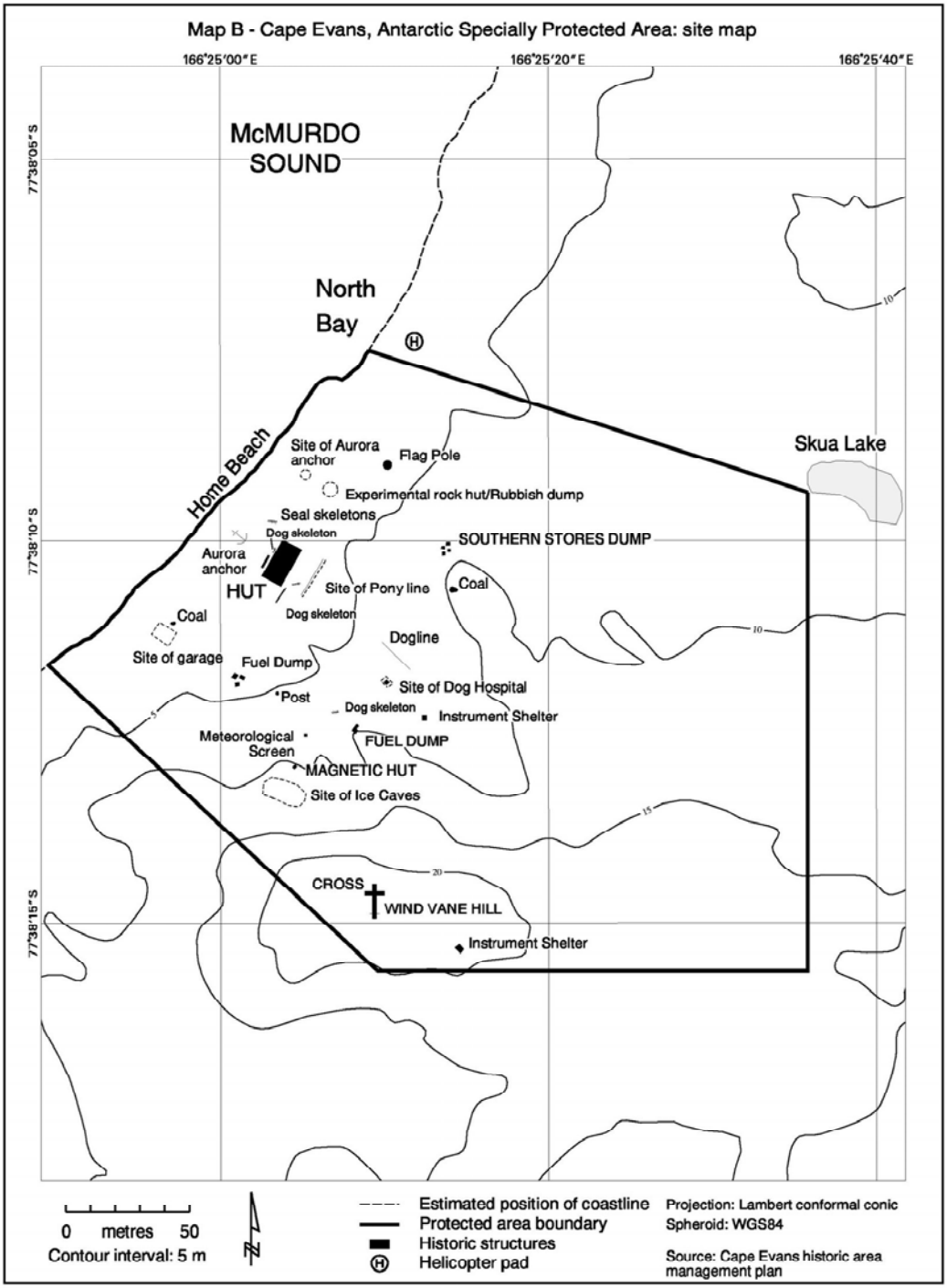
- The Permit, or an authorised copy, shall be carried within the Area.
- Information on the requirements of this Plan shall be provided to all visitors.
- The Code of Conduct set out in section 7(ii) shall be followed by all visitors, except where conservation, research, monitoring or management purposes require otherwise.
- Operators facilitating educational and recreational visits (including tourism) to the Area shall, prior to commencement of the summer season, nominate people with a working knowledge of both the site and this Management Plan to act as guides during visits.
- All educational and recreational visits (including tourism) shall be supervised by a nominated guide, who is responsible for briefing visitors on the code of conduct and ensuring it is complied with.
- Parties shall consult and coordinate to develop skills and resources, particularly those related to conservation techniques, to assist with the protection of the Area's values.

7(x) Requirements for Reports

Parties shall ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports shall include, as appropriate, the information identified in the Visit Report provided in Appendix 4 of Resolution 2 (1998). In addition, any removal of materials in accordance with section 7(vii) shall be detailed, including the reason for removal and the current location of the items or the date of disposal. Any return of such items to the site shall also be reported.

Parties shall maintain a record of activities within the Area and, in the Annual Exchange of Information, shall provide summary descriptions of activities conducted by persons subject to their jurisdiction, in sufficient detail to allow an evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of visitation, to be used both for review of the Management Plan and in managing further visitation to the site.


Map A - Cape Evans, Antarctic Specially Protected Area: regional map
166°25′00″E
166°26′00″E
166°27′00″E
77°37′40″S
77°38′00″S
77°38′20″S
Inset: Ross Island showing sites of nearby protected areas and stations
10 km
ROSS SEA
New College Valley
Tramway Ridge
Cape Crozier
Cape Royds
Mt Erebus
Ross Island
Cape Evans
Hut Point
Ross Ice Shelf
Arrival Heights
Scott Base
McMurdo Station
North Bay
Home Beach
Skua Lake
Scott's Hut
Historic Monument 16
Wind Vane Hill
Memorial Cross
Historic Monument 17
West Beach
Refuge huts/ campsite
Dog Sledge Gully
Cape Evans
South Bay
0 metres 250
Contour interval: 5 m
Estimated position of coastline
Protected area boundary
Historic structures
Helicopter pad
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Cape Evans historic area management plan


Map B - Cape Evans, Antarctic Specially Protected Area: site map
166°25'00" E
166°25'20" E
166°25'40" E
77°38'05" S
77°38'10" S
77°38'15" S
McMURDO SOUND
North Bay
Home Beach
Skua Lake
Site of Aurora anchor
Flag Pole
Experimental rock hut/Rubbish dump
Seal skeletons
Dog skeleton
SOUTHERN STORES DUMP
Aurora anchor
HUT
Site of Pony line
Coal
Dog skeleton
Coal
Dogline
Site of garage
Fuel Dump
Post
Site of Dog Hospital
Dog skeleton
Instrument Shelter
Meteorological Screen
FUEL DUMP
MAGNETIC HUT
Site of Ice Caves
CROSS
WIND VANE HILL
Instrument Shelter
0 metres 50
Contour interval: 5 m
N
Estimated position of coastline
Protected area boundary
Historic structures
Helicopter pad
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Cape Evans historic area management plan

Management Plan for Antarctic Specially Protected Area No. 157

BACKDOOR BAY, CAPE ROYDS, ROSS ISLAND

(including Historic Site and Monument No. 15,
the historic hut of Sir Ernest Shackleton and its precincts)

1. Description of Values to be Protected

The significant historic value of this Area was formally recognised when it was listed as Historic Site and Monument No. 15 in Recommendation 9 (1972). It was designated as Specially Protected Area No. 27 in Measure 1 (1998) and redesignated as Antarctic Specially Protected Area (ASPA) 157 in Decision 1 (2002).

The hut on which this Area is centred was built in February 1908 by the British Antarctic (*Nimrod*) Expedition of 1907-1909 which was led by Sir Ernest Shackleton. It was also periodically used by the Ross Sea Party of Shackleton's Imperial Trans-Antarctic Expedition of 1914-1917.

Structures associated with the hut include stables, kennels, a latrine and a garage created for the first motor vehicle in Antarctica. Other significant relics in the Area include an instrument shelter, supply depots, and a rubbish site. Numerous additional artefacts are distributed around the Area.

Cape Royds is one of the principal areas of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration and, as such, has considerable historical significance. Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna in Antarctica are associated with the *Nimrod* Expedition which was based at this site. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica give this Area significant scientific, aesthetic and historic values.

2. Aims and Objectives

The aim of the Management Plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the Plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the Area through planned conservation work which may include:
  a. an annual 'on-site' maintenance programme,
  b. a programme of monitoring the condition of artefacts and structures, and the factors which affect them, and
  c. a programme of conservation of artefacts conducted on and off site;
- allow management activities which support the protection of the values and features of the Area including:
  a. mapping and otherwise recording the disposition of historic items in the hut environs, and
  b. recording other relevant historic data;
- prevent unnecessary human disturbance to the Area, its features and artefacts through managed access to the *Nimrod* hut.

3. Management Activities

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

- A regular programme of conservation work shall be undertaken on the *Nimrod* hut and associated artefacts in the Area.
- Visits shall be made as necessary for management purposes.
- Systematic monitoring shall be put in place to assess the impacts of present visitor limits, and the results and any related management recommendations included in reviews of this Management Plan.
- National Antarctic Programmes operating in, or those with an interest in, the Area shall consult together with a view to ensuring the above management activities are implemented.

4. Period of designation

Designated for an indefinite period.

5. Maps

- Map A: Cape Royds regional map. This map shows the location of the Area in relation to ASPA 121 and significant topographic features in the vicinity. Inset: shows the position of the site in relation to other protected sites on Ross Island.
- Map B: Cape Royds Area map. This map shows the boundaries of the Area and the adjacent ASPA 121. Also shown are the approaches, field camp and helicopter landing sites.

6. Description of the Area

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

Cape Royds is an ice free area at the western extremity of Ross Island, approximately 40 kilometres to the south of Cape Bird and 35 kilometres to the north of Hut Point Peninsula on Ross Island. The ice free area is composed of till covered basalt bedrock. The designated Area is located to the north east of Cape Royds adjacent to Backdoor Bay. It is immediately to the east of ASPA 121, an Adélie penguin rookery. The Area is centred on Shackleton's *Nimrod* expedition hut.

The boundaries of the Area are:

- South and East, by the shoreline of the eastern coast of Cape Royds including Arrival and Backdoor Bays;
- West, by a line following the boundary of ASPA 121 from the coastline at Arrival Bay to a signpost (77°31´ 12.6" S, 166° 10´ 01.3" E) and then continuing to follow the boundary of ASPA 121 for 40 m in a northeast direction;
- Northwest, by a line extending in a northwest direction from the boundary of ASPA 121 and following the shore of a small lake to the NW of Pony Lake and then along a gully leading to a point at 77° 33´ 7.5" S, 166° 10´ 13" E; and
- North, by a line extended due east from a point at 77° 33´ 7.5" S, 166° 10´ 13" E to the coastline of Backdoor Bay.

Adélie penguins *(Pygoscelis adeliae)* from the adjacent colony at Cape Royds often transit the Area. Skuas *(Catharacta maccormicki)* nest in the vicinity.

6(ii) Access to the Area

Access to the Area should be made on foot from Backdoor Bay or the helicopter landing sites using the routes shown in Map B. Landings by boat (when there is open water), or vehicle (when safe sea ice conditions exist), may be made in Backdoor Bay. Care should be taken to avoid the marine extent of ASPA 121 (see Map A). Helicopter landings may be made at the designated landing sites marked on Map B. The primary (and preferred) site is approximately 100 metres north of the Area. A secondary landing site is located 30 metres north of the Area and should be avoided from the start of November until the start of March, when the nearby Adélie penguin colony is occupied.

6(iii) Location of structures within and adjacent to the Area

Apart from a Treaty plaque, all structures within the Area are of historic origin. A major feature of the Area is Shackleton's *Nimrod* expedition hut located in a sheltered basin. The hut is surrounded by many other historic relics including an instrument shelter, supply depots, and a dump site. Numerous additional artefacts are distributed around the site.

A New Zealand refuge hut and camp site are located at the north west corner of the ASPA.

6(iv) Location of other Protected Areas in the vicinity

- ASPA 121 (previously SSSI No. 1), Cape Royds is immediately adjacent to this Area.
- ASPA 122 (SSSI No. 2), Arrival Heights and
- ASPA 158 (SPA No. 28), Hut Point are approximately 30 kilometres south of Cape Royds at Hut Point Peninsula.
- ASPA 130 (SSSI No. 11), Tramway Ridge is 20 kilometres east of Cape Royds.
- ASPA 116 (SSSI No. 10, SPA No. 20), New College Valley is located 35 kilometres north in the vicinity of Cape Bird.
- ASPA 155 (SPA No. 25), Cape Evans is 12 kilometres south.
- ASPA 156 (SPA No. 26), Lewis Bay is 36 kilometres to the north east.

All sites are located on Ross Island.

6 (v) Special Zones within the Area

There are no special zones within the Area.

7. Terms and Conditions for Entry Permits

Entry to the Area is prohibited except in accordance with a Permit. Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A Permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Area shall consult together and with groups and organisations interested in visiting the Area to ensure that visitor numbers are not exceeded.

Permits to enter the site may be issued for a stated period for:

- activities related to conservation, research and/or monitoring purposes;
- management activities in support of the objectives of this Plan; and
- activities related to educational or recreational activities including tourism, providing they do not conflict with the objectives of this Plan.

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

- *Control of movement within the Area* is necessary to prevent damage caused by crowding around the many vulnerable features within the Area. The maximum number in the Area at any time (including those within the hut) shall be: **40 people.**
- *Control of numbers within the hut* is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number within the hut at any time (including guides) shall be: **8 people.**
- Avoidance of cumulative impacts on the interior of the hut requires an annual limit on visitor numbers. The effects of current visitor levels (average 1020 per year between 1998 and 2004) suggest that an increase of more than 100% could cause significant adverse impacts. The annual maximum number of visitors shall be: **2000 people.**
- These limits have been based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, archaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitors would be detrimental to the values to be protected. An ongoing monitoring programme to assess the effect of visitors is required to provide the basis for future reviews of the Management Plan, in particular whether the current limits on numbers of visitors are appropriate.
- Adequate supervision of visits to the Area is necessary to prevent damage caused by crowding and by actions inconsistent with the Code of Conduct set out in section 7(vii). All tourism, educational and recreational visits must be supervised by an experienced guide nominated by the operator (refer section 7(ix)).
- Helicopter landings are prohibited within the Area as they have the potential to damage the site by blowing scoria and ice particles and to accelerate the abrasion of the hut and surrounding artefacts. Vehicles are prohibited within the Area. Refer to 6(ii) for recommended approaches and landing sites.

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

Activities which may be conducted within the Area include:

- visits for conservation purposes;
- educational and/or recreational visits including tourism;
- scientific activity which does not detract from the values of the Area.

Visitors should adhere to the following Code of Conduct, except where conservation, research, monitoring or management activities specified in the Permit require otherwise:

- Thoroughly clean grit and scoria, ice and snow from boots using the brushes provided before entering the hut to reduce floor abrasion;
- Remove any clothing made wet by sea water, and any sea ice crystals from boots, as salt particles accelerate corrosion of metal objects;

- Do not touch, move or sit on any items or furniture in the huts - handling artefacts causes damage;
- As many areas are cramped and artefacts can be accidentally bumped, do not wear packs inside;
- When moving around the sites, take great care not to tread on any items which may be obscured by snow;
- Use of combustion style lanterns, naked flames or smoking in or around the huts is prohibited, as fire is a major risk; and
- Visits should be recorded in the book provided. This allows times and levels of visitation to be correlated with temperature and humidity data automatically logged inside the hut.

7(iii) Installation, modification or removal of structures

- No new structures are to be erected in the Area, or scientific equipment installed, except for conservation or scientific activities that do not detract from the values of the Area as specified in 1.
- No historic structure shall be removed from the Area, unless specified in a Permit issued in accordance with the provisions of section 7(vii).

7(iv) Location of field camps

- Use of the historic hut for living purposes is not permitted. Camping is prohibited within the Area under any circumstances.
- An existing field camp site and a New Zealand shelter is located at the north western boundary of the Area (see Map B).

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

- No living animals, plant material, soil or micro-organisms shall be introduced to the Area. No food products shall be taken into the Area.
- Chemicals may only be introduced for permitted scientific or conservation purposes. Chemicals (including fuel) or other materials are not to be left in the Area, unless required for essential purposes connected with the conservation of the historic structures or the associated relics.
- All materials are to be removed when no longer required and before a date to be specified in the relevant Permit.

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

- This activity is prohibited except in accordance with a permit issued by the appropriate national authority specifically for that purpose under Article 3, Annex II to the Protocol on Environmental Protection.
- Where animal taking or harmful interference is involved, this should, as a minimum standard, be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

7(vii) Collection of anything not imported by the Permit Holder

- Material may be collected and removed from the Area for conservation reasons consistent with the objectives of this Plan only when specified in a Permit issued by the appropriate national authority.
- Materials which pose a threat to the environment or human health may be removed from the Area for disposal, in accordance with a Permit, where they meet one or more of the following criteria:
  - (i) the artefact presents a threat to the environment, wildlife or human health and safety;
  - (ii) it is in such poor condition that it is not reasonably possible to conserve it;
  - (iii) it does not contribute in any significant way to our understanding of the hut, its occupants or the history of Antarctica;
  - (iv) it does not contribute to, or it detracts from, the visual qualities of the site or the hut; and/or
  - (v) it is not a unique or rare item;

  and where such action is:

  (i) undertaken by parties with appropriate heritage conservation expertise; and

  (ii) part of an overall plan for conservation work at the site.

National authorities should ensure that any removal of artefacts and assessment against the above criteria is carried out by personnel with appropriate heritage conservation expertise.

Artefacts judged to be of high historic value, which cannot be conserved on site with currently available techniques, may be removed in accordance with a Permit for storage in a controlled environment until such time as they can safely be returned to the Area.

7(viii) Disposal of waste

- All human waste, grey water and other waste generated by work parties or visitors shall be removed from the Area.

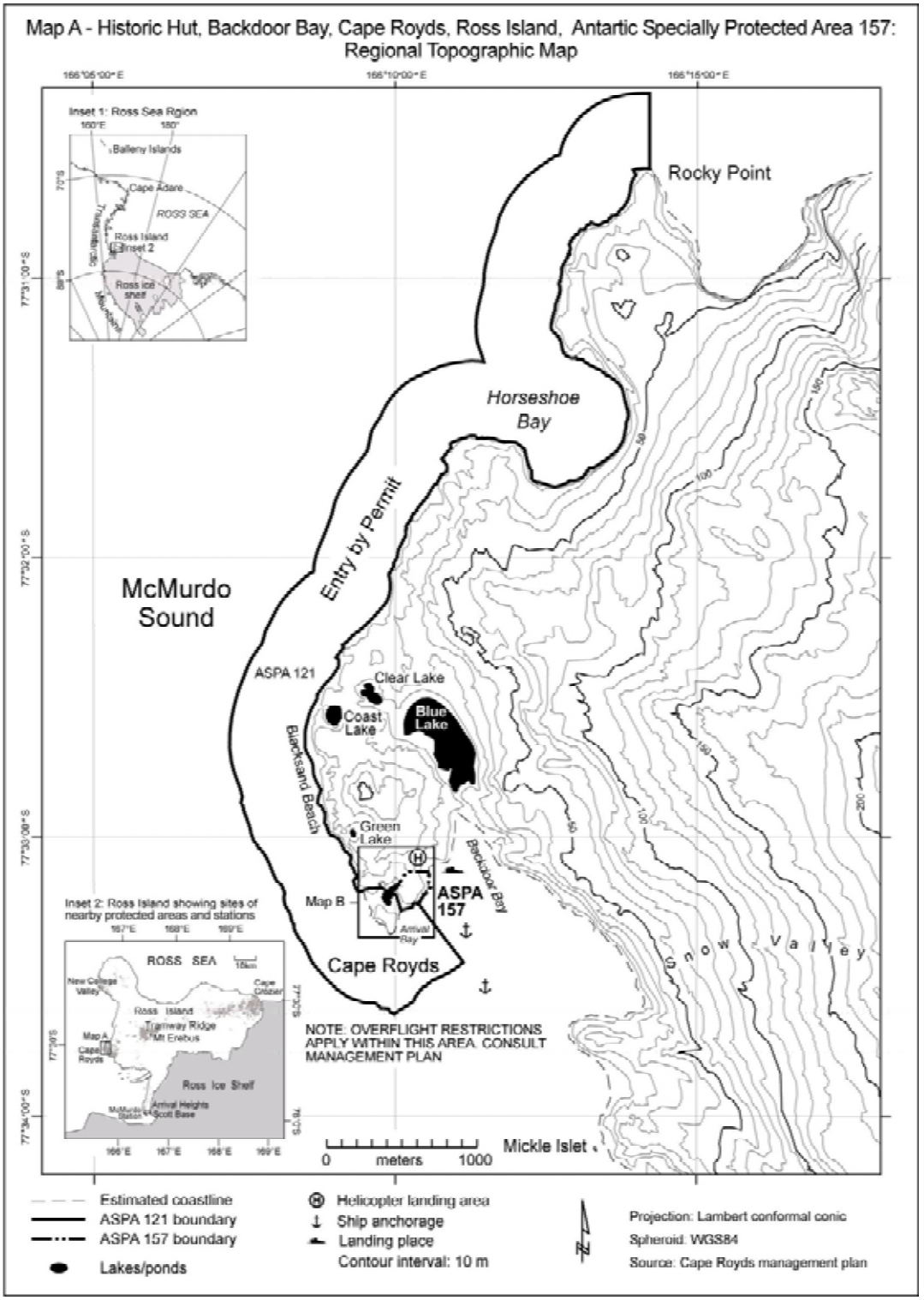
7(ix) Measures that may be necessary to ensure that the aims and objectives of the Plan continue to be met

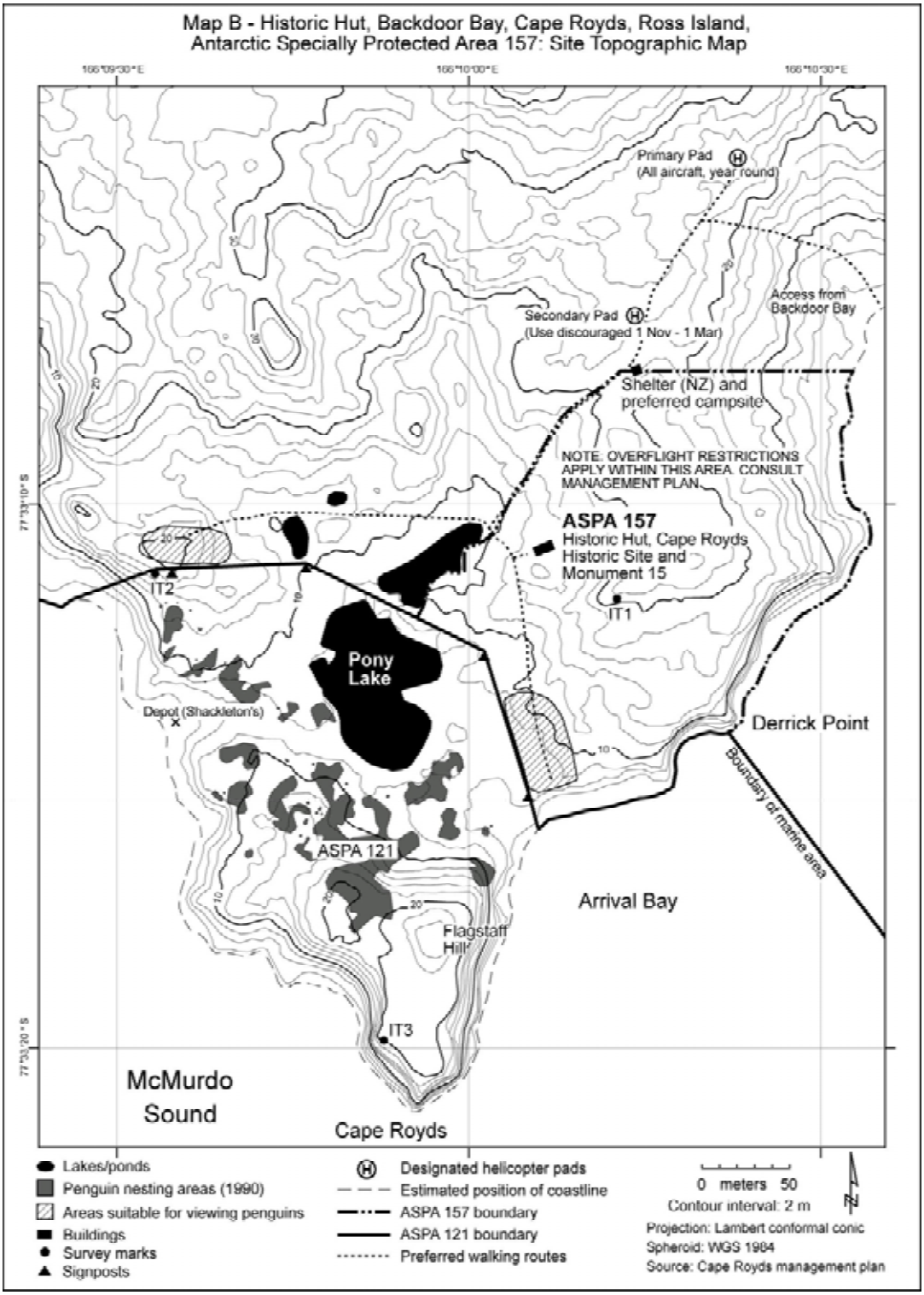
- The Permit, or an authorised copy, shall be carried within the Area.
- Information on the requirements of this Plan shall be provided to all visitors.
- The Code of Conduct set out in section 7(ii) shall be followed by all visitors, except where conservation, research, monitoring or management purposes require otherwise.
- Operators facilitating educational and recreational visits (including tourism) to the Area should prior to commencement of the summer season, nominate people with a working knowledge of both the site and this Management Plan to act as guides during visits.
- All educational and recreational visits should be supervised by a nominated guide, who is responsible for briefing visitors on the code of conduct and ensuring it is complied with.
- Parties should consult and coordinate to develop skills and resources, particularly those related to conservation techniques, to assist with the protection of the Area's values.

7(x) Requirements for reports

Parties shall ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports shall include, as appropriate, the information identified in the Visit Report Form provided in Appendix 4 of Resolution 2 (1998). In addition, any removal of materials in accordance with section 7(viii) shall be detailed, including the reason for removal and the current location of the items or the date of disposal. Any return of such items to the site shall also be reported.

Parties shall maintain a record of activities within the Area and, in the Annual Exchange of Information, shall provide summary descriptions of activities conducted by persons subject to their jurisdiction, in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of visitation, to be used both for review of the Management Plan and in managing further visitation to the site.


Map A - Historic Hut, Backdoor Bay, Cape Royds, Ross Island, Antartic Specially Protected Area 157:
Regional Topographic Map
Inset 1: Ross Sea Region
Balleny Islands
Cape Adare
ROSS SEA
Ross Island
(Inset 2
Ross ice shelf
Rocky Point
Horseshoe Bay
Entry by Permit
McMurdo Sound
ASPA 121
Clear Lake
Coast Lake
Blue Lake
Blacksand Beach
Green Lake
Backdoor Bay
Map B
ASPA 157
Arrival Bay
Cape Royds
Inset 2: Ross Island showing sites of nearby protected areas and stations
ROSS SEA
New College Valley
Cape Crozier
Ross Island
Tramway Ridge
Mt Erebus
Map A
Cape Royds
Ross Ice Shelf
Arrival Heights
Scott Base
NOTE: OVERFLIGHT RESTRICTIONS APPLY WITHIN THIS AREA. CONSULT MANAGEMENT PLAN
Mickle Islet
0 meters 1000
Estimated coastline
ASPA 121 boundary
ASPA 157 boundary
Lakes/ponds
Helicopter landing area
Ship anchorage
Landing place
Contour interval: 10 m
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Cape Royds management plan


Map B - Historic Hut, Backdoor Bay, Cape Royds, Ross Island,
Antarctic Specially Protected Area 157: Site Topographic Map
166°09'30"E
166°10'00"E
166°10'30"E
77°32'10"S
77°33'20"S
Primary Pad
(All aircraft, year round)
Secondary Pad
(Use discouraged 1 Nov - 1 Mar)
Access from Backdoor Bay
Shelter (NZ) and preferred campsite
NOTE: OVERFLIGHT RESTRICTIONS APPLY WITHIN THIS AREA. CONSULT MANAGEMENT PLAN.
ASPA 157
Historic Hut, Cape Royds
Historic Site and Monument 15
IT1
IT2
IT3
Pony Lake
Depot (Shackleton's)
Derrick Point
Boundary of marine area
ASPA 121
Arrival Bay
Flagstaff Hill
McMurdo Sound
Cape Royds
Lakes/ponds
Penguin nesting areas (1990)
Areas suitable for viewing penguins
Buildings
Survey marks
Signposts
Designated helicopter pads
Estimated position of coastline
ASPA 157 boundary
ASPA 121 boundary
Preferred walking routes
0 meters 50
Contour interval: 2 m
Projection: Lambert conformal conic
Spheroid: WGS 1984
Source: Cape Royds management plan
N

Management Plan for Antarctic Specially Protected Area No. 158

HUT POINT, ROSS ISLAND

(including Historic Site and Monument No. 18, the historic *Discovery* hut of Captain R F Scott)

1. Description of Values to be Protected

The significant historic value of this Area was formally recognised when it was designated as Historic Site and Monument No. 18 in Recommendation 9 (1972). It was designated as Specially Protected Area No. 28 in Measure 1 (1998) and redesignated as Antarctic Specially Protected Area 158 in Decision 1 (2002).

The hut was built in February 1902 during the National Antarctic *(Discovery)* Expedition of 1901-1904, led by Captain Robert Falcon Scott who later found it a valuable advance staging point for journeys on the "Barrier" during his 1910-1913 expedition. It was also used by Sir Ernest Shackleton during the 1907-1909 British Antarctic Expedition and later by his stranded Ross Sea Party during the Imperial Trans-Antarctic Expedition of 1914-1917. This building was prefabricated in Australia to an 'outback' design with verandahs on three sides.

The Hut Point site is one of the principal sites of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration and, as such, has considerable historical significance. Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna in Antarctica are associated with the *Discovery* Expedition based at this site. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica give this Area significant scientific, aesthetic and historic values.

2. Aims and Objectives

The aim of the Management Plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the Plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the Area through planned conservation work which may include:
  a. an annual 'on-site' maintenance programme,
  b. a programme of monitoring the condition of artefacts and structures, and the factors which affect them, and
  c. a programme of conservation of artefacts conducted on and off site;
- allow management activities which support the protection of the values and features of the Area including recording of any relevant historic data; and
- prevent unnecessary human disturbance to the Area, its features and artefacts through managed access to the *Discovery* hut.

3. Management Activities

- A regular programme of conservation work shall be undertaken on the *Discovery* hut and associated artefacts in the Area;
- Visits shall be made as necessary for management purposes;
- Systematic monitoring shall be put in place to assess the impacts of present visitor limits, and the results and any related management recommendations included in reviews of this Management Plan;
- National Antarctic Programmes operating in, or those with an interest in, the Area shall consult together with a view to ensuring the above management activities are implemented.

4. Period of Designation

Designated for an indefinite period.

5. Maps

- Map A: Hut Point regional map. This map shows the wider environs of the Area with significant topographic features and the adjacent US McMurdo Station. Inset: shows the position of the site in relation to other protected sites on Ross Island.
- Map B: Hut Point site map. This map shows the location of the historic hut, Vince's cross and other detail of the immediate environs.

6. Description of the Area

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

Hut Point is a small ice free area protruding south west from the Hut Point Peninsula and situated to the west of the United States McMurdo Station. The designated Area consists solely of the structure of the hut which is situated near the south western extremity of Hut Point.

6(ii) Access to the Area

There are no designated helicopter landings sites in the vicinity of the hut as helicopters have the potential to damage the hut by blowing scoria and ice particles and to accelerate the abrasion of the hut and surrounding artefacts. Vehicles may approach the hut along the road leading from the United States McMurdo Station, or from the sea ice when safe conditions exist. During open water, landings by boat may be made to the north of the hut.

6(iii) Location of structures within and adjacent to the Area

The designated Area consists solely of the structure of the historic Discovery hut. Historic Site and Monument No. 17, a cross to the memory of G.T. Vince (a member of the Discovery expedition who died in the vicinity), is situated approximately 75 metres west of the hut.

6(iv) Location of other Protected Areas in the vicinity

- ASPA 121 (previously SSSI No. 1) and
- ASPA 158 (SPA No. 28), Cape Royds, are 32 kilometres north of Hut Point.
- ASPA 122 (SSSI No. 2), Arrival Heights, is 2 kilometres north of Hut Point on Hut Point Peninsula.
- ASPA 155 (SPA No. 25), Cape Evans, is 22 kilometres to the north of Hut Point.

All sites are located on Ross Island.

6(v) Special Zones within the Area

There are no special zones within the Area.

7. Terms and Conditions for Entry Permits

Entry to the Area is prohibited except in accordance with a Permit. Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A Permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Area shall consult together and with groups and organisations interested in visiting the Area to ensure that visitor numbers are not exceeded.

Permits to enter the site may be issued for a stated period for:

- activities related to conservation, research and/or monitoring purposes;
- management activities in support of the objectives of this Plan; and
- activities related to educational or recreational activities including tourism, providing they do not conflict with the objectives of this Plan.

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

- Control of numbers within the hut is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number within the hut at any time (including guides) shall be: **8 people.**
- Avoidance of cumulative impacts on the interior of the hut require an annual limit on visitor numbers. The effects of current visitor levels (average 1033 per year between 1998 and 2004) suggest that an increase of more than 100% could cause significant adverse impacts. The annual maximum number of visitors shall be: **2000 people.**
- These limits have been based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, archaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitors would be detrimental to the values to be protected. An ongoing monitoring programme to assess the effect of visitors is required to provide the basis for future reviews of the Management Plan, in particular whether the current limits on numbers of visitors to the area are appropriate.
- Adequate supervision of visits to the Area is necessary to prevent damage caused by crowding and by actions inconsistent with the Code of Conduct set out in section 7(ii). All tourism, educational and recreational visits must be supervised by an experienced guide nominated by the operator (refer section 7(ix)).

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

Activities which may be conducted within the Area include:

- visits for conservation purposes;
- educational and/or recreational visits including tourism;
- scientific activity which does not detract from the values of the Area.

Visitors should adhere to the following Code of Conduct, except where conservation, research, monitoring or management activities specified in the Permit require otherwise:

- Thoroughly clean grit and scoria, ice and snow from boots using the brushes provided before entering the hut to reduce floor abrasion;
- Remove any clothing made wet by sea water, and any sea ice crystals from boots, as salt particles accelerate corrosion of metal objects;
- Do not touch, move or sit on any items or furniture in the huts - handling artefacts causes damage;
- As many areas are cramped and artefacts can be accidentally bumped, do not wear packs inside.
- When moving around the sites, take great care not to tread on any items which may be obscured by snow;
- Use of combustion style lanterns, naked flames or smoking in or around the huts is prohibited, as fire is a major risk; and
- Visits should be recorded in the book provided. This allows times and levels of visitation to be correlated with temperature and humidity data automatically logged inside the hut.

7(iii) Installation, modification or removal of structures

- No alteration to the structure shall be made, except for conservation purposes or scientific activities that do not detract from the values of the Area as specified in 1. No historic structure shall be removed from the Area, unless specified in a Permit issues in accordance with the provisions of section 7(viii).

7(iv) Location of field camps

- Use of the historic hut for living purposes is not permitted.

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

- No living animals, or material, soil or micro-organisms shall be introduced to the Area.
- No food products shall be taken into the Area.
- Chemicals may only be introduced for permitted scientific or conservation purposes. Chemicals (including fuel) or other materials are not to be left in the Area, unless required for essential purposes connected with the conservation of the historic structure or the associated relics. All materials are to be removed when no longer required and before a date to be specified in the relevant Permit.

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

- There are no native flora or fauna within the designated Area.

7(vii) Collection of anything not imported by the Permit Holder

- Material may be collected and removed from the Area for conservation reasons consistent with the objectives of this Plan only when specified in a Permit issued by the appropriate national authority.
- Materials which pose a threat to the environment or human health may be removed from the Area for disposal, in accordance with a Permit, where they meet one or more of the following criteria:
  - (i) the artefact presents a threat to the environment, wildlife or human health and safety;
  - (ii) it is in such poor condition that it is not reasonably possible to conserve it;
  - (iii) it does not contribute in any significant way to our understanding of the hut, its occupants or the history of Antarctica;
  - (iv) it does not contribute to, or it detracts from, the visual qualities of the site or the hut, and/or;
  - (v) it is not a unique or rare item;

  and where such action is:
  - (i) undertaken by parties with appropriate heritage conservation expertise; and
  - (ii) part of an overall plan for conservation work at the site.
- National authorities should ensure that any removal of artefacts and assessment against the above criteria is carried out by personnel with appropriate heritage conservation expertise.
- Artefacts judged to be of high historic value, which cannot be conserved on site with currently available techniques, may be removed in accordance with a Permit for storage in a controlled environment until such time as they can safely be returned to the Area.

7(viii) Disposal of waste

- All human waste, grey water and other waste generated by work parties or visitors shall be removed from the Area.

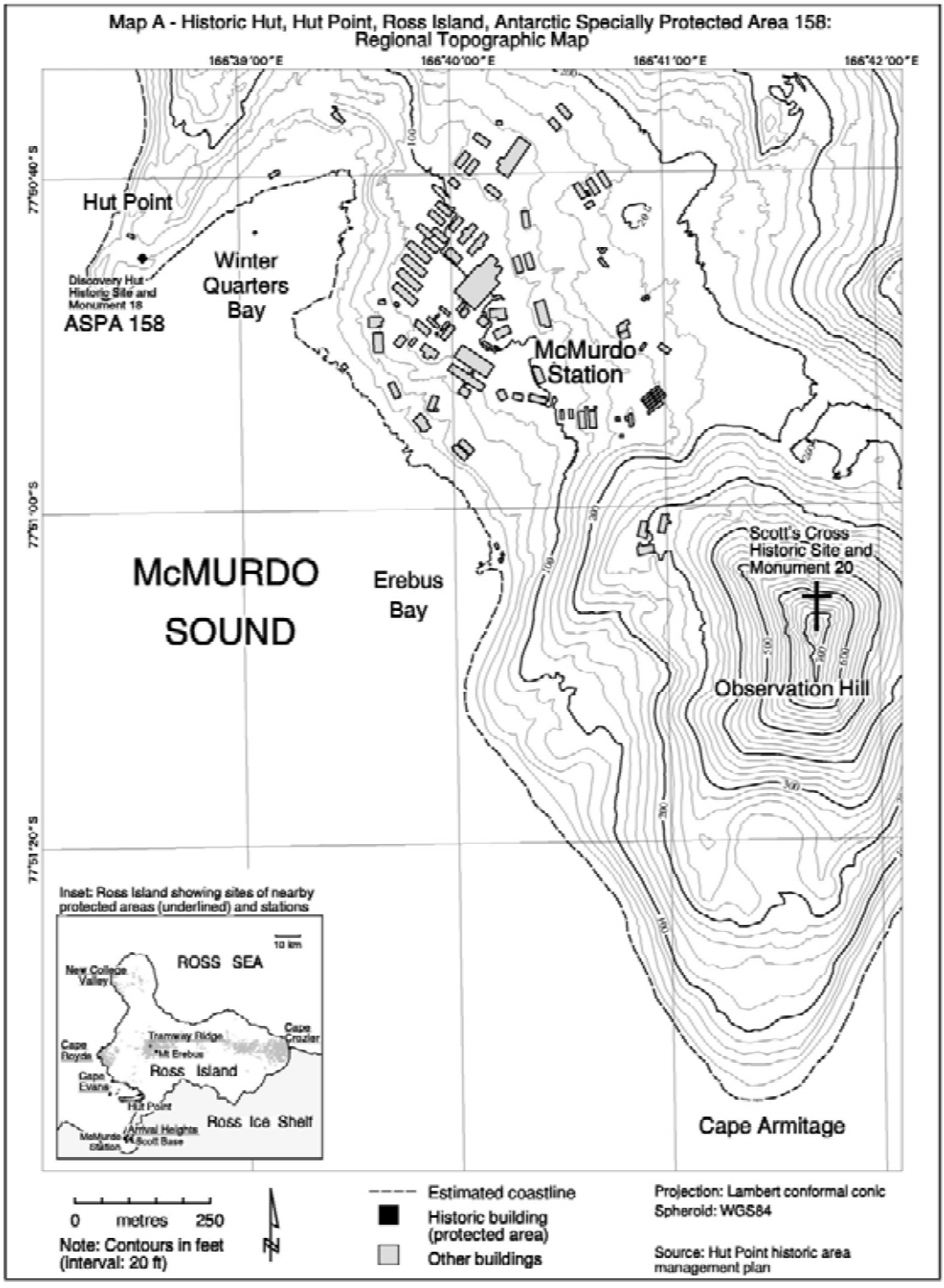
7(ix) Measures that may be necessary to ensure that the aims and objectives of the plan continue to be met

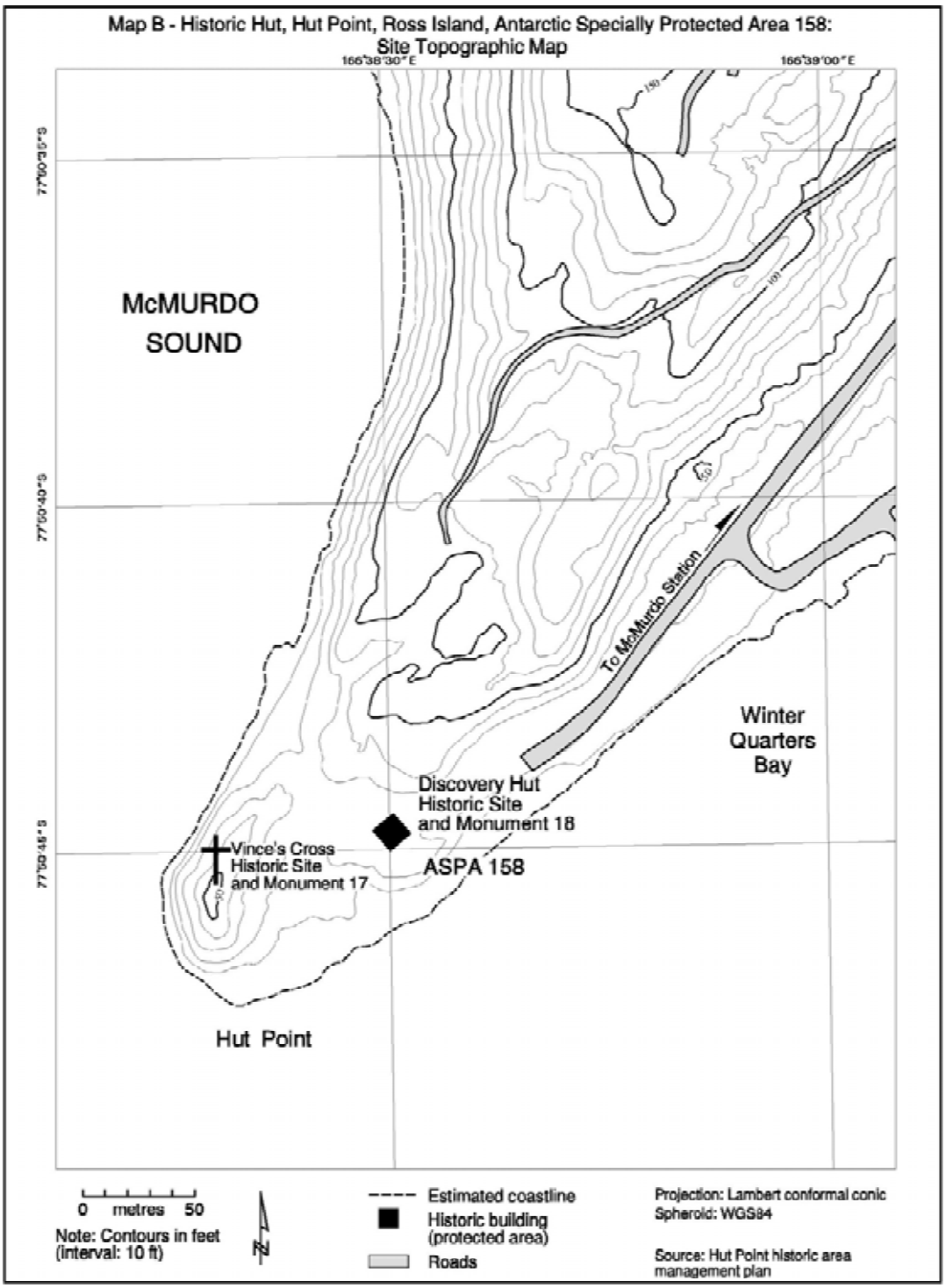
- The Permit, or an authorised copy, shall be carried within the Area.
- Information on the requirements of this Plan shall be provided to all visitors.
- The Code of Conduct set out in section 7(ii) shall be followed by all visitors, except where conservation, research, monitoring or management purposes require otherwise.
- Operators facilitating educational and recreational visits (including tourism) to the Area shall, prior to commencement of the summer season, nominate people with a working knowledge of both the site and this Management Plan to act as guides during visits.
- All educational and recreational visits (including tourism) shall be supervised by a nominated guide, who is responsible for briefing visitors on the code of conduct and ensuring it is complied with.
- Parties shall consult and coordinate to develop skills and resources, particularly those related to conservation techniques, to assist with the protection of the Area's values.

7(x) Requirements for reports

Parties shall ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports shall include, as appropriate, the information identified in the Visit Report Form provided in Appendix 4 of Resolution 2 (1998). In addition, any removal of materials in accordance with section 8(viii) shall be detailed, including the reason for removal and the current location of the items or the date of disposal. Any return of such items to the site shall also be reported.

Parties shall maintain a record of activities within the Area and, in the Annual Exchange of Information, shall provide summary descriptions of activities conducted by persons subject to their jurisdiction, in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of visitation, to be used both for review of the Management Plan and in managing further visitation to the site.


Map A - Historic Hut, Hut Point, Ross Island, Antarctic Specially Protected Area 158:
Regional Topographic Map
166°39'00"E
166°40'00"E
166°41'00"E
166°42'00"E
77°50'40"S
77°51'00"S
77°51'20"S
Hut Point
Discovery Hut Historic Site and Monument 18
ASPA 158
Winter Quarters Bay
McMurdo Station
McMURDO SOUND
Erebus Bay
Scott's Cross Historic Site and Monument 20
Observation Hill
Cape Armitage
Inset: Ross Island showing sites of nearby protected areas (underlined) and stations
10 km
ROSS SEA
New College Valley
Cape Royds
Tramway Ridge
Mt Erebus
Cape Crozier
Ross Island
Cape Evans
Hut Point
Arrival Heights
McMurdo station
Scott Base
Ross Ice Shelf
0 metres 250
Note: Contours in feet (Interval: 20 ft)
N
Estimated coastline
Historic building (protected area)
Other buildings
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Hut Point historic area management plan


Map B - Historic Hut, Hut Point, Ross Island, Antarctic Specially Protected Area 158:
Site Topographic Map
166°38'30" E
166°39'00" E
77°50'15" S
77°50'45" S
77°51'15" S
McMURDO
SOUND
To McMurdo Station
Winter
Quarters
Bay
Discovery Hut
Historic Site
and Monument 18
ASPA 158
Vince's Cross
Historic Site
and Monument 17
Hut Point
0 metres 50
Note: Contours in feet
(interval: 10 ft)
N
Estimated coastline
Historic building
(protected area)
Roads
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Hut Point historic area
management plan

Management Plan for Antarctic Specially Protected Area No. 159

CAPE ADARE, BORCHGREVINK COAST

(including Historic Site and Monument No. 22,
the historic huts of Carsten Borchgrevink and Scott's Northern Party and their precincts)

1. Description of Values to be Protected

The historic value of this Area was formally recognized when it was listed as Historic Site and Monument No. 22 in Recommendation VII-9 (1972). It was designated as Specially Protected Area No. 29 in Measure 1 (1998) and redesignated as Antarctic Specially Protected Area (ASPA) 159 in Decision 1 (2002).

There are three main structures in the Area. Two were built in February 1899 during the British Antarctic (*Southern Cross*) Expedition led by C.E. Borchgrevink (1898-1900). One hut served as a living hut and the other as a store. They were used for the first winter spent on the Antarctic continent.

Scott's Northern Party hut is situated 30 metres to the north of Borchgrevink's hut. It consists of the collapsing remains of a third hut built in February 1911 for the Northern Party led by V.L.A. Campbell of R.F. Scott's British Antarctic (*Terra Nova*) Expedition (1910-1913), which wintered there in 1911.

In addition to these features there are numerous other historic relics located in the Area. These include stores depots, a latrine structure, two anchors from the ship *Southern Cross*, an ice anchor from the ship *Terra Nova*, and supplies of coal briquettes. Other historic items within the Area are buried in guano.

Cape Adare is one of the principal sites of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration and, as such, has considerable historical significance. Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna in Antarctica are associated with the two earliest expeditions based at this site. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica give this Area significant scientific, aesthetic and historic values.

2. Aims and Objectives

The aim of the Management Plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the Plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the Area through planned conservation work which may include:
  a. 'on-site' maintenance,
  b. monitoring the condition of artefacts and structures, and the factors which affect them, and
  c. conservation of artefacts to be conducted on and off site;

- allow management activities which support the protection of the values and features of the Area including:
  a. mapping and otherwise recording the disposition of historic items in the hut environs, and
  b. recording other relevant historic data; and
- prevent unnecessary human disturbance to the Area, its features and artefacts through managed access to Borchgrevink's hut.

3. Management Activities

- A programme of conservation work shall be undertaken on the *Southern Cross* hut and associated structures and artefacts in the Area.
- Visits shall be made as necessary for management purposes.
- Systematic monitoring shall be put in place to assess the impacts of present visitor limits, and the results and any related management recommendations included in reviews of this Management Plan. National Antarctic Programmes operating in, or those with an interest in, the Area shall consult together with a view to ensuring the above management activities are implemented.

4. Period of Designation

Designated for an indefinite period.

5. Maps

- Map A: Cape Adare regional map. This map shows the Cape Adare region along with the boundaries of the Area with significant topographic features. It also shows the approximate location of significant historical items within the Area.
- Map B: Cape Adare site map. This map shows the approximate location of specific historic relics and structures within the Area.

6. Description of the Area

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

Cape Adare is a generally ice free, prominent volcanic headland, at the northern extremity of Victoria Land, which marks the western approaches to the Ross Sea. The Area is located to the south west of the Cape on the southern shore of Ridley Beach, which encloses a large, flat, triangular area of shingle.

The whole of the flat area and the lower western slopes of the Adare Peninsula are occupied by one of the largest Adélie penguin (*Pygoscelis adeliae*) rookeries in Antarctica. Penguins have almost completely occupied the Area and the need to avoid disturbance often restricts access to the huts.

The boundaries of the ASPA are:

- North, an east-west line drawn 50 metres north of the Northern Party Hut;

- East, a north-south line drawn 50 metres to the west of Borchgrevink's stores hut;
- West, a north-south line drawn 50 metres to the east of Borchgrevink's living hut; and
- South, the shoreline of Ridley Beach.

Skuas (*Catharacta maccormicki*) nest in the vicinity and Weddell seals also haul up along the beach.

6(ii) Access to the Area

There are no designated helicopter pads in the vicinity of the Area. Helicopter landings should be avoided as for most of the summer season it is difficult to operate helicopters without causing disturbance to penguins and skuas. Landings from the sea by boat, or vehicles travelling on the sea ice, may be made directly onto the beach as ice and surf conditions allow. From the beach, access to the Area is by foot. Care must be taken to avoid damage to artefacts in the Area and disturbance to birds nesting on and around the structures.

6(ii) Location of structures within and adjacent to the Area

Apart from a Treaty plaque all structures within the Area are of historic origin. Major features of the Area include Borchgrevink's Southern Cross expedition living hut and the unroofed stores hut. Scott's Northern Party hut is situated 30 metres to the north of Borchgrevink's living hut and is in a state of collapse.

In addition to these structures there are many other historic relics distributed around the Area. These include stores depots, a latrine structure, two anchors from the ship Southern Cross, an ice anchor from the ship Terra Nova, and supplies of coal. Many of these items are either partly or completely covered in the guano of the Adélie penguins which also occupy the Area.

The grave (Historic Site and Monument No. 23) of Nicolai Hanson (biologist with the Southern Cross expedition) is located approximately 1.5 km north east of historic huts. It is marked by a large boulder with an iron cross, a brass plaque and a white cross marked out in quartz pebbles.

6(iii) Location of other Protected Areas in the vicinity

The nearest ASPA is 106 (previously SPA 7), approximately 115 km to the south, on the western side of Cape Hallett.

6(iv) Special Zones within the Area

There are no special zones within the Area.

7. Permit Conditions

Entry to the Area is prohibited except in accordance with a Permit.

Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A Permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Area shall consult together and with groups and organisations interested in visiting the Area to ensure that visitor numbers are not exceeded.

Permits to enter the site may be issued for a stated period for:

- activities related to conservation, research and/or monitoring purposes;
- management activities in support of the objectives of this Plan; and
- activities related to educational or recreational activities including tourism, providing they do not conflict with the objectives of this Plan.

7(i) Access to and movement within the Area

- Control of movement within the Area is necessary to prevent disturbance to wildlife and damage caused by crowding around the many vulnerable historic features within the Area. The maximum number in the Area at any time (including those within the hut) shall be: **40 people.**
- Control of numbers within Borchgrevink's hut is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number within the hut at any time (including guides) shall be: **4 people.**
- Avoidance of cumulative impacts on the interior of Borchgrevink's hut requires an annual limit on visitor numbers. The number of visitors to the hut varies considerably from year to year but the effect of visitors to other Ross Sea area historic huts suggests that similar limits should apply. The annual maximum number of visitors shall be: **2000 people.**
- These limits have been based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, archaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitors would be detrimental to the values to be protected. An ongoing monitoring programme to assess the effect of visitors is required to provide the basis for future reviews of the management plan, in particular whether the limits on number of visitors are appropriate.
- Adequate supervision of visits to the Area is necessary to prevent damage caused by crowding and by actions inconsistent with the Code of Conduct set out in section 7(ii). All tourism, educational and recreational visits must be supervised by an experienced guide nominated by the operator (refer section 7(ix)).
- Helicopter landings are prohibited within the Area.
- Vehicles are prohibited within the Area.

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

Activities which may be conducted within the Area include:

- visits for conservation purposes;
- educational and/or recreational visits including tourism; and
- scientific activity which does not detract from the values of the Area.

Visitors should adhere to the following Code of Conduct, except where conservation, research, monitoring or management activities specified in the Permit require otherwise:

- Thoroughly clean grit and scoria, ice and snow from boots using the brushes provided before entering the hut to reduce floor abrasion;
- Remove any clothing made wet by sea water, and any sea ice crystals from boots, as salt particles accelerate corrosion of metal objects;

- Do not touch, move or sit on any items or furniture in the huts - handling artefacts causes damage;
- As many areas are cramped and artefacts can be accidentally bumped, do not wear packs inside;
- When moving around the sites, take great care not to tread on any items which may be obscured by snow;
- Use of combustion style lanterns, naked flames or smoking in or around the huts is prohibited, as fire is a major risk; and
- Visits should be recorded in the book provided. This allows times and levels of visitation to be correlated with temperature and humidity data automatically logged inside the hut.

7(iii) Installation, modification or removal of structures

- No new structures are to be erected in the Area, or scientific equipment installed, except for conservation or scientific activities that do not detract from the values of the Area as specified in 1.
- No historic structure shall be removed from the Area, unless specified in a Permit issued in accordance with the provisions of section 7(vii).

7(iv) Location of field camps

- Use of the historic hut, or other structures in the Area, for living purposes is not permitted.
- Camping is prohibited within the Area under any circumstances.

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

- No living animals, plant material, soil or micro-organisms shall be introduced to the Area.
- No food products shall be taken into the Area.
- Chemicals may only be introduced for permitted scientific or conservation purposes. Chemicals (including fuel) or other materials are not to be left in the Area, unless required for essential purposes connected with the conservation of the historic structures or the associated relics. All materials are to be removed when no longer required and before a date to be specified in the Permit.

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

- This activity is prohibited except in accordance with a permit issued by the appropriate national authority specifically for that purpose under Article 3, Annex II to the Protocol on Environmental Protection.
- Where animal taking or harmful interference is involved, this should, as a minimum standard, be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

7(vii) Collection of anything not imported by the Permit Holder

- Material may be collected and removed from the Area for conservation reasons consistent with the objectives of this Plan only when specified in a Permit issued by the appropriate national authority.

- Materials which pose a threat to the environment or human health may be removed from the Area for disposal, in accordance with a Permit, where they meet one or more of the following criteria:
  (i) the artefact presents a threat to the environment, wildlife or human health and safety;
  (ii) it is in such poor condition that it is not reasonably possible to conserve it;
  (iii) it does not contribute in any significant way to our understanding of the hut, its occupants or the history of Antarctica;
  (iv) it does not contribute to, or it detracts from, the visual qualities of the site or the hut, and/or;
  (v) it is not a unique or rare item;

  and where such action is:
  (i) undertaken by parties with appropriate heritage conservation expertise; and
  (ii) part of an overall plan for conservation work at the site.

National authorities should ensure that any removal of artefacts and assessment against the above criteria is carried out by personnel with appropriate heritage conservation expertise.

Artefacts judged to be of high historic value, which cannot be conserved on site with currently available techniques, may be removed in accordance with a Permit for storage in a controlled environment until such time as they can safely be returned to the Area.

7(viii) Disposal of waste

- All human waste, grey water and other waste generated by work parties or visitors shall be removed from the Area.

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

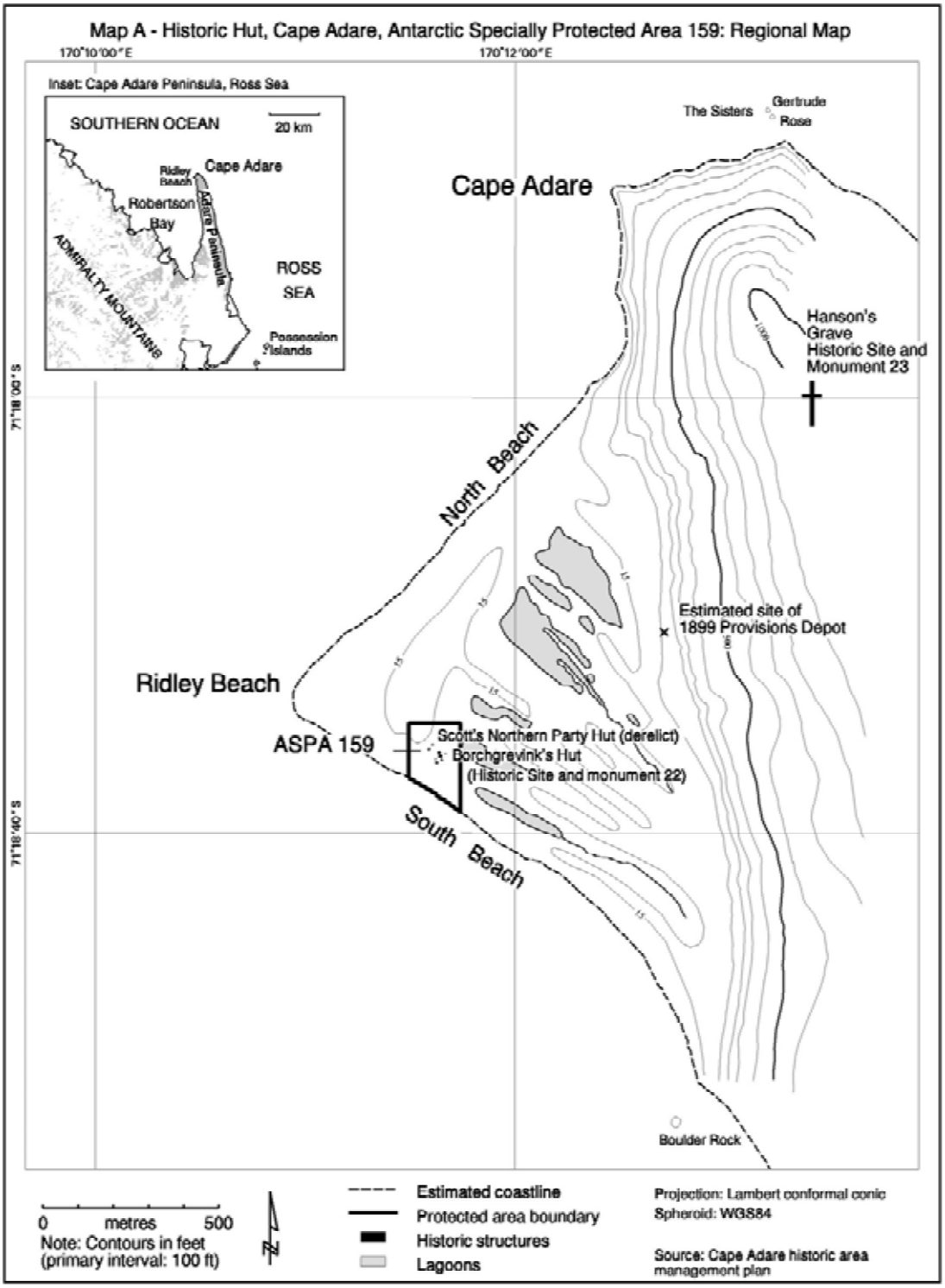
- The Permit, or an authorised copy, shall be carried within the Area.
- Information on the requirements of this Plan shall be provided to all visitors.
- The Code of Conduct set out in section 7(ii) shall be followed by all visitors, except where conservation, research, monitoring or management purposes require otherwise.
- Operators facilitating educational and recreational visits (including tourism) to the Area shall, prior to commencement of the summer season, nominate people with a working knowledge of both the site and this Management Plan to act as guides during visits.
- All educational and recreational visits (including tourism) shall be supervised by a nominated guide, who is responsible for briefing visitors on the code of conduct and ensuring it is complied with.
- Parties shall consult and coordinate to develop skills and resources, particularly those related to conservation techniques, to assist with the protection of the Area's values.

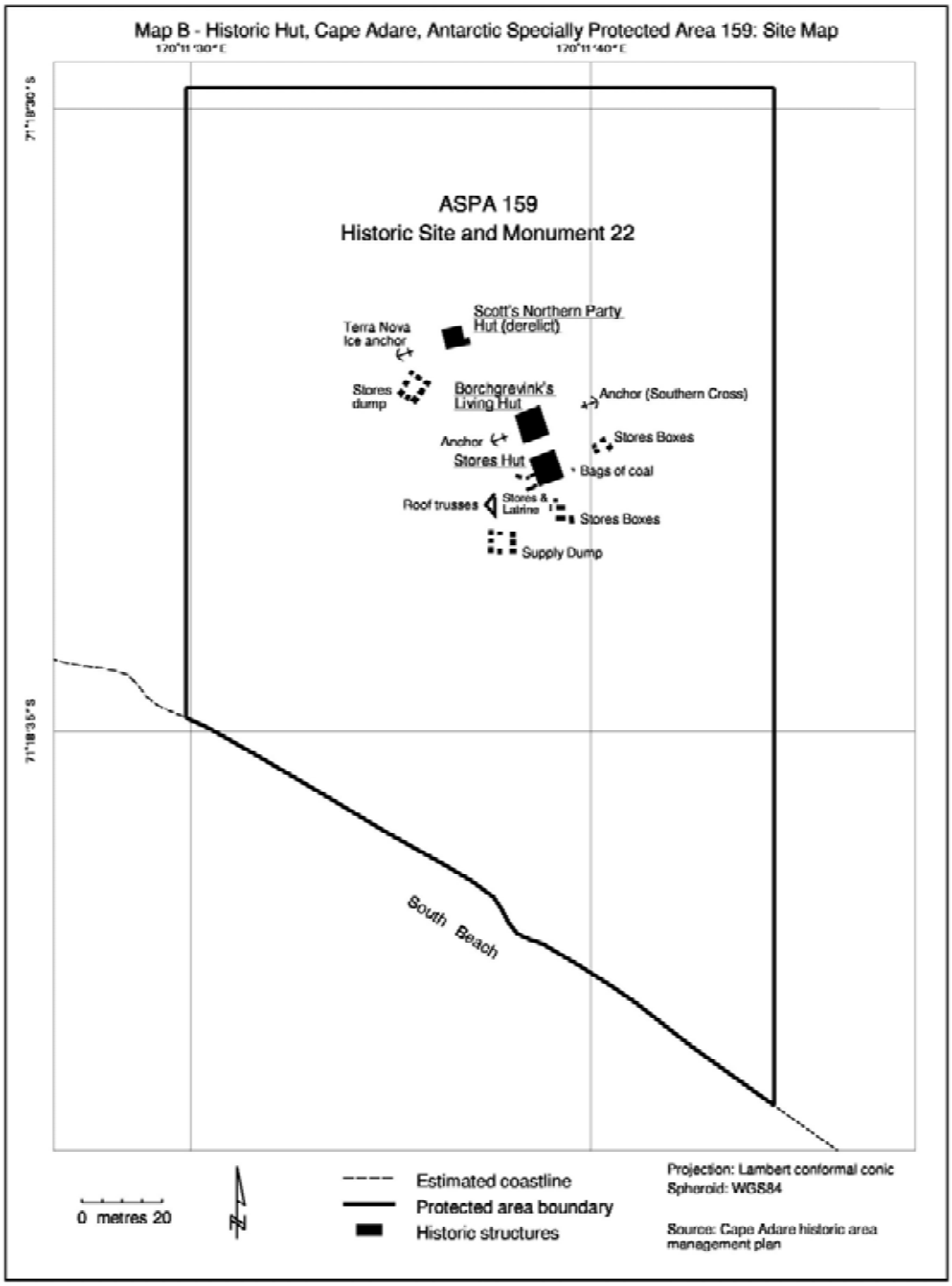
7(x) Requirements for reports

Parties shall ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports shall include, as appropriate, the information identified in the Visit Report Form provided in Appendix 4 of Resolution 2 (1998). In addition, any removal of materials in accordance with section 8(viii) shall be detailed, including the

reason for removal and the current location of the items or the date of disposal. Any return of such items to the site shall also be reported.

Parties shall maintain a record of such activities and, in the Annual Exchange of Information, shall provide summary descriptions of activities conducted by persons subject to their jurisdiction, in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of visitation, to be used both for review of the Management Plan and in managing further visitation to the site.


Map A - Historic Hut, Cape Adare, Antarctic Specially Protected Area 159: Regional Map
170°10'00"E
170°12'00"E
Inset: Cape Adare Peninsula, Ross Sea
SOUTHERN OCEAN
20 km
Ridley Beach
Cape Adare
Robertson Bay
Adare Peninsula
ADMIRALTY MOUNTAINS
ROSS SEA
Possession Islands
The Sisters
Gertrude Rose
Cape Adare
Hanson's Grave Historic Site and Monument 23
North Beach
Estimated site of 1899 Provisions Depot
Ridley Beach
ASPA 159
Scott's Northern Party Hut (derelict)
Borchgrevink's Hut
(Historic Site and monument 22)
South Beach
Boulder Rock
71°18'00"S
71°18'40"S
0 metres 500
Note: Contours in feet
(primary interval: 100 ft)
N
Estimated coastline
Protected area boundary
Historic structures
Lagoons
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Cape Adare historic area management plan


Map B - Historic Hut, Cape Adare, Antarctic Specially Protected Area 159: Site Map
ASPA 159
Historic Site and Monument 22
Scott's Northern Party Hut (derelict)
Terra Nova Ice anchor
Stores dump
Borchgrevink's Living Hut
Anchor (Southern Cross)
Anchor
Stores Boxes
Stores Hut
Bags of coal
Roof trusses
Stores & Latrine
Stores Boxes
Supply Dump
South Beach
0 metres 20
Estimated coastline
Protected area boundary
Historic structures
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Cape Adare historic area management plan

Management Plan for Antarctic Specially Protected Area No. 163

DAKSHIN GANGOTRI GLACIER, DRONNING MAUD LAND

Introduction

In accordance with the provisions of Annex V to the Protocol on Environmental Protection to the Antarctica on Treaty Area Protection and Management, India initiated a review of the management plans for the Antarctic Specially Protected Area: Dakshin Gangotri Glacier, Dronning Maud Land. This ASPA is renamed from the previous Specially Protected Area and Site of Special Scientific Interest (SSSI) in accordance with Decision 1 (2002) of the XXV ATCM at Warsaw.

1. Description of values to be protected

Historic Value

Dakshin Gangotri Glacier is a small tongue of polar continental ice sheet, overriding the Schirmacher Oasis of central Dronning Maud Land (CDML). It was identified by the second Indian Antarctic Expedition in 1983 and since then its snout is being monitored continuously.

Scientific Value

With the availability of this vast amount of data for the past two decades, it has become a valuable site for observing the changes in the movement of the Antarctic ice sheet under the impact of global warming. The area has primary scientific importance for glaciologists and environmental scientists. Due to the scientific values of the Area and the nature of the research, it is protected as an Antarctic Specially Protected Area consistent with Articles 2, 3, 5 and 6 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty, to prevent interference with ongoing planned scientific investigations.

Environmental Value

In the designated Area exploration shows the faunal diversity and ecology of the moss-inhabiting terrestrial invertebrate fauna and it is also extensively explored lichenologically. Schirmacher Oasis is also an important area for the algal and cyanobacterial flora diversity. Terrestrial mosses are quite widespread in the Schirmacher Oasis colonizing a range of habitats. The bryophytes, because of their poikilohydric nature and alternative strategy of adaptation, are one of the very few plant groups which grow in Antarctica. As such their role in habitat modification, nutrient cycling, primary production and providing shelter and security to associated invertebrate animals, for example the bryobionts, bryophiles, bryoxenes assume a particular significance. Bryophytes have been reported in Schirmacher Oasis (divided in Eastern, Central and Western Schirmacher). Lichens, fungi, algae and bacteria have also been reported in the Area. Distribution of algae and cyanobacteria flora of fresh water streams of the Oasis at the designated area are studied. Examination of algae and cyanobacteria is conducted in the glacier-melt water stream. The species reported are *G. magma, Chaemosiphon subglobosus, Oscillatoria limosa, O. limnetica, P. frigidum, P. autumnale, Nostoc commune, N. punctiforme, Calothrix gracilis, C. brevissima, Uronema* sp.*,* and *Cosmarium* leave. Among the cyanobacteria encountered in the stream of Schirmacher Oasis, contribution by N_2 –fixing species might play a

significant role in nitrogen economy of the ecosystem through N_2–fixation. Studies on polar Skuas are also conducted at Schirmacher Oasis and their nesting and breeding success is reported around the designated place.

2. Aims and Objectives

Management at Dakshin Gangotri Glacier aims to:

- Avoid degradation of values of the Area by preventing undue human disturbance;
- Allow glaciological and environmental scientific research, while ensuring protection of observational accuracy from any sort of man-made inputs;
- Ensure that peripheral points along the snout are not adversely affected by human activity in the Area;
- Maintain the Area as a reference marker for studying the movement patterns of this part of the Antarctic ice-sheet under the influence of global warming;
- Allow visits for management purposes in support of the aims of the Management Plan for the Area.

3. Management Activities

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

- A detailed map showing the location & boundaries of the Area and stating the special restrictions that apply will be displayed prominently at Maitri (India) and Novolazarevskaya (Russia) research stations; copies of this management plan shall also be made available at both the stations.
- Two signs displaying the location and boundaries of the Area with clear statements of entry restrictions shall be placed on prominent rocks near both the entrance points to the valley, the eastern end and the south-eastern end; to help avoid inadvertent entry.
- Copies of this management plan along with location and boundary maps of the Area will be provided to all the visiting ships/aircraft.
- Markers, signs, cairns and other structures erected within the Area for scientific and management purposes will be secured and maintained in good condition, and will be removed when no longer necessary.
- Visits shall be made as necessary (at least once every year) to assess whether the Area continues to serve the purposes for which it was designated and to ensure that maintenance and management are adequate.
- The management plan shall be reviewed no less than once every five years and updated as required.

4. Period of Designation

The ASPA is designated for an indefinite period.

5. Maps

The following maps and photographs are enclosed for illustrating the Area and the Management Plan:

- Map 1: Location of Schirmacher Oasis in central Dronning Maud Land, East Antarctica.
- Map 2: Map of Schirmacher Oasis, showing locations of Maitri Research Station (India) and Novolazarevskaya Research Station (Russia).
- Map 3: Classification and Numbering of Lakes of Schirmacher Oasis (after Ravindra et al, 2001).
- Map 4: Topographic map of the Area (contour interval 10 m).
- Map 5: Paths of Fossil Glaciers in Schirmacher Oasis (after Beg et al, 2000).
- Map 6: Aerial view of the Dakshin Gangotri Glacier Snout.

6. Description of the Area

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

Schirmacher Oasis is a rocky hill range, about 17 km long in E-W trend (bounded by Eastern longitudes 11° 22' 40" and 11° 54' 20") and about 0.7 km to 3.3 km wide (bounded by Southern latitudes 70° 43' 50" and 70° 46' 40"). Its elevation varies from 0 to 228 m above the msl. It is a part of central Dronning Maud Land in Eastern Antarctica. The Area is a fragment of the western part of Schirmacher Oasis.

The Area is bounded by the Eastern longitudes 11° 33' 30" and 11° 36' 30" and by the Southern latitudes 70° 44' 10" and 70° 45' 30". The Area is 4.53 sq. km in aerial extent. The northeastern and northwestern corners of the Area are on shelf-ice, while the southwestern extremity is on polar ice-sheet. The southeastern end lies on a rocky outcrop.

Topographically, the Area can be divided into four distinct units–the southern continental ice-sheet, rocky hill slopes, a vast central proglacial lake (Lake-B7, Sbrosovoye Lake) and northern undulatory shelf ice.

The southernmost ice-sheet is bare 'blue ice', descending from 180 m contour to 10 m contour at the snout of the Glacier. It is crevassed and crisscrossed by NE-SW to NNE-SSW trending fractures. Two small and ephemeral supraglacial streams flow over the snout in a NNE direction.

The rocky terrain is uneven and has the minimum width of the Schirmacher Oasis at the snout point; less than 50 m only. The eastern and western sides of the hills slope towards the snout, making a wide valley. The contours descend from 150 m to msl at the northern margin of the rock outcrops.

The central part of the Area is occupied by Lake B7. It is a lake of glacial origin. The dimensions of the lake are about 500 m x 300 m.

The northernmost part of the Area comprises shelf ice with pressure ridges, fractures and crevasses. The contact between shelf ice and eastern rocky slopes is marked by a prominent 3-km long, NNE-SSW trending lineament. The fractures in the ice are also aligned parallel to this lineament.

Schirmacher Oasis exposes a granulite to amphibolite facies metamorphic terrain. The rock types are represented by charnockites, enderbites, garnet-sillimanite, gneisses, garnet-biotite gneisses, quartzofeldspathic augen gneisses with some foliated lamprophyres, amphibolites, dolerite, metagabbro and metabasalt. The rock suites dominantly fall under Grenvillean (1000 Ma) and Pan-African (550 Ma) events. Three phases of deformation are distinct.

The Area comprises mostly charnockite-Khondalite type of rocks (quartz-garnet-sillimanite-perthite±graphite gneisses) with some interlayering of garnet-sillimanite quartzites, calc silicate gneisses and mafic granulites. Two sets of faults (N30E and N50E) are quite prominent. One such major fault runs from the north-eastern corner of the Area; cutting all the three geomorphological units–shelf ice, rocks and continental ice-sheet.

Meteorological data from the nearby Indian Research Station Maitri shows that the Area has a dry polar climate. The extreme temperatures for the warmest and the coldest months range between 7.4 to -34.8°C. The mean annual temperature is -10.2°C. December is the warmest month of the year and August is the coldest. The blizzards touch a gale speed of 90 to 95 knots; the mean annual wind speed is 18 knots. The dominant wind direction is E-SE. Snowfall is quite frequent during the winter months, but gale force winds scrub the rocky surfaces clean and snow deposition is widespread on the leeward side of the hillocks.

Glaciological observations from 1983 to 1996 were carried out by surveys from two fixed points ('G' and 'H') using EDM or theodolite. The results showed that the Glacier is steadily receding every year at an average recession rate of 70 cm per annum.

In 1996, to enhance the accuracy of the observations, 19 peripheral points were marked encircling the snout of the Glacier. The average annual recession in the years 1997 to 2002 was 48.7 cm, 74.9 cm, 69.5 cm, 65.8 cm and 62.7 cm, respectively.

This translates into an overall average recession of 65.3 per annum for the period 1996-2002; which is in conformity with the observations for the previous period (1983 – 1996) of a recession rate of 7 meters per decade.

6(ii) Restricted and managed zones within the Area

Along the periphery of the Dakshin Gangotri Glacier, 19 observation points have been marked in February 1996. With reference to these points it has become possible to record the movement of the Glacier within an accuracy of 1 cm. Precise monitoring on cm-scale is also available for the years 1996-2002. Access to this zone should be restricted. It is proposed that a 100m radius all along the periphery of the Glacier should have limited admittance to protect the accuracy of scientific observations.

6(iii) Structures within and near the Area

There are no structures present in the Area, apart from two cairns ('G' and 'H') marking the sites used for glaciological and topographical surveys.

In future, some signs and cairns will be erected notifying the protected status of the Area.

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

In the entire Schirmacher Oasis, there are no other protected areas.

7. Permit Conditions

7(i) Access to and movement within the Area

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

A permit to enter the Area may only be issued for scientific research, or for essential management purposes consistent with the Management Plan's objectives and provisions; with the condition that the actions permitted will not jeopardize the scientific and environmental values of the Area and will not interfere with ongoing scientific studies.

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

The following activities may be conducted within the Area:

- Scientific research programmes consistent with the Management Plan for the Area, including the values for which the Area has been designated; which cannot be carried out elsewhere and which will not jeopardize the ecosystem of the Area.
- Essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

No structures are to be erected within the Area except as specified in a permit. Any equipment should not be installed if it is not essential for scientific research or for management activities, and it must be authorized in a permit. All scientific equipment installed in the Area must be clearly identified by country, name of principal investigator, year of installation and expected date of completion of the study. Details are to be included in the visit report. All such equipment should be made of materials that pose minimum risk of contamination and must be removed at the completion of the study. Removal of specific equipment for which the permit has expired shall be a condition of the permit.

7(iv) Location of field camps

Camping is not allowed in the Area. The field parties can camp either east of "Lake Kalika" at "VK-Ground" or beyond the western limit of the Area.

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

No living animals, plant material or microorganism shall be deliberately introduced into the Area and precautions shall be taken against accidental introductions.

No pesticides, herbicides, chemicals, radio-isotopes shall be brought into the Area, other than those permitted for scientific or management purposes. And these authorized agents shall be removed from the Area at the conclusion of the activity.

Fuel is not to be stored in the Area unless connected with authorized activity. Permanent depots are not to be built in the Area.

All material taken into the Area shall be for a stated period only and shall be removed at or before the conclusion of that stated period.

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

Any interference with the native flora and fauna of the Area shall be in accordance with the requirements of the Protocol on Environmental Protection to the Antarctic Treaty, 1991, Annex II, Article 3. Where taking or harmful interference with animals is involved, SCAR Code of Conduct for Use of Animals for Scientific Purposes in Antarctica should be used as a minimum standard.

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

Material may only be collected or removed from the Area as specified in the permit and should be limited to the minimum necessary to meet scientific or management requirements.

7(viii) Disposal of Waste

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

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

Permits may be granted to enter the Area to carry out biological monitoring and area inspection activities.

Specific sites of long-term monitoring shall be appropriately marked and GPS positions will be obtained for records with the Antarctic Data Directory System through the appropriate national authority.

8. Requirements for Reports

The principal permit holder for the permit issued shall submit to the appropriate national authority a visit report describing the activities undertaken. Reports are due and shall be submitted as soon as possible after the expiration of the permit, and include the types of information contained in SCAR visit report form or as required by national laws. The authority will maintain a record of such activities and make this accessible to interested Parties.

Supporting Bibliography

ASTHANA, R., GAUR, M.P. AND CHATURVEDI, A. (1996): Notes on Pattern of Snow Accumulation/ ablation on ice shelf and Secular Movement of Dakshin Gangotri Glacier Snout in Central Dronning Maud Land, East Antarctica. *In: scientific Report of the Twelfth Indian Scientific Expedition to Antarctica, Tech. Pub. No. 10 D.O.D., Govt. of India, New Delhi, pp.111-122.*

BEG, M.J., PRASAD, A.V.K. AND CHATURVEDI, A. (2000): Interim Report on Glaciological Studies in the Austral Summer of 19th Indian Antarctic Expedition. Submitted for publication in: Scientific Report of Nineteenth Indian Expedition to Antarctica, Tech. Pub. No. 17, D.O.D., Govt. of India, New Delhi, pp. 121-126.

BEJARNIYA, B.R., RAVIKANT, V. AND KUNDU, A., (2000): Glaciological Studies in Schirmacher Hill and on Ice Shelf during XIV Antarctica Expedition. In: Scientific Report of Sixteenth Indian Expedition to Antarctica, Tech. Pub. No. 14, D.O.D., Govt. of India, New Delhi, pp. 121-126.

CHATURVEDI, A., SINGH, A., GAUR, M.P., KRISHNAMURTHY, K.V., AND BEG, M.J., (1999): A confirmation of Polar Glacial Recession by Monitoring the Snout of Dakshin Gangotri Glacier in

Schirmacher Range. In: Scientific Report of Fifteenth Indian Expedition to Antarctica, Tech. Pub. No. 13, D.O.D., Govt. of India, New Delhi, pp. 321-336.

D'SOUZA, M.J. AND KUNDU, A., (2000): Glaciological studies during the Seventeenth Antarctic Expedition. In: Scientific Report of Seventeenth Indian Expedition to Antarctica, Tech. Pub. No. 15, D.O.D., Govt. of India, New Delhi, pp.67-72.

KASHYAP, A.K. (1988.): Studies on Algal flora of Schirmacher Oasis, Dronning Maud land, Antarctica . In: proceedings of Workshop on Antarctic Studies, D.O.D.,CSIR, Govt. of India, New Delhi, pp.435-439

KAUL, M.K., SINGH, R.K., SRIVASTAVA, D., MUKERJI, S. AND JAYARAM, S. (1998): Observations on the Changes in the Snout of Dakshin Gangotri Glacier, Antarctica. In: Scientific Report of the Fifth Indian Expedition to Antarctica, Tech. Pub. No. 5, D.O.D., Govt. of India, New Delhi, pp. 205-209.

KAUL, M.K., CHAKRABORTY, S.K. AND RAINA, V.K. (1985): A Note on the snout of the Dakshin Gangotri Glacier, Antarctica. In: Scientific Report of Second Indian Expedition to Antarctica, Tech. Pub. No. 2, D.O.D., Govt. of India, New Delhi, pp. 91-93.

MUKERJI, S., RAVIKANT, V., BEJARNIYA, B.R., OBEROI, L.K. AND NAUTIYAL, S.C. (1995): A Note on the Glaciological Studies Carried Out During Eleventh Indian Expedition to Antarctica. In: Scientific Report of Eleventh Indian Expedition to Antarctica, Tech. Pub. No. 9, D.O.D., Govt. of India, New Delhi, pp. 153-162.

PANDEY K.D., KASHYAP A.K. (1995): Diversity of Algal Flora in Six Fresh Water Streams of Scirmacher Oasis, Antarctica. In Scientific Report of Tenth Indian Expedition to Antarctica, Tech. Pub. No. 8, D.O.D., Govt. of India, New Delhi, pp. 218-229.

RAVINDRA, R. (2001): Geomorphology of Schirmacher Oasis, East Antarctica. Proc. Symp. on Snow, Ice and Glaciers, Geol. Sur. India, Spl. Pub. No. 53, pp. 379-390.

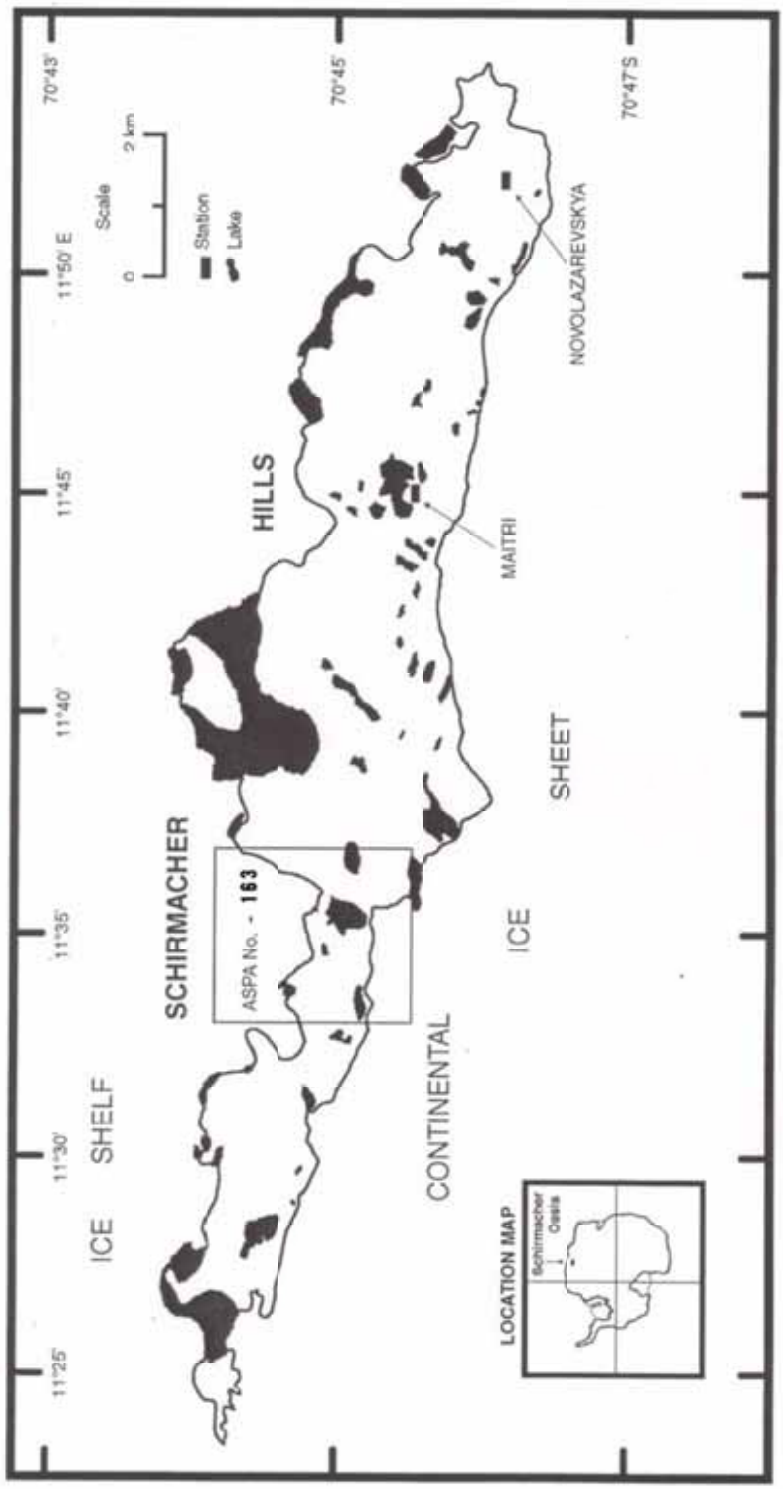
RAVINDRA, R., CHATURVEDI, A. AND BEG, M.J. (2001): Melt Water Lakes of Schirmacher Oasis - Their Genetic Aspects and Classification. *In: Advances in Marine and Antarctic Science, Ed. Sahu, DB and Pandey, PC, Dariyaganj, New Delhi, pp. 301-313.*

RAVINDRA, R., SRIVASTAVA, V.K., SHARMA, B.L., DEY, A. AND BEDI, A.K. (1994): Monitoring of Icebergs in Antarctic Waters and a Note on the Secular Movement of Dakshin Gangotri Glacier. *In: Scientific Report of Ninth Indian Expedition to Antarctica, Tech. Pub. No. 6, D.O.D., Govt. of India, New Delhi, pp. 239-250.*

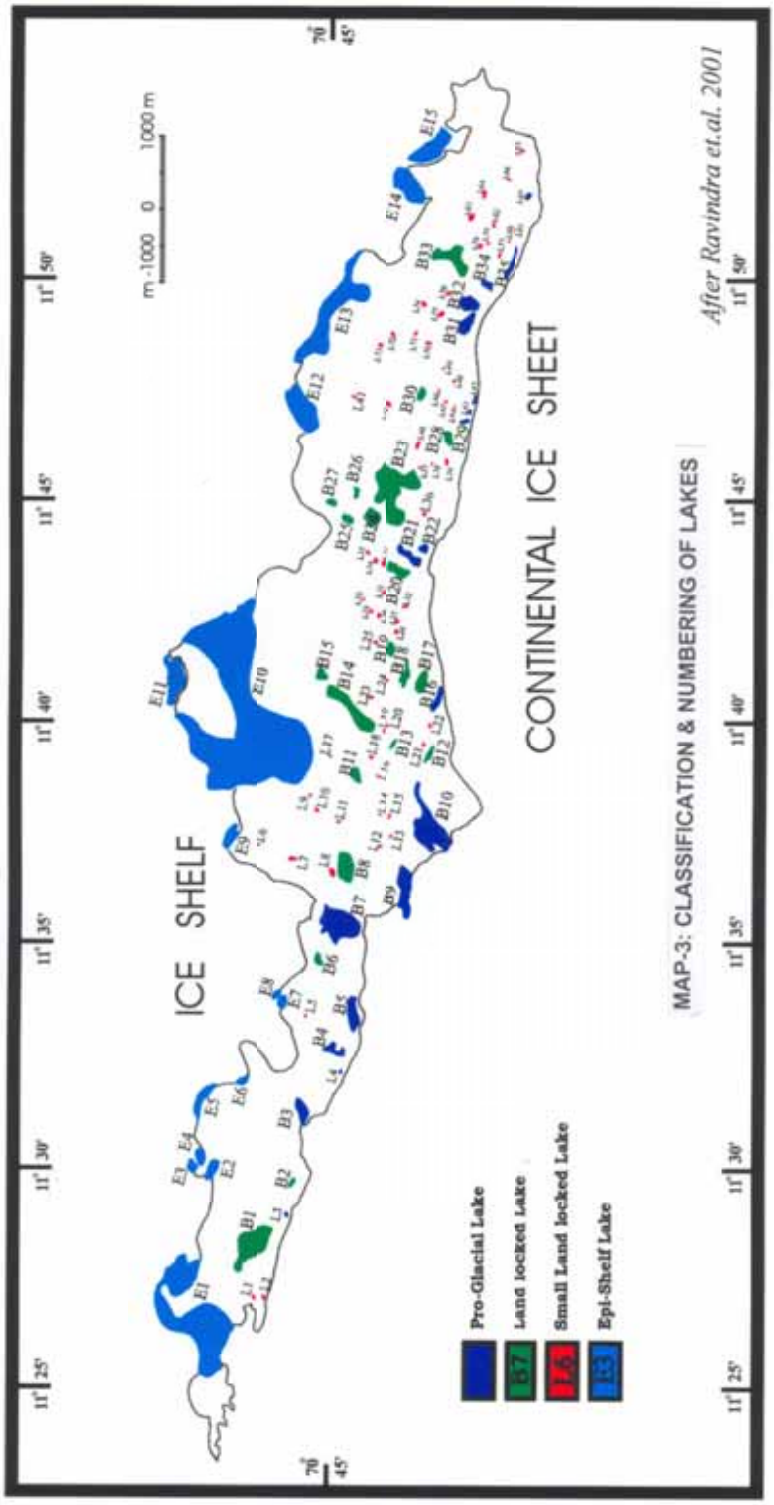
SINGH D.K., SEMWAL R.C., (2000): Bryoflora of Schirmacher Oasis,East Antarctica: A Preliminary Study. *In: Scientific Report of Sixteenth Indian Expedition to Antarctica, Tech. Pub. No. 14, D.O.D., Govt. of India, New Delhi, pp.173-186*

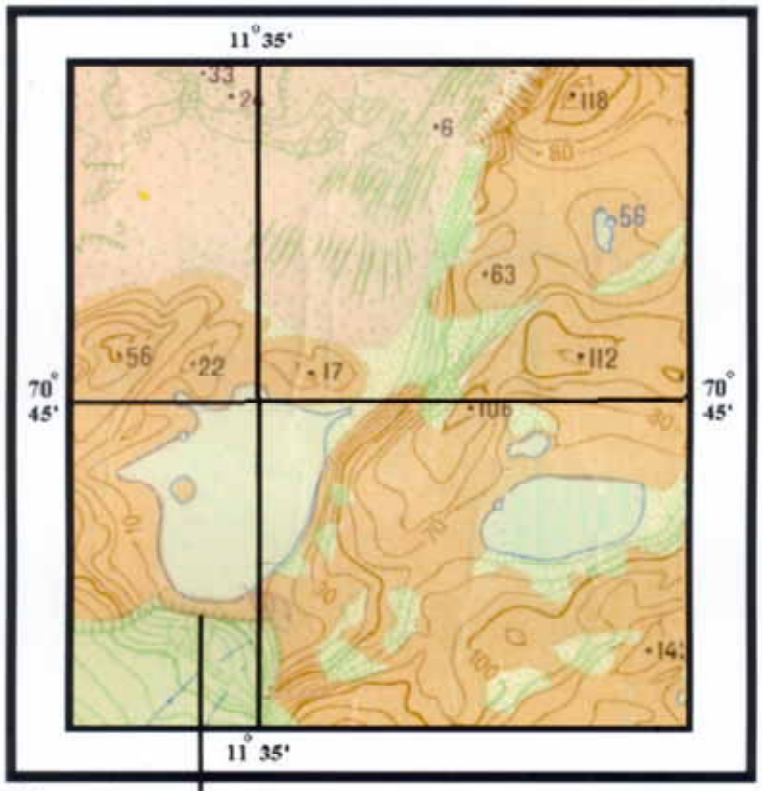
VENKATARAMAN K. (1998): Studies on Phylum Tardigrada and Other Associated Fauna, South Polar Skua and Bird and Mamal Ligging During 1994-1995 Expedition. In: Scientific Report of Fourteenth Indian Expedition to Antarctica, Tech. Pub. No. 12, D.O.D., Govt. of India, New Delhi, pp.220-243

MAP-1: LOACTION MAP OF SCHRIMACHER OASIS



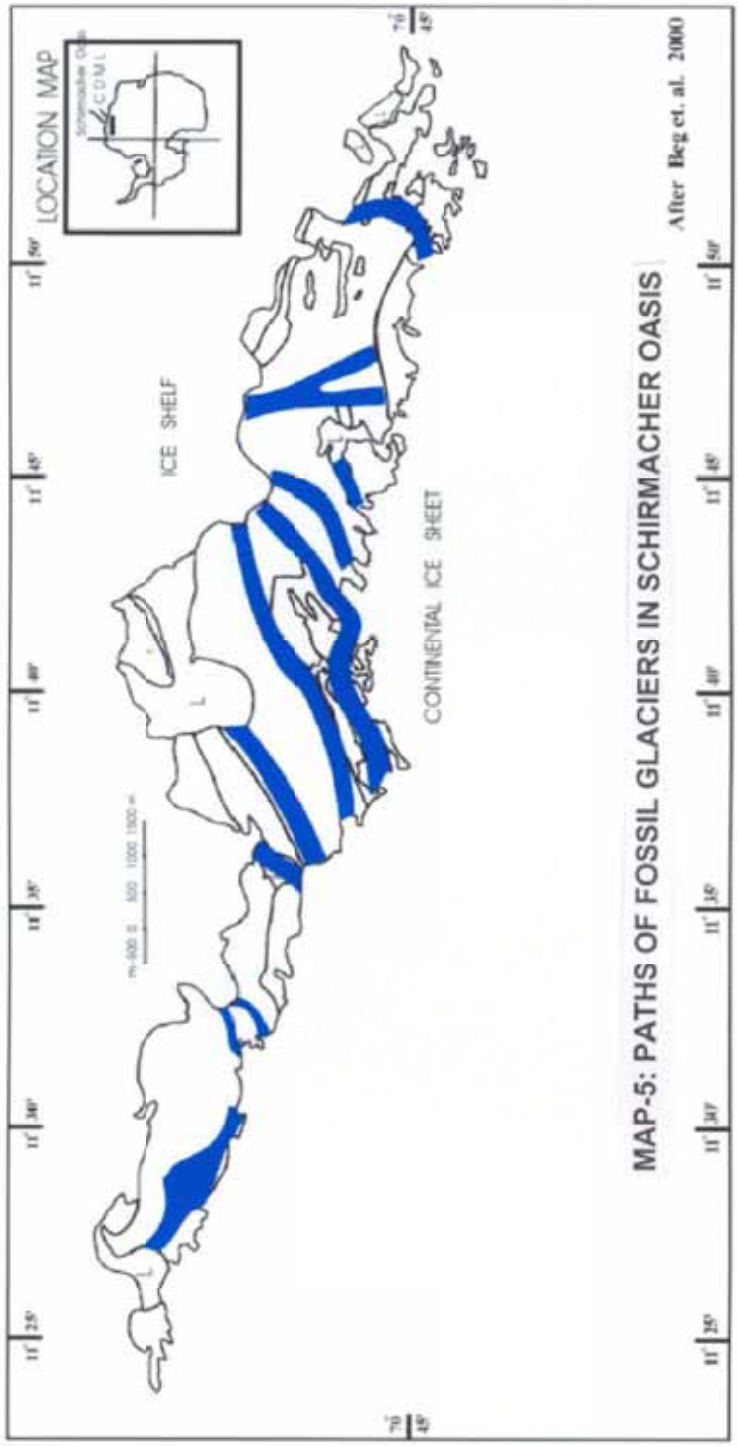
MAP-2: MAP SHOWING LOCATION OF MAITRI (INDIA) & NOVOLAZAREVSKAYA RUSSIA


ICE SHELF
CONTINENTAL ICE SHEET
m -1000 0 1000 m
Pro-Glacial Lake
Land locked Lake
Small Land locked Lake
Epi-Shelf Lake
MAP-3: CLASSIFICATION & NUMBERING OF LAKES
After Ravindra et.al. 2001



MAP-4: TOPOGRAPHIC MAP OF THE AREA

MAP-6: DAKSHIN GANGOTRI SNOUT


LOCATION MAP
ICE SHELF
CONTINENTAL ICE SHEET
MAP-5: PATHS OF FOSSIL GLACIERS IN SCHIRMACHER OASIS
After Beg et. al. 2000

Management Plan for Antarctic Specially Protected Area No. 164

SCULLIN AND MURRAY MONOLITHS, MAC ROBERTSON LAND, EAST ANTARCTICA

1. Description of Values to be Protected

Scullin and Murray Monoliths (67° 47'S 66° 42'E and 67° 47'S 66° 53'E) hold the greatest concentration of breeding seabird colonies in East Antarctica, including the second largest colony of Antarctic petrels *Thalassoica antarctica.* The Scullin and Murray Monoliths ASPA is a breeding locality for at least 160,000 pairs of Antarctic petrels from a minimum estimated global total of approximately half a million pairs (van Franeker *et al.* 1999). Scullin Monolith was recently recognised as a candidate Important Bird Area (IBA) using IUCN/BirdLife International criteria on known breeding populations by the SCAR Bird Biology subcommittee in mid-2002 (SCAR unpubl. data).

Adélie penguin colonies occupy the lower slopes of both monoliths, extending almost to the foreshore. Approximately 50,000 pairs nest on Scullin Monolith and a further 20,000 pairs on Murray Monolith. This represents approximately 10% of the Adélie penguin breeding population for East Antarctica and approximately 3% of the global population.

Many of the ocean-facing slopes of both monoliths are used for breeding by petrels. Extensive breeding colonies of four species of petrels occupy many of the steeper, higher-altitude slopes of both monoliths. The Antarctic petrel colony on Scullin Monolith is second in population only to the colony at Svarthameren in the Mühlig Hofmannfjella, in Dronning Maud Land. South Polar skuas nest throughout the ASPA, making use of the high density of breeding seabirds as prey during their breeding season. (See Figure A and Photograph A).

While larger colonies of seabirds are known from elsewhere in East Antarctica (e.g. the Rauer Group), it is the extensive populations (total known breeding population conservatively estimated at 230,000 pairs equivalent to a minimum of 460,000 individual breeding seabirds) and rich species diversity (seven breeding species) within the very small ice-free areas of Scullin and Murray Monoliths (estimated ice free area of 1.9 and 0.9 km^2, respectively, total of 2.8 km^2) that make these the greatest concentration and one of the most diverse seabird breeding localities known from East Antarctica (Appendix 1).

There are no data on population trends available, and the census and survey data collected in 1986/87 serve as baseline data for all future ornithological work in the Area. Some limited census data were collected from Reference Breeding Groups (RBGs) established in the mid 1980s to monitor the Antarctic petrel population; there have been no surveys of these RBGs for more than a decade. Many Adélie penguin breeding populations throughout East Antarctica have increased in the last 20 or so years, and it is likely that the Adélie penguin population within the Scullin and Murray Monoliths ASPA is greater than the 70,000 pairs reported from 1986/87. Further, it is likely that the 1986/87 census underestimated the breeding population of Antarctic petrels, given the census occurred late in the breeding season.

Aesthetic and wilderness values

In addition to the outstanding ecological and scientific values already identified, the Area possesses outstanding aesthetic values in the geomorphology of the two Monoliths and the spectacular nature of the glaciers descending from the Continental plateau that flow around the Monoliths ending in

calving glaciers. The near-vertical aspects of both Monoliths dropping to the sea, used by a high number of seabirds for nesting, represent an unique landscape in the Antarctic. The very large breeding assemblage of undisturbed seabirds in a setting of high aesthetic and wilderness values warrants the highest level of protection.

Human history

Recorded visits to Scullin and Murray Monoliths are few. Scullin and Murray Monoliths were first visited during the second BANZARE voyage in 1930-31, on 13th February 1931 (Grenfell Price 1962, Fletcher 1984). A brief landing was made at Scullin Monolith on 26 February 1936 from the R.R.S. *William Scoresby,* when an ascent was made to a height of several hundred metres (Rayner 1940). A landing by the Norwegian, Lars Christensen was made on 30 January 1937, when Scullin Monolith was visited (Christensen 1938, 1939). Australian National Antarctic Research Expeditions (ANARE) personnel have made few visits to the Area from Mawson station, approximately 160 km to the west. The only recorded stay within the Area was a six-day visit (1 - 6 February 1987), when comprehensive ornithological surveys were conducted (Alonso *et al*. 1987). A fibreglass 'Apple' refuge was established within the ASPA for this visit, and as of 13 October 2002, was intact. The first visit by a commercial tourist vessel to the Area was made on 10 December 1992, when passengers were landed at Scullin and Murray Monoliths. Brief tourist visits were made to Scullin Monolith on 7 December 1997, to Scullin and Murray Monoliths on 8 January 1998 and, Scullin and Murray Monoliths on 18 December 2002. Compared to many sites in East Antarctica, Scullin and Murray Monoliths have been visited infrequently, and with the one known exception, all visits have been brief (less than a day). Further, with little activity conducted during those visits, the Area, and in particular the avifauna, is of particular value as a relatively undisturbed area suitable for use in the future as a reference site for other areas that experience a greater level of human visitation and extent of activities.

Nomenclature

Mawson named both Monoliths during the second BANZARE voyage. Murray Monolith was named after Sir George Murray, Chief Justice of South Australia, Chancellor of the University of Adelaide and a patron of the Expedition, while Scullin Monolith was named after James H. Scullin, Prime Minister of Australia from 1929-31.

2. Aims and Objectives

The high concentration and diversity of the ASPA's avifauna requires management strategies that will limit the potential for human activities within the Area to affect the values to be protected. All human activities within the Scullin and Murray Monoliths ASPA will be managed and coordinated to:

- preserve Scullin and Murray Monoliths henceforth as a restricted Area with the goal of ensuring ecosystem integrity and the concomitant minimisation of environmental impacts of human activities;
- avoid degradation to, or substantial risk to, the values of the ASPA by preventing unnecessary human disturbance and activities within the ASPA, and maintain the undisturbed nature of the ASPA to permit its use in future as a reference area;
- permit and facilitate scientific research activities within the ASPA, in particular on the avifauna, while ensuring that the breeding populations are protected through the restriction on the frequency of visits and the types of activities undertaken. Research proposed for the ASPA will be on the basis that it can not be undertaken elsewhere. Non-ornithological research or

activities within the Area must not affect the ornithological values of the ASPA and should be limited to areas outside breeding colonies or nesting sites whenever possible;

- prohibit non-research visits to the ASPA during the summer seabird breeding season;
- prohibit the construction or installation of semi-permanent accommodation in the ASPA (i.e. extending beyond the end of one seabird breeding season);
- prohibit flying of any aircraft within the ASPA during the summer breeding season (1 October to 31 March for the purposes of this Management Plan);
- accord high priority to the collection of seabird census data from representative sample areas, reference breeding colonies (RBGs) or of whole breeding populations. These census data will be major determinants in, and contributions to, future revisions of the management strategy for the ASPA;
- accord high priority to the collection of biological survey data, in particular flora and invertebrate surveys. These survey data will be incorporated into future revisions of the management strategy for the Antarctic Specially Protected Area No. 164;
- minimise the potential for introduction of alien plants, animals and micro-organisms to the ASPA reducing the potential for the introduction of avian pathogens is a primary concern.

3. Management Activities

The following management activities will be undertaken to protect the values of the ASPA:

- allow visits for management purposes that address the conservation and ongoing assessment of values, including the identification of new values or the recognition of values no longer present (ie incorporating a dynamic set of values that reflect biological processes within the Area);
- permit research visits to conduct censuses of seabird breeding populations, including mapping of colonies and nest sites. Visits to assess populations or to undertake aerial photography of the colonies shall be undertaken as necessary (preferably no less than one visit every five years);
- markers, signs and other indicators of the Area's extent shall not be erected, maintaining the aesthetic values and undisturbed nature of the Area;
- clothing (and in particular all footwear) and field equipment shall be cleaned before and after entering the Area. Research equipment shall be disinfected where possible and appropriate, to prevent possible introductions to, or contamination of, the Area;
- information on the Scullin and Murray Monoliths ASPA, including restrictions, shall be produced and displayed prominently at Davis and Mawson stations. Copies of this Management Plan will be made available at both stations and via the internet. Copies of the Management Plan will be made available for all visitors;
- visits will be permitted as necessary to facilitate research activities in accordance with the stated aims of the management of the ASPA;
- national Antarctic programs operating in the vicinity or intending to visit the Area shall consult together to ensure that the ASPA is not visited more than once every five (5) years, or that research projects do not overlap or conflict;
- permit visits to remove fuel, grey water, the Apple refuge and associated materials currently stored within the ASPA.

4. Period of Designation

The Area is designated for an indefinite period.

5. Maps and Photographs

- Map A: East Antarctica, Mac. Robertson Land, Location of Antarctic Specially Protected Area Scullin and Murray Monoliths, ASPA No. 165.

  Inset Map: indicates the location in relation to the Antarctic continent.

  Map Specifications: Projection: Lambert Conical Conformal; Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level.
- Map B: Antarctic Specially Protected Area Scullin and Murray Monoliths, ASPA No. 165. Showing protected area at Scullin Monolith.

  Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level.
- Map C: Antarctic Specially Protected Area, Scullin and Murray Monoliths, ASPA No. 165. Showing protected area at Murray Monolith.

  Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level.
- Map D: Antarctic Specially Protected Area, Scullin and Murray Monoliths, ASPA No. 165, Showing Helicopter Approach for Scullin Monolith.

  Map Specifications: Horizontal Datum: WGS84; Vertical Datum: Mean Sea Level.
- Photograph A: Oblique aerial photograph of Scullin Monolith with seabird colonies shown, 2003.

6. Description of the Area

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

Scullin Monolith (67° 47'S, 66° 42'E) and Murray Monolith (67° 47'S, 66° 53'E) are situated on the coast of Mac. Robertson Land approximately 160 km east of Mawson station (Map A). Scullin and Murray Monoliths are approximately 7 km apart and abut the sea at the edge of the continental ice sheet. The coastline to the west and east, and between the Monoliths, consists of ice cliffs 30 - 40 m high; the Antarctic plateau rising steeply from there to the south. Scullin Monolith is a crescent-shaped massif whose highest point is 433 m ASL. It encloses a broad north-facing cove with an entrance approximately 2 km wide. The upper slopes of the Monolith are everywhere precipitous, but in the lower 100 m the slope eases in many parts and these areas are strewn with boulders and large stones. Elsewhere in the lower parts the rock face falls sheer to the sea, and there are some scree slopes.

The walls of Murray Monolith rise at between 70° and 80° from the sea to a dome-shaped summit at 243 m ASL. On the western side of the Monolith, the lower slopes drop to a coastal platform. There are several other rock outcrops inland of the Monolith, and these are included in the ASPA. The protected area extends over all ice-free areas associated with the two Monoliths, including a few small islets and rocks.

The Scullin and Murray Monoliths ASPA comprises two sectors:

- Scullin Monolith: the boundary commences at a coordinate on the coastline at 67°47'01"S, 66°40'31"E (A), then in a southerly direction to a coordinate at 67°48'03"S, 66°40'26"E (B),

east to a coordinate at 67°48’06"S, 66°44’33"E (C) then north to a coordinate on the coast at 67°46’41"S, 66°44’37"E (D), then west following the coast line at the low tide mark to the coordinate 67°48’03"S, 66°40’26"E (A). See Map B.

- Murray Monolith: the boundary commences at a coordinate on the coastline at 67°46’29"S, 66°51’01"E (A), then in a southerly direction to a coordinate at 67°48’03"S, 66°50’55"E (B), east to a coordinate at 67°48’05"S, 66°53’51"E (C) then north to a coordinate on the coast at 67°46’42"S, 66°53’59"E (D), then west following the coast line at the low tide mark to the coordinate 67°46’29"S, 66°51’01"E (A). See Map C.

Geology

The geology of the two Monoliths is poorly known, as they have been neither the subject of dedicated study (but see Tilley 1940) nor specific geological mapping. What is known is summarised briefly in Tingey (1991). The geology of the Monoliths appears to be similar in general terms to that of the region around Mawson. The rocks consist dominantly of high grade-granulite facies gneisses of metasedimentary origin, including some sapphirine bearing rocks. The metamorphism occurred in anhydrous conditions probably at about 1000Ma. Arriens (unpublished data; see Tingey 1991) determined ages of 1075 and 829Ma for the metamorphic age of the gneisses from Scullin Monolith but ages elsewhere as great as 1254Ma and as young as 625Ma have been documented. Metamorphism involved sedimentary rocks initially of Proterozoic age. These metamorphic basement rocks were intruded at about 920-985Ma by the Mawson Charnockite a form of granite characterised by presence of orthopyroxene, and common in this region. It forms the faces of the monoliths. Takigami *et al.* (1992) recorded an age of 433 and 450Ma which may reflect a later influence of the ‘500 Ma or Pan-African event’ recorded widely throughout Gondwana. The margins of the Monoliths contain some sediment carried by the icesheet and deposited by melting ice. The source cannot be specified but it may contain recycled material from farther inland and could perhaps provide evidence of some of the geology beneath the ice.

Vegetation

The flora reported from Scullin Monolith is given in Appendix 3, based on visits in 1972 and 1987. All species of lichens and moss found on Scullin Monolith occur elsewhere in Mac. Robertson Land (Filson 1966, Bergstrom and Seppelt 1990). Vegetation on Scullin Monolith is restricted mainly to the western plateau and associated nunataks. The coastal slopes are generally devoid of vegetation due to high levels of seabird guano. The distribution of vegetation on the western plateau is influenced by microtopography that controls the extent of exposure and moisture availability.

Other biota

No invertebrates have been recorded from Scullin and Murray Monoliths. A leopard seal *(Hydrurga leptonyx)* was sighted during the 1936 visit (Rayner 1940) and several Weddell seals *(Leptonychotes weddellii)* were observed during the 1997 and 1998 visits (PG Quilty, pers. comm.); no further observations of biota have been reported. Appendix 2.

6(ii) Restricted and managed zones within the Area

During the summer breeding season (1 October to 31 March), access to all areas occupied by, or adjacent to, colonies or nesting sites of seabirds shall be restricted. Ornithological research as authorised by permit may be conducted within the seabird colonies. Non-ornithological research may be conducted in the Area during the summer breeding season if it does not disturb nesting birds. Non-scientific visits and landings within the Area are prohibited during the summer breeding season.

6(iii) Structures within and near the Area

As of 13 October 2002, a fibreglass 'Apple' refuge is situated on the southwestern summit ridge of Scullin Monolith. There are four (4) 200-litre drums of helicopter fuel and one (1) empty 200-litre drum as well as the (reported) remains of a food cache (1985/86 vintage). It is intended that all of this material be removed from the Area at the first opportunity.

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

There are two ASPAs located to the west of Scullin and Murray Monoliths; Rookery Islands Antarctic Specially Protected Area No. 102 is approximately 180 km to the west (c.20 km west of Mawson), and Taylor Rookery Antarctic Specially Protected Area No. 101 approximately 75 km further west of the ASPA No. 102.

7. Permit conditions

Entry to the Area is prohibited except in accordance with a Permit issued by an appropriate national authority. Any Treaty Party wishing to conduct research within the Area should contact the Australian Antarctic Division to ensure that the frequency of visits does not exceed that permitted in the Management Plan (the current level deemed to be appropriate is no more than one visit every five (5) years). Permits to enter the Area may be issued during the non-breeding period, specifically from 1 April to 30 September, for compelling scientific research that cannot be undertaken elsewhere, or for essential management purposes consistent with the objectives and provisions of the Management Plan. Permits are only to be issued for research that will not jeopardise the ecological or scientific values of the Area, interfere with existing scientific studies, or impact on the ecological integrity of the Area.

Activities permitted within the Area include those addressing management needs such as inspection and the review of the Management Plan.

Restrictions listed within this document must be incorporated into permit conditions.

Conditions that must be included in the Permit are provisions that the issuing authority may include additional conditions, consistent with the objectives and provisions of the Management Plan. The Principal Permit Holder for each Permit issued shall submit to the Permit issuing authority a visit report detailing all activities undertaken within the Area.

Permits issued to enter the Area shall include the following requirements:

- the Permit or an authorised copy shall be carried at all times when within the Area;
- a Visit Report shall be supplied to the appropriate national authority at the conclusion of the permitted activity;
- the types of activities and specific periods for which they are authorised shall be specified. Activities not detailed on the Permit are prohibited. Permits shall be issued for a single season only, and will not allow entry to the Area for more than 120 days; and
- specification of the minimum number of people required to undertake the permitted activities within the Area. No more than 10 people are to be within the Area at any time during the breeding season, and no more than 15 for the remainder of the year.

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

- vehicles are prohibited within the Area during the summer breeding season;

- access to the Area for researchers and management-related visits shall be by inflatable rubber boats, over-snow/ice vehicles or by helicopters. Movement by visitors within the Area shall be by foot only;
- access to the Area for all other (non-research, non-management) visits is restricted to shoreline approaches by inflatable rubber boats, with no landings permitted;
- inflatable boats used to approach the Area must be operated at or below five (5) knots within 500 m of the shore. No approach within fifty (50) metres from shore shall be permitted;
- any movement within the Area shall observe the minimum specified approach distances for nesting birds (Appendix 4); closer approach may be allowed specifically under permit;
- to reduce disturbance to wildlife, noise levels including verbal communication are to be kept to a minimum. The use of motor-driven tools and any other activity likely to generate loud noise and thereby cause disturbance to nesting birds shall not be allowed within the Area during the summer seabird breeding season (1 October to 31 March).

Aircraft may be used to enter the Area subject to the following conditions:

- there shall be no overflights of the Area below 1500 m (twin-engine aircraft) and below 750 m (single-engine) during the breeding season (1 October to 31 March);
- refuelling is not to take place within the Area;
- landings within the period 1 October to 31 March shall only occur at the designated landing site and only by single-engine aircraft;
- helicopter overflights for aerial photography are permitted subject to overflight altitude conditions specified above;
- helicopters shall approach the landing site from the south-west (as shown by the approved flight corridor in Appendix 5). Under no circumstances are aircraft to fly within the Scullin Monolith amphitheatre during the breeding season;
- there are no restrictions on the operation of aircraft outside the breeding season (1 October to 31 March).

Exemptions from any or all of the above conditions are only permitted in emergency.

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

The following activities may be conducted within the Area between 1 October and 31 March as authorised by permit:

- scientific research and essential management activities consistent with this Management Plan that do not affect the values of the Area or its ecosystem integrity;
- compelling scientific research that cannot be undertaken elsewhere, including the initiation or continuance of ongoing monitoring programmes.

The following activities may be conducted within the Area between 1 April and 30 September as authorised by permit:

- scientific research that does not impact or interfere upon the values identified in the Management Plan, either in the short term or the long term;
- management activities consistent with the aims of this Management Plan.

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

No permanent structures are to be erected within the Area.

7(iv) Location of field camps

Temporary camps for field parties are permitted within the Area, but must be placed as far from seabird colonies and nesting sites as is practicable without compromising visitor safety. Camps shall be established for the minimum time necessary to undertake approved activities and shall not be allowed to remain from one seabird breeding season to the next.

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

- A small amount of fuel is permitted within the Area for field parties for cooking purposes. Fuel is not to be stored unattended within the Area. Aircraft and IRB refuelling within the Area is prohibited.
- No poultry products, including dried foods containing egg powder, are to be taken into the Area.
- No herbicides or pesticides are to be taken into the Area.
- All chemicals required for research purposes must be approved by Permit, and shall be removed at or before the conclusion of the permitted activity to which they relate. The importation and use of radio-nucleides and stable isotopes within the Area is prohibited.
- The highest level precautions shall be employed to prevent the introduction to the Area of micro-organisms, including pathogens. No living organisms shall be deliberately introduced to the Area. Clothing (and in particular all footwear) and field equipment shall be cleaned before entering the Area. Research equipment shall be disinfected where possible and appropriate, to prevent possible contamination of the Area.

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

Taking of, or harmful interference with, native flora and fauna are prohibited unless specifically authorised by permit issued in accordance with Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty. Disturbance to wildlife should be avoided at all times.

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

Material of human origin likely to compromise the values of the ASPA, which was not brought into the Area by the Permit Holder or was otherwise authorised, may be removed unless the impact of the removal is likely to be greater than leaving the material *in situ*. If such material is found the Australian Antarctic Division and the Permit Issuing Authority (if different) shall be notified if possible while the field party is present within the Area.

Specimens of natural material may only be collected or removed from the ASPA as authorised in a Permit and should be limited to the minimum necessary to meet scientific or management needs.

7(viii) Disposal of waste

No wastes, including human wastes, are to be left within the Area. Wastes from field parties shall be stored in such a manner to prevent wildlife (e.g. skuas) scavenging until such time as the wastes can

be disposed or removed. Wastes are to be removed no later than the departure of the field party. Human wastes and grey water may be disposed into the sea.

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

- The maximum number of people within the Area at any time during the breeding season (1 October to 31 March) is 10. There will be a maximum of 15 people for all other times of the year.
- Ornithological research shall be limited to activities that are non-invasive and non-disruptive to the breeding seabirds present within the Area. Surveys, including aerial photographs for the purposes of population census, shall have a high priority.
- All GPS, survey and census data collected by field parties visiting the Area shall be made available to the Permit Issuing Authority and the Australian Antarctic Division (if different).
- These data shall be lodged in the Antarctic Master Data Directory through the Australian Antarctic Data Centre.

7(x) Requirements for reports

All visit reports shall provide detailed information on all census data, locations of any new colonies or nests not previously recorded, as texts and maps; a brief summary of research findings, copies of all photographs taken of the Area, and comments indicating measures taken to ensure compliance with permit conditions. Where appropriate, the report may make recommendations relevant to the management of the Area, in particular, as to whether the values for which it was designated are being adequately protected and whether management measures are effective.

The report should be submitted as soon as practicable after the visit to the Area has been completed, but no later than six months after the visit has occurred. A copy of the report should be made available to the Permit Issuing Authority and the Australian Antarctic Division (if different) for the purposes of reviewing the Management Plan in accordance with the Antarctic Treaty system requirements. Reports should include a completed SCAR Visit Report, or such information as required by national laws. The Permit Issuing Authority should maintain a record of the report for an indefinite period and shall make it available to SCAR, CCAMLR, COMNAP, and to interested parties if requested.

8. Supporting documentation

Alonso J.C., Johnstone G.W., Hindell M., Osborne P. & Guard R. (1987): Las aves del Monolito Scullin, Antártida oriental (67° 47'S, 66° 42'E). In: *Castellvi J (ed) Actas del Segundo symposium Espanol de estudios antarcticos, pp. 375-386, Madrid.*

Christensen L. (1938): My last expedition to the Antarctic 1936 - 1937. JG Tanum, Oslo. Christensen L 1939. *Charting the Antarctic. Polar Times 8, 7-10.*

Filson R.B. (1966): The lichens and mosses of Mac. Robertson Land. *ANARE Scientific Reports B(II) Botany.*

Takigami Y., Funaki M. & Tokieda K. (1992): ^{40}Ar-^{39}Ar geochronological studies on some paleomagnetic samples of East Antarctica. *in Y.* Yoshida *et al.* (editors) *Recent Progress in Antarctic Earth Science,. pp 61-66, Tokyo, Terra Scientific Publishing Co.*

Tilley C.E. (1940): Rocks from Mac. Robertson Land and Kemp Land, Antarctica. *Discovery Reports, XIX, 165-184.*

Tingey R.J. (1991): The regional geology of Archaean and Proterozoic rocks in Antarctica. *in* Tingey RJ (ed) *The Geology of Antarctic,. pp 1-73, Oxford, Oxford Science Publications.*

van Franeker J.A., Gavrilo M., Mehlum F., Veit R.R. & Woehler E.J. (1999): Distribution and abundance of the Antarctic Petrel. *Waterbirds 22, 14-28.*

Appendix 1. Breeding populations (pairs) of seabirds at Scullin and Murray Monoliths

Species	Scullin Monolith	Murray Monolith
Adélie penguin *Pygoscelis adeliae*	49,500	20,000
Southern fulmar *Fulmarus glacialoides*	1,350	150
Antarctic petrel *Thalassoica antarctica*	157,000	3,500
Cape petrel *Daption capense*	14	ND
Snow petrel *Pagodroma nivea*	1,200	ND
Wilson's storm petrel *Oceanites oceanicus*	ND	ND
South polar skua *Catharacta maccormicki*	30	ND
Note: ND indicates no census data are available		

Appendix 2. Seals recorded at Scullin and Murray Monoliths

Leopard seal *Hydrurga leptonyx*

Weddell seal *Leptonychotes weddellii*

Appendix 3. Flora recorded at Scullin Monolith

The following taxa were collected at Scullin Monolith in 1972 (R Seppelt) and in 1987 (D Bergstrom), and were published in Bergstrom and Seppelt 1990).

LICHENS	
Acarosporaceae	**Teloschistaceae**
Biatorella cerebriformis (Dodge) Filson	*Caloplaca citrina* (Hoffm.) Th. Fr.
Acarospora gwynii Dodge & Rudolph	*Xanthoria elegans* (Link.) Th. Fr.
Lecanoraceae	*Xanthoria mawsonii* Dodge
Lecanora expectans Darb	**Candelariaceae**
Rhizoplaca melanophthalma (Ram.) Leuck. et Poelt	*Candellariella hallettensis* Murray
Lecideaceae	**Umbilicariaceae**
Lecidea phillipsiana Filson	*Umbilicaria decussata* (Vill.) Zahlbr.
Lecidea woodberryi Filson	**Usneaceae**
Physciaceae	*Usnea antarctica* Du Rietz
Physcia caesia (Hoffm.) Hampe	*Pseudophebe miniscula* (Nyl. Ex Arnold) Brodo et
Buellia frigida Darb	Hawksw.
Buellia grimmiae Filson	**BRYOPHYTES**
Buellia lignoides Filson	
Rinodina olivaceobrunnea Dodge & Baker	**Grimmiaceae**
	Grimmia lawiana Willis
	Pottiaceae
	Sarconeurum glaciale (C. Muell.) Card. Et Bryhn

Appendix 4. Approach distances guide: minimum distances (m) to maintain when approaching wildlife without permit

Species	People on foot/ski	Quad/skidoo	Hagglunds
Southern Giant Petrel	100	150	250
Emperor penguins in colonies	30		
Other penguins in colonies Moulting penguins Seals with pups Seal pups on their own Prions and petrels on nest South Polar Skua on nest	15		
Penguins on sea ice Non-breeding adult seals	5		

Notes:

1. These distances are a guide, and should you find that your activity is disturbing wildlife, a greater distance is to be maintained.

2. Watercraft and aircraft operations must comply with the minimum approach distances and other requirements outlined in the ANARE Small Boat Operations Manual and Flight Paths for Helicopter Operations in the Australian Antarctic Territory, respectively.

These are available at:

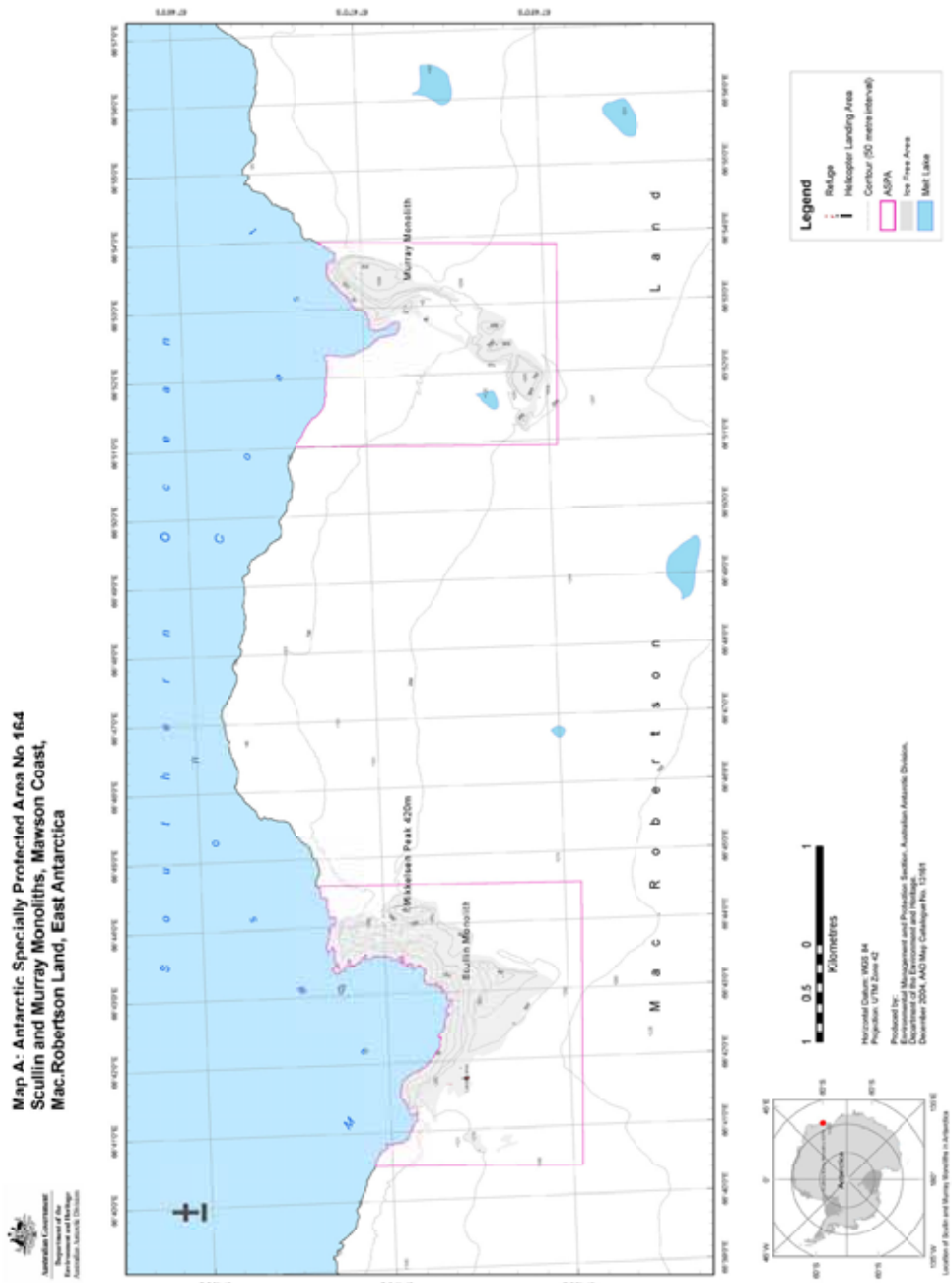
http://www.aad.gov.au/goingsouth/expeditioner/manuals/default.asp

http://www.aad.gov.au/goingsouth/sao/Heli flight paths.asp

3. 'Prions and petrels' comprises Cape petrels, Antarctic petrels, Wilson's storm petrels, snow petrels and southern fulmars.

Appendix 5. Vehicular activities permitted in the vicinity of Scullin and Murray Monoliths ASPA during the breeding and non breeding season

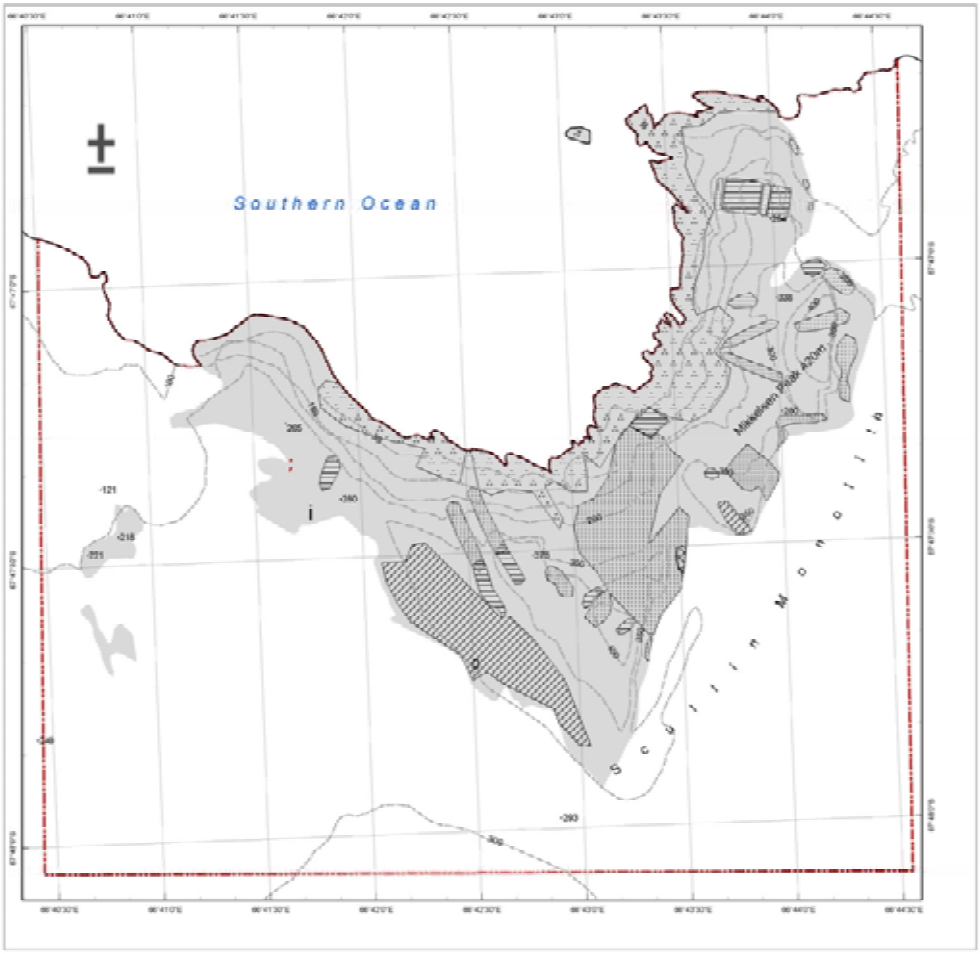
Activity	Breeding season	Non-breeding season
Helicopter operations (single engine)	750 m horizontal and vertical buffer zone. Landing permitted only at designated site (see map).	Landing permitted only at designated site (see map).
Helicopter operations (twin engine)	1500 m horizontal and vertical buffer zone. No landings permitted.	Landing permitted only at designated site (see map).
Boating operations	No approach closer than 100m from shore, no landings. Boats to be operated at less than 5kn between 500m and 100m from shore.	Landings permitted.

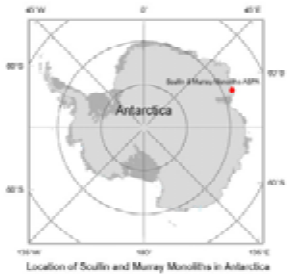

Map A - Antarctic Specially Protected Area No 164
Scullin and Murray Monoliths, Mawson Coast,
Mac.Robertson Land, East Antarctica
Australian Government
Department of the Environment and Heritage
Australian Antarctic Division
Southern Ocean
Murray Monolith
Mawson Peak 420m
Scullin Monolith
Mac Robertson Land
Legend
Refuge
Helicopter Landing Area
Contour (50 metre interval)
ASPA
Ice Free Area
Melt Lake
1 0.5 0 1
Kilometres
Horizontal Datum: WGS 84
Projection: UTM Zone 42
Produced by:
Management and Protection Section, Australian Antarctic Division,
Department of the Environment and Heritage
December 2004. AAD Map Catalogue No. 12161
Location of Scullin and Murray Monoliths in Antarctica

Australian Government
Department of the Environment and Heritage
Australian Antarctic Division

Map B: Antarctic Specially Protected Area: No 164 Scullin and Murray Monoliths, Mawson Coast, Mac.Robertson Land, East Antarctica

Detail Scullin Monolith:Topography and Bird Distribution



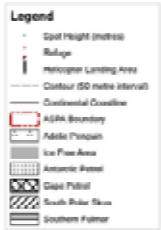


Location of Scullin and Murray Monoliths in Antarctica

0 0.5 1
Kilometres

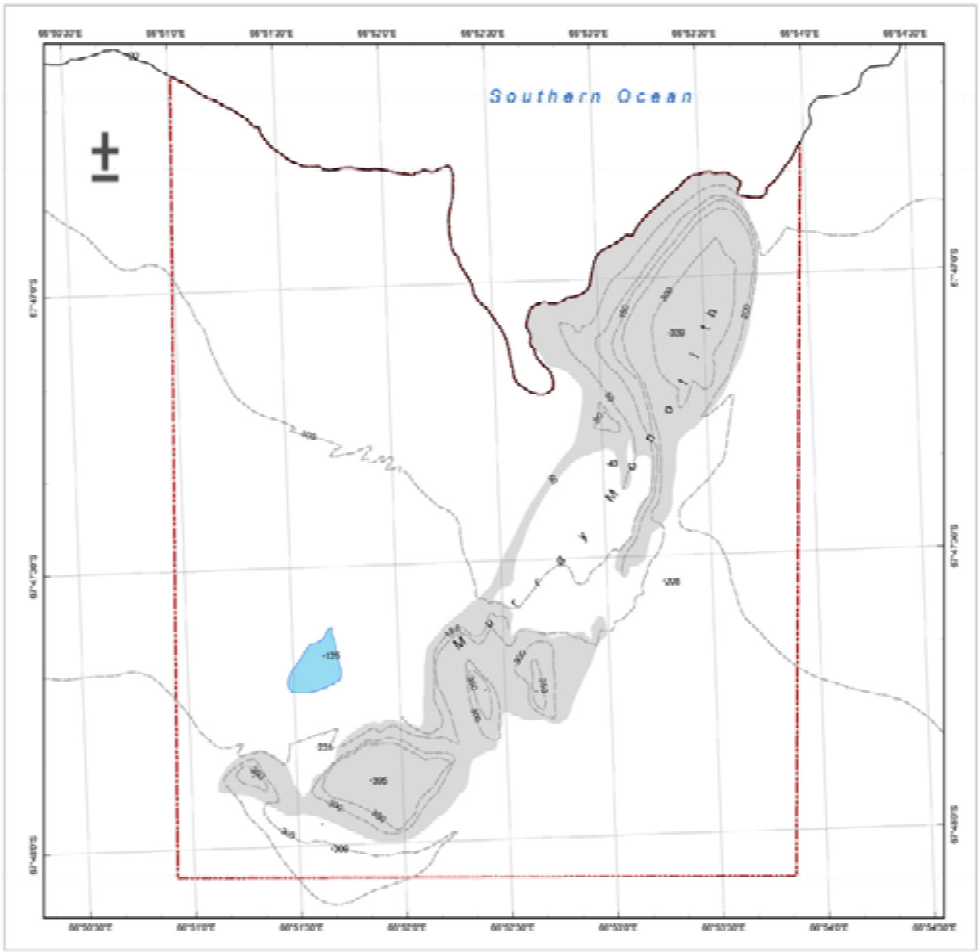
Horizontal Datum: WGS 84
Projection: UTM Zone 42

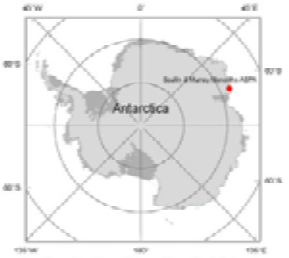
Produced by:
Environmental Management and Protection Section, Australian Antarctic Division,
Department of the Environment and Heritage.
December 2004. AAD Map Catalogue No. 10102



Australian Government
Department of the Environment and Heritage
Australian Antarctic Division

Map C: Antarctic Specially Protected Area: No 164
Scullin and Murray Monoliths, Mawson Coast,
Mac.Robertson Land, East Antarctica
Detail Murray Monolith:Topography





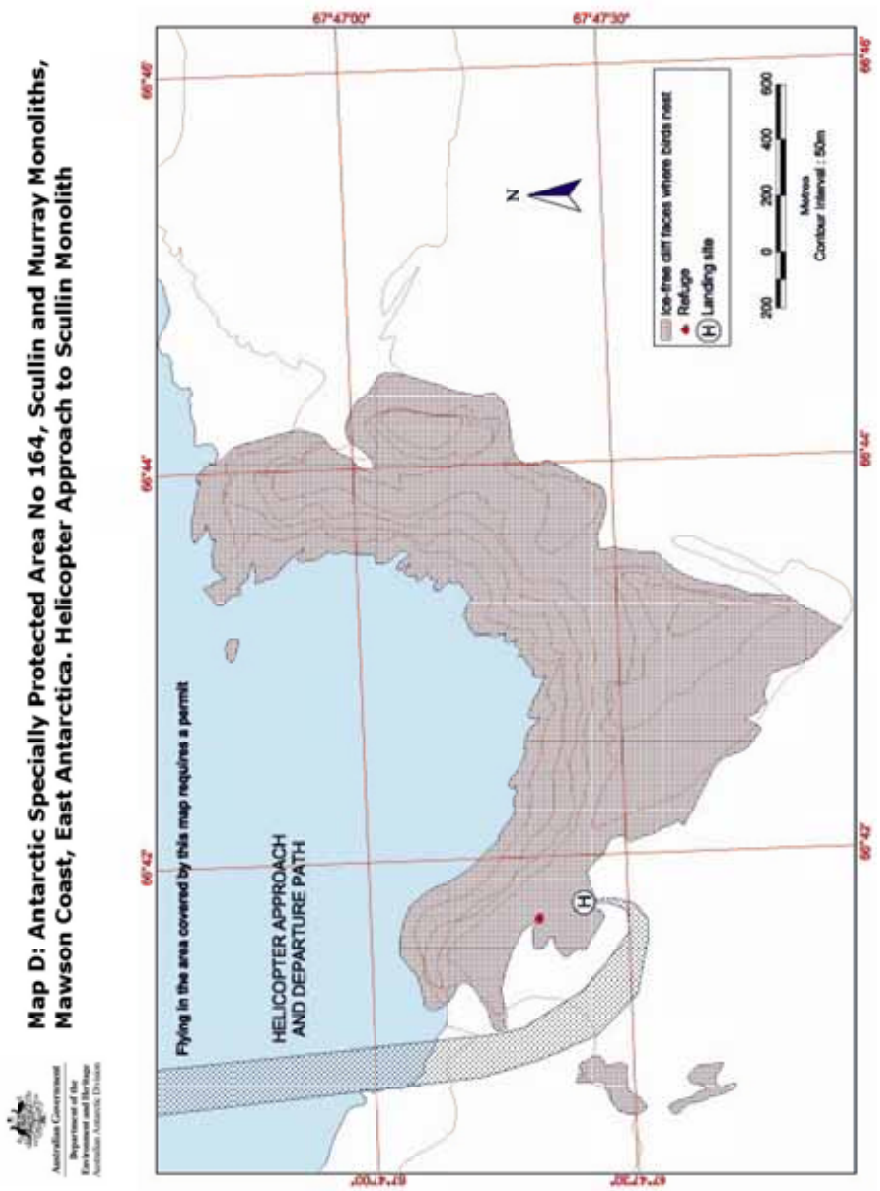
Location of Scullin and Murray Monoliths in Antarctica

0 0.5 1
Kilometres

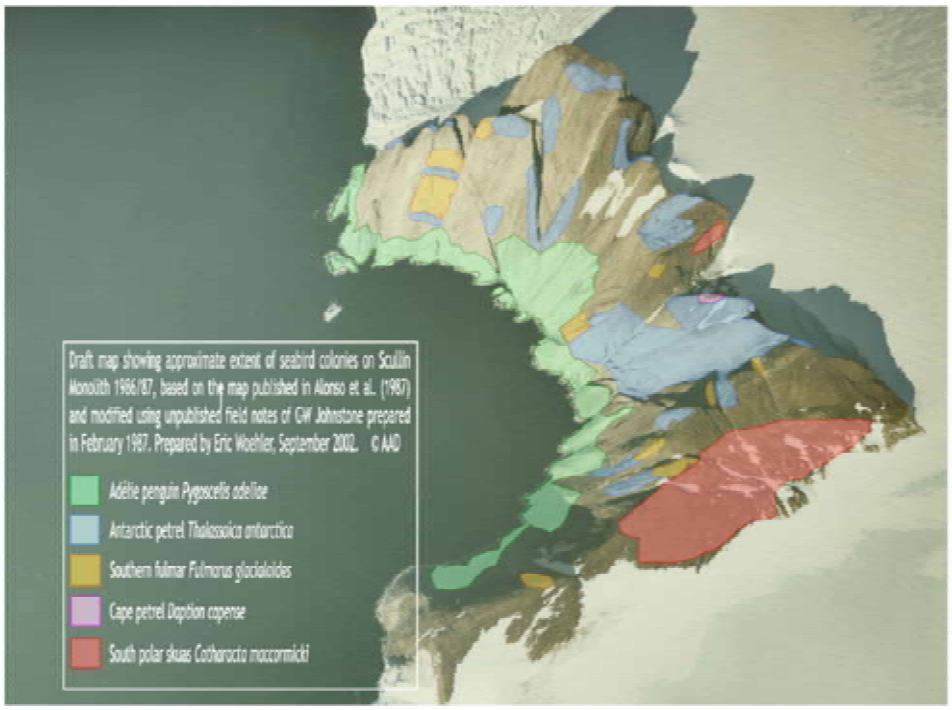
Horizontal Datum: WGS 84
Projection: UTM Zone 42

Produced by:
Environmental Management and Protection Section, Australian Antarctic Division,
Department of the Environment and Heritage.
December 2004. AAD Map Catalogue No. 10163

Legend
Spot Height (metres)
Contour (50 metre interval)
ASPA Boundary
Ice Free Area
Mott Lake


Map D: Antarctic Specially Protected Area No 164, Scullin and Murray Monoliths, Mawson Coast, East Antarctica. Helicopter Approach to Scullin Monolith
Australian Government
Department of the Environment and Heritage
Australian Antarctic Division
67°47'00"
67°47'30"
66°46'
66°44'
66°42'
N
Ice-free dirt faces where birds nest
Refuge
Landing site
200 0 200 400 600
Metres
Contour Interval : 50m
Flying in the area covered by this map requires a permit
HELICOPTER APPROACH AND DEPARTURE PATH
AAD Map Catalogue No. 13164

Photograph A: Antarctic Specially Protected Area No 164, Scullin and Murray Monoliths, Mawson Coast, East Antarctica. Oblique Aerial Photograph of Scullin Monolith.
(Unrectified and unscaled) Australian Antarctic Division Map Catalogue No. 13160.



Measure 3 (2005)

Antarctic Specially Managed Area and Antarctic Specially Protected Areas: Designation and Management Plans: Deception Island

The Representatives,

Recalling Articles 3, 4, 5 and 6 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol), providing for the designation of Antarctic Specially Protected Areas (ASPA) and Antarctic Specially Managed Areas (ASMA) and the approval of Management Plans for those Areas;

Recalling Article 8 of Annex V to the Protocol regarding Historic Sites and Monuments (HSM);

Recalling Recommendation XIII-8 (1985) which designated Shores of Port Foster, Deception Island as Site of Special Scientific Interest (SSSI) No. 21 and annexed a Management Plan for it; and Decision 1 (2002) which renamed and renumbered it as ASPA No. 140: Parts of Deception Island;

Recalling Recommendation XIV-5 (1987) which designated Port Foster, Deception Island as SSSI No. 27 and annexed a Management Plan for it; and Decision 1 (2002) which renumbered it as ASPA No. 145;

Recalling Measure 3 (2003) which revised and updated the "List of Historical Sites and Monuments" in which HSM No. 71: Whalers Bay, Deception Island, and HSM No. 76: Base Pedro Aguirre Cedra Station, are listed;

Noting that the Committee for Environmental Protection has advised that Deception Island be designated as an ASMA and has endorsed the Management Plan annexed to this Measure;

Recognising that Deception Island is an area where activities are being conducted, in which it is desirable to plan and co-ordinate activities, avoid possible conflicts, improve co-operation between Parties and avoid possible environmental impacts;

Desiring to designate Deception Island as an ASMA, within which ASPA No. 140, ASPA No. 145, HSM No. 71 and HSM No. 76 are located, and to approve a Management Plan for the Area;

Desiring also to amend the Management Plans for ASPA No. 140 and ASPA No. 145, to revise the boundaries of ASPA No. 140 and to update the content of both Plans;

Noting that Deception Island contains marine areas and that the Commission for the Conservation of Antarctic Marine Living Resources approved the Management Plan for this area at its 23rd meeting;

Recommend to their Governments the following Measure for approval in accordance with paragraph 1 of Article 6 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty:

That:

1. Deception Island, South Shetland Islands be designated as Antarctic Specially Managed Area No. 4;
2. the Management Plan for Antarctic Specially Managed Area No. 4: Deception Island, South Shetland Islands, contained in the Annex to this Measure, be approved;
3. the revised Management Plan for ASPA No. 140: Parts of Deception Island, contained in Appendix 1 to the Annex to this Measure, be approved;
4. the revised Management Plan for ASPA No. 145: Port Foster, Deception Island, contained in Appendix 2 to the Annex to this Measure, be approved;
5. the Management Plan for ASPA No. 140: Parts of Deception Island, annexed to Recommendation XIII-8 (1985), shall cease to be effective;
6. the Management Plan for ASPA No. 145: Port Foster, Deception Island, annexed to Recommendation XIV-5 (1987), shall cease to be effective.

Deception Island

Management Package

Introduction

Deception Island is a unique Antarctic island with important natural, scientific, historic, educational, aesthetic and wilderness values.

Over the years, different parts of the island have been given legal protection under the Antarctic Treaty following piecemeal proposals, but no coherent strategy had been formulated for protecting the whole island. In 2000, an integrated strategy for the management of activities there was agreed by Argentina, Chile, Norway, Spain and the UK.

This strategy recommended an island-wide approach. Deception Island would be proposed as an Antarctic Specially Managed Area (ASMA) comprising a matrix of Antarctic Specially Protected Areas (ASPAs), Historic Sites and Monuments (HSMs), and further zones in which activities would be subject to a code of conduct.

In March 2001, the Instituto Antártico Chileno hosted a workshop in Santiago to progress the Management Plan for Deception Island. The Deception Island working group was widened to include the USA, as well as the Antarctic and Southern Ocean Coalition (ASOC) and the International Association of Antarctica Tour Operators (IAATO) as advisors to the group.

During February 2002, the Dirreción Nacional del Antártico (Argentina) hosted an expedition to the island at Decepción Station. Representatives from the six National Antarctic Programmes, as well as ASOC and IAATO, participated. The overall goal of the expedition was to undertake baseline survey fieldwork to assist with the joint preparation by the six Antarctic Treaty Consultative Parties of a Management Package for Deception Island.

Following further extensive consultation, this Management Package for Deception Island was produced. Its aim is to conserve and protect the unique environment of Deception Island, whilst managing the variety of competing demands placed upon it, including science, tourism, and the conservation of its natural and historic values. It also aims to safeguard those working on, or visiting, the island.

Information Papers submitted to the CEP (XII SATCM/IP8, XXIV ATCM/IP63, XXV ATCM/IP28 and XXVI ATCM/IP48) give further detail of the extensive consultation and site investigations which have resulted in the production of this Management Package for Deception Island.

Management Plan for Antarctic Specially Managed Area No. 4

DECEPTION ISLAND, SOUTH SHETLAND ISLAND*S*

Latitude 62°57'S, longitude 60°38'W

1. Values to be protected and activities to be managed

Deception Island (latitude 62°57'S, longitude 60°38'W), South Shetland Islands, is an unique Antarctic island with important natural, scientific, historic, educational, aesthetic and wilderness values.

i. Natural value

- Deception Island is one of only two volcanoes in the Antarctic at which eruptions have been observed. It was responsible for numerous ash layers dispersed across the South Shetland Islands, Bransfield Strait and the Scotia Sea. Ash from the island has even been recorded in an ice core at the South Pole. The volcano erupted during two short periods during the 20th century, most recently between 1967-1970. It contains a restless caldera that is actively deforming. It is therefore likely that Deception Island will witness further eruptions in the future.
- The Area has an exceptionally important flora, including at least 18 species which have not been recorded elsewhere in the Antarctic. No other Antarctic area is comparable. Of particular importance are the very small, unique biological communities associated with the island's geothermal areas, and the most extensive known community of the flowering plant Antarctic pearlwort (*Colobanthus quitensis*).
- Eight species of seabird breed on the island, including the worlds largest colony of chinstrap penguins (*Pygoscelis antarctica*).
- The benthic habitat of Port Foster is of ecological interest due to the natural perturbations caused by volcanic activity.

ii. Scientific value and activities

- The Area is of outstanding scientific interest, in particular for studies in geoscience and biological science. It offers the rare opportunity to study the effects of environmental change on an ecosystem, and the dynamics of the ecosystem as it recovers from natural disturbance.
- Long term seismological and biological data-sets have been collected at Decepción Station (Argentina) and Gabriel de Castilla Station (Spain).

iii. Historic value

- The Area has had a long history of human activity since *c.*1820, including exploration, sealing, whaling, aviation and scientific research, and as such has played a significant role in Antarctic affairs.

- At Whalers Bay, the Norwegian Hektor whaling station, the cemetery and other artefacts, some of which pre-date the whaling station, are the most significant whaling remains in the Antarctic. The British 'Base B', which was established in the abandoned whaling station, was the first base of the secret World War II expedition 'Operation Tabarin', the forerunner to the British Antarctic Survey. As such, it was one of the earliest permanent research stations in Antarctica. The whaler remains and Base B are listed as Historic Site and Monument (HSM) No. 71. Appendix 3 contains the Conservation Strategy for HSM No. 71.
- The remains of the Chilean Presidente Pedro Aguirre Cerda Station at Pendulum Cove are listed as HSM No. 76. Meteorological and volcanological studies were undertaken at the base from 1955 until its destruction by volcanic eruptions in 1967 and 1969.

v. Aesthetic value

- Deception Island's flooded caldera, its 'horse-shoe' shape and linear glaciated eastern coastline, its barren volcanic slopes, steaming beaches and ash-layered glaciers provide an unique Antarctic landscape.

iv. Educational and Tourism activities

- Deception Island is the only place in the world where vessels can sail directly into the centre of a restless volcanic caldera, providing the opportunity for visitors to learn about volcanoes and other aspects of the natural world, as well as early Antarctic exploration, whaling and science. Deception Island is also one of the most frequently visited sites in Antarctica by tourists.

2. Aims and objectives

The main aim of this Management Package is to conserve and protect the unique and outstanding environment of Deception Island, whilst managing the variety of competing demands placed upon it, including science, tourism, and the conservation of its natural and historic values. It also aims to protect the safety of those working on, or visiting the island.

The objectives of management at Deception Island are to:

- assist in the planning and co-ordination of activities in the Area, encourage co-operation between Antarctic Treaty Parties and other stakeholders, and manage potential or actual conflicts of interest between different activities, including science, logistics and tourism;
- avoid unnecessary degradation, by human disturbance, to the unique natural values of the Area;
- minimise the possibility of non-native species being introduced through human activities;
- prevent unnecessary disturbance, destruction or removal of historic buildings, structures and artefacts;
- safeguard those working in or near to, or visiting, the Area from the significant volcanic risk;
- manage visitation to this unique Island, and promote an awareness, through education, of its significance.

3. Management activities

To achieve the aims and objectives of this Management Plan, the following management activities will be undertaken:

- Parties with an active interest in the Area should establish a Deception Island Management Group to:
  - oversee the co-ordination of activities in the Area;
  - facilitate communication between those working in, or visiting, the Area;
  - maintain a record of activities in the Area;
  - disseminate information and educational material on the significance of Deception Island to those visiting, or working there;
  - monitor the site to investigate cumulative impacts;
  - oversee the implementation of this Management Plan, and revise it when necessary.
- a general island-wide Code of Conduct for activities in the Area is included in this ASMA Management Plan (see Section 9). Further site-specific Codes of Conduct are included in the Conservation Strategy for Whalers Bay HSM No.71 (Appendix 3), as well the Code of Conduct for the Facilities Zone (Appendix 4), and the Code of Conduct for Visitors (Appendix 5). These Codes of Conduct should be used to guide activities in the Area;
- National Antarctic Programmes operating within the Area should ensure that their personnel are briefed on, and are aware of, the requirements of this Management Plan and supporting documentation;
- tour operators visiting the Area should ensure that their staff, crew and passengers are briefed on, and are aware of, the requirements of this Management Plan and supporting documentation;
- signs and markers will be erected where necessary and appropriate to show the boundaries of ASPAs and other zones, such as the location of scientific activities. Signs and markers will be well designed to be informative and obvious, yet unobtrusive. They will also be secured and maintained in good condition, and removed when no longer necessary;
- the volcanic alert scheme (as at Appendix 6) will be implemented. It, and the emergency evacuation plan, will be kept under review;
- copies of this Management Plan and supporting documentation, in English and Spanish, will be made available at Decepción Station (Argentina), and Gabriel de Castilla Station (Spain). In addition, the Deception Island Management Group should encourage National Antarctic Operators, tour companies and, as far as practicable, yacht operators visiting the Area, to have available copies of this Management Plan when they visit the Area;
- visits should be made to the Area as necessary (no less than once every 5 years) by members of the Deception Island Management Group to ensure that the requirements of the Management Plan are being met.

4. Period of designation

Designated for an indefinite period of time.

5. Description of the Area

i. General description, including geographical co-ordinates, boundary markers and natural features that delineate the area.

General description

Deception Island (latitude 62°57'S, longitude 60°38'W) is situated in the Bransfield Strait at the southern end of the South Shetland Islands, off the north-west coast of the Antarctic Peninsula (Figures 1 and 2). The boundary of the ASMA is defined as the outer coastline of the island above the low tide water level. It includes the waters and seabed of Port Foster to the north of a line drawn across Neptunes Bellows between Entrance Point and Cathedral Crags (Figure 3). No boundary markers are required for the ASMA, as the coast is clearly defined and visually obvious.

Geology, geomorphology and volcanic activity

Deception Island is an active basaltic volcano. It has a submerged basal diameter of approximately 30 km and rises to 1.5 km above the sea floor. The volcano has a large flooded caldera, giving the island a distinctive horseshoe shape broken only on the south-eastern side by Neptunes Bellows, a narrow shallow passage about 500 m wide.

The eruption which formed the caldera occurred possibly 10,000 years ago. A large scale, violently explosive eruption evacuated about 30 km^3 of molten rock so rapidly that the volcano summit region collapsed to form the Port Foster caldera. Associated ashfalls and tsunamis had a significant environmental impact on the northern Antarctic Peninsula region. The volcano was particularly active during the late 18th and 19th centuries, when numerous eruptions occurred. By contrast, 20th century eruptions were restricted to two short periods, around 1906–1910 and 1967–1970. In 1992, seismic activity on Deception Island was accompanied by ground deformation and increased groundwater temperatures around Decepción Station.

The volcano has since returned to its normal, essentially quiescent state. However, the floor of Port Foster is rising at a geologically rapid rate (approximately 30 cm per annum). Together with the record of historical eruptions and the presence of long lived areas of geothermal activity, it is classified as a restless caldera with a significant volcanic risk.

Approximately 57% of the island is covered by permanent glaciers, many of which are overlain with volcanic ash. Mounds and low ridges of glacially transported debris (moraines) are present around the margins of the glaciers.

An almost complete ring of hills, rising to 539 m at Mount Pond, encircles the sunken interior of Port Foster, and is the principal drainage divide on the island. Ephemeral springs flow toward the outer and inner coast. Several lakes are located on the inner divide of the watershed.

Climate

The climate of Deception Island is polar maritime. Mean annual air temperature at sea level is –2.9°C. Extreme monthly temperatures range from 11°C to – 28 °C. Precipitation, which falls on more than 50% of summer days, is high, with a mean annual equivalent of rainfall of approximately 500 mm. Prevailing winds are from the north-east and west.

Marine ecology

The marine ecology of Port Foster has been significantly influenced by volcanic activity and sediment deposition. ASPA No. 145, comprising two sub-sites, is located in the Area. The Management Plan for ASPA 145, contained in Appendix 2, gives further detail of the marine ecology of Port Foster.

Flora

Deception Island is an unique and exceptionally important botanical site. The flora includes at least 18 species of moss, liverwort and lichen which have not been recorded elsewhere in the Antarctic. Small communities, which include rare species and unique associations of taxa, grow at a number of geothermal areas on the island, some of which have fumaroles. Furthermore, the most extensive known concentration of Antarctic pearlwort (*Colobanthus quitensis*) is located between Baily Head and South East Point.

In many areas, ground surfaces created by the 1967-70 eruptions are being colonized rapidly, probably enhanced by the increasing summer temperatures now occurring in the Antarctic Peninsula.

ASPA No. 140, comprising 11 sub-sites, is located in the Area. The Management Plan for ASPA No. 140 is contained in Appendix 1. This gives further detail of the flora of Deception Island.

Invertebrates

Recorded terrestrial and freshwater invertebrates on Deception Island include 18 species of *Acarina* (mite), 1 species of *Diptera* (fly), 3 species of *Tardigrada* (tardigrade), 9 species of *Collembola* (springtail), 3 freshwater *Crustacea* (crustacean), 14 *Nematoda* (nematode), 1 *Gastrotricha* (gastrotrich) and 5 *Rotifera* (rotifer).

Birds

Eight species of bird breed within the Area. The most numerous is the chinstrap penguin (*Pygoscelis antarctica*), with an estimated 140,000 to 191,000 breeding pairs. The largest rookery is at Baily Head, with an estimated 100,000 breeding pairs. Macaroni penguins (*Eudyptes chrysolophus*) occasionally nest in small numbers on the island, their southernmost breeding limit. Brown skuas (*Catharacta antarctica lonnbergi*), kelp gulls (*Larus dominicanus*), cape petrels (*Daption capensis*), Wilson's storm-petrels (*Oceanites oceanicus*), Antarctic terns (*Sterna vittata*) and snowy sheathbills (*Chionis alba*) also breed within the Area.

Mammals

Deception Island has no breeding mammals. Antarctic fur seals (*Arctocephalus gazella*), Weddell seals (*Leptonychotes weddelli*), crabeater seals (*Lobodon carcinophagus*), southern elephant seals (*Mirounga leonina*) and leopard seals (*Hydrurga leptonyx*) haul out on the beaches of the inner and outer coast.

ii. Structures within the Area

Decepción Station (Argentina) (latitude 62º58' 20"S, longitude 60º 41'40"W) is situated on the southern shore of Fumarole Bay. Gabriel de Castilla Station (Spain) (latitude 62º58'40"S, longitude 60º40'30"W) is located approximately 1km to the south-east. Further details on both stations are contained in the Facilities Zone Code of Conduct (Appendix 4).

The remains of Hektor Whaling Station (Norway) and other remains which pre-date the whaling station, the Whalers Cemetery and the former British 'Base B' (Historic Site and Monument (HSM) No. 71) are located at Whalers Bay (see Appendix 3). A number of steam boilers from the whaling

station can be found washed up on the southwest coast of Port Foster. The remains of the Chilean Presidente Pedro Aguirre Cerda Station (HSM No. 76) is located at Pendulum Cove. A derelict wooden refuge hut is located approximately 1 km to the south-west of HSM No.76.

A light beacon, maintained by the Chilean Navy, is located on Collins Point. A collapsed light tower, dating from the whaling era, is below it. The remains of a further light tower dating from the whaling era is located at South East Point.

The stern of the *Southern Hunter*, a whale-catcher belonging to the Christian Salvesen Company, which foundered on Ravn Rock, Neptunes Bellows in 1956, remains on the unnamed beach to the west of Entrance Point.

A number of beacons and cairns marking sites used for topographical survey are present within the Area.

6. Protected areas and managed zones within the Area

Figure 3 shows the location of the following ASPAs, HSMs, Facility Zone and other sites with special management provisions within the Area.

- ASPA No. 140, comprising 11 terrestrial sites;
- ASPA No. 145, comprising 2 marine sites within Port Foster;
- HSM No. 71, the remains of Hektor Whaling Station and other remains which pre-date the whaling station, the Whalers Cemetery and 'Base B', Whalers Bay;
- HSM No. 7, the remains of Pedro Aguirre Cerda Station, Pendulum Cove;
- A Facilities Zone, located on the west side of Port Foster, which includes Decepción Station and Gabriel de Castilla Station;
- Three further sites requiring special management provisions are also located at Pendulum Cove, Baily Head and an unnamed beach at the eastern end of Telefon Bay.

7. Maps

Map 1: The location of Deception Island ASMA No. 4 in relation to the Antarctic Peninsula

Map 2: Deception Island - topography

Map 3: Deception Island Antarctic Specially Managed Area No 4

8. Supporting Documents

This Management Plan includes the following supporting documents as appendices:

- Management Plan for Antarctic Specially Protected Area No. 140 (Appendix 1)
- Management Plan for Antarctic Specially Protected Area No. 145 (Appendix 2)
- Conservation Strategy for HSM No. 71, Whalers Bay (Appendix 3)
- Code of Conduct for Facilities Zone (Appendix 4)
- Code of Conduct for visitors at Deception Island (Appendix 5)
- Alert Scheme and Escape Strategy for volcanic eruptions on Deception Island (Appendix 6)

9. General Code of Conduct

i. Volcanic risk

All activities undertaken within the Area should be planned and conducted taking into account the significant risk to human life posed by the threat of volcanic eruption (see Appendix 6).

ii. Access to and movement within the Area

Access to the Area is generally by ship or yacht, with landings usually taking place by small boat, or less frequently by helicopter.

Vessels arriving in or departing from Port Foster should announce over VHF Marine Channel 16 the intended time and direction of passage through Neptunes Bellows.

Ships may transit ASPA 145, but anchoring within either of the two sub-sites should be avoided except in compelling circumstances.

There are no restrictions on landings on any beaches outside the protected areas covered in Section 6, although recommended landing sites are shown in Figure 3. Boat landings should avoid disturbing birds and seals. Extreme caution should be exercised when attempting landings on the outer coast owing to the significant swell and submerged rocks.

Recommended landing sites for helicopters are shown in Figure 3.

Movement within the area should generally be on foot. All-Terrain Vehicles may also be used with care for scientific support or logistical purposes along the beaches outside of ASPA 140. All movement should be undertaken carefully to minimise disturbance to animals, soil and vegetated areas, and not damage or dislodge flora.

iii. Activities that are or may be conducted within the Area, including restrictions on time or place

- scientific research, or the logistical support of scientific research, which will not jeopardise the values of the Area;
- management activities, including the restoration of historic buildings, clean-up of abandoned work-sites, and monitoring the implementation of this Management Plan;
- tourist or private expedition visits consistent with the Codes of Conduct for Visitors (Appendix 5) and the provisions of this Management Plan;

Further restrictions apply to activities within ASPA 140 and ASPA 145 (see Appendices 1 and 2).

iv. Installation, modification or removal of structures

Site selection, installation, modification or removal of temporary refuges, hides, or tents should be undertaken in a manner that does not compromise the values of the Area.

Scientific equipment installed in the Area should be clearly identified by country, name of principal investigator, contact details, and date of installation. All such items should be made of materials that pose minimal risk of contamination to the area. All equipment and associated materials should be removed when no longer in use.

v. Location of field camps

Field camps should be located on non-vegetated sites, such as on barren ash plains, slopes or beaches, or on thick snow or ice cover when practicable, and should also avoid concentrations of mammals or breeding birds. Field camps should also avoid areas of geothermally heated ground or fumaroles. Similarly, campsites should avoid dry lake or stream beds. Previously occupied campsites should be re-used where appropriate.

Figure 3 shows the recommended sites for field camps within the Area.

vi. Taking or harmful interference with native flora or fauna

Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the *Protocol on Environmental Protection to the Antarctic Treaty* (1998). Where taking or harmful interference with animals for scientific purposes is involved, the *SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica* should be used as a minimum standard.

vii. Collection or removal of anything not brought into the Area

Material should only be removed from the area for scientific, management, conservation or archeological purposes, and should be limited to the minimum necessary to fulfill those needs.

viii. The disposal of waste

All wastes other than human wastes and domestic liquid waste shall be removed from the Area. Human and domestic liquid wastes from stations or field camps may be disposed of to Port Foster below the high water mark, and not within the boundaries of ASPA No. 145. Freshwater streams or lakes, or vegetated areas, shall not be used to dispose of human wastes.

ix. Requirement for reports

Reports of activities within the Area, which are not already covered under existing reporting requirements should be made available to the Chair of the Deception Island Management Group.

10. Advance exchange of information

- IAATO should, as far as practicable, provide the Chair of the Deception Island Management Group with details of scheduled visits by IAATO-registered vessels. Tour operators not affiliated to IAATO should also inform the Chair of the Deception Island Management Group of planned visits.
- All National Antarctic Programmes should, as far as practicable, notify the Chair of the Deception Island Management Group of the location, expected duration, and any special considerations related to the deployment of field parties, scientific instrumentation or botanical quadrats at the four sites commonly visited by tourists (Whalers Bay, Pendulum Cove, Baily Head or the eastern end of Telefon Bay). This information will be relayed to IAATO (and as far as practicable to non-IAATO members).

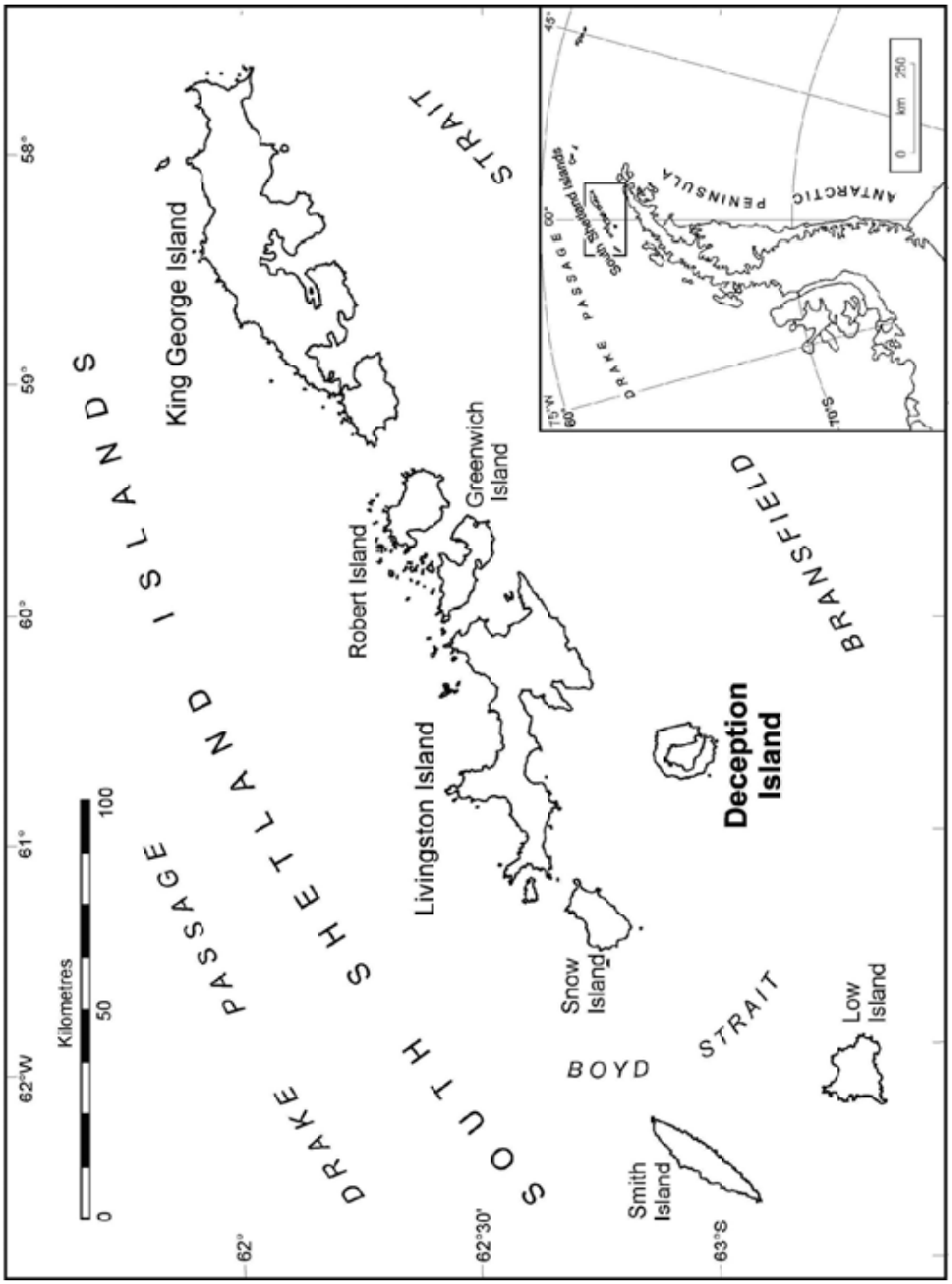


Figure 1. The location of Deception Island in relation to the South Shetland Islands and the Antarctic Peninsula

Figure 2. Deception Island - Topography

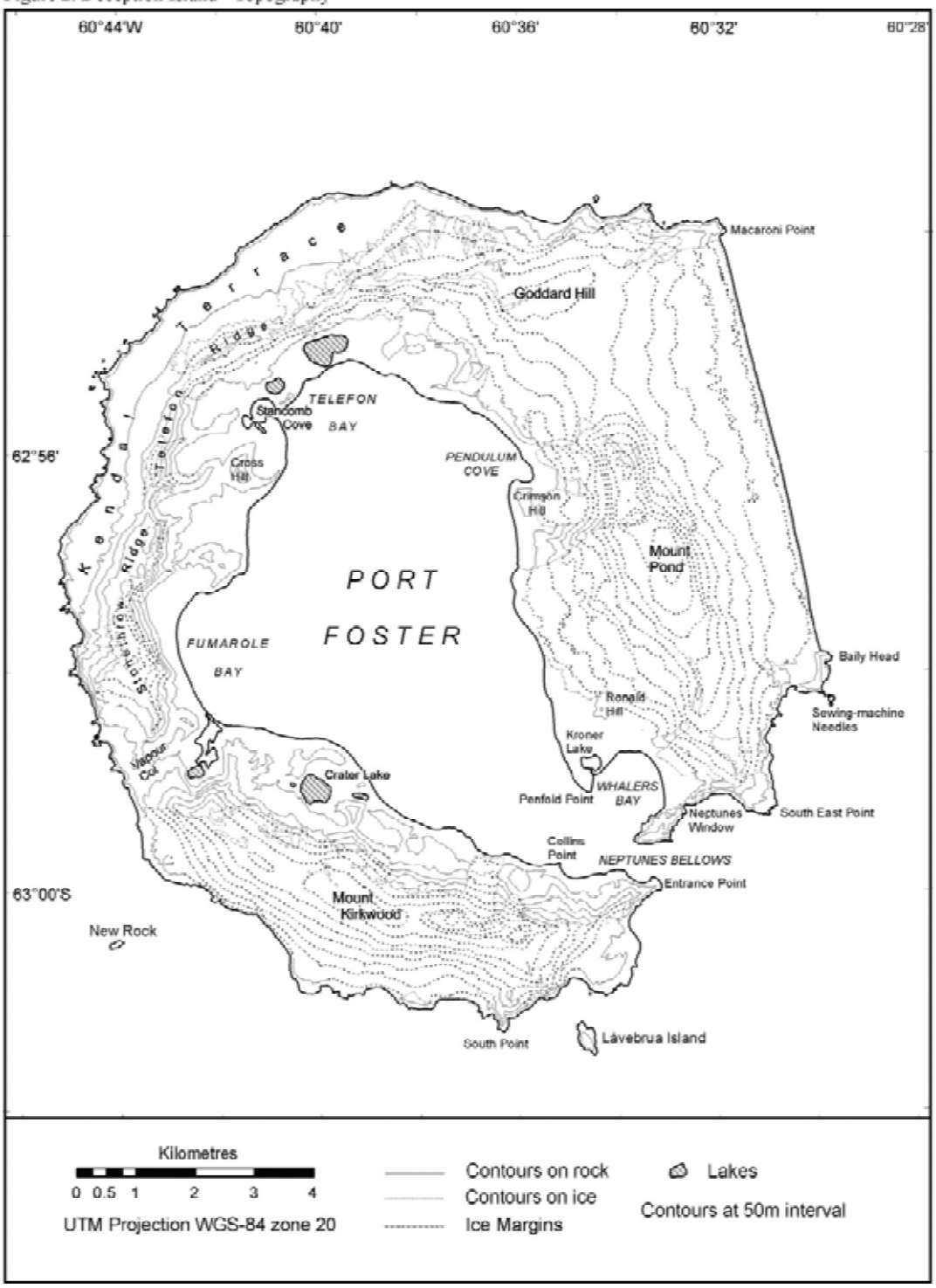
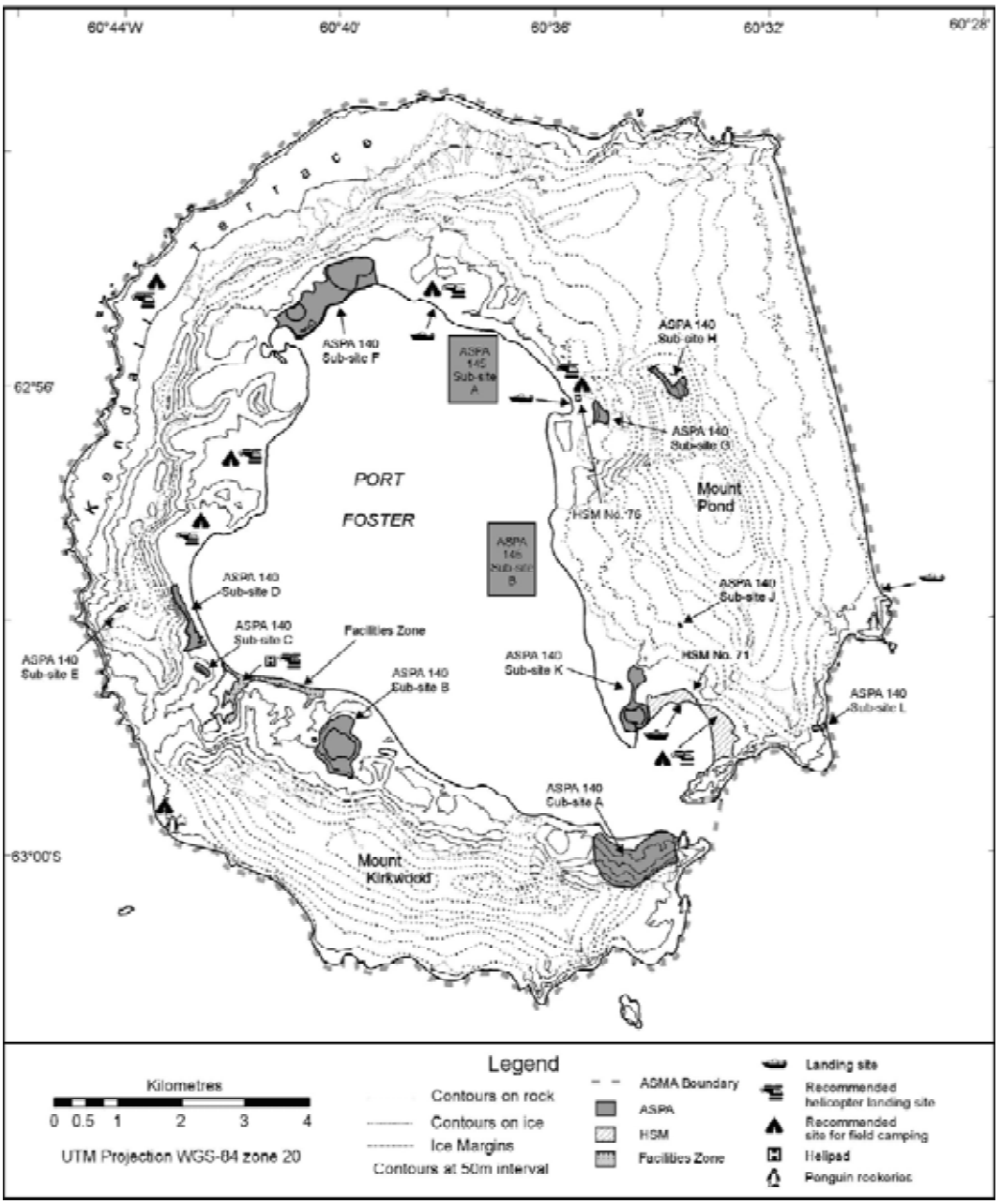


Figure 3. Deception Island Antarctic Specially Managed Area No. 4



Management Plan for Antarctic Specially Protected Area No. 140

PARTS OF DECEPTION ISLAND, SOUTH SHETLAND ISLANDS

1. Description of values to be protected

Deception Island (latitude 62°57'S, longitude 60°38'W) is an active volcano. Recent eruptions occurring in 1967, 1969 and 1970 (Baker *et al*. 1975) altered many of the topographical features of the island and created new, and locally transient, surfaces for the colonisation of plants and other terrestrial biota (Collins 1969, Cameron & Benoit 1970, Lewis Smith 1984*a*, *b*). There are a number of sites of geothermal activity, some with fumaroles (Smellie *et al*. 2002).

The flora of the island is unique in Antarctic terms, particularly where associated with these geothermal areas, but also because of the recently formed surfaces which provide known-age habitats for the study of colonisation and other dynamic ecological processes by terrestrial organisms (Lewis Smith 1988).

Five small sites around the coast of Port Foster were adopted under Recommendation XIII–8 (ATCM XIII, Brussels, 1985) as Site of Special Scientific Interest No. 21 on the grounds that "Deception Island is exceptional because of its volcanic activity, having had major eruptions in 1967, 1969 and 1970. Parts of the island were completely destroyed, new areas were created, and others were covered by varying depths of ash. Few areas of the interior were unaffected. The island offers unique opportunities to study colonization processes in an Antarctic environment."

Following a detailed botanical survey of the island in 2002, the values specified in the original designation were reaffirmed and considerably augmented. The survey identified 11 sub-sites of unique botanical interest.

Those interests were:

- The island has the greatest number of rare[1] and extremely rare[2] plant species of any site in the Antarctic. 28 of the 54 mosses recorded on the island, 4 of the 8 liverworts and 14 of the *ca*. 75 lichen are considered to be rare or extremely rare. Appendix A lists the plant species classed as rare or extremely rare in the Antarctic Treaty Area, which occur on Deception Island. These represent 25%, 17% and *ca*. 4% of the total number of mosses, liverworts and lichens, respectively, known from the Antarctic (Aptroot & van der Knaap 1993, Bednarek-Ochyra *et al*. 2000, Ochyra *et al.* in press, Øvstedal & Lewis Smith 2001). 13 species of moss (including two endemics), 2 species of liverwort and 3 species of lichen growing on Deception Island have not been recorded elsewhere in the Antarctic. No other site in the Antarctic is comparable. This suggests that there is a significant deposition of immigrant propagules (by wind and seabirds), particularly of southern South American provenance, over the Antarctic, which becomes established only where favourable germinating conditions prevail (e.g. the heat and moisture provided around fumaroles) (Lewis Smith 1984*a*, *b*). Such sites are unique in the Antarctic Treaty Area.

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[1] Known to grow at a few localities in the Antarctic and often in small quantity.

[2] Known to grow at only one or two localities in the Antarctic.

- The more stable geothermal areas, some of which have fumaroles issuing steam and sulphurous gas, have developed bryophyte communities of varying complexity and density, each with a distinct and unique flora. Most of these areas were created during the 1967-70 series of eruptions, but at least one (Mt. Pond) predates that period. Species growing close to active vents are continuously subjected to temperatures between 30°C to 50°C, thereby posing important questions regarding their physiological tolerance.
- Areas of volcanic ash, mudflows, scoria and lapilli deposited between 1967 and 1970 provide unique known-age surfaces. These are currently being colonised by vegetation and other terrestrial biota, allowing the dynamics of immigration and colonisation to be monitored. These areas are unstable and subject to wind and water erosion, so exposing some areas to continual surface change and a cycle of re-colonisation.
- Kroner Lake, the only intertidal lagoon with hot springs in Antarctica, supports a unique community of brackish-water algae.
- Several sites within the Area, unaffected by ash deposits during the 1967-70 eruptions, support long-established mature communities with diverse vegetation and are typical of the older stable ecosystems on the island.
- The largest known stand of Antarctic pearlwort (*Colobanthus quitensis*), one of only two flowering plants in the Antarctic, is located within the Area. After being virtually eradicated by burial in ash during the 1967 eruption, it has recovered and is now spreading at an unprecedented rate within and beyond the original site. This correlates with the current trend in regional climate change, particularly increasing temperature.

2. Aims and objectives

Management of the Area aims to:

- preserve each site for its potential scientific research value, particularly monitoring floristic and ecological change, colonisation processes and community development;
- avoid degradation of the botanical, vulcanological, or geomorphological values of the Area by preventing unnecessary human disturbance;
- minimise potential conflicts of interest within the Area between scientists of different disciplines (e.g. biologists and vulcanologists), and between scientists and tourists;
- minimise the possibility of the introduction of alien plants and other biota to the Area by human activities;
- ensure that the flora is not adversely affected by excessive sampling within the Area;
- allow research within the Area of a compelling scientific nature which cannot be served elsewhere, and which is consistent with the objectives of this Management Plan;
- allow visits for management purposes and to resurvey the state of the botanical values for which each site has been designated, in support of the aims of this Management Plan.

3. Management activities

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

- each of the botanical sub-sites shall be clearly marked with signs and boundary markers, where practicable;

- visits shall be made as necessary to assess whether the individual sites continue to serve the purposes for which they were designated and to ensure management and maintenance measures are adequate;
- markers, signs or other structures erected within each site for scientific or management purposes shall be secured and maintained in good condition, and removed when no longer necessary;
- equipment or materials shall be removed from the sites once no longer required;
- a map showing the location of each sub-site on Deception Island (stating any special restrictions that apply) shall be displayed prominently at Gabriel de Castilla Station (Spain) and Decepción Station (Argentina). Copies of the Management Plan shall be freely available and carried aboard all vessels planning visits to the island.

4. Period of designation

Designated for an indefinite period.

5. Maps

Figure 1: Antarctic Specially Protected Area No.140, Deception Island, showing the location of sub-sites A – L (Scale 1:100 000).

Figures 1a–d: Topographic Maps of Antarctic Specially Protected Area No.140 showing sub-sites A-L (Scale 1: 25000).

6. Description of the Area

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

The Area comprises 11 sub-sites, shown in Maps 1 and 1a-1d. This fragmented distribution is characteristic of the vegetation cover of Deception Island. Because of the patchy nature of stable and moist substrata not subjected to erosion, the vegetation has a very disjunct distribution and is consequently restricted to widely scattered, and often very small, habitats.

The sub-sites are lettered A to L (but excluding I), in a clockwise direction from the south-west of the caldera and referred to by the most prominent named geographical feature associated with each Site.

Site A - Collins Point: The north-facing slopes between Collins Point and the unnamed point 1.15 km to the east (0.6 km west of Entrance Point), directly opposite Fildes Point, and extending from the back of the beach to a ridge from 0.5 and 1 km inland from the shoreline. The eastern boundary of Site A runs due south from the shore, following the outline of a ridge to an elevation of 184 m. The western boundary extends from Collins Point, following a ridge due south to an elevation of 145 m. The southern boundary follows the arcuate ridge crest running from east to west, following a line of summits (172, 223 and 214 m) joining points 184 and 145 m. The beach area, including the Collins Point light beacon (maintained by the Chilean Navy), to the 10 m contour is excluded from the site.

The site contains some of the best examples of the island's longest established vegetation, largely unaffected by the recent eruptions, with high species diversity and several Antarctic rarities, some in considerable abundance. A few small plants of *Colobanthus quitensis* have very recently become established, while the large liverwort *Marchantia berteroana* is a fairly recent and spreading colonist.

Site B - Crater Lake: This site extends from the foot of the northern slope of the broad valley *ca*. 300 m north of Crater Lake to the slope *ca*. 300 m south of the south side of the lake, including the lake, to the ridge lines of the crater *ca*. 50 m to the west and east of the lake, and lower scree *ca*. 10 m south of the shoreline at the south-west corner of the Site. The principal area of botanical interest lies on a scoria-covered lava tongue above the south-east of the lake, up to the 50 m contour. The site was unaffected by the recent eruptions.

The extensive, virtually monospecific, moss carpet (*Sanionia uncinata*), on the floor of the northern valley, is one of the largest continuously vegetated stands on the island. The vegetation on the scoria tongue has a diverse cryptogamic flora, including several Antarctic rarities, and exceptional development of turf-forming moss, dominated by one relatively common species (*Polytrichastrum alpinum*). Of particular interest is that it reproduces sexually in great abundance here. Sporophytes of this species are not known in such profusion in this, or any other moss, anywhere else in the Antarctic.

Site C - Unnamed hill, southern end of Fumarole Bay: A narrow line of fumaroles extending *ca*. 30-40 x 3 m along the gently sloping summit ridge at *ca*. 105-107 m elevation on the unnamed hill above the north-west side of the unnamed intertidal lagoon northwest of Decepción Station (Argentina) at the southern end of Fumarole Bay. Commencing 10 m WNW of the summit cairn, the site extends in a rectangular strip along the ridge crest 5 m beyond the outermost fumaroles all around the Site. Access to the cairn is not restricted.

Several rare species of moss, some unique to the island, colonise the heated soil crust close to the line of vents.

Site D - Fumarole Bay: The unstable moist scree slopes below the precipitous lava cliffs on the east side of the southern end of Stonethrow Ridge to the break of slope beyond the beach west of mid-Fumarole Bay. The site has a complex geology and contains the most diverse flora on the island, including several Antarctic rarities. It was unaffected by the recent eruptions.

The southern boundary of the site extends from a prominent massive yellow tuff boulder at the back of the beach above a shallow pool, westwards to the foot of the southernmost yellowish tuff cliff face above central Fumarole Bay. The eastern boundary runs northwards along the break-of-slope at the back of the beach for 1 km to a prominent outcrop of grey lava just north of a crimson lava cliff. The northern boundary extends from this point westwards to the foot of the Stonethrow Ridge cliffs. The western boundary follows the 75 m contour. The flat beach area from the shore, including a prominent inter-tidal fumarole, to the break-of-slope is excluded from the site.

Site E - West Stonethrow Ridge: The site is a red scoria cone lying at *ca*. 270 m altitude, *ca*. 600 m south-south-west of the highest point on Stonethrow Ridge (330 m), west of central Fumarole Bay. It comprises two parts, each with fumaroles, the total area covering about 400 m^2. The boundary extends to 5 m beyond all evidence of geothermal activity.

This site possesses several very rare mosses, liverworts and lichens, two of the dominant species being a liverwort (*Clasmatocolea grandiflora*) and lichen (*Stereocaulon condensatum*), neither of which is known elsewhere in Antarctica. Photographs taken in the mid-1980s indicate that the development and diversity of this vegetation has advanced considerably. A skua nest (also noted in 1993) occupies the main site. These birds may be responsible for introducing some of the plants from Tierra del Fuego, notably the dominant liverwort.

Site F - Telefon Bay: The site extends from the north shore of the lagoon at the south-west of Telefon Bay to the south of the "new island" hill, northwards to the north shoreline of the large unnamed lake at the northern end of Telefon Bay, and thence to the shore of the bay following approximately the 10 m contour of a low north-south trending ridge. The north-western boundary is 20 m from the break-

of-slope below the prominent low cliff of crimson lava; this allows an access route skirting around the west and southern end of the larger of the two lakes.

This site incorporates several features created during the 1967 eruption in Telefon Bay, and includes the low flat land extending from the prominent hill on the south-eastern side to the steep slopes and lava outcrops *ca*. 0.5 km inland to the steep slope and lava cliffs below the north-eastern end of Stonethrow Ridge. The hill was created as a new island in 1967, but is now joined to the main island by the aforementioned ash plain. About 0.5 km north of the lagoon in the south-west of Telefon Bay there is a small shallow lake, while at the northern end of the plain there is a large deep lake. This lake is separated from the sea in Port Foster by a *ca*. 50 m long isthmus barely 2 m high and 2 m wide. It has been used as the main pedestrian access along this part of coastline, and is extremely vulnerable to erosion. If it is breached it will be quickly eroded further by high tides and storms, allowing the lake to become inter-tidal and profoundly altering its geochemistry and microbiota. The shoreline of Telefon Bay is excluded to allow access past the site.

The main feature of botanical interest is that all surfaces within the site date from 1967, thereby allowing accurate monitoring of colonisation by plants and other biota. The site has a generally barren appearance, but close inspection reveals an abundance of inconspicuous mosses and lichens. In the absence of geothermal activity here, colonisation processes may be related to aspects of the current trend in climate change. Although species diversity is low, the developing communities are typical of non-heated habitats throughout the island.

Site G - Pendulum Cove: The site comprises the very uneven gentle slope of very coarse grey, crimson, red scoria and occasional disintegrating blocks of yellowish tuff overlying a dead glacier, due east of Crimson Hill and *ca*. 0.5-0.8 km south-east of Pendulum Cove. It extends *ca*. 500 m uphill, from west to east and from *ca*. 50 to 100 m altitude, and is *ca*. 500 m wide. It was created largely by the 1969 eruption. Geothermal activity was recorded during a survey in 1987, with substantial heat being emitted from crevices amongst scoria. There was no such evidence in 2002.

The Site boundary encloses the undulating "plateau", an area of *ca*. 0.25 km^2. There are no natural features to delineate this area, but the boundary follows the break-of-slope between the plateau and the steep slopes rising to it.

Although vegetation is very sparse, this known-age site is being colonised by numerous moss and lichen species. Two of the mosses (*Racomitrium lanuginosum* and *R. heterostichoides*) are unique both on the island and in the Antarctic, and both are very rare here. Several other mosses are Antarctic rarities.

Site H - Mt. Pond: Lying *ca*. 1.25-1.5 km north-north-west of Mount Pond summit, this extensive area of geothermal activity extends *ca*. 150 x 50 m on the gently sloping upper part of a broad ridge at *ca*. 485 to 500 m elevation (Lewis Smith 1988). At the northern end of the site there are numerous inconspicuous fumarole vents in low mounds of very fine, compacted baked soil. The upper, southern, part of the site is close to a large rime dome at 512 m, in the lee of which (at *ca*. 500-505 m) are numerous active fumaroles, also surrounded by fine, compacted baked soil, on a steep, moist, sheltered slope. The extensive areas of heated ground surrounding the fumaroles comprise a fine soil with a soft crust which is extremely vulnerable to pedestrian damage. There are several stands of dense, thick (up to 10 cm) bryophyte vegetation associated with these areas. The adjacent yellowish tuff outcrops support a different community of mosses and lichens.

This is an outstanding site of botanical interest, unique in the Antarctic. It possesses several moss species which are either unique to the Antarctic or are extremely rare in Antarctica. The development of the moss turf (*Dicranella hookeri* and *Philonotis polymorpha*) in the main upper part of the site is exceptional, and two or more species have colonised profusely since last inspected in 1994. The large liverwort *Marchantia berteroana* is rapidly colonising the warm moist soil crust at the periphery

of the moss stands. At least one species of toadstool fungus also occur amongst the moss, the highest known record for these organisms in Antarctica. A totally different community of mosses and lichens occurs on the rock outcrops, and also includes several extremely rare species (notably *Schistidium andinum* and *S. praemorsum*).

Site J - 'Perchue Cone': The boundary includes all of the ash and cinder cone referred to as 'Perchue Cone'. This ash cone lies *ca*. 0.5 km east-north-east and comprises a very narrow line of fumaroles and adjacent heated ground on the west-facing slope at *ca*. 160-170 m elevation. The geothermal area covers *ca*. 25 x 10 m, and the fine ash and lapilli surface of the entire slope is very vulnerable to pedestrian damage.

The site contains several mosses that are extremely rare in Antarctica. Photographic evidence suggests that the extent of moss colonisation has decreased since the mid-1980s.

Site K - Ronald Hill to Kroner Lake: This site includes the circular flat plain of the crater immediately to the south of Ronald Hill, and extends along the prominent broad shallow outwash gulley with a low bank on either side, leading southwards from here to Kroner Lake. The substratum throughout the area is consolidated mud, fine ash and lapilli deposited by the lahar during the 1969 eruption. Part of the site, notably the gulley, remains geothermally active. The site also includes the intertidal geothermal lagoon (Kroner Lake) as it is part of the same volcanological feature. This small, shallow, circular, brackish crater lake was broached by the sea during the 1980's, and is now the only geothermally heated lagoon in the Antarctic. The boundary surrounds the crater basin, valley and Kroner Lake. A corridor below Ronald Hill, from the break-of-slope to the lowermost massive boulders about 10-20 m beyond, remains outside the boundary to allow access past the Area.

The surfaces of this site are of known-age and are being colonised by numerous moss, liverwort and lichen species, several of which are extremely rare in the Antarctic (e.g. the mosses *Notoligotrichum trichodon* and *Polytrichastrum longisetum*, and a rare lichen, *Peltigera didactyla*, is colonising >1 ha of the crater floor). The geothermal northern intertidal shore of Kroner Lake possesses an unique community of algae.

Site L - South East Point: An east-west trending rocky ridge *ca*. 0.5 km north of South East Point, extending from the top of the sea cliff (*ca*. 20 m altitude) westwards for *ca*. 250 m, to a point about 30 m altitude. The north edge of the ridge is a low vertical lava outcrop, giving way to a steep unstable slope leading to the floor of a gully parallel to the ridge. The south side of the site is the gently sloping ridge crest covered with ash and lapilli. The site extends 50 m north and south of the lava outcrop.

This site has the most extensive population of Antarctic pearlwort (*Colobanthus quitensis*) known in the Antarctic. It was the largest population before the 1967 eruption (Longton 1967), covering *ca*. 300 m^2, but was almost completely destroyed by ash burial. It gradually recovered, but since about 1985-1990 there has been a massive increase in seedling establishment and the population has expanded downwind (westwards, uphill). It is now very abundant in an area of *ca*. 2 ha. It is also remarkable for the absence of the other native vascular plant, Antarctic hairgrass (*Deschampsia antarctica*), almost always associated with this plant. Photographs of the Site immediately after the eruption revealed almost total loss of lichens, but these too have recolonised rapidly and extensively, the large bushy *Usnea antarctica* being particularly abundant and attaining a considerable size after the relatively short period since recolonisation. The cryptogamic flora of the site is generally sparse and typical of most of the island. The site is particularly important for monitoring the reproduction and spread of the pearlwort in a known-age site.

6(ii) Restricted and managed zones within the Area

In Site F, the narrow isthmus separating the large unnamed lake from Port Foster shall be avoided. Pedestrians should use the beach to bypass the isthmus. The isthmus is friable and extremely vulnerable to erosion. If it is breached it will be quickly eroded further by high tides and storms, allowing the lake to become inter-tidal and profoundly altering its geochemistry and microbiota.

6(iii) Structures within or near to the Site

At Site A, there are six 50 x 50 cm plots marked with wooden corner stakes, although not all of the four stakes per plot remain. These were established by the British Antarctic Survey in 1969 to monitor changes in the vegetation in subsequent years (Collins 1969); data were obtained in 1969 and 2002. These markers should be maintained.

Other structures near to the Area are listed in the ASMA Management Plan for Deception Island.

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

ASPA 145 comprises 2 sub-sites of benthic importance within Port Foster.

7. Permit conditions

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

- it is issued only for compelling scientific reasons which cannot be served elsewhere, or for essential management purposes such as inspection, maintenance or review;
- the actions permitted will not jeopardise the floristic, ecological or scientific values of the Area;
- any management activities are in support of the aims and objectives of this Management Plan;
- the actions permitted are in accordance with this Management Plan;
- the Permit, or an authorised copy, must be carried within the area;
- a visit report shall be supplied to the authority named in the Permit, and to the Chair of the Deception Island Management Group;
- permits shall be issued for a stated period;
- the appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

7(i) Access to and movement within the Area

Helicopter landings or the use of vehicles are prohibited within ASPA 140. The Management Plan for Deception Island ASMA shows recommended helicopter landing sites on Deception Island. Access to the sites shall be by foot or small boat. Access to Site F (Telefon Bay) shall avoid the isthmus referred to in section 6 (ii). Movement within the sites shall also be on foot. Rowing boats are permitted for sampling purposes in the lakes in Sites B (Crater Lake) and F (Telefon Bay), and the lagoon in Site J (Kroner Lake).

All movement shall be undertaken carefully so as to minimise disturbance to soil and vegetation.

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

- compelling scientific research which cannot be undertaken elsewhere and which will not jeopardise the flora and ecology of the Area.
- essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

Structures shall not be erected within the Area except as specified in a Permit. All scientific equipment, botanical quadrats or other markers installed in the Area must be approved by Permit and clearly identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination of the Area.

At Site A (Collins Point), the existing staked plots should be maintained to allow continued monitoring of vegetation change since 1969. At Site K, any wind-blown debris from the Hektor Whaling Station and Base B shall be removed.

7(iv) Location of field camps

Camping is not permitted within the Area. The ASMA Management Plan for Deception Island shows recommended sites for field camps on the island, but outside ASPA 140.

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

No living animals, plant material or microorganisms shall be deliberately introduced into the Area. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radionuclides or stable isotopes, which may be introduced for scientific or management purposes specified in the permit, shall be removed from the Area at or before the conclusion of the activity for which the permit was granted.

To ensure that the floristic and ecological values of the Area are maintained, special precautions shall be taken against accidentally introducing microbes, invertebrates or plants from other Antarctic sites, including stations, or from regions outside Antarctica. All sampling equipment or markers brought into the Area shall be cleaned or sterilised. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including bags or backpacks) shall be thoroughly cleaned before entering the Area.

No poultry or egg products shall be taken into the Area.

Fuel, food and other materials are not to be deposited within the site, unless authorised by Permit for specific scientific or management purposes. Permanent depots are not permitted. All materials introduced shall be for a stated period only, shall be removed at or before the conclusion of the stated period, and shall be stored and handled so that risk of their introduction into the environment is minimised. If release occurs which is likely to compromise the values of the Area, removal is encouraged only where the impact of removal is not likely to be greater than that of leaving the material *in situ*. The appropriate authority shall be notified of any materials released and not removed that were not included in the authorised Permit.

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

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

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

Material of a biological, geological (including soil and lake sediment), or hydrological nature may be collected or removed from the Area only in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs. Permits shall not be granted if there is reasonable concern that the sampling proposed would take, remove or damage such quantities of soil, sediment, flora or fauna that their distribution or abundance within the Area would be significantly affected. Material of human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit Holder or otherwise authorised, may be removed unless the impact of removal is likely to be greater than leaving the material *in situ*; if this is the case the appropriate authority should be notified.

7(viii) Disposal of waste

All wastes shall be removed from the Area. In order to avoid anthropogenic microbial and nutrient enrichment of soils, no solid or liquid human waste should be deposited within the Area. Human wastes may be disposed of within Port Foster, but avoiding ASPA 145.

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

- Permits may be granted to enter the Area to carry out biological, vulcanological or seismic monitoring and site inspection activities. Biological activities may involve the collection of small amounts of plant or soil material or small numbers of invertebrate animals for analysis or review.
- Any long-term monitoring sites shall be appropriately marked and the markers or signs maintained.

7(x) Requirements for reports

The principal Permit Holder for each issued Permit shall submit to the appropriate authority a report describing the activities conducted in the Site.

Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction, which should be in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the Management Plan and in organising the scientific use of the Site.

List of References

Aptroot, A. and van der Knaap, W.O. 1993. The lichen flora of Deception Island, South Shetland Islands. *Nova Hedwigia*, **56**, 183-192.

Bednarek-Ochyra, H., Váòa, J., Ochyra, R. and Lewis Smith, R.I. 2000. *The Liverwort Flora of Antarctica*. Polish Academy of Sciences, Krakow, 236 pp.

Cameron, R.E. and Benoit, R.E. 1970. Microbial and ecological investigations of recent cinder cones, Deception Island, Antarctica – a preliminary report. *Ecology*, **51**, 802-809.

Collins, N.J. 1969. The effects of volcanic activity on the vegetation of Deception Island. *British Antarctic Survey Bulletin*, **21**, 79-94.

Lewis Smith, R.I. 1984a. Colonization and recovery by cryptogams following recent volcanic activity on Deception Island, South Shetland Islands. *British Antarctic Survey Bulletin*, **62**, 25-51.

Lewis Smith, R.I. 1984b. Colonization by bryophytes following recent volcanic activity on an Antarctic island. *Journal of the Hattori Botanical Laboratory*, **56**, 53-63.

Lewis Smith, R.I. 1988. Botanical survey of Deception Island. *British Antarctic Survey Bulletin*, **80**, 129-136.

Longton, R.E. 1967. Vegetation in the maritime Antarctic. In Smith, J.E., *Editor*, A discussion of the terrestrial Antarctic ecosystem. *Philosophical Transactions of the Royal Society of London*, B, **252**, 213-235.

Ochyra, R., Bednarek-Ochyra, H. and Lewis Smith, R.I. *The Moss Flora of Antarctica*. In prep. Cambridge University Press, Cambridge.

Øvstedal, D.O. and Lewis Smith, R.I. 2001. *Lichens of Antarctica and South Georgia. A Guide to their Identification and Ecology*. Cambridge University Press, Cambridge, 411 pp.

Smellie, J.L., López-Martínez, J., Headland, R.K., Hernández-Cifuentes, Maestro, A., Miller, I.L., Rey, J., Serrano, E., Somoza, L. and Thomson, J.W. 2002. *Geology and geomorphology of Deception Island*, 78 pp. BAS GEOMAP Series, Sheets 6-A and 6-B, 1:25,000, British Antarctic Survey, Cambridge.

Appendix A. List of plant species, classed as rare or very rare in the Antarctic Treaty Area, occurring on Deception Island

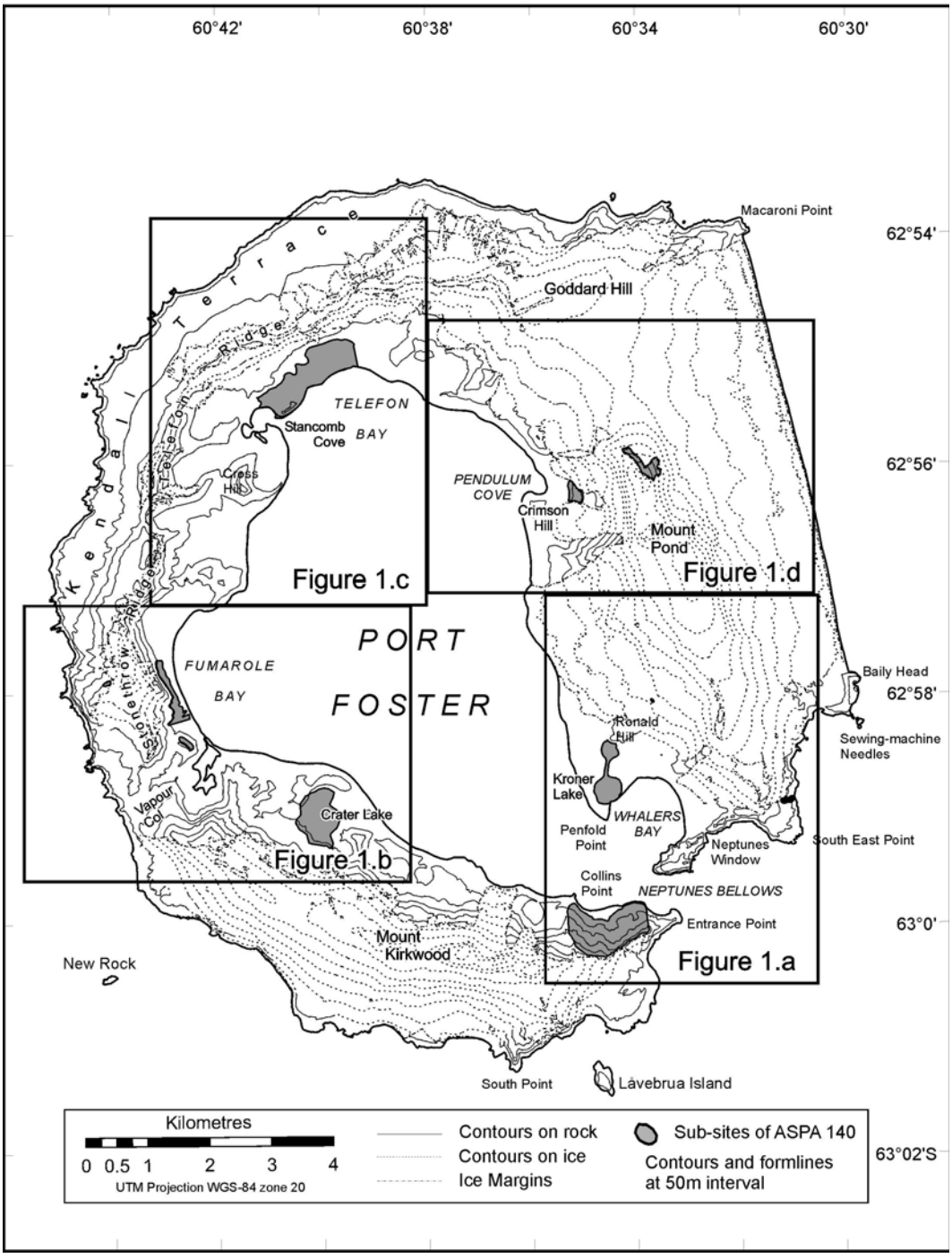
A. Bryophytes (L = Liverwort)

Species	Sites where species occurs	Notes
Brachythecium austroglareosum	D	Few other known Antarctic sites
B. fuegianum	G	Only known Antarctic site
Bryum amblyodon	C, D, G, K	Few other known Antarctic sites
B. dichotomum	C, E, H, J	Only known Antarctic site
B. orbiculatifolium	H, K	One other known Antarctic site
B. pallescens	D	Few other known Antarctic sites
Cryptochila grandiflora (L)	E	Only known Antarctic site
Dicranella hookeri	C, E, H	Only known Antarctic site
Didymodon brachyphillus	A, D, G, H	Locally more abundant than any other known Antarctic site
Ditrichum conicum	E	Only known Antarctic site
D. ditrichoideum	C, G, J	Only known Antarctic site
D. heteromallum	C, H	Only known Antarctic site
D. hyalinum	G	Few other known Antarctic sites
D. hyalinocuspidatum	G	Few other known Antarctic sites
Grimmia plagiopodia	A, D, G	A continental Antarctic species
Hymenoloma antarcticum	B, C, D, E, G, K	Few other known Antarctic sites
H. crispulum	G	Few other known Antarctic sites
Notoligotrichum trichodon	K	One other known Antarctic site
Philonotis polymorpha	E, H	Only known Antarctic site
Platyneurum jungermannioides	D	Few other known Antarctic sites
Polytrichastrum longisetum (L)	K	One other known Antarctic site
Pohlia wahlenbergii	C, E, H	One other known Antarctic site
Racomitrium heterostichoides	G	Only known Antarctic site
R. lanuginosum	G	Only known Antarctic site
R. subsecundum	C	Only known Antarctic site
S. amblyophyllum	C, D, G, H	Few other known Antarctic sites
S. andinum	H	Few other known Antarctic sites
S. deceptionensis sp. nov.	C	Deception endemic
S. leptoneurum sp. nov.	D	Deception endemic
Schistidium praemorsum	H	One other known Antarctic site
Syntrichia andersonii	D, L	Only known Antarctic site

B. Lichens

Species	Sites where species occurs	Notes
Acarospora austroshetlandica	A	One other known Antarctic site
Caloplaca johnstonii	B, D, F, L	Few other known Antarctic sites
Catapyrenium lachneoides		Few other known Antarctic sites
Cladonia galindezii	A, B, D	More abundant than any other known site
Degelia sp.	K	Only known Antarctic site
Ochrolechia parella	A, B, D	More abundant than any other known site
Peltigera didactyla	B, K	Very rare in B; very small colonising form abundant in K
Pertusaria excludens	D	Few other known Antarctic sites
P. oculae-ranae	G	Only known Antarctic site
Placopsis parellina	A, B, D, G, H	More abundant than any other known site
Protoparmelia loricata	B	Few other known Antarctic sites
Psoroma saccharatum	D	Only known Antarctic site
Stereocaulon condensatum	E	Only known Antarctic site
S. vesuvianum	B, G	Few other known Antarctic sites

Figure 1 - Antarctic Specially Protected Area No. 140, Sites of Exceptional Botanical Importance, Deception Island, South Shetland Islands



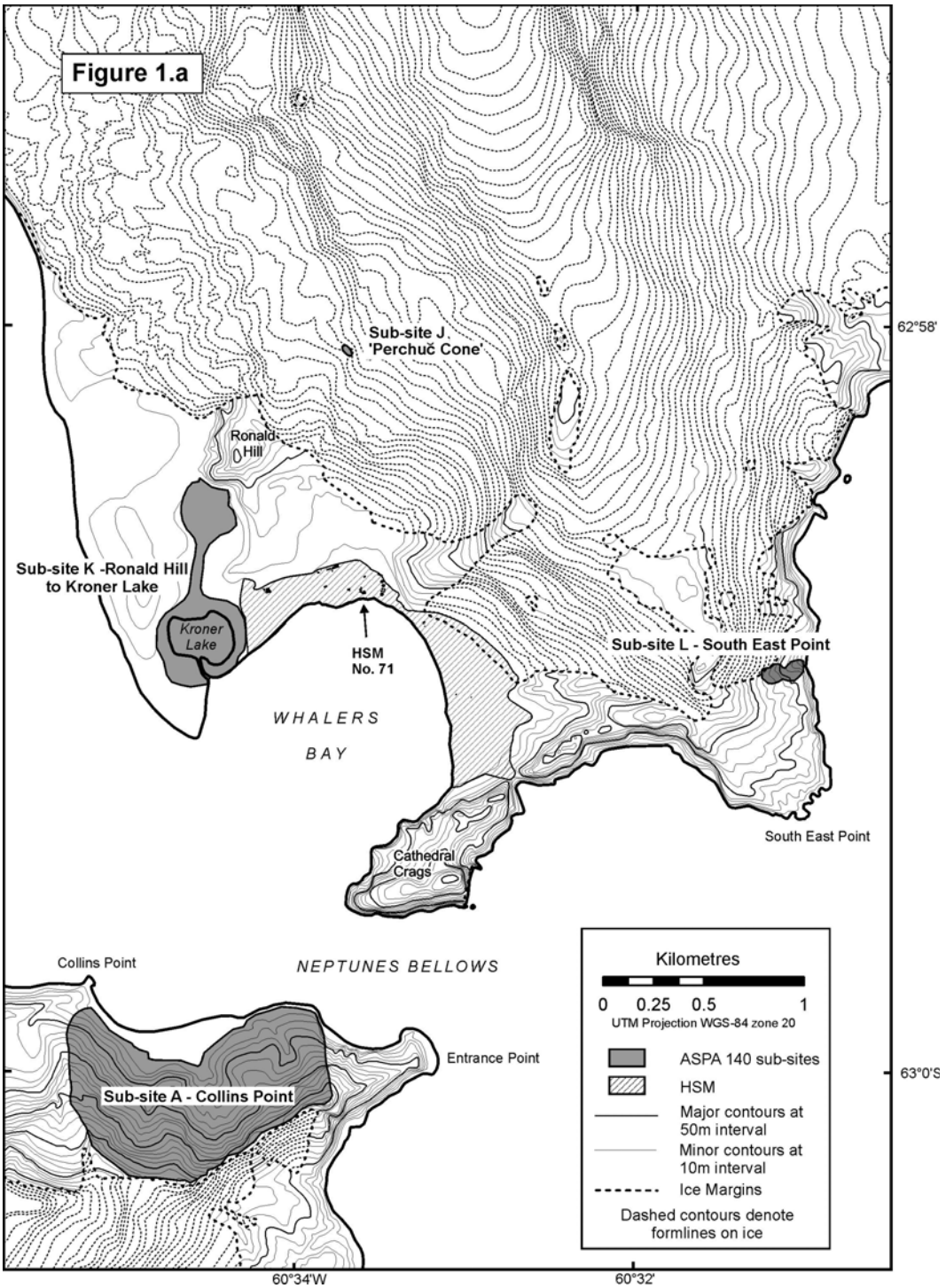


Figure 1.a
Sub-site J
'Perchuč Cone'
Ronald Hill
Sub-site K -Ronald Hill to Kroner Lake
Kroner Lake
HSM No. 71
WHALERS BAY
Sub-site L - South East Point
South East Point
Cathedral Crags
Collins Point
NEPTUNES BELLOWS
Entrance Point
Sub-site A - Collins Point
62°58'
63°0'S
60°34'W
60°32'
Kilometres
0 0.25 0.5 1
UTM Projection WGS-84 zone 20
ASPA 140 sub-sites
HSM
Major contours at 50m interval
Minor contours at 10m interval
Ice Margins
Dashed contours denote formlines on ice

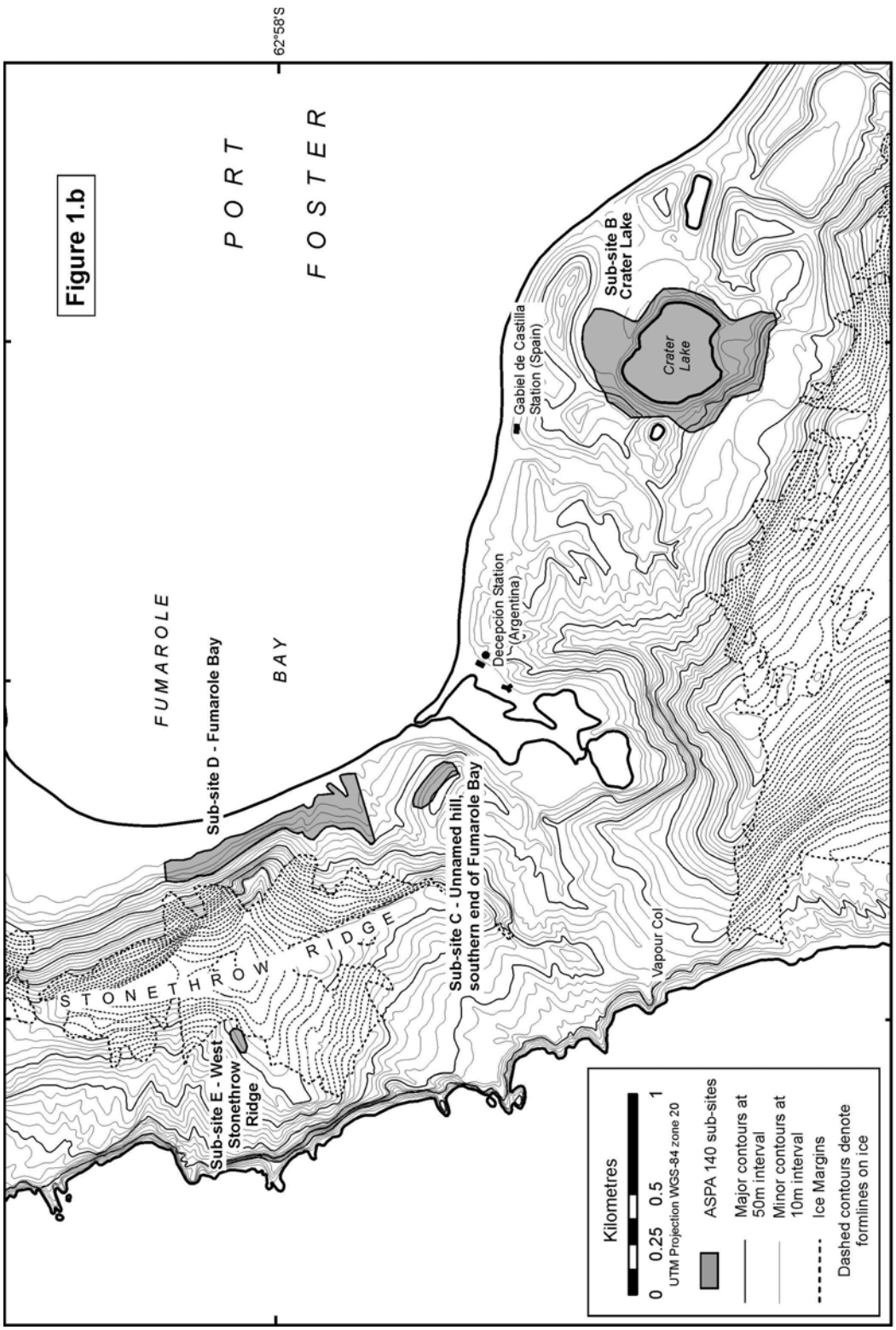


Figure 1.b
62°58'S
PORT FOSTER
FUMAROLE BAY
Sub-site D - Fumarole Bay
Sub-site E - West Stonethrow Ridge
STONETHROW RIDGE
Sub-site C - Unnamed hill, southern end of Fumarole Bay
Vapour Col
Decepción Station (Argentina)
Gabiel de Castilla Station (Spain)
Sub-site B Crater Lake
Crater Lake
Kilometres
0 0.25 0.5 1
UTM Projection WGS-84 zone 20
ASPA 140 sub-sites
Major contours at 50m interval
Minor contours at 10m interval
Ice Margins
Dashed contours denote formlines on ice

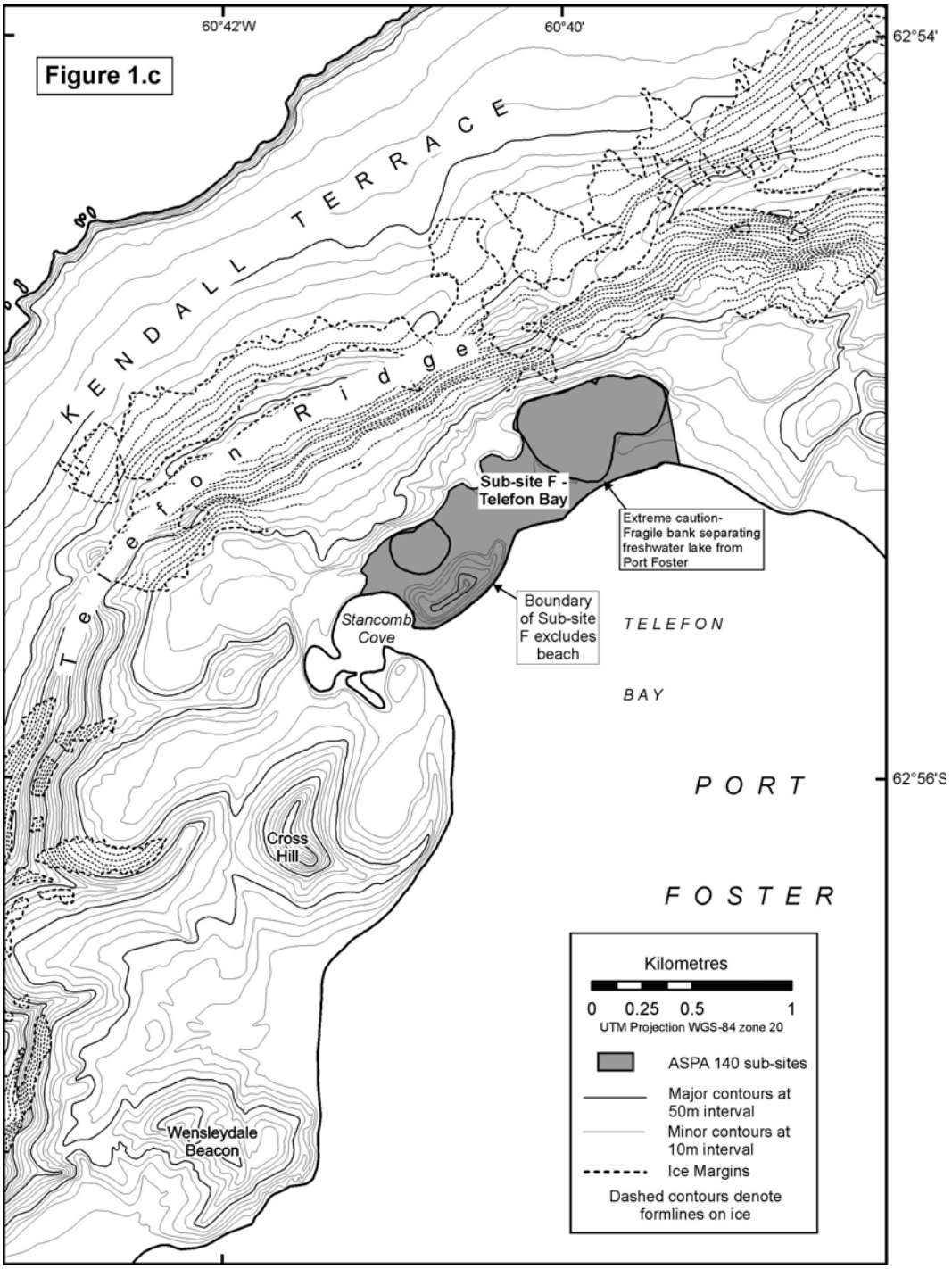


Figure 1.c
60°42'W
60°40'
62°54'
62°56'S
KENDALL TERRACE
Telefon Ridge
Sub-site F - Telefon Bay
Extreme caution- Fragile bank separating freshwater lake from Port Foster
Boundary of Sub-site F excludes beach
Stancomb Cove
TELEFON
BAY
PORT
FOSTER
Cross Hill
Wensleydale Beacon
Kilometres
0 0.25 0.5 1
UTM Projection WGS-84 zone 20
ASPA 140 sub-sites
Major contours at 50m interval
Minor contours at 10m interval
Ice Margins
Dashed contours denote formlines on ice

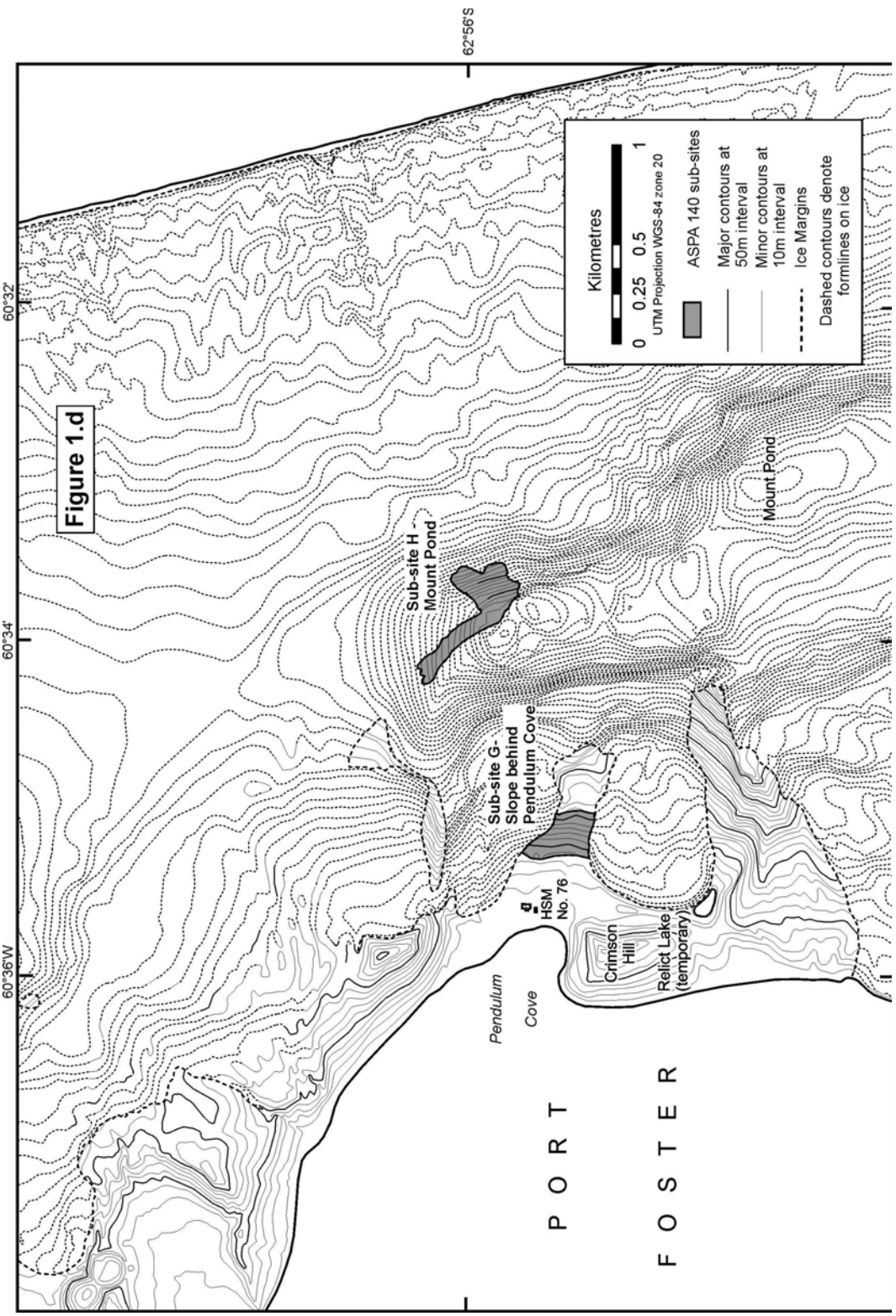


Figure 1.d
62°56'S
60°32'
60°34'
60°36'W
Kilometres
0 0.25 0.5 1
UTM Projection WGS-84 zone 20
ASPA 140 sub-sites
Major contours at 50m interval
Minor contours at 10m interval
Ice Margins
Dashed contours denote formlines on ice
Sub-site H - Mount Pond
Mount Pond
Sub-site G- Slope behind Pendulum Cove
HSM No. 76
Crimson Hill
Relict Lake (temporary)
Pendulum Cove
PORT FOSTER

Management Plan for Antarctic Specially Protected Area No. 145

PORT FOSTER, DECEPTION ISLAND, SOUTH SHETLAND ISLANDS

1. Description of values to be protected

These two sub areas were originally designated as SSSI N° 27 by Rec. XIV-5 of October 6, 1987 after a proposal by Chile.

Values protected under original designation included the diversity of benthic fauna on two different kinds of sea bottom substrates. The original research about the ecological process of recolonization after volcanic eruption needed protection from the risk of undue interference.

Deception Island is a caldera formed by subsidence of a group of Cenozoic volcanoes superimposed along radial faults. Port Foster is an almost entirely enclosed body of water, receiving large volumes of fresh water during periods of melt. In several places there is geothermal activity.

The area is of exceptional ecological interest because of its actively volcanic character. The two habitat areas are subject to long-term research programs and the purpose in designating them is, as far as possible, to reduce the risk of accidental interference that could jeopardize these scientific investigations.

2. Aims and objectives

The management of Port Foster aims to:

- Avoid degradation or substantial risk to the values of the area by preventing unnecessary human disturbance.
- Allow scientific research on the marine benthic system, ensuring protection from interference.

3. Management activities

The following management activities shall be undertaken to ensure the protection of the values of the area:

- Preparation and distribution of a map showing the location of the area, with explicit statement of the special restrictions that apply. This map shall be available at the Deception Island Stations and to visitors.
- Periodical visits and assessment of the effectiveness of the protection.
- Sampling of benthic fauna to verify that the values for which the site was originally designated remain valid.

4. Period of designation

Designated for two years.

5. Maps

Map 1: Port Foster, showing bathymetry, and the location of sub-sites A and B.

6. Description of the area

6(i) Geographical coordinates

Benthic habitat A: between 50 and 150 m depths and the coordinates: lat 62°55.5'S long 60°38'00"W, lat 62°56.2'S long 60°37'00"W.

Benthic habitat B: between 100 and 150 m depths and the coordinate: lat 62°57.2'S long 60°37'20"W, lat 62°57.9'S long 60°36'20"W.

6(ii) Physical features

The bottom of habitat A consists of coarse to medium-sized, poorly sorted volcanic sediments including scoria and lapilli, and that of habitat B of medium to fine, better sorted volcanic ash. Volcanic sediments are at least 30 cm thick, on both habitats. Soft bottom habitats are low on water dissolved oxygen.

Water temperature, near Benthic habitat A, may fluctuate widely depending on circulation and due to under-water hot springs in the neighboring area.

6(iii) Biological features

Benthic fauna was severely impacted by the volcanic eruption of 1967, due to volcanic ash and high concentrations of dissolved toxic compounds.

Following the volcanic eruption of December 1967 at Deception Island, a long-term program of research was initiated at Port Foster to study the mechanism and paths of the re-establishment of the benthic communities. Community studies to observe biota changes, including other relevant studies to meet the requirements of long-term biological monitoring programs, are performed periodically.

The most conspicuous macrofauna in dredge samples include the nemerteans *Lineus* sp and *Paraborlasia corrugatus*, the isopod *Serolis kemp*: the bivalve *Yoldia eightsii*, the echinoids *Abatus agassizizi* and *Sterechinus neumayeri*, the asteroids *Lysasterias perrieri* and *Odontaster validus*, the ophiuroid *Ophionotus victoriae* and the holothurian *Ypsilothuria* sp. The composition of the benthic assemblages has varied greatly since the volcanic eruption of December 1967.

Soft bottom habitat predominant groups are: *Polichaeta, Bivalvia, Nemertina, Cumacea* and *Amphipoda.*

Hard bottom habitat predominant groups are: *Echinoderms, Amphipoda* and *Tunicata.*

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

ASPA 140 comprises eleven small sub-sites of unique and important vegetation on Deception Island. Also, in the vicinity of Pendulum Cove is HSM 76, the remains of Pedro Aguirre Cerda Station. HSM 71 at Whalers Bay comprises the remains of Hektor Whaling station, other artefacts which predate the whaling station, and the remains of 'Base B' (UK).

Other protected areas in the vicinity are ASPA Nº 126 Byers Peninsula approximately 40 km northwest and ASPA Nº 149 Cape Shirreff, both on Livingston Island.

7. Permit conditions

Conditions for issuing a sampling permit:

- It is issued only for scientific study of the marine benthic system and geology of the area, or for compelling scientific reasons that cannot be served elsewhere.
- It is issued for essential management purposes consistent with management plan objectives such as inspection or review.
- The actions permitted will not jeopardize the ecological or geological scientific values of the area.
- A visit report shall be supplied to the authority named in the Permit, as well as to the Chair of the Deception Island Management Group.
- Permits shall be issued for a stated period.

7(i) Access to and movement within the area

Although access points as such are not designated, free passage of ships through these areas is not in any way prejudiced. Movement in shallow waters should be undertaken carefully so as to minimize the probability of disturbing bottom fauna and flora.

7(ii) Activities that may be conducted

- Scientific research other than that disturbing benthic habitats and communities.
- Essential management activities, including monitoring.

7(iii) Scientific sampling

Samples from benthic habitats should be taken only for compelling scientific purposes.

7(iv) Other restrictions

The dumping of waste from ships and bottom trawling shall be avoided. Anchoring shall be avoided except in compelling circumstances. Siting of bottom devices should be avoided.

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

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

7(vi) Waste disposal

Disposal of all waste, including human waste, is prohibited in this area.

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

Access to the area by permit to carry out site inspection and monitoring; this may involve collection of benthos samples for analysis and review of protective measures.

7(viii) Requirements for reports

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority, and to the Chair of the Deception Island Management Group, a report of the activities undertaken. This report shall be submitted no later than six months after the visit. Such reports should be stored and made available to interested parties, SCAR, CCAMLR and COMNAP if requested, to ensure good management.

Bibliography

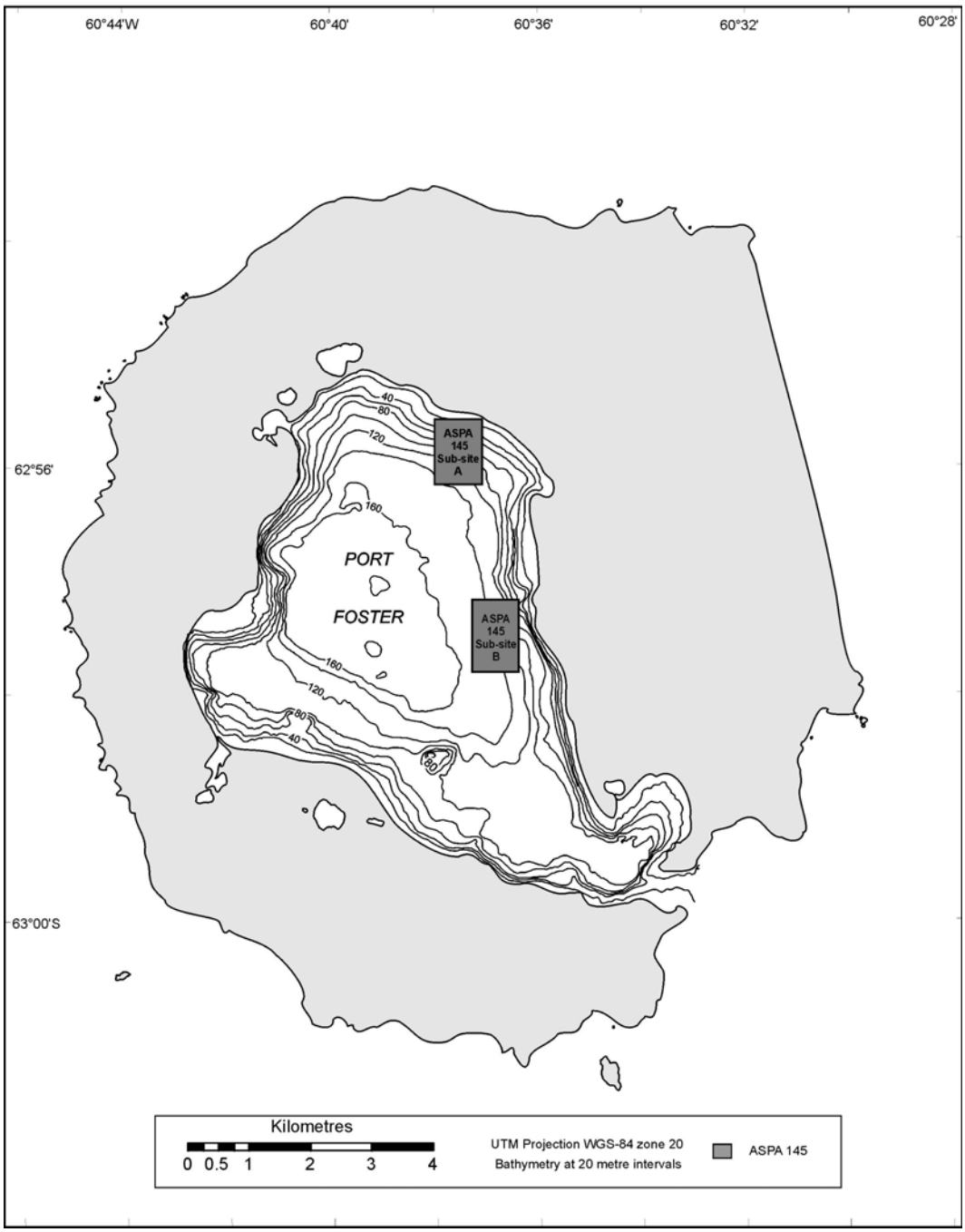
Gallardo,V.A., and J.Castillo, 1970 Quantitative observations on benthic macrofauna of Port Foster (Deception I.), Chile Bay (Greenwich I.). In: *Antarctic Ecology* 1:242-243 (Ed) M.Holdgate. Academic Press London N.York.

Gallardo,V.A. 1987 The sublitoral macrofaunal benthos of the Antarctic shelf. *Environment International* 13:71-81

Retamal, M., R. Quintana, and F. Neira. 1970. Análisis cuali y cuantitativo de las comunidades bentónicas en Bahia Foster, I.Decepción. Ser.Cient.INACH 29:5-15

Valenzuela, E., L. Chavez, F. Munizaga. 1970. Actividad Volcánica en Isla Decepción. Ser. Cient. INACH 1(1):25-39.

Figure 1. Antarctic Specially Protected Area No. 145, Port Foster, Deception Island, South Shetland Islands.



Conservation Strategy for Historic Site and Monument No. 71, Whalers Bay, Deception Island

1. Introduction

1.1 General background

Historic Site and Monument No 71, Whalers Bay (latitude 62° 59'S, longitude 60° 34'W), is located on Deception Island, South Shetland Islands, Antarctica.

The buildings, structures and other artefacts on the shore of Whalers Bay, which date from the period 1906– 931, represent the most significant whaling remains in the Antarctic. Other buildings, structures and artefacts of the British 'Base B' represent an important aspect of the scientific history of the area (1944-1969).

The remains of the Norwegian *Hektor* whaling station at Whalers Bay were originally listed as Historic Site and Monument No. 71 in ATCM Measure 4 (1995) based on a proposal by Chile and Norway. The extent of the historic site was expanded in 2003 by means of ATCM Measure 3 (2003) (see Section 3).

1.2 Brief historical background (1906-1969)

During the 1906-07 austral summer, the Norwegian Captain Adolfus Andresen, founder of the *Sociedad Ballenera de Magallanes*, Chile, began whaling at Deception Island. Whalers Bay served as a sheltered anchorage for factory ships that processed whale blubber. In 1908 a cemetery was established here. The cemetery was partly buried and partly swept away during a volcanic eruption in 1969, at which time it comprised 35 graves and a memorial to ten men who were lost at sea (only one body was recovered). In 1912, a Norwegian company, *Aktieselskabet Hektor*, established the shore-based whaling station in Whalers Bay. *Hektor* whaling station operated until 1931.

During the 1943-44 austral summer, the UK established a permanent base (Base B) in part of the abandoned whaling station. Base B was operated as a British scientific station, latterly by the British Antarctic Survey, until 1969, when it was severely damaged by a mud and ash flow caused by a volcanic eruption, and was abandoned.

The Attachment A contains further detail on the history of Whalers Bay, including a bibliography.

1.3 Aim and objectives of the conservation strategy

The overall aim of the conservation strategy is to protect the values of Whalers Bay Historic Site. The objectives are to:

- ***Maintain and preserve the cultural heritage and the historic values of the site within the constraints of natural processes.*** Minor restoration and conservation work will be considered, whilst it is recognised that natural processes will continue to cause the deterioration of buildings, structures and other artefacts over time.
- ***Prevent unnecessary human disturbance to the site, its features and artifacts.*** Every effort shall be made to ensure that human activity at the site does not diminish its historic values. Any damage, removal or destruction of buildings or structures is

prohibited in accordance with Article 8 (4) of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty.

- ***Permit ongoing clean up of debris.*** Large quantities of waste are present in and around the buildings at Whalers Bay. Wind-scattered debris is present throughout the site. There is also hazardous waste present, including diesel fuel and asbestos. A major clean up of loose debris and waste, identified by conservation and environmental experts as not forming an important part of the historic remains, was undertaken in April 2004. Furthermore, a program of ongoing clean–up of debris resulting from the gradual deterioration of the structures, will be instigated.
- ***Educate visitors to understand, respect and care for the historic values of the site.*** Whalers Bay Historic Site is one of the most visited sites in Antarctica. Information on the historic significance of the site, and the need to conserve its values, will be made available to visitors.
- ***Protect the natural environment of the site.*** Whalers Bay is an integral part of the unique natural environment of Deception Island. Activities at the site should be undertaken in such a way that minimises any environmental impact.

2. Parties undertaking management

Chile, Norway and the UK shall consult within the wider Deception Island Management Group to ensure that the provisions of this conservation strategy are implemented and its aim is met.

3. Description of the site

The site comprises all pre-1970 remains on the shore of Whalers Bay, including those from the early whaling period (1906-12) initiated by Captain Adolfus Andresen of the *Sociedad Ballenera de Magallanes*, Chile; the remains of the Norwegian Hektor Whaling Station established in 1912 and all artefacts associated with its operation until 1931; the site of a cemetery with 35 burials and a memorial to ten men lost at sea; and the remains from the period of British scientific and mapping activity (1944-1969). The site also acknowledges and commemorates the historic value of other events that occurred there, from which nothing remains.

3.1 Site boundary

Figure 1 shows the boundary of the Whalers Bay Historic Site. It comprises most of the beach at Whalers Bay from Neptunes Window to the former BAS aircraft hangar. Boundary markers, which would detract from the aesthetic value of the site, have not been erected. Figure 1 also shows the major historic buildings and structures at the site.

3.2 Historic remains

Table 1 summarises the main buildings, facilities and other structures at the site. More detailed information about these historic structures is provided in Attachment B and their location is shown on Figure 1.

Table 1: Historic remains at the Whalers Bay Historic Site

#[1]	Structure	Map 1[2]
Whaling period		
WB1	Various remains from the whaling period at Deception Island (1906-1931), including: - Water boats and rowing boats - Wells and well head houses - Storage building - Wooden and metal barrels - Rampart dams	14
WB2	Cemetery (1 cross and 1 empty coffin currently visible)	Cross
WB3	Magistrate's residence	3
WB4	Hospital/storage building	2
WB5	Boilers	7
WB6	Cookers and associated equipment, including: - cooking grills - driving wheel - steam winch	7
WB7	Foundation of kitchen/mess building (subsequently reused as the foundations for Priestley House) and piggery	4
WB8	Fuel storage tanks[3]	10, 11
WB9	Half floating dock	12
WB10	Whalers Barracks (subsequently renamed Biscoe House)	5
Scientific period		
WB11	'Hunting Lodge' (UK company Hunting Aerosurveys)	9
WB12	Aircraft hangar	1
WB13	Massey Ferguson tractor	6

[1] Reference number is cross-referenced with the information in Attachment B.

[2] Reference to map location (Figure 1).

[3] A de Havilland DHC-3 Single Otter was removed from the site in April 2004 by BAS for safe-keeping. The intention is to return it to Whalers Bay once it is safe to do so.

3.3 Natural environment

The 1967 volcanic eruption on Deception Island resulted in the deposition of a 1-5 cm layer of ash over Whalers Bay, whilst the 1969 eruption caused a lahar (mud slide) which partly buried the site. Geologically important, and fragile fluvial terraces are located to the north of the whaling station.

The immediate area to the west of the Historic Site, including Kroner Lake, the Ronald Hill crater plain and the valley connecting them, is designated as part of ASPA 140 due to its exceptional botanical and limnological importance.

Further areas of botanical importance are located within the Historic Site. These include a geothermally active scoria outcrop to the east of the whaling station, around the 'Hunting Lodge', inside the two accessible whale oil tanks, around the site of the cemetery, and on the cliffs and massive boulders at Cathedral Crags and Neptunes Window. Elsewhere, timber and iron structures, bricks and mortar, are colonised by various crustose lichens, all of which are common on natural substrata on the island.

Kelp gulls (*Larus dominicanus*) and Antarctic Terns (*Sterna vittata*) breed at Whalers Bay, and Cape petrels (*Daption capensis*) nest in Cathedral Crags, overlooking the site.

4. Management of the site

4.1 Access to, and movement within, the site

- The recommended landing site is directly in front of the whalers' boilers (see Figure 1).
- Motorized vehicles are only to be used within the HSM for scientific, conservation or clean-up activities (e.g. removal of waste).
- Access to buildings or other structures including boilers and tanks, is prohibited unless for management purposes, or for shelter in an emergency.
- Helicopter landings, where necessary for conservation or management purposes, should only take place in the designated landing site (shown in Figure 1) to avoid dangers associated with loose debris and to prevent damaging structures or causing disturbance to wildlife.
- Field camps for scientific or management purposes should be established in the area to the east of the half floating dock as indicated in the map provided in Attachment B. The use of buildings for camping purposes is prohibited except in an emergency.

4.2 Installation, modification and removal of structures

- In accordance with Article 8 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty (1998), the historic structures, facilities and artefacts at the site are not to be damaged, removed or destroyed. Graffiti considered to be of historic importance should not be removed. New graffiti should not be added.
- Conservation and/or restoration work agreed by the Parties undertaking management may be carried out. Work on the buildings and structures may be necessary to render them safe or to prevent damage to the environment.
- No new buildings or other structures (apart from interpretative material agreed by Chile, Norway and the UK, in consultation with the wider Deception Island Management Group) are to be erected at the site.

- Historic remains and artefacts found at other locations on Deception Island, or elsewhere, which originate from Whalers Bay may be returned to the site after due consideration by those Parties undertaking management.

4.3 Visitor guidelines

The general guidelines, outlined in Code of Conduct for Visitors to Deception Island, apply to all visitors, including visits by commercial tour operators (IAATO and non-IAATO affiliated), private expeditions and National Antarctic Programme staff when undertaking recreational visits. In addition, the following site-specific guidelines apply:

- Stay on the seaward side of the station remains, the water boats, and the piles of barrel staves, in order to avoid the geologically important, and fragile, fluvial terraces located to the north of the whaling station.
- Do not go beyond the western end of the airplane hangar in order to avoid entry into ASPA 140 (Site K).
- Do not enter buildings or tanks or sit or climb on the boats.
- Approach oil and fuel tanks with caution. The foundations are vulnerable to erosion and the tanks are at risk of collapse.
- Beware of flying debris in windy conditions.
- Visitors to Neptunes Window should proceed along the beach on the seaward side of the waterboats. They should then walk up the slope towards the 'window' in single file and remaining on existing paths. Extreme caution should be exercised along the steep and friable edge of Neptunes Window. Follow existing paths back down to the beach. Visitors should not attempt to traverse the scree slope to the south, below Cathedral Crags, which is susceptible to rockfalls.

4.4 Information

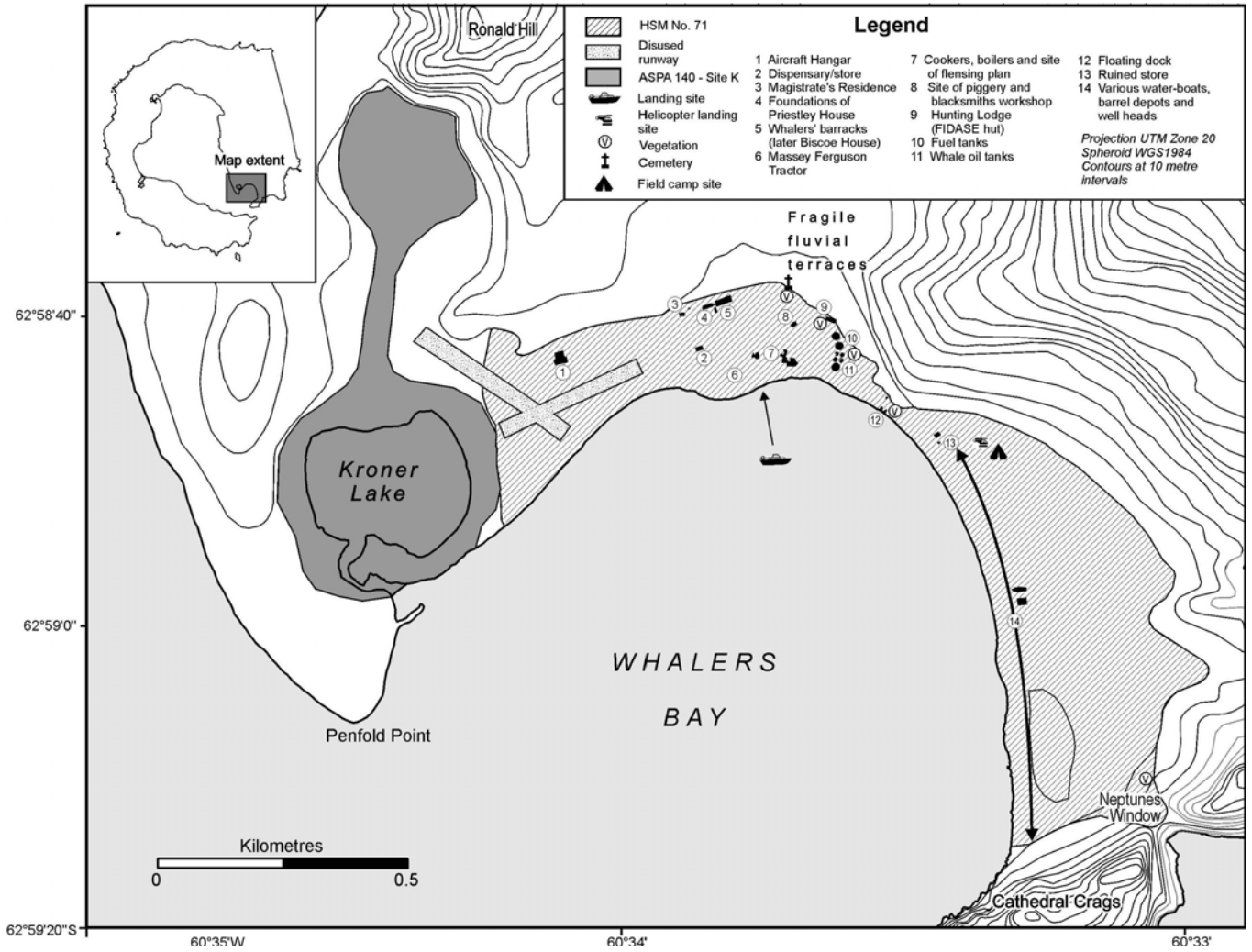
- An informative sign, agreed by the Parties undertaking management, will be located at the recommended landing site. Appropriate and necessary signs advising visitors of any health and safety issues will also be considered.
- Memorial plaques (e.g. listing the names of those buried in the cemetery, or commemorating Captain Adolfus Andresen) may also be located within the site.
- Boundary markers are not considered necessary, as they would detract from the aesthetic value of the site. The boundary generally follows clearly visible natural features.
- The Parties undertaking management will disseminate further information about the significance of the historic site and the need to conserve its values.

4.5 Reporting

The following records are to be maintained by the Parties undertaking management:

- number of tourists landing at the site;
- number of scientists and associated logistics personnel visiting the site;
- conservation and clean-up work carried out; and
- site inspection reports, including reports and photographs on the condition of the historic remains.

Appendix B: Figure 1 - Historic Site and Monument No. 71 - Whalers Bay Deception Island



Attachment A: Brief historic overview of Whalers Bay, Deception Island

Deception Island was first visited by British and United States sealers in the austral summer 1820-21.

In 1905 the Norwegian Adolfus Amandus Andresen established the Chilean whaling company *Sociedad Ballenera de Magallanes* in Punta Arenas, having moved there from Norway in 1894. During the 1906-07 season he anchored his floating factory ship *Gobernador Bories* in Whalers Bay and thereby started an extensive use of the bay for whale processing.

In 1908, a cemetery was established for those who lost their lives at, or near to, Deception Island.

The processing method used by the factory ships was inefficient and wastage was high. In the 1912-1913 season, the Stipendiary Magistrate reported 3,000 rotting carcasses in the harbour. In an attempt to reduce this wastage, a 21 year licence was issued to the whaling company Hvalfangerselskabet *Hektor A/S* of Tønsberg for the establishment of a shore-based whaling station at Whalers Bay. The land station was established for processing the carcasses that had already been flensed and discarded from the floating whale factories. As part of the agreement, the company brought a prefabricated wooden house from Norway for the British magistrate, which was of the same type as the barracks used by the factory workers.

The global slump in whale oil prices, and the introduction of pelagic whaling factory ships, heralded the end of shore-based operations at Deception Island. The station was abandoned as it stood on 26 April 1931, after which it was used as a source of materials for other expeditions and bases on the Antarctic Peninsula (e.g. Port Lockroy).

In November 1928, the Australian Sir Hubert Wilkins and the Canadian Carl Ben Eielson undertook the first powered flight in the Antarctic, taking off from the flat beach at Whalers Bay. In 1934-35 Lincoln Ellsworth (USA) assembled his aircraft the *Polar Star* there, but was frustrated by bad weather and moved his plane to Dundee Island for his successful trans-Antarctic flight.

In January 1936, the British Graham Land Expedition, led by John Rymill, visited Deception Island on the schooner *Penola*. Timber collected from the abandoned whaling station was used for the construction of the expedition's winter headquarters at Debenham Islands.

In 1941, the Royal Navy's HMS *Queen of Bermuda* destroyed remaining fuel stocks at the station to deny them to enemy ships that were attacking and capturing Norwegian whaling vessels in the Southern Ocean.

During the 1943-1944 austral summer, the Royal Navy, as part of the British Government's secret "Operation Tabarin", established a small permanent British base in part of the abandoned whaling station. "Operation Tabarin" was terminated in 1945 and the station was handed over to the organisation that is now the British Antarctic Survey (BAS).

During the summers of 1955-56 and 1956-57, the UK company Hunting Aerosurveys Ltd. conducted vertical air photography of the South Shetland Islands and the northern Antarctic Peninsula with Canso flying boats based at Whalers Bay. A total of 116,000 km^2 of previously unmapped terrain were photographed.

In 1957, HRH Prince Philip visited Base B, Deception Island, aboard the Royal Yacht *Britannia.*

In 1969, the remains of Hektor Whaling Station, Base B and the Whalers cemetery were partially destroyed and buried by a lahar resulting from a volcanic eruption. The station was abandoned, and Whalers Bay has not been reoccupied since then.

In 1992, a partial clean-up of hazardous and non-hazardous waste was carried out by BAS. In 2004, BAS carried out a further clean-up of Base B and removed the wreck of the BAS de Havilland DHC-3 Single Otter from beside the aircraft hanger for safe keeping.

Whalers Bay is currently one of the most visited sites in the Antarctic.

Bibliography

Downie, R. and J.L. Smellie. 2001. A Management Strategy for Deception Island. British Antarctic Survey.

Hacquebord, L. 1992: Hector station on Deception Island (South Shetland Islands, Antarctica), an environmental assessment study of a whaling-station. Circumpolar Journal 1-2. Groningen, Netherlands.

Headland, R.K. 1986: Hvalfangernes gravsteder i Antarktis. Sandefjordmuseene Årbok 1981-86.

Headland, R.K. 2001: Antarctic Chronology, extract for Deception Island. SPRI, Cambridge, UK.

Rossnes, Gustav. 1997: Hvalfangstbase og kulturminne, Hektor Hvalfangststasjon. Norsk Sjøfartsmuseum, Årsberetning 1996. Oslo.

Valencia, J. and R. Downie (eds.). 2002. Workshop on a Management Plan for Deception Island. Instituto Antártico Chileno.

Attachment A: Description of the historic elements in HSM No. 71

WB1	
Remains:	**Various remains from the whaling period at Deception Island, including:** • Water boats • Well houses • Storage building • Barrel depots • Rowing boats • Wells • Rampart dams
Location:	Item 14 on the map of the site (Appendix B). Along the beach, east of the whaling station, on the east side of Whalers Bay.
Function and Description:	Both the shore station and the floating factory ships used steam power. Planks were placed vertically in the sand as a dam to collect melt water from the glacier in the valley behind. Wells were used to supply fresh water. The many water boats were used to transport fresh water to the factory ships. Rowing boats were used for various tasks, mainly for transporting flensers to strip the blubber off the whales beside the floating factories. In the earliest phase of whaling, wood and later iron barrels were used to store and transport the oil. The use of barrels continued at the shore stations until the late 1920s.
Present state (2003):	Over a distance of approximately 1 km, there are 5 water boats, 2 rowing boats, 6 well houses, 1 storage house, 5 wooden barrel depots, 1 iron barrel depot and a number of dams. Between the two easterly pump houses, a well remains intact.

Rowing boat (in the water) and water boat (on deck) used in the whaling industry. From the factory ship "Sir James Clark Ross".
Photographer unknown (NPI Archives).

One of the remaining water boats at Whalers Bay (1996).
Photo: Birgit Njåstad (NPI).

The remains of the wooden barrels at Whalers Bay.
Photo: Rod Downie (BAS).

WB2	
Structure:	**Cemetery (1908)**
Location:	Marked with cross on the map of the site (Appendix B)
Function and Description:	In 1908 the whalers established a cemetery. A total of 34 Norwegian, Swedish, Chilean and Russian whalers were buried here in the first half of the century, as well as one member of the organisation that is now BAS, in 1953. A memorial was also erected to commemorate ten men lost at sea (only one body was recovered). The cemetery was a neat and orderly site enclosed by a wire fence and with impressive stone monuments and carved wooden crosses marking the separate graves.
Present state (2003):	In 1969 the site was partly buried and partly swept away when volcanic activity caused a lahar (a mud and ash slide). In February 2002, a cross belonging to Peder Knapstad, a Norwegian carpenter who was buried in the cemetery in 1931, was recovered and re-erected at the site of the cemetery, close to the remains of a coffin that is partially visible.

The cemetery at Whalers Bay (1930-31). Photo Gunnar Isachsen (NPI Archives)

The remains of the cemetery: one grave and the cross of Peder Knapstad (2002). Photo: Susan Barr (DCH)

WB3	
Structure:	**The Magistrate's House**
Location:	Item 3 on the map of the site (Appendix B).
Function and description:	This building was the residence of the British magistrate during the operation of *Hektor* Whaling Station. It was constructed of machine planed planks with a tongue, groove and dovetail locking in each corner. The moulding and panelled door are typical of buildings from the World War I period in Norway. The building has a sheltered porch with a decorative baluster as a panel. The fretwork on the porch and the decorative details are characteristic of the Swiss style that was common in Norwegian building practices at that time. The building contained an office, a bedroom and a living room. A 10-meter flagpole was also located by the building.
Present state (2003):	The Magistrate's House was not significantly damaged by volcanic activity, but recently the roof has blown off and lies nearby.

The Magistrate's residence . From a postcard with photo by A. Th. Larsen (NPI Archives)

The Magistrate's residence in 2002. Photo: Susan Barr (DCH)

WB4	
Structure:	**Hospital/ laboratory/ storage building/**
Location:	Item 2 on the map of the site (Appendix B).
Function and Description:	This building originally served as the hospital and laboratory and housed the doctor's office. The building was erected by the Norwegian whaling company, as indicated by notes inscribed on one of the panels. It was later used as a storage building by the UK.
Present state (2003):	The building is now half buried in mud and ash.

The hospital/ laboratory in 1946
Photo: Reece, A.W. (BAS archives)

The hospital/storage building/ laboratory in its present condition (2002)
Photo: Susan Barr (DCH)

WB5	
Structure:	**Steam Boilers**
Location:	Item 7 on the map of the site (Appendix B).
Function and Description:	The boilers were used to provide steam for processing of the whale meat and bones.
Present state (2003):	The boiler house has collapsed and is partly disintegrated, but 5 small and 4 large boilers still remain. The large boilers show extensive signs of corrosion.

The boilers in their present condition in the middle of the picture (1996).
Photo: Birgit Njåstad (NPI)

WB6	
Structure:	**Boilers/Cookers**
Location:	Item 7 on the map of the site (Appendix B).
Function and Description:	Boilers/cookers were used to extract oil from the whale meat and bones and to dry guano. The meat and bone boiling took place in two separate buildings - one on each side of the flensing platform. The boilers were arranged in two rows. The meat and bones were loaded into the boilers from a platform (loft) above the boilers. The guano drying took place in a building behind the flensing platform.
Present state (2003):	On the west side of the flensing platform are 10 boilers from the two original boiler rows. Of the smaller boilers with a larger diameter originally to the left of the boilers only two remain. On the east side of the flensing platform, 10 boilers are left in two rows together with a row of four boilers of the lower, wider type. Five settling tanks are found north of the boilers. The remains of the boiler kettles used in the process of drying the guano are sited near the guano factory. A large number of cooking grills are found on the remains of the boiler platforms and are also scattered around the boilers. On the west side of what was the flensing platform there are rail tracks, on which a trolley was used to transport meat and bones from the flensing platform to the boilers.

The Boilers/Cookers protected in buildings (1929-30). Meat and bone cookers to the left and right, guano dryers at the back.
Photo by Gunnar Isachsen (NPI Archives)

The Boilers/Cookers in their present condition (1996).
Photo: Birgit Njåstad (NPI)

WB7	
Structure:	**Foundation of the kitchen/mess building and piggery**
Location:	Item 4 on the map of the site (Appendix B).
Function and Description:	The kitchen/mess was an essential part of the whaling station. The kitchen/mess building was destroyed by a fire in 1946. A fibreglass hut, Priestley House, was built over the foundations.
Present state (2003):	Only the foundation of the mess still remains today. Although the fibreglass hut was removed, some items, including the stove and fireplace remain.

The fiberglass hut, Priestley House, built on the foundation of the kitchen/mess (1967).
Photo by D. R. Gipps (BAS Archives)

The foundation of the kitchen/mess building (2002).
Photo: Susan Barr (DCH)

WB8	
Structure:	**Fuel oil and whale oil storage tanks**
Location:	Item 10 and 11 on the map of the site (Appendix B).
Function and Description:	During the early whaling period at Whalers Bay, wooden barrels were used for storage of whale oil. Later these were replaced by iron barrels and following World War I by large steel tanks, also used for storage of fuel.
Present state (2003):	The southerly of the two large fuel storage tanks, which was shot through by the Royal Naval vessel *Queen of Bermuda* in 1941 to prevent enemy raiders from using the fuel, contains approximately 37 m^3 of highly weathered diesel below the shell hole and with oil leakage to the ground outside. The roofs of the smaller tanks are rusting through and collapsing. Entry into the tanks is therefore dangerous. Water erosion is causing the south-westerly tank to lean.

The fuel oil and whale oil tanks as they appeared in 1961. Photo by John Killingbeck (BAS Archives)

The fuel oil and whale oil tanks in their present condition (1996). Photo: Birgit Njåstad (NPI)

WB9	
Structure:	**Floating dock**
Location:	Item 13 on the map of the site (Appendix B).
Function and Description:	The floating dock is U-shaped, and was placed underneath ships to lift either the bow or stern out of the water to enable repairs to the underside of the vessel.
Present state (2003):	The floating dock is partly sunk in the sand, but in relatively good condition, although corroded.

The floating dock in its present state (1996). Photo: Birgit Njåstad (NPI)

WB10	
Structure:	**Whalers Barracks (Biscoe House)**
Location:	Item 5 on the map of the site (Appendix B).
Function and description:	The building was originally a barracks for the workers at Hektor Whaling Station. As with the Magistrate's House, it was constructed of machine planed planks having a tongue, groove and dovetail locking in each corner. The structural interior is comparable to that of the Magistrate's House. The barracks were most likely constructed at the same time, and most likely also delivered by the same lumber supplier as the Magistrate's House. After the UK occupied the barracks, the building was renamed Biscoe House. A room housing a diesel generator was added to the south-west end of the barracks.
Present state (2003):	The building is now half-destroyed and partly filled with mud from the lahar caused by the 1969 eruption.

The barracks (Biscoe House) in the foreground. From a postcard with photo by A. Th. Larsen (NPI Archives)

Biscoe House in its present condition (1996). Photo: Birgit Njåstad (NPI)

WB11	
Structure:	**Hunting Lodge (1955)**
Location:	Item 9 on the map of the site (Appendix B).
Function and Description:	Wooden barracks used from 1955 to 57 by the UK-based Hunting Aerosurveys during an early aerial survey expedition and thereafter by the organization that is now BAS. This prefabricated hut was built by the British company *Bolton and Paul.*
Present state (2003):	The building structure is in relatively good repair, but the inside has been gutted. Window and door openings are uncovered. The foundations of the west wall are in danger of collapsing.

Hunting Lodge under construction (1955) Reproduced with the permission of Simmons Aerofilms

Hunting Lodge in its present condition(2002) Photo: Rod Downie (BAS)

WB12	
Structure:	**Hangar**
Location:	Item 1 on the map of the site (Appendix B).
Function and Description:	Between 1960-1962, an aircraft hangar was constructed a few hundred metres west of the whaling station to support the British logistical and aerial survey work. The hangar was used for the repair, maintenance and storage of the aircraft.
Present state (2003):	The hangar is stable but in poor condition. A De Havilland DHC-3 Otter was removed from the site in April 2004 for safe-keeping. The intention is to return it to Whalers Bay once it is safe to do so.

The hangar under construction (1961).
Photo by John Killingbeck (BAS Archives)

The hangar in its present condition (2002).
Photo: Susan Barr (DCH)

WB13	
Structure:	**Massey Ferguson Tractor**
Location:	Item 6 on the map of the site (Appendix B).
Function and Description:	The Massey Ferguson tractor was used to tow aircraft, and for other works around Base B.
Present state (2003):	The tractor was mostly buried by the lahar caused by the 1969 eruption. Only the top of the tractor is visible.

Massey Ferguson Tractor at aircraft hangar, Deception Island (1963 or 1964)
Photo: Possibly Mole, L..U, BAS archives)

The Massey Ferguson Tractor on the beach at Whalers Bay (1999).
Photo: Rod Downie (BAS)

Code of Conduct for the Deception Island ASMA 4 Facilities Zone, including Decepción Station (Argentina) and Gabriel de Castilla Station (Spain)

1. Introduction

The Deception Island ASMA includes a Facilities Zone within which is located Decepción Station (Argentina) and Gabriel de Castilla Station (Spain). Figure 1 shows the extent of the Facilities Zone, which includes the two stations, the surrounding beach area, and a small unnamed lake to the west of Crater Lake from which freshwater is extracted. Activities within this zone are to be undertaken in line with this Code of Conduct, the aims of which are to:

- encourage the pursuit of scientific investigation on Deception Island, including the establishment and maintenance of appropriate supporting infrastructure;
- preserve the natural, scientific and cultural values of the Facilities Zone;
- safeguard the health and safety of station personnel.

This Code of Conduct summarises existing station procedures, a copy of which is available (Spanish language version only) at Decepción and Gabriel de Castilla stations.

Staff and visitors will be made aware of the contents of this Code of Conduct during pre-deployment training programmes and briefing sessions on board ship prior to arrival at the station.

A copy of the complete Deception Island ASMA Management Package will be kept at Decepción Station and Gabriel de Castilla Station, where relevant maps and information posters about the ASMA will also be displayed.

2. Buildings and services

2.1 Buildings

- An Environmental Impact Assessment (EIA) must be undertaken for the construction of any new permanent station buildings in line with Annex I to the Environmental Protocol.
- An EIA must also be undertaken for the quarrying of rock to maintain existing buildings, in line with Annex I to the Environmental Protocol, as well as with the prior approval of the national authorities of Argentina (Decepción Station) or Spain (Gabriel de Castilla Station).
- Consideration will be given to reusing existing sites when practicable, in order to minimise disturbance.
- Buildings are to be maintained in good condition. Buildings not currently in use are to be routinely checked, and assessed for likely removal.
- Work-sites are to be kept as neat as possible.

2.2 Power Generation

- Maintain generators in good condition, and undertake routine inspections, so as to minimise emissions and possible fuel leaks.
- Ensure economy in power consumption and hence fuel usage and emissions.
- The use of renewable energy sources will be encouraged, where appropriate.

2.3 Water Supply

- Handling or disposing of wastes, fuel or other chemicals within the stations' water catchment area is prohibited.
- Use of vehicles within the water catchment area will only be for essential purposes.
- Ensure that regular tests of water quality, as well as routine cleaning of water holding tanks, are conducted.
- Regulate water consumption, so as to avoid unnecessary extraction.

3. Fuel handling

- The integrity of bulk fuel storage facilities, supply lines, pumps, reels and other fuel handling equipment will be regularly inspected.
- At both stations, fuel storage includes secondary containment. Drummed fuel should be stored inside. Storage areas should, as far as practicable, be properly ventilated, and sited away from electrical services. Storage facilities should also be sited away from accommodation facilities for safety reasons.
- All practicable measures will be undertaken to avoid fuel spills, in particular during fuel transfer (e.g. ship to shore transfer by pipeline or zodiac, refuelling day tanks).
- Any fuel, oil or lubricant spills will be reported immediately to the Station Leader, and subsequently to the National Authority.
- Ensure that adequate and sufficient spill response equipment (e.g. absorbents) is kept in a known location and available to deal with any spills.
- Station personnel will be trained in how to use spill response equipment. Training exercises will be undertaken at the beginning of each season.
- In case of fuel spills, response actions will be undertaken in line with the Oil Spill Contingency Plan held at each station.
- Oily wastes will be packaged in appropriate containers and disposed of according to station procedures.

4. Fire prevention and fire-fighting

- Signs indicating no-smoking areas, and flammable substances, will be displayed as appropriate.
- Fire fighting equipment will be available at fuel storage sites and elsewhere. Such equipment will be clearly marked.

5. Waste Management

- Waste management, including waste reduction and the provision of equipment and appropriate packaging material, will be considered in the planning and conducting to all activities at Decepción and Gabriel de Castilla stations.
- All station personnel will be instructed on the provisions of Annex III to the Environmental Protocol.
- A waste management co-ordinator will be appointed at each station.

- Wastes will be segregated at source and stored safely on site prior to removal. After each summer season, wastes generated at Decepción and Gabriel de Castilla stations will be removed from the Antarctic Treaty Area.
- Regular tests of water effluents discharged into Port Foster will be undertaken.
- Any substances that may adversely affect the working of effluent treatment plants will not be disposed of through the drainage system (including toilets and wash basins).
- Cleaning up past waste disposal sites on land and abandoned work sites will be considered a priority, except where removal would result in more adverse environmental impacts than leaving the structure or waste material *in situ*.
- Personnel from both stations should periodically participate in clean-up activities within the facilities area, so as to minimise any scattered wastes around the stations.
- At the end of each summer season, activities connected to clean-up and removal of wastes will be reported to the appropriate national authority.

6. Other Operational Issues

6.1 Communications

- The installation of permanent or temporary aerials is to be carefully considered through the environmental evaluation procedures in place.
- VHF Marine Channel 16 will be monitored.
- All station personnel leaving the Facilities Zone must be equipped with a VHF radio.

6.2 Use of vehicles and small boats

- Vehicles should only be used around and between the stations when necessary.
- Keep to established tracks within the station area where practicable.
- Refuelling and servicing of vehicles will be carried out at the facilities provided for these purposes. Every effort should be made to avoid spills during refuelling and servicing.
- Do not use vehicles close to sensitive scientific equipment, across flora or near concentrations of fauna, or unnecessarily within the water-catchment area.
- Small boats operating out of Decepción or Gabriel de Castilla Station are only to be used within Port Foster, when weather conditions allow, and principally for scientific and logistic reasons. No small boats will be used outside Port Foster. Avoid the use of small boats close to cliffs and/or glaciers, to avoid rock or ice falls.
- When operating one boat, a second boat will be on stand-by, at the Station, for immediate support in an emergency.
- Small boats will be operated by at least two people. Essential equipment will include boating immersion suits, life jackets and VHF radios.

6.3 Aircraft Operations

- Helicopters will generally take off from and land at the helipad at Decepción Station. Occasionally, operational reasons may require them to take off from, or land at, other appropriate locations within the Facilities Zone.

6.4 Field travel

- All wastes from field parties, except for human wastes (faeces, urine and grey water) will be returned to the stations for safe disposal.
- The Station Leader and/or the Station Environment Officer will brief field parties on environmental management in the field, the location of protected areas, and the provisions of the ASMA Management Plan.
- No uncooked poultry products will be used by field parties.
- All field parties will be equipped with VHF radios.

7. Protected Areas

- Three terrestrial sub-sites of ASPA No. 140 (Site B - Crater Lake, Site C - Unnamed hill, southern end of Fumarole Bay, and Site D - Fumarole Bay), are located close to the Facilities Zone. Station personnel will be made aware of the location of, and restrictions on access to, all protected areas on Deception Island. Information about these protected areas, including a map showing their location, will be prominently displayed at both stations.

8. Flora and fauna

- Any activity involving the taking of, or harmful interference with, native flora or fauna (as defined in Annex II to the Protocol) is prohibited unless authorised by a permit issued by the appropriate authority.
- An appropriate distance is to be maintained from birds or seals which is safe and avoids causing them disturbance.
- Staff and visitors are to walk slowly and carefully when near wildlife, in particular avoiding birds which are nesting, moulting, crèching or returning from foraging trips. Give 'right of way' to wildlife at all times.
- Birds are not to be fed on waste food scraps from the stations. Food wastes will be secured to prevent scavenging by birds.
- All reasonable precautions will be taken to avoid the introduction of micro-organisms and any other non-native species, or species from other Antarctic sites.
- The introduction of herbicides, pesticides or other harmful substances is prohibited.
- At the end of each summer season, a report on activities involving the taking of, or harmful interference with, native flora and fauna will be forwarded to the appropriate national authorities.

9. Tourist visits to the Facilities Zone

- Any visits to Decepción Station (Argentina) or Gabriel de Castilla Station (Spain) may only be undertaken at the discretion of the respective Station Leader. Contact can be made via VHF Marine Channel 16. Visits will only be allowed if they do not interfere with scientific or logistical work.
- Visits are to be undertaken in line with Recommendation XVIII-1.

- Station Leaders will co-ordinate visits to stations with Expedition Leaders.
- Visitors will be informed about the principles of this Code of Conduct, as well as the ASMA Management Plan.
- The station leader will appoint a guide (English speaking, when appropriate and possible), to escort visitors around the station, in order to ensure compliance with the measures included in this Code of Conduct.
- The national authorities operating Decepción or Gabriel de Castilla Stations will inform IAATO of any increase in the risk of volcanic eruption. The stations shall notify any ships in the area of any immediate danger.

10. Co-operation and sharing of resources

- Both stations will co-ordinate and periodically conduct joint emergency evacuation, oil spill response and fire-fighting exercises.

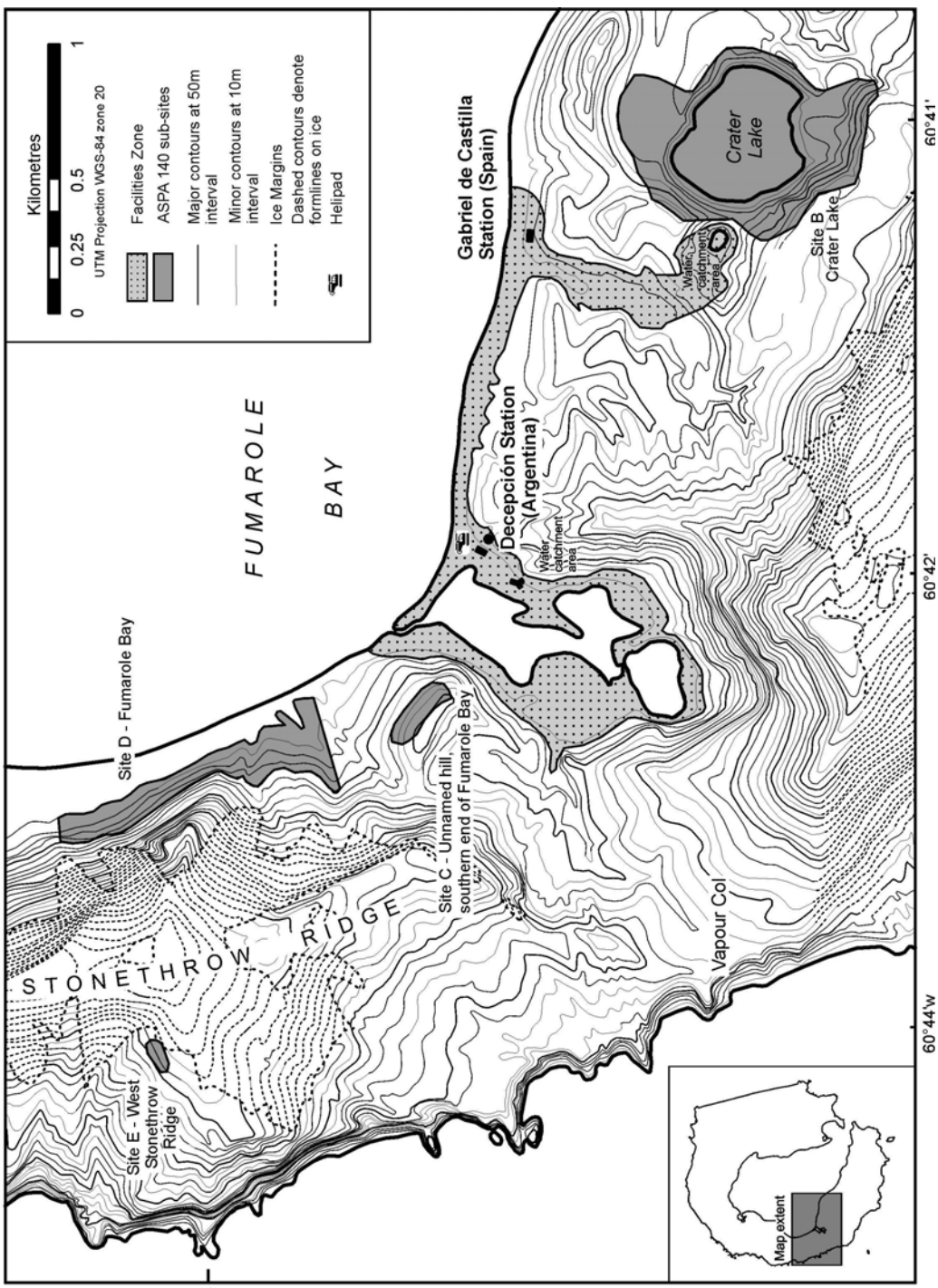


Figure 1. Facilities Zone

Code of Conduct for Visitors to Deception Island

1. Introduction

This code of conduct has been produced for commercial tour operators (IAATO and non-IAATO affiliated), private expeditions and National Antarctic Programme staff when undertaking recreational visits to Deception Island.

There are four sites on Deception Island which may generally be visited: Whalers Bay, Baily Head, Pendulum Cove, and Telefon Bay (east). Stancomb Cove, in Telefon Bay, is also used as an anchorage for yachts. Visits to Decepción Station (Argentina) and Gabriel de Castilla Station (Spain) are only permitted by prior agreement with the respective Station Leaders. Tourist or recreational visits to other sites on the island are discouraged.

2. General Guidelines

The following general guidelines apply to all the above sites visited on Deception Island:

- Visits are to be undertaken in line with the Management Plan for Deception Island ASMA 4 and with Recommendation XVIII -1.
- All visits must be planned and conducted taking into account the significant risk to human life posed by the threat of volcanic eruption.
- Expedition Leaders of cruise ships and Masters of national programme support vessels are encouraged to exchange itineraries in order to avoid two ships unintentionally converging on a site simultaneously.
- Vessels approaching or departing from Port Foster must announce over VHF Marine Channel 16 the intended time and direction of passage through Neptunes Bellows.
- For commercial cruise operators, no more than 100 passengers may be ashore at a site at any time, accompanied by a minimum of one member of the expedition staff for every 20 passengers.
- Do not walk on vegetation such as moss or lichen. The flora of Deception Island is of exceptional scientific importance. Walking on the alga *Prasiola crispa* (associated with penguin colonies) is permissible as it will not cause it any adverse disturbance.
- Maintain an appropriate distance from birds or seals which is safe and does not cause them disturbance. As a general rule, maintain a distance of 5 metres. Where practicable, keep at least 15 metres away from fur seals.
- In order to prevent biological introductions, carefully wash boots and clean clothes, bags, tripods and walking sticks before landing.
- Do not leave any litter.
- Do not take biological or geological souvenirs or disturb artefacts.
- Do not write or draw graffiti on any man-made structure or natural surface.
- Scientific equipment is routinely deployed during the austral summer by National Antarctic Programmes at a number of locations on Deception Island. The Spanish Antarctic Programme deploy equipment for important and necessary seismic monitoring. Such equipment is highly sensitive to disturbance. At least 20 metres must be maintained

from seismic monitoring equipment, which will be marked with a red flag. This distance is under examination - any revisions will be provided as necessary.

- Do not touch or disturb other types of scientific instruments or markers (e.g. wooden stakes marking botanical plots).
- Do not touch or disturb field depots or other equipment stored by National Antarctic Programmes.

3. Site Specific Guidelines

3.1 Whalers Bay (latitude 62°59'S, longitude 60°34'W)

Whalers Bay is the most visited site on Deception Island, and one of the most visited sites in the Antarctic. It is a small bay immediately to the east after passing into Port Foster through Neptunes Bellows. It was named by the French explorer Jean-Baptiste Charcot because of the whaling activity that took place there. The site includes the remains of the Norwegian Hektor Whaling Station, the site of the cemetery and the abandoned British 'Base B', as well as the whaling remains along the length of the beach, some of which pre-date the whaling station. Appendix 3, Conservation Strategy for Whalers Bay Historic Site and Monument No. 71, contains further information about Whalers Bay.

- Visits to Whalers Bay must be undertaken in line with the Conservation Strategy for Whalers Bay Historic Site and Monument No 71.

3.2 Pendulum Cove (latitude 62º56'S, longitude 60º36'W)

Pendulum Cove (see figure 1) is a small cove on the north east side of Port Foster. It was named by Henry Foster of the British Royal Naval vessel HMS *Chanticleer* who, in 1828, undertook magnetic observations there using pendulums. The gently sloping ash and cinder beach leads to the remains of the abandoned Presidente Pedro Aguirre Cerda Station (Chile), Historic Site and Monument No. 76, which was destroyed by a volcanic eruption in 1967. Thermal springs along the shallow shoreline of Pendulum Cove offer visitors the opportunity to 'bathe' in warm water.

- Water temperatures in excess of 70° C have been recorded at Pendulum Cove. Bathers are to be made aware of the potential risk of scalding. Expedition staff should carefully choose a 'bathing area' for passengers where the hot water mixes with the cooler sea-water.
- Shoes or boots should be worn when entering the water to avoid scalding ones feet.
- Educational visits to Historic Site and Monument No. 76 are welcomed. The remains are a dramatic visual representation of the force of a volcanic eruption. At least one member of the expedition staff is to be present at the site during visits. For safety reasons, large groups of visitors are not to approach the site simultaneously. Do not go inland beyond the station ruins.
- Equipment is routinely deployed by the Spanish Antarctic programme for important and necessary seismic monitoring at Pendulum Cove. A distance of 20 metres must be maintained from seismic monitoring equipment, which will be marked with a red flag.
- Do not walk on vegetated areas. Elsewhere, tread gently to avoid disturbing ground surfaces which may host inconspicuous biota.

- The slope to the south east of HSM No. 76 is designated as Site G of ASPA 140 and must not be entered without a permit issued by the appropriate National Authority. This surface, created during the 1969 eruption, is being colonized by numerous moss and lichen species. Two species of moss that grow here are not found anywhere else in the Antarctic.

3.3 Baily Head (latitude 62°58'S, longitude 60°30'W)

Baily Head (see figure 2) is a rocky headland exposed to the Bransfield Strait on the south east coast of Deception Island. It was named after Francis Baily, the English astronomer who reported on Foster's magnetic observations at Pendulum Cove. The site comprises the southern end of a long linear beach which runs along most of the eastern side of Deception Island, and a narrow valley that rises steeply inland to a semi-circular ridgeline, giving the impression of a natural 'amphitheatre'. It is bounded to the north by a large glacier and to the south by the cliffs of Baily Head. A substantial melt-stream runs through the centre of the valley during the austral summer.

Within this unnamed valley, and to the south of it, is one of the largest colonies of chinstrap penguins (*Pygoscelis antarctica*) in Antarctica - it is estimated that 100,000 pairs breed here. Brown skuas (*Catharacta antarctica lonnbergi*), cape petrels (*Daption capensis*) and snowy sheathbills (*Chionis alba*) also nest at Baily Head. Antarctic fur seals (*Arctocephalus gazella*) haul out along the beach in large numbers during the austral summer.

- No more than 350 visitors are to land at Baily Head in any one day.
- Total visiting time is not to exceed 6 hours in any one day.
- Staff and visitors are to exercise extreme caution when undertaking landings by small boat - such landings may be hazardous due to the swell resulting from the steeply sloping beach.
- Maintain a safe distance from the rock cliffs and the glacier front to avoid falling rock or ice.
- Maintain an appropriate and safe distance from birds or seals which does not cause them disturbance. Remain outside the natural 'boundary' of discrete colonies.
- Walk slowly and carefully when near to penguins, in particular when birds are nesting, moulting, crèching or returning from foraging trips. Give 'right of way' to penguins at all times.
- Hiking between Baily Head and Whalers Bay is discouraged because of environmental and safety concerns.

3.4 Telefon Bay (east) (latitude 62°56'S, longitude 60°40'W)

Telefon Bay (see figure 3) was named after the whaling vessel *Telefon* which was moored in the bay for repairs in 1909 by Adolfus Amandus Andresen, founder of the company Sociedad Ballenera de Magallanes. At the easternmost end of Telefon Bay a gently sloping beach leads to a shallow valley which rises sharply to the rim of an unnamed volcanic crater.

- Exercise extreme caution when approaching the steep edge of the crater lip. The soil is friable and may collapse underfoot.

3.5 Decepción Station (Argentina) and Gabriel de Castilla Station (Spain)

Visits to Decepción Station (Argentina) and Gabriel de Castilla Station (Spain) may only be undertaken with the prior agreement of the appropriate Station Leader. Visits to the stations must be undertaken in line with the Code of Conduct for the Deception Island Facilities Zone (Appendix 4).

Figure 1. Pendulum Cove

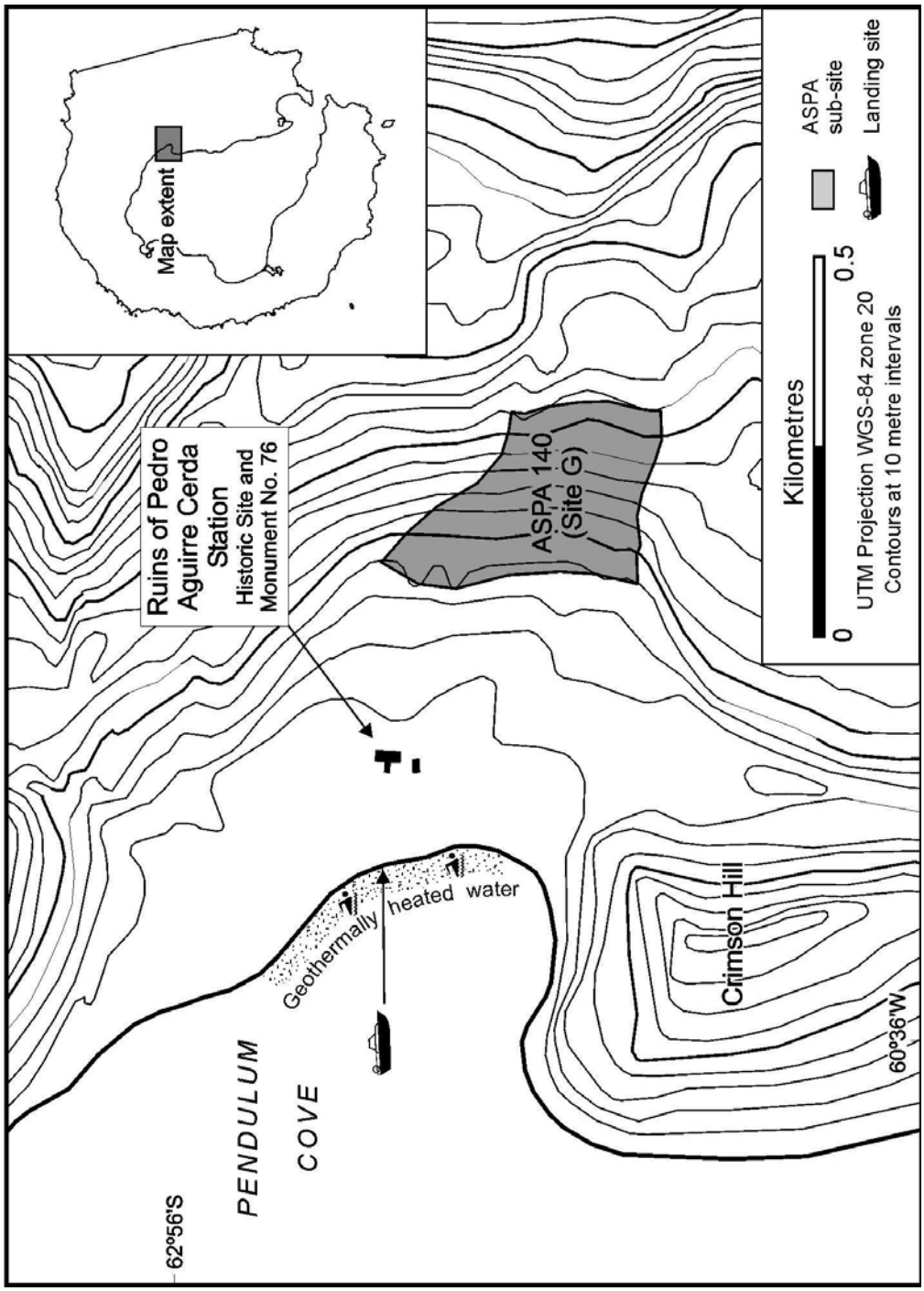
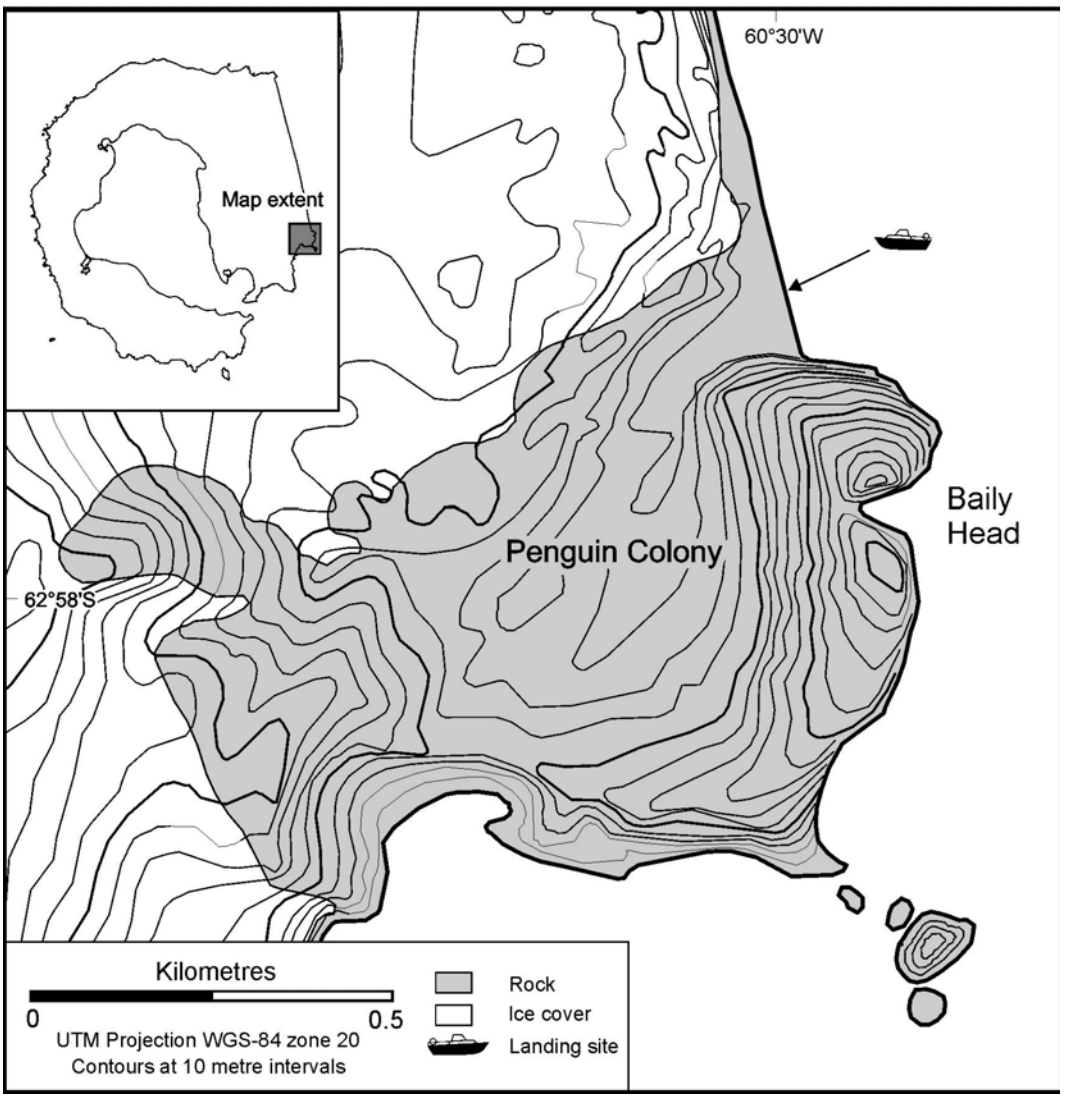


Figure 2. Baily Head



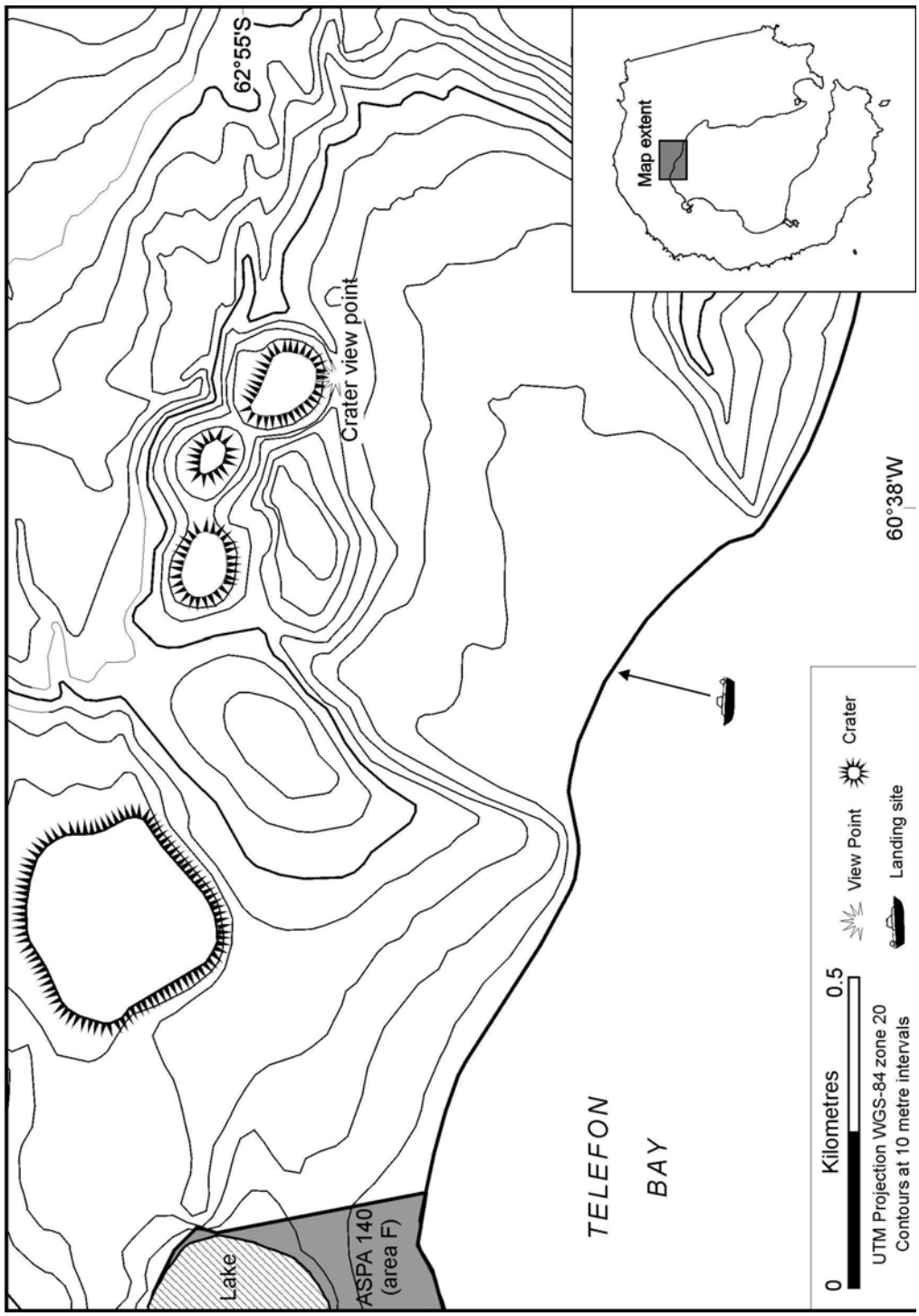


Figure 3. Telefon Bay (East)

Alert Scheme and Escape Strategy for volcanic eruptions on Deception Island[1]

Spanish seismologists monitor seismographs on the island for about three months each year (generally between late November and late February). That period also corresponds to the major period of human activity on the island.

The schematic arrangement presented in Table 1 is adapted from that used by the Alaska Volcano Observatory (United States Geological Survey;

http://www.avo.alaska.edu/avo4/updates/color_code.html).

This type of scheme is well suited to Deception Island.

Masters of vessels intending to enter Deception Island, or pilots of aircraft flying near to the island, should pay attention to any bulletins on the current state of activity of the volcano that are issued from Gabriel de Castilla Station (Spain), or by an appropriate spokesperson representing a national Antarctic programme operating in the Antarctic (e.g. Argentine Antarctic Institute, British Antarctic Survey, National Science Foundation (USA) or Spanish Antarctic Programme).

Table 1. Alert scheme for eruptions on Deception Island (modified after system used by USGS Alaska Volcano Observatory).

Colour code	Alert state	Description
GREEN	No eruption is anticipated.	Volcano is quiet, in dormant state. Normal seismicity and fumarolic activity occurring. This is the normal alert state for Deception Island.
YELLOW	An eruption is possible in the next few weeks and may occur with little or no additional warning.	Volcano is restless; an eruption may occur. Increased levels of small earthquakes detected locally and/or increased volcanic gas emissions.
ORANGE	Explosive eruption occurring or is possible within a few days and may occur with little or no warning. Ash plume(s) not expected to reach 10,000 m above sea level.	Volcano in eruption, or eruption may occur at any time. Increased numbers and/or magnitudes of local earthquakes. Extrusion of lava flows (non-explosive eruption) may be occurring.
RED	Major explosive eruption is in progress or expected within 24 hours. Large ash plume(s) expected to exceed 10,000 m above sea level.	Significant eruption is occurring or major explosive activity expected at any time. Strong earthquake activity detected even at distant monitoring stations.

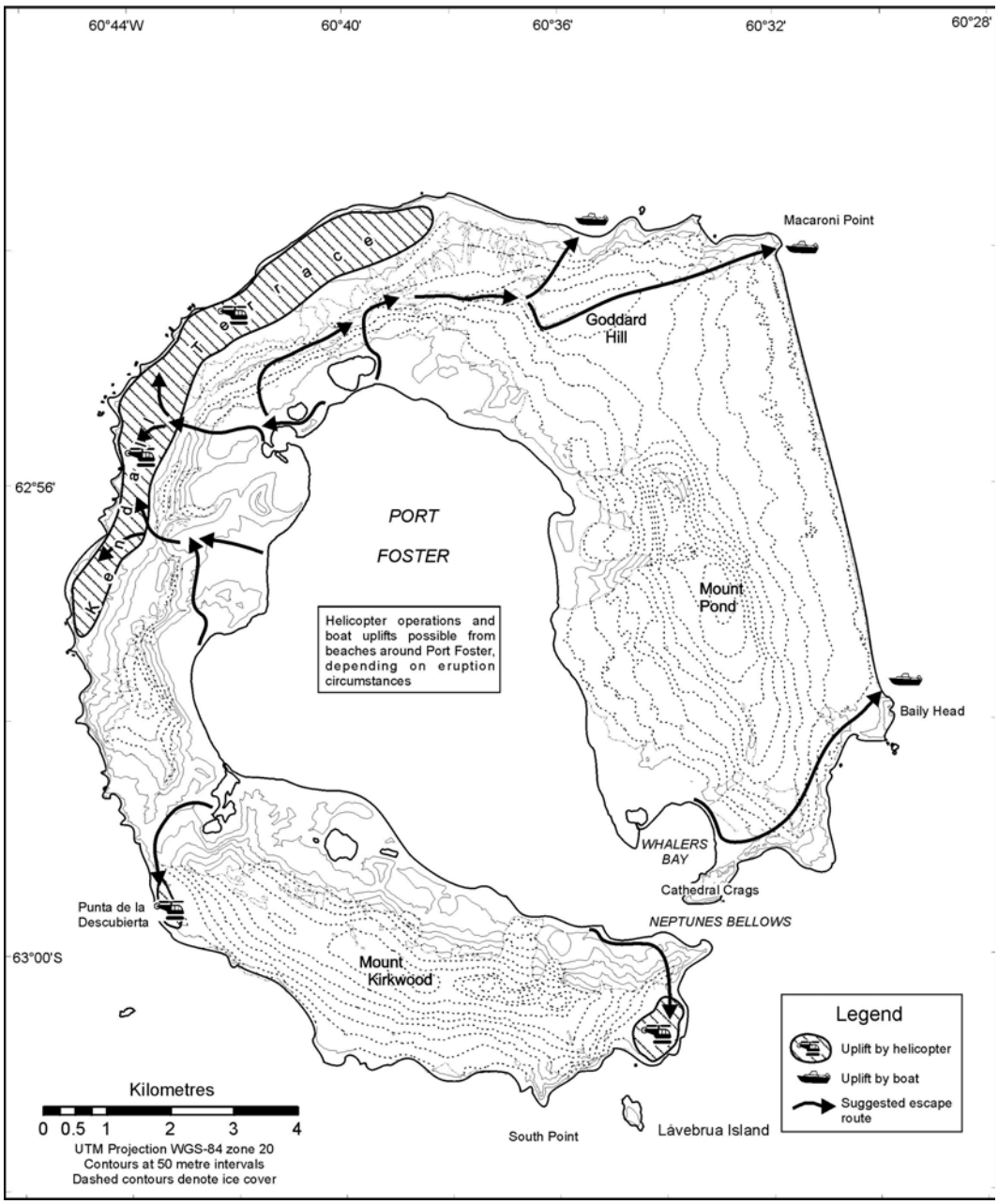
[1] Adapted from Smellie, J.L. (2002) Volcanic Hazard. In: Smellie, J.L., López-Martínez, J., Headland, R.K., Hernández-Cifuentes, Maestro, A., Miller, I.L., Rey, J., Serrano, E., Somoza, L. and Thomson, J.W. 2002. *Geology and geomorphology of Deception Island*, 78 pp. BAS GEOMAP Series, Sheets 6-A and 6-B, 1:25,000, British Antarctic Survey, Cambridge.

Escape strategy in case of a volcanic eruption on Deception Island

This escape strategy is based on the premise that eruptions will be similar to those documented in 1967-1970, i.e. with a limited geographical impact on the island (code orange alert state; Table 1). A sudden collapse of the caldera could result in a much more serious eruption, with potentially devastating effects on anyone on the island at the time. Escape from the island during a caldera collapse eruption is unlikely. However, the probability of this is very low and it would likely be preceded by significant precursory activity, particularly widespread ground inflation and associated earthquakes, during several days or weeks prior to the eruption. However, any eruptions can take place with relatively little immediate warning.

1. Inner coast areas are likely to be hazardous because of ash fall, possible pyroclastic surges (within c. 2 km of an eruption centre), tsunami and irregular rapid tidal oscillations. Tidal effects are likely to be pronounced by water ramping onto beaches, and they may prevent the use of inner coast beaches for boat uplift. People may therefore have to be uplifted from the outer coast.
2. If ships are present within Port Foster when an eruption occurs, they should depart the island immediately, ideally after uplifting all people ashore. Masters of vessels should observe extreme caution whilst departing Neptunes Bellows because of tidal rips and surges, which are enhanced at the narrow shallow entrance channel. Masters of vessels should also be aware of Ravn Rock, which is located at Neptunes Bellows, and the possibility of rockfalls from Cathedral Crags.
3. All rescuing vessels and helicopters should avoid passing through or under the eruption clouds because of the damaging effects of gritty ash particles on machinery.
4. Escape routes to the outer coast of the island are shown in Figure 1 of Appendix 6. All escape routes from the inner bay to the outer coast are strenuous, both climbing up onto the caldera rim and (in most cases) descending again on the outside. The caldera wall is steep (impassable cliff in places) and covered in highly mobile scree. It is impossible to use ground vehicles (e.g. ATVs) to transport people out of the caldera. Although exit routes are passable for ATVs at two places, much skill and local knowledge of the routes are required and the routes are impassable to ATVs carrying a passenger.
5. All routes to the outer coast will take hours to complete, ranging from about 2 hours for the easiest route (Whalers Bay to Baily Head) to 3 or 4 hours (or more) if the unnamed bay on the north coast or at Macaroni Point are the only options. These are minima and based on times likely to be taken by young relatively fit persons. The routes are physically arduous as most surfaces are yielding (mainly composed of coarse ash and lapilli). Exhaustion is likely and should be anticipated, even in fit persons. Descending to beaches on the outer coast is also generally difficult because of steep slopes. Apart from routes shown from Goddard Hill to Macaroni Point and the unnamed bay on the north coast (Figure 1), there are no recommended safe routes over snow and ice. Because of important difficulties peculiar to glaciers (e.g. crevasses, whiteout, slippery surfaces), other glacier travel should be avoided unless with trained guides using suitable equipment (e.g. ice axes, ropes, harnesses). Such equipment is unlikely to be readily available in an emergency.
6. Helicopter uplifts may be the best option as most of the outer coast beaches are narrow, bouldery and shelve steeply into deeper water, causing beach surf even on calm days. Some beaches (e.g. north of Punta de la Descubierta) also have a submerged offshore bar hazardous to small boats. If wind conditions are suitable, it may be possible to uplift people by helicopter from the inner coast. The most appropriate action can be judged at the time. Although helicopter uplifts can probably be effected, with variable difficulty, almost anywhere, the best areas are shown in Figure 1 of Appendix 6.

Figure 1. Suggested escape routes on Deception Island during a volcanic crisis corresponding to no more than a code orange alert state.



Measure 4 (2005)

Antarctic Specially Protected Areas: Extension of Expiry Dates

The Representatives,

Recalling Articles 3, 5 and 6 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol), providing for the designation of Antarctic Specially Protected Areas and approval of Management Plans for those Areas;

Recalling Recommendations VIII-4 (1975), XIV-5 (1987) and XVI-2 (1991), Measure 2 (2000) and Measure 3 (2001);

Recalling Decision 1 (2002) which renamed and renumbered Areas and Sites as Antarctic Specially Protected Areas;

Noting that the expiry date for certain Management Plans for Antarctic Specially Protected Areas is 31 December 2005, but wishing to continue to protect these Areas until such time that their respective Management Plans have been revised in accordance with Annex V of the Protocol,

Recommend to their Governments the following Measure for approval in accordance with paragraph 1 of Article 6 of Annex V to the Protocol:

that the date of expiry of the following Management Plans be extended until 31 December 2010:

(a) Antarctic Specially Protected Area 125: Fildes Peninsula, King George Island, South Shetland Islands;

(b) Antarctic Specially Protected Area 127: Haswell Island;

(c) Antarctic Specially Protected Area 144: Chile Bay (Discovery Bay), Greenwich Island;

(d) Antarctic Specially Protected Area 146: South Bay, Doumer Island, Palmer Archipelago; and

(e) Antarctic Specially Protected Area 150: Ardley Island, Maxwell Bay, King George Island.

Measure 5 (2005)

Antarctic Historic Sites and Monuments:
Lillie Marleen Hut and Amundsen's Tent

The Representatives,

Recalling the requirements of Article 8 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol) to maintain a list of current Historic Sites and Monuments and that such sites shall not be damaged, removed or destroyed;

Recalling Measure 3 (2003) which revised and updated the "List of Historic Sites and Monuments";

Desiring to add the following two sites to that list;

Recommend to their Governments the following Measure for approval in accordance with paragraph 2 of Article 8 of Annex V to the Protocol:

That the following sites be added to the "List of Historic Sites and Monuments" annexed to Measure 3 (2003):

(a) No. 79: Lillie Marleen Hut, Mt. Dockery, Everett Range, Northern Victoria Land.
Lillie Marleen Hut was erected to support the work of the German Antarctic Northern Victoria Land Expedition (GANOVEX I) of 1979/1980. The hut, a bivouac container made of prefabricated fiberglass units insulated with polyurethane foam, was named after the Lillie Glacier and the song "Lillie Marleen". The hut is closely associated with the dramatic sinking of the expedition ship "Gotland II" during GANOVEX II in December 1981.
Location: 71º12'S, 164º31'E
Original proposing Party: Germany
Party undertaking management: Germany

(b) No. 80: Amundsen's Tent
The tent was erected at 90º by the Norwegian group of explorers led by Roald Amundsen on their arrival at the South Pole on 14 December 1911. The tent is currently buried underneath the snow and ice in the vicinity of the South Pole.
Location: In the vicinity of 90ºS
Original proposing Party: Norway
Party undertaking management: Norway

ANNEX B

DECISIONS

Decision 1 (2005)

Annex VI on Liability Arising from Environmental Emergencies to the Protocol on Environmental Protection to the Antarctic Treaty

The Representatives,

Welcoming the adoption of Measure 1 (2005);

Recalling the undertaking in Article 16 of the Protocol on Environmental Protection to the Antarctic Treaty;

Recalling Decision 3 (2001) of the XXIVth Antarctic Treaty Consultative Meeting regarding the elaboration of an Annex on the liability aspects of environmental emergencies, as a step in the establishment of a liability regime in accordance with Article 16 of the Protocol;

Decide:

1. to evaluate annually, from the adoption of Annex VI to the Protocol, progress towards its becoming effective in accordance with Article IX of the Antarctic Treaty, and what action may be necessary and appropriate to encourage Parties to approve the Annex in a timely fashion;

2. not later than five years from the adoption of the Annex, in light of the evaluation pursuant to paragraph 1 above, to take a decision on the establishment of a time-frame for the resumption of negotiations, in accordance with Article 16 of the Protocol, to elaborate further rules and procedures as may be necessary relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by the Protocol.

Decision 2 (2005)

Decision confirming the recognition of Ukraine as a Consultative Party

The Representatives,

Recalling that Ukraine acceded to the Antarctic Treaty on 28 October 1992 in accordance with Article XIII;

Recalling further the notification of Ukraine setting forth its view that it has met the requirements of Article IX Paragraph 2 of the Antarctic Treaty by conducting substantial scientific research in Antarctica, and its intent to approve measures adopted under Article IX;

Recalling Decision 2 (1997);

Recalling also Paragraph 43 of the Final Report of ATCM XXVI with regard to Ukraine's notification of its interest to achieve Consultative Party status and the decision of that Meeting in Paragraph 44 to include the matter in the agenda of ATCM XXVII;

Noting that Parties are encouraged to approve measures adopted at earlier ATCMs;

Noting the entry into force of the Protocol on Environmental Protection to the Antarctic Treaty on 14 January 1998 and the deposit by Ukraine of its instrument of accession to the Protocol on 25 May 2001, and that the Protocol entered into force for Ukraine on 24 June 2001, thus fulfilling the requirement of Article 22.4 of the Protocol;

Recalling the decision of the XXVIIth ATCM, recorded in Paragraph 57 of the Final Report of that meeting, that Ukraine had met the requirements of Article IX Paragraph 2 of the Antarctic Treaty and Decision 2 (1997) and was therefore accepted as a Consultative Party;

Having ascertained, in accordance with Article X of the Antarctic Treaty, on the basis of the information provided about scientific expeditions and research carried out, that the activities of Ukraine are in accordance with the principles and purposes of the Treaty,

Affirm their acknowledgement made at the XXVIIth ATCM and reflected in Paragraph 57 of the Final Report of that meeting that Ukraine has fulfilled the requirements established in Article IX, Paragraph 2 of the Antarctic Treaty and that, as a consequence, as of June 4

2004 Ukraine is entitled, during such time as it continues in accordance with Article IX, Paragraph 2 of the Treaty to demonstrate its interest in Antarctica by conducting substantial scientific research there, to appoint representatives in order to participate in the Consultative Meeting provided for in Article IX, Paragraph 1 of the Treaty; and thereby warmly welcome Ukraine as a participant in such meetings.

Decision 3 (2005)

Amendments to the Rules of Procedure

The Representatives,

Recalling Decision 1 (2004) containing the revised Rules of Procedure of the Antarctic Treaty Consultative Meeting;

Recalling Measure 1 (2003), and especially Article 3.3, which establishes that during the intersessional periods the Executive Secretary of the Antarctic Treaty Secretariat shall consult in a manner to be prescribed in the Rules of Procedure;

Desiring to amend the Rules of Procedure to provide a procedure for intersessional consultation;

Decide that the "Revised Rules of Procedure (2005)" annexed to this Decision shall replace the existing Rules of Procedure for Antarctic Treaty Consultative Meetings.

REVISED RULES OF PROCEDURE (2005)

1. Meetings held pursuant to Article IX of the Antarctic Treaty shall be known as Antarctic Treaty Consultative Meetings. Contracting Parties entitled to participate in those Meetings shall be referred to as "Consultative Parties"; other Contracting Parties which may have been invited to attend those Meetings shall be referred to as "non Consultative Parties". The Executive Secretary of the Secretariat of the Antarctic Treaty shall be referred to as the "Executive Secretary".

2. The Representatives of the Commission for the Conservation of Antarctic Marine Living Resources, the Scientific Committee on Antarctic Research and the Council of Managers of National Antarctic Programs, invited to attend those Meetings in accordance with Rule 31, shall be referred to as "Observers."

Representation

3. Each Consultative Party shall be represented by a delegation composed of a Representative and such Alternate Representatives, Advisers and other persons as each State may deem necessary. Each non-Consultative Party which has been invited to attend a Consultative Meeting shall be represented by a delegation composed of a Representative and such other persons as it may deem necessary within such numerical limit as may from time to time be determined by the Host Government in consultation with the Consultative Parties. The Commission for the Conservation of Antarctic Marine Living Resources, the Scientific Committee on Antarctic Research and the Council of Managers of National Antarctic Programs shall be represented by their respective Chairman or President, or other persons appointed to this end. The names of members of delegations and of the observers shall be communicated to the Host Government prior to the opening of the Meeting.

4. The order of precedence of the delegations shall be in accordance with the alphabet in the language of the Host Government, all delegations of non-Consultative Parties following after those of Consultative Parties, and all delegations of observers following after non-Consultative Parties.

Officers

5. A Representative of the Host Government shall be the Temporary Chairman of the Meeting and shall preside until the Meeting elects a Chairman.

6. At its inaugural session, a Chairman from one of the Consultative Parties shall be elected. The other Representatives of Consultative Parties shall serve as Vice Chairmen of the Meeting in order of precedence. The Chairman normally shall preside at all plenary sessions. If he is absent from any session or part thereof, the Vice Chairmen, rotating on the basis of the order of precedence as established by Rule 4, shall preside during each such session.

Secretariat

7. The Executive Secretary shall act as Secretary to the Meeting. He or she shall be responsible, with the assistance of the Host Government, for providing secretariat services for the meeting, as provided in Article 2 of Measure 1 (2003), as provisionally applied by Decision 2 (2003) until Measure 1 becomes effective.

Sessions

8. The opening plenary session shall be held in public, other sessions shall be held in private, unless the Meeting shall determine otherwise.

Committees and Working Groups

9. The Meeting, to facilitate its work, may establish such committees as it may deem necessary for the performance of its functions, defining their terms of reference.

10. The committees shall operate under the Rules of Procedure of the Meeting, except where they are inapplicable.

11. Working groups may be established by the Meeting or its committees.

Conduct of Business

12. A quorum shall be constituted by two thirds of the Representatives of Consultative Parties participating in the Meeting.

13. The Chairman shall exercise the powers of his office in accordance with customary practice. He shall see to the observance of the Rules of Procedure and the maintenance of proper order. The Chairman, in the exercise of his functions, remains under the authority of the Meeting.

14. Subject to Rule 28, no Representative may address the Meeting without having previously obtained the permission of the Chairman and the Chairman shall call upon speakers in the order in which they signify their desire to speak. The Chairman may call a speaker to order if his remarks are not relevant to the subject under discussion.

15. During the discussion of any matter, a Representative of a Consultative Party may rise to a point of order and the point of order shall be decided immediately by the Chairman in accordance with the Rules of Procedure. A Representative of a Consultative Party may appeal against the ruling of the Chairman. The appeal shall be put to a vote immediately, and the Chairman's ruling shall stand unless over ruled by a majority of the Representatives of Consultative Parties present and voting. A Representative of a Consultative party rising to a point of order shall not speak on the substance of the matter under discussion.

16. The Meeting may limit the time to be allotted to each speaker, and the number of times he may speak on any subject. When the debate is thus limited and a Representative has spoken his allotted time, the Chairman shall call him to order without delay.

17. During the discussion of any matter, a Representative of a Consultative Party may move the adjournment of the debate on the item under discussion. In addition to the proposer of the motion, Representatives of two Consultative Parties may speak in favour of, and two against, the motion, after which the motion shall be put to the vote immediately. The Chairman may limit the time to be allowed to speakers under this Rule.

18. A Representative of a Consultative Party may at any time move the closure of the debate in the item under discussion, whether or not any other Representative has signified his wish to speak. Permission to speak on the closure of the debate shall be accorded only to Representatives of two Consultative Parties opposing the closure, after which the motion shall be put to the vote immediately. If the Meeting is in favour of the closure, the Chairman shall declare the closure of the debate. The Chairman may limit the time to be allowed to speakers under this Rule. (This Rule shall not apply to debate in committees.)

19. During the discussion of any matter, a Representative of a Consultative Party may move the suspension or adjournment of the Meeting. Such motions shall not be debated, but shall be put to the vote immediately. The Chairman may limit the time to be allowed to the speaker moving the suspension or adjournment of the Meeting.

20. Subject to Rule 15, the following motions shall have precedence in the following order over all other proposals or motions before the Meeting:

    a) to suspend the Meeting;

    b) to adjourn the Meeting;

    c) to adjourn the debate on the item under discussion;

    d) for the closure of the debate on the item under discussion.

21. Decisions of the Meeting on all matters of procedure shall be taken by a majority of the Representatives of Consultative Parties participating in the Meeting, each of whom shall have one vote.

Languages

22. English, French, Russian and Spanish shall be the official languages of the Meeting.

23. Any Representative may speak in a language other than the official languages. However, in such cases he shall provide for interpretation into one of the official languages.

Measures, Decisions, and Resolutions and Final Report

24. Without prejudice to Rule 21, Measures, Decisions and Resolutions, as referred to in Decision 1 (1995), shall be adopted by the Representatives of all Consultative Parties present and will thereafter be subject to the provisions of Decision 1 (1995).

25. The final report shall also contain a brief account of the proceedings of the Meeting. It will be approved by a majority of the Representatives of Consultative Parties present and shall be transmitted by the Executive Secretary to Governments of all Consultative and non Consultative Parties which have been invited to take part in the Meeting for their consideration.

26. Notwithstanding Rule 25, the Executive Secretary, immediately following the closure of the Consultative Meeting, shall notify all Consultative Parties of all Measures, Decisions and Resolutions taken and send them authenticated copies of the definitive texts in an appropriate language of the Meeting. In respect to a Measure adopted under the procedures of Article 6 or 8 of Annex V of the Protocol, the respective notification shall also include the time period for approval of that Measure.

Non-Consultative Parties

27. Representatives of non-Consultative Parties, if invited to attend a Consultative Meeting, may be present at:

    a) all plenary sessions of the Meeting; and

    b) all formal Committees or Working Groups, comprising all Consultative Parties, unless a Representative of a Consultative Party requests otherwise in any particular case.

28. The relevant Chairman may invite a Representative of a non-Consultative Party to address the Meeting, Committee or Working group which he is attending, unless a Representative of a Consultative Party requests otherwise. The Chairman shall at any time give priority to Representatives of Consultative Parties who signify their desire to speak and may, in inviting Representatives of non Consultative Parties to address the Meeting, limit the time to be allotted to each speaker and the number of times he may speak on any subject.

29. Non-Consultative Parties are not entitled to participate in the taking of decisions.

30.

a) Non Consultative Parties may submit documents to the Secretariat for distribution to the Meeting as information documents. Such documents shall be relevant to matters under Committee consideration at the Meeting.

b) Unless a Representative of a Consultative Party requests otherwise such documents shall be available only in the language or languages in which they were submitted.

Antarctic Treaty System Observers

31. The observers referred to in Rule 2 shall attend the Meetings for the specific purpose of reporting on:

a) in the case of the Commission for the Conservation of Antarctic Marine Living Resources, developments in its area of competence.

b) in the case of the Scientific Committee on Antarctic Research:

i) the general proceedings of SCAR;

ii) matters within the competence of SCAR under the Convention for the Conservation of Antarctic Seals;

iii) such publications and reports as may have been published or prepared in accordance with Recommendations IX 19 and VI 9 respectively.

c) in the case of the Council of Managers of National Antarctic Programs, the activities within its area of competence.

32. Observers may be present at:

a) the plenary sessions of the Meeting at which the respective Report is considered;

b) formal committees or working groups, comprising all Contracting Parties at which the respective Report is considered, unless a Representative of a Consultative Party requests otherwise in any particular case.

33. Following the presentation of the pertinent Report, the relevant Chairman may invite the observer to address the Meeting at which it is being considered once again, unless a Representative of a Consultative Party requests otherwise. The Chairman may allot a time limit for such interventions.

34. Observers are not entitled to participate in the taking of decisions.

35. Observers may submit their Report and/or documents relevant to matters contained therein to the Secretariat, for distribution to the Meeting as working papers.

Agenda for Consultative Meetings

36. At the end of each Consultative Meeting, the Host Government of that Meeting shall prepare a preliminary agenda for the next Consultative Meeting. If approved by the Meeting, the preliminary agenda or the next Meeting shall be annexed to the Final Report of the Meeting.

37. Any Contracting Party may propose supplementary items for the preliminary agenda by informing the Host Government for the forthcoming Consultative Meeting no later than 180 days before the beginning of the Meeting; each proposal shall be accompanied by an explanatory memorandum. The Host Government shall draw the attention of all Contracting Parties to this Rule no later than 210 days before the Meeting.

38. The Host Government shall prepare a provisional agenda for the Consultative Meeting. The provisional agenda shall contain:

    a) all items on the preliminary agenda decided in accordance with Rule 36; and

    b) all items the inclusion of which has been requested by a Contracting Party pursuant to Rule 37.

    Not later than 120 days before the Meeting, the Host Government shall transmit to all the Contracting Parties the provisional agenda, together with explanatory memoranda and any other papers related thereto.

Experts from International Organisations

39. At the end of each Consultative Meeting, the Meeting shall decide which international organisations having a scientific or technical interest in Antarctica shall be invited to designate an expert to attend the forthcoming Meeting in order to assist it in its substantive work.

40. Any Contracting Party may thereafter propose that an invitation be extended to other international organisations having a scientific or technical interest in Antarctica to assist the Meeting in its substantive work; each such proposal shall be submitted to the Host Government for that Meeting not later than 180 days before the beginning of the Meeting and shall be accompanied by a memorandum setting out the basis for the proposal.

41. The Host Government shall transmit these proposals to all Contracting Parties in accordance with the procedure in Rule 38. Any Consultative Party which wishes to object to a proposal shall do so not less than 90 days before the Meeting.

42. Unless such an objection has been received, the Host Government shall extend invitations to international organisations identified in accordance with Rules 39 and 40 and shall request each international organisation to communicate the name of the

designated expert to the Host Government prior to the opening of the Meeting. All such experts may attend the Meeting during consideration of all items, except for those items relating to the operation of the Antarctic Treaty System which are identified by the previous Meeting or upon adoption of the agenda.

43. The relevant Chairman, with the agreement of all the Consultative Parties, may invite an expert to address the meeting he is attending. The Chairman shall at any time give priority to Representatives of Consultative Parties or non Consultative Parties or observers referred to in Rule 31 who signify their desire to speak, and may in inviting an expert to address the Meeting limit the time to be allotted to him and the number of times he may speak on any subject.

44. Experts are not entitled to participate in the taking of decisions.

45.

a) Experts may, in respect of the relevant agenda item, submit documents to the Secretariat for distribution to the Meeting as information documents.

b) Unless a Representative of a Consultative Party requests otherwise, such documents shall be available only in the language or languages in which they were submitted.

46. Intersessionally, the Executive Secretary shall, within his/her competence as established under Measure 1 (2003) and associated instruments that govern the operation of the Secretariat, consult the Consultative Parties, when legally required to do so under relevant instruments of the ATCM and when the exigencies of the circumstances require action to be taken before the opening of the next ATCM, using the following procedure:

a) The Executive Secretary shall transmit the relevant information and any proposed action to all Consultative Parties through contact persons designated by them, indicating an appropriate date by which responses are requested;

b) The Executive Secretary shall ensure that all Consultative Parties acknowledge the receipt of such transmission, and shall also ensure the list of contact persons is current;

c) Each Consultative Party shall consider the matter and communicate their reply, if any, to the Executive Secretary through their respective contact person by the specified date;

d) The Executive Secretary after informing the Consultative Parties of the result of the consultations, may proceed to take the proposed action if no Consultative Party has objected; and

e) The Executive Secretary shall keep a record of the intersessional consultations, including their results and the actions taken by him/her and shall reflect these results and actions in his/her report to the ATCM for its review.

Amendments

47. These Rules of Procedure may be amended by a two thirds majority of the Representatives of Consultative Parties participating in the Meeting. This Rule shall not apply to Rules 24, 27, 29, 34, 39-42, 44, and 46, amendments of which shall require the approval of the Representatives of all Consultative Parties present at the Meeting.

Decision 4 (2005)

Consultative Party Status

The Representatives,

Recognising the need for a procedure of consultation in the event that another state, having acceded to the Antarctic Treaty, should notify the Depositary Government that it considers it is entitled to appoint Representatives to participate in Antarctic Treaty Consultative Meetings;

Recalling their obligation under Article X of the Antarctic Treaty to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in an activity in Antarctica contrary to the principles or purposes of the Treaty;

Recognising that the entitlement of an acceding state to appoint Representatives to participate in Antarctic Treaty Consultative Meetings (ATCM) under Article IX.2 of the Antarctic Treaty depends on such a state demonstrating its interest in Antarctica by conducting substantial scientific research activities there, such as the establishment of a scientific station or the dispatch of a scientific expedition;

Recalling their obligation under Article 22.4 of the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol) not to act upon a notification regarding the entitlement of a Contracting Party to the Antarctic Treaty to appoint representatives to participate in the ATCM unless the Contracting Party has first ratified, accepted, approved or acceded to the Protocol;

Emphasising the importance of Contracting Parties to the Antarctic Treaty that are seeking consultative status approving all Annexes to the Protocol that have become effective;

Recalling the decision of the First Special Antarctic Treaty Consultative Meeting (1977) and the amendments made to that decision by Decision 2 (1997);

Recalling also the Guidelines on Notification with respect to Consultative Status agreed at the XIVth ATCM;

Conscious of the adoption, subsequent to the adoption of the Protocol, of Annex V to the Protocol on Area Protection and Management and Annex VI to the Protocol on Liability Arising from Environmental Emergencies;

Noting that Annex V to the Protocol has become effective;

Decide that:

1. An acceding state which considers itself entitled to appoint Representatives in accordance with Article IX.2 of the Antarctic Treaty shall notify the Depositary Government for the Antarctic Treaty of this view and shall provide information concerning its activities in the Antarctic, in particular the content and objectives of its scientific programme. The Depositary Government should forthwith communicate for evaluation the foregoing notification and information to all other Consultative Parties.

2. Consultative Parties, in exercising the obligation placed on them by Article X of the Treaty, shall examine the information about its activities supplied by such an acceding state, may conduct any appropriate enquiries (including the exercising of their right of inspection in accordance with Article VII of the Treaty) and may, through the Depositary Government, urge such a state to make a declaration of intent to approve the Recommendations and Measures adopted at ATCM in pursuance of the Treaty and subsequently approved by all the Contracting Parties whose Representatives were entitled to participate in those meetings. Consultative Parties may, through the Depositary Government, invite the acceding state to consider approval of the other Recommendations and Measures.

3. The Government which is to host the next ATCM shall, in the context of its preparation of the Provisional Agenda for the ATCM in accordance with Rule 38 of the Rules of Procedure, include an appropriate item in the Provisional Agenda for consideration of the notification.

4. The ATCM shall determine, on the basis of all information available to it, whether to acknowledge that the acceding state in question has met the requirements of Article IX.2 of the Antarctic Treaty and of Article 22.4 of the Protocol, including whether the acceding state has approved all Annexes to the Protocol that have become effective. The ATCM shall also take into account the Guidelines on Notification with respect to Consultative Status. If agreed by the Representatives of all the Consultative Parties, such acknowledgement shall be recorded in a Decision of the ATCM and be notified by the host Government to the acceding state.

5. The procedure set out in paragraphs 1 to 4 above may be modified only by a unanimous decision of Consultative Parties.

6. The decision of the First Special Consultative Meeting (1977) and Decision 2 (1997) shall cease to be operative.

7. The Guidelines on Notification with respect to Consultative Status agreed at the XIVth ATCM shall remain unchanged.

Decision 5 (2005)

Appointment of External Auditor

The Representatives,

Recalling the Financial Regulations for the Secretariat of the Antarctic Treaty contained in Decision 4 (2003), and in particular Regulation 11 (External Audit),

Considering that the Antarctic Treaty Secretariat carries out most of its financial transactions in Argentina and that detailed bookkeeping and accounting regulations are specific to each country,

Considering the proposal of Argentina to appoint the Comptroller's Office of the Argentine Government (Sindicatura General de la Nación, SIGEN) external auditor of the Secretariat,

Decide:

1. to appoint the Comptroller's Office of the Argentine Government (Sindicatura General de la Nación, SIGEN) external auditor of the Antarctic Treaty Secretariat for a term of two years, in accordance with Regulation 11.1;

2. to accept the proposal by SIGEN to perform an external audit in accordance with Regulation 11.3 and the Annex to this Decision, at the fee indicated.

Tasks to be carried out by the external auditor

To provide an external audit report covering the financial years ending in 2005 and 2006, in accordance with Regulation 11.3 of Decision 4 (2003).

The activities can be summarized as follows:

Implementation of regulations adopted by the ATCM

Internal controls – Regulations and Procedures

Internal oversight of administrative processes, payments, custody of funds, and assets

Budgeting

Comparative budget reports

Expenditure efficiency analysis

Budget execution oversight

Analysis of the establishment of new area units

Control and reporting of contributions

Establishment and oversight of the General Fund

Establishment and oversight of the Working Capital Fund

Income and expense accounts

Trust funds

Custody of funds - Investments

Accounting oversight in accordance with Regulation 10 of Decision 4 (2003)

Drafting of an external audit report

The cost of the work proposed by SIGEN is:

Annual external audit——————————————————US$ 6.532

Decision 6 (2005)

Amendment to Financial Regulations for the Secretariat of the Antarctic Treaty

The Representatives,

Bearing in mind Paragraphs 2 and 3 of Decision 2 (2003) on the provisional application of Measure 1 (2003);

Recalling Decision 4 (2003) that adopted the Financial Regulations for the Secretariat of the Antarctic Treaty;

Desiring to amend the Financial Regulations to ensure that there is an adequate level of funds available in the Working Capital Fund to allow for the efficient functioning of the Secretariat;

Decide to replace Regulation 6.2(a) of the Financial Regulations with the following:

> 6.2 (a) There shall be established a Working Capital Fund in an amount of not more than one-sixth (1/6) of the budget of that financial year to ensure continuity of operations in the event of a temporary shortfall of cash and for other purposes to be determined by the ATCM from time to time. The Working Capital Fund shall initially be financed up to the specified level by a transfer from the General Fund, and thereafter from the fund determined appropriate by the Antarctic Treaty Consultative Meeting.

Decision 7 (2005)

Approval of the Work Programme and Budget of the Secretariat

The Representatives,

Recalling Measure 1 (2003) of the XXVIth ATCM on the establishment of the Secretariat of the Antarctic Treaty (the Secretariat);

Recalling also Decision 2 (2003) on the provisional application of Measure 1 (2003); and

Bearing in mind the Financial Regulations for the Secretariat of the Antarctic Treaty adopted by Decision 4 (2003);

Noting especially the provisions of Regulation 6.3 of the Financial Regulations relating to the surplus;

Decide:

1. To approve the budget and work programme of the Secretariat for 2005/06 annexed to this Decision;

2. To approve the expenditure of up to one quarter of the forecast budget for 2006/07, annexed to this Decision, in the 2006/07 financial year subject to the availability of sufficient funds;

3. To transfer $ 400.000 from the surplus of the financial year 2004/05 to a Special Fund established according to the provisions of Regulation 6.2(d) of the Financial Regulations, to be used to defray the expenses of interpretation and translation of the first Antarctic Treaty Consultative Meeting to be held after the entry into effect of Measure 1 (2003).

4. To use the contribution of the United States for 2004 to set up a Special Fund for the purpose of strengthening the Secretariat's database development and documentary infrastructure.

Work Programme 2005/6

Introduction

This Work Programme outlines the activities proposed for the Secretariat in the financial year 2005/6 (1 April 2005 to 31 March 2006)[1]. It is accompanied by the following appendices:

Appendix 1: Draft budget 2005/6, arranged by appropriations and by outputs

Appendix 2: Forecast budget 2006/7

Appendix 3: Contribution scale 2006/7

Appendix 4: Salary scale 2005/6

The Programme and the accompanying budget figures are based on Forecast Budget for 2005/6 (Decision 2 (2004), Attachment 4) and the actual work experience of the initial period from September 1st 2004. During these few initial months our main effort was devoted to set up the infrastructure of the ATS and to recruit the staff considered necessary for this starting period.

The financial year 2005/6 is the first regular financial year for the Secretariat; the financial year 2004/5 started in September 2004 and only contained seven months.

Management

The basic establishment needs of the Secretariat in terms of recruitment of personnel, acquisition of equipment, IT development have been filled. The priority tasks for this year are now the preparation of the 28th ATCM and 29th ATCM, publication of the Final Reports, building up the ATS website, and the development of data infrastructure in support of the web page and the various data management tasks assigned to the Secretariat. Specific tasks will also depend on the decisions taken by the 28th ATCM.

Administrative/technical staff

At the beginning of the financial year the permanent staff consisted of the Executive Secretary, the Assistant Executive Officer, one Information Officer and a Secretary/Administrative Assistant. Other personnel (data entry, translation and accounting assistants) are hired on a part time basis to deal with tasks which do not amount to a full day's work or which have a temporary character. Specific technical assistance (such as web and database design) is also contracted out.

In order to strengthen the Secretariat's capacity to handle data management tasks expected to be assigned by the ATCM it will be necessary to recruit a person with good technical qualifications as IT Officer. For the preparation of Final Reports, Handbooks, guidelines, newsletters etc. we plan to recruit an Editor. These staff will be recruited in the same way as the earlier administrative/technical staff, that is, by the publication of vacancy notices in the English language newspaper the Buenos Aires Herald. The Consultative Parties will be informed of the vacancies. The permanent staff will be supplemented by part-time staff in fields such as accounting, translation, and data input, and by trainees from Argentina and abroad for shorter periods and specific projects.

[1] In the period between 1 April and the date of the ATCM the Secretariat is financed on a continuing basis according to Regulation 4.2 of the Financial Regulations.

Financial matters

The budget has been compiled using the figures in the Forecast Budget, with some adjustments on the basis of the actual experience of the Secretariat so far. Assuming that the Consultative Parties will make assessed voluntary contributions at the same rate as the previous year, the budget will be roughly in balance.

The United States intends to make its contribution for 2004 in the form of a restricted grant of US $30.000 to strengthen the Secretariat's database development and documentary infrastructure. It is proposed that a Special Fund be set up according to Regulation 6.2 (d) of the Financial Regulations to deal with this contribution, which will be used for the items Computers, Software Development and Documentation Material.

Specific Tasks

Section headings refer to the paragraphs of Art. 2 of Measure 1 (2003).

(a) Preparation for the 28th ATCM and CEP 8

The secretariat has assumed the responsibility for preparing the agenda and gathering and collating the working and information papers for the 28th ATCM and publishing them on the restricted area of the ATS website. The web site for the 28th ATCM has been operational from April 22nd 2005. Use of a database of meta-data on the papers allows easier multilingual access and quicker updating of the information. Similar technology will be used for providing access to the ATCM recommendations and other documents.

The Secretariat has assumed responsibility for the contracting of the translation and interpretation for the ATCM. The contract has been granted, as in the past years, to the team of Mr. Bernard Ponette. The Swedish Government as host of the 28th ATCM will reimburse the Secretariat for the costs of translation and interpretation during the meeting, and the pre-meeting translation and editing and publication of the Final Report are included in the Secretariat budget.

(b) Support intersessional work of the ATCM and the CEP

The secretariat will provide support in the organization of any intersessional meetings planned by the ATCM.

(c) Facilitate exchange of information required under the Antarctic Treaty and the Protocol

The Secretariat will support work to improve the efficiency and transparency of the exchange of information among the Consultative Parties as required under the Antarctic Treaty and the Environment Protocol. In the set-up of the Secretariat databases and website, provision is being made for facilities for the exchange of information through the website. The specific activities to be undertaken on this regard are subject to the decisions that the ATCM will take on this matter.

(d) Co-ordination and contact with other elements of the Antarctic Treaty System, and other relevant international bodies and organizations

Under the guidance of the ATCM the Executive Secretary in the current financial year will attend the annual meeting of COMNAP and visit the CCAMLR Secretariat at the time of the annual meeting of the CCAMLR Commission, as well as attending such other meetings as agreed to by the Antarctic Treaty Consultative Parties pursuant to Rule 46.

(e) Development and maintenance of databases

The data model set up for the documents of the 28th ATCM will be further developed to include the recommendations, Measures, Decisions and Resolutions of the previous ATCMs, the contact points of the ATCP and other Antarctic organizations and, depending on the decisions of the ATCM, other data relevant to the tasks of the Secretariat.

(f) Circulation amongst the Parties relevant information and disseminate information on activities in Antarctica

The Secretariat and its website will function as a clearinghouse for information on the Parties' activities and relevant developments in Antarctica. It will include links to all other relevant websites. Information will be circulated also through circulars, notes, and newsletters.

(g) Collection, maintenance and publication of ATCM/CEP records

Consultative Parties that have hosted ATCM's have been be asked to provide the Secretariat with authentic copies of all reports of the ATCM's and other meetings they have hosted, so that the Secretariat will become a complete and reliable repository of the documents of the ATCM. The recommendations, measures, decisions and resolutions of the ATCM will be digitized if electronic copies of them don't exist yet. With these records, the database of ATCM recommendations, which is almost complete as far as the English language documents are concerned, will be expanded to include the other language versions of the documents. At a later stage, Working Papers and Information Papers of the recent meetings will also be added. The database will be made available through the ATS website before the 29th ATCM.

(h) Facilitate the availability of information about the Antarctic Treaty system

The Secretariat will continue with improvement of the visibility of the Antarctic Treaty System through its website, through the ATS newsletter and through pamphlets, and other publicity activities. Publication and distribution of guidelines adopted by the ATCM and versions of the ATCM documents oriented towards the general public are also being considered.

(i) Preparation of reports on the Secretariat's activities

Under this heading falls the task of preparing the reports and budgets of the Secretariat for the ATCM.

(j) Assisting the review of past Recommendations and Measures

The examination and review of past Recommendations and Measures of the ATCM, which is at present focusing on the Protected Area System, will be assisted by the Secretariat. Although this work is essential to preserve the integrity and effectiveness of the system of ATCM rule-making, during the annual meeting there usually is not enough time for the legal experts of the Consultative Parties to focus on this. The ATCM might consider the possibility of holding a workshop at the Secretariat with experts from the Consultative Parties to prepare a decision during the 29th ATCM.

(k) Maintenance and updating of the Antarctic Treaty System Handbook

The Secretariat is considering publishing the Antarctic treaty handbook in separate volumes instead of in one volume. A possible design might be as follows:

Vol. 1 Basic Texts and Operation of the ATCM and CEP

Vol. 2 Environmental Protection

Vol. 3 Operational and Scientific Matters

Vol. 4 Tourism and non-governmental activities

Vol. 5 Recommendations, Measures, Decisions and Resolutions

Appendix 1. Budget 2005/6

1. APPROPRIATION FOR SALARIES	
Executive staff	
ES	$115,522
AEO	$80,682
Adminstrative/Technical staff	
IT Officer	$16,385[1]
Information Officer	$24,014
Editor	$13,200[2]
Sec/Admin. Assistant	$11,292
Total Salaries	**$261,095**
2. APPROPRIATION FOR GOODS AND SERVICES	
Communications	
Postage and freight	$5,000
Internet	$13,200
Telecommunication	$9,000
Travel	
Airfare and travel allowances	$80,000
Support costs	
Auditor	$6,900
Insurance	$1,340
Computer assistance	$7,620
Accounting services	$7,560
Printing and copying	$12,700
Stationery	$11,600
Maintenance & cleaning	$11,700
Representation expenses	$22,200
Legal advice	$10,000
Data entry	$15,540
Training	$10,600
Library Assistance	$1,890
Electricity	$1,000
Miscellaneous	$5,800
ATCM Translation and Interpretation	
Airfares and travel allowances	p.m.
Interpretation during the meeting	p.m.
Translation during the meeting	p.m.
Pre-meeting translation	$65,000
Translation/editing of Final Report	$65,000
Total Goods and Services	**$363,650**
3. APPROPRIATION FOR EQUIPMENT	
Computers	$22,860
Computer software	$6,480
Web and Software development	$20,000
Furniture, misc. equipment	$20,000
Documentation material	$20,000
Subscriptions	$2,300
Photocopying & printing equipment	$8,200
Total Equipment	**$99,840**
TOTAL	**$724,585**

[1] Salary estimated at 7 months in rank G2, Step I.
[2] Salary estimated at 7 months in rank G3, Step I.

Budget 2005/6 (Outputs)

A. MANAGEMENT	
Executive Secretary (70%)	$80,865
Assistant Executive Officer (60%)	$48,409
	$129,274
B. GENERAL SUPPORT	
Salaries	
IT Officer (20%)	$3,277
Sec/Admin. Assistant (70%)	$7,904
Editor (20%)	$2,640
	$13,821
Goods and services	
Postage & Freight	$5,000
Internet	$13,200
Telecommunications	$9,000
Auditor	$6,900
Insurance	$1,340
Computer asistance	$7,620
Printing and copying (25%)	$3,175
Maintenance & cleaning	$11,700
Stationery	$11,600
Representation expenses	$22,200
Training	$10,600
Airfare and travel allowances (40%)	$32,000
Legal Advice	$10,000
Electricity	$1,000
Accounting services (60%)	$4,536
Miscellaneous	$5,800
	$155,671
Equipment	
Computers	$22,860
Computer software	$6,480
Furniture, misc. equipment	$20,000
Documentation material	$20,000
Subscriptions	$2,300
Photocopying & printing equipment	$8,200
	$79,840
C. TASKS	
(a) Preparation and organization of ATCM/CEP	
Executive Secretary (10 %)	$11,552
Assistant Executive Officer (10%)	$8,068
Information Officer (20%)	$4,803
Web and software development (20%)	$4,000
Airfares and travel allowances (30%)	$24,000
Airfare for translators and interpreters	p.m.
Interpretation during the meeting	p.m.
Translation during the meeting	p.m.
Printing and copying (50%)	$6,350
Pre-ATCM translation	$65,000
Translation/editing of Final Report	$65,000
	$188,773
(b) Support intersessional work of the ATCM and the CEP	

(c) Facilitate exchange of information required under the Antarctic Treaty and the Protocol	
Assistant Executive Officer (20%)	$16,136
IT Officer (20%)	$3,277
Information Officer (20%)	$4,803
Data entry (25%)	$3,885
Airfares and travel allowances (10%)	$8,000
Web and Software development (40%)	$8,000
	$44,101
(d) Coordination and contact with other elements of the Antarctic Treaty System	
Executive Secretary (10%)	$11,552
Airfares and travel allowances (20%)	$16,000
	$27,552
(e) Development and maintenance of databases	
IT Officer (40%)	$6,554
Data entry (25%)	$3,885
Web and Software development (20%)	$4,000
	$14,439
(f) Circulation amongst the Parties relevant information and disseminate information on activities in Antarctica	
Information Officer (20%)	$4,803
	$4,803
(g) Collection, maintenance and publication of ATCM/CEP records	
IT Officer (20%)	$3,277
Information Officer 10%)	$2,401
Editor (40%)	$5,280
Data entry (50%)	$7,770
Library Assistance	$1,890
Web and Software development (20%)	$4,000
	$24,618
(h) Facilitate the availability of information about the Antarctic Treaty System	
Information Officer (10%)	$2,401
Sec/Admin. Assistant (10%)	$1,129
Editor (20%)	$2,640
	$6,170
(i) Preparation of reports on the Secretariat's activities	
Sec/Admin. Assistant (20%)	$2,258
Accounting services (40%)	$3,024
	$5,282
(j) Assisting the review of past recommendations and measures	
Executive Secretary (10%)	$11,552
Information Officer (10%)	$2,401
	$13,953
(k) Maintenance and updating of the Antarctic Treaty System Handbook	
Assistant Executive Officer (10%)	$8,068
Information Officer (10%)	$2,401
Editor (20%)	$2,640
Printing and copying (25%)	$3,175
	$16,284
TOTAL	**$724,581**[1]

[1] The difference between this sum and the total in the Appropriations list is due to differences in rounding.

Appendix 2. Forecast Budget 2006/7[1]

1. APPROPRIATION FOR SALARIES	
Executive staff	
ES	$117,720
AEO	$82,220
Adminstrative/Technical staff	
IT Officer	$26,110
Information Officer	$26,900
Editor	$21,760
Sec/Admin. Assistant	$12,650
Total Salaries	**$287,360**
2. APPROPRIATION FOR GOODS AND SERVICES	
Communications	
Postage and freight	$5,360
Internet	$14,140
Telecommunication	$9,640
Travel	
Airfare and travel allowances	$81,520
Support costs	
Auditor	$7,390
Insurance	$1,440
Computer maintenance and assistance	$8,050
Accounting services	$8,100
Printing and copying	$13,600
Stationery	$12,420
Maintenance & cleaning	$12,530
Representation expenses	$23,780
Legal advice	$10,710
Data entry	$16,640
Training	$11,350
Library Assistance	$2,020
Electricity	$1,070
Miscellaneous	$6,210
ATCM Translation and Interpretation	
ATCM Pre-meeting translation	$66,240
Translation/Preparation of Final Report	$66,240
Total good and services	**$378,450**
3. APPROPRIATION FOR EQUIPMENT	
Computers	$24,140
Computer software	$6,840
Web and Software development	$16,070
Documentation material	$10,190
Subscriptions	$2,340
Furniture, misc. equipment	$5,100
Photocopying & printing equipment	$8,780
Total Equipment	**$73,460**
TOTAL	**$739,270**

[1] In calculating the Forecast Budget inflation estimates for 2005 from the IMF World Economic Outlook have been used, i.e. 7,1% for Argentina and 1,9% for overseas expenses.

Appendix 3. Contribution scale 2006

	Cat.	Mult.	Variable	Fixed	Total
Argentina	A	3.6	$20,285	$13,201	$33,486
Australia	A	3.6	$20,285	$13,201	$33,486
Belgium	D	1.6	$9,015	$13,201	$22,217
Brazil	D	1.6	$9,015	$13,201	$22,217
Bulgaria	E	1	$5,635	$13,201	$18,836
Chile	C	2.2	$12,396	$13,201	$25,598
China	C	2.2	$12,396	$13,201	$25,598
Ecuador	E	1	$5,635	$13,201	$18,836
Finland	D	1.6	$9,015	$13,201	$22,217
France	A	3.6	$20,285	$13,201	$33,486
Germany	B	2.8	$15,777	$13,201	$28,978
India	C	2.2	$12,396	$13,201	$25,598
Italy	B	2.8	$15,777	$13,201	$28,978
Japan	A	3.6	$20,285	$13,201	$33,486
Korea	D	1.6	$9,015	$13,201	$22,217
Netherlands	C	2.2	$12,396	$13,201	$25,598
New Zealand	A	3.6	$20,285	$13,201	$33,486
Norway	A	3.6	$20,285	$13,201	$33,486
Peru	E	1	$5,635	$13,201	$18,836
Poland	D	1.6	$9,015	$13,201	$22,217
Russia	D	1.6	$9,015	$13,201	$22,217
South Africa	C	2.2	$12,396	$13,201	$25,598
Spain	C	2.2	$12,396	$13,201	$25,598
Sweden	C	2.2	$12,396	$13,201	$25,598
Ukraine	D	1.6	$9,015	$13,201	$22,217
United Kingdom	A	3.6	$20,285	$13,201	$33,486
United States	A	3.6	$20,285	$13,201	$33,486
Uruguay	D	1.6	$9,015	$13,201	$22,217
		65.6		$369,635	$739,270

Appendix 4. Salary Scale 2005/6

2005/6		STEPS														
Level		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
1	A	$91,425	$93,126	$94,827	$96,529	$98,230	$99,931	$101,632	$103,334	$105,034						
1	B	$114,281	$116,408	$118,533	$120,660	$122,787	$124,913	$127,040	$129,167	$131,293						
2	A	$76,985	$78,433	$79,881	$81,328	$82,775	$84,222	$85,669	$87,117	$88,565	$90,012	$91,459	$92,906	$94,354		
2	B	$96,232	$98,042	$99,850	$101,660	$103,469	$105,277	$107,086	$108,897	$110,705	$112,514	$114,324	$116,133	$117,942		
3	A	$64,197	$65,593	$66,990	$68,387	$69,784	$71,180	$72,577	$73,974	$75,370	$76,766	$78,163	$79,559	$80,956	$82,353	$83,749
3	B	$80,246	$81,992	$83,738	$85,484	$87,230	$88,976	$90,721	$92,467	$94,213	$95,957	$97,703	$99,449	$101,195	$102,941	$104,687
4	A	$53,232	$54,525	$55,820	$57,110	$58,405	$59,697	$60,988	$62,283	$63,577	$64,868	$66,162	$67,454	$68,747	$70,040	$71,333
4	B	$66,541	$68,156	$69,775	$71,388	$73,006	$74,621	$76,235	$77,854	$79,471	$81,086	$82,703	$84,317	$85,934	$87,550	$89,166
5	A	$44,134	$45,292	$46,448	$47,605	$48,761	$49,917	$51,074	$52,228	$53,386	$54,543	$55,697	$56,856			
5	B	$55,168	$56,615	$58,060	$59,506	$60,951	$62,396	$63,842	$65,286	$66,733	$68,179	$69,622	$71,070			
6	A	$34,938	$36,050	$37,160	$38,273	$39,383	$40,494	$41,607	$42,718	$43,828	$44,504	$44,940				
6	B	$43,672	$45,063	$46,451	$47,841	$49,229	$50,618	$52,009	$53,398	$54,785	$55,630	$56,175				

2005/6	STEPS														
Level	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
1	$24,578	$25,780	$26,982	$28,183											
2	$23,737	$24,844	$25,952	$27,059											
3	$19,780	$20,703	$21,626	$22,549											
4	$16,484	$17,253	$18,022	$18,791											
5	$13,617	$14,253	$14,888	$15,524											
6	$11,162	$11,682	$12,203	$12,724											
7															
8															

Decision 8 (2005)

Use of Heavy Fuel Oil (HFO) in Antarctica

The Representatives:

Recalling Article 3 of the Environmental Protocol to the Antarctic Treaty which requires that activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment,

Recalling also the requirements of Annex IV to the Environmental Protocol on Prevention of Marine Pollution,

Aware of the potential for adverse impact which a release of Heavy Fuel Oil (HFO) could have on the Antarctic marine environment,

Considering that the International Maritime Organization is the competent organization to deal with shipping regulations,

Decide to:

Address a request through the Chair of ATCM XXVIII to the International Maritime Organization to examine mechanisms for restricting the use of Heavy Fuel Oil (defining HFO in accordance to MARPOL Regulation 13 H definition of Heavy Grade Oil as all fuels of higher number than Intermediate Fuel Oil 180 (IFO-180)) in Antarctic waters, taking into account:

- the relatively high risk of fuel release in the Antarctic Treaty area due to conditions such as icebergs, sea-ice, and uncharted waters; and

- the high potential of environmental impacts associated with a spill and emission of HFO in the Antarctic Treaty area.

Decision 9 (2005)

Marine Protected Areas and other areas of interest to CCAMLR

The Representatives,

Noting the requirements in Article 6(1) and 6(2) of Annex V to the Protocol of Environmental Protection to the Antarctic Treaty that the prior approval of the Commission of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) must be obtained on proposal for Antarctic Specially Protected Areas or Antarctic Specially Managed Areas which contain marine areas;

Recalling that ATCM XXI agreed to transmit a draft text addressing criteria for Marine Areas to CCAMLR for its consideration;

Recalling also the endorsement of that draft text by CCAMLR at its XVIth Meeting, and its adoption as Decision 4 (1998) of ATCM XXII;

Noting that Decision 4 (1998) set out procedures to be followed pending the entry into force of the Annex V, which is now in force;

Desiring to adopt updated procedures;

Decide:

1) That for the purpose of the implementation of Article 6.2 of the Environmental Protocol, draft management plans that contain marine areas which require a prior approval of CCAMLR are those:

   a) in which there is actual harvesting or potential capability of harvesting of marine living resources which might be affected by site designation; or

   b) for which there are provisions specified in a draft management plan which might prevent or restrict CCAMLR related activities.

2) That proposals for designations of Antarctic Specially Protected Areas or Antarctic Specially Managed Areas which meet the criteria of Paragraph 1 above shall be submitted to CCAMLR for its consideration before any decision is taken on the proposal relating to marine areas.

3) Furthermore that any other proposed designations which might have implications for CCAMLR Ecosystem Monitoring Programme (CEMP) sites shall also be submitted to CCAMLR for its consideration.

4) That this decision shall replace Decision 4 (1998), which shall cease to be operative.

Decision 10 (2005)

Establishment of an Electronic Information Exchange System

The Representatives,

Recalling Article III.1(a) and Article VII.5 of the Antarctic Treaty;

Conscious of the obligations within the Protocol on Environmental Protection to the Antarctic Treaty and its Annexes to exchange information;

Conscious also of Resolution 6 (2001) and other commitments that the Parties have made with respect to keeping each other informed by regular or occasional exchanges;

Desiring to ensure that the exchange of information between the Parties is conducted in the most efficient and timely way, and that the ATCM has available to it the best available information on which to base it decisions;

Decide that the Secretariat of the Antarctic Treaty shall, in consultation with other relevant organizations of the Antarctic Treaty System, begin development of an electronic information exchange system and report to ATCM XXIX on its progress.

ANNEX C

RESOLUTIONS

Resolution 1 (2005)

Environmental Impact Assessment: Circulation of Information

The Representatives,

Recalling Articles III and VII of the Antarctic Treaty and Articles 3, 6.2 and 17 of the Protocol on Environmental Protection to the Antarctic Treaty;

Noting that Annex I to the Protocol creates obligations to exchange information annually, including information on Initial Environmental Evaluations and Comprehensive Environmental Evaluations;

Noting that the requirements for the exchange of information have been further developed in numerous measures of the Antarctic Treaty Consultative Meetings;

Taking into account the establishment of the Secretariat of the Antarctic Treaty;

Conscious of Resolution 6 (1995), which states that the procedures on circulation of information should be reviewed following the establishment of a permanent Secretariat;

Desirous that such information should be easily accessible and in a comprehensive and uniform format so that the scale and trend of activities and developments in Antarctica can be readily monitored;

Recommend that:

1) Their Governments should provide the Secretariat of the Antarctic Treaty with a list of the Initial Environmental Evaluations and Comprehensive Environmental Evaluations prepared by or submitted to them during the period from April 1 of the previous year to March 31 prior to the ATCM.

2) The above list should, at a minimum, contain the following information: a short description of the development or activity; the type of environmental impact assessment undertaken (IEE or CEE); the location (name, latitude, and longitude) of the activity; the organisation responsible for the EIA; and any decision taken following consideration of the environmental impact assessment.

3) A copy in electronic format of these documents should also be submitted where possible.

4) The lists should be collated by the Secretariat, posted on the ATS website and circulated as an information paper to the ATCM and thereafter, if the ATCM so agrees, be published as an Annex to the final Report of the ATCM.

Resolution 2 (2005)

Practical Guidelines for Developing and Designing Environmental Monitoring Programs in Antarctica

The Representatives,

Conscious that there has been an increased focus on the need for environmental monitoring among national Antarctic programs;

Noting the need of having standardized techniques to develop monitoring programs which are scientifically sound, practical and cost effective;

Noting also the need of a proper methodology to be followed when designing a monitoring program;

Considering that a unified approach to environmental monitoring will contribute to the continued protection of the Antarctic environment;

Recommend that:

1. the *Practical Guidelines for Developing and Designing Environmental Monitoring Programs in Antarctica* annexed to this Resolution be made available for use by those engaged in the preparation of monitoring Programs in Antarctica;

2. these guidelines be used in conjunction with the COMNAP/SCAR Antarctic Environmental Handbook.

Practical Guidelines for Developing and Designing Environmental Monitoring Programmes in Antarctica

January 2005

This document has been developed for the Council of Managers of National Antarctic Programs (COMNAP) by its Antarctic Environmental Officers Network (AEON). Up-to-date versions of this document can be found on the COMNAP web site at *http://www.comnap.aq*

FOREWORD

Environmental monitoring has been an important focus of the Council of Managers of National Antarctic Programmes' (COMNAP) work since the mid-1990s. Recent initiatives within the Antarctic Treaty system and within the Scientific Committee on Antarctic Research (SCAR) and COMNAP, as well as ongoing experience in the practical implementation of the Environmental Protocol to the Antarctic Treaty, have each advanced the understanding of the issues related to environmental monitoring in Antarctica.

During the 1999 meeting of COMNAP in Goa, India, the Antarctic Environmental Officers Network (AEON) arranged a workshop with the aim of following up and facilitating discussions on the issue of environmental monitoring of science and operational activities in Antarctica.

This workshop identified several steps in the process of developing, designing and implementing environmental monitoring programmes, and looked at areas where there may be gaps in the current documentation and information available to operators. Although information exists on these matters the workshop noted that much of it is not widely available, and is not written as practical guidelines that are readily understandable by operators.

Following the discussion, the workshop recommended that practical guidelines for developing and designing an environmental monitoring programme be prepared. Terms of Reference were then prepared, and the document developed reflects the intentions of these Terms of Reference.

The document has passed through several drafts in its development. The drafts have been circulated and reviewed by members of AEON. Comments have been incorporated to arrive at the final format and content.

This coordinated effort to provide practical monitoring guidelines should assist all national programmes, but particularly those with more limited resources and who do not currently have a systematic monitoring programme in place. Ultimately, a unified approach to environmental monitoring will assist the continued protection of resources and values, and in minimising human impacts on the Antarctic continent.

Gérard Jugie
Chair, Council of Managers of National Antarctic Programmes (COMNAP)

January 2005

LIST OF ACRONYMS

AEON	Antarctic Environmental Officers Network
ASMA	Antarctic Specially Managed Area
ASPA	Antarctic Specially Protected Area
ATCM	Antarctic Treaty Consultative Meeting
BOD	Biological Oxygen Demand
CEP	Committee for Environmental Protection
COD	Chemical Oxygen Demand
COMNAP	Council of Managers of National Antarctic Programmes
DO	Dissolved Oxygen
EIA	Environmental Impact Assessment
GIS	Geographical Information System
IAATO	International Association of Antarctica Tour Operators
PAH	Polycyclic Aromatic Hydrocarbon(s)
PCB	Polychlorinated Biphenyls
PM_{10}	Particulate up to 10 microns in diameter
SCAR	Scientific Committee on Antarctic Research
SS	Suspended Solids
TOC	Total Organic Carbon
TSS	Total Suspended Solids
TPH	Total Petroleum Hydrocarbons

GLOSSARY OF TERMS

Action: Any step taken as part of an activity.

Activity: An event or process resulting from, or associated with, the presence of humans in Antarctica, and/or which may lead to the presence of humans in Antarctica.

Baseline monitoring: Collection of data and information from a particular site, ahead of an activity taking place that is predicted to have certain impacts on the site.

Cumulative Impact: The combined impact of past, present and reasonably foreseeable activities. These activities may occur over time and space and can be additive, interactive or synergistic.

Direct Impact: A change in environmental components that results from direct cause-effect consequences of interaction between the exposed environment and outputs.

Exposure: The process of interaction between an identified potential output and an environmental element or value.

Impact: A change in the values or resources attributable to a human activity. It is the consequence of an agent of change, not the agent itself.

Indicator: Indicators are measures of physical, chemical, biological or socio-economic factors which best represent the key elements of the environment. They capture, focus and condense information about complex environments for management, monitoring and reporting purposes. To be effective indicators must be scientifically credible.

Indirect indicator: Signs or symptoms of changes in features not directly related to the environmental feature, but which potentially may impact the environmental features. Output indicators indicate changes in outputs (emission, fuel spills, noise) that may impact the environment. Compliance indicators indicate changes in compliance with environmental legislation, which then indirectly may have consequences for the environment.

Indirect Impact: A change in environmental components that results from interactions between the environment and other impacts (direct or indirect).

Mitigation: The use of practice, procedure or technology to minimise or prevent impacts associated with proposed activities.

Monitoring: Consists of standardised measurements or observations of key parameters (outputs and environmental variables) over time, their statistical evaluation and reporting on the state of the environment in order to define quality and trends.

Output: A physical change or an entity imposed on or released to the environment as a result of an action or an activity.

Parameter: A measurable variable for an indicator.

Remediation: The steps taken after impacts have occurred to promote, as much as possible, the return of the environment to its original condition.

Unavoidable Impact: An impact for which no further mitigation is possible.

Value: The worth, merit or importance of something (**environmental value**: the worth, merit or importance of an environmental feature).

SECTION 1: Introduction to the Guidelines

1.1 Why Monitor in Antarctica?

The primary obligations for undertaking monitoring in Antarctica are set out in the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol). These requirements are summarised in Appendix 1, and include the verification of predicted impacts linked to specific activities and monitoring for unforseen impacts and environmental change in Antarctica generally.

The issue of environmental monitoring was substantively discussed at ATCM XV (1989) and Recommendation XV-5 was the result (reproduced at Appendix 1). Further consideration of the issue at ATCM XVI (1991) led to the convening of a Meeting of Experts in Buenos Aires in June 1992. ATCM XVII considered the report of the Meeting of Experts and adopted Recommendation XVII-1 (reproduced at Appendix 1). ATCM XVII also proposed the convening of a workshop to pursue the issue of environmental monitoring further. In July 1996 the Scientific Committee on Antarctic Research (SCAR) and the Council of Managers of National Antarctic Programmes (COMNAP) published the results of two workshops entitled "Monitoring of Environmental Impacts from Science and Operations in Antarctica" (Kennicutt et al, 1996).

As a result of those workshops two further documents were proposed:

- a technical handbook of standardised monitoring methods, and
- a practical guide to monitoring in Antarctica.

The technical handbook was published by COMNAP and SCAR in May 2000 as the "COMNAP/SCAR Antarctic Environmental Monitoring Handbook".

The present "Practical Guidelines for Developing and Designing Environmental Monitoring Programmes in Antarctica" fulfill the second proposal of preparing a practical guide to monitoring in Antarctica. It is recommended that it be used in conjunction with the handbook.

1.2 Objectives of these Guidelines

The objective of these guidelines is to provide practical advice to national Antarctic operators in developing and designing environmental monitoring programmes, by:

a. Setting out a practical approach to designing environmental monitoring programmes in Antarctica, with examples;

b. Bringing together various sources of monitoring information into a single reference document; and

c. Providing clear and understandable advice.

1.3 How to use these Guidelines

These Guidelines have been structured so as to provide a common approach to the design of monitoring programmes in Antarctica that can be used by national Antarctic operators that are:

- New signatories to the Environmental Protocol;
- Wishing to review existing or long-term monitoring programmes;
- Looking to establish new monitoring programmes for specific activities.

The guidelines can be used for a range of monitoring needs including:

- Meeting the monitoring requirements of the Environmental Protocol;

- Monitoring of activities in response to environmental impact assessment requirements;
- Reporting on the state of the Antarctic environment.

The guidelines have been prepared in a deliberately generic format to enable application to both simple and complex monitoring needs; though the basic process for designing monitoring programmes is likely to be the same in each case.

It is important to note that these guidelines have no mandatory status and are available for use by national Antarctic programmes at their own discretion.

SECTION 2: A Three-Step Approach to Environmental Monitoring

This section outlines a three-step approach to designing and developing an environmental monitoring programme in Antarctica. Figure 1 summarises these steps.

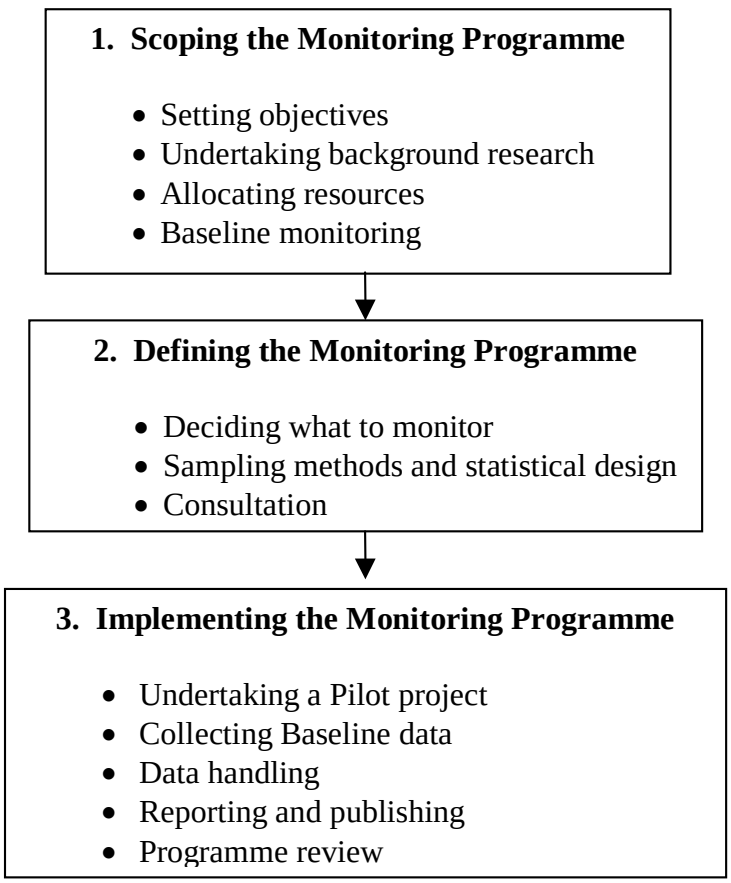


Figure 1. A flow diagram summarising the three-step approach to designing a monitoring programme.

2.1 STEP 1: Scoping the monitoring programme

This section describes the preparatory work that is necessary prior to undertaking any monitoring programme. It is important to undertake this step in a thorough manner to ensure that an effective monitoring programme can be developed.

2.1.1 Setting objectives

All monitoring programmes should have clearly defined objectives, which must be agreed at the outset. Objectives should be meaningful, achievable, and concise. They need to identify what is to be achieved and over what time period. Objectives also need to make sense to those responsible for designing and implementing the monitoring programme, and to senior managers who may need to take action as a result of the findings of the monitoring programme.

Example for Setting Objectives

National Programme Alpha has decided to undertake an environmental monitoring programme for its Alpha Station. Having been assigned the task of developing and designing a monitoring programme, the Alpha Environmental Manager implemented the following process to set the objectives of the programme:

1. *A review of all environmental policy documents and reports relevant to the Alpha National Programme was conducted.*
2. *A small brainstorming meeting of relevant personnel (managers and operators) was held to identify possible objectives of the environmental monitoring programme at Station Alpha.*
3. *Based on outcomes from the brainstorming meeting the Environmental Manager developed a set of draft objectives.*
4. *The draft objectives were reviewed and revised by relevant personnel (managers and operators) and were revised accordingly.*
5. *The following objectives were established for the environmental monitoring programme:*
   - *To demonstrate compliance with the requirements of the Environmental Protocol*
   - *To capture information that may show environmental changes/impacts around the Alpha Station that may result from station and related field activities*
   - *To undertake the monitoring for a period of five years before conducting a major review of the programme*
   - *To utilise existing equipment, station personnel and scientists as much as possible without appointing additional staff to minimise costs*
   - *To amend the structure and processes in the organisation to ensure monitoring information is used as a part of management decisions.*

2.1.2 Background Research

Having defined the objectives for monitoring it is essential to gather relevant information that will assist with the design of the monitoring programme. The following sets out the key issues that need to be addressed.

Existing data and research

A key issue will be to determine what is already known about the area to be monitored. The following questions may assist in meeting this need:

- Is there any scientific or environmental research being conducted in the area to be monitored that may provide useful data?
- What information and data has been, or is being collected at, or near to the area to be monitored?
- Are there any existing environmental monitoring programmes with similar aims being conducted by other national Antarctic programmes?
- Is there any data available prior to any human activity in the region that could be useful baseline data?
- What are the information gaps? What is not known about the area?
- Is there a need for baseline data collection to be undertaken? Will it be important to collect basic information about the site before implementing a larger-scale monitoring programme?
- Are there any environmental reports, or environmental impact assessments for the area to be monitored?

Environmental features within the monitoring area

When collecting background information about the area to be monitored it is particularly important to build up a picture of the key environmental features that are found in the area of interest. This information will be essential when considering what to monitor (Step 2 of these guidelines). Figure 2 highlights key environmental features that might typically be found either singularly or in combination.

Flora and Fauna (including marine species)

Consider if:

- there are species or species assemblages that are rare or unique in Antarctica.
- there are species or species assemblages that are rare or unique in the area.
- there are species or species assemblages that are important for on-going or planned science.
- the flora is particularly undisturbed.

Atmospheric, freshwater, marine or terrestrial environments including ice-shelves and ice-free ground

Consider if:

- there are any unique or special physical, chemical or biological features related to these environments.
- the environment is important for on-going or planned science.
- the environment is undisturbed or pristine.
- the environment is protected as part of an Antarctic Specially Protected Area (ASPA) or Antarctic Specially Managed Area (ASMA).

Heritage.

Consider if:

- there are any historic sites listed on the Historic Site and Monument list or protected as part of an ASPA?
- there are any historic elements important for on-going or planned science?

Figure 2. Checklist of key environmental features that might typically be found in Antarctica.

2.1.3 Resources available

Sufficient resources are instrumental to the success of the monitoring programme. Required resources may include:

- A dedicated budget for the monitoring programme;
- A programme manager to oversee the implementation of the monitoring programme;
- The availability of expert scientists to take responsibility for sample collection and analysis;
- Specialist equipment, including field, laboratory and data management equipment;
- The availability of trained staff to assist with, for example, sample collection and analysis, or data handling and reporting;
- Collaborative opportunities with other national Antarctic operators and/or researchers.

Roles and responsibilities

At this point in the preparation of the monitoring programme it will also be important to clearly establish and record the roles and responsibilities for those people that will be needed to ensure effective implementation.

2.1.4 Baseline Monitoring

Baseline monitoring is undertaken ahead of a particular activity commencing. The primary purpose of baseline monitoring is to establish a data set of pre-impact conditions of the site or area in question.

Example for Baseline Monitoring:

> *National Programme Bravo wants to establish an ice runway near its existing station. The Environmental Impact Assessment for the runway has identified the need for an environmental monitoring programme for the life of the runway to ensure environmental impacts are monitored and mitigated. Baseline data for the runway site will need to be gathered on surface snow and ice quality prior to operation of the runway in order to compare future data during operation of the runway.*

2.2 STEP 2: Defining the programme

Completing the data and information gathering exercises highlighted in Step 1 should assist in providing a clear understanding of what is known about the site and what resources are available to implement a monitoring programme. The next step is to define the boundaries of the monitoring programme by identifying what needs to be monitored, and the techniques to be used.

2.2.1 Deciding what to monitor

Deciding what to monitor is an essential stage in the process, if the monitoring programme is to meet its stated objectives. Deciding what to monitor will be influenced by a number of factors. These include:

- The key environmental features of the area to be monitored (determined through Step 1);
- The predicted or known impacts of an activity for which monitoring may be required (for example as determined through an EIA);
- Practical and technical issues, such as the ease with which samples can be taken and/or analysed.

Prioritisation

Prioritisation or ranking will need to be undertaken particularly when values and impacts are of too large a number to be adequately monitored within available resources.

The prioritisation of values and impacts that are the most critical should be based on the work carried out in Step 1 using the judgement of relevant experts. Rank the findings, noting that the highest priority in terms of a monitoring programme should be those values that are the most sensitive, those most likely to be significantly impacted, those that are most important to protect, or a combination of these factors.

Choosing relevant indicators

An indicator is defined as: signs or symptoms of changes, potentially due to numerous factors, in an environmental feature or features. Some examples of indicators are shown in Table 1.

Choosing what parameters to measure to detect changes in the indicators

When the most appropriate indicators have been selected it is important to decide on the parameters to measure. There are usually numerous parameters that could be measured for each indicator chosen, and therefore these need to be carefully selected. There are several factors that may influence the choice of parameters, for example, the cost of sampling/analysis, and the level of expertise needed to sample. Consideration should also be given to ensuring comparability with monitoring programmes conducted elsewhere, especially if these are in the near vicinity. Table 1 also gives examples of parameters for the various indicators listed. The COMNAP/SCAR Antarctic Environmental Monitoring Handbook should be consulted as a primary reference.

SCAR/COMNAP 1996 have recommended that the following criteria be used when selecting parameters:

The parameters must:

- Have the potential to exhibit changes in excess of limits of detection;
- Be directly relatable to a testable hypothesis;
- Be known or measurable above natural variability (i.e. background levels);
- Give information from which management decisions can be made;
- Be able to sustain the monitoring activity;
- Be able to be sampled within logistical and time constraints;
- Be measurable on samples that can be transported without deterioration or be measurable on-site in the field;
- Be amenable to quality assurance procedures including demonstrable precision, accuracy and reproducibility.

It is also desirable that the parameters:

- Be measurable by cost effective, simple and standard procedures (if the procedures are non-standard intercalibrations are essential);
- Be strongly related by what is believed to be a causal link to a particular activity or process;
- Be a direct measure of change in a value of concern;
- Permit generalisations about causative agents;
- Be definable in terms of limits beyond which changes are judged to be deleterious, and
- Be measurable without conflicting with scientific activities.

Finally, make sure that the chosen indicators can be readily measured and are achievable within the available resources.

Table 1. An overview of some potential indicators and parameters for use in monitoring programmes in Antarctica.

Indicator	Parameter
"Footprint"	Area subject to human activity, e.g. spatial coverage of buildings and associated impact including roads, pipes etc; number and location of field expeditions
Air quality	SO_2, particulates
Soil quality	Erosion (e.g. footpaths), metals, TPH, PAH
Sea water quality	TSS, DO, BOD, COD, pH, conductivity
Fresh water quality	TSS, DO, BOD, COD, pH, conductivity
Snow and ice quality	Metals, TPH, particulates
Vegetation quality	Spatial extent, metals
Wildlife health	Population size, breeding success
Fuel handling	Amount consumed, number of spills, size and location of spills
Aircraft/vehicle operations	Distance travelled, number of landings, fuel consumed
Solid and liquid waste	Waste types (including hazard), volume / weight
Waste water	TSS, DO, BOD, COD, pH, conductivity, faecal coliforms, volume
Field activities	Number of person days in field, location of field camps
Introduced organisms	Species, distribution, population size
EIA/permit compliance	Number of breaches recorded

Examples for Deciding What to Monitor:

1st Example

National Programme Charlie has decided to undertake an environmental monitoring programme to monitor environmental change in an Antarctic Specially Protected Area (ASPA) near Charlie Station. The information will be used to assist in the preparation of a Management Plan for the ASPA.

The key environmental feature in the ASPA is vegetation, namely mosses and lichens. The only potential impact from nearby activities is through pollution.

2nd Example

National Programme Delta is to undertake an environmental monitoring programme of its new summer station on the plateau. National Programme Delta has limited budget but is keen to meet Environmental Protocol requirements and ensure minimisation of environmental impacts.

It has initially developed a list of possible monitoring indicators from local environmental values and possible impacts but is unable to undertake monitoring of all of them due to resource constraints. The Environmental Manager uses the Impact Rating methodology already undertaken in the Environmental Impact Assessment for the new station to rank/prioritise the indicators:

Indicator	***Likelihood***	***Consequence***	***Resulting Impact Rating***
Station Footprint	*Certain*	*High*	*High*
Ice Pollution by Fuel	*Unlikely*	*High*	*High*
Air Quality – Emissions from station power plant	*Certain*	*Low*	*Medium*
Pollution from windblown debris	*Unlikely*	*Medium*	*Medium*
Introduced organisms on cargo	*Unlikely*	*Low (station is in a remote plateau location)*	*Low*

The Environmental Manager decides to only implement a monitoring programme on the indicators that score a high impact rating, which can also be undertaken within available resources.

2.2.2 Sampling methods and statistical design

It is important to ensure that the sampling methods and statistical design follow recognised scientific procedures. In this regard SCAR / COMNAP (1996) have recommended a series of basic tenets that need to be followed for the statistical design of monitoring programmes:

i. *Have a clear question.* The thought process should be:
question ->hypothesis ->indicators ->parameters ->model ->statistics and tests of hypothesis ->interpretation.

ii. *Have controls.* These should be both spatial and temporal where appropriate.

iii. *Have a balanced design,* e.g. the same number of replicate samples at each time and place.

iv. *Have replicates randomly allocated.*

v. *Conduct preliminary sampling (pilot study) in order to do the following (vi – ix):*

vi. *Assess the sampling methods* to ensure they are efficient and do not introduce bias into the study. Adequate quality assurance must be applied from initial sample collection, through transport to the laboratory, and during the analysis.

vii. *Estimate error variability* and necessary sampling effort to achieve the desired power.

viii. *Determine natural environmental patterns* to be incorporated into the study design (e.g. stratification).

ix. *If statistical analysis assumptions are not satisfied* (they probably will not be) then transform variable before analysis, use nonparametric methods or use simulation or randomisation methods.

Once specific parameters have been selected, technical requirements that need to be followed in order to measure the chosen parameters, need to be identified. The COMNAP/SCAR Antarctic Environmental Monitoring Handbook should be consulted when carrying out this step in the process.

2.2.3 Consultation

As a final step in the planning phase of the monitoring programme, it is important to consult with relevant stakeholders (scientists, logistics staff, managers, permitting authority etc) to ensure that the proposed monitoring programme meets the objectives identified in Step 1, and can effectively be resourced and implemented.

Example for Consultation

> *The Environmental Manager from National Programme Echo has prepared a draft monitoring programme for its shipping activities. The Environmental Manager undertakes widespread consultation with managers, maritime associations and the shipping companies to ensure the programme is realistic prior to implementation. As a result of consultation the Environmental Manager discovers that the maritime association already undertakes monitoring of one the indicators, and is pleased to provide data free of charge, saving thousands of dollars on the programme.*

2.3 STEP 3: Implementing the programme

2.3.1 Pilot project

If circumstances allow, consideration might be given to undertaking a pilot study to test the effectiveness of the indicators and parameters chosen. This could include taking a small set of samples for analysis to test both sampling and laboratory methodologies.

Example of a pilot study

> *National Programme Hotel undertakes the first year of its monitoring programme as a pilot study to ensure its effectiveness prior to full commitment and expenditure. As a result of the pilot study it discovers that it cannot retrieve sufficient water quality samples at one of the monitoring locations to achieve required statistical rigour due to unsafe sea ice conditions. National Programme Hotel amends its monitoring locations as a result of the pilot study to ensure reliable and continuous water quality data can be gathered.*

2.3.2 Baseline monitoring

It will be important to collect baseline data in circumstances where, for example, very little is known about the site to be monitored, or in those cases when some degree of impact is expected. Collection of baseline data may take some time (e.g. it may be necessary to collect baseline data over a full Antarctic season, or even over a full annual cycle. As such adequate time may need to be factored into the monitoring programme to ensure that sufficient baseline data can be collected.

2.3.3 Data handling (collection, storage and analysis)

The data collected through the monitoring programme must be analysed in order to assess whether the monitoring goals are being achieved. Relevant experts and scientists should be consulted in interpreting the data. It may be useful to establish a small group of relevant experts/scientists with responsibility for assessing and reporting on the monitoring information.

For more detailed assistance with data handling reference is made to Chapter 3 of the COMNAP/ SCAR Antarctic Environmental Monitoring Handbook and to Section 11 of the SCAR report 1996.

It is also noted that in the future a State of the Environment Reporting system may be developed by the Committee for Environmental Protection (CEP) for centralised data management of key environmental indicators. As such standardised reporting and data handling methods will be important to ensure comparability of data collected from various sources.

In addition it is recommended that the expertise of the Joint Committee on Antarctic Data Management (JCADM - *www.jcadm.scar.org*) be considered for data management needs.

Example for Data Handling

> *Tourist Operator Foxtrot has decided to implement an environmental monitoring programme for all of its tours. It establishes a data handling system on its internet site, using password access to allow its Voyage Leaders to input data on a weekly basis.*

2.3.4 Reporting and publishing

It is recommended that the results of environmental monitoring programmes in Antarctica should be made available to other operators and interested scientists for data comparison and knowledge sharing. Options include:

- Publishing in operational and environmental journals or peer-reviewed scientific journals;
- Informing the CEP by means of Information Papers;
- Making information available via COMNAP reporting procedures and website (refer to COMNAP database of environmental programmes);
- Publishing on national programme websites;
- Provision of data and information to the CEP's State of the environment reporting system.

Example for Reporting and Publishing

> *Tourist Operator Foxtrot stores its environmental management data on an internet site. It has developed a computer programme that automatically compiles and sends a monthly report to its national regulator. The Tourist Operator also uses the data to compile a yearly report that it forwards to IAATO for their information. In turn IAATO makes the information available to the CEP and the ATCM by means of annual reporting to the meetings.*

2.3.5 Programme review

Individual national programmes should periodically review any proposed monitoring programme, and, as noted above, the results of such reviews shared amongst national operators. It is recommended that review and critical evaluation focus on each of three phases of the monitoring activity: data collection, data analysis and use of the results in management decisions.

Data collection

The sampling process should be reviewed to ensure that:

- The original design of sampling location, frequency, replication and measured variables is being followed consistently. If costs, operational difficulties, changing technologies, etc. are limiting the intended design, appropriate changes must be put in place;
- The quality of the data is as originally specified.

Once analysis has begun, data collection should also be reviewed to ensure that the design is adequate and that the collected information is meeting the objectives of the monitoring programme.

It is also worth remembering that changes in the objectives/testable hypotheses may be required as new insights, or new activities, and/or technologies occur.

Data analysis and use

Data collection and analyses are intended to provide decision-makers with sound scientific information from which environmental management decisions are made. Therefore programme review should consider:

- If the data and the results of the monitoring are providing managers with the information that was envisaged in the original designs. If not adjustments must be made;

- Whether management's use of the data has resulted in a measurable decrease in human impact.

Review mechanism

For small scale monitoring programmes, review is likely to be conducted by the environmental manager or the monitoring programme supervisor. For larger scale or longer-term monitoring programmes programme evaluation/review is best undertaken by external peer review, which may include representatives from other national operators. Such peer review should be undertaken by individuals with relevant scientific, logistical or policy expertise.

Additional issues, which may also need to be factored into the programme review, include resource use and allocation, reporting procedures, and publication opportunities.

Example for Review of the Monitoring Programme

> *National Programme Golf undertakes its biannual review of its monitoring programme for its station. As part of its review it discovers that incineration is no longer undertaken on station, significantly improving air quality emissions. It revises its ranking/prioritisation of indicators and determines that air quality emissions is no longer a high ranking issue. It decides to cease all air quality monitoring, as the data no longer provides any management benefit.*

REFERENCES

AEON. 1999. "Environmental Monitoring and Environmental Impact Assessment". Workshop report. Available on *www.comnap.aq*.

Committee for Environmental Protection (CEP). 1999. "Guidelines for Environmental Impact Assessment in Antarctica". Available on *www.cep.aq.*

COMNAP. 1998. "Summary of Environmental Monitoring Activities in Antarctica". Available in archive version and updated version on *www.comnap.aq*.

COMNAP/SCAR. 2000. "Antarctic Environmental Monitoring Handbook". Available on *www.comnap.aq*.

SCAR/COMNAP. 1996. "Monitoring of Environmental Impacts from Science and Operations in Antarctica". Workshop reports. Available on *www.comnap.aq*.

The Protocol on Environmental Protection to the Antarctic Treaty (1991). Available on *www.cep.aq* and *www.ats.org.ar.*

The Antarctic Master Directory (AMD) has been established at *http://gcmd.nasa.gov/Data/portals/amd/* by the Joint Committee on Antarctic Data Management (JCADM) *www.jcadm.scar.org* for Antarctic Treaty nations to lodge metadata records.

APPENDICES

Appendix I: Monitoring requirements of the Environmental Protocol to the Antarctic Treaty; text of Recommendations XV-5 and XVII-1.

Appendix I:

Requirements of the Protocol on Environmental Protection to the Antarctica Treaty (the Protocol)

As indicated above, the Protocol, which came into force in 1998, is the principle basis for determining monitoring requirements in Antarctica.

Article 3(1) of the Protocol sets out key environmental principles for all operations in Antarctica and states that the fundamental considerations in the planning and conduct of all activities in the Antarctica Treaty area shall be, "The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment..."

Against this background Article 3 of the Protocol specifically identifies monitoring as key to the evaluation of impacts of all activities in that:

Article 3(2)(c) states:

> *"Activities in the Antarctic Treaty area shall be planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of Antarctica for the conduct of scientific research; such judgments shall take full account of:*
>
> *(v) whether there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify and provide early warning of any adverse effects of the activity and to provide for such modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment and dependent and associated ecosystems;"*

Article 3(2)(d) states:

> *"regular and effective monitoring shall take place to allow assessment of the impacts of ongoing activities, including the verification of predicted impacts;"*

Article 3(2)(e) states:

> "regular and effective monitoring shall take place to facilitate early detection of the possible unforeseen effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment and dependent and associated ecosystems."

Furthermore, monitoring is specifically identified in Annex I to the Protocol as a key element in respect of assessing the environmental impacts of activities in Antarctica:

- In respect of preparation of Comprehensive Environmental Evaluations (CEEs) Article 3(2)(g) of Annex I provides for *"identification of measures, including monitoring programmes, that could be taken to minimise or mitigate impacts of the proposed activity and to detect unforeseen impacts and that could provide early warning of any adverse effects of the activity as well as to deal promptly and effectively with accidents."*
- Article 5 of Annex I states:
  1. *"Procedures shall be put in place, including appropriate monitoring of key environmental indicators, to assess and verify the impact of any activity that proceeds following the completion of a Comprehensive Environmental Evaluation.*
  2. *The procedures referred to in paragraph 1 above and in Article 2(2) [activities proceeding on the basis of an Initial Environmental Evaluation] shall be designed to provide a regular and verifiable record of the impacts of the activity in order, inter alia to:*
     a. *Enable assessments to be made of the extent to which such impacts are consistent with the Protocol, and*
     b. *Provide information useful for minimising or mitigating impacts, and where appropriate, information on the need for suspension, cancellation or modification of the activity."*

Whilst not explicitly stated, monitoring is also likely to be a primary means of meeting additional requirements of the Protocol:

- Annex II sets out provisions for the conservation of Antarctic fauna and flora, and Article 6(1)(b) of Annex II requires Parties to make arrangements for *"obtaining and exchanging information as to the status of native mammals, birds, plants and invertebrates in the Antarctica Treaty area, and the extent to which any species or population needs protection"*.
- Annex III sets out provisions for waste disposal and waste management, and, in respect of waste management planning Article 8 of Annex III requires Parties to *"prepare and annually review and update its waste management plans, …specifying…current and planned arrangements for analysing the environmental effects of wastes and waste management"* (Article 8(2)(c)).
- Annex V sets out provisions in relation to Antarctic Specially Protected Areas and Antarctic Specially Managed Areas. Article 10(1)(b) of Annex V requires Parties to make arrangements for *"obtaining and exchanging information on any significant change or damage to any Antarctic Specially Managed Areas, Antarctic Specially Protected Areas or Historic Site or Monument"*.

It is also noted that two of the primary functions of the Committee for Environmental Protection, as set out in Article 12 of the Protocol, are *"to provide advice (to the ATCM) on:*

- *the state of the Antarctic environment* (Article 12(1)(j)); and
- *the need for scientific research, including environmental monitoring, related to the implementation of this Protocol* (Article 12(1)(k))".

RECOMMENDATION XV-5

HUMAN IMPACT ON THE ANTARCTIC ENVIRONMENT: ENVIRONMENTAL MONITORING IN ANTARCTICA

The Representatives,

Recognising that, because of its relatively pristine state, Antarctica provides an important natural laboratory to obtain baseline information on Antarctic environments and for detecting and monitoring some of the effects of human activities on the global environments and ecosystems upon which the welfare and survival of the human species depends;

Recognising also that scientific research, related logistic support activities, tourism, natural resources exploration and development, and other human activities in Antarctica could have local, regional or global environmental effects, or compromise the scientific value of Antarctica;

Recalling the Scientific Committee on Antarctic Research (SCAR) response to Recommendation XII-3 and Recommendation XIV-2, which call upon the Antarctic Treaty Consultative Parties to establish programmes for detecting and monitoring the effects of human activities on key components of Antarctic Ecosystems;

Conscious that determining cause-effect relationships between certain human activities and observed changes in Antarctic environments will require knowledge of natural variation in Antarctic environments and accurate record of such things as the types and quantities of fuels used to supply heat and light to Antarctic station and to operate aircraft and land vehicles in Antarctica;

Aware of the ecosystem monitoring programme being developed to help meet the objectives of the Convention on the Conservation of Antarctic Marine Living Resources;

Desiring to identify and initiate cooperative, long-term monitoring programmes necessary to verify the predicted effects and to detect and quantify the possible unforeseen effects of human activities on the Antarctic environment; and

Recognising that the design and implementation of integrated, comprehensive and cost-effective environmental monitoring programmes in Antarctica service both scientific and environmental protection purposes;

Recommend to their Governments that:

1. They encourage their national Antarctic programmes, individually and collectively, to continue and, as appropriate expand programmes in Antarctica aimed at detecting and monitoring global environmental change, including its effects on the ozone layer over Antarctica, effects on Antarctic terrestrial, marine and atmospheric environments and dependent and associated ecosystems as well as effects on Antarctic living resources.
2. They undertake, individually and collectively to establish environmental monitoring programmes to verify the predicted effects and to detect the possible unforeseen effects on Antarctic environments and living resources of activities in the Antarctic Treaty area, including:
   (a) Waste disposal;
   (b) Contamination by oil or other hazardous or toxic substances;

(c) Construction and operation of stations, field camps, and related ship, aircraft and other logistic support facilities;

(d) Conduct of science programmes;

(e) Recreational activities;

(f) Those affecting the purposes of designated protected areas.

3. They take such steps as necessary to maintain accurate records of the activities of their national programmes in Antarctica, including, among other things, maintaining accurate records of the types and quantities of fuels and other materials transported to and used to support their national programmes in Antarctica, the types and quantities of materials subsequently removed from Antarctica, and the types and quantities of materials disposed of in Antarctica by various means, bearing in mind Recommendation XV-3.

4. They convene, in accordance with Recommendation IV-24, a meeting of experts to consider and provide advice on:

(a) The types of cooperative, long-term monitoring programmes that would be useful for detecting, quantifying, monitoring, and determining the likely causes of observed changes in air quality, snow and water quality, and other key feature of Antarctic environments and living resources;

(b) On the methods that should be used to collect, report, store, exchange, and analyse needed data; and

(c) On where and how frequently various environmental parameters should be measured.

To this end, they invite SCAR through their national committees, to consider and provide advice on the above matters.

5. They exchange information and establish cooperative working relations with those Specialised Agencies of the United Nations and other international organisations having a scientific or technical interest in Antarctica that are engaged in the planning and implementation of related scientific research and environmental monitoring programmes.

RECOMMENDATION XVII-1

ENVIRONMENTAL MONITORING AND DATA MANAGEMENT

The Representatives,

Recalling Recommendations XV-5, XV-16, XV-12 and paragraphs 106-109 of the Report of the XVIth ATCM;

Noting the report and the valuable work of the First Meeting of Experts on Environmental Monitoring in Antarctica (XVII ATCM/INFO 9) and the recommendation sent forth in the afore mentioned report;

Noting that better data management can improve the quality of Antarctic Environmental Monitoring, operations and science;

Noting additionally the report by SCAR-COMNAP (XVII ATCM/WP5) describing actions that could be taken to develop a coordinated data management system with the intent to improve the comparability and accessibility of both scientific and environmental data being collected by national programmes, as called for by ATCM Recommendations XIII-5 and XV-16;

Recognising that, in the Final Act of the Protocol on Environmental Protection to the Antarctic Treaty, it was agreed that it was desirable to ensure effective implementation at an early date; and that paragraph 69 of the Report of the XVIth ATCM exhorts the Consultative Parties to ratify the protocol as soon as possible, and that meanwhile efforts also should be made to implement the provisions of the Annexes as rapidly and completely as possible;

Acknowledging that in order to meet the requirements of the Protocol on Environmental Protection to the Antarctic Treaty that calls, under Articles 3.2(d) and 3.2(e) for regular and effective monitoring, to allow assessment of the adverse impacts of human activities, it is necessary to focus environment impact monitoring particularly on anthropogenic effects at a local level;

Aware that once established, the Committee for Environmental Protection may offer its advice on these measures, consistent with its terms of reference as provided for in the Protocol;

Aware that applied monitoring can be expensive and may require long term commitment and that any environmental monitoring should be scientifically defensible, practicable and cost-effective;

Recommend to their Governments that they:

1. Through their SCAR National Committees request SCAR to consider and provide advice on:
   i. The types of long-term programmes, if any, necessary to verify that human activities (such as tourism, scientific research or other activities) do not have significant adverse effects on birds, seals and plants; and
   ii. Emission standards that should be established to ensure that the combustion of fossil fuels and incineration of waste do not contaminate the Antarctic atmosphere, terrestrial, ice, aquatic or marine environments in a way that would compromise their scientific values;
2. As their COMNAP Representatives in consultation with SCAR to establish research programmes at a representative subset of facilities in Antarctica to determine how different types and sizes of facilities in different localities (e.g. coastal and inland station on rocks and on ice shelves) affect the Antarctic environment;

3. Provide a list of the Antarctic data sets being compiled and archived by their nationals and make this list available to other Parties, SCAR and COMNAP, as soon as possible, to form the basis for the development of an Antarctic Data Directory;
4. Establish, as appropriate, national arrangements for obtaining expert advice on the types of data products and data access mechanisms which would best meet both the basic scientific requirements and long-term environmental monitoring requirements.

Resolution 3 (2005)

Fuel Storage and Handling

The Representatives,

Recalling Article 3 of the Environmental Protocol which requires that activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment;

Noting the importance which Article 14 of the Protocol attaches to inspections in accordance with Article VII of the Antarctic Treaty as a way to promote the protection of the Antarctic environment and dependent and associated ecosystems;

Noting also that the issue of fuel storage and handling has been raised in several reports of inspections under Article VII of the Antarctic Treaty and has been noted by the CEP on a number of occasions;

Conscious of the importance of bringing the issue of fuel storage and handling to the attention of the Treaty Parties;

Recommend:

1. That their Governments either replace bulk fuel facilities currently lacking secondary containment with double-skinned tanks or provide them with adequate bunding, and have adequate oil spill contingency plans in place;
2. That COMNAP consider undertaking a further assessment of fuel handling and storage facilities and procedures in Antarctica with a view to issuing a set of clear recommendations to operators.

Resolution 4 (2005)

Updating of Guidelines for Environmental Impact Assessment in Antarctica

The Representatives,

Noting that under Resolution 1 (1999) the ATCM adopted Guidelines for Environmental Impact Assessment;

Conscious of the need for these guidelines to better address the possible cumulative impacts arising from multiple activities at multiple locations undertaken by one or more national or private operator;

Considering the revision by the Committee of Environmental Protection of these guidelines;

Recommend that the Guidelines for Environmental Impact Assessment adopted by Resolution 1 (1999) be replaced by the amended guidelines attached to this text.

Guidelines for Environmental Impact Assessment in Antarctica

1. Introduction

The Madrid Protocol, in Article 3, establishes a number of environmental principles which can be considered a guide to environmental protection in Antarctica and its dependent and associated ecosystems. Among such principles, those stated under paragraph C express the necessity of collecting sufficient information "to allow prior assessments of, and informed judgements about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of Antarctica for the conduct of scientific research". In addition, it states that "such judgements shall take account of:

i) the scope of the activity, including its area, duration and intensity;

ii) the cumulative impacts of the activity, both by itself and in combination with other activities in the Antarctic Treaty Area;

iii) whether the activity will detrimentally affect any other activity in the Antarctic Treaty Area;

iv) whether technology and procedures are available to provide for environmentally safe operations;

v) whether there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify and provide early warning of any adverse effects of the activity and to provide for such modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment and dependent and associated ecosystems; and

vi) whether there exists the capacity to respond promptly and effectively to accidents, particularly those with potential environmental effects"

Article 8 of the Protocol introduces the term *Environmental Impact Assessment* and provides three categories of environmental impacts (*less than*, *equal to* and *more than minor or transitory*), according to their significance. The Article also requires that assessment of planned activities to be undertaken in Antarctica, subject to the procedures set out in Annex I.

Annex I of the Protocol provides a more comprehensive explanation of the different impact categories and establishes a set of basic principles to conduct an EIA for planned activities in Antarctica.

In addition, it sets up a preliminary stage for assessing the environmental impact of Antarctic activities, which is intended to determine if an impact produced by a certain activity is less than minor or transitory or not. Such determination must be accomplished through the appropriate national procedures.

According to the results of the preliminary stage, the activity can either:

- proceed (if the predicted impacts of the activity are likely to be less than minor or transitory); or

- be preceded by a an Initial Environmental Evaluation (IEE), if predicted impacts are likely to be minor or transitory; or

- be preceded by a Comprehensive Environmental Evaluation (CEE), if the predicted impacts are to be more than minor or transitory.

Although the key to decide whether an activity shall be preceded by an IEE or a CEE is the concept of *"minor or transitory impact"*, no agreement on this term has so far been reached (contributions to this subject can be found in XX ATCM/IP 2, New Zealand; XXI ATCM/WP 35, New Zealand; XXI ATCM/IP 55, Argentina, XXII ATCM/IP 66 , Russia and XXII ATCM/WP 19, Australia, among others). The difficulty with defining *"minor and transitory impact"* thus far appear to be due to the dependence of a number of variables associated with each activity and each environmental context. Therefore the interpretation of this term will need to be made on a case by case site specific basis. As a consequence, this document does not focus on seeking a clear definition of *"minor or transitory impact"*, but rather is an attempt to provide basic elements for the development of the EIA *process*.

Article 8 and Annex I of the Protocol on Environmental Protection to the Antarctic Treaty set out the requirements for Environmental Impact Assessments (EIAs) for proposed activities in Antarctica. These Guidelines to EIA in Antarctica do not amend, modify or interpret the requirements set out in Article 8 and Annex I of the Environmental Protocol, or the requirements of national legislation which may include procedures and guidelines for the preparation of EIAs in Antarctica. These Guidelines have been produced to assist those preparing EIAs for proposed activities in Antarctica.

2. Objectives

The general objective of these guidelines is to achieve transparency and effectiveness in assessing environmental impacts during the planning stages of possible activities in Antarctica, as well as consistency of approach in fulfilling the obligations of the Protocol.

Specifically, the guidelines aim to:

- assist proponents of activities who may have little experience of EIA in Antarctica;

- assist in determining the proper level of EIA document (according to the Protocol) to be prepared;

- facilitate co-operation and co-ordination in EIA for joint activities;

- facilitate comparison of EIAs for similar activities and/or environmental conditions;

- provide advice to operators other than ATCPs;

- assist in the retrospective analysis of cumulative impacts for specific sites;

- initiate a process of continuous improvement of EIA.

3. The EIA Process

The EIA is a process having the ultimate objective of providing decision makers with an indication of the likely environmental consequences of a proposed activity (figure 1).

The *process* of predicting the environmental impacts of an activity and assessing their significance is the same regardless of the apparent magnitude of the activity. Some activities require no more than a cursory examination to determine impacts, although it must be remembered that the level of assessment is relative to the significance of the environmental impacts, not to the scale or complexity of the activity. Thus, the picture that emerges with respect to the impacts of the activity will determine how much further the EIA process needs to be taken, and how complex it should be.

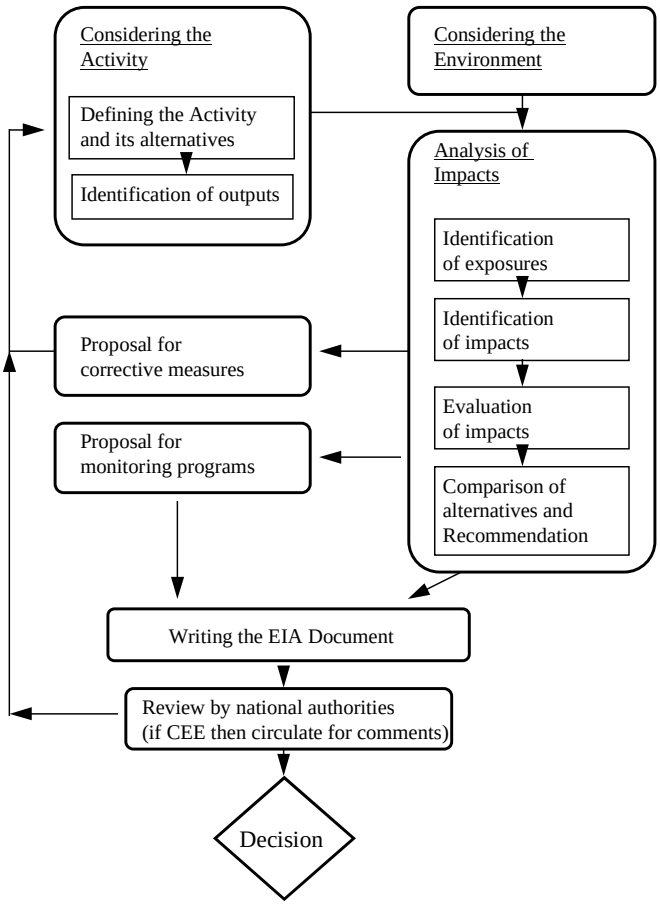


Figure 1: Steps of the EIA process for Antarctic activities

Those persons responsible for an Environmental Impact Assessment Process need to ensure that they consult as widely as is reasonably necessary and possible in order that the best available information and professional advice contribute to the outcome. A number of different participants may be involved throughout this process, ranging from those who are involved in the details of nearly all parts of the process (e.g. environmental officer, proponent of the activity) to those who are the technical experts who provide input in particular subjects of the process (e.g. researchers, logistic personnel, others with experience at the location or in a particular activity). In addition, EIAs undertaken in Antarctica for planned activities may represent a valuable source of information. At this respect, it should be pointed out that an updated list of EIAs is presented every ATCM, according to Resolution XIX-6. The Antarctic Data Directory System (ADDS) can also represent an helpful source of metadata.

3.1. Considering the activity

3.1.1. Defining the activity

An activity is an event or process resulting from (or associated with) the presence of humans in the Antarctic, and/or which may lead to the presence of humans in Antarctica. An activity may consist of several *actions*, e.g. an ice drilling *activity* may require *actions* such as the transport of equipment, establishment of a field camp, power generation for drilling, fuel management, drilling operation, waste management, etc. An activity should be analysed by considering all phases involved (e.g. construction, operation and potential dismantling or decommissioning phases).

The activity and the individual actions should be defined through a planning process which considers the physical, technical and economic aspects of the proposed project and its alternatives. Consultation with relevant experts to identify all these aspects is an important part of this initial scoping process. It is important to accurately define all aspects of the activity which could have environmental impacts. The rest of the EIA process relies on this initial description, which should occur during the planning process.

The following aspects of the proposed activity and its alternatives should be clearly identified:

- the purpose of and the need for the activity;
- the principal characteristics of the activity that might cause impact on the environment; for instance: design characteristics; construction requirements (types of material, technologies, energy, size of any installation, personnel, temporary constructions, etc.); transportation requirements (e.g. types, numbers and frequency of use of vehicles, fuel types); type (according to Annex III of the Protocol) and volume of wastes generated through different phases of the activity and their final disposition; dismantling of temporary constructions; decommissioning the activity if necessary; as well as those aspects that will result from the operational phase of the activity;
- the relationship of the proposed activity to relevant previous or current activities;
- a description of the activity's location and geographical area, indicating access roads, etc. Using maps will ease the evaluation process and, therefore, will be useful in the EIA documentation;

- timing of the activity (including range of calendar dates for construction time, as well as overall duration, periods of operation of the activity and decommissioning. This may be significant with respect to wildlife breeding cycles, for example.);

- location of the activity with regard to areas with special management requirements (SPA, SSSI, HSM, CCAMLR CEMP sites, already proposed ASPAs and/or ASMAs, etc.);

- precautionary measures that are integral to the project including during the construction, operational and decommissioning phases.

Careful consideration is required to determine the full scope of the activity so that the impacts can be properly assessed. This is necessary to avoid preparing a number of separate EIAs on actions which indicate an apparent low impact, when in fact, taken in its entirety, the activity actually has potential for impacts of much greater significance. This particularly common where a number of activities take place at the same site either spatially and/or temporally. Where activities are to be undertaken at sites which are visited repeatedly by one or more operators the cumulative effects of past, current and planned activities should be taken into consideration.

In identifying spatial and temporal boundaries for the EIA proponents should identify other activities occurring in the region within the EIA framework.

When defining an Antarctic activity, experience gained in similar projects undertaken within and outside the Antarctic Treaty System Area (e.g. the Arctic) may be an additional and valuable source of information.

Once the activity is defined, any subsequent changes to the activity must be clearly identified and addressed according to when they occur in the EIA process (e.g. if the change occurs once the EIA document is completed, then an amendment to the EIA or a rewrite of the document may be necessary depending on how significant the change is). In every case it is important that the change and its implications (in terms of impacts) is assessed in the same manner as other impacts previously identified in the EIA process.

3.1.2. Alternatives to the activity

Both the proposed activity and possible alternatives should be examined in concert so that a decision maker can more easily compare the potential impacts. Both the environmental and scientific consequences should be considered during the evaluation.

Examples of alternatives for consideration include:

- use of different locations or sites for the activity;

- use of different technologies, in order to reduce the outputs (or the intensity of the outputs) of the activity;

- use of pre-existing facilities; and

- different timing for the activity.

The alternative of not proceeding with the proposed activity (i.e. the "no-action" alternative) should always be included in any analysis of environmental impacts of the proposed activity.

3.1.3. Identification of outputs of the activity

An *output* is a physical change (e.g. movement of sediments by vehicle passage, noise) or an entity (e.g. emissions, an introduced species) imposed on or released to the environment as the result of an *action* or an *activity*. Outputs can also be defined as by-products of the activity (or action) and can include emissions, dust, mechanical action on substrate, fuel spills, noise, light, electromagnetic radiation, wastes, heat, introductions of alien species, etc.

Note that a single action may generate several different outputs (for example the use of vehicles may cause soil compaction, emissions, noise, visual interference etc.) and that the same type of output may be generated by different actions of a single activity, (for example in an ice drilling activity emissions may come from the use of vehicles, drilling operations, power generation, etc.).

When planning an activity the outputs of the proposed activity should be considered together with the outputs arising from past, present, and future activities. Therefore, potential for additive, synergistic or antagonistic interactions between outputs (thus resulting in possible significant environmental impacts) has to be considered.

It is also important to identify and consider outputs resulting from the activitie of ractions of other proponents that can contribute to cumulative effects.

Systematising outputs and actions in a matrix format may be helpful in this process. The example below, taken from *"Monitoring of Environmental Impacts from Science and Operations in Antarctica"(SCAR/COMNAP, 1996)*, illustrates a potential situation (e.g. actions and outputs associated with a station complex).

	OUTPUTS					
ACTIONS	**Air emissions (incl. Dust)**	**Wastes**	**Noise**	**Fuel spills**	**Mechanical action**	**Heat**
Vehicles	X	-	X	X	X	X
Power generation	X	-	X	X	-	X
Building	X	X	X	X	X	-
Fuel storage	-	-	-	X	-	-

Outputs may vary across different alternatives. That is there may not be a single set of outputs, but rather multiple sets if the alternatives are significantly different from one another.

The geographical spread of an output has to be accurately estimated in order to determine to what extent the environment is exposed.

3.2. Considering the environment

Consideration of the environment requires the characterisation of all relevant physical, biological, chemical and anthropic elements or values in a given area, where and when an activity is proposed. Relevant means all those aspects of the environment that the proposed activity might influence or which might influence the activity.

Such information should be quantitative (e.g., heavy metal concentration on organisms or on river flows, a bird population size) where available and appropriate. In many cases qualitative descriptions (e.g., aesthetic value of a landscape) may have to be used. Maps, publications, research results and researchers are different sources of information to be identified and taken into account.

Consideration of the existing environment should include:

- recognition of the special status accorded to Antarctica by the ATS, including its status as a natural reserve devoted to peace and science;
- the physical and biological features that could be affected directly or indirectly, including:
  - the physical characteristics (topography, bathymetry, geology, geomorphology, soils, hydrology, meteorology, glaciology etc.);
  - the biota (e.g. inventories of plant and animal species, populations and communities, and other important features such as the presence of breeding grounds.); and
  - any dependent and related populations (e.g. bird nesting areas related to feeding areas);
- natural variations in environmental conditions that could occur on a diurnal, seasonal, annual and/or interannual timescale;
- information about the spatial and temporal variability of the environmental sensitivity (e.g. differences in impacts when an area is snow covered compared to when it is not);
- current trends in natural processes such as population growth or spread of particular species, geological or hydrological phenomena;
- the reliability of the data (e.g. anecdotal, historical, scientific, etc.);
- aspects of the environment which have been changed, or may be changing as the result of other current or previous activities;
- recognition of management action taken/required to address or minimise the cumulative impacts of past and present activities;
- special values of the area (if previously identified);
- the existence of areas potentially subject to indirect and cumulative impacts;
- the influence that the activity may exert on dependent and associated ecosystems;

- existing activities being carried out in the area or at the site, particularly scientific activities, given their intrinsic importance as a value to be protected in Antarctica;

- specific parameters against which predicted changes are to be monitored, including:

A thorough consideration of the environment before starting the activity (baseline information) is essential to ensure a valid prediction of impacts and to define monitoring parameters, if required. If such a baseline information is not available, field research may be necessary to obtain reliable data about the state of the environment before beginning the activity.

It is also important to clearly identify gaps in knowledge and uncertainties encountered in compiling the information.

When an operator plans an activity which will be undertaken at several sites, each one of those sites should be described according to the methodology above.

3.3. Analysis of Impacts

3.3.1. Identification of exposures

Exposure is the process of interaction between an identified potential output and an environmental element or value. Identifying exposure means determining which component of the environment is susceptible to be affected by the outputs of an activity or action. Overlaying spatial information (e.g. use of a GIS) is a valuable tool to assist in this determination.

Determination of exposures may be summarised using a matrix of outputs and environmental elements or values, taking into account that matrices can only give information about the existence of exposures but not on their intensity.

The table below provides an example of the interaction of various outputs with environmental elements to identify relevant exposures resulting from the activity.

When the box is crossed (X) it means that the environmental element is exposed to the considered output. This is a random example for a given environment and may, therefore, vary in another context. For example, a noise may occur when a breeding site is unoccupied, or a breeding site may be protected from noise by a topographic feature. From the examples above it can be inferred that the occurrence of an output does not necessarily lead to exposure of environmental element or value and hence potential for environmental effects.

	ENVIRONMENTAL ELEMENTS OR VALUES				
OUTPUTS	**Flora**	**Fauna**	**Freshwater / Seawater**	**Soil**	**Air**
Emissions	X	X	X	X	X
Noise		X			
Fuel spills	X	X	X	X	
Wastes	X	X	X	X	
Introduced species	X	X			

Correct identification of the intensity of exposure is a crucial step in making a reliable prediction of impacts. Some elements contributing to that identification are:

- Temporal variation. The exposure of an environmental element or value may change with the season in which the activity takes place, as climate cycles, breeding patterns, etc. may change over time.

- Cause-effect relationships between outputs and environmental elements or values must be determined, especially in cases where the relationships are indirect, or an element or value is exposed to outputs from numerous sources, or repeatedly from the same source.

3.3.2. Impact identification

An **impact** (synonym: **effect**) is a change in the values or resources attributable to a human activity. It is the consequence (e.g. reduced plant cover) of an agent of change, not the agent itself (e.g. increase of trampling). Impact may also be defined as the result of the interaction between an output and an environmental value or resource.

The identification of environmental impacts consists of the characterisation of all changes in environmental elements or values exposed to the outputs of a given set of activities. The identification task requires that evaluators are able to determine the important cause-effect relationships between the activities and the environmental elements or values. Only when the impact is identified can an evaluation be made of its **significance**.

An impact may be identified by its nature, spatial extent, intensity, duration, reversibility and lag time.

Nature*: type of change imposed on the environment due to the activity (e.g. contamination, erosion, mortality).*

Spatial extent*: area or volume where changes are likely to be detectable.*

Intensity*: a measure of the amount of change imposed on the environment due to the activity (it can be measured, or estimated, through, e.g. number of species or individuals effected, concentration of a given pollutant in a waterbody, rates of erosion, rates of mortality, etc.).*

Duration*: period of time during which changes in the environment are likely to occur.*

Reversibility*: possibility of the system to return to its initial environmental conditions once an impact is produced.*

Lag time*: time span between the moment outputs are released to or imposed on the environment and the moment impacts occur.*

In addition, a proper impact identification should also enable a distinction between direct, indirect and cumulative impacts.

A ***direct impact*** is a change in environmental components that results from direct cause-effect consequences of interaction between the exposed environment and outputs (e.g. decrease of a limpet population due to an oil spill). An ***indirect impact*** is a change in environmental components that results from interactions between the environment and other impacts – direct or indirect – (e.g.

alteration in seagull population due to a decrease in limpet population which, in turn, was caused by an oil spill).

A ***cumulative impact*** is the combined impact of past, present, and reasonably foreseeable activities. These activities may occur over time and space and can be additive or interactive/synergistic (e.g. decrease of limpet population due to the combined effect of oil discharges by base and ship operations). Cumulative impacts can often be one of the hardest impact categories to adequately identify in the EIA process. When attempting to identify cumulative impacts it is important to consider both spatial and temporal aspects and to identify other activities which have and could occur at the same site or within the same area.

Several methods exist to identify impacts such as: overlay maps, checklists, matrices, etc. The choice of the methodology will depend on the character of the activity and the environment that is likely to be affected. Recognition should be given to relevant scientific data, where this exists, and to the results of monitoring programs.

3.3.3. Impact Evaluation

The purpose of impact evaluation is to assign relative significance to predicted impacts associated with an activity (and the various identified alternatives).

Significance*: It is a value judgement about the severity and importance of a change in a given environment or environmental value.*

According to the Madrid Protocol, impacts shall be evaluated by taking into account three levels of significance:

- less than minor or transitory impact;
- minor or transitory impact; or
- more than minor or transitory impact.

The interpretation of these terms should be made on a case by case site specific basis. However it may be useful to consider how similar impacts have been judged in earlier EIAs at similar sites and/or for similar types of activities.

An inherent consideration to judging significance is that it may have a rather subjective component and this fact should be acknowledged. Where an impact has the possibility of being significant, several experts should be consulted to achieve a view as objective as possible.. This is particularly important either if there is a reliance on incomplete data or if there are gaps in the knowledge.

Judging significance should not be based solely on direct impacts, but must also take account of possible indirect and cumulative impacts. This evaluation should determine the magnitude and significance of cumulative effects.

The significance of the unavoidable impacts (those impacts for which no further mitigation is possible) represents an important consideration for the decision maker in deciding whether, on balance, an activity is justified.

Some problems can arise when evaluating impacts, due to misunderstanding or overlooking some aspects of the process of evaluating impacts. These can include for example:

- confusing duration of the impact with duration of the activity;
- confusing outputs of activities with impacts;
- limiting the analysis to direct impacts, without consideration of indirect and cumulative impacts.

3.4. Comparison of impacts

When the project has been assessed with respect to environmental impacts it is necessary to summarise and aggregate the significant impacts for the various alternatives in a form suitable for communication to the decision makers. From such an aggregation of information a comparison among alternatives can be easily made.

3.5. Proposal for corrective measures

Corrective measures are composed of all steps conducted to decrease, avoid, or eliminate any of the components of an impact. It can be considered a process of feedback, and should occur throughout the EIA process, not simply as a final step. Corrective measures include mitigation and remediation actions.

Mitigation is the use of practice, procedure or technology to minimise or to prevent impacts associated with proposed activities. The modification of any aspect of the activity (and hence the consideration of outputs and the environmental exposure) as well as the establishment of supervision procedures represent effective ways of mitigation.

Mitigation measures will vary according to the activity and the characteristics of the environment , and may include:

- developing on site control procedures (e.g. recommended methods for waste disposal);
- establishing the best time for the activity (e.g. to avoid the breeding season of penguins);
- providing environmental education and training to personnel, or contractors, involved in the activity;
- ensuring adequate on site supervision of the activity by senior project staff or environmental specialists.

Remediation consists of the steps taken after impacts have occurred to promote, as much as possible, the return of the environment to its original condition.

The final version of the activity to be assessed must incorporate all corrective measures, including those associated with mitigation and remediation actions. Impact avoidance, as a form of mitigation, may contribute to minimising monitoring, reducing remediation costs and generally contribute also to maintaining the existing state of the environment.

When considering mitigation and remediation measures, the following issues should be addressed:

- making a clear distinction between mitigation and remediation measures;
- clearly defining the state of the environment that is being aimed for through such measures;
- considering that new, unforeseen impacts may appear as a result of inadequate implementation of proposed mitigation measures;
- noting that the environment may not always be capable of returning to its original condition, even when remediation actions are implemented;
- considering that a given corrective measure may interact antagonistically or synergically with other corrective measures.

3.6. Proposal for Monitoring Programs

Monitoring consists of standardised measurements or observations of key parameters (outputs and environmental variables) over time, their statistical evaluation and reporting on the state of the environment in order to define quality and trends. For the EIA process, monitoring should be oriented towards confirming the accuracy of predictions about environmental impacts of the activity, and to detect unforeseen impacts or impacts more significant than expected. Given this, it may be useful to set environmental thresholds or standards for an activity that monitoring results are assessed against. If these thresholds are exceeded, then a review or re-analysis would be required of assumptions made regarding the environmental impacts or of management systems related to the activity.

Monitoring may also include any other procedures that can be used to assess and verify the predicted impacts of the activity. Where measurement of specific parameters is not necessary or appropriate, assessment and verification procedures could include maintaining a log of the activity that actually occurred, and of changes in the nature of the activity where they were significantly different from those described in the EIA. This information can be useful for further minimising or mitigating impacts, and, where appropriate, for modifying, suspending or even cancelling all or part of the activity.

Monitoring is not about the measurement of everything in a haphazard approach to detect change but about precise measurement of a few target species, processes, or other indicators, carefully selected on the basis of scientifically sound predetermined criteria. Where a number of proponents are conducting activities at the same sites they should give consideration to establishing joint regional monitoring programs.

The process of selecting key indicators should be accomplished during the activity's planning stage, once outputs have been identified, the environment has been considered and associated impacts have been assessed, while monitoring environmental parameters generally should start before the commencement of the activity if adequate baseline information is not available.

Planning or undertaking monitoring activities may be hindered by a number of situations:

- leaving the planning of monitoring programs until the activity is in progress;
- monitoring activities can be costly, especially for multi-year projects and activities;

- some assumptions about the environmental impacts of an activity cannot be tested;
- failure to follow through with monitoring;
- failure to distinguish between natural and human-induced variability in environmental parameters.

4. Writing the EIA Document

The outcome of an EIA is a formal document, which presents all the relevant information about the EIA process. The EIA document represents a fundamental link between the EIA process and decision makers seeing that conclusions stemming from the EIA process will assist decision makers to consider the environmental aspects of the proposed activity.

Four bodies of information arise from an EIA process: *methodology, data*, *results* and *conclusions* derived from them. Since *results* and *conclusions* are of particular interest for decision makers, these chapters should be written in an accessible language, avoiding very technical terms. The use of graphical information, such as maps, tables and graphs, is an effective way of improving communication.

The size and level of detail in the document will depend on the significance of the environmental impacts that have been identified throughout the EIA process. Thus, Annex I to the Protocol establishes two formats to document it: Initial Environmental Evaluation (IEE) and Comprehensive Environmental Evaluation (CEE), for which the Protocol requires the presentation of different volumes of information (Annex I, Articles 2 and 3).

Unless it has been determined that an activity will have less than a minor or transitory impact or it has already been determined that a Comprehensive Environmental Evaluation is needed, an Initial Environmental Evaluation (IEE) shall be prepared. If the EIA process indicates that a proposed activity is likely to have more than a minor or transitory impact a Comprehensive Environmental Evaluation must be prepared.

According to Annex I requirements a draft CEE shall be prepared first, which shall be circulated to all Parties as well as to CEP for comments. Once comments and suggestions have been incorporated, a final CEE is circulated to all Parties.

The following table summarises the steps to be considered throughout the EIA process (which are explained in Section 3 of the present guidelines). It also lists the requirements stemming from Annex I that should be included in an EIA document. In the case of IEE, some of the marked items are not specifically mentioned in Annex I, Article 2. However, their inclusion in the IEE document is often useful to communicate the results of the process in a transparent manner. These items were distinguished in the table with an X.

EIA Contents and Annex I Requirements	IEE	CEE
Description of the purpose and need of the activity	√	√
Description of the proposed activity and possible alternatives and the consequences of those alternatives	√	√
Alternative of not proceeding with the activity	X	√
Description of the initial environmental reference state and prediction of the environmental state in absence of the activity	X	√
Description of methods and data used to forecast the impacts	X	√
Estimation of nature, extent, duration and intensity of direct impacts	√	√
Consideration of cumulative impacts	√	√
Consideration of possible indirect impacts	X	√
Monitoring programs	X	√
Mitigation and remediation measures	X	√
Identification of unavoidable impacts	X	√
Effects of the activity on scientific research and other uses or values	X	√
Identification of gaps in the knowledge	X	√
Preparers and advisors	X	√
References	X	X
Non-technical summary	X	√
Index	X	X
Glossary		X
Cover sheet		X

√ Required by annex I.

X Often useful.

The following text focuses briefly on how the items listed above should be referred to in the text of any EIA. Further technical information is already described in previous chapters.

Description of the Purpose and Need for the Proposed Activity

This section should include a brief description of the proposed activity and an explanation of the intent of the activity. It should include sufficient detail to make it clear why the activity is being proposed including the need for the activity to proceed. It should also provide details on the process by which the scope of the activity was defined. This will help ensure that the full scope of the activity has been included so that impacts can be properly assessed. If a formal process was used to accomplish this (a formal meeting or solicitation of input from the public or other groups), that process and its results should be discussed here.

Description of the proposed activity and possible alternatives and the consequences of those alternatives

This section should include a detailed description of the proposed activity as well as reasonable alternatives. The first alternative to be described would be the proposed activity. The description should be as comprehensive and detailed as possible (see section 3.1).

It may be useful to provide a comparison of alternatives in this section. For instance, for a new research station, alternatives might include differences in the size of the station and the number of persons that could be accommodated. These differences would mean different quantities of materials required, fuels consumed and emissions or wastes generated. Tables showing appropriate comparisons can be very helpful to the reader of the document.

Alternative of not proceeding with the activity

The alternative of not proceeding with the proposed activity (i.e. the "no-action" alternative) should be described to highlight the pros and cons of not conducting the activity. Although the Protocol only requires its inclusion in CEEs, it is useful to also include the "no-action" alternative in the text of IEEs in order to better justify the need for proceeding with the activity.

Description of the initial environmental reference state and prediction of the environmental state in absence of the activity

Such a description should not be limited to a characterisation of the relevant physical, biological, chemical and anthropic elements of the environment, but should also take into account the existence and behaviour of dynamic trends and processes in order to predict the state of the environment in absence of the activity. A proper description of the initial environmental reference state provides elements against which changes are to be compared.

Description of methods and data used to forecast the impacts

The purpose of this section is to explain and, if necessary, defend the design of the assessment and then provide enough detail that a further evaluator can understand and reproduce the procedure. Careful writing of the methodology is critically important because it determines that results can be reproducible and/or comparable.

Estimation of nature, extent, duration and intensity of impacts (including consideration of possible indirect and cumulative impacts).

This section contains the results of analyses of impacts, which includes a clear description of identified exposures as well as the identification of impact aspects, in terms of their nature, spatial

extent, intensity, duration, reversibility and lag time. It must clearly establish the significance assigned to each impact and the justification for such assignment. In addition, and to summarise this section, the inclusion of a table showing the environmental impacts on each environmental component can be very helpful.

Special attention must be paid to the consideration of possible indirect and cumulative impacts, since cause-effect relationship determining the existence of such impacts usually exhibit a higher degree of complexity.

Monitoring programs

When necessary, this section should clearly define monitoring objectives, set testable hypotheses, choose key parameters to be monitored, assess data collection methods, design statistical sampling program, and decide on frequency and timing of data collection/recording. Implementation of such monitoring programs is a further step that may begin after the planning of the activity has been completed, even though the activity has not actually been initiated.

Mitigation and remediation measures

Since mitigation and remediation measures usually aim to correct some aspects of the activity, communication of these measures must be concrete, pointing out the proposed actions and their timing, as well as the benefits associated to each individual measure. It is often useful to include this section in the text of IEEs.

Identification of unavoidable impacts

Recognition of the existence of unavoidable impacts should be included within any impact analysis. Consideration of such impacts is of great importance given that the occurrence of unavoidable impacts may affect the decision on whether to proceed with the proposed activity.

Effects of the activity on scientific research and other uses or values

Taking into account that the Protocol designates Antarctica as an area devoted to peace and science, the effects of the proposed activity on ongoing scientific research, or on the potential of a site to future scientific research, must be a fundamental consideration when the impact analysis is carried out.

Identification of gaps in the knowledge

Existing bodies of knowledge (i.e. empirical, theoretical, or anecdotal data and information) are used to support the assessment process. Nonetheless, these bodies of knowledge may be incomplete or may be surrounded by varying degrees of uncertainty. It is critical to identify explicitly in the assessment where such incompleteness or uncertainty exists; and how this has been factored into the assessment process. This disclosure can be useful in assessment by clearly identifying where more knowledge is needed.

Preparers and Advisors

This section provides a list of those experts who were consulted in preparing the assessment, their areas of expertise, and appropriate contact information. It should also list the persons who were responsible for the actual preparation of the document. This information is useful to reviewers and

decision makers to ensure that the appropriate expertise was brought to bear on the analyses needed to assess the type and degree of impact from the proposed activity. It is also useful information for future assessments on similar activities or issues.

References

This section should list any references used in preparing the evaluation. They may include research or other scientific papers used in the analysis of impacts or monitoring data used to establish baseline conditions in the area where the activity is proposed. They may also include other environmental assessments of similar activities at other or similar locations.

Index

As an EIA document may be fairly large , an index is a very helpful aid to the reader.

Glossary

This section provides a list of terms and definitions as well as abbreviations that are helpful to the reader, especially if the terms are not commonly understood.

Cover Sheet

The CEE should contain a title page or cover sheet that lists the name and address of the person or organization who prepared the CEE and the address to which comments should be sent (for the draft document only).

Non-Technical Summary

The CEE must contain a non-technical summary of the contents of the document. This summary should be written in an accessible language and include pertinent information on the purpose and need for the proposed activity, the issues and alternatives considered, the existing environment, and the impacts associated with each alternative. A non-technical summary might also be useful for an IEE.

Finally, in either case (IEE or CEE) a number of considerations about writing the EIA document should be taken into account, such as:

- avoidance of including irrelevant descriptive information;
- documenting all relevant steps of the process;
- clearly describing the impact identification methodology;
- clearly distinguishing between results (identification of impacts, mitigation measures, etc.) and final value judgement of significance;
- properly connecting results and conclusions.

5. Annex I Requirements for Circulation

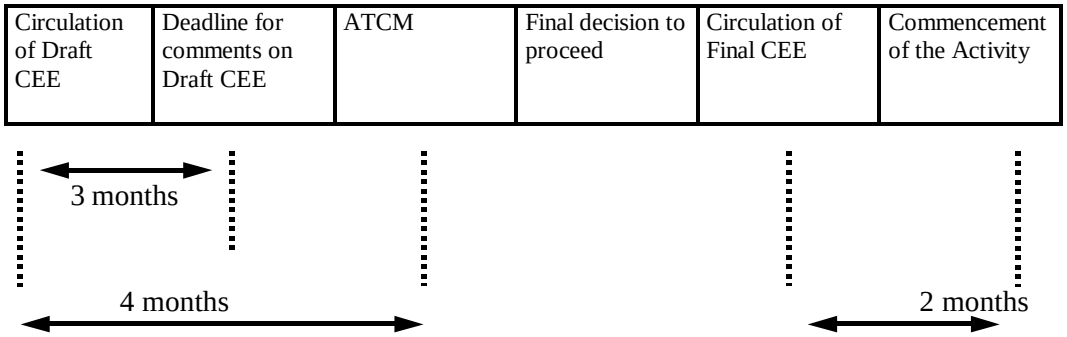
5.1. Public circulation of an EIA

Under Annex I, public circulation is only required for CEEs. The draft CEE shall be made publicly available and shall be circulated to all Parties, which shall also make it publicly available, for comment. A period of 90 days shall be allowed for the receipt of comments. It shall be forwarded to the CEP at the same time as it is circulated to the Parties, and at least 120 days before the next ATCM, for consideration as appropriate.

5.2. Receipt and incorporation of comments

No final decision shall be taken to proceed with the proposed activity in the Antarctic Treaty area unless there has been an opportunity for consideration of the draft CEE by the ATCM on the advice of the CEP, provided that no decision to proceed with a proposed activity shall be delayed for longer than fifteen months from the day of circulation of the draft CEE. A final CEE shall address and shall include or summarise comments received on the draft CEE. The final CEE, notice of any decision relating thereto, and any evaluation of the significance of the predicted impacts in relation to the advantages of the proposed activity, shall be circulated to all Parties, which shall also make them publicly available, at least sixty days before the commencement of the proposed activity in the Antarctic Treaty area.

The following diagram illustrates this schedule for CEEs, as defined in Annex I:



6. Definition of terms in the EIA process

Action: any step taken as a part of an activity.

Activity: an event or process resulting from (or associated with) the presence of humans in the Antarctic, and/or which may lead to the presence of humans in Antarctica (adapted from *SCAR/ COMNAP Monitoring Workshop*).

Comprehensive Environmental Evaluation (CEE): an environmental impact document required for proposed activities that may have more than a minor or transitory impact on the Antarctic environment (from *Madrid Protocol, Annex I, Article 3*).

Cumulative Impact: the combined impact of past, present, and reasonably foreseeable activities. These activities may occur over time and space and can be additive or interactive/synergistic (adapted from *IUCN Cumulative Impacts Workshop)*. These activities may involve visits by multiple operators or repeated visits to the same site by the same operator.

Direct Impact: a change in environmental components that results from direct cause-effect consequences of interaction between the exposed environment and outputs (from *Guidelines for EIA in the Arctic).*

Environmental Impact Assessment (EIA): a process for identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of proposed projects and physical activities prior to major decisions and commitments being made (from *Guidelines EIA in the Arctic*).

Exposure: the process of interaction between an identified potential output and an environmental element or value (adapted from *SCAR/COMNAP Monitoring Workshop*).

Impact: a change in the values or resources attributable to a human activity. It is the consequence (e.g. reduced plant cover) of an agent of change, not the agent itself (e.g. increase of trampling). Synonym: effect (from *SCAR/COMNAP Monitoring Workshop*).

Indirect Impact: a change in environmental components that results from interactions between the environment and other impacts (direct or indirect). (From *Guidelines for EIA in the Arctic.)*

Initial Environmental Evaluation (IEE): an environmental impact document required for proposed activities that may have a minor or transitory impact on the Antarctic environment (from *Madrid Protocol, Annex I, Article 2*).

Mitigation: the use of practice, procedure or technology to minimise or to prevent impacts associated with proposed activities. (*COMNAP Practical Guidelines.)*

Monitoring: consists of standardised measurements or observations of key parameters (outputs and environmental variables) over time, their statistical evaluation and reporting on the state of the environment in order to define quality and trends (adapted from *SCAR/COMNAP Monitoring Workshop*).

Operator: individuals or organisations undertaking activities from which impacts arise.

Output: a physical change (e.g. movement of sediments by vehicle passage, noise) or an entity (e.g. emissions, an introduced species) imposed on or released to the environment as the result of an *action* or an *activity*. (*SCAR/COMNAP Monitoring Workshop.*)

Preliminary Stage (PS): a process that considers the level of environmental impacts of proposed activities -before their commencement- referred to in Article 8 of the Protocol, in accordance with appropriate national procedures (from *Madrid Protocol, Annex I, Article 1*).

Proponent: an individual or a national program advocating the activity and responsible for the preparation of the EIA document.

Remediation: consists of the steps taken after impacts have occurred to promote, as much as possible, the return of the environment to its original condition.

Unavoidable Impact: an impact for which no further mitigation is possible.

7. References

ARCTIC ENVIRONMENTAL PROTECTION STRATEGY. 1997. Guidelines for Environmental Impacts Assessment (EIA) in the Arctic. Sustainable Development and Utilisation. Finnish Ministry of the Environment, Finland, 50 pp.

ATCPs. 1991. Protocol on Environmental Protection to the Antarctic Treaty (plus annexes). 11th Antarctic Treaty Special Consultative Meeting. Madrid, 22-30 April, 17-23 June 1991.

COMNAP. 1992. The Antarctic Environmental Assessment Process, Practical Guidelines. Bologna (Italy) June 20, 1991, revised Washington D.C. (USA), March 4, 1992.

FOREIGN AND COMMONWEALTH OFFICE. 1995. Guide to Environmental Impact Assessment of Activities in Antarctica. Polar Regions Section, South Atlantic and Antarctic Department, London.

IUCN - The World Conservation Union. 1996. Cumulative Environmental Impacts in Antarctica. Minimisation and Management. Edited by M. de Poorter and J.C. Dalziell. Washington, D.C., USA. 145 pp.

MINISTRY OF FOREIGN AFFAIRS AND TRADE. 1997. Guidelines and Procedures for Visitors to the Ross Sea Region. Ministry of Foreign Affairs and Trade. New Zealand.

SCAR/COMNAP. 1996. Monitoring of Environmental Impacts from Science and Operations in Antarctica. Workshop report. 43 pp and Annexes, 1996 Workshops.

XX ATCM/IP 2, Developing and Understanding of Minor or Transitory, submitted by New Zealand.

XXI ATCM/IP 55, Elementos para la Interpretación de los Procedimientos de Evaluación de Impacto Ambiental contenidos en el Anexo I del Protocolo de Madrid, submitted by Argentina.

XXI ATCM/WP 35, Further understanding of the term Minor or Transitory, submitted by New Zealand.

XXII ATCM/IP 66, Application of the “minor or transitory impacts” criterion of EIA in different regions of Antarctica, submitted by Russian Federation.

XXII ATCM/WP 19, Environmental Impact Assessment. The role of EIA Guidelines in understanding “Minor or Transitory”, submitted by Australia.

8. Acronyms

ADDB: Antarctic Digital Database

ASMA: Antarctic Specially Managed Area

ASPA: Antarctic Specially Protected Area

ATCM: Antarctic Treaty Consultative Meeting

ATCP: Antarctic Treaty Consultative Party

ATS: Antarctic Treaty System

CCAMLR: Commission for the Conservation of Antarctic Marine Living Resources

CEE: Comprehensive Environmental Evaluation

CEMP: CCAMLR Ecosystem Monitoring Program

CEP: Committee of Environmental Protection

COMNAP: Council of Managers of National Antarctic Programmes

EIA: Environmental Impact Assessment

GIS: Geographical Information System
GOSEAC: SCAR Group of Specialists on Environmental Affairs and Conservation
HSM: Historic Sites and Monuments
IEE: Initial Environmental Evaluation
IUCN: International Union for the Conservation of Nature (World Conservation Union)
SCAR: Scientific Committee of Antarctic Research
SPA: Specially Protected Area
SSSI: Site of Special Scientific Interest

Resolution 5 (2005)

Resolution on Site Guidelines for Visitors

The Representatives,

Recognising the continuing trend in the increase of tourism activities in Antarctica;

Noting that certain specific sites provide the principal focus for visitors;

Noting further that such sites are, to varying degrees, visited frequently by tour operators thereby increasing the potential for visitor-related pressures at such sites;

Confirming that the term "visitors" does not include scientists conducting research within such sites, or individuals engaged in official governmental activities;

Desiring to ensure that the management of visitors within such sites is tailored to their environmental values and sensitivities, and should be achieved through non-mandatory means;

Recognising the need for tour operators and visitors to have practical guidance on how they should conduct their activities within such sites;

Believing that such guidance will enhance the provisions set out in Recommendation XVIII –1 (Guidance for those Organising and Conducting Tourism and Non-Governmental Activities in the Antarctic);

Believing further that the management of visitor sites must be able to respond readily to changing circumstances such as increased tourist pressure, or demonstrable environmental impact;

Recommend that:

1) a list of sites subject to "Site Guidelines", adopted by the ATCM, be attached to this Resolution as an Appendix;

2) the Antarctic Treaty Secretariat be requested to place the texts of such "Site Guidelines", as adopted by the ATCM, on the website of the Secretariat, as well as publishing, as appropriate, the Guidelines in a hard copy compendium and CD-ROM. Furthermore, the Secretariat is requested to ensure wide dissemination, especially among tour operators, of such Site Guidelines;

3) administrative procedures be introduced to ensure that the texts of Site Guidelines can be modified readily to reflect readily changing environmental circumstances;

4) any proposed amendment to existing Site Guidelines should be discussed by the CEP which should advise the ATCM accordingly. If such advice is endorsed by the ATCM then the Antarctic Treaty Secretariat would be mandated to make the necessary changes to the texts of Site Guidelines on the website and, as appropriate, in any other forms in which the Guidelines have been published;

5) the Governments urge all those intending to visit such sites that they are fully conversant with, and adhere to, the advice in the relevant Site Guidelines as published by the Secretariat.

Annex to Resolution 5 (2005)

List of current Site Guidelines:

1. Penguin Island (Lat. 62º 06'S; Long. 57º 54'W);
2. Aitcho Islands (Lat. 62º 24'S; Long. 59º 47'W);
3. Cuverville Island (Lat. 64º 41'S; Long. 62º 38'W); and
4. Jougla Point, Wiencke Island (Lat. 64º 49'S; Long. 63º 30'W).

Resolution 6 (2005)

Antarctic Post Visit Site Report Form

The Representatives,

Recalling Resolution 3 (1995), which agreed there would be an advantage in standardised reporting of information on tourism and non-governmental activity in Antarctica;

Noting that Attachment A to Recommendation XVIII-1 outlines the requirements for advance notice of tourism and non-governmental activities, and that Resolution 3 (1995) outlines requirements for Post Activity Reports;

Recalling Resolution 3 (1997), which sets out a standard form for Advance Notification and Post Visit Reporting on Tourism and Non-Governmental reporting;

Noting the convenience of obtaining consistent information that will facilitate analysis of the scope, frequency and intensity of tourism and non-governmental activities;

Recommend that the attached revised standard Post Visit Site Report Form for Tourism and Non-Governmental Activities in Antarctica be used.

POST-VISIT REPORT FORM: PART 1 - Expedition Record

View Instructions for this Page

The Expedition Record is completed for every Expedition. This information is requested in compliance with Antarctic Treaty Recommendation XVIII-1 and Resolution XIX-3. Please submit both Part 1 and Part 2 to an appropriate national authority within three months of the activity having taken place.

A: *Expedition Details*

Company name:	Voyage/Flight number:
	Voyage Name:
Expedition Leaders(s) name:	Vessel / aircraft name:
Expedition is: ▾ based	Captain's/commander's name:
Port of Embarkation:	Port of Disembarkation:
Date of Embarkation:	Date of Disembarkation:

Voyage Number Example

Actual itinerary traveled: please provide description of route, giving dates:
(Note: If you consider that the Site Visit Record (SVR) provides an adequate description of itinerary, simply write "See SVR")

B: *Observers*

Name:	Name:	Name:
Affiliation:	Affiliation:	Affiliation:

C: *Record of Expedition numbers by nationality* (in alphabetical order)

Nationality	Pax[1]	Staff[2]	Crew[3]	Nationality	Pax[1]	Staff[2]	Crew[3]
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▾				TOTAL	0	0	0
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[1] **Passengers**: Members of the Expedition that are not Staff, Crew, Observers or National Representatives.
[2] **Staff**: Expedition personnel, guides, lecturers and small boat drivers (exclude crew serving these functions).
[3] **Crew**: Vessels captain and officers, helicopter pilots, crew and hotel / catering staff (excluding above)

D: *Report on Expedition by Expedition Leader* (please be brief, but use additional sheets if necessary)

1. Has an expedition meteorological report been submitted to the World Meteorological Organization?
   ○ Yes ○ No ○ Don't Know
2. List any unusual incidents affecting people or the environment:

3. If there were any unusual events, has or will an incident report be prepared:
   ○ Yes ○ No ○ Don't Know
4. To whom has or will the incident report be provided?

5. Any other comments or information
   (e.g. observations of disturbance to wildlife or the physical environment, changes from expedition Advance Notification, etc.)

Signature: ______________________ Date: ______________
Expedition Leader or Vessel Captain

Document PVR Rev.3 - Windows version (October 22, 2004) (Electronic) provided by NSF and IAATO

POST-VISIT REPORT FORM: PART 2 - Site Visit Record

Complete one line of the Site Visit Record wherever Expedition members disembark or journey beyond base or camp. View Instructions for it

Voyage Number:

Embarkation Date:

Tour Company or Name:

Vessel Name:

Voyage Name:

Date(s)	Site visited	Site Latitude/Longitude: Latitude	Longitude	1st pax arrival shore/site (in GMT)	Last pax depart shore/site (in GMT)	Pax[1]	Number of people making site visit: Staff[2]	Crew[3]	Obs[4]	Total	Activities at site: Select up to three activities per Site Visit entry. Use additional lines if more than three activities occurred or if the number of passengers differs per activity.		
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[1] **Pax** (Passengers): Members of the Expedition that are not Staff, Crew, Observers or National Representatives.
[2] **Staff:** Expedition personnel, guides, lecturers and boat drivers (include crew serving these functions).
[3] **Crew:** Vessels captain and officers, helicopter pilots, and crew and hotel / catering staff (excluding above).
[4] **Obs:** Observers or National Representatives.

Activity Notes:

BAILY HEAD TO WHALERS BAY WALK is Abbreviated: BH to WB Walk

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Resolution 7 (2005)

Biological Prospecting in Antarctica

The Representatives,

Convinced of the benefits of scientific research in the field of biological prospecting for the progress of humankind;

Recalling Article III(1)(c) of the Antarctic Treaty, which provides that scientific observations and results from Antarctica shall be exchanged and made freely available;

Recalling the Protocol on Environmental Protection to the Antarctic Treaty, including Article 2, as well as Article 3, which provides for the regulation of activities in the Antarctic Treaty area to be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems;

Bearing in mind ongoing discussions in other international fora on aspects of biological prospecting, including efforts to develop and clarify the nature and definition of such activities;

Reaffirming the importance of Article III(1) of the Antarctic Treaty with regard to scientific activities relating to biological prospecting, in that, to the greatest extent feasible and practicable:

(a) information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;

(b) scientific personnel shall be exchanged in Antarctica between expeditions and stations;

(c) scientific observations and results from Antarctica shall be exchanged and made freely available;

Recommend that:

1) their governments draw to the attention of their national Antarctic programmes and other research institutes engaged in Antarctic biological prospecting activities the provisions of Article III(1) of the Antarctic Treaty;

2) their governments continue to keep under review the question of biological prospecting in the Antarctic Treaty Area, and exchange on an annual basis information and views relating to that question as appropriate.

PART III

OPENING AND CLOSING ADDRESSES AND REPORTS FROM XXVIII ATCM

ANNEX D

OPENING AND CLOSING ADDRESSES

Opening Address by Minister for Foreign Affairs of Sweden, Ms. Laila Freivalds

28th Antarctic Treaty Consultative Meeting in Stockholm 06 June 2005

Mr. Chairman, honoured Delegates,

It is for me a special honour and privilege to open the 28th Antarctic Treaty Consultative Meeting here in Stockholm.

Sweden has had quite a long and intense relation with Antarctica. The scientific efforts undertaken by individual Swedish Scientists in relation to the Terra Incognita started already in the 18th Century. Swedish scientific research expeditions were undertaken before the Antarctic Treaty was concluded. The first expedition was led by Otto Nordenskjöld in 1901-1903, and the scientific results from that expedition were outstanding.

Many of the countries represented here today have had similar and even more dramatic Antarctic experiences in their national history. At the same time I would like to stress that what really matters for our Antarctic experiences of today is international cooperation.

Sweden adhered to the Antarctic Treaty over twenty years ago, in 1984. One of the main reasons for this was the fact that the cooperation within the Antarctic Treaty System had been so promising. The objectives in the treaty - that Antarctica shall be used for peaceful purposes only, and that it shall not become the scene or object of international discord - had been successfully met.

The Continent of Antarctica is a great example of fruitful and expanding international cooperation. A cooperation that really has served and could continue to serve as a model of conflict prevention and peaceful cooperation. The Antarctic Treaty and the Meetings under its umbrella play a key role in this respect. We therefore welcome that the new Antarctic Secretariat in Buenos Aires is operational.

Sweden is a relatively small research nation in Antarctica. Therefore international cooperation with other countries researchers and polar organizations is a main feature of our research program. Sweden's polar research covers both the Arctic and Antarctica. The Swedish Antarctic Research Program has its geographical focus on Dronning Maud Land, where our two research stations Wasa and Svea are located.

Honoured Delegates,

As you all know Antarctica is the first and only demilitarised continent. A continent that has been designated as a natural reserve, devoted to peace and science. It has served as a source of inspiration for on sight inspection regimes - something that is also mentioned by the former UN-inspector in Iraq, Hans Blix, in his book 'Disarming Iraq'. The history of Antarctica therefore brings about a special responsibility for the Antarctic Treaty Parties to continue the cooperation in a peaceful and successful manner.

For Sweden it is a special privilege to host this Meeting. For the first time all the issues on the agenda have to be solved in collaboration between our Host Country Secretariat and the Antarctic Treaty Secretariat, headed by Mr. Huber. I hope that when these two weeks are over, you will leave Stockholm with an over all good and positive impression of the Meeting and Sweden. But more importantly, I hope that you will have made concrete progress in some of the key areas before you. I think here especially of a new Annex on Liability arising from environmental emergencies in the Antarctic Treaty Area.

I understand that Delegations are now very close to a final agreement. If this is accomplished it would certainly contribute to prevent detrimental effects arising from environmental emergencies in Antarctic. But there are also other items on the Agenda before you where more progress is needed.

Environmental protection has always been a central theme of the cooperation between the Antarctic Treaty Parties. Our common and challenging task is to manage this extraordinary continent for the benefit of our common environment - and for future generations. The Antarctic Continent is our largest joint nature reserve. But the continent can also give us a unique perspective and knowledge regarding today's global environmental hazards. You all have an important task before you when you now start the first week of the Meeting, with crucial environmental issues on the agenda.

With these words it is my pleasure to declare the 28th Antarctic Treaty Consultative Meeting open, and I wish you every success in your important work.

Opening Address by Ambassador Hans Corell, Chairman of the Meeting

Stockholm, 6 June 2005

Distinguished Delegates,

It is a great honour for me to accept your electing me Chairman of the 28th Antarctic Treaty Consultative Meeting.

On a personal note, may I add that I am very pleased to be involved with Antarctica again. During my tenure in the United Nations over the past ten years, I was deeply involved with the Law of the Sea, including with the establishment of the three institutions of the UN Convention on the Law of the Sea, but not with Antarctica since it is not within the mandate of the UN Office of Legal Affairs.

I can assure you that my colleagues and I will do our utmost to make this Meeting a fruitful and a good one – a Meeting that will take matters forward in the very special spirit that is the hallmark of our cooperation relating to the Antarctic.

This Meeting brings with it a new element: an operational Secretariat under Executive Secretary Jan Huber. It was established last year, but it is the first time the Secretariat it is operational at one of our Meetings. I look forward with great expectations to a gratifying and enjoyable cooperation with Jan Huber and his colleagues. And I know that Folke Löfgren, Secretary General of the Host Country Secretariat, and his team have already developed a very good cooperation with them.

One thing is clear: the mere mentioning of Antarctica brings about an immediate reaction among those who listen. And it is almost always positive. It is true that the Antarctic represents extreme cold and eternal ice – and yet! Antarctica is something great and – hopefully – eternal. It also reminds us of the ongoing and unrelenting struggle of human beings to gain knowledge and to widen their horizons.

There were many heroes. The Antarctic has been and still is the scene of many adventures and bold enterprises. The stories and legends are many. And many are those have passed them on. Even more numerous are those who have been fascinated by this continent, the last one to be discovered. It was known to humankind only at the beginning of the 19th century.

As is well known, Admiral Teodor von Bellingshausen is claimed to be the explorer who first sighted the ice shelf of the Antarctic continent – a continent without human life but so full of other things. Still ice time. Extreme climatic conditions. Everything so extraordinary and thrilling.

This enormous continent was examined and mapped step-by-step. Initially, focus was on exploration and whaling and sealing and the like. This is understandable. However, at an early stage, also research and the efforts to gain knowledge and insight came to the forefront, and soon there was an increasing presence of scientists among those who undertook travels to the Antarctic.

As a matter of fact, the first among them, Captain James Cook, had a number of scientists on board when, in 1774, he reached the icebergs and was forced to turn. On board this ship there was also a Swedish scientist, Anders Sparrman, a disciple of Linnaeus.

When hearing "Antarctica", most people see before them the enormous width of snow, the glaciers and the high mountains that here and there rise over the kilometre thick inland-ice. They see the wealth of creatures: penguins, seals, whales and the extraordinary conditions of life that has developed in this the coldest, driest and probably highest continent.

Sweden's first contribution to Antarctic research is of an early date. Otto Nordenskjöld's expedition in 1901-03 nearly perished but was miraculously saved by an Argentinean relief expedition on board the corvette *Uruguay*.

In this endeavour more than hundred years ago tremendous courage and determination was demonstrated. It should be regarded as an early expression of the Antarctic Spirit. It was a demonstration of a spirit of cooperation and preparedness to extend assistance of a kind that grows stronger and natural in situations where the outdoor impediments and threats are as extreme as they are in Antarctica.

Over the years, this cooperation has developed and refined. The Antarctic Treaty is a continuation of this spirit, and it is the same spirit that has characterized earlier Meetings and which will characterize also the present one.

The Antarctic Treaty has existed for about half a century. It is an outflow of what I just mentioned: a determination to create something new and extraordinary out of this continent of the extreme.

It was the advances in connection with the International Geophysical Year 1957-58 that made it possible to reach an agreement on the Antarctic Treaty. Military and strategic interests were put aside. At a time when the world was plagued by Cuban and Berlin crises and similar hardships, the conditions developed for a particularly well functioning model for international cooperation. This we know, because the Antarctic Treaty regime has handled many crises and developed its own dynamic, its own way of producing solutions.

Unfortunately, the success of the cooperation of the Antarctic Treaty is little known. In a sense it is a model and it has functioned well in spite of tensions. Conflicts have been resolved and managed. The Treaty deserves much more attention than it gets, and the spirit for which it is stands should be demonstrated also in other fields.

The Convention on the Protection of Antarctic Marine Living Resources (CCAMLR) was the first international agreement in which principles like those on ecological balance and the precautionary principle were set out. It was a matter of attaining a sustainable use of the resources of the sea. These principles are now the cornerstones of all ensuing conventions on fisheries administration.

In 1991, the Protocol on Environmental Protection to the Antarctic Treaty was elaborated, which in the same way provides an elaborate regime with respect the conditions for all activities in Antarctica. Mineral resources must not be exploited. All activities must be examined and their environmental consequences must be examined. Rules exist on what is permissible: on permission to visit Antarctica, on how to manage garbage and residual products, etc.

Today, environmental issues are certainly very much in the focus of the media and the general public. The climate change! What does it mean? What are the consequences of the quick melting of the ices? Is this just a natural change, such as researchers have been able to establish and which have occurred many times in the past, or is it something new, something special, disquieting, threatening?

Environmental protection has always been a central theme of the cooperation between the Parties to the Antarctic Treaty. As with previous Meetings, the workload for the Committee for Environmental Protection (CEP) is substantial. There are over 80 working papers and information papers submitted for consideration. Many important issues are on the Committee's agenda, among them consideration of the environmental impacts associated with the construction and operation of two new research stations and further development of a system for reporting on the state of the Antarctic environment.

Additionally, the CEP has undertaken to review its work to date, with the intent of considering its method of operation and its strategic directions and future work. This issue is likely to prompt

spirited discussion among CEP Members, who take seriously their responsibilities for protecting the Antarctic environment.

On Wednesday this week, the Scientific Committee on Antarctic Research (SCAR) will arrange a presentation at 11 am, which will be held in presence of His Majesty the King of Sweden.

So, the environmental issues are central and will be given great attention in various ways in the days ahead.

In the Environmental Protocol the Parties have agreed to regulate questions of responsibility and liability for activities in the Antarctic Treaty Area. This is a particularly complex chapter. However, it would seem that the Parties are now very close to a common view and a decision. As the host country, Sweden has accorded these questions highest priority. Let us hope that the Meeting will succeed and that we will be able to announce that the Parties have been able to agree upon a special protocol to regulate these issues.

There are other areas with high priority. One is tourism in Antarctica. This tourism is steadily growing after a decline in the wake of 11 September 2001. There are many issues here for the Parties to discuss and problems to solve.

The question of bio-prospecting has been raised at previous Antarctic Treaty Meetings. The CEP has noted that the phenomenon raised "many legal and political issues". This important matter is therefore on the agenda also at this Meeting.

The new Secretariat in Buenos Aires has just started functioning. This Meeting has been planned by the members of the Secretariat in cooperation with those responsible here in Sweden. An important task for the Parties is to support the Secretariat so that it can become an effective and efficient tool to assist them in their future work.

We have two weeks of intense labour ahead of us, starting today the 6th of June – Sweden's National Day. However, we have seen to it that there are breaks in the schedule for some time to be together and to get further information about what is now happening on the Antarctic continent.

A particularly important ingredient in meetings that deal with as vast areas of work as yours is the contacts and the connections that are established during the meetings and not least outside the conference rooms. There is a creative dynamic here, which in itself is invaluable for the work and for the good results.

As the delegates will notice, we have located the Meeting in an environment where there are several museums. Presently, there are a number of exhibitions relating to Antarctica. We hope that you will find the opportunity to visit those exhibitions.

Once again, let me thank you for the confidence that you have given me to preside over this Meeting. I will do my utmost so that we can move ahead and so that also during this Meeting we can develop the Treaty regime. Above all, we must continue working indefatigably in the Antarctic Spirit.

Thank you for your attention!

III. Opening and Closing Addresses

Concluding Remarks by Ambassador Hans Corell, Chairman of the Meeting

Stockholm, 17 June 2005

Distinguished Delegates,

The 28th Antarctic Treaty Consultative Meeting is now coming to an end. It has been an honour and a great pleasure to chair the Meeting. I believe that we all agree that we have accomplished what we set out to do, and matters have been advanced in the special way that is a feature of the Antarctic cooperation. In short, the Meeting has been very fruitful.

After an intense first week, the Committee for Environmental Protection (CEP) presented a comprehensive report, bringing the environmental issues forward. Since these issues are central in the Antarctic Treaty System they have been given great attention in various ways during the Meeting. I would, in particular, like to stress the importance of the decision to commence elaborating a strategy for the future work of the CEP.

This achievement is of course an effort in which all delegations can and should take pride. But, needless to say, the Chairman of CEP, Dr Anthony Press, deserves special recognition for the way in which he guided the Committee through a busy agenda. We also thank Professor Dr. Jörn Thiede, the President of SCAR, and Professor Steven Chown for their very interesting presentations in the presence of His Majesty King Carl XVI Gustaf.

An event that we all looked forward to with great expectations was the adoption of Annex VI on Liability Arising from Environmental Emergencies to the Protocol on Environmental Protection to the Antarctic Treaty. The finalization of this Annex is a major achievement of this Meeting. We are grateful to all who have contributed to this work over the years. Our special thanks go to Ambassador Don MacKay, who skilfully guided the Working Group on Liability to this successful result.

We are particularly grateful that Ambassador MacKay organized and generously hosted an intersessional meeting in April in spite of the fact that he is presently the very busy Chairman of the Fifth Committee of the United Nations General Assembly. I believe that the April meeting in New York greatly contributed to ATCM being able to adopt Annex VI here in Stockholm.

Special thanks also to Mr. Rene Léfeber, the Chairman of the Drafting Group, and to Mr. Mark Simonoff, who chaired the sub-group on Article 9 of Annex VI.

We are also grateful to Mr. Michel Trinquier for chairing the Working Group on Tourism, to Professor Olav Orheim for chairing the Working Group on Legal and Institutional Matters, this time with an extended mandate to review all draft instruments before they go before the Plenary, and to Dr José Retamales for chairing the Working Group on Operational Matters. They all contributed in different respects to the successful outcome of the 28th ATCM.

My personal and sincere thanks go to the Heads of Delegation who faithfully participated in meetings both before and during the formal Meeting. I think that these gatherings were most helpful for the process as a whole.

The same applies to the Bureau which met whenever there was a need. I also think that it was a good idea to invite representatives from the Host Government of the 29th ATCM to the meetings of the Bureau. The idea was of course to make sure that Dr Mike Richardson and the future head of the new Host County Secretariat, Mr. Paul Davies, and their colleagues should gain information that may be useful when they organize next year's Meeting.

We now welcome the presence at this Plenary Meeting of Mr. Robert Culshaw, Director of the Americas & Overseas Territories in the Foreign & Commonwealth Office.

We are grateful to the Observers and the Experts for participating in the Meeting and for sharing their views and experiences with us.

We are also very grateful for the assistance given to the Meeting by Mr. Jan Huber, the Executive Secretary, and his team. This was the first time they participated in a Meeting in their new capacity, and I think the experience bodes well for the future.

I would also like to thank Ambassador Greger Widgren and my other colleagues in the Swedish delegation for their support. Needless to say, I am also most grateful to the Secretary General of the Host Country Secretariat, Ambassador Folke Löfgren, and his team. They have worked hard for a long time to make this Meeting an accomplishment, and I think that it is fair to say that they have succeeded.

We were happy to note that many delegates have taken the time to participate in the social program too, including the visits to the Museum of Natural History and the Icebreaker Oden. These events are important also in the sense that the participants have extra opportunities to discuss matters relating to the Meeting and to get to know each other better.

As in the past, we are indebted to Mr. Bernard Ponette and his very competent team of translators and interpreters. Without them, we simply could not have achieved what we did. Their performance also testifies to the value of high quality speediness and continuity.

We also thank our technicians and all the many who have assisted us, be it in our midst or behind the scenes: security, catering, personnel from the museum, attachés, conference pilots and the officers at the friendly helpdesk and the internet café.

The exhibition by Dr Fred Goldberg and his Post Office were delightful components of the Meeting and gave it a historic touch. The same holds true for Pablo Wainschenker's film**.** We are grateful to both of them.

We should also not forget the media. Hopefully, the successful cooperation within the framework of the Antarctic Treaty is better known now to the general public, since both national and international media followed the Meeting. Our special thanks to Mr. Stig Berglind, who served as Liaison Officer.

Allow me to make a few personal remarks relating to one particular issue, namely the Consultative Parties' Contributions. The reason that I raise the topic is that I have practical experience, in particular from the mid-1990s, of managing a department within the United Nations Secretariat at a time when assessed contributions were not forthcoming as they should have. This caused much extra work and frustration within the Organization and, in particular, the Secretariat.

The effective operation of the Secretariat is of course a matter of utmost importance to us all. I now sincerely hope that all Contracting Parties will in the well-known "Antarctic Spirit" support the Secretariat by fully paying their contributions and – even better – by approving Measure 1 (2003), thereby putting its legal and budgetary framework in place.

Distinguished Delegates,

Before I declare this Meeting closed, let me add the following.

We should take pride in our achievements. But more important is to look forward and to focus on our future work. This work should be seen in a larger perspective – as an important contribution to the maintenance of international peace and security, the mandate of the United Nations.

At the opening and closing of the United Nations General Assembly, there is a recurrent item on the agenda: Minute of silent prayer or meditation. The same procedure is observed at the meetings of the Assembly of States Parties to the United Nations Convention on the Law of the Sea.

I am not suggesting that you should adopt the same procedure in the ATCM. But on this occasion, because of a very special coincidence, I propose that the Meeting should observe a moment of stillness before the gavel falls.

Upon leaving the United Nations in March 2004, after ten years as the Legal Counsel of the Organization, I presented the Secretary-General with a gift – a piece of music that I had composed for him: *"Secretary-General Kofi Annan's Prayer for Peace"*.

There is an explanation to the title, but it is not necessary to relate it here. Suffice it to say that the prayer has no words. Hopefully, the music can be understood by all, and those who listen are free to add in their minds in any language words of their own.

But why, do you ask, play this music on this occasion? The reason is very simple. I wrote the music for the Great Highland Bagpipe. So, not only will the music give room for silent prayer or meditation – it will also point forward to the challenges at the Meeting next year in Edinburgh.

We thank the Government of the United Kingdom for offering to host the next ATCM in Scotland. From personal experience over many years I know that you will be met by something that is a hallmark of that country: hospitality and friendship. And, if you are lucky, you may also be greeted by the pipes!

Let us now observe a moment of stillness while we listen to *"Secretary-General*

Kofi Annan's Prayer for Peace". The music is performed by pipers from the Pipes & Drums of the 1st Royal Engineers in Stockholm.

[The music is tuned in – and fades out.]

The 28th Antarctic Treaty Consultative Meeting is closed!

ANNEX E

REPORT OF THE COMMITTEE FOR ENVIRONMENTAL PROTECTION (CEP VIII)

REPORT OF THE COMMITTEE FOR ENVIRONMENTAL PROTECTION

CEP VIII

STOCKHOLM 6-10 JUNE 2005

ITEM 1: Opening of the Meeting

(1) The CEP Chair, Dr Tony Press (Australia), opened the meeting on Monday 6 June 2005.

(2) A welcome speech was given by the Swedish Minister for the Environment, Ms Lena Sommestad (see Annex 1). Ms Sommestad stressed the importance of the Protocol on Environmental Protection to the Antarctic Treaty and pointed out that the value of work done by the CEP cannot be overestimated.

(3) The Chair thanked Sweden for arranging and hosting the meeting, and thanked the Secretariat of the Antarctic Treaty for its important work to administer the submission of papers and the Meeting website.

(4) The Chair formally welcomed the Czech Republic to the Meeting table as a CEP Member, having ratified the Protocol on 25 August 2004.

(5) The Chair also thanked Mr Tito Acero for his contributions as a CEP Representative, and congratulated Mr Acero on his appointment as Assistant Executive Officer in the Secretariat.

(6) The Committee was saddened to learn of the death of Mr Chris Badenhorst, a long-serving member of the South African delegation to the CEP and the ATCM.

ITEM 2: Adoption of the Agenda

(7) The Committee adopted the provisional agenda, as agreed at CEP VII, and the work plan circulated in CEP Circular 3/2005.

(8) The Committee also agreed to the allocation of papers to agenda items, as proposed in CEP Circular 3/2005.

(9) The Committee considered 37 Working Papers and 62 Information Papers (Annex 2).

ITEM 3: Operation of the CEP

(10) The list of CEP contact points was updated (Annex 3).

The CEP's work and strategic directions

(11) The Chair recalled discussions held at CEP VII on the CEP's future work, and the Committee's decision that the issue should be further discussed at CEP VIII.

(12) Argentina introduced WP 9 *The Committee on Environmental Protection of the Antarctic Treaty: An Overview and Likely Future Scenarios*, reviewing the main issues the Committee has dealt with during its first seven years of operation, and suggesting future scenarios.

(13) Chile commented on the observation in WP 9 that relatively little attention has been given by the CEP to Protocol Annexes III and IV to date, suggesting that this issue should be examined.

(14) Sweden introduced WP 1 *Working Paper to initiate a strategic discussion on future environmental challenges in Antarctica and its dependent and associated ecosystems*, noting that the CEP now finds itself at a mature stage of development, with a workload that is growing in volume, scope and complexity.

(15) Sweden suggested that the Committee needs to adopt a more strategic and systematic approach to its work, in order to be able to meet this challenge and fulfil its obligations to the ATCM. This was reflected in the presentation on tools given by Sweden as an introduction to its Working Paper.

(16) The Chair suggested a three-part approach to the discussion of WP 1 and WP 9, bearing in mind Articles 3 and 12 of the Protocol, and the importance of the Committee's interactions with other bodies:

- as an issue-based approach taking account of issues which straddle more than one Annex;
- the nature and growth of human activities and their relationship to the environment;
- the effectiveness of current CEP work practices.

(17) Many Members expressed their appreciation to Argentina and Sweden for introducing these papers, as an excellent basis for discussion of this important issue.

(18) Brazil suggested that, in order to improve the Committee's effectiveness and efficiency, a coordinated thematic approach be adopted to address the pressures on the Antarctic environment, and responses to them.

(19) Germany highlighted the growing importance of intersessional work in allowing a more considered approach to issues than is possible during the annual CEP meeting. Germany also stressed the need for the Committee's roles to be clearly identified, for timely response to the ATCM, and for cooperation with other ATS bodies.

(20) France stressed the importance of not censuring or limiting debate within the CEP, even if other groups within the ATCM or the ATS are working on similar issues.

(21) The United Kingdom stressed also the need to take stock of the expanding work of the CEP, and the importance of continuing outreach by encouraging the involvement of new Committee Members.

(22) CCAMLR commented that similar discussions and debate had been held by its Members over many years, and noted the effectiveness of thematic workshops to discuss such matters.

(23) Argentina stressed the need for databases of environmental indicators and the possibility of obtaining information from other bodies, for example SCAR.

(24) The United Kingdom noted that the CEP is principally an advisory committee to the ATCM, and must undertake many tasks to fulfil that role. It would be appropriate to identify those tasks which the CEP must do, and then to determine what capacity remains for other work to be included in the Committee's strategic work program.

(25) Norway suggested that two key issues require discussion: (1) increasing activity in the Antarctic; and (2) increasing CEP workload. Norway suggested that such discussions may lead to revised CEP Rules of Procedure.

(26) ASOC suggested that one component of the CEP's task could be to develop an inventory of the types of activities undertaken in Antarctica. ASOC referred to IP 74 *Development Pressures on the Antarctic Wilderness* as a preliminary contribution to such an inventory.

(27) Two open-ended contact groups were established to discuss two aspects of this issue:

- the tasks that the CEP *must do*, as a result of analysis of the Protocol and CEP Rules of Procedure ; and
- the major issues facing the CEP currently and in the future.

(28) The conclusions of the open-ended contact group that discussed the first aspect are at Annex 5. The Committee accepted this as a useful contribution to the ongoing discussion on this issue.

(29) A record of the discussions of the second open-ended contact group is given in the *aide memoire* at Annex 6.

(30) As a result of these discussions, the Committee agreed to establish a steering committee to prepare for a substantive discussion of the strategic issues facing the CEP at CEP IX and to stimulate continuing discussions during the intersessional period of the strategic issues facing the CEP. The steering committee comprised the Chair, both Vice-Chairs, the Secretariat and the host of CEP IX (the United Kingdom).

(31) The United Kingdom noted that, as the host of CEP IX, it would be happy to investigate options for a pre-CEP workshop to assist further discussion of this issue.

(32) This offer was warmly welcomed by the Committee.

CEP interaction with the Secretariat

(33) The Secretariat proposed several ways in which it could assist the CEP, including by:

- providing a template on the Secretariat website to assist with the consistent submission and presentation of Annual Reports under Article 17 of the Protocol. The Secretariat could provide a collation of Annual Report information at each Meeting;
- assisting in the production of an annual list of IEEs/CEEs under Resolution 6(1995) (which was to be reviewed following the establishment of the Secretariat) by developing a searchable database. It was also suggested that the reporting period be changed from the calendar year to the period 1 April to 31 March, to ensure that each Meeting could consider activities undertaken in the preceding austral summer;
- publishing information on the status of protected area management plans;
- transferring the CEP website to the Secretariat website following CEP IX, and presenting the website in the four Antarctic Treaty languages;
- making previous CEP meeting documents available via a searchable database.

(34) The Secretariat also welcomed further suggestions from Members.

(35) The meeting thanked the Secretariat for the offers of assistance and asked that it develop the annual reporting template for its consideration at CEP IX.

ITEM 4: Compliance with the Protocol on Environmental Protection

4a) General matters

(36) The Chair recalled CEP Circular 3/2005, which proposed that the Committee consider the environmental aspects of Antarctic Treaty inspection reports. Acknowledging the requirements under Article 14 of the Protocol, the Committee agreed to add consideration of inspection reports to the CEP agenda as a standing item.

(37) Australia introduced WP 16 *Scott Base and McMurdo Station: Report of an Inspection under Article VIII of the Antarctic Treaty and Article 14 of the Protocol on Environmental Protection*, submitted under ATCM Agenda Item 18. The inspection team had been warmly welcomed by New Zealand and United States station personnel and Australia thanked both Parties for their assistance.

(38) The inspection team had observed full compliance with the Protocol at all sites visited. Australia noted the considerable effort expended in maximising environmental performance, such as attention to waste management and sewage treatment, procedures for fuel storage and transfer, cleanup of past sites, environmental education programs and cooperation between the two Parties with facilities in the region.

(39) The United States thanked Australia for the report and noted that it had also completed inspection checklists for its South Pole and Palmer stations. It has committed to updating these checklists each year and promoted the checklist as a useful management tool.

(40) New Zealand also thanked Australia and noted that inspections are beneficial for improving station operations. It had already acted on some of the comments from the Australian inspection team, as well as those received from Finland in 2004.

(41) COMNAP noted that it had previously committed to make information available on its website to meet the requirements of the Antarctic Treaty inspection checklist and the requirements of Resolution 6(2001). It noted that this is a work in progress.

(42) The United Kingdom introduced WP 32 *Report of Joint Inspections under Article VII of the Antarctic Treaty and Article 14 of the Environmental Protocol* (United Kingdom, Peru, Australia), reporting on joint inspections undertaken from *HMS Endurance* in February and March 2005.

(43) The inspection covered nine permanent (year-round) stations, five summer-only stations, three unoccupied stations, one station under construction, five Historic Sites and Monuments and one tourist vessel. In addition, five further unoccupied stations were overflown by helicopter, but were not visited.

(44) The United Kingdom noted that the inspection report contained six conclusions of relevance to the work of the CEP, relating to: the significant number of abandoned or unoccupied stations; fuel storage and transfer; Environmental Impact Assessment (EIA) procedures; protection of flora and fauna; area protection and management; and environmental monitoring.

(45) The United Kingdom highlighted three of the report's recommendations relevant to the work of the Committee:

- That construction of stations at previously unoccupied sites in Antarctica should be minimised and any such new sites should be located with a view to optimising science, whilst minimising environmental impacts.

- That Parties, particularly those that have recently acquired status within the Antarctic Treaty System, should consider joint operations in Antarctica, thereby minimising the environmental impact of constructing new facilities.
- That bulk fuel facilities currently lacking secondary containment should be replaced either with double-skinned tanks, or provided with adequate bunding. Also, Parties should have in place oil spill contingency plans and COMNAP should consider undertaking a further assessment of fuel handling and storage facilities and procedures in Antarctica with a view to issuing a set of clear recommendations to operators.

(46) Australia expressed gratitude to the United Kingdom for the opportunity to take part in the inspection and to gain valuable experience with operations on the Antarctic Peninsula. It encouraged cooperation in the conduct of inspections.

(47) Peru, Spain, Argentina, Bulgaria, Chile, China, Brazil and the Russian Federation each thanked the inspection team and noted the professional manner in which the inspections had been undertaken.

(48) Peru said that in addition to the cooperation shown during the inspections they would ask the Meeting to conclude that this is a situational diagnosis on how it undertook its activities in Antarctica.

(49) Argentina noted that work was in fact being done at its unoccupied station on maintenance and environmental protection shortly before the inspection was undertaken and that the station is not unoccupied on a permanent basis. Argentina indicated that it would take notice of all the inspection report's observations.

(50) Bulgaria found the report's recommendations on how to develop its base in the future very useful. It suggested that a good example of cooperation is the sharing of logistics between the Spanish and Bulgarian bases.

(51) China noted that it attaches great importance to environmental protection and scientific research, but acknowledged that there are some problems with the infrastructure at Great Wall Station. It has plans to improve this infrastructure.

(52) Brazil suggested an element of caution when drawing conclusions as the result of short station inspections. It noted that work at its Admiralty Bay station focuses on environmental monitoring, despite the suggestions in the report that there is no consistent or focussed approach to monitoring.

(53) Chile noted that its stations were closed down when inspected, but these are occupied on the basis of the needs of its science program. For example, one station had been occupied up to the day before the inspection visit. It is concerned to ensure environmental protection and noted that it is undertaking a process to renew fuel storage tanks.

(54) ASOC welcomed the work done by the inspection teams, but was disappointed to note similarities with the findings by ASOC member Greenpeace between the 1980s and the late 1990s, such as poor fuel storage and handling practices and the little or no evidence of the EIA process at stations.

(55) COMNAP recognised that fuel storage and handling is a major concern and noted that the issue is on its agenda for future work. COMNAP noted the excellent work by the United Kingdom on oil spill contingency training. COMNAP indicated that it would undertake an analysis of fuel storage and handling practices and report findings to the next meeting.

(56) New Zealand welcomed the inspection report and raised three points:

- Regarding the issue of abandoned and unoccupied stations, it recalled the requirements of Annex III, Article 8 to develop programs for cleaning up abandoned work sites, and to prepare an inventory of sites of past activities. It suggested Members may wish to come forward with this information.
- National programs should be encouraged to look at means of improving provisions for safe fuel storage and transfer.
- The CEP could address the issue of introduced species as part of its future work.

(57) Norway welcomed both inspection reports and agreed with recommendations regarding cooperation between Parties. It suggested that this issue would fit well into the CEP's strategic discussions, for example on cumulative impacts.

(58) Norway also noted that the issue of fuel storage and handling had been raised in several inspection reports and noted by the Committee on a number of occasions. Norway suggested that it was now important to bring the issue of fuel storage and handling to the attention of the Treaty Parties.

(59) The CEP endorsed all three recommendations raised by the United Kingdom and furthermore accepted Norway's suggestion that the CEP ask the ATCM to adopt a Resolution on the issue of fuel storage and handling.

(60) ASOC introduced IP 74 *Development Pressures on the Antarctic Wilderness*, asking the Committee to note the recommendations in the paper and welcoming discussions under Agenda Item 3 of strategic environmental assessment.

(61) France introduced IP 9 *Rapport annuel présenté par la France conformément à l'article 17 du Protocole au Traité sur l'Antarctique relatif à la protection de l'environnement 2005* and IP 10 *Mise en Oeuvre du Protocole de Madrid Relatif a la Protection de l'environnement en Antarctique*.

(62) Annex 4 provides a list of internet addresses where Annual Report information is published in accordance with Article 17 of the Protocol. The following Information Papers

containing annual reports were also submitted: IP 2 (South Africa), IP 7 (Spain), IP 21 (Belgium), IP 26 (New Zealand), IP 39 (Italy), IP 65 (United Kingdom), IP 84 (China), IP 101 (Ukraine), IP 102 (Japan), IP 110 (Chile), IP 116 (Korea, Republic of).

(63) The following Information Papers were also submitted under Agenda Item 4a: IP 4 (United States); IP 43 (Czech Republic); IP 51 (Sweden); IP 73 (Belgium); IP 80 (India).

4b) Consideration of Draft CEEs forwarded to the CEP in accordance with paragraph 4 of Article 3 of the Protocol

(64) The Committee considered two draft CEEs.

i) Halley VI

(65) The United Kingdom delivered an audio-visual presentation to introduce WP 19 *Draft Comprehensive Environmental Evaluation (CEE) Proposed Construction and Operation of Halley VI Research Station, Brunt Ice Shelf, Caird Coast, Antarctica* and the complementary IP 66 of the same title.

(66) The draft CEE was produced by the United Kingdom and circulated in February 2005 after approval by the UK Government. It is intended that construction take place between 2006/07 and 2007/08, and that the station have a life of at least 25 years.

(67) The United Kingdom noted in its presentation that Halley Station is one of the most important research sites in Antarctica, being where the ozone hole was first discovered, and contributing to continuous datasets developed over the past 50 years.

(68) The United Kingdom further noted that a competition was being held to design the new station. Three designs had been short-listed and a final selection was expected to be made by early July 2005.

(69) The presentation covered the major environmental impacts considered in the Draft CEE, including: air pollution and particulate deposition from atmospheric emissions; disposal of grey water and human wastes and abandoned materials buried under the snow; and contamination of snow and ice by minor fuel spills and leaks.

(70) The presentation also covered the mitigation measures planned to reduce these impacts: reduction in the number of people on station, both in summer and winter; the use of new technologies to reduce environmental impact; and a design life of at least 25 years, and the ability of the station to be easily removed when required.

(71) In summary, the draft CEE concluded that:

- the construction and operation of Halley VI will have more than a minor or transitory environmental impact;

- the implementation of the preventative and mitigation measures outlined in the draft CEE will reduce impacts;
- the overall impact of Halley VI will be substantially less than Halley V; and
- the importance to global science of the construction and operation of Halley VI outweighs the impact the station will have on the Antarctic environment and fully justifies the activity proceeding.

(72) The United Kingdom advised that hard copies of the draft CEE are available, as well as copies on CD and on the web: *www.antarctica.ac.uk/halleyvi/cee.html*

(73) The meeting thanked the United Kingdom for the comprehensive papers and presentation.

(74) In response to a question from France on the proposed use of renewable energy at Halley VI, the United Kingdom noted that this is being addressed in the short-listed proposals, in particular the use of passive solar heating.

(75) Referring to IP 105, Japan commented that, based on experience at Syowa Station it is important to maintain good monitoring records for waste disposed at, and removed from, Antarctic stations.

(76) Germany noted that it had forwarded comments received through its domestic consultation process on the draft CEE to the United Kingdom, and further that:

- a decision has yet to be made on which station design will be used;
- commentary on contingency planning for fuel spills may be useful; and
- the document does not contain a discussion of the supply logistics to be used during the construction phase.

(77) The United Kingdom thanked France, Japan and Germany for their comments. The United Kingdom noted that all facilities above the snow surface at Halley V will either be recycled or reused at Halley VI or will be demolished and removed from Antarctica in 2009/10. Also, all hazardous materials will be removed from the sub-surface tunnels. The demolition and removal of Halley V will be the subject of a separate EIA.

(78) New Zealand commended the United Kingdom on the environmental criteria used in the station design competition and welcomed the novel approach to the selection of the station design. New Zealand considered, however, that this approach complicates the CEE process, and perhaps introduces some uncertainty about likely environmental impacts. New Zealand asked whether the final CEE addressing those uncertainties would be circulated for comment.

(79) The United Kingdom agreed that it had taken a novel approach and that timing of the competition had prevented the inclusion of the successful design in the document presented

to the Meeting. As a result, it was the intention of the UK that the final CEE would be made available to Members via the BAS website *www.antarctica.ac.uk/halleyvi/cee.html* for comment before next year's ATCM.

(80) Norway congratulated the United Kingdom on their draft CEE, remarking that for continental Antarctica there is no problem of proliferation of infrastructure and that the important scientific work undertaken at Halley and other similar continental stations in relatively unexplored parts of Antarctica warrants their existence.

(81) The Chair noted the Committee's agreement that the draft CEE provides a comprehensive description and evaluation of the proposed activity and likely environmental impacts, and is therefore consistent with the requirements to Annex I to the Protocol.

(82) The CEP's advice to the ATCM on the draft CEE for 'Proposed Construction and Operation of Halley VI Research Station' is contained in Appendix 1.

ii) Neumayer

(83) Germany delivered an audio-visual presentation to introduce IP 30 *Draft Comprehensive Environmental Evaluation (CEE). Rebuild and Operation of the Wintering Station Neumayer III and Retrogradation of the Present Neumayer Station II*, noting that the document had been circulated to Members and was also available in hard copy.

(84) The presentation provided an overview of the current operations and scientific activities at Neumayer II Station, and introduced the plans for the establishment of Neumayer III.

(85) Germany thanked New Zealand for the most helpful comments on the draft CEE. Germany further advised that:

- Neumayer II station must be replaced by 2008 as it is becoming progressively buried in snow and will not remain safe for habitation.
- Neumayer III would be Germany's third overwintering station on the floating Ekström Ice Shelf.
- The ice shelf moves northward at about 150 metres per year but the new station is unlikely to approach the Atka Bay emperor penguin colony.
- Neumayer III will utilise existing resupply sites on the edge of the ice shelf.
- The station will have a greater floor space than the present station to accommodate additional laboratories and observatories.
- The new station incorporates hydraulic legs which can lift the station as snow accumulates, to ensure that the buildings remain above the snow level, and enabling the removal of all components of the station at the end of its lifetime.
- It is expected that the new station will be ready for operation in 2008, and that it will have a lifetime of over 25 years.

(86) Germany made specific reference to the importance of the extensive meteorological program undertaken at Neumayer II, which is to be continued at Neumayer III, including climate and atmospheric studies which contribute to many international data collection and monitoring networks.

(87) Germany elaborated on its plan to increase the use of wind energy to supply the new station, noting that waste heat from the diesel powered generators will provide heat and freshwater for the station. Waste water will be treated biologically and by UV sterilisation, and the resulting treated water disposed of below the ice/snow surface. Sewage sludge will be removed from the Antarctic Treaty area.

(88) All scientific materials from Neumayer II will be moved to the new station, and the only material to be left at the old site will be iron tubes which are deeply buried. Germany considered that the fuel used by vehicles to remove these items would have a greater environmental impact than leaving them *in situ*.

(89) In conclusion, Germany stated that their ambition was to see Neumayer III as an integral part of the network of permanent wintering research stations in continental Antarctica.

(90) Many Members thanked Germany for their clear and comprehensive presentation on the proposed activity.

(91) In response to a question from Australia, Germany indicated that Neumayer III would normally support a winter staff of nine, including four scientists.

(92) Norway noted that it was encouraging to witness the continued presence of research stations such as Halley VI and Neumayer III in important yet isolated locations on the Antarctic continent, and the value to science of increased cooperation between such stations.

(93) The United Kingdom thanked Germany for its excellent cooperation during the process to plan and establish Neumayer III and Halley VI, and particularly for hosting three United Kingdom design teams.

(94) In response to a question from New Zealand regarding the proposed use of renewable energy, Germany advised that Neumayer II was one of the first stations in Antarctica to use wind energy, and that it intends to increase the current supply rate of 20 % in Neumayer III. Germany would also investigate ways of using photovoltaic solar panels.

(95) The Chair referred to the existence of an energy management network within COMNAP, and welcomed the introduction to Antarctica of new techniques and technologies such as those proposed by Germany for Neumayer III.

(96) Australia asked Germany to clarify the conclusion of IP 30, which did not use the language of the Environmental Protocol as the basis of its conclusion.

(97) The assessment of the operator, using the terminology of the Protocol, is that the proposed activity would have a minor or transitory impact on the environment.

(98) Some Members expressed their concern that this was a different conclusion to that of the UK CEE despite the very similar nature of the activities in question.

(99) The Chair noted the Committee's agreement that the draft CEE provides a comprehensive description and evaluation of the proposed activity and likely environmental impacts, and is therefore consistent with the requirements of Annex I of the Protocol.

(100) The CEP's advice to the ATCM on the draft CEE for 'Rebuild and Operation of the Wintering Station Neumayer III and Retrogradation of the Present Neumayer II' is contained in Appendix 2.

(101) Germany thanked the United Kingdom for its close cooperation and noted that the production of the two CEEs could be viewed as a combined effort.

(102) The Chair thanked the United Kingdom and Germany for their presentations, noting that the preparation of these thorough documents and the conduct of the projects are excellent examples of the international cooperation that characterises the Antarctic Treaty System.

4c) Other matters covered by Annex I (Environmental Impact Assessment)

(103) Norway introduced WP 40 *Assessment of environmental impacts of satellite facility at Troll* and the accompanying IP 72 *Initial Environmental Evaluation for the establishment of a satellite reception and command facility (TrollSat) and a Norwegian Institute for Air Research (NILU) Laboratory as an integral part of the Troll Station in Dronning Maud Land, Antarctica.*

(104) Norway recalled that matters relating to the Troll station and airstrip had been discussed at length at previous meetings. It noted that subsequent developments have led to a proposal by the Norwegian Space Centre to develop an additional satellite facility, which is likely to be in operation by the start of austral winter 2006. The proposal raises questions of principle regarding the question of cumulative environmental impacts and level of environmental assessment.

(105) In response to a question from India, Norway indicated that the satellite facility would be able to acquire data from many satellites, particularly the European MetSat and the United States' Orbital Viewer, and would also contribute to the Galileo satellite network.

(106) New Zealand welcomed Norway's transparent approach to informing the Committee of this proposal, noted that it highlighted issues of cumulative impacts, and suggested that an appropriate course of action may be to reconsider the original CEE in the light of the new information to see if the conclusions change.

(107) Norway thanked the Members for their comments, and noted that the project is on the borderline between levels of assessment. It noted the different conclusions reached in the environmental impact assessments for the United Kingdom and German stations and recalled the previous feeling of the Committee that more examples of CEEs were required

to help assist determine the appropriate level of assessment for activities. The issue of cumulative impacts required further consideration in this case.

(108) Australia introduced WP 30 *Report of the ICG Established to Update the 'Guidelines for Environmental Impact Assessment in Antarctica' (1999)*, noting that this task had arisen from WP 28 submitted by Argentina at CEP VII. The ICG had reviewed the guidelines and suggested changes to ensure that cumulative impacts are explicitly addressed.

(109) IAATO complimented Australia on its work to tackle this difficult task. It noted that United States NSF in cooperation with IAATO had collected tourism data from 1989-2003. Since then IAATO provided tourism information for the database. Tourism reports from 1989 can be found on the IAATO website *www.iaato.org*. In response to the paper's comments regarding sensitivity analysis, IAATO noted that it had conducted sensitivity analyses since 2003 and adopted guidelines based on site sensitivities. It also noted that any list of IEEs would not be complete because some Parties require only preliminary assessments for tourist activities.

(110) ASOC thanked Australia for coordinating the ICG work and noted that some participants had indicated the need for operators to conduct joint or regional environmental impact assessments, which ties in with the strategic discussions under Agenda Item 3.

(111) The Committee adopted, with minor changes, the amended *Guidelines* at Attachment A to WP 30. The amended *Guidelines* are at Annex 7.

(112) The Committee Members discussed the other recommendations raised in WP 30, and agreed to:

- ask the Secretariat to establish an electronic database of IEEs/CEEs and report back to the next meeting;
- address the issue of monitoring and reporting baseline data as part of the environmental monitoring and reporting ICG;
- gratefully accept an offer by COMNAP to liaise with the CEP about developing a mechanism to respond to reports of environmental incidents at its annual meeting;
- also gratefully accept New Zealand's offer to work on the development of a methodology to assist proponents in identifying all the steps/information required in assessing cumulative impacts.

(113) ASOC presented IP 59 *A Note on the Vulnerability of Cetaceans in Antarctic Waters to Noise Pollution*.

(114) The Committee recalled earlier discussions of this important issue, agreed that it warranted further consideration, and agreed that it should be a topic for substantive discussion at CEP IX. The Committee also looked forward to receiving at that meeting SCAR's paper reviewing available information on marine acoustics as foreshadowed at CEP VII.

(115) Brazil presented IP 6 *Environmental Impact Assessment on the Padre Balduíno Rambo Refuge's Dismantlement*, describing the process undertaken to minimise environmental impacts when dismantling and removing the refuge.

(116) Italy presented IP 40 *Talos Dome Ice Core Project (TALDICE): Initial Environmental Evaluation for Recovering a Deep Ice Core at Talos Dome, East Antarctica: Comments from CEP Contact Points*, noting that it had decided to go ahead with an IEE for the activity.

(117) The following Information Papers were also submitted under Agenda Item 4c: IP 17 (Brazil); IP 23 (South Africa); IP 42 (Czech Republic); IP 58 (Uruguay); IP 75 (Czech Republic); IP 83 (China); IP 107 (Australia).

4d) Matters covered by Annex II (Conservation of Antarctic Fauna and Flora)

(118) The Chair recalled that CEP VII had agreed that Specially Protected Species should be an important topic for discussion at CEP VIII, and that SCAR had offered to bring to the meeting proposals for listing and delisting species.

(119) SCAR presented WP 34 *Proposal to List a Species as a Specially Protected Species under Annex II*, noting that this paper represents the continuation of a process commenced with the presentation by Argentina of WP 17 at CEP III.

(120) WP 34 proposed how the IUCN endangerment criteria could be applied to bird species breeding or foraging in the Antarctic Treaty area, providing suggestions for a possible procedure, and including a model framework presenting data for the southern giant petrel.

(121) SCAR also presented WP 33 *De-listing Antarctic Specially Protected Species*, recommending the IUCN criteria for endangerment for determining the need for conservation measures in the Antarctic context. It also recommended that *Arctocephalus tropicalis* (sub-Antarctic fur seal) and *Arctocephalus gazella* (Antarctic fur seal) be removed from Appendix A of Annex II on the basis of the current population estimates, the annual trend, the geographical area inhabited, and the lack of any threats to the species.

(122) To ensure that proposals for Specially Protected Species are handled in a consistent manner, the Committee developed *Guidelines for CEP Consideration of Proposals for New and Revised Designations of Antarctic Specially Protected Species under Annex II to the Protocol* which are included at Annex 8. The Committee thanked all contributors over recent years for their work to develop the procedures.

(123) CCAMLR observed that the *Guidelines* had been developed to address the designation of protected species within the provisions of the Annex II version applicable at the time of CEP VIII. It noted that any changes to Annex II in the future may necessitate a review of the *Guidelines*.

(124) The Committee asked SCAR to assess the species noted in WP 34 as candidates for listing (southern giant petrel and macaroni penguin) using the new guidelines.

(125) SCAR agreed to undertake this work and report back to CEP IX. It also requested the CEP's advice on the proposal in WP 33 to delist two fur seal species.

(126) A number of Members were of the view that, on the basis of the paper presented by SCAR, the two species of fur seal warranted delisting; other Members considered that the proposal required further consideration.

(127) On the basis of that discussion, and to ensure consistency with the new guidelines and to include all available data, the Committee asked SCAR to submit to CEP IX a revision of the proposal for delisting the two fur seal species in accordance with the new guidelines. The Chair agreed to seek CCAMLR's views on the delisting proposal and the United Kingdom agreed to consult with CCAS.

(128) SCAR noted that, by CEP IX, it could also provide information and data in relation to the Ross seal.

Quarantine

(129) Australia introduced WP 28 *Measures to address the unintentional introduction and spread of non-native biota and disease to the Antarctic Treaty Area*, recalling that the intent of Article 4 of the Protocol is that unintentional introductions of non-native species to the Antarctic Treaty Area will be minimised.

(130) This issue had been raised in several papers previously submitted to the CEP, and is one of global concern, as also raised in IP 63 *Introduction of Non-native Species, Parasites and Diseases (IUCN)* and IP 97 *Update on Boot and Clothing Decontamination Guidelines and the Introduction and Detection of Diseases in Antarctic Wildlife: IAATO's perspective* (IAATO).

(131) Australia highlighted the difficulty and cost of eradicating introduced species and noted that no formal assessment has been undertaken of the risks in the Antarctic context. Increasing visitation to Antarctica, combined with a more benign climate due to global warming, is likely to increase the opportunity for non-native species to arrive and become established. Australia also emphasised similar concerns regarding transfer of species between Antarctic sites.

(132) Many Members thanked Australia for bringing a paper on this important matter to the CEP.

(133) COMNAP raised the issue of the introduction of marine species in ballast water, noting that the IMO had established guidelines to address this issue. A COMNAP survey captured the practices of 40 of the 72 vessels of the combined COMNAP-IAATO fleet and the results are deemed representative of current practices. Of those 40 vessels, 35 vessels

do not discharge any ballast water in the Treaty area, 3 vessels do not discharge any ballast water brought from outside the Treaty area, and 2 vessels only exchange ballast water in the open ocean. COMNAP provided this information to the Committee as IP 121 *The use of Ballast Water in Antarctica.*

(134) France stated that the introduction of non-native species may be the main threat to biodiversity in Antarctica. Through human activity and climate change the risk increases as the possibility for reproduction of alien species increases, particularly near the Antarctic coast.

(135) IUCN welcomed Australia's initiative and noted that harmful alien species are a global problem and that prevention and precaution are the key. The IUCN guidelines for preventing the introduction of alien species can be found on its website.

(136) Regarding ballast water, Norway noted that it is encouraging that relatively few ships are disposing ballast water in the Antarctic Treaty Area. Norway also noted that this issue is of global concern, and referred to the International Convention for the Control and Management of Ships' Ballast Waters and Sediments, 2004. Norway suggested that consideration should be given to voluntary application of the Convention within the Antarctic Treaty, as the implementation of the Convention in general may take some time. Norway suggested that this may be an issue for further consideration at CEP IX.

(137) There was general agreement among Members with the Norwegian proposal regarding the ballast water Convention.

(138) In supporting this, the United Kingdom noted that the Convention provided for additional measures for certain areas and offered to develop practical guidelines for ballast water exchange in the Antarctic Treaty area, in consultation with other interested Parties and appropriate experts, for consideration at the next meeting.

(139) New Zealand noted that hull fouling may also be a significant factor in the transfer of foreign organisms to Antarctica.

(140) Many Members agreed that there were several matters of concern with regard to the broad issues of quarantine and the introduction of non-native species, and that these matters warrant the further detailed consideration of the Committee, based on expert scientific advice, such as from SCAR.

(141) New Zealand also noted that it had undertaken some work on the topic of quarantine and the introduction of non-native species over the last six months domestically and planned to undertake a workshop before the next meeting to discuss related issues. It would be happy to expand the scope of the workshop to address the points noted in WP 28, to welcome the attendance of CEP Members, and to time the workshop to facilitate maximum participation.

(142) The Committee warmly welcomed New Zealand's proposal and agreed that the workshop would help develop the proposals outlined in WP 28.

(143) Germany noted that a working group under the Convention on Biological Diversity had been working for some time on this issue.

(144) SCAR indicated that it has been interested in invasive species over recent years and that it has programs studying relevant questions, such as the potential pathways for alien arrivals. SCAR also said that it had new information indicating that hull fouling is probably a bigger problem than ballast water in Antarctic waters and it will bring a paper to the next meeting. SCAR offered to provide further expert advice on the issue.

4e) Matters covered by Annex III (Waste Disposal and Waste Management)

(145) The United Kingdom introduced IP 37 *Reducing Sewage Pollution in the Antarctic Marine Environment Using a Sewage Treatment Plant*, describing an environmental monitoring study to determine the effectiveness of a sewage treatment plant installed at Rothera Research Station. The results show that the microbiological pollution in the near-shore marine environment had decreased significantly since the plant had become operational.

(146) Japan introduced IP 105 *Four-year program for clean-up at Syowa Station* reporting on its current and planned efforts to clean up old waste dumps at Syowa Station.

(147) Sweden introduced IP 47 *Waste Water Treatment in Antarctic. A Feasibility Study for Grey Water Treatment at Wasa Station*, and offered to report back to CEP IX with findings.

(148) The Russian Federation introduced IP 47 *Evacuation of AN-3T aircraft from the Amundsen-Scott station*, reporting on the cooperative efforts to successfully remove the fully-fuelled aircraft – a potential environmental hazard – from the Amundsen-Scott Station in the 2004/05 season. This aircraft of a Russian non-government expedition had been at the US station because of technical problems since 2002. The Russian Federation gratefully acknowledged the assistance of the United States Antarctic Program.

4f) Matters covered by Annex IV (Prevention of Marine Pollution)

(149) Norway introduced WP 41 *Proposal to submit a proposal to IMO to ban the presence of Heavy Fuel Oil (HFO) on board ships south of 60 degrees south*, suggesting the CEP recommend to the ATCM that it propose to the IMO a ban on the use of Heavy Fuel Oil (HFO) by ships in Antarctic waters (south of 60°S, the area declared as a Special Area under Annexes I and V of the MARPOL 73/78 Convention).

(150) COMNAP introduced IP 67 *The Use of Heavy Fuel Oil in Antarctic Waters*. It noted that no ships in the COMNAP-IAATO fleet currently use HFO in Antarctic waters.

(151) There was general agreement in the Committee regarding the risks associated with HFO in Antarctica and the need to consider mechanisms to avoid environmental impacts due to release of such substances. Many Members agreed that restrictions on use would be appropriate. One Member noted that preventive measures and contingency plans could be

instituted as a control mechanism to avoid release of any fuels in Antarctic waters instead of banning the use of HFO, but it was also suggested that these mechanisms could be implemented in parallel.

(152) Based on the discussion the CEP agreed to recommend that the ATCM ask IMO to examine mechanisms for restricting the use of HFO (defining HFO in accordance to MARPOL Regulation 13 H definition of Heavy Grade Oil as all fuels heavier than Intermediate Fuel Oil 180 (IFO-180)) in Antarctic waters in light of :

- the level of risk of fuel release being relatively high in Antarctica due to conditions such as icebergs, sea-ice, uncharted waters; and
- the high potential environmental impact associated with a spill and emission of HFO in Antarctica.

(153) Some Members noted the need to raise with other international organisations associated with the Antarctic Treaty area the question of restrictions regarding HFO use.

(154) The Chair noted his intention to report on this issue to the Scientific Committee of CCAMLR and to request the ATCM to refer the issue to the CCAMLR Commission itself and to other bodies with operations or interests in Antarctic waters.

(155) Chile introduced WP 52 *Marine Debris: Global and Regional Impacts*, outlining the harmful effects of marine debris and suggesting measures to prevent and reduce marine debris, which is a complex issue of global concern. The paper included several items for the Committee's consideration.

(156) IAATO shared Chile's concerns regarding marine debris but, in response to the recommendation that IAATO tour operators develop a code of conduct for their vessels, indicated that all of its members follow IAATO standard operating procedures for ship activities, which specifically prohibit any dumping of waste or any other products. This is consistent with the Protocol, is documented in all operators' EIAs and exceeds the requirements of MARPOL V. IAATO does not, therefore, see the need for further codes of conduct, which in any case should be applied to all vessels, not just tour operators.

(157) Spain raised also the issue of biocide paint as another type of marine pollution, noting that the IMO had adopted resolution on this issue in 1999 and 2001.

(158) CCAMLR noted that it had collected substantial data on marine debris collected over many years and agreed to provide examples of data sheets to promote consistency of data collection, with possible application in the SAER.

(159) The Committee thanked CCAMLR for the offer of this information and agreed to discuss the issue further at CEP IX.

(160) In response to Chile's other recommendations, the Committee agreed to note, with particular regard to the requirements of Article 5, Annex IV:

- that marine debris is an issue warranting the attention of Antarctic national operators and tour operators;
- that CCAMLR should be supported in sustaining, improving and expanding its monitoring of debris;
- that consideration should be given to including a section on marine debris in any future State of the Environment Report; and
- that there would be value in the development of educational strategies and actions, taking into account the International Polar Year.

4g) Matters covered by Annex V (Area Protection and Management)

i) Draft management plans which have been reviewed by ICG and which the CEP may decide to recommend to the ATCM for approval

(161) The Committee considered eight Working Papers containing Annex V management plans under this category:

- WP 5 *Final Revised Management Plan for ASPA 149 Cape Shirreff and San Telmo Island, Livingston Island, South Shetland Islands* (United States). The United States thanked Parties for their comments in the ICG. CCAMLR noted that it had considered and approved the management plan.
- WP 7 *Revision of Management plan for ASPA No. 133* (*Harmony Point*) (Argentina, Chile).
- WP 8 *Revision of Management plan for ASPA 132 (Potter Peninsula)* (Argentina).
- WP 20 (Rev 1) *Deception Island Antarctic Specially Managed Area (ASMA) Management Package* (Argentina, Chile, Norway, Spain, United Kingdom, United States). This package comprised ASPA 140, ASPA 145, and ASMA and associated management provisions. The United Kingdom noted with gratitude the efforts since 1999 of all other proponents of the management plan, as well as that of ASOC and IAATO. CCAMLR has considered and approved the marine component of the Management Package (ASPA 145). The period of designation for ASPA 145 has been revised to two years, to allow further thorough review of this site and the plan was slightly amended to take into account minor changes suggested by New Zealand.
- WP 21 (Rev 1) *Antarctic Specially Protected Area No. 120 Revised management plan Cape Geology archipelago* (France). The plan was slightly amended to take into account minor changes suggested by the United Kingdom.
- WP 25 *Antarctic Protected Areas System Proposed Management Plan for Dakshin Gangotri Glacier, Dronning Maud Land, Antarctic Specially Protected Area (ASPA) No. 163* and accompanying WP 24 *Intersessional*

Contact Group to Consider Antarctic Specially Protected Area at Dakshin Gangotri Glacier, Dronning Maud Land – Convener's report (India).

- WP 35 *Review of the Admiralty Bay Antarctic Specially Managed Area Management Plan (ASMA No. 1)* (Brazil, Poland).
- WP 36 *Antarctic Protected Areas System Management Plan for Scullin and Murray Monoliths, Mac. Robertson Land, East Antarctica Antarctic Specially Protected Area No. 164* (Australia).

(162) The Committee agreed that, as the draft Admiralty Bay ASMA management plan had not previously been considered by the CEP, and had been substantially revised since the version adopted in principle at ATCM XX prior to the entry into force of Annex V, the draft plan should be referred for consideration by an intersessional contact group convened by Brazil, and consideration also by CCAMLR if appropriate.

(163) Noting that the other nine management plans had been considered by ICGs and revised to take into account comments received, the Committee agreed to refer them to the ATCM for approval. A list of these plans is contained in Appendix 3.

ii) Draft revised management plans which have not been reviewed by an ICG

(164) The Committee considered five Working Papers containing ASPA or ASMA management plans under this category:

- WP 4 *Draft Revised Management Plan for ASPA 119 Davis Valley and Forlidas Pond, Dufek Massif* (United States).
- WP 15 *Revised Management Plan for Antarctic Specially Protected Area 127 Haswell Island (Haswell Island and Adjacent Emperor Penguin Rookery on Fast Ice)* (Russian Federation).
- WP 17 *Antarctic Protected Area System: Review of Antarctic Specially Protected Areas 155, 157, 158 and 159* (New Zealand).
- WP 37 (Rev 1) *Revision of Management Plan for Antarctic Specially Protected Area No. 150 (Ardley Island)* (Chile).
- WP 42 *Antarctic Protected Areas System: Revised Management Plans for: Antarctic Specially Protected Area No. 101 Taylor Rookery, Mac. Robertson Land, East Antarctica, Antarctic Specially Protected Area No. 102 Rookery Islands, Mac. Robertson Land, East Antarctica, and Antarctic Specially Protected Area No. 103 Ardery Island and Odbert Island, Budd Coast, Wilkes Land, East Antarctica* (Australia).

(165) There was some uncertainty concerning the currency of bird population data presented in the management plan for ASPA 127. Following informal discussions with interested Parties and Observers, the Russian Federation agreed that the necessary

amendments to the management plan could not be made during the meeting. The Committee therefore decided to refer the management plan for consideration by an intersessional contact group convened by the Russian Federation, reporting back to CEP IX.

(166) Following discussion with other Members, Chile decided that the management plan for ASPA 150 should be referred for review by an ICG convened by Chile and resubmitted to the next meeting. On the other hand, an intersessional contact group may, in the future, develop an ASMA at Fildes Peninsula and opportunities for feedback may arise. Therefore, Chile requested that the period of designation for the existing management plan be extended for three years.

(167) The Committee agreed to request the ATCM to extend the period of designation for the management plan for ASPA 150 for three years.

(168) Noting the appropriate changes that had been made to the remaining eight management plans during their revision, the Committee agreed to refer those management plans to the ATCM for approval. A list of those management plans is at Appendix 3.

iii) New draft management plans for protected/managed areas

(169) The Committee considered the following three Working Papers containing ASPA or ASMA management plans under this category:

- WP 6 *Draft Management Plan for ASMA? Amundsen-Scott South Pole Station, South Pole* (United States).
- WP 22 *Proposal for Classifying Historical Site No. 46 Port Martin (Adelie Coast) (66°49' S / 141°23' E) as a Specially Protected Area Management Plan* (France).
- WP 27 (Rev 1) *Draft Antarctic Specially Managed Area (ASMA) Management Plan for the Larsemann Hills, East Antarctica* (Australia, China, Russian Federation).

(170) In response to WP 27 (Rev 1), India referred to IP 80, submitted under Agenda Item 4a, on the proposed site for the new Indian research base, located in the Larsemann Hills.

(171) The Committee agreed to refer these management plans for consideration by intersessional contact groups convened respectively by the United States, France and Australia. It noted that France had foreshadowed the inclusion of the landing rock of Dumont D'Urville as an historical site.

(172) The Committee agreed that the intersessional contact groups considering management plans should operate in accordance with the Terms of Reference agreed at CEP VII and detailed in Annex 4 to the CEP VII Final Report.

(173) The Chair welcomed the proposal of two more ASMA management plans and indicated that it is encouraging to see that this provision of the Protocol has come to maturity.

iv) Other matters related to Area Protection and Management

(174) New Zealand spoke to an audio-visual presentation introducing WP 2 *Systematic Environmental Protection in Antarctica: A draft Systematic Environmental-Geographic Framework for Antarctica created using Environmental Domains Analysis* and IP 44 *Environmental Domain Analysis for the Antarctic Continent*, updating the Committee on its ongoing work to develop a systematic environmental-geographic framework as required by Annex V.

(175) The presentation indicated that a process of computer analysis been undertaken, using seven continent-wide datasets to define layers of classification of various numbers (groups) of Environments, also referred to as 'environmental domains' on the land masses. A classification involving 20 Environments was illustrated for potential application on a continental scale. New Zealand noted that future work planned included further analysis to finalise classification levels, including a 100 Environment classification for use in ice-free areas, review and documentation of classification layers, and an examination of the representativeness of existing ASPAs in the light of the draft classification.

(176) Many Members thanked New Zealand for this exciting and useful work, which has been developed and improved over many years.

(177) The Russian Federation noted that the classification could look back at previous analyses, such as those undertaken in the 1960s, in an attempt to define categories of nature zones. It also noted that it could be useful to define a classification for Antarctic oases and to differentiate both between shore and near-shore areas, and between eastern and western Antarctic ice sheets.

(178) Chile shared some of the views of the Russian Federation, noting that the 19th century regional concept of Antarctica is still applicable today, but noted that this new classification should serve as an important tool for protected areas.

(179) The United Kingdom noted some early results of the classification that might be useful for science (e.g. ice shelves vulnerable to climate change) or management (e.g. use of information technology). It encouraged New Zealand to bring to CEP IX an analysis of how existing protected areas fit into the new classification, particularly conclusions about under-representation.

(180) Australia indicated that it would be keen to participate in further development of this work and that it would look at the possibility of how to include biological data, which could be very valuable to the analysis.

(181) Argentina also indicated its willingness to share necessary data.

(182) The Committee accepted each of the recommendations outlined in WP 2 by:

- looking forward with interest to an update from New Zealand at CEP IX on the further development of a systematic environmental-geographic framework, including a finer-scale classification for ice-free land environments ("oases");
- requesting that SCAR review the "proof of concept" classification layer; and
- requesting national programs to contribute to the data layers used in the analysis where practical.

(183) SCAR indicated that it would be happy to review New Zealand's work and may be able to provide other data being prepared in the SCAR system, such as improved geological information and remotely-sensed data.

(184) ASOC hoped that a similar type of classification could be applied to the Antarctic marine environment.

(185) New Zealand introduced WP 11 *A Review of the Antarctic protected Areas System* and accompanying IP 29 with the same title, noting that this work was undertaken to support the SAER work but merited presentation to the Committee as a separate Working Paper.

(186) Many Members congratulated New Zealand on a very useful and comprehensive review.

(187) In response to the recommendations outlined in WP 11, the Committee agreed to:

- acknowledge that the systematic environmental-geographic framework presented in WP 2 provides an excellent tool for ensuring a more systematic spread of protected areas;
- use the Antarctic Protected Areas Information Archive to maintain an up to date online archive of protected area management plans;
- establish a register of the status of protected area management plans and review dates on the CEP and ATS websites;
- include in Working Papers introducing new or revised draft management plans a comment reflecting how the area complements the system of protected areas as a whole;
- note that it would be useful to review the Guide to the preparation of Management Plans for Antarctic Specially Protected Areas and the Guidelines for Implementation of the Framework for Protected Areas set forth in Article 3, Annex V of the Environmental Protocol and consider at CEP IX when it would be appropriate to do so;

- consider, as part of the review of the protected area guidelines mentioned above the need for management plans to include a clear statement of the primary reason for designation;
- encourage Parties responsible for those plans not yet in Annex V format to revise them accordingly, as required by Resolution 1 (1998) and Resolution 2 (2002);
- encourage Parties responsible for management plans that have not been reviewed for 5 or more years to undertake reviews and any subsequent plan revisions; and
- consider also the separate list of protected area recommendations outlined in Annex 5 to the CEP III Final Report when assessing the future work of the CEP as discussed under Agenda Item 3.

(188) The United Kingdom confirmed that it is currently updating the management plan for Moe Island, which was recommended under Resolution 9 (1995) as a useful model to assist with the preparation of new and revised management plans.

(189) Germany presented WP 3 *Antarctic Protected Areas System: Lillie Marleen Hut, Mt. Dockery, Everett Range, northern Victoria Land, Antarctica. Proposal for Inclusion in the Antarctic Treaty List of Historic Sites and Monuments.* It noted that the hut had played an important role in the dramatic, but unsuccessful attempt to prevent the sinking of the expedition ship *Gotland II*.

(190) Norway presented WP 39 *Listing of the Amundsen Tent on the List of Historic Sites and Monuments*, stating that, while the exact location of the hut is unknown, it has great historic heritage value and remains a symbol of one of the last great natural conquests. The paper included comments on the threats to the tent and considers that it should be protected. As the exact location is not known, unintentional damage would not be considered a breach of the management provisions.

(191) In response to a question from Australia regarding how the site would be delimited, Norway noted that it is possible to calculate ice drift and thereby narrow down the potential location of the tent, and indicated that further consideration would be given to this matter.

(192) The Committee agreed to refer the two sites to the ATCM for inclusion on the list of Historic Sites and Monuments. A list is included in Appendix 4.

(193) The Committee also agreed that future nominations should include an assessment against the criteria for listing historic sites and monuments outlined in Resolution 8 (1995).

(194) Ukraine presented IP 98 *Draft proposal for discussion to Antarctic Protected Areas System - Antarctic Specially Managed Area No XX "Petermann Island, Wilhelm Archipelago, Antarctic Peninsula"*, seeking to identify Parties interested in discussing whether ASMA designation of this site is appropriate.

(195) Germany introduced IP 16 *Progress Report on the Research Project "Risk assessment for Fildes Peninsula and Ardley Island and the development of management plans for designation as Antarctic Specially Protected or Managed Areas"*. It provided an update on the project, noting the excellent cooperation of other Parties in the area through an informal coordination group, and indicating its intent to submit a draft ASMA plan for consideration at CEP IX.

(196) The Chair referred briefly to WP 31 *Site Guidelines for Land-Based Tourist-Visited Sites* (Australia, United Kingdom, United States), noting that the paper was not submitted for the Committee's consideration, but that it includes a proposal that, if endorsed by ATCM, would require the CEP to undertake an intersessional review of several site guidelines.

(197) The Committee agreed that, if required, it would be appropriate for the Chair to establish an ICG out of session and to nominate its convenor.

(198) Recalling that the current management plan for Ardley Island is due to expire later this year, and noting that the revised ASPA management plan has been referred to an ICG, the CEP requested the ATCM to consider extending the life of management plans which are due to expire.

(199) Australia noted that, as a result of discussions at CEP VII, it had established an online discussion forum which had been used for intersessional discussion of draft management plans. Australia requested feedback from Parties so that the discussion forum could be improved for future use.

(200) The United Kingdom commended Australia for developing the forum, and noted that its success was reflected in the way in which consideration of draft management plans progressed on the floor during the Meeting. The United Kingdom encouraged the further use of the discussion forum by Members.

(201) The following Information Papers were also submitted under Agenda Item 4g: IP 27 (New Zealand); IP 28 (Italy, New Zealand, United States); IP 41 (Italy); IP 64 (IUCN).

ITEM 5: Environmental Monitoring

(202) France introduced WP 23 *Progress report of the CEP Intersessional Contact Group on Environmental Monitoring*. It summarised the methodology used for the ICG, which had included representatives from 13 Parties, two Observers and one NGO.

(203) Over the intersessional period, the ICG had reviewed previous works by CEP/ATCM and SCAR/COMNAP on environmental monitoring, agreed on definitions for key terms, agreed on desired characteristics for environmental indicators, agreed on the main tenets for the design of monitoring programs and had discussed the difficulty of monitoring every site of human activity in Antarctica and the need to compare the impacts of activities in contrasted situations.

(204) France noted that the recent SCAR/COMNAP workshop on Biological Monitoring will provide a sound basis to make progress in these issues, but that further intersessional work is needed in order to produce a final report to the next CEP meeting.

(205) France reported back to the Committee on discussions held out of session to consider the direction of ongoing intersessional work on environmental monitoring and state of the Antarctic environment reporting. It noted that the goal of such work could be to use existing documentation by CEP and COMNAP and the results of the SCAR/COMNAP workshop to see how progress can be made to develop a system for addressing state of the Antarctic environment reporting.

(206) The Committee agreed that such intersessional work would be highly valuable and agreed to convene an ICG operating under the terms of reference given at Annex 9 and reporting back to CEP IX.

(207) In response to the second term of reference for the ICG, CCAMLR noted that it could make available data obtained through its programs to collect marine debris data and other information collected within the CCAMLR Ecosystem Monitoring Program.

(208) The Chair thanked CCAMLR and suggested that it may be useful for an ICG member to attend the Scientific Committee of CCAMLR to promote the exchange of scientific information.

(209) COMNAP noted that it had been active in last year's state of the Antarctic environment reporting ICG and recalled that many indicators are directly linked to national program information. It will continue to look into how to effectively provide this information to the CEP.

(210) SCAR stated that the results of the Texas workshop would be discussed at the COMNAP/SCAR Executive meeting in July. The report would be available to the ICG for discussion. SCAR and COMNAP will provide a paper to the next CEP meeting on any issues arising.

(211) COMNAP introduced WP 26 *Working Paper on "Practical Guidelines for Developing and Designing Environmental Monitoring Programmes in Antarctica"*, presenting standardised techniques for monitoring in Antarctica and proposing that these guidelines be used in conjunction with the SCAR/COMNAP Environmental Monitoring Handbook (2000).

(212) The Committee thanked COMNAP for its work to develop the practical guidelines, and accepted the recommendations in WP 26 by agreeing to recommend that the ATCM endorse them and make them available to all Parties for use in conjunction with the Environmental Monitoring Handbook.

(213) The United States presented IP 22 *Antarctic Site Inventory: 1994-2005*, providing an annual report of results from the Antarctic Site Inventory project and noting that 639 visits have now been made to 93 Antarctic Peninsula locations.

(214) Several Parties welcomed the report by the United States and noted the usefulness of the substantial work undertaken over a number of years. It was hoped that the provisions of annual reports to the CEP would continue.

(215) New Zealand suggested that this body of data on visitor impacts could feed into the monitoring and state of the Antarctic environmental reporting work of the CEP. It also expressed interest in establishing some parallel scheme in other sectors in Antarctica to contribute to a continent-wide approach.

(216) Uruguay submitted IP 52 *Initial Improvements to Biological Monitoring in the Uruguayan "Artigas" Base*, which referred to the use of indigenous organisms as biological indicators in the light of experience in temperate climates. Uruguay also expressed its congratulations to SCAR and COMNAP for the Texas Workshop.

(217) Uruguay also submitted IP 54 *Magnetic Surveys at B.C.A.A., Second State, March 2005*, providing information on improvements to the magnetic survey instrument built by Uruguayan technicians, and on the possibility of contributing to the scientific topics and principles established for the IPY in 2007/08.

(218) Other papers submitted under Agenda Item 5 included:

- IP 69 *Biological Monitoring of Human Impacts in the Antarctic* (SCAR)
- IP 76 *Environmental Monitoring of the Indian Permanent Station-Maitri in Pursuant to the Protocol on Environmental Protection to the Antarctic Treaty* (India)

ITEM 6: State of the Antarctic Environment Report

(219) New Zealand delivered an audio-visual presentation to introduce WP 10 *State of the Antarctic Environment Reporting System: Report of the Intersessional Contact Group*, providing an update on the status of the work of the ICG convened by New Zealand and Australia.

(220) Key issues raised during the ICG included the need for:

- indicator selection to be robust, systematic and meet CEP needs;
- custodian support for, and input to, the system; and
- critical assessment of the system by the CEP and others.

(221) New Zealand stressed that the system is still under development and that further intersessional work is required to develop the framework and criteria for indicator selection, to identify additional relevant indicators and to engage key observer organisations. New Zealand proposed that an ICG be established to continue the work.

(222) Several Members thanked New Zealand and Australia for leading this work during the intersessional period.

(223) COMNAP noted that many of the indicators to be used concern operational matters and indicated COMNAP's commitment to helping Members to provide data for use in the SAER. Most of this data exists currently, as a result of the exchange of information requirements of Resolution 6 (2001) but there remains a need to improve methods for collation and provision of information to CEP.

(224) France noted some similarities and overlapping interests of the SAER ICG with the work of the ICG on environmental monitoring.

(225) As indicated under Agenda Item 5, the Committee decided to combine its work on environmental monitoring and State of the Antarctic Environment Reporting, and agreed to convene an ICG on environmental monitoring and reporting operating under the terms of reference given at Annex 9.

(226) ASOC presented IP 104 *The Antarctic and Climate Change*, which summarises the results of climate-related research in the Antarctic during the past few years. ASOC noted that it is particularly appropriate for Antarctic Treaty member states to use this information, derived from their own research, as a basis for taking action to avoid dangerous climate change, and called on Parties that have not ratified the Kyoto Protocol to reconsider their positions.

ITEM 7: Biological Prospecting

(227) The Committee noted that, while one Information Paper had been submitted under this Agenda Item (IP 93 *Recent Developments in Biological Prospecting Relevant to Antarctica* (UNEP)), it would undergo substantive discussion under ATCM Agenda Item 18 Biological Prospecting.

ITEM 8: Emergency Response and Contingency Planning

(228) No papers were introduced under this Agenda Item.

(229) France indicated that, while no papers had been submitted to CEP on this topic at this meeting, the issue is one of importance and it proposed to submit a Working Paper on risks and response for substantive discussion at CEP IX.

(230) The Committee recalled earlier discussions of fuel storage and transfer procedures raised in the inspection reports presented under Agenda Item 4a, and looked forward to receiving further information from COMNAP on this matter at the next meeting.

ITEM 9: Data and Exchange of Information

(231) Germany introduced IP 15 *Establishment of an Antarctic Discussion Forum of Competent Authorities* on behalf of itself and the Netherlands. Germany noted that most Parties to the Protocol have an authority responsible for administering domestic Antarctic legislation. It suggested developing a forum of such competent authorities to promote discussion on issues related to the implementation of the Protocol, noting that such a group would not replace existing bodies, such as the Antarctic Environment Officers Network. Germany invited interested Parties to indicate their interest in being involved in such a forum by providing contact details.

(232) COMNAP clarified the role of the Antarctic Environment Officers Network (AEON), a COMNAP technical group responsible for advising COMNAP on practical environmental issues and, as such, confirmed that AEON does not address the types of the issues outlined in IP 15.

(233) There was agreement among Members to the proposal by Germany and the Netherlands to establish this discussion forum. The Committee accepted Australia's offer to make an online discussion forum available for this purpose.

ITEM 10: Cooperation with Other Organisations

(234) The Chair introduced IP 32 *Progress with the Implementation of the Agreement on the Conservation of Albatrosses and Petrels (ACAP): Report to ATCM XXVIII & CEP VIII from the ACAP Interim Secretariat Hosted by the Australian Government*, on behalf of the depositary for the Agreement. It was noted that the first meeting of Parties had been held in Hobart in 2004 and that Australia would host both the interim and permanent secretariat to the agreement. The report highlighted ACAP's desire to work with and assist ATCM and CEP, particularly with respect to seabird conservation.

(235) The Committee agreed to ask the ATCM to invite ACAP to attend CEP as an Observer under Rule 4 of the CEP Rules of Procedure.

(236) France noted that it had finalised legislation in May this year to enable it to ratify ACAP.

(237) The Chair introduced IP 36 *Report of the CEP Observer to the twenty third meeting of the scientific committee to CCAMLR, 25 to 29 October 2004*, noting in particular the agreement by the CCAMLR Scientific Committee to hold a workshop on marine protected areas, which is directly relevant to the work of the CEP. The report also noted:

- that around 13,000 tons of toothfish were legally caught in the Convention area in the 2004/05 season;

- that eight countries intend to fish for krill in 2005/06 and there are indications that the krill fishery will expand (noting that this fishery is interesting and relevant to the CEP as a keystone of the Antarctic ecosystem);
- that the total catch in the CCAMLR area is low compared to the estimated total allowable catch, but the number of applications to fish in the Convention Area is rising;
- that the Working Group on Ecosystem Monitoring and Management had considered three management plans for ASPAs referred by the CEP;
- the increasing numbers of seals taken as bycatch in the legal fishery;
- that increased bycatch of seabird species associated with illegal fishing in the Convention area is still a major concern;
- the tremendous success of the fishing methodologies detailed in Conservation Measures in significantly reducing seabird bycatch in the legal fishery; and
- the apparent decline in the estimated illegal catch of toothfish, probably as a result increased law enforcement in exclusive economic zones and the success of the catch documentation scheme.

(238) The Chair also noted that the work of the Scientific Committee is highly relevant to the work of the CEP and he believes that the level of cooperation between the two bodies will increase in the future.

(239) The United States informed Members about the CCAMLR Commission's discussions in recent years regarding marine protected areas as a means of furthering the objectives of the Convention. At a recent meeting, it was decided that a Steering Committee be established to plan a CCAMLR workshop on marine protected areas to be held from August 29 – September 1 in Washington.

(240) The United States agreed to make a presentation to Members on the outcomes of the workshop at the next meeting.

(241) In response to a question from Germany of whether the Committee should show concern about the potential increased catch in the krill fishery, CCAMLR noted that there are measures in place to ensure that any expansion of the fishery would be managed in accordance with the principles of the Convention, such as triggers for spreading catch locations and requirements for research and reporting.

(242) The International Hydrographic Office advised that it will produce updated hydrographic charts during the International Polar Year. While this will require increased shipping activity, it is expected to improve maritime safety and therefore have overall environmental benefits.

ITEM 11: Election of Officers

(243) The Committee enthusiastically agreed to re-elect Ms Anna Carin Thomer to a second term as Vice-Chair.

(244) The Committee also enthusiastically elected Dr Yves Frenot of France to the position of second Vice-Chair.

(245) Ms Thomer and Dr Frenot each thanked the Members for the confidence they have shown and indicated that they look forward to working with the Committee and Chair in their capacities as Vice-Chair.

(246) The Chair reminded Members that CEP IX would be the second year of his second term as Chair. As required by the Rules of Procedure, the next meeting would be his last as Chair. The Chair therefore noted that an election would take place at the next meeting and encouraged Members to consider a suitable replacement to take up the role at the conclusion of CEP IX.

ITEM 12: Preparation for CEP IX

(247) The Committee adopted the agenda for CEP IX contained at Appendix 5.

ITEM 13: Adoption of the Report

(248) The Committee adopted the draft Report.

ITEM 14: Closing of the Meeting

(249) The Chair thanked the Members for a fabulous meeting, which had covered a large number of papers on a wide range of issues, and also for the business-like manner in which the meeting had been conducted.

(250) The Members also thanked the Chair for directing a productive and efficient meeting.

(251) The Chair closed the Meeting and thanked the Members, Observers interpreters, translators, Secretariat and rapporteurs.

Annex 1

Welcome speech by Ms Lena Sommestad, Minister for the Environment, at the opening of the Committee of Environmental Protection meeting (CEP VIII) in Stockholm on 6 June 2005

Your Excellencies,

Ladies and Gentlemen,

It is a great pleasure for me, on behalf of the Swedish Ministry for Sustainable Development, to welcome you all to Sweden and Stockholm for the 8th meeting of the Antarctic Treaty's Committee on Environmental Protection.

In February this year I had the great honour to visit Antarctica. I was invited by my Norwegian colleague, Mr Knut Arild Hareide, Minister for the Environment, to participate in the inauguration by Queen Sonja of the new and modern year-round Troll station, as well as the inauguration of the new runway, Troll Airfield, in the Dronning Maud Land part of Antarctica. This was indeed a very interesting and rewarding experience for me, as it was my first ever visit to Antarctica. The visit gave me increased insight and knowledge regarding research and the special conditions on the earth's third largest continent. Antarctica is a natural reserve, devoted to peace and science, which it is our responsibility to manage together. Moreover, it is a source of much valuable information on the state of and trends for the global environment.

The Environment Protocol is very important. The Protocol as a tool and the work done by the Committee on Environmental Protection can not be overestimated.

A strategic discussion on future environmental challenges in Antarctica and its dependent and associated ecosystems is on your agenda, as a result of Sweden's initiative at last year's meeting. In that perspective, what environmental challenges do we foresee for Antarctica, in the short and long run? Some questions that I think are important to raise are:

- How should the CEP communicate its findings to us ministers concerned, and to civil society?
- How can I and my fellow ministers in the Member States help in taking action, based on the important findings of the CEP?
- And finally, how can this help move the global environmental agenda forward?

I believe that the outcome of a discussion about these and other very strategic issues – future challenges and priorities – will be very important for the CEP.

The connection between the Arctic and Antarctica will be manifest in the International Polar Year, which is to focus on both polar regions in a global context. I would therefore like to highlight the bipolar linkages – similarities and differences in, for example, environmental pressure in the Arctic and in Antarctica. It is my hope that increased international research will focus on connections such as climate change and transport of chemicals, which we will hear more about at a lunch seminar arranged by Sweden on Friday. Let me take a few minutes to suggest a few thoughts.

The earth's climate is changing. The global temperature is now rising. Trends and patterns of change in recent decades indicate that human influences are evident. The findings of the Arctic Climate Impact Assessment (ACIA) show that the Arctic average temperature has risen at almost twice the rate of the global mean temperature in the past few decades. The widespread melting of glaciers and

sea ice provides additional evidence of strong Arctic warming. These trends are projected to accelerate during this century, due to ongoing increases in concentrations of greenhouse gases in the earth's atmosphere. While most greenhouse gas emissions do not primarily originate in the Arctic, they are projected to bring wide-ranging changes and impacts to the Arctic.

So, why am I bringing this up when it is the South Pole area – Antarctica – that will be on your agenda in the days ahead? The answer of course lies in the increasingly important bipolar linkages. In Antarctica, too, the temperature has risen more than expected. Research shows that the Antarctic ice shelves are melting, and they are also being torn loose and drifting out into the sea at a higher speed than earlier expected. Climate processes unique to the Arctic and Antarctica have significant effects, not only on the regional polar climate, but also globally.

Climate change is taking place within the context of many other ongoing pressures, which is another bipolar link I would like to highlight. The ozone hole was first discovered in Antarctica in the 1970s. It then became clear that the ozone layer over Antarctica was being depleted by chemicals, even though they were not produced there. This made it evident that chemical contaminants could enter the polar areas by air. Ocean currents also bring substances from a long way off. Traces of such chemicals have actually been found in penguins in Antarctica, for example. In the Arctic, several assessments have shown further evidence of such transboundary contamination.

We have also recently learned that diseases such as bird flu can be transmitted by migratory birds. To understand the ecology and correctly assess the role of microorganisms – across the entire spectrum from wildlife biodiversity to the epidemiology of human diseases – it is important to take a bipolar view.

I believe that we need instruments to help us trace global environmental changes so that we have reliable early warning systems. Monitoring programmes are of the greatest importance for research and action, and I hope they will come further into focus when planning future international research programmes. Another instrument is assessments, where for example cumulative impacts are evaluated. We should be sure to benefit from such instruments.

I believe that addressing issues like these is an important task for the Committee on Environmental Protection, the CEP. The State of the Antarctic Environment Reporting System, SAER, is a positive way forward. However, we still need to enhance the work with assessments.

I eagerly look forward to hearing the results of the CEP meeting.

Ladies and Gentlemen, I hope that this important meeting will be a great success for you all and I wish you every luck in the tasks ahead. Despite your tight work programme, let me remind you to also take time off to enjoy and explore Stockholm and its surroundings, and perhaps take one of the many cruises out to our beautiful archipelago. Thank you.

Annex 2

CEP VIII Agenda and Final List of Documents

Paper No.	Title	Submitted By

Item 1: Opening of the Meeting

Item 2: Adoption of the Agenda

Item 3: Operation of the CEP

WP 001	Working Paper to initiate a strategic discussion on future environmental challenges in Antarctica and its dependent and associated ecosystems	Sweden
WP 009	The Committee on Environmental Protection of the Antarctic Treaty: An overview and likely future scenarios	Argentina
IP 074	Development pressures on the Antarctic wilderness	ASOC

Item 4: Compliance with the Protocol on Environmental Protection

4a) General matters

WP 016	Scott Base and Mc Murdo Station: report of an inspection under Article vii of the Antarctic Treaty and Article 14 of the Protocol on Environmental Protection (*submitted under ATCM Item 18)*	Australia
WP 032	Report of joint inspections under Article vii of the Antarctic Treaty and article 14 of the Environmental Protocol (*submitted under ATCM Item 18*)	Australia, Peru, United Kingdom
IP 002	Annual report pursuant to the Protocol on Environmental Protection to the Antarctic Treaty	South Africa
IP 004	Renewable energy use at field camps in Antarctica	United States
IP 007	Informe anual de España de acuerdo con el Artículo 17 del Protocolo al Tratado Antártico Sobre Protección del Medio Ambiente	Spain
IP 009	Rapport annuel présenté par la France conformément à l'article 17 du Protocole au Traité sur l'Antarctique relatif à la protection de l'environnement 2005	France
IP 010	Mise en oeuvre du Protocole de Madrid Relatif a la Protection de l'Environnement en Antarctique	France
IP 021	Annual report pursuant to the Protocol on Environmental Protection to the Antarctic Treaty	Belgium
IP 026	Annual report of New Zealand pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty	New Zealand
IP 039	Annual report pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty	Italy
IP 043	ACT of August 6, 2003 on Antarctica and on amendment to some laws	Czech Republic
IP 051	Wind power in antarctica. A feasibility study for Wasa	Sweden
IP 053	Informe anual de acuerdo al Artículo 17 del Protocolo al tratado antártico sobre la protección del medio ambiente Periodo 2004- 05	Uruguay
IP 065	Report on the implementation of the Protocol on Environmental Protection as required by Article 17 of the Protocol	United Kingdom
IP 073	New Belgian research station in the Sør Rondane, Antarctica, 2004-2005 BELARE site survey expedition	Belgium

Paper No.	Title	Submitted By
IP 074	Development pressures on the Antarctic wilderness	ASOC
IP 080	India's endeavour for a new research Station in Antarctica- a report	India
IP 084	Annual report of China pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty	China
IP 101	Annual report pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty. The Ukraine (2005)	Ukraine
IP 102	Annual report pursuant to the Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty Japan 2004/2005 Season	Japan
IP 104	The Antarctic and climate change	ASOC
IP 110	Informe anual de acuerdo al Artículo 17 del Protocolo al Tratado Antártico Sobre Protección del Medio Ambiente	Chile
IP 116	Annual report to the Protocol on Environmental Protection to the Antarctic Treaty	Korea, Republic of

4b) Consideration of Draft CEEs forwarded to the CEP in accordance with paragraph 4 of article 3 of Annex I of the Protocol

WP 019	Draft Comprehensive Environmental Evaluation (CEE) Proposed construction and operation of Halley VI Research Station, Brunt Ice Shelf, Caird Coast, Antarctica	United Kingdom
IP 025	ANDRILL – The Approved McMurdo Sound Portfolio Projects. Final CEE update	Germany, Italy, New Zealand, United States
IP 030	Draft Comprehensive Environmental Evaluation (CEE) Rebuild and operation of the wintering Station Neumayer III and retrogradation of the present Neumayer Station II	Germany
IP 066	Draft Comprehensive Environmental Evaluation (CEE) Proposed construction and operation of Halley VI Research Station, Brunt Ice Shelf, Caird Coast, Antarctica	United Kingdom

Paper No.	Title	Submitted By

4c) Other matters covered by Annex I (Environmental Impact Assessment)

WP 030	Report of the ICG established to update the 'Guidelines for Environmental Impact Assessment in Antarctica' (1999)	Australia
WP 040	Assessment of environmental impacts of satellite facility at Troll	Norway
IP 006	Environmental impact assessment on the Padre Balduíno Rambo refuge's dismantlement - Brazil	Brazil
IP 017	Annual list of Brazilian Environmental Evaluations prepared in accordance with Annex I, Article 6, paragraph 1 of the Protocol) - 2004/2005 season	Brazil
IP 023	Annual list of any Initial Environmental Evaluations prepared in accordance with Annex I, Article 2, of the Protocol (Annex I, Article 6, lit. b, of the Protocol) and also ATCM Resolution 6 (1995) 2004/2005 Season	South Africa
IP 040	Talos Dome Ice Core Project (TALDICE): Initial Environmental Evaluation for recovering a deep ice core at Talos Dome, East Antarctica: Comments from CEP contact points	Italy
IP 042	Construction of the Czech Antarctic station on the James Ross Island. Activities performed in the year 2004, and during the austral summer of 2004/05	Czech Republic
IP 058	List of Initial Environmental Evaluations (IEE) prepared by Uruguay in 2004	Uruguay
IP 059	A note on the vulnerability of cetaceans in Antarctic waters to noise pollution	ASOC
IP 072	Initial Environmental Evaluation for the establishment of a satellite reception and command facility (TrollSat) and a Norwegian Institute for Air Research (NILU) Laboratory as an integral part of the Troll Station in Dronning Maud Land, Antarctica	Norway
IP 075	Baseline of the environment in the surroundings of the Czech Antarctic station	Czech Republic
IP 083	A report on the environment of Great Wall Station and Zhongshan Station in current years for ATCM	China
IP 107	Annual list of Initial Environmental Evaluations (IEE) and Comprehensive Environmental Evaluations (CEE) calendar year 2004	Australia

Paper No.	Title	Submitted By

4d) Matters covered by Annex II (Conservation of Antarctic Fauna and Flora)

WP 028	Measures to address the unintentional introduction and spread of non-native biota and disease to the Antarctic Treaty Area	Australia
WP 033	De-listing Antarctic Specially Protected Species	SCAR
WP 034	Proposal to List a Species as a Specially Protected Species under Annex II	SCAR
IP 063	Introduction of non-native species, parasites and diseases	IUCN
IP 097	Update on boot and clothing decontamination guidelines and the introduction and detection of diseases in Antarctic wildlife: IAATO's perspective	IAATO
IP 121	The use of ballast water in Antarctica	COMAP, IAATO

4e) Matters covered by Annex III (Waste Disposal and Waste Management)

IP 037	Reducing sewage pollution in the Antarctic marine environment using a sewage treatment plant	United Kingdom
IP 047	Evacuation of AN-3T aircraft from the Amundsen-Scott station	Russian Federation
IP 049	Waste water treatment in Antarctica. A feasibility study for grey water treatment at Wasa station	Sweden
IP 105	Four-year program for clean-up at Syowa Station	Japan

4f) Matters covered by Annex IV (Prevention of Marine Pollution)

WP 041	Proposal to submit a proposal to IMO to ban the presence of Heavy Fuel Oil (HFO) on board ships south of 60° South	Norway
WP 052	Marine debris: Global and regional impacts	Chile
IP 067	The use of heavy fuel oil in Antarctic waters	COMNAP, IAATO

4g) Matters covered by Annex V (Area Protection and Management)

WP 002	Systematic Environmental Protection in Antarctica: A draft Systematic Environmental-Geographic Framework for Antarctica created using Environmental Domains Analysis	New Zealand
WP 003	Antarctic Protected Areas System: Lillie Marleen Hut, Mt. Dockery, Everett Range, northern Victoria Land, Antarctica. Proposal for inclusion in the Antarctic Treaty list of Historic Sites and Monuments	Germany
WP 004	Draft Revised Management Plan for ASPA 119 Davis Valley and Forlidas Pond, Dufek Massif	United States
WP 005	Final Revised Management Plan for ASPA 149 Cape Shirreff and San Telmo Island, Livingston Island, South Shetland Islands	Chile, United States
WP 006	Draft Management Plan for ASMA ? Amundsen-Scott South Pole Station, South Pole	United States
WP 007	Revision of Management Plan for ASPA No. 133 (Harmony Point)	Argentina, Chile
WP 008	Revision of Management Plan for ASPA 132 (Potter Peninsula)	Argentina
WP 011	A Review of the Antarctic Protected Areas System	New Zealand
WP 015	Revised Management Plan for Antarctic Specially Protected Area 127 Haswell Island (Haswell Island and Adjacent Emperor Penguin Rookery on Fast Ice)	Russian Federation
WP 017	Antarctic Protected Area System: Review of Antarctic Specially Protected Areas 155, 157, 158 and 159	New Zealand
WP 020	Deception Island Antarctic Specially Managed Area (ASMA) management package	Argentina, Chile, Norway, Spain, United Kingdom, United States

Paper No.	Title	Submitted By
WP 021 (Rev1)	Antarctic Specially Protected Area no. 120. Revised Management Plan Cape Geology archipelago	France
WP 022	Proposal for classifying Historical Site n° 46 Port Martin (Adelie Coast) (66°49' S/ 141°23' E) as a Specially Protected Area management plan	France
WP 024	Intersessional Contact Group to consider Antarctic Specially Protected Area at Dakshin Gangotri Glacier, Dronning Maud Land – Convener's report	India
WP 025	Antarctic Protected Areas System. Proposed Management Plan for Dakshin Gangotri Glacier, Dronning Maud Land, Antarctic Specially Protected Area (ASPA) No XXX	India
WP 027 (Rev1)	Draft Antarctic Specially Managed Area (ASMA) Management Plan for the Larsemann Hills, East Antarctica	Australia, China, Russian Federation
WP 031	Site Guidelines for land-based tourist-visited sites (*submitted under ATCM Agenda Item 12*)	Australia, United Kingdom, United States
WP 035	Review of the Admiralty Bay Antarctic Specially Managed Area Management Plan (ASMA No 1)	Brazil, Poland
WP 036	Antarctic Protected Areas System Management Plan for Scullin and Murray monoliths, Mac. Robertson Land, east Antarctica Antarctic Specially protected Area No. XXX	Australia
WP 037 (Rev1)	Revision of Management Plan for Antarctic Specially Protected Area no. 150 (Ardley Island)	Chile
WP 039	Listing of the Amundsen Tent on the List of Historic Sites and Monuments	Norway
WP 042	Antarctic Protected Areas System: Revised Management Plans for: Antarctic Specially Protected Area No. 101 Taylor Rookery, Mac. Robertson Land, East Antarctica, Antarctic Specially Protected Area No. 102 Rookery Islands, Mac. Robertson Land, East Antarctica, and Antarctic Specially Protected Area No. 103 Ardery Island and Odbert Island, Budd Coast, Wilkes Land, East Antarctica	Australia
IP 016	Progress report on the research project "Risk assessment for Fildes Peninsula and Ardley Island and the development of management plans for designation as Antarctic Specially Protected or Managed Areas"	Germany
IP 027	Antarctic Protected Area System: Reviews of Antarctic Specially Protected Areas 116 and 131	New Zealand
IP 028	Antarctic Protected Area System: McMurdo Dry Valleys ASMA Management Group	Italy, New Zealand, United States
IP 029	A Review of the Antarctic Protected Areas System	New Zealand
IP 041	Brief report on Edmonson Point Management Plan progress	Italy
IP 044	Environmental Domain Analysis for the Antarctic Continent	New Zealand
IP 064	Resolution on Antarctic Conservation adopted at the 3d World Conservation Congress, Bangkok, November 2004	IUCN
IP 098	Draft proposal for discussion to Antarctic Protected Areas System - Antarctic Specially Managed Area No XX "Petermann Island, Wilhelm Archipelago, Antarctic Peninsula"	Ukraine

Paper No.	Title	Submitted By

Item 5: Environmental Monitoring

WP 023	Progress report of the CEP Intersessional Contact Group on Environmental Monitoring	France
WP 026	Working Paper on "Practical guidelines for developing and designing Environmental Monitoring Programmes in Antarctica"	COMNAP
IP 022	Antarctic Site Inventory: 1994-2005	United States
IP 037	Reducing sewage pollution in the Antarctic marine environment using a sewage treatment plant	United Kingdom
IP 052	Initial approach to biological monitoring in the Uruguayan "Artigas" Base	Uruguay
IP 054	Relevamiento magnético de las inmediaciones de la BCAA. Segunda etapa, marzo 2005	Uruguay
IP 069	Biological monitoring of human impacts in the Antarctic	SCAR
IP 076	Environmental monitoring of the Indian permanent Station-Maitri in pursuant to the Protocol on Environmental Protection to the Antarctic Treaty	India

Item 6: State of the Antarctic Environment Report

WP 010	State of the Antarctic Environment Reporting System: Report of the Intersessional Contact Group	Australia, New Zealand
IP 104	The Antarctic and climate change	ASOC

Item 7: Biological Prospecting

IP 093	Recent developments in biological prospecting relevant to Antarctica	UNEP

Item 8: Emergency Response and Contingency Planning

	No papers were submitted or introduced under this Agenda item	

Item 9: Data and Exchange of Information

IP 015	Establishment of an Antarctic discussion forum of Competent Authorities	Germany, The Netherlands

Item 10: Co-operation with Other Organisations

IP 032	Progress with the implementation of the Agreement on the Conservation of Albatrosses and Petrels (ACAP): Report to ATCM XXVIII & CEP VIII from the Acap Interim Secretariat hosted by the Australian government	Australia
IP 036	Report of the CEP observer to the twenty third meeting of the scientific committee to CCAMLR, 25 to 29 October 2004	Australia

Item 11: Election of Officers

Item 12: Preparation for CEP IX

Item 13: Adoption of the Report

Item 14: Closing of the Meeting

Annex 3

CEP National Contact Points

Member Country	Contact Person	Email address
Chair	**Tony Press**	*tony.press@aad.gov.au*
Argentina	Memolli Mariano **Rodolfo Sánchez**	*dna@dna.gov.ar / mgm@mrecic.gov.ar* *rsanchez@dna.gov.ar*
Australia	**Tom Maggs** Michael Stoddart	*tom.maggs@aad.gov.au* *michael.stoddart@aad.gov.au*
Belgium	**Alexandre de Lichtervelde**	*alexandre.delichtervelde@health.fgov.be*
Brazil	**Tania Aparecida Silva Brito**	*tania.brito@mma.gov.br*
Bulgaria	**Christo Pimpirev** Nesho Chipev	*polar@gea.uni-sofia.bg* *chipev@ecolab.bas.bg*
Canada	**Fred Roots**	*fred.roots@ec.gc.ca* *www.ats.org.ar/aeoi.htm*
Chile	**Verónica Vallejos**	*vvallejos@inach.cl*
China	**Wei Wen Liang** Chen Danhong	*chinare@263.net.cn* *hydane@vip.sina.com*
Czech Republic	**Zdenek Venera**	*venera@cgu.cz*
Ecuador	**Arturo Romero Velázquez**	*digeim@digeim.armada.mil.ec*
Finland	**Markus Tarasti** Mika Kalakoski	*markus.tarasti@ymparisto.fi* *mika.kalakoski@fimr.fi*
France	**Yves Frenot** Laurence Petitguillaume	*yves.frenot@ipev.fr* *laurence.petitguillaume@environnement.gouv.fr*
Germany	**Antje Neumann**	*antje.neumann@uba.de*
Greece	**Emmanuel Gounaris** **Georgios Makridis**	*giorgom1@otenet.gr*
India	**Prem C. Pandey** Ajai Saxena	*pcpandey@ncaor.org* *ajai@dod.delhi.nic.in* *ajaisaxena@yahoo.com*
Italy	**Sandro Torcini**	*sandro.torcini@casaccia.enea.it*
Japan	**Kousei Masu**	*antarctic@env.go.jp*
Korea, Republic of	**In-Young Ahn** Jaeyong Choi	*iahn@kordi.re.kr* *jchoi@kei.re.kr*
Netherlands	**Dick C. de Bruijn**	*Dick.DeBruijn@minvrom.nl*
New Zealand	**Neil Gilbert**	*n.gilbert@antarcticanz.govt.nz*
Norway	**Birgit Njaastad**	*njaastad@npolar.no*
Peru	**Juan Carlos Rivera**	*teconec@hotmail.com* *teconecsac@yahoo.com*

Poland	**Stanislaw Rakusa-Suszczewski**	*profesor@dab.waw.pl*
Romania	**Teodor Gheroghe-Negoita**	*negoita_antarctic@yahoo.com*
Russian Federation	**Valery Lukin** Valery Martyshchenko	*lukin@raexp.spb.su* *lukin@aari.nw.ru* *seadep@mcc.mecom.ru*
South Africa	**Henry Valentine**	*henryv@antarc.wcape.gov.za*
Spain	**Manuel Catalan**	*cpe@mcyt.es* *manuel.catalan@ucs.cs* *cmartido@mapya.es* *carlos.palomo@md.ies.es* *arodriguez@mma.es*
Sweden	**Johan Sidenmark** Anna Carin Thomer Marianne Lillieskold	*johan.sidenmark@polar.se* *annacarin.thomer@sustainable.ministry.se* *marianne.lillieskold@naturvardsverket.se*
Ukraine	Gennady Milinevsky	*science@uac.gov.ua*
United Kingdom	**John Shears** Jane Rumble	*jrs@bas.ac.uk* *Jane.Rumble@fco.gov.uk*
United States of America	**Polly Penhale** Fabio Saturni	*ppenhale@nsf.gov* *SaturniFM@state.gov*
Uruguay	**Aldo Felici**	*ambiente@iau.gub.uy*

Observers 4a		
Observer	**Contact person**	**Email address**
Estonia	**Mart Saarso** Enn Kaup	*Mart.Saarso@mfa.ee* *kaup@gi.ee*

Observers 4b		
Observer	**Contact Person**	**Email address**
CCAMLR	**Edith Fanta**	*ccamlr@ccamlr.org* *e.fanta@terra.com.br*
COMNAP	**Antoine Guichard** Gérard Jugie (Chairman)	*sec@comnap.aq* *chair@comnap.aq*
SCAR	**Peter Clarkson**	*pdc3@cam.ac.uk*

Observadores 4c		
Observador	**Contacto**	**Correo electrónico**
ASOC	**Ricardo Roura** Alan Hemmings	*ricardo.roura@worldonline.nl* *alan.d.hemmings@bigpond.com* *antarctica@igc.org*
IAATO	**Denise Landau** Kim Crosbie David Rootes	*iaato@iaato.org*
IUCN	**Maj de Poorter**	*m.depoorter@auckland.ac.nz*
UNEP	**Christian Lambrechts**	*christian.lambrechts@unep.org*
WMO		
IHO	**Hugo Gorziglia**	*hgorziglia@ihb.mc*

Annex 4

Internet addresses (URLs) where Annual Report information is published in accordance with Article 17 of the Protocol

COUNTRY	INTERNET ADDRESS
Argentina	http://www.ats.aq/aeoi.pmp
Australia	http://www.ats.aq/aeoi.pmp
Belgium	http://www.ats.aq/aeoi.pmp
Brazil	www.mma.gov.br www.secirm.mar.mil.br
Bulgaria	
Canada	http://www.ats.aq/aeoi.pmp
Chile	www.inach.cl www.minrec.cl/pages/politicos/ambiente/antarctica.html
China	www.chinare.cn
Czech Republic	www.env.cz
Ecuador	
Finland	www2.fimr.fi/en/etelamanner/ympariston-suojelu.html
France	www.ipev.fr
Germany	www.awi-bremerhaven.de/logistics/antarktisvertrag/berichte/index-d.html
India	www.ncaor.org
Italy	www.pnra.it
Japan	www.en.go.jp/earth/nankyoku/kankyohogo/index.html (Japanese and English version)
Netherlands	http://www.ats.aq/aeoi.pmp
New Zealand	www.antarcticanz.govt.nz
Norway	http://npolar.no/AntarcticTreatySystem
Peru	www.rree.gob.pe/inanpe
Poland	www.dab.waw.pol
Republic of Korea	www.polar.re.kr
Romania	
Russia	www.aari.nw.ru
South Africa	www.sanap.org.za
Spain	www.mcyt.es/cpe
Sweden	http://www.ats.aq/aeoi.pmp
Ukraine	www.uac.gov.ua
United Kingdom	http://www.ats.aq/aeoi.pmp
United States	www.nsf.gov/od/opp/antarct/treaty/index.htm
Uruguay	www.antarctic.ian.gub.uy

Annex 5

Report of the Open-Ended Contact Group Discussing the 'Must-Do' Tasks of the CEP

An Open-Ended Contact Group met to consider the 'must do' tasks of the CEP and how they are currently carried out. The Group also discussed how these tasks might be undertaken differently and whether this highlighted any implications for the CEP Rules of Procedure.

The Group noted that the main tasks for the CEP are set out in Article 12 of the Protocol (as attached). It also highlighted Exchange of Information as a key CEP task.

The Group also highlighted that the CEP is tasked to be proactive in its advice to the ATCM as well as responding to specific requests for advice. It was noted that there may be scope for the CEP to be more active in encouraging the ATCM to refer issues to the Committee which have an environmental aspect.

In terms of considering how key tasks are currently undertaken, CEEs and Management Plans were considered in particular. This prompted two key issues:

There was a need to maximize the exchange of comments on draft CEEs before the CEP meeting. This could perhaps be facilitated by requiring both a non-technical summary (as a Working Paper) and the full text of the document (as an Information Paper) to be submitted in line with the timetable set out in the Protocol. It was noted that this would highlight translation issues, in respect of the Working Paper.

In respect of Protected Area Management Plans, there was recognition of the continually increasing workload, and the need to ensure effective consideration of the documents by the CEP. It was suggested that the Management Plans could be examined by a specific group, who would then provide advice to the CEP in considering their recommendations to the ATCM.

It was noted that these options presented issues for the CEP, which required further consideration, including the need for intersessional meetings (as set out in the CEP Rules of Procedure).

With regard to ICGs, it was noted that it was virtually impossible for all Parties to participate in them all, and that few really got going. Whilst it was recognised that ICGs can be helpful, it was suggested that some clearer rules for their operation would be of assistance. These might set out that ICGs should be used to review or update guidelines and procedures, but not be used for policy discussions. ICGs should have clear Terms of Reference and the convenors should provide a clear timetable for the work plan, and regular summaries of the discussion as the ICG worked. It might also be an option to restrict the number of ICGs each year to one or two and to allow ICGs to meet for one year only, before progress is comprehensively reviewed.

In respect of policy issues, it was suggested that these should be highlighted for inclusion on the CEP Agenda, in sufficient time for members to prepare and submit papers. The Agenda could then be adjusted to provide time for full debate at the CEP.

There was also a suggestion to try to minimise the number of papers for consideration by, for example, only taking Working Papers and key Information Papers at the meeting. Clearer guidelines could be prepared on what WPs and IPs should cover. Information papers could be required to specify whether they are for information, background or discussion (though all should be recorded in the meeting report). Working Papers sponsored by more than one Party could be given priority.

It was suggested that the Chair and Vice Chairs could discuss the priority of Agenda items, and then order the Working Papers to set out a timetabled work plan for each meeting (as the Chair had provided for this year).

Finally, the Group was mindful of the need to engage all parties and suggested that a CEP Handbook be prepared to include all existing CEP procedures and agreed guidelines. The Chair and Vice Chair could also undertake to liaise with all Parties to consider further options for maximising contributions in the meeting.

LIST OF CEP "MUST DO" TASKS

Fulfill requirements set out in Article 12 of the Protocol, including:

- Effectiveness of Measures;
- Provide advice to ATCM on environmental issues relating to Protocol and prepare advice for ATCM as requested;
- Provide advice on application and implementation of the EIA procedures, including consideration of CEEs;
- Procedures for situations requiring urgent action, including response action to environmental emergencies;
- Operation and further elaboration of Antarctic Protected Area System, including proposing, revising and considering Protected Area Management Plans and Historical Sites and Monuments;
- Inspection procedures;
- State of Antarctic Environment;
- Consultation with SCAR, CCAMLR Scientific Committee and other relevant scientific, environmental and technical organizations.

Annex 6

Aide memoire

CEP- THE WAY FORWARD

RATIONALE

- This aide memoire represents the combined thoughts of CEP members, with commitment and energy. These issues have concerned members for some time.
- CEP is now a mature body – it is time for us to review who we are, what we do, how we do it, and take a new, informed, and updated look at the Antarctic environment.
- The exercise is totally within the CEP charter under articles 11 and 12 of the Protocol.
- The CEP has considered the condition, pressures, and responses to those pressures
- Members intend to develop aspirational goals for the CEP.
- A core goal is to maintain and if possible improve the state of the Antarctic environment.
- We will take a precautionary approach to environmental issues.
- We want to become proactive to the protection of the Antarctic environment.

MAJOR THEMES

Environmental

- The International Polar Year, and what it means for the Antarctic environment and the CEP.
- Human footprint in Antarctica:
  - the carrying capacity - of the Antarctic region overall, and within it - both regionally and locally;
  - research and logistic support activities on land and at sea: establishment; management; removal; cooperation; temporary bases;
  - tourism and related non-governmental activities.
- Global environmental pressures, including climate change.
- Bipolar aspects – what can we learn from the Arctic experience?
- Monitoring, reporting and responding to the state of the Antarctic environment.
- Outreach: communication to civil society and policy makers.
- Science in management: how do we get the information we need.

Administrative

- Relationships within the ATS (including with the ATCM) and outside the ATS.
- Appropriate tools to do our work: the Protocol and its annexes; resolutions etc; procedures, guidelines, rules of procedure.

- A structured approach to our business: efficient, targeted, transparent
  - a forward work plan for the next 5 – 10 years;
  - meetings and agenda structured to allow major focus on major issues;
  - one day of each meeting dedicated to strategic environmental issues on a thematic basis, as well as procedures;
  - an agenda and rules of procedure which facilitate our work;
  - standing groups to address routine issues, eg management plans;
  - develop longer term objectives for the protection of the Antarctic environment.

Annex 7

Guidelines for Environmental Impact Assessment in Antarctica

See Annex to Resolution 4, page 407.

Annex 8

Guidelines for CEP Consideration of Proposals for New and Revised Designations of Antarctic Specially Protected Species under Annex II of the Protocol

1 Proposals for new designations or revision of existing designations of species as Antarctic Specially Protected Species (ASPS), in accordance with Appendix A to Annex II to the Protocol, may be submitted by any Party, the CEP or SCAR to the CEP for consideration at its next meeting. Such proposals should include scientific justification and, for new designations, a draft Action Plan (using the attached template as a guideline), to the extent possible with available data and knowledge.

2 On receipt of a proposal, the CEP should invite the Scientific Committee on Antarctic Research (SCAR) to assess the status of the species, if SCAR has not already made such an assessment as part of the proposal.

3 SCAR should use the most up-to-date IUCN criteria (consulting with appropriate experts in IUCN and elsewhere) to assess the risk of extinction of the species. Such assessments should, as a priority, take account of the global status and trends of the species, though the status and trends of the species at regional or local levels may also need to be assessed.

4 For new designations:

a. If SCAR's assessment determines that the species is at significant risk of extinction (e.g. the conservation status is determined to be "vulnerable" or higher), then the CEP should recommend SPS designation to the ATCM and initiate a process to finalise the Action Plan for the species, in accordance with the guideline. The proponent should play a co-ordinating role.

b. The CEP should determine whether other authorities or organisations have a role in protective action and should consult accordingly (e.g. for species of interest to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) or the Agreement for the Conservation of Albatrosses and Petrels (ACAP) the CEP should forward the proposal and the draft Action Plan, and any advice from SCAR, to CCAMLR or ACAP for advice on practical measures to provide special protection).

c. The Action Plan should be finalised taking account of advice from any authority or organisation as appropriate, and reported to the next meeting of the CEP by the coordinator.

5 For existing designations:

a. If SCAR's assessment determines that the species remains at significant risk of extinction, then the species should retain its SPS designation and an Action Plan should be produced.

b. If SCAR's assessment determines that the species is no longer at a significant risk of extinction, the CEP should assess the implications of removing the species from the list of Specially Protected Species with particular regard to potential future threats to the species and specific mechanisms that might be needed to manage them.

6 The CEP should make a recommendation to the ATCM as to whether the species merits Specially Protected Species status, including the Action Plan as appropriate, and arrangements for monitoring the implementation of the Plan and modifying it when necessary.

Guideline template of an Action Plan for a species proposed for designation as an Antarctic Specially Protected Species

PROTECTION ACTION PLAN FOR XXX YYY

Table of Contents

Summary

1. Introduction

Brief overview of:

a) species reproductive and foraging ecology (e.g. life history)
b) past and present distribution including critical habitat
c) population trends (e.g. past, present, future estimates)
d) conservation status
e) agents of decline/threats (including uncertainties and potential future threats)
f) past and current management/conservation measures
g) legal framework under Environmental Protocol/Antarctic Treaty System

2. Goals and objectives (examples)

Overall goal: to downgrade threatened status/degree of endangerment by reducing threats to adults and critical stages of the life cycle

Specific objectives:

a) Quantify and reduce threats to survival of breeding population
b) Quantify and reduce threats to reproductive success
c) Develop or maintain existing monitoring of populations
d) Educate base staff and other relevant human agencies
e) Assess and revise Action Plan every 5 years

3. Actions

This would include specific actions to be taken, who should do the work, performance measures, and prioritization if necessary

a) Management of threats to survival (e.g. prevention of individual adult mortality)
b) Management of threats to reproductive success (e.g. restrictions on approach to breeding areas, prohibition of destructive sampling)
c) Management of critical habitat (e.g. establishment of protected areas)
d) Research on agents of decline, population dynamics, distribution, management techniques and effectiveness
e) Monitoring of key populations or life cycle stages
f) Education and awareness
g) International agreements (including consultation with relevant international organisations on appropriate action outside the Antarctic Treaty Area)

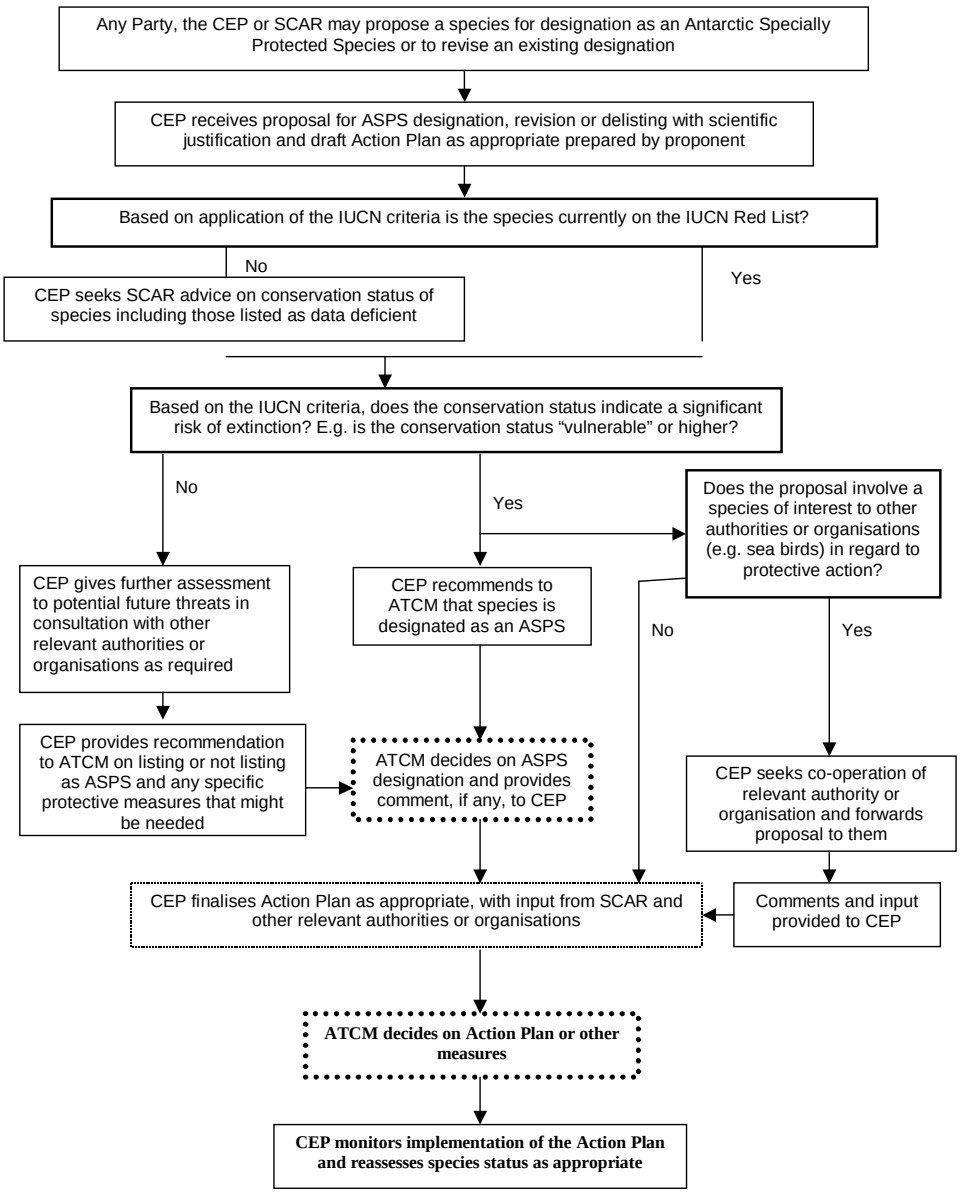
h) Assessing and revising the Action Plan, including performance criteria and audit of efficacy of recovery actions

4. References

5. Appendices (examples)

- Summary of IUCN criteria
- Work programmes.

Figure 1: Proposed assessment process for species proposed for designation, revision or delisting as Antarctic Specially Protected Species



Annex 9

Terms of Reference for ICG – "Environmental Monitoring and Reporting"

In views of CEP's endorsement of COMNAP paper "Practical Guidelines for Developing and Designing Environmental Monitoring Programmes in Antarctica" (WP 26), and the progress made by ICGs on "Environmental Monitoring" and "State of Antarctic Environment Reporting" (SAER), the CEP agreed to establish a single ICG to further develop practices and procedures in Environmental Monitoring and Reporting. It will address the following Terms of Reference:

1. Propose a preliminary list of environmental indicators and associated parameters which can best indicate the impact of human activities in Antarctica on populations, habitats and other sensitive areas directly, indirectly or cumulatively impacted. Special attention will be paid to the previous works by CEP/ATCM and COMNAP on environmental monitoring in Antarctica and to the outputs of the recent SCAR / COMNAP / NSF workshop on the "Practical Biological Indicators of Human Impacts in Antarctica".
2. Work with CCAMLR to examine the desirability of including marine debris and other data into CEP's SAER system.
3. Display these indicators using CEP's SAER system in order to analyse the potential value of this system for both reporting and monitoring of the state of the environment in Antarctica.
4. Provide a report to CEP IX on the development of Environmental Monitoring and Reporting in Antarctica.

Convener: Dr Yves Frenot *(yfrenot@ipev.fr)*

Appendix 1

CEP Advice to ATCM XXVIII on the Draft CEE Contained in ATCM XXVIII-WP 19 & IP 66 (United Kingdom)

The Committee for Environmental Protection,

With regard to the draft Comprehensive Environmental Evaluation for the *Proposed Construction and Operation of Halley VI Research Station, Brunt Ice Shelf, Caird Coast, Antarctica*;

Having fully considered the draft CEE circulated by the United Kingdom on 04 February 2005, as reported in paragraphs 65 to 82 of the CEP VIII Final Report, and

Having noted the comments provided by the Parties to the United Kingdom, and the response of the United Kingdom to those comments,

Provides the following advice to the ATCM:

The draft CEE and the process followed by the United Kingdom conform to the requirements of Article 3 of Annex 1 to the Environmental Protocol;

The draft CEE is well-structured and comprehensive and provides an appropriate assessment of the impacts of the proposed project;

The information contained in the draft CEE supports its conclusion, that the proposed activity will have a more than minor or transitory impact on the Antarctic environment, but that the global scientific importance to be gained by the construction and operation of Halley VI outweighs the impact the station will have on the Antarctic environment and fully justifies the activity proceeding;

While the draft CEE addresses the construction of a new research station based on three possible alternative designs, the Committee feels that the document nonetheless appropriately assesses the likely environmental impacts of the overall design objectives, and that whichever of the three designs is chosen, there will be a significant reduction in the overall impact compared to that at the current Halley V research station.

The CEP recommends that the ATCM endorse these views.

Appendix 2

CEP Advice to ATCM XXVIII on the Draft CEE Contained in ATCM XXVIII-IP 30 (Germany)

The Committee for Environmental Protection,

With regard to the draft Comprehensive Environmental Evaluation for the *Rebuild and Operation of the Wintering Station Neumayer III and Retrogradation of the Present Neumayer Station II*;

Having fully considered the draft CEE circulated by Germany on 11 January 2005, as reported in paragraphs 83 to 102 of the CEP VIII Final Report, and

Having noted the comments provided by the Parties to Germany, and the response of Germany to those comments,

Noting also that the draft CEE has yet to be approved by the German competent authority, which will finalise its decision on the level of predicted impacts of the activity after considering the comments made by Parties,

Provides the following advice to the ATCM:

The draft CEE and the process followed by Germany conform to the requirements of Article 3 of Annex 1 to the Environmental Protocol;

The draft CEE is well-structured and appropriately comprehensive;

A CEE is the appropriate level of assessment for this project.

The CEP recommends that the ATCM endorse these views.

Appendix 3

List of ASPA and ASMA Management Plans Referred by the CEP to the ATCM for Adoption

Antarctic Specially Protected Areas

- ASPA No. 101 Taylor Rookery, Mac. Robertson Land
- ASPA No. 102 Rookery Islands, Holme Bay, Mac. Robertson Land
- ASPA No. 103 Ardery Island and Odbert Island, Budd Coast
- ASPA No. 119 Forlidas Pond and Davis Valley, Dufek Massif
- ASPA No. 120 Pointe-Géologie Archipelago, Terre Adélie
- ASPA No. 132 Potter Peninsula, King George Island, South Shetland Islands
- ASPA No. 133 Harmony Point, Nelson Island, South Shetland Islands
- ASPA No. 140 Parts of Deception Island, South Shetland Islands*
- ASPA No. 145 Port Foster, Deception Island, South Shetland Islands*
- ASPA No. 149 Cape Shirreff and San Telmo Island, Livingston Island, South Shetland Islands
- ASPA No. 155 Cape Evans, Ross Island
- ASPA No. 157 Backdoor Bay, Cape Royds, Ross Island
- ASPA No. 158 Hut Point, Ross Island
- ASPA No. 159 Cape Adare, Borchgrevink Coast
- ASPA No. 163 Dakshin Gangotri Glacier, Dronning Maud Land
- ASPA No. 164 Scullin and Murray Monoliths, Mac. Robertson Land, East Antarctica

Antarctic Specially Managed Areas

- ASMA No. 4 Deception Island*

* These management plans are part of the broader “Deception Island Management Package

Appendix 4

List of Historic Sites and Monuments Referred by the CEP to the ATCM for Adoption

- Lillie Marleen Hut, Mt. Dockery, Everett Range, northern Victoria Land, Antarctica
- Amundsen Tent

Appendix 5

CEP IX Provisional Agenda

1. Opening of the Meeting
2. Adoption of the Agenda
3. Strategic Discussions on the Future Work of the CEP
4. Operation of the CEP
5. International Polar Year
6. Environmental Impact Assessment
   - Draft Comprehensive Environmental Evaluations
   - Other EIA Matters
7. Area Protection and Management
8. Conservation of Antarctic Flora and Fauna
9. Environmental Monitoring and Reporting
10. Inspection Reports
11. Waste Management
12. Prevention of Marine Pollution
13. Cooperation with Other Organisations
14. General Matters
15. Election of Officers
16. Preparation for Next Meeting
17. Adoption of the Report
18. Closing of the Meeting

ANNEX F

REPORTS PURSUANT TO RECOMMENDATION XIII-2

Report of the Depositary Government of the Antarctic Treaty and its Protocol (USA) in accordance with Recommendation XIII-2

This report covers events with respect to the Antarctic Treaty and the Protocol on Environmental Protection.

There have been no new accessions to the Antarctic Treaty in the past year. There are forty-five Parties to the Treaty.

The Czech Republic deposited its instrument of ratification of the Protocol on Environmental Protection on August 24, 2004. There are now thirty-two Parties to the Protocol.

The following countries have provided notification that they have designated the persons so noted as Arbitrators in accordance with Article 2(1) of the Schedule to the Protocol on Environmental Protection:

Australia	Mr. Bill Campbell	3 July 2000
	Dr. Stuart Kaye	3 July 2000
	Dr. Don Rothwell	3 July 2000
Bulgaria	Mrs. Guenka Beleva	30 July 2004
France	Mr. Jean-Marc Lavieille	16 November 2000
	Mr. Gérard Ployette	16 November 2000
	Ms. Marie-Jacqueline Lauriau	16 November 2000
Greece	Mr. Fransiscos Verros	22 May 2003
	Dr. Emmanuel Gounaris	22 May 2003
	Dr. Vassilios Patronas	22 May 2003
India	Prof. Upendra Baxi	6 October 2004
	Mr. Ajai Saxena	6 October 2004
	Dr. N. Khare	6 October 2004
United States	Professor Daniel Bodansky	22 April 2003
	Mr. David Colson	22 April 2003

Lists of Parties to the Treaty, to the Protocol, and of Recommendations/Measures and their approvals are attached.

Status of ANTARCTIC TREATY

Signed at Washington December 1, 1959
by
Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway,
South Africa, the Union of Soviet Socialist Republics,
the United Kingdom of Great Britain and Northern Ireland,
and the United States of America

State	Date of deposit of instrument of ratification	Date of deposit of instrument of accession	Date of entry into force
Argentina	June 23, 1961		June 23, 1961
Australia	June 23, 1961		June 23, 1961
Austria		Aug. 25, 1987	Aug. 25, 1987
Belgium	July 26, 1960		June 23, 1961
Brazil		May 16, 1975	May 16, 1975
Bulgaria		Sept. 11, 1978	Sept. 11, 1978
Canada		May 4, 1988	May 4, 1988
Chile	June 23, 1961		June 23, 1961
China		June 8, 1983	June 8, 1983
Colombia		Jan. 31, 1989	Jan. 31, 1989
Cuba		Aug. 16, 1984	Aug. 16, 1984
Czech Republic [7]		Jan. 1, 1993	Jan. 1, 1993
Denmark		May 20, 1965	May 20, 1965
Ecuador		Sept. 15, 1987	Sept. 15, 1987
Estonia		May 17, 2001	May 17, 2001
Finland		May 15, 1984	May 15, 1984
France	Sept. 16, l960		June 23, 1961

State	Date of deposit of instrument of ratification	Date of deposit of instrument of accession	Date of entry into force
Germany [1]		Feb. 5, 1979	Feb. 5, 1979
Greece		Jan. 8, 1987	Jan. 8, 1987
Guatemala		July 31, 1991	July 31, 1991
Hungary		Jan. 27, 1984	Jan. 27, 1984
India		Aug. 19, 1983	Aug. 19, 1983
Italy		Mar. 18, 1981	Mar. 18, 1981
Japan	Aug. 4, 1960		June 23, 1961
Korea, DPR of		Jan. 21, 1987	Jan. 21, 1987
Korea, Rep. of		Nov. 28, 1986	Nov. 28, 1986
Netherlands		Mar. 30, 1967 [2]	Mar. 30, 1967
New Zealand	Nov. 1, 1960		June 23, 1961
Norway	Aug. 24, 1960		June 23, 1961
Papua New Guinea		Mar. 16, 1981 [5]	Sept. 16, 1975 [6]
Peru		Apr. 10, 1981	Apr. 10, 1981
Poland		June 8, 1961	June 23, 1961
Romania		Sept. 15, 1971 [3]	Sept. 15, 1971
Russian Federation	Nov. 2, 1960		June 23, 1961
Slovak Republic [7]		Jan. 1, 1993	Jan. 1, 1993
South Africa	June 21, 1960		June 23, 1961
Spain		Mar. 31, 1982	Mar. 31, 1982
Sweden		Apr. 24, 1984	Apr. 24, 1984
Switzerland		Nov. 15, 1990	Nov. 15, 1990

State	Date of deposit of instrument of ratification	Date of deposit of instrument of accession	Date of entry into force
Turkey		Jan. 24, 1996	Jan. 24, 1996
Ukraine		Oct. 28, 1992	Oct. 28, 1992
United Kingdom of Great Britain & Northern Ireland	May 31, 1960		June 23, 1961
United States of America	Aug. 18, 1960		June 23, 1961
Uruguay		Jan. 11, 1980 [4]	Jan. 11, 1980
Venezuela		Mar. 24, 1999	Mar. 24, 1999

l. On October 2, 1990, the Embassy of the Federal Republic of Germany informed the Department of State "that, through the accession of the German Democratic Republic to the Federal Republic of Germany with effect from October 3, 1990, the two German states will unite to form one sovereign state, which, as a contracting party to the Antarctic Treaty, will remain bound by the provisions of the Treaty and subject to those recommendations adopted at the 15 consultative meetings which the Federal Republic of Germany has approved. From the date of German unity, the Federal Republic of Germany will act under the designation of 'Germany' within the framework of the antarctic system....".

Prior to unification, the German Democratic Republic and the Federal Republic of Germany had acceded to the Treaty on November 19, 1974 and February 5, 1979, respectively.

2. The *Netherlands* accession is for the Kingdom in Europe, Suriname and the Netherlands Antilles; Aruba as a separate entity as of January 1, 1986.

3. The Romanian instrument of accession was accompanied by a note of the Ambassador of the Socialist Republic of Romania, dated September 15, 1971, containing the following statement of the Council of State of the Socialist Republic of Romania:

"The Council of State of the Socialist Republic of Romania states that the rovisions of the first paragraph of the article XIII of the Antarctic Treaty are not in accordance with the principle according to which the multilateral treaties whose object and purposes are concerning the international community, as a whole, should be opened for universal participation."

4. The instrument of accession by Uruguay accompanied by a Declaration, a copy of which is attached, with translation.

5. Date of deposit of notification of succession.

6. Date of independence.

7. Effective date of succession. Czechoslovakia deposited an instrument of accession to the Treaty on June 14, 1962. On December 31, 1992, at midnight, Czechoslovakia ceased to exist and was succeeded by two separate and independent states, the Czech Republic and the Slovak Republic.

Department of State,

Washington, May 5, 2005.

Report by the head of the Australian Delegation in his capacity as representative of the depositary Government for the Convention on the Conservation of Antarctic Marine Living Resources to the Twenty-Eighth Antarctic Treaty Consultative Meeting

1. Australia, as depositary Government to the Convention on the Conservation of Antarctic Marine Living Resources 1980 (the Convention) is pleased to report to the Twenty-Eighth Antarctic Treaty Consultative Meeting on the status of the Convention.

2. Australia advises the Antarctic Treaty Parties that, since the Twenty-Seventh Antarctic Treaty Consultative Meeting, Mauritius deposited its instrument of accession to the Convention in accordance with Article XXIX(1) of the Convention on 2 September 2004. The Convention entered into force for Mauritius in accordance with Article XXVIII(2) of the Convention on 2 October 2004.

3. Australia further advises the Antarctic Treaty Parties that, since the Twenty-Seventh Antarctic Treaty Consultative Meeting, no States have become members of the Commission for the Conservation of Antarctic Marine Living Resources, in accordance with Article VII(2) of the Convention.

4. A copy of the status list for the Convention is available to States Parties to the Convention upon request to the Treaties Secretariat of the Department of Foreign Affairs and Trade, conveyed through Australian diplomatic missions, as well as via the internet on the Australian Treaties Database at the following internet address:

http://www.austlii.edu.au/au/other/dfat/treaty_list/deposity/CCAMLR.html

Report by the Head of the Australian Delegation in his capacity as representative of the depositary Government for the Agreement on the Conservation of Albatrosses and Petrels to the Twenty-Eighth Antarctic Treaty Consultative Meeting

1. Australia, as depositary Government to the Agreement on the Conservation of Albatrosses and Petrels (the Agreement) is pleased to report to the Twenty-Eighth Antarctic Treaty Consultative Meeting on the status of the Agreement.

2. Australia advises the Antarctic Treaty Parties that, since the Twenty-Seventh Antarctic Treaty Consultative Meeting, Peru deposited its instrument of ratification of the Agreement in accordance with Article XV of the Agreement on 17 May 2005. In accordance with Article XVI of the Agreement, the Agreement will enter into force for Peru on 1 August 2005.

3. This brings the number of States Parties to the Agreement to seven. A copy of the status list for the Agreement is available to States Parties to the Agreement upon request to the Treaties Secretariat of the Department of Foreign Affairs and Trade, conveyed through Australian diplomatic missions, as well as via the internet on the Agreement website at the following internet address:

http://www.acap.aq/acap/parties

Report submitted to Antarctic Treaty Consultative Meeting XXVIII by the depositary Government for the Convention for the Conservation of Antarctic Seals in Accordance with Recommendation XIII-2, paragraph 2 (d)

Submitted by the United Kingdom

This report covers events regarding the Convention for the Conservation of Antarctic Seals (CCAS) for the reporting year 1 March 2003 to 29 February 2004.

The summary at Annex A lists all capturing and killing of Antarctic seals by Contracting Parties to CCAS during the reporting period. A report of events in the 2004 – 2005 year will be submitted to ATCM XXIX, once the June 2005 deadline for exchange of information has passed.

The United Kingdom would like to remind Contracting Parties to CCAS that the reporting period for the Exchange of Information is from 1 March to the end of February each year. The reporting period was changed to the above dates during the September 1988 Meeting to Review the Operation of the Convention. This is documented in Paragraph 19(a) of the Report of that Meeting.

The Exchange of Information, referred to in Paragraph 6(a) in the Annex to the Convention, should be submitted to other Contracting Parties and to SCAR by **30 June** each year, including nil returns. Currently, not all the information required in paragraph 6(a) is being provided. Neither is it being provided on time or with any regularity. The accuracy of the CCAS figures is therefore being compromised.

Since ATCM XXIII there have been no accessions to CCAS. A list of countries which were original signatories to the Convention, and countries which have subsequently acceded is attached to this report (Annex B).

ANNEX A

CONVENTION FOR THE CONSERVATION OF ANTARCTIC SEALS (CCAS)

Synopsis of reporting in accordance with Article 5 and the Annex of the Convention: Capturing and killing of seals during the period 1 March 2002 to 28 February 2003.

Contracting Party	Antarctic Seals Captured	Antarctic Seals Killed
Argentina	215[a]	Nil
Australia	Nil	Nil
Belgium*	-	-
Brazil*	-	-
Canada	Nil	Nil
Chile	700[b]	Nil
France*	-	-
Germany	19[c]	1[c]
Italy*	-	-
Japan*	-	-
Norway	Nil	Nil
Russia*	-	-
Poland	Nil	Nil
South Africa*	-	-
United Kingdom	Nil	Nil
United States of America	2775[d]	Nil

* No report received.

[a] All Elephant seals.

[b] All Antarctic Fur seals.

[c] All Weddell seals (single mortality: a female did not survive the anaesthetic, in spite of being given the appropriate antidote).

[d] Up to 1000 Weddell, 800 Crabeater, 500 Antarctic Fur, 400 Leopard, and 75 Ross seals.

All reported capturing was for scientific research.

ANNEX B

CONVENTION FOR THE CONSERVATION OF ANTARCTIC SEALS (CCAS)

London, 1 June – 31 December 1972

(The Convention entered into force on 11 March 1978)

State	Date of Signature	Date of deposit (Ratification or Acceptance)
Argentina[1]	9 June 1972	7 March 1978
Australia	5 October 1972	1 July 1987
Belgium	9 June 1972	9 February 1978
Chile[1]	28 December 1972	7 February 1980
France[2]	19 December 1972	19 February 1975
Japan	28 December 1972	28 August 1980
Norway	9 June 1972	10 December 1973
Russia[1,2,4]	9 June 1972	8 February 1978
South Africa	9 June 1972	15 August 1972
United Kingdom[2]	9 June 1972	10 September 1974[3]
United States of America[2]	28 June 1972	19 January 1977

ACCESSIONS

State	Date of deposit of Instrument of Accession
Brazil	11 February 1991
Canada	4 October 1990
Germany, Federal Republic of	30 September 1987
Italy	2 April 1992
Poland	15 August 1980

[1] Declaration or Reservation.

[2] Objection.

[3] The instrument of ratification included the Channel Islands and the Isle of Man.

[4] Former USSR.

Polar Regions Unit
Foreign and Commonwealth Office
London SW1A 2AH
United Kingdom

Report by the CCAMLR Observer at the Twenty-Eighth Antarctic Treaty Consultative Meeting

1. During its Twenty-Third Meeting (25 October to 5 November 2004), the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) addressed a number of routine matters as well some specific issues. The most notable of the latter included:
   - Illegal, unreported and unregulated (IUU) fishing in the Convention Area;
   - Implementation of the Catch Documentation Scheme (CDS) for *Dissostichus* spp.;
   - Further development of a centralized vessel monitoring system (c-VMS);
   - Compilation of a list of vessels engaged in IUU fishing;
   - Implementation of an electronic-based catch document system (e-CDS);
   - Further development of ecosystem management, including decision making;
   - Elimination of seabird by-catch in longline fisheries; and
   - Co-operation with various international organizations including the FAO, ATCM and CITES.
2. These issues are relevant to several items on the agendas of ATCM-28 and CEP-VIII.

CCAMLR Fisheries in 2003-2004

3. Fisheries in the CAMLR Convention Area during 2003-2004 targeted Patagonian and Antarctic Toothfish (*Dissostichus eleginoides* and *D. mawsoni*), mackerel icefish (*Champsocephalus gunnari*) and krill (*Euphausia superba*).
4. The reported finfish catch was 13, 698 tonnes in 2003/2004, compared to 28, 568 tonnes in 2002/2003. *Dissostichus* spp. (*Toothfish)*, predominantly from longlining, accounted for 10 966 tonnes in 2002/2003, compared to 24, 137 tonnes in the previous season. It is believed that, in addition to reported catches, some 15, 922 tonnes of Dissostichus spp were taken as a result of IUU fishing in the Convention Area during 2003/2004, compared with 28, 577 tonnes in 2002/2003. The total global catch for Toothfish in 2002/03 was estimated at 52, 714 tonnes
5. The reported catch of krill in 2003/2004 was 102, 112 tonnes until 3 October 2004, compared to 117, 728 tonnes in the previous season. The annual krill catch has remained relatively stable since 1992/93 in the range 80, 000 to 120, 000 tonnes. The projected krill catch for the 2004/2005 season may be as much as 60% higher than in 2003/2004 season.
6. The Commission adopted conservation measures for all fisheries being conducted in the 2004/20,05 season, as well as general measures for regulating fishing activities and reporting fisheries information from the Convention Area. These are published in the Schedule of Conservation Measures in Force – 2004/2005, available from the CCAMLR Secretariat or on website: *http://www.ccamlr.org.*

Illegal, Unreported and Unregulated (IUU) Fishing in the Convention Area

7. IUU fishing for Patagonian Toothfish (*Dissostichus eleginoides*) in the Convention Area has been a major issue for the Commission since 1997. CCAMLR attaches high priority to eliminating such fishing. It continues to develop and implement an integrated suite of administrative, political and enforcement-related measures aimed at addressing the problem in the Convention Area and at ensuring that fishing in closely adjacent areas adheres to international best practice.

8. CCAMLR annually reviews Members' implementation of enforcement-related measures and evaluates their performance in combating IUU fishing in the Convention Area.

9. The above initiatives have taken place against a background of ongoing and vigorous action by individual CCAMLR Contracting Parties to combat IUU fishing in areas under their national jurisdiction.

10. In addition to the Catch Documentation Scheme (CDS) for *Dissostichus* spp. (see paragraphs 15-24 below) and measures to manage specific fisheries directly (e.g. the setting of catch limits and other conditions affecting fishing), CCAMLR conservation and management measures include:

    - The CCAMLR System of Inspection;
    - Scheme to Promote Compliance by both Contracting and Non-Contracting Party Vessels, including provisions for compiling a list of IUU vessels;
    - Licensing and Inspection Obligations of Contracting Parties with regard to their Flag Vessels Operating in the Convention Area;
    - Procedures for port inspections of vessels carrying Toothfish;
    - Marking of Fishing Vessels and Fishing Gear;
    - Automated Satellite-Linked Vessel Monitoring Systems (VMS); and
    - Various Resolutions – (a) "Banning Driftnet Fishing in the Convention Area", (b) "Harvesting Species Occurring Both within and Outside the Convention Area", (c) "Implementation of the CDS by Acceding States and Non-Contracting Parties", (d) "Use of Ports not Implementing the CDS", (e) "Application of VMS in the CDS", (f) "Use of VMS and Other Measures to Verify CDS Catch Data for Areas Outside the Convention Area, Especially FAO Statistical Area 51; (g) "Harvesting of *D. eleginoides* in Areas Outside Coastal State Jurisdiction Adjacent to the Convention Area in FAO Statistical Areas 51 and 57, and (h) "Vessels Flying Flags of Non-Compliance and Ice Strengthening Standards in High Latitude Fisheries".

11. To facilitate exchange of relevant information amongst its Members, CCAMLR maintains a database on vessels known to have fished in contravention of CCAMLR Conservation Measures. Such vessels are incorporated into an official "CCAMLR IUU Vessel List". CCAMLR has also initiated a centralized, satellite-based vessel monitoring system (c-VMS) in the CCAMLR Secretariat.

12. CCAMLR has welcomed the entry into force of a number of international instruments and continues to urge its Members to accept, ratify and implement these.

13. CCAMLR continues to provide input into the FAO's work on IUU fishing and encourages all its Members to participate in this work to ensure that a comprehensive and integrated international approach to the problem is developed (see also paragraphs 39 to 41 below).

14. CCAMLR interacts with various other international and regional fisheries organisations, especially those with responsibility for waters adjacent to the Convention Area, in the exchange of information on issues such as IUU fishing and other matters relevant to CCAMLR (e.g. seabird by-catch, see paragraph 32 below).

CCAMLR Catch Documentation Scheme for *Dissostichus* spp.

15. Implementation of the CDS (which became binding on CCAMLR Members on 7 May 2000) has been one of the most important steps taken by CCAMLR to address IUU fishing in the Convention Area. The Scheme is designed to track Toothfish landings and trade flows from catches in the Area and, where possible, adjacent waters. It strives to identify the origin of

Toothfish entering the markets of all Parties to the Scheme to facilitate determination of whether catches in the Convention Area are taken in a manner consistent with CCAMLR's Conservation Measures.

16. During 2003/04, development of the CDS continued, with:
    - Further development of an electronically-based CDS;
    - Refinement of explanatory memoranda on CDS implementation; and
    - Development of various other enforcement measures (see paragraph 10 above).

17. Non-Contracting Parties cooperating in CDS implementation, or partial implementation, include the People's Republic of China, Republic of Mauritius, Republic of Seychelles and the Republic of Singapore. Positive contacts continue with a number of other Non-Contracting Parties, most of which participate in Toothfish trade. In October 2004, Mauritius formally acceded to the CAMLR Convention.

18. By January 2005, more than 26,750 *Dissostichus* Catch Documents (DCDs) had been issued. These included 10,000 Landing, 15,000 Export and 1,600 Re-Export Documents. Copies of these are verified whenever a shipment of Toothfish is traded to allow all Contracting and CDS Parties (fishing or not fishing for Toothfish) to track trade across their borders.

19. CDS information is processed and analyzed to assess the volume and location of Toothfish trade. It also gives some indication of fish taken legally and provides a barrier to fish taken illegally entering the marketplace.

20. The CCAMLR Secretariat has developed a system to process, store and access CDS information. The relevant information is available in close to real-time on the CCAMLR Website to allow CDS participants to assess the veracity of reported Toothfish landings. Widening application of the e-CDS illustrates CCAMLR's commitment to improving the CDS' effective implementation overall.

21. There is evidence to indicate that introduction of the CDS has made trading in illegally-caught fish less profitable since such higher prices are generally paid for fish accompanied by valid DCDs.

22. CCAMLR not only promotes on-going use of the CDS, it also provides information on its implementation to various intergovernmental and non-governmental fisheries, environmental and scientific organizations. These include: FAO, IOC, IWC, SCAR, SCOR, NAFO, ICCAT, FFA, CCSBT, SPC, I-ATTC, WTO, ASOC, IUCN and UNEP.

23. CCAMLR fully endorses development of uniform catch documentation and reporting measures that make use of appropriate technologies (as demonstrated by CCAMLR's development of the e-CDS noted in paragraph 20 above). It also continues to improve co-operation with the WTO and World Customs Organization (WCO), particularly implementation of harmonized customs codes for Toothfish products.

24. Various resolutions identified in paragraph 11 are aimed at improving the CDS's broader application and CCAMLR continues its efforts to improve co-operation with CITES in respect of broadening the CDS' implementation.

Development of an Integrated Fisheries Management Framework

25. CCAMLR continues to pursue the development of an integrated fisheries management framework. Fishery Plans are now available for all the krill, icefish and Toothfish fisheries in the Convention Area.

Ecosystem Management and Decision Making

26. The CCAMLR Ecosystem Monitoring Programme (CEMP) collects long-term data on various Antarctic marine ecosystem components as well as the environment. Such data are used to provide annual assessments of ecosystem status. Advice on long-term ecosystem trends and changes can then be incorporated into management advice.

27. The CCAMLR scientific community continues to explore ways in which ecosystem advice (such as described in paragraph 26 above) can be formally incorporated into management decisions. Plausible ecosystem models were reviewed at a workshop in mid-2004 and efforts to study functional relationships between krill and its dominant predators continue. Other workshops in 2004 examined – (a) application of small-scale management units as a means to study relationships between krill, krill predators and the fishery, and (b) set the stage for an important workshop in mid-2005 to consider ecosystem-based decision rules to be applied as part of CCAMLR ecosystem and precautionary management approach.

Seabird By-catch in Longline and Trawl Fisheries

28. Over the past few years CCAMLR has taken a leading role in implementing measures to reduce seabird mortality during longline fishing. Many of CCAMLR's measures, particularly the provisions of Conservation Measure 25-03 (first adopted in 1992 as Conservation Measure 29), have been incorporated into the FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds) adopted by COFI. A number of CCAMLR Members have also developed and implemented national plans of action to address the seabird by-catch issue.

29. Compliance with the provisions of CCAMLR Conservation Measure 25-02 has improved to such an extent that seabird by-catch levels in regulated fisheries in the Convention Area are now extremely low. However, there is still considerable concern about the levels of such by-catch attributable to the IUU fishery. Furthermore, many of the important species breeding in the Convention Area (particularly albatrosses and petrels) remain affected by high levels of mortality associated with longline fishing on a global basis. To this extent, CCAMLR has urged its Members to support the entry into force of the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and CCAMLR was an official observer to the first Meeting of Parties to this Agreement in November 2004.

30. CCAMLR's efforts to reduce seabird by-catch continue to strive for:

- Compulsory placement of international and scientific observers on board all vessels licensed to fish in the Convention Area;
- Full compliance with mitigation measures set out in CCAMLR Conservation Measure 25-02, especially suitable line weighting, and
- Continuing development of underwater longline setting devices.

31. CCAMLR also monitors incidental by-catch of seabirds and marine mammals in trawl fisheries for krill and finfish. Conservation Measure 25-03 has been substantially revised to include regulations on offal disposal, cleaning of nets before shooting and minimizing the time that the net is lying on the surface. This Measure encourages Members to develop gear configurations to minimize the probability of birds encountering the part of the net to which they are most vulnerable.

32. CCAMLR exchanges information with various international fisheries and conservation organizations on the prevention of seabird incidental mortality during fishing operations, the state of Antarctic seabird populations, incidental catches of seabirds in these fisheries, CCAMLR experience with mitigating techniques and the formulation of associated

conservation action. Emphasis is also being given to high seas areas adjacent to the Convention Area and to species falling within CCAMLR's management remit. In the latter regard, CCAMLR has approached a number of other Regional Fisheries Organizations (RFO's) (particularly those managing tuna, such as ICCAT, IOTC and CCSBT) in an effort to secure more global information on incidental by-catch of seabird species breeding in the Convention Area. It should be noted that many of these organizations do not mandate the collection of such data.

Co-Operation with Non-CCAMLR Contracting Parties (NCPs)

33. In applying the CDS, CCAMLR has done much to encourage, and liaise with, various NCPs considered to have an interest in CCAMLR's work or in the resources that it manages. Such encouragement has included inviting NCPs to attend and participate in CCAMLR meetings.

34. The above does not only promote transparency in CCAMLR's activities, but has also enabled the Commission's membership and work to expand. A clear example of the former was evidenced by Mauritius becoming an acceding party to the Convention in October 2004.

35. Co-operation with NCPs assists CCAMLR to manage better the resources for which it is responsible. Not only is awareness of CCAMLR Conservation Measures enhanced, the organization's status as a regional management body of repute is promoted in keeping with the more global responsibilities of a number of recent environmental/fisheries agreements (most notably the United Nations Fish Stock Agreement which entered into force in December 2001).

36. CCAMLR is considering ways that Developing States can be encouraged to participate in its work and be invited to the Commission's meetings. The accessing of financial support from a special UN system trust fund for this purpose is being actively pursued.

CCAMLR Rules of Data Access

37. CCAMLR has revised its rules governing access to, and use of, data held in its Database. Copies of the new rules are available from the CCAMLR Secretariat (email: *ccamlr@ccamlr.org*) or on the CCAMLR Website (*http://www.ccamlr.org*).

CCAMLR Educational Package

38. CCAMLR is finalizing its development of a web-based educational package.

Co-Operation with Other International Organizations

39. FAO is one of several international organizations explicitly referred to in Article XXIII of the Convention, as an organization with which CCAMLR should cooperate. Both the CCAMLR Commission and Scientific Committee continue to enjoy a productive cooperative working relationship with FAO in general and with several FAO-sponsored activities such as the work of the *Coordinating Working Party on Fisheries Statistics* (CWP), the *Sub-Committee on Fish Trade* and the *Meeting of the Regional Fisheries Bodies*, in particular.

40. As highlighted in past years, CCAMLR continues development of an institutional plan of action to address IUU fishing (CPOA-IUU) consistent with that produced by FAO and outlined in *FAO Technical Guidelines for Responsible Fisheries No. 9.*

Co-Operation with the ATCM

41. CCAMLR has expressed satisfaction in the growing co-operation between CCAMLR, and the ATCM/CEP.

42. The CCAMLR Secretariat continues to provide assistance to the Antarctic Treaty Secretariat in Buenos Aires and that Secretariat's Executive Secretary visited the CCAMLR Secretariat and annual meeting in November 2004. Subject to Paragraph 8 of ATCM-XXVI Decision 2, CCAMLR continues to administer voluntary financial contributions to the Treaty Secretariat until funds are formally transferred to that Secretariat subject to the above Decision.

43. CCAMLR has expressed interest and has kept abreast of the CEP's current debate on Antarctic Protected Species as well as on development of a State of Antarctic Environment Reporting.

44. In accordance with Article 6(2) of Annex V to the Protocol, CCAMLR has considered and approved the following two proposals for Antarctic Specially Protested Areas (ASPAs) which contain marine components:

    (i) the Management Plan for ASPA No. 149, Cape Shirreff and San Telmo Island, Livingston Island, South Shetlands Islands; and

    (ii) the Management Plan for ASPA No. 145, Port Foster, Deception Island, South Shetland Islands.

45. In addition, the CCAMLR Scientific Committee has discussed the status of a possible new ASPA at Edmonson Point as proposed by Italy. The proposal was received too late to be considered at the 2004 meeting of the Working Group on Ecosystem Monitoring and Management Advisory Subgroup on Protected Areas. Despite positive support for the proposed management plan, the Scientific Committee could not reach consensus on whether it could recommend that the plan be approved (SC-CAMLR-XXIII, paragraphs 3.58 to 3.65 attached). Thus, there will be a year's delay before the Scientific Committee and Commission will be in a position to provide advice to the ATCM.

46. CCAMLR will continue its work on improving the current procedures for the review of ATCM management plans containing marine areas submitted to CCAMLR for approval, particularly focusing on ways to avoid procedural delays.

47. CCAMLR's *Advisory Subgroup on Protected Areas* continues its work on developing advice on draft ASPA and ASMA management plans which have been forwarded to CCAMLR by the ATCM following the procedures agreed some years ago. It will also consider the matter of marine protected areas under Article IX.2 (g) of the CAMLR Convention at a workshop planned for mid-2005.

SCAR Report to XXVIII ATCM

1. SCAR and its Role in Relation to the Antarctic Treaty

SCAR, the Scientific Committee on Antarctic Research, is the principal organization dealing with Antarctic scientific research (see http://www.scar.org). It is the authoritative voice on Antarctic scientific research from the ionosphere to the mantle, from bacteria to seals, from the ice sheet to the deep sea floor, on the role of Antarctica in the Earth System, and on astronomy from Antarctica.

SCAR is an interdisciplinary committee of the Internatinal Council for Science (ICSU). Formed in 1958, SCAR was charged with "*furthering the coordination of scientific activity in Antarctica, with a view to framing a scientific programme of circumpolar scope and significance*". In this role SCAR inherited the mantle of the Antarctic component of the International Geophysical Year for 1957-58 (IGY).

SCAR area of interest includes Antarctica, its offshore islands, and the surrounding Southern Ocean including the Antarctic Circumpolar Current, the northern boundary of which is the Subantarctic Front. Subantarctic islands that lie north of the Subantarctic Front and yet fall into SCAR's area of interest include: Ile Amsterdam, Ile St Paul, Macquarie Island and Gough Island.

SCAR has Observer status within the Antarctic Treaty System, and provides advice and responds to requests in the form of Information Papers and Working Papers to the annual Antarctic Treaty Consultative Meeting (ATCM) and the Committee for Environmental Protection (CEP).

SCAR's remit has evolved in part because of the development of the Antarctic Treaty System. When the Antarctic Treaty came into force in 1961, SCAR accepted the task of being the primary source of objective, independent scientific advice to the Antarctic Treaty Parties through the biennial Antarctic Treaty Consultative Meeting (ATCM), and was granted the status of Observer to the ATCM. Subsequently, some of the tasks formerly addressed by SCAR were taken up by organizations of the Antarctic Treaty System. For instance, in 1982, under the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), the Antarctic Treaty Consultative Parties created a Commission and a Scientific Committee to oversee the development of an ecosystem-wide approach to management of the waters south of the Antarctic Convergence. In 1991, the Protocol on Environmental Protection to the Antarctic Treaty was concluded to apply environmental protection principles to human activities in Antarctica. The Protocol required the formation of a Committee for Environmental Protection (CEP) to advise the ATCM on the implementation of the Protocol.

A change in SCAR's remit took place in 1988, when the newly created Council of Managers of National Antarctic Programmes (COMNAP) took over the coordination of the management and logistics of the National Antarctic Research Programmes operating there, a task formerly carried out by the SCAR Working Group on Logistics.

SCAR's Members are representatives of national organizations adhering to ICSU, or nominated by national organizations adhering to ICSU. SCAR's membership has changed from the original 12 countries to 28 Full Members and 4 Associate Members (nations with an interest in becoming full members).

Despite the changes over the years, there is still an essential requirement for the international coordination of science in the Antarctic region and the provision of objective state-of-the-art scientific advice from an independent organization. SCAR continues to play a unique and crucial role in contributing to the scientific understanding of the south polar region of the planet. Under SCAR's leadership, and within the framework of SCAR Scientific Research Programmes, SCAR Members and

their national scientific communities increase scientific knowledge about Antarctica and understanding of the processes taking place there on and under the land surface, in the atmosphere and the ocean, in the ice and in outer space. Studies by SCAR scientists increasingly show how Antarctic processes contribute to the working of the Earth System, and *vice versa*, and of how the south polar environment is influenced by human activities originating both within and outside the region. They also indicate what needs to be done to safeguard the environment. In addition, through the provision of relevant information, assessments and advice to the ATCM, SCAR helps policy makers meet international commitments in the Antarctic. SCAR continues its leading role in international efforts to monitor and protect the environment, by providing critical information on the role of Antarctica in global warming, climate change and sea-level rise, and on the effects of climate change on living organisms. It is axiomatic that improved scientific understanding demands free and unrestricted geographic access to the region, and the free and unrestricted exchange of scientific data and information.

2. Delivering Science in the 21st Century

At its 28th session, in Bremerhaven, during October 2004, SCAR completed the restructuring that began with an independent review commissioned in April 1999. The principal changes are as follows (roman numerals (i) through (x), below):

i. SCAR has converted its Secretariat to an Executive Office run by an Executive Director, Dr C Summerhayes, formerly of UNESCO;

ii. SCAR has adopted a new Constitution and Rules of Procedure, which embrace a new vision, mission and objectives.

The Vision is

> *"To establish through scientific research and international cooperation a broad understanding of the nature of Antarctica, the role of Antarctica in the Earth System, and the effects of global change on Antarctica."*

The Mission is

> *"To be the leading independent organization for facilitating and coordinating Antarctic research, and for identifying issues emerging from greater scientific understanding of the region that should be brought to the attention of policy makers".*

Five Main Objectives provide a new focus on achieving this mission:

- to initiate, develop, and co-ordinate high quality international scientific research in the Antarctic region, and on the role of the Antarctic region in the Earth system;
- to provide objective and independent scientific advice to the Antarctic Treaty Consultative Meetings and other organizations on issues of science and conservation affecting the management of Antarctica and the Southern Ocean;
- to facilitate free and unrestricted access to Antarctic scientific data and information;
- to develop scientific capacity in all SCAR Members, especially with respect to younger scientists, and to promote the incorporation of Antarctic science in education at all levels;
- to communicate scientific information about the Antarctic region to the public.

In developing the processes and structures to reach these objectives there are two objectives that underpin the way forward:

- to improve the effectiveness, efficiency and flexibility of the structure, working mechanisms and practices of SCAR;
- to increase funding to match requirements, and to maintain a healthy funding stream.

iii. SCAR has created a modern science framework of Standing Scientific Groups on Geosciences, Life Sciences, and Physical Sciences, with interdisciplinary cross linkages between them;

iv. SCAR has focused its major scientific research on a limited number of major strategic scientific questions of global scientific interest, many of which also have considerable socio-economic significance;

v. SCAR has reorganized its meetings to give National Delegates greater contact with the science, and has introduced a major biennial open science conference;

vi. SCAR has expanded its geographical remit to include the Southern Ocean from the Antarctic coast north to the Subantarctic Front, to recognize the important role of the Antarctic Circumpolar Current;

vii. SCAR has published a Strategic Plan (2004–10) to specify how it proposes to achieve its new mission and objectives;

viii. SCAR has considerably improved its communications both internally and externally, with a new web page, a quarterly newsletter (starting in January 2005), posters and PowerPoint presentations; hits on the web site reached 62,000 in March 2005, up from 16,700 in January 2004;

ix. SCAR is changing, and will continue to change, in response to the changing demands of science and policy, and in the interests of efficiency and effectiveness.

x. SCAR is requesting a significant increase in contributions from Members, to compensate for inflation over the past decade, and to provide the support essential for the effective functioning of the Executive Office, the effective implementation of its new scientific research programmes, and effective interaction with the Antarctic Treaty System;

3. The International Polar Year (2007-2008)

SCAR will make a significant contribution to the proposed International Polar Year (IPY) (1 March 2007 – 1 March 2009). During 2004, SCAR made significant contributions to the activities of ICSU's IPY Planning Group and its development of the "Framework for the IPY". Subsequently, the SCAR Executive Director has been appointed an *ex officio* member of the new ICSU/WMO Joint Committee on the IPY, which will steer the IPY process, and which will include several SCAR scientists. SCAR's five Scientific Research Programmes (SRPs), described below, prepared Expressions of Interest (EoIs) for submission to the IPY selection process by the end of 2004. At the first meeting of the Joint Committee (March 2005) the SCAR SRPs were designated lead projects for substantial subsets of the 850 EoIs submitted.

4. New Developments

SCAR held its first Open Science Conference on 26–28 July 2004, in Bremen, with the title "Antarctica and the Southern Ocean in the Global System". Around 1000 people registered for the meeting, which provided important opportunities to develop cross-disciplinary links.

The Conference was part of the XXVIII SCAR Meeting, which was held in two parts, in Bremen in July, and in Bremerhaven in October. The SCAR and COMNAP Executive Committees held a joint meeting in Bremen in July.

The SCAR Delegates, meeting in October, approved plans for a new set of five major Scientific Research Programmes (SRPs) that will be SCAR's scientific flagships for the next 5–10 years. They are:

- Antarctica and the Global Climate System (AGCS) a study of the modern ocean-atmosphere-ice system;
- Antarctic Climate Evolution (ACE) a study of climate change over the past 34 million years since glaciation began;
- Evolution and Biodiversity in the Antarctic (EBA) a study of the response of life to change;
- Subglacial Antarctic Lake Exploration (SALE) a study of the chemistry and biology of long buried lakes beneath the ice sheet;
- Interhemispheric Conjugacy Effects in Solar-Terrestrial and Aeronomy Research (ICESTAR) a study of how the Earth's outer atmosphere responds to the changing impact of the solar wind at both poles.

Brief descriptions of the programmes are given in Appendix 4. Most of the activities contributing to these programmes will be funded nationally. SCAR's international coordination will add value to national efforts. Scientists interested in participating in and contributing to the 5 scientific research programmes are invited to contact the SCAR Secretariat (*info@scar.org*).

SCAR also supports a variety of other scientific activities in which value is added to national efforts through international cooperation. These activities are coordinated by Action Groups operating for short periods, and Expert Groups where more time is needed to achieve success. Brief descriptions of these activities are given in Appendix 5.

SCAR's activities will make significant contributions to achieving the goals of the International Polar Year (IPY) (2007–09). During 2004 SCAR had considerable input into the IPY Science and Implementation Plans prepared by ICSU and WMO. From the end of 2004 onwards, SCAR will be a member *ex officio* of the Joint ICSU-WMO Steering Committee for the IPY, and will work with partner organizations to influence the development of the IPY.

SCAR's Standing Committee on the Antarctic Treaty System will work closely with the Standing Scientific Groups and the Executive Committee to bring key scientific issues to the attention of the Antarctic Treaty Consultative Meeting.

5. Highlights of Scientific Coordination Activities

This report gives selected examples and is not exhaustive.

5.1 Scientific Research Programmes

During the year, SCAR's Standing Scientific Groups (SSGs) put considerable effort into developing the five new Scientific Research Programmes. All five programmes were evaluated by external reviews, on the basis of which they were approved by the Delegates for start up at the beginning of 2005.

Determining the extent of environment change across the Antarctic in recent decades is a high priority activity. The SSG on Physical Sciences (SSG-PS) contributed to this work through the creation of a number of new data sets of key environmental variables. Analyses of these data sets have resulted in assessments of climatic change over the Antarctic since the IGY in 1957–58. Details of some of these data sets are given below under the various Action and Expert Groups. A major conclusion is that there has been a complex pattern of change across the Antarctic over the last 50 years with the Antarctic Peninsula warming more than anywhere else on Earth while the rest of the continent has shown little change.

Recognizing that Southern Ocean biodiversity is an important and significant component of the World marine biodiversity, and that a large part of the Southern Ocean biodiversity remains unknown, in particular in the deep sea, the SSG on Life Sciences (SSG-LS) agreed to co-sponsor a Southern Ocean component of the global Census of Marine Life (CoML). To that end it formed a new Action Group on a Census on Antarctic Marine Life (CAML) to take this initiative forward as a contribution to EBA. The Group is led by Michael Stoddart of the Australian Antarctic Division, and has been awarded a start-up grant of US$525,000 by the Alfred P Sloan Foundation.

The SSG-LS is also developing a Marine Biodiversity Information Network (MarBIN) that will contribute to the compilation, dissemination, and integration of fundamental information on the Antarctic marine biodiversity for scientific, monitoring, management and conservation purposes. This will be connected to the CoML's Ocean Biodiversity Information System (OBIS).

The evolution of climate is the focus of attention of the newly approved Antarctic Climate Evolution (ACE) programme within the SSG on Geosciences. Initial work by the ACE team has been published as a set of 13 papers in a Special Issue of *Global and Planetary Change* **45** (pages 1–332) in 2005, with an introduction on "Long-term changes in Southern high-latitude ice sheets and climate, the Cenozoic history" by the editors, F Florindo, D M Harwood and G S Wilson. ACE is placing a high priority on following up the work of the ANTIME project (part of the former GLOCHANT programme) that focused on the Antarctic environment during the Last Glacial Maximum.

Planning for exploration of a new scientific frontier, subglacial lakes, has continued under the aegis of the SSG on Geosciences through the newly approved Subglacial Antarctic Lake Environments (SALE) Scientific Research Programme, following the initial work of the Group of Specialists on Subglacial Antarctic Lake Exploration (SALEGOS). Much of the effort has been devoted to planning drilling activities that will avoid contaminating the lake environments. Plans are being made to start drilling into some of the smaller subglacial lakes during the forthcoming International Polar Year.

5.2 Action and Expert Groups

Recognizing the need to invest more effort in understanding the role of the Southern Ocean in climate and biodiversity, SCAR now co-sponsors much Southern Ocean research with global programmes having Antarctic interests, through recent joint agreements with the World Climate Research Programme and with the Global Ocean Ecosystem Dynamics programme (GLOBEC). As a further step in this direction, SCAR upgraded its Action Group on Oceanography to an Expert Group, which complements the activities of other groups active in the Southern Ocean. It will be managed in concert with SCOR and iAnZone.

SCAR is working with the space agencies and UN agencies through the Partnership for an Integrated Global Observing Strategy (IGOS) to devise a bi-polar programme to improve observations of the cryosphere.

The MOSAK Action Group carried out a modelling study that has produced a new, improved high resolution near surface wind field for the Antarctic. This will be of value in studies of blowing snow, sea ice advection and the investigation of katabatic winds.

The Expert Group of Operational Meteorology has worked with COMNAP to produce an International Antarctic Weather Forecasting Handbook. The WMO provided funding for a hardcopy version that is being distributed to all nations active in the Antarctic.

The READER Action Group has produced a new, improved database of mean, Antarctic tropospheric/ stratospheric temperatures, winds and heights from surface observations and radiosonde ascents *(http://www.antarctica.ac.uk/met/READER/)*.

Significant new astronomical results have been obtained from the Amundsen-Scott South Pole Station, including measurements of the Cosmic Microwave Background Radiation (CMBR) and galactic/ interstellar emission in a sub-millimetre diapason, as well as infrared observations of the Milky Way. More than 50 refereed papers have come from these data, and the cosmic microwave background polarization has been measured for the first time from the Antarctic.

The ASPeCT Expert Group has continued to develop its database of sea ice parameters from *in-situ* ship observations. Data from 81 voyages were added over the last two years. The data archive has been used in a number of studies, including comparisons with satellite ice edge location to determine seasonal variability in the reliability in the satellite estimates, comparisons with sea ice-ocean models and the development of a circumpolar climatology of area-averaged albedo.

The ITASE Expert Group collected more than 240 firn cores (for a total of 7,000 m) and about 20,000 km of snow radar, resulting in numerous publications. In addition ITASE developed multi-centennial scale proxies for sea ice, regional temperature, and major atmospheric circulation features plus new continental scale maps depicting the distribution of major chemical species over the ice sheet.

In the Life Sciences, the Expert Group on Human Biology and Medicine came to the conclusion that it would operate more effectively if it amalgamated with the COMNAP group MEDINET. Discussions on this merger are ongoing.

The research programme EVOLANTA published the proceedings of one of their workshops as a special issue of *Antarctic Science* (**16**, No. 1, March 2004).

The research programme RiSCC completed three successful field campaigns:

1. the three island study (Marion, Kerguelen, and Heard islands);
2. the Antarctic Peninsula transect (Netherlands – United Kingdom); and
3. the Latitudinal Gradient Project in Victoria Land (New Zealand – Italy – United States). The RiSCC community is also planning research in the Arctic, the Northern RiSCC, to be hosted by Canada.

The EASIZ programme was successfully terminated with a closing symposium in September 2004 in Croatia. The proceedings will be published in a special issue of *Deep Sea Research*.

The SSG Geosciences Action Group on Communication and Outreach (COG) plays an essential role in gathering, collating and disseminating geospatial and geoscientific information for the benefit of the entire Antarctic research community. This is achieved through the SSG on Geosciences website *http://www.geoscience.scar.org* and through *Georeach*, the geosciences newsletter which can be downloaded from the website. In addition, the SSG on Geosciences has a listserver with 134 subscribers

and listservers have also been established for the Expert Groups on Geodetic Infrastructure in Antarctica (GIANT), on Antarctic Neotectonics (ANTEC), and on the Antarctic Digital Magnetic Anomaly Project (ADMAP).

A new Action Group on Marine Survey Coordination has been established to improve coordination of planned marine surveys within the Antarctic community.

The SSG on Geosciences has upgraded some of its short term Action Groups to longer term Expert Groups.

The Action Group on Permafrost has been up-graded to a longer-term Expert Group on Permafrost and Periglacial Environments that will address science questions pertaining to the age and history of Antarctic permafrost, landscape dynamics and evolution (including erosion, ground ice formation, patterned ground).

Similarly, the former Action Group on Geographic Information has been changed to an Expert Group that will create an Antarctic Spatial Data Infrastructure (ANTSDI) by integrating and coordinating Antarctic mapping and GIS programmes to provide a fundamental geographical base for all Antarctic research.

The former Action Group on Geodetic Infrastructure of Antarctica (GIANT) has also been converted to an Expert Group that will continue to define an accurate geodetic reference frame. This is essential for all scientists undertaking mapping application and geodynamics studies in Antarctica. The Expert Group will continue its activity for better planning of Geodetical and Geophysical Observatories, and to enhance continental and global data processing.

The Action Group on the Antarctic Digital Magnetic Anomaly Project (ADMAP) has also been up-graded to an Expert Group to maintain the database and make it a permanent tool available to the scientific community.

A new Expert Group on the International Bathymetric Chart of the Southern Ocean (IBCSO) will develop new compilations of bathymetric data for inclusion in the Chart.

The former Group of Specialists on Antarctic Neotectonics (ANTEC), established in 1998 to promote and coordinate multidisciplinary, multinational research relevant to Antarctic neotectonics, has been changed to an Expert Group. In conjunction with the ISMASS programme of the SSG on Physical Sciences, the Expert Group presented a thematic set of 21 papers on “Ice Sheets and Neotectonics” that was published in a Special Issue of *Global and Planetary Change* **42** (pages 1–326) in 2004, including an editorial by T S James, T H Jacka, A Morelli and R Dietrich.

6. Future Plans

This report gives selected examples and is not exhaustive.

6.1 Scientific Coordination

The first priority is implementation of the five newly approved Scientific Research Programmes. The first task is to draft Implementation Plans for the five new programmes. These will be complete for the meeting of the SCAR Executive in July.

The Steering Committee for the AGCS SRP will meet in Cambridge, UK over 27 June – 1 July 2005.

The meeting of the SALE SRP will be held in Vienna, 22–23 April 2005, in association with the European Geophysical Union meeting.

The ACE SRP meeting will also be held in Vienna, on 25 April 2005.

The first ICESTAR workshop will be held in Spring 2005. This will focus on data portal/virtual-observatory specifications, identification and metadata description of all available Antarctic data on the Internet for ICESTAR and identification of available value-added products on- and off-line and prioritization of the data and products based on their science merit.

The Implementation Plan for the EBA SRP will be completed, following a draft, written during a workshop in Cambridge in March 2005, during the IX SCAR International Biology Symposium, which will be held in Curitiba, Brazil, 25 –29 July 2005. These highly successful symposia bring together over 75% of the biologists currently active in the Antarctic and Southern Ocean environment. Further information on this symposium can be found at: *http://www.nioo.knaw.nl/projects/scarlsssg/* Prior to the symposium, several workshops will be held including, among others, on Antarctic Conservation matters.

SCAR will also maintain the key activities of its Action and Expert Groups. A detailed record of the activities of these groups during 2005 can be found under EVENTS on the SCAR web page. The efforts of the Action Group on Marine Acoustics, which is investigating the relationship between noise in the ocean and the behaviour of cetaceans, and which resulted in a report to the XXVII ATCM, is continuing, as a means of providing scientific advice to the ATCM.

Several activities are planned as part of the European Geophysical Union (EGU) meeting in Vienna in April, or as part of the American Geophysical Union (AGU) Assembly in New Orleans (23–27 May 2005) or the AGU fall meeting in San Francisco (December 2005).

SCAR will continue to provide inputs to the IPY process through its membership of the ICSU/WMO Joint Committee for the IPY. In addition, its Scientific Research Programmes will plan their leadership of subsets of the Expressions of Interest received by the IPY planners, and by the end of June 2005 will convert these EoIs into full proposals for IPY endorsement.

Key meetings in 2005 include:

1. SCAR–COMNAP Workshop on Practical Biological Indicators of Human Impacts in Antarctica, 16–18 March 2005, College Station, USA; to assess biological indicators of human impact and advise on implementing meaningful monitoring programmes in Antarctica.
2. Continental drilling 2005: A Decade of Progress and Opportunities for the Future; 30 March – 1 April 2005, Potsdam, Germany.
3. Climate and Cryosphere (CliC) 1st Science Conference; 11–15 April 2005, Beijing, China.
4. SCAR Workshop on Antarctic Conservation in the 21st Century, 23–25 May 2005, Stellensbosch, South Africa.
5. Southern Ocean Implementation Panel Meeting; 27–30 June 2005 Cambridge, UK; to discuss modes of variability and the IPY.
6. SCAR IX International Biology Symposium; 25–29 July 2005, Curitiba, Brazil.
7. International Association of Meteorology and Atmospheric Sciences Meeting; 2–11 August 2005, Beijing, China; to discuss Climate, Variability and Change in the Polar Regions: Causality and Prediction.
8. SCAR will co-sponsor special IAG/IAPSO sessions on “Oceanography and geodesy in polar regions” and on “Ocean interactions with sea ice, polynyas, ice shelves, and icebergs” as part of the IAPSO/IABO Symposium, 22–26 August 2005, Cairns, Australia.
9. International Conference on Glacial Sedimentary Processes and Products; August 2005, Aberystwyth, UK.

10. Sixth International Conference on Geomorphology; 7–11 September 2005, Zaragoza, Spain; to discuss Antarctic Geomorphology.
11. Third International Conference on the Oceanography of the Ross Sea; 10–14 October 2005, Venice, Italy.
12. International Symposium on Sea Ice; 4–9 December 2005, Dunedin, New Zealand.

6.2 Developing Scientific Capacity

The Antarctic research programmes of SCAR Member nations vary greatly in their size and capacity. Some have scientific communities that are large, scientifically advanced and long standing. Others have relatively small and new Antarctic science communities that are still developing. To enable all in the SCAR family to participate in, contribute to and benefit from SCAR's activities, it is incumbent on SCAR to work with appropriate national agencies to help to enhance the research capacity of all of its Members and Associate Members. This requirement has become more pressing with the significant increase in SCAR Membership in recent years. SCAR is in the process of developing a strategy for capacity building. One aspect of the potential capacity building programme that is already active is the SCAR Fellowship Programme, which provides a small number of annual awards. SCAR also arranges training workshops. For example, the MOSAK Action Group proposes to hold a workshop on the Antarctic wind field in early 2006 in Kuala Lumpur, Malaysia.

SCAR hopes that the nations participating in the ATCM will work actively with SCAR to support this scientific capacity building programme as it develops in the coming years.

7. Concluding Remarks

SCAR continues to play a central role in the development of scientific understanding in the Antarctic region. This role will be enhanced in future by SCAR's involvement at the heart of the planning process for the International Polar Year. SCAR's five new Scientific Research Programmes will make a major contribution to, and will help to lead the development of, the International Polar Year in the region. SCAR is keen to continue to play a major role as the scientific partner to the ATCM, and the driver for scientific research performed to acceptable scientific standards.

Appendix 1

MEMBERSHIP OF SCAR

Full members:	*Date of admission to Associate Membership*	*Date of admission to Full Membership*
Argentina		3 February 1958
Australia		3 February 1958
Belgium		3 February 1958
Chile		3 February 1958
France		3 February 1958
Japan		3 February 1958
New Zealand		3 February 1958
Norway		3 February 1958
South Africa		3 February 1958
Russia (formerly Union of Soviet Socialist Republics)		3 February 1958
United Kingdom		3 February 1958
United States of America		3 February 1958
Germany (including former German Democratic Republic)		22 May 1978
Poland		22 May 1978
India		1 October 1984
Brazil		1 October 1984
China		23 June 1986
Sweden	(24 March 1987)	12 September 1988
Italy	(19 May 1987)	12 September 1988
Uruguay	(29 July 1987)	12 September 1988
Spain	(15 January 1987)	23 July 1990
Netherlands	(20 May 1987)	23 July 1990
Korea, Republic of	(18 December 1987)	23 July 1990
Finland	(1 July 1988)	23 July 1990
Ecuador	(12 September 1988)	15 June 1992
Canada	(5 September 1994)	27 July 1999
Peru	(14 April 1987)	22 July 2002
Switzerland	(16 June 1987)	3 October 2004
Associate Members:		
Pakistan	15 June 1992	
Ukraine	5 September 1994	
Bulgaria	5 March 1995	
Malaysia	3 October 2004	

ICSU Union Members

IGUInternational Geographical Union
IUBSInternational Union of Biological Sciences
IUGGInternational Union of Geodesy and Geophysics
IUGSInternational Union of Geological Sciences
IUPACInternational Union of Pure and Applied Chemistry
IUPSInternational Union of Physiological Sciences
URSIUnion Radio Scientifique Internationale

Appendix 2

SCAR Executive Committee

President

Professor Dr J Thiede

Alfred-Wegener-Institut für Polar- und Meeresforschung,
Building E–3221, Am Handelschafen, D-27570 Bremerhaven, Germany

E-mail: jthiede@awi-bremerhaven.de

Vice-Presidents

Professor J López-Martínez

Departamento Geología y Geoquímica,
Universidad Autónoma de Madrid, Facultad de Ciencias, Madrid 28049, Spain

E-mail: jeronimo.lopez@uam.es

Dr C Howard-Williams

National Institute of Water and Atmospheric Research,
Box 8602, Christchurch, New Zealand

E-mail: c.howard-williams@niwa.co.nz

Professor M C Kennicutt II

Director Sustainable Development,
Office of the Vice President for Research, 1112 TAMU, College Station,
TX 77843-1112, United States

E-mail: m-kennicutt@tamu.edu

Dr H Shimamura

National Institute of Polar Research (NIPR)
Kaga 1-9-10, Itabashi, Tokyo 173-8515, Japan

E-mail: shima@nipr.ac.jp

SCAR Secretariat

Executive Director

Dr C P Summerhayes

E-mail: cps32@cam.ac.uk

Executive Secretary

Dr P D Clarkson

E-mail: pdc3@cam.ac.uk

SCAR Secretariat, Scott Polar Research Institute, Lensfield Road, Cambridge,

CB2 1ER, United Kingdom

SCAR Chief Officers

Standing Scientific Groups

Geosciences

Professor A Capra

DIASS Department,
Polytechinc of Bari, Viale del Turismo n.8, 74100 – Taranto, Italy

E-mail: a.capra@poliba.it

Life Sciences

Dr A H L Huiskes

Netherlands Institute of Ecology,
Unit for Polar Ecology, PO Box 140, 4400 AC Yerseke, Netherlands

E-mail: a.huiskes@nioo.knaw.nl

Physical Sciences

Dr J Turner

British Antarctic Survey,
High Cross, Madingley Road, Cambridge CB3 0ET, United Kingdom

E-mail: j.turner@bas.ac.uk

Standing Committees

Antarctic Treaty System

Professor D W H Walton

British Antarctic Survey,
High Cross, Madingley Road, Cambridge CB3 0ET, United Kingdom

E-mail: d.walton@bas.ac.uk

Finance

Professor M C Kennicutt II

Director Sustainable Development, Office of the Vice President for Research, 1112 TAMU, College Station, TX 77843–1112, United States

E-mail: m-kennicutt@tamu.edu

SCAR–COMNAP Joint Committee on Antarctic Data Management

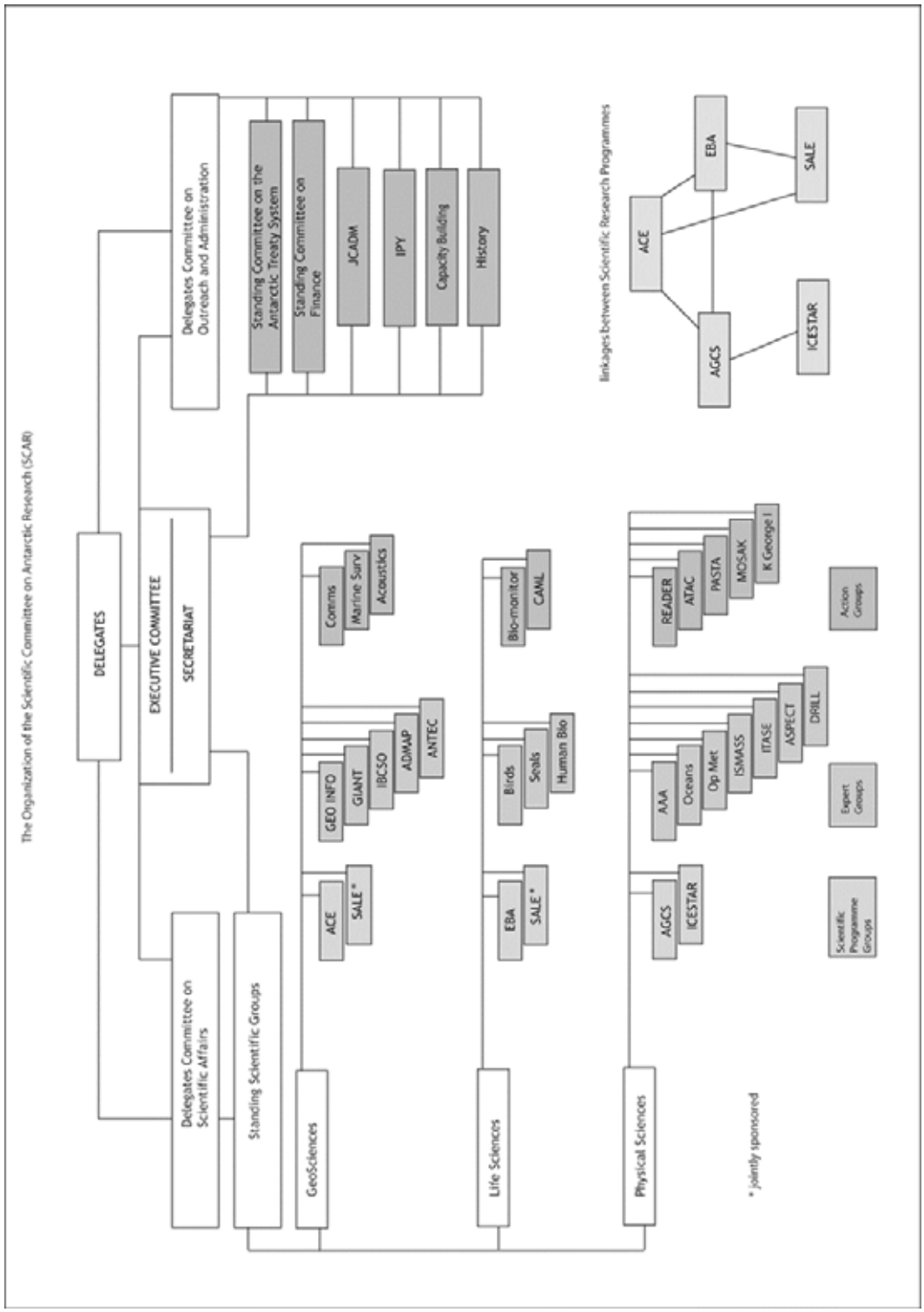
Dr T de Bruin

Royal Netherlands Institute for Sea Research (NIOZ),
PO Box 59, 1790 AB Den Burg, Texel, The Netherlands

E-mail: bruin@nioz.nl

Appendix 3:

New SCAR Structure



List of constituent sub-groups in the SCAR Organization

Delegates Committee on Scientific Affairs

Standing Scientific Group on Geosciences

Expert Groups on:
- Geographic Information
- Geodetic Infrastructure for Antarctica
- International Bathymetric Chart of the Southern Ocean
- Antarctic Digital Magnetic Anomaly Project
- Antarctic Neotectonics

Standing Scientific Group on Life Sciences

Expert Groups on:
- Birds
- Seals
- Human Biology and Medicine

Standing Scientific Group on Physical Sciences

Expert Groups on:
- Antarctic and Astronomy and Astrophysics
- Oceanography of the Southern Ocean
- Operational Meteorology
- Ice Sheet Mass Balance and Sea Level
- International Trans-Antarctic Scientific Expedition
- Antarctic Sea-Ice Processes and Climate
- Ice drilling technology

Scientific Research Programmes

- Antarctic Climate Evolution
- Antarctica and the Global Climate System
- Evolution and Biodiversity in the Antarctic

Other sub-groups

- Standing Committee on the Antarctic Treaty System
- Standing Committee on Finance
- Joint Committee on Antarctic Data Management

Delegates Committee on Outreach and Administration

Action Groups on:
- Communications and Outreach
- Marine geophysical surveying
- Marine Acoustic Technology

Action Groups on:
- Bio-monitoring of Human Impacts
- Census of Antarctic Marine Life

Action Groups on:
- Reference Antarctic Data for Environmental Research
- Antarctic Tropospheric Aerosols and their Role in Climate
- Plateau Astronomy Site Testing in Antarctica
- Modelling and Observational Studies of Antarctic Katabatics
- Scientific Coordination on King George Island

- Inter-hemispheric Conjugacy Effects in Solar-Terrestrial and Aeronomy Research
- Subglacial Antarctic Lake Environments

- Capacity Building
- International Polar Year 2007–09
- History of Scientific Research in Antarctica

Appendix 4

The SCAR Scientific Research Programmes

Antarctic Climate Evolution (ACE)

ACE will use palaeoclimate and ice sheet-modelling investigations, integrated with terrestrial and marine geological and geophysical evidence, to study the climate and glacial history of Antarctica. Over the past 34 million years changes in climate have led to considerable spatial and temporal fluctuations in ice volume that have driven significant changes in global sea-level. Determining the scale and rapidity of the response of ice masses and associated sea ice to climate forcing is essential to understand the processes of climate change in the region, and to underpin estimates of the likely magnitudes and directions of future change.

ACE will promote the exchange of data and ideas between research groups focusing on the evolution of Antarctica's climate system and ice sheet. It will encourage scientific exchange between modellers and data gatherers, facilitating the development of relevant projects and the testing of hypotheses. The main function of the programme is to acquire and compile "ground truth" geoscience data and to use these to develop a suite of palaeoclimate models for significant periods of climate change throughout Cenozoic times up to and including the Holocene. Data access and data sharing will be encouraged to facilitate the data syntheses needed for enhancing palaeoclimate models. Numerical modelling is an essential component, and will address:

1. ice sheet modelling;
2. coupled ice-sheet, climate and ocean modelling; and
3. coupled ice sheet and sediment modelling to address the interaction between ice sheets, water and deformable sediment at the interface between ice and bedrock.

The broad outcomes will be:

1. a quantitative assessment of the climate and glacial history of Antarctica;
2. identification of the processes that govern Antarctic climate change and those that feed back around the globe;
3. improvements in the ability to model past climate changes in Antarctica; and
4. documented case studies of past changes against which models of future change can be tested.

ACE will promote new drilling programmes to expand the necessary database. These will include the activities of the Integrated Program for Ocean Drilling (IPOD) in deep water, the shallow drilling (SHALDRIL) programme on land, and the ANDRILL programme on the ice shelves. Among other things the programme will examine the terrestrial record of landscape evolution; the influence of tectonics on the behaviour of the ice sheet; and the influence of palaeo-seaways, such as the opening of the Drake Passage, on climate.

ACE and AGCS have complementary interests in Quaternary studies of Antarctica, so a joint Action Group manned by both programmes will be established to run a Quaternary sub-programme.

Antarctica and the Global Climate System (AGCS)

AGCS will investigate the nature of the atmospheric and oceanic linkages between the climate of the Antarctic and the rest of the Earth system. The linkages between the different elements of the

Antarctic climate system are highly non-linear and it is necessary to understand the behaviour of and interactions between the atmospheric, oceanic and cryospheric elements of the system if past change is to be explained and we are to have confidence in future predictions. A study of this kind has only recently become feasible with the advent of sufficient high-resolution *in-situ* data and ice core records, and the development of numerical modeling tools to the point where they can represent realistically the closely coupled atmosphere-ocean processes that control long-term climate variability.

The work requires a combination of modern, instrumented records of atmospheric and oceanic conditions, and the climate signals held within ice cores, to understand fully past and future climate variability and change in the Antarctic as a result of natural and anthropogenic forcing. AGCS will focus on the last 6,000 years, since the mid-Holocene warm period, and will develop forecasts to 100 years in the future. Records that capture abrupt climate change over the past few glacial/interglacial cycles will also be studied, in association with the ACE programme (see below).

AGCS will use existing deep and shallow ice cores, satellite data, the output of global and regional coupled atmosphere-ocean climate models, and in-situ meteorological and oceanic data to understand how signals of tropical and mid-latitude climate variability reach the Antarctic, and high latitude climate signals are exported northwards. It will emphasize synthesis and integration of existing data sets and model outputs, although some new ice core and oceanographic data will be collected.

AGCS will contain four closely linked themes reflecting significant gaps in our knowledge:

1. *Decadal time scale variability in the Antarctic climate system*, to investigate ocean-atmosphere coupling and the role of the El Niño-Southern Oscillation in modulating the Antarctic climate;
2. *Global and regional climate signals* in shallow and deep ice cores, to establish better quantitative relationships between ice core data and measures of tropical, mid- and high latitude climate variability;
3. *Natural and anthropogenic forcing on the Antarctic climate system*, including the production of regional-scale estimates of expected climate change over Antarctica during the next 100 years, to be able to distinguish natural variability from anthropogenic activity and to understand how global climate change will be expressed in the Antarctic; and
4. *The export of Antarctic climate signals*, to examine how climate changes in the Antarctic can influence conditions at more northerly latitudes.

The research will be carried out in an interdisciplinary way through a close collaboration between meteorologists, climatologists, glaciologists, oceanographers and ice chemists, who will integrate observational and modelling activities.

A key deliverable will be the production of regional and Antarctic-wide climate predictions covering the next 100 years.

Evolution and Biodiversity in the Antarctic (EBA): the response of life to change

A major challenge facing humankind is the management of the Earth System to ensure a sustainable human future. Managing the environment requires understanding the functioning of all parts of the Earth System in the context of both natural and anthropogenic change. That understanding must encompass Antarctica and the Southern Ocean and their biota, including knowledge of the way in which life has evolved in those environments, and the ways in which it is likely to change, which in turn demands an integrated, interdisciplinary investigation of the structure and functioning of living systems in the region.

EBA will provide a platform for the kinds of interactions amongst disciplines and researchers that are essential to understand the evolution of biodiversity in the region and the responses and contributions of that biodiversity to the Earth System. By doing so, it will fill a major void in understanding of the role of biodiversity in the Earth System.

The overall aims of EBA are to understand the evolution and diversity of life in the Antarctic, to determine how these have influenced the properties and dynamics of present Antarctic and Southern Ocean ecosystems, and to make predictions on how organisms and communities will respond to current and future environmental change. EBA will integrate work on marine, terrestrial and limnetic ecosystems in a manner never before attempted, covering an entire biome. By comparing the outcomes of parallel evolutionary processes over a range of Antarctic environments, fundamental insights can be obtained into evolution, and the ways in which life responds to change, from the molecular to the whole organism level and ultimately to biome level. EBA will be complementary to many ongoing national programmes that cannot attempt an ambitious study individually.

Antarctic ecosystems offer unique examples of how both structure and function have evolved, and the likely responses of species and ecosystems to change induced by a wide variety of natural and anthropogenic processes, as well as the ways in which their responses feed back to influence these processes.

EBA will use a range of modern techniques and a multidisciplinary approach to explore the evolutionary history of the modern Antarctic biota, examine how modern biological diversity in Antarctica influences how present-day ecosystems function, and attempt to predict how the biota may respond to future environmental change. It will integrate the major realms of Antarctic biology into a cohesive picture for the first time, and contribute to evolutionary theory and understanding of global ecology and biological diversity. More specifically, EBA will examine:

1. The evolutionary history of the Antarctic biota.
2. Evolutionary adaptations to the Antarctic environment.
3. Patterns of gene flow within, into and out from the Antarctic, and their consequences for population dynamics.
4. Patterns and diversity of organisms, ecosystems and habitats in Antarctica, together with the ecological and evolutionary processes that control these.
5. The impact of past, current and predicted environmental change on biodiversity and the consequences for Antarctic marine, freshwater and terrestrial ecosystem function.

The programme will integrate research across a wide variety of fields, from functional genomics and molecular systematics to ecosystem science and modelling, and will draw on and contribute information to a wide rage of related fields, such as climate modelling and tectonics.

Interhemispheric Conjugacy Effects in Solar-Terrestrial and Aeronomy Research (ICESTAR)

ICESTAR will address some key questions about the interaction of the solar wind with the Earth's outer atmosphere, so as to quantify the key mechanisms of indirect coupling between the Sun and the Earth at high latitudes; to determine how solar variability is amplified through those couplings; and to determine the temporal evolution of atmospheric change caused by solar coupling. Much remains to be learned about how the solar forcing can affect the atmosphere, especially at high latitudes where the solar wind-driven processes are most influential.

ICESTAR will also investigate possible influences of the changing Sun (i.e., its irradiance and magnetic moment) and the geospace environment on polar climate and weather. ICESTAR addresses the fact that important gaps remain in our understanding of the solar wind-magnetosphere-ionosphere interaction. We do not know enough about the changes and dynamics of the Earth's magnetosphere

under extreme solar wind conditions, i.e., during strong geomagnetic storms and as a consequence of solar activity such as coronal mass ejections.

In order to obtain a deep understanding of the mechanisms responsible for energy transfer from the solar wind into the geospace environment, simultaneous consideration is needed of various geophysical phenomena occurring over both the northern and southern Polar Regions. ICESTAR will both enable and conduct focused scientific research on the upper atmosphere above the Antarctic and on how that region of space ties in with the global system. The programme will strive for international coordination of interhemispheric research in the areas of solar-terrestrial physics and polar aeronomy, promoting exchange of research ideas, and sharing experimental data from various arrays of geophysical instrumentation deployed over the Polar Regions and in near-Earth space.

ICESTAR aims:

1. to identify and quantify various mechanisms that control interhemispheric regional differences and commonalities in the electrodynamics and plasma dynamics of the Earth's magnetosphere-ionosphere coupling system, and in the aeronomy of the upper atmosphere over the Arctic and Antarctic; and
2. to create a data portal that will link together a large number of geophysical databases including both data serving applications and visualization tools, so as to enable a systems view of the polar upper atmosphere. Creation of the ICESTAR data portal to facilitate the sharing and interpretation of global geospace datasets will encourage the collaboration of researchers by sharing data and the interpretation of the results.

Subglacial Antarctic Lake Environments (SALE)

SALE serves as the international focal point of SCAR's activities to promote, facilitate, and champion cooperation and collaboration in the exploration and study of subglacial environments in Antarctica.

The overarching scientific objectives of SALE are:

1. to understand the formation and evolution of subglacial lake processes and environments;
2. to determine the origins, evolution and maintenance of life in subglacial lake environments; and
3. to understand the limnology and palaeoclimate history recorded in subglacial lake sediments.

To explore the complex interplay of biological, geological, chemical, glaciological, and physical processes within subglacial lake environments an international, interdisciplinary plan for coordinated research and study is essential. The three objectives can only be accomplished by integrated and coordinated phases of discovery and hypotheses driven research over at least a ten-year period.

Major areas of research will be:

1. Functional Genomics and Phylogenetics (eg to determine the genetic diversity in the water columns and benthic sediments of subglacial lakes);
2. Limnology (eg to establish the geochemical and isotopic composition of selected lake water constituents to determine their role in biological processes, water column stability, and to establish the age of subglacial lake water);
3. Geophysics (eg to understand the tectonic and ice sheet setting of subglacial lakes through geological analysis of geophysical data);
4. Glaciology (eg to understand the interrelation between ice sheet processes and lake water circulation);

5. Geology and Cenozoic Palaeoclimate (eg to use palaeoenvironmental data to determine lake and ice sheet histories, and evaluate temporal changes in Cenozoic palaeoclimate relative to those histories determined from Antarctic marginal sequences and global Cenozoic proxy records).

The technological challenges and environmental stewardship issues of under ice drilling cannot be underestimated, so SALE will also advise the international community not only on scientific issues but also on technology issues relevant to subglacial lake exploration, including environmental concerns and safeguards.

Appendix 5

SCAR's Action and Expert Groups

Geosciences SSG

Action Group on "Communication and Outreach" (**COG**): to provide information on Antarctic geoscientific research to the scientific and community and the wider public.

Action Group on "Acoustics in the Marine Environment": to consider the effects on marine mammals of noise created by marine scientific activities (such as echo-sounding and airgun surveys).

Action Group (Cross-SSG) on "Antarctic Treaty and Committee for Environmental Protection (CEP)": to communicate with SCAR representative at the CEP and ATCM to bring matters of concern to the CEP and Treaty to the SSG-G for advice and to identify areas of concern in geosciences and geospatial information, raise them in Antarctic Treaty System (ATS) fora, and provide scientific advice.

Action Group on "Marine Survey Coordination": to develop mechanisms for improved communication about planned marine surveys within the Antarctic community.

Expert Group on "Geographical Information" (**EGGI**): to create an Antarctic Spatial Data Infrastructure (**ANTSDI**) by: providing Antarctic fundamental geographic information products and policies in support of all SCAR science programmes and operations management and the global user; integrating and coordinating Antarctic mapping and GIS programmes; promoting an open standards approach to support free and unrestricted data access; promoting capacity building towards sound Antarctic geographic data management within all SCAR nations; and promoting to COMNAP the data and products that the EGGI produces.

Expert Group on "Permafrost and Periglacial Environments" (**EGPPE**): to provide coordination, communication and exchange of data amongst Antarctic permafrost researchers within SCAR and IPA and promote interaction and collaboration with SCAR and IPA working groups; to collect and collate spatial data on permafrost and cryosols and contribute to databases for Antarctic soils, permafrost and ground ice conditions including the active layer; to develop and promote monitoring/observation protocols and networks; to promote international cooperation and facilitate collaborative field research; and to address key science questions pertaining to permafrost.

Expert Group on "Geodetic Infrastructure of Antarctica" (**GIANT**): to provide a common geodetic reference system for all Antarctic scientists and operators; to contribute to global geodesy for the study of the physical processes of the earth and the maintenance of the precise terrestrial reference frame; to provide information for monitoring the horizontal and vertical motion of the Antarctic.

Expert Group on "Antarctic Neotectonics" **(ANTEC)**: to promote and coordinate multidisciplinary, multinational research relevant to Antarctic neotectonics; to identify 'target sites' where there is a need for deployment of geodetic and seismic stations and arrays, and airborne, marine and field campaigns; to encourage and coordinate the installation of instruments at permanent sites and in regional networks (GPS, gravity, seismic) for focused studies in target areas; and to promote and coordinate sharing of instrumentation, logistics, and data.

Expert Group on "Antarctic Digital Magnetic Anomaly Project "(**ADMAP**): to produce a coordinated effort for: compiling the existing magnetic data acquired by various institutions; coordinating protocols for data distribution; serving as a reference for future survey planning; archiving and maintaining the magnetic anomaly data base of Antarctica.

Expert Group on "International Bathymetric Chart of the Southern Ocean" (**IBCSO**): to act as the steering group for production of a revised chart of the bathymetry of the Southern Ocean, in conjunction with the IHO and GEBCO.

Life Sciences SSG

Action Group on "Global International Waters Assessment" (**GIWA**): to provide the information required for a Global Waters Assessment for Area 66: Antarctica.

Action Group on "Best Practices for Conservation": to review and establish current best practices for conservation in an Antarctic context.

Action Group on Biological Monitoring: to organize a workshop on this topic, in order to produce a (set of) protocol(s) for biological monitoring activities for environmental management purposes.

Action Group for the "Census of Marine Life" (**CoML**): to act as a scientific steering committee for the Southern Ocean component of the global CoML programme.

Expert Group on: "Birds": to provide long-term data on avian populations in the region; to encourage, coordinate and support research on seabirds; to contribute to their conservation; and to provide scientific advice to SCAR.

Expert Group on "Seals": to provide information on the status of seal stocks as required by the Convention for the Conservation of Antarctic Seals (CCAS); to encourage research and information exchange on this group of animals; and to provide advice to SCAR.

Expert Group on "Human Biology and Medicine": to provide a forum for medical, physiopathological, behavioural, clinical, and biological scientists; to promote high quality research in polar human biology in association with appropriate international scientific organizations; to encourage cooperation in the continued evolution of high quality healthcare and the prevention of injury and disease in the Antarctic; and to promote the full use of the unique environment of the Antarctic to allow understanding of major health problems in extreme environments in particular, and in mankind in general.

Physical Sciences SSG

Action Group on: "Plateau Astronomy Site Testing in Antarctica" (**PASTA**): to coordinate the efforts to properly characterize the conditions available at various sites on the Antarctic plateau, delivering and compiling the required site testing data.

Action Group on "Modelling and Observational Studies of Antarctic Katabatic Winds" (**MOSAK**): to analyze, understand and model katabatic wind events, and to develop a new map of katabatic wind distribution and strength over the Antarctic ice sheet.

Action Group (Cross-SSG) on Coordination of Scientific Activities on King George Island: to encourage different national groups on King Gorge Island to share information about their research plans, so as to avoid unnecessary duplication of costly activities.

Expert Group on "SCAR and Oceanography": - to facilitate coordination between the physical oceanographic research groups currently active and those planning research in the Southern Ocean; to encourage an inter-disciplinary approach to Southern Ocean observations, modelling and research, recognizing the inter- dependence of physical, chemical and biological processes in the ocean at present and in the past; to identify historical and reference data set of value to researchers, focusing initially on physical oceanography data; to encourage the exchange of information with operational agencies.

Expert Group on "Antarctic and Astronomy and Astrophysics" (**AAA**): to coordinate efforts to explore the potential for astronomical observations in the Antarctic.

Expert Group on "Operational Meteorology in the Antarctic": to liaise with WMO over observing standards, the use of new data/model fields and weather forecasting in the Antarctic; to maintains links with COMNAP/SCALOP; and to provide scientific advice to WMO on Antarctic meteorology.

Expert Group on "Ice Sheet Mass Balance and Sea Level" (**ISMASS**): to understand the relationship between Ice Sheet Mass Balance and Sea Level, by determining the present accumulation rate over the entire ice sheet and measuring ice thickness and velocities at the grounding zone of the ice sheet and glaciers.

Expert Group on Ice Drilling Technology: to facilitate communication among international ice drilling communities; to create an international forum for strategic development of new ice drilling and borehole testing concepts and technologies and continued improvement of existing technologies; to provide a pool of expertise to address SCAR issues related to ice drilling and coring; and to enhance international cooperation and communication on large- and small-scale ice core recovery projects.

Appendix 6

List of Acronyms

AAA	Antarctic and Astronomy and Astrophysics
ACE	Antarctic Climate Evolution
ADMAP	Antarctic Digital Magnetic Anomaly Project
AGCS	Antarctica in the Global Climate System
AGU	American Geophysical Union
ANDRILL	Antarctic Geological Drilling Project
ANTEC	Antarctic Neotectonics
ANTIME	Late Quaternary Sedimentary Record of Antarctic Ice Margin Evolution
ANTSDI	Antarctic Spatial Data Infrastructure
APTIC	Antarctic Peninsula Tropospheric-Ionospheric Coupling
ASPeCT	Antarctic Sea-Ice Processes and Climate
ATAC	Antarctic Tropospheric Aerosols and their Role in Climate
ATCM	Antarctic Treaty Consultative Meeting
CAML	Census of Antarctic Marine Life
CEP	Committee for Environmental Protection
CliC	Climate and Cryosphere Programme
CMBR	Cosmic Microwave Background Radiation
COG	Communication and Outreach
CoML	Census of Marine Life
COMNAP	Council of Managers of National Antarctic Programmes
EASIZ	Ecology of the Antarctic Sea-Ice Zone
EBA	Evolution and Biodiversity in the Antarctic
EGGI	Expert Group on Geographical Information
EGGPE	Expert Group on Permafrost and Periglacial Environments
EGU	European Geophysical Union
EoI	Expression of Interest
EVOLANTA	Evolutionary Biology of Antarctic Organisms
GIANT	Geodetic Infrastructure for Antarctica
GIS	Geographic Information Systems
GIWA	Global International Waters Assessment
GLOBEC	Global Ocean Ecosystems Dynamics
GLOCHANT	Group of Specialists on Global Change and the Antarctic
GPS	Global Positioning System
IABO	International Association of Biological Oceanography
IAG	International Association of Geodesy
IAnZone	International (Coordination of Oceanographic Research within the) Antarctic Zone
IAPSO	International Association for the Physical Sciences of the Ocean
IBCSO	International Bathymetric Chart of the Southern Ocean
ICESTAR	Inter-hemispheric Conjugacy Effects in Solar-Terrestrial and Aeronomy Research
ICSU	International Council for Science
IGOS	Integrated Global Observing Strategy
IGU	International Geographical Union
IGY	International Geophysical Year
IPA	International Permafrost Association
IPOD	Integrated Program for Ocean Drilling
IPY	International Polar Year
ISMASS	Ice Sheet Mass Balance and Sea-Level
ITASE	International Trans-Antarctic Scientific Expedition
IUBS	International Union of Biological Sciences
IUGG	International Union of Geodesy and Geophysics
IUGS	International Union of Geological Sciences
IUPAC	International Union of Pure and Applied Chemistry
IUPS	International Union of Physiological Sciences
JCADM	Joint Committee on Antarctic Data Management
MADREP	Middle Atmosphere Dynamics and Relativistic Electron Precipitation
MarBIN	Marine Biodiversity Information Network
MEDINET	Medical Network
MOSAK	Modelling and Observational Studies of Antarctic Katabatic Winds

OBIS	Ocean Biodiversity Information System
PASTA	Plateau Astronomy Site Testing in Antarctica
PPE	Permafrost and Periglacial Environments
READER	Reference Antarctic Data for Environmental Research
RiSCC	Regional Sensitivity to Climate Change in Antarctic Terrestrial and Limnetic Ecosystems
SALE	Subglacial Antarctic Lake Environments
SALEGOS	Subglacial Antarctic Lake Exploration Group of Specialists
SCALOP	Standing Committee on Antarctic Logistics and Operations
SCAR	Scientific Committee on Antarctic Research
SCOR	Scientific Committee on Oceanic Research
SHALDRIL	Shallow Drilling
SRP	Scientific Research Programme
SSG	Standing Scientific Group
SSG-G	SSG on Geosciences
SSG-LS	SSG on Life Sciences
SSG-PS	SSG on Physical Sciences
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
URSI	Union Radio Scientifique Internationale
WMO	World Meteorological Organization

COMNAP Report to ATCM XXVIII

INTRODUCTION

1. COMNAP, the Council of Managers of National Antarctic Programs, was established in 1988 and currently brings together the National Programs from 29 countries. The "National Antarctic Programs" are those agencies tasked by their government to implement and manage their national activities in Antarctica.
2. COMNAP membership is open to the National Programs of Antarctic Treaty Parties having ratified the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol). The application for membership of a 30th member was accepted at the 2004 COMNAP annual meeting and the National Program from Estonia will officially join COMNAP when its government formally ratifies the Madrid Protocol.
3. The primary function and activities of COMNAP are related to the exchange of practical, operational information with a view to improving the way all National Programs can fulfil their various missions, from the support of the Antarctic continent's governance to the support of Antarctic research to the protection of the Antarctic region's environment.

COMNAP'S ROLE AND MODE OF OPERATION

4. COMNAP serves as a forum in which the directors, logistics managers and other members of the National Programs develop practices that improve the effectiveness and safety of their activities pursuant to the Antarctic Treaty and the associated Madrid Protocol. This mostly involves the exchange of practical, operational information and includes mutual support in the design, ongoing improvement and operation of Antarctic facilities and transport infrastructure.
5. A substantial part of that infrastructure comprises year-round stations, a fleet of ships and a number of airfields and aircraft. In 2005, the National Programs together operate in the Antarctic Treaty area 37 year-round stations with a combined winter average population of 1030 and a peak summer population of 3427 persons. A list of these stations is provided in Appendix 2. The National Programs currently operate or charter in the Antarctic Treaty area a fleet of 39 vessels ranging from 1,400 to 40,000 tons displacement.
6. COMNAP includes a permanent Standing Committee on Antarctic Logistics and Operations (SCALOP) and a number of other groups (Committees, Working Groups, Coordinating Groups and Networks) focused on various areas of expertise. The bulk of COMNAP's work is achieved through the routine, core activities of these 'groups'. This provides for continuous exchange of information, providing ongoing, multi-directional capacity building and a vehicle for addressing a wide range or issues, sometimes very technical, but always with practical applications in the support of Antarctic Programs. ppendix 1 provides an insight into these routine activities by listing the current terms of reference, tasks and membership of these groups.
7. A COMNAP Executive Committee (EXCOM) is responsible for COMNAP matters between full meetings of the Council. It includes the COMNAP Chair, three COMNAP member representatives, the chair of SCALOP and, as a non-voting member, the Executive Secretary. The retiring chair remains on the Committee as an additional member for one year after completion of her/his term. Gérard Jugie of the French National Program became the new

chair of COMNAP in July 2004, succeeding Karl Erb of the US National Program who had served his three year term.

8. The work of COMNAP is supported by a secretariat that provides organisational and coordination support. This includes provision of a common communications support infrastructure, central information repository and point of contact. A COMNAP Executive Secretary, working under and with the COMNAP Chair, is responsible for the operation of the secretariat and for maintaining coordination between the members. As secretary to the organisation, the Executive Secretary is also responsible for compliance with all relevant rules and requirements and for maintaining an appropriate, productive working relationship with all stakeholders in the interest of both COMNAP and the Antarctic Treaty System.

CURRENT AND RECENT ACTIVITIES RELATED TO ATS WORK

9. As part of its responsibilities to the Antarctic Treaty System (ATS), COMNAP provides input to ATS discussions derived from its operational experience and its continuous work towards improved operations and practices. Some of this input can be in response to direct, specific requests from an Antarctic Treaty Consultative Meeting (ATCM) or a meeting of the Committee for Environmental Protection (CEP). COMNAP is committed to serve its role in the ATS by providing practical, technical and non-political advice.

10. As and when appropriate COMNAP contributes to the work of ATCM-mandated intersessional work and collaborates with the Antarctic Treaty Secretariat on practical, operational issues such as the exchange of information.

Practical Guidelines for Developing and Designing Environmental Monitoring Programs in Antarctica

11. ATCM XVIII (Kyoto - 1994) requested COMNAP and SCAR to conduct technical workshops to develop an approach to monitoring which would be scientifically sound, practical and cost effective. Two workshops were held and resulted in a report on the *Monitoring of Environmental Impacts from Science and Operations in Antarctica* (July 1996). To meet one of the key recommendations of the report, COMNAP and SCAR jointly prepared and published the *Antarctic Environmental Monitoring Handbook* (May 2000) which provides guidance on standard techniques and methodologies for monitoring a first tier of physical and chemical indicators in Antarctica.

12. COMNAP continued to work on practical aspects of monitoring and, having identified gaps in the current documentation and information available to operators, tasked its Antarctic Environmental Officers Network (AEON) with preparing *Practical Guidelines for Developing and Designing an Environmental Monitoring Programme in Antarctica*. Following the excellent work by AEON and considerable effort on the part of several National Programs, COMNAP endorsed and published the Guidelines in January 2005. The guidelines are available on the public access section of the COMNAP web site.

13. The guidelines, to be used in conjunction with the *Antarctic Environmental Monitoring Handbook* (May 2000), do not attempt to prescribe what indicators should be monitored. They instead attempt to provide a methodology that can be followed when designing a monitoring program and include several practical examples to assist in clarifying the proposed methodology. It is anticipated that the guidelines should assist all National Programs, but particularly those with more limited resources.

14. Ultimately, a unified approach to environmental monitoring will assist the continued protection of resources and values, and in minimising human impacts on the Antarctic environment.

15. COMNAP is presenting the *Practical Guidelines for Developing and Designing an Environmental Monitoring Programme in Antarctica* to CEP VIII in Working Paper ATCMXXVIII-WP026 and recommends that the CEP endorse the practical guidelines and make them also available through the CEP web site.

Biological Monitoring of Human Impacts in the Antarctic

16. At the time the July 1996 report on the *Monitoring of Environmental Impacts from Science and Operations in Antarctica* and the May 2000 *Antarctic Environmental Monitoring Handbook* were prepared it was estimated that there was not a sufficient scientific basis to propose indicators or methods for biological monitoring. The handbook was restricted to physical and chemical monitoring. The issue of biological monitoring was to be revisited once more data were available.

17. SCAR and COMNAP decided in 2004 to organise a joint workshop to revisit the issue of biological monitoring. Funded by the US National Science Foundation, SCAR and COMNAP the workshop was held on 16-18 March 2005 in Bryan-College Station, Texas, with 44 participants from 14 countries.

18. The workshop was very successful and a draft report will be presented to both SCAR and COMNAP for their consideration in July 2005. The two organisations will provide further information on the workshop outcomes and subsequent actions to the 2006 ATCM XXIX.

Heavy Fuel Oil

19. ATCM XXVIII (Cape Town – 2004) discussed the possibility of a *prohibition on the use of heavy oils south of 60 degrees South* and requested COMNAP, *in consultation with IAATO, (…) to report to ATCM on the present and planned use of heavy fuel in ships operating in Antarctic waters by national operators and by the tourism industry*.

20. COMNAP, through its Working Group on Ship Operations (SHIPOPS), and the International Association of Antarctica Tour Operators (IAATO) conducted a survey on the fuel carried in the Antarctic Treaty area on ships currently operated or chartered by their members. The two organisations also prepared a technical note on operational and regulatory aspects of the use of fuel on board ships in the area.

21. COMNAP and IAATO are presenting the results of this work to ATCM XXVIII in Information Paper ATCMXXVIII-IP067 on *The Use of Heavy Fuel Oil in Antarctic Waters*.

22. The combined COMNAP-IAATO fleet of 72 ships makes the bulk of the ships operating in the Antarctic Treaty area, with only 5 other ships known to operate in the area, excluding private yachts which in any case are not expected to carry heavy fuels.

23. The survey collected information on 50 of the 72 ships, or 70% of the combined COMNAP-IAATO fleet, deemed representative of both the current and planned state of practices for that fleet. None of the 50 ships does carry Heavy Grade Oil in the Antarctic Treaty Area.

24. Fuel information was available for 3 of the 5 other ships known to operate in the Antarctic Treaty area outside of the combined COMNAP-IAATO fleet. One of those 3 ships, registered in the Marshall Islands, is understood to carry Heavy Grade Oil in the Antarctic Treaty Area.

Ballast Water

25. ATCM XXVIII (Cape Town – 2004) discussed the *possible introduction of non-native organisms into Antarctic waters through the discharge of ballast water* and *requested*

SCAR, with the support of other appropriate organisations, to investigate the environmental and technical issues associated with the question of ballast water.

26. COMNAP, through its Working Group on Ship Operations (SHIPOPS), and the International Association of Antarctica Tour Operators (IAATO) conducted a survey on the ballast water practices in the Antarctic Treaty area of ships currently operated or chartered by their members. The two organisations prepared a technical note including results of the survey and some relevant information on technical issues associated with ballast water and provided this note to SCAR in support of their ongoing work on the issue.

27. The survey captured the practices of 40 of the 72 vessels of the combined COMNAP-IAATO fleet and the results are deemed representative of current practices. Of those 40 vessels:

- 35 vessels (87.5%) do not discharge any ballast water in the Treaty area;
- 3 vessels (7.5%) do not discharge any ballast water brought from outside the Treaty area; and
- 2 vessels (5%) only exchange ballast water in the open ocean;

State of the Antarctic Environment Reporting

28. The COMNAP Secretariat participated to the work of the intersessional contact group (ICG) on State of the Antarctic Environment Reporting (SAER). While it did not feel qualified to discuss the validity or merit of various indicators, it is committed to assist to the maximum extent possible in facilitating the provision of operational information. COMNAP is currently re-designing and developing its information systems, including data collection and aggregation. This is done with the SAER and the ATS Exchange of Information requirements in mind and COMNAP is committed to finding ways to provide the required operational information in an efficient, timely and reliable manner.

Review of the Process for Exchange of Information

29. The COMNAP Secretariat participated to the work of the ICG on the Review of the Process for Exchange of Information. COMNAP welcomes the positive, pragmatic approach of the ICG members and supports their recommendation of the development of an electronic Antarctic Treaty Information Exchange (ATIE) system as described in Working Paper ATCMXXVIII-WP029. Such a system should become an invaluable tool to provide the ATCM and other stakeholders with quality, timely information in support of the Antarctic Treaty System.

30. COMNAP is committed to liaising with the Antarctic Treaty Secretariat to assist in such development as appropriate, and to designing its own systems so that they can interface with the new ATIE system in a way that will benefit both COMNAP members and the ATCM.

Collaboration with the Antarctic Treaty Secretariat

31. COMNAP has established through its secretariat a good working relationship with the Antarctic Treaty Secretariat and the COMNAP Executive Secretary took advantage of a meeting in South-America to visit the Treaty Secretariat in Buenos-Aires in October 2004. This was the occasion of productive meetings on how both secretariats could work together with specific sessions addressing the issues of the State of the Antarctic Environment and the Antarctic Treaty Information Exchange under Resolution 6 (2001).

32. COMNAP looks forward to its secretariat developing a long-standing, productive relationship with the Treaty Secretariat, when and as appropriate, to better support their respective memberships and the Antarctic Treaty System.

Support of the International Polar Year (IPY) 2007-2008

33. As requested by ATCM Resolution 2 (2003) COMNAP has engaged in the preparation of the forthcoming International Polar Year (2007-2008). It has created an IPY Coordinating Group (IPYCG) that coordinates COMNAP's involvement in IPY preparations and maintains contact with the main stakeholders, including members of the International Council of Scientific Unions (ICSU) IPY Planning Group, officials of the World Meteorological Organization (WMO) and members of the Scientific Committee on Antarctic Research (SCAR), the International Arctic Science Committee (IASC) and the Forum of Arctic Research Operators (FARO).
34. The COMNAP focus up to now has been primarily to develop full awareness amongst National Programs of planning efforts underway in the science community while conveying to the science community the support potentially available from the National Programs for their projects, including planning requirements and both logistical and time constraints.
35. As part of this last effort, COMNAP has conducted through IPYCG an assessment on the availability of ship support during the IPY. The survey gives an overview of plans and options regarding ship transports and ship based research in the Antarctic area during the IPY period (2 winter and 2 summer seasons), as well as a picture of in which sectors the ships are expected to operate. COMNAP Working Group on Air Operations (AIROPS) is also in the process of completing a similar assessment on the availability of aircraft support.
36. While some deadlines for support proposals for that period have already passed, COMNAP and IPYCG will endeavour to work with all stakeholders on finding the best ways the National Programs can work together to support IPY core projects once they have been fully identified and developed.
37. COMNAP will include in its upcoming annual meeting COMNAP XVII, July 2005, two major sessions focused on the IPY: a one-day workshop on Education, Outreach and Communication (EOC) organised by COMNAP Information Officers Network INFONET and a half-day COMNAP plenary session dedicated to the IPY organised by IPYCG.
38. The EOC workshop will be a small, focused interactive workshop that will explore EOC opportunities in relation to the IPY and identify if and how COMNAP can and should engage in IPY EOC activities.
39. The COMNAP IPY plenary session will provide a forum for National Programs to discuss their IPY plans and work together on how to coordinate their activities and operational capabilities to better support IPY projects.
40. In that respect, it is worth noting that a number of COMNAP groups are currently working in parallel, as part of their routine activities, on some very practical issues with potential tangible benefits for the IPY, as illustrated by the two following examples. COMNAP Medical Officers Network, MEDINET is working on common standards for medical screening for the interchange of personnel between National Programs. SCALOP organised in July 2004 its biennial Symposium on Antarctic Logistics and Operations on the theme "towards the International Polar Year and beyond".

OTHER COMNAP TASKS AND ACTIVITIES

COMNAP Meetings and Events

41. 'COMNAP XVI', the 2004 annual general meeting, was held in Bremen, Germany, from 25 to 30 July 2004. It was hosted by the COMNAP member for Germany, the Alfred Wegener

Institute, in conjunction with SCAR's bi-annual meeting 'SCAR XXVIII'. In addition to two full days of plenary sessions and parallel meetings of all groups, the 2004 annual general meeting included (1) a half-day workshop on energy management, (2) a series of meetings to discuss preparations for the International Polar Year (IPY), addressing both collaboration with the IPY organising committee and SCAR and collaboration between national programs to support IPY projects and (3) a joint meeting of the COMNAP and SCAR Executives.

42. COMNAP XVI included a Symposium on Antarctic Logistics and Operations on the theme "towards the International Polar Year and beyond". The main topics addressed in the symposium were:
    - new transportation technologies and applications;
    - technology to enable science;
    - technology to reduce environmental impact;
    - ergonomic issues related to polar work;
    - latest developments in energy storage.

43. A number of intersessional meetings were held, including (1) a meeting of those COMNAP members attending the 2004 ATCM in Cape Town, South-Africa, in June 2004 and (2) a two-day meeting of the COMNAP Executive Committee in Punta Arenas, Chile, in October 2004 to finalise the conclusions and results of the 2004 annual general meeting and the work plan for 2004/2005.

44. A number of COMNAP group officers ended their term at the meeting. Chair of the Working Group on Air Operations (AIROPS) John Pye of the UK National Program was succeeded by Valery Klokov of the Russian Program. Chair of the Working Group on Ship Operations (SHIPOPS) Hartwig Gernandt of the German Program was succeeded by Manuel Catalan of the Spanish Program. Coordinator of the Information Officers Network Luciano Blasi of the Italian Program was succeeded by Jan Stel of the Dutch Program. Coordinator of the Training Officers Network (TRAINET) Richard Mulligan of the Australian Program was succeeded by Patricio Eberhard of the Chilean Program. Member representatives on the Executive Committee Okitsugu Watanabe of the Japanese Program and Gérard Jugie of the French Program were succeeded by Yeadong Kim of the Korean Program and Henry Valentine of the South African Program. COMNAP Chair Karl Erb of the US Program was succeeded by Gérard Jugie of the French Program.

45. Later in the year, Coordinator of the Antarctic Environmental Officers Network (AEON) Shaun Walsh of the Australian Program was succeeded by Rebecca Roper-Gee of the New Zealand Program.

46. 'COMNAP XVII', the 2005 annual general meeting, will be held from 12 to 15 July 2005 in Sofia, Bulgaria. Hosted by the COMNAP member for Bulgaria, the Bulgarian Antarctic Institute, the meeting is scheduled to also include (1) a workshop of the Medical Officers Network MEDINET, (2) a workshop of the Information Officers Network INFONET, (3) a number of specific sessions on preparations for and support of the IPY and (4) a joint meeting of the COMNAP and SCAR Executives.

Operational Publications

47. COMNAP publishes a number of operational publications in support of Antarctic operations, in particular in support of safety and best environmental practice. In June 2005 was published *Practical Guidelines for Developing and Designing an Environmental Monitoring Programme in Antarctica*, the result of considerable work by COMNAP's Antarctic Environmental Officers Network (AEON). This publication is available for download from

the public access of the COMNAP web site where latest versions of most COMNAP publications can be found.

48. COMNAP publishes and regularly updates the *Antarctic Flight Information Manual (AFIM)* which contains exhaustive information on Antarctic airfields and on procedures to contact and access these airfields. It covers airfields operated by both National Programs and private operators affiliated with the International Association of Antarctica Tour Operators (IAATO). The manual is published as a tool towards safe air operations in Antarctica as per ATCM Recommendation XV-20 and as such is provided by the COMNAP Secretariat to all organisations or individuals requesting a copy, for a nominal fee destined to assist with printing costs and with the significant cost of the manual's ongoing maintenance.

49. To address a number of concerns about recent unannounced and unauthorised access to Antarctica by air, COMNAP inserted a new preamble in the last AFIM update, released in January 2005. Prepared in consultation with the Antarctic Treaty Secretariat, the preamble is intended to clarify conditions of access to Antarctica including the existence of various legal instruments and authorisation procedures adopted by the states party to the Antarctic Treaty.

50. Most COMNAP publications are intended for as wide a distribution as possible to contribute to operational safety and best practice in the Antarctic. Most of these publications are made available free of charge, unrestricted download from the COMNAP web site and we are looking at other ways of facilitating and promoting the distribution and use of these publications. This may include releasing publications under alternative licences such as Creative Commons licences which facilitate and promote redistribution and reuse of the publications content. A possible licence would be the Creative Commons Attribution Share-Alike 2.0 licence (see *http://creativecommons.org/licences/by-sa/2.0*).

General Information Publications

51. COMNAP is also publishing some general interest information about its activities, installations and logistics and its place in the Antarctic Treaty System. It currently includes:

- a brochure, available in the four official Antarctic Treaty languages;
- a range of online information accessible on the COMNAP web site.

This should be progressively integrated and synchronised with the various exchange of information and reporting requirements of the Antarctic Treaty

- a 'COMNAP Book' on National Programs.

Initially published in 2003 with the support of the French National Program, this book provided information on a large number of National Programs and the locations they were operating from. It is intended to become a 'living book' with regular updates and the availability of online versions;

- a soon-to-be-released map of the Antarctic showing all year-round stations operated by National Programs in the Antarctic Treaty Area.

It includes tabular information on stations including geographic coordinates, year of opening, average winter and peak summer population as well as tabular information on membership of the various organisations of the Antarctic Treaty System. Low resolution elements of this map are used in Appendix 2.

Hydrographic Committee on Antarctica

52. The International Hydrographic Organisation (IHO) Hydrographic Committee on Antarctica (HCA) is *responsible for hydrographic surveying and nautical charting matters in International Region M*, the Antarctic Treaty Area. Membership *is open to any IHO Member State whose government has acceded to the Antarctic Treaty and which contributes resources and/or data to IHO INT chart coverage of Region M*. Observer status is open amongst others to *any national or international organisation, and to individual experts, having professional involvement in hydrographic surveying or nautical charting in Region M either by contributing to those activities, or by providing support to those activities, or as users of derived products*. COMNAP, along with IAATO and SCAR, has observer status at the HCA.

53. The work and objectives of the HCA are very much in line with COMNAP's efforts on improving the effectiveness and safety of operations in Antarctica and the chair of COMNAP Working Group on Ship Operations (SHIPOPS) participated to the 2004 meeting of HCA to work on how COMNAP could best contribute to the HCA.

54. COMNAP and IAATO members currently operate in the Antarctic Treaty area a combined fleet of 72 ships, with 39 ships for National Programs and 33 for IAATO members. This is certainly the bulk of the ships operating in the Antarctic Treaty area with only 5 other ships known to operate in that area. COMNAP will continue to work with the HCA and IAATO to see how ships of their fleet can be best used on a 'ships of opportunity' basis to support the needs for surveying, charting and establishing terrestrial Aids to Navigation (AtNs).

Ongoing Surveys

55. COMNAP is regularly conducting a number of surveys amongst its members, generally focused on specific needs relevant to the work of one of COMNAP groups. It generally includes one-off surveys such as the recent surveys on ship fuel and ballast water practices and ongoing surveys updated on an annual cycle such as the surveys on station energy use and on the interactions between National Programs and non-government activities.

56. Work is currently under way to integrate those surveys into an efficient, unified survey management system for collecting and updating survey information. This is intended to not only make the survey process much more structured and efficient but also maximise the use and reuse of data for a range of applications, avoid duplication and inconsistencies and allow automated or semi-automated aggregation of data, including data from separate surveys.

57. It is worth noting that the survey management system could also end-up exchanging selected, appropriate fields of information with any electronic information exchange system set-up by the Antarctic Treaty Secretariat in support of information exchange under Resolution 6 (2001), as well as providing aggregate indicator information to the State of the Antarctic Environment Reporting (SAER) system.

58. Due to time and resource constraints, development of the new survey management system delayed the annual updates of the surveys on energy and on interaction with non-government activities. These updates will be completed as soon as practical using the new system and the results will be provided to upcoming Treaty meetings.

IT Support Infrastructure

59. COMNAP has engaged in a comprehensive review and re-development of its IT support infrastructure, the guiding principles being to:

- simplify and reduce the amount of time and resources required from members to participate in COMNAP group activities and to report information required by COMNAP or the Antarctic Treaty System;
- maximise the use and reuse of information provided through the COMNAP system, by COMNAP, individual National Programs and, when and as appropriate, other organisations;
- provide tools that are consistent with and support COMNAP organisational structure, terms of reference and practical needs;
- support the creation of a comprehensive and useable 'corporate memory' archive repository, recognising that COMNAP's best and most fragile asset is constituted by individual members of the National Programs and their knowledge and experience;
- base the systems on open standards, open formats and robust open source software. It provides in the long term the best chance of successfully implementing, maintaining and further developing a useful system for COMNAP able to exchange data with the systems of other organisations. It will also make it possible for National Programs and other stakeholders to freely use parts or all of the tools developed without restrictions or ongoing licence fees, and modify them as needed. It is worth noting that the concept of 'open standards, open formats and open source software' is very much aligned with the values of the Antarctic Treaty System and there is probably great potential for both to effectively support each other.

60. As illustrated in a number of sections of the present report, this development of the IT support infrastructure has implications and potential for a number of COMNAP activities and missions, including interaction and collaboration with a number of stakeholders on projects such as the ATS Exchange of Information, the State of the Antarctic Environment Reporting, the work of the Hydrographic Committee on Antarctica and the support of the International Polar Year.

61. The first element of this new infrastructure is a group collaboration portal that will manage, structure and support the work of COMNAP's various groups while providing them with an archive repository of their resources, discussions and reports. It is currently under final testing and validation phase.

COMNAP Secretariat Operation

62. The COMNAP Secretariat operates from an office located in Hobart, Tasmania, Australia provided at no charge by the secretariat's supporting organisation, the Tasmanian State Government through its office of Antarctic affairs 'Antarctic Tasmania'. This invaluable support has now been provided since 1997 and the current support agreement runs until September 2009. The free support provided by Antarctic Tasmania includes a range of office equipment and administrative support, notably through accounting and auditing services. COMNAP is very thankful for Antarctic Tasmania's support which allows its secretariat to operate very efficiently in a quality, supportive environment.

63. The COMNAP Secretariat is in the process of consolidating all business systems and procedures to increase its capacity to support COMNAP effectively. This will provide further operational efficiencies and systems that are more scaleable and responsive to change. It does involve better structuring and documentation of processes to provide increased transparency and to facilitate possible changes in staff or office location. This is part of a larger overhaul of COMNAP's organisation and work processes. Ultimately, the objective is to put COMNAP in a better position to serve its members and the Antarctic Treaty System

by integrating into its operations the latest standards of corporate governance and management.

64. A simple, recent example is the complete overhaul of COMNAP's budgeting and accounting procedures. These now follow the latest international accounting principles and account structures and moved from a January-December budgeting and reporting period to a July-June period better aligned with the annual work cycle of COMNAP and its groups. The new procedures are more portable, more transparent, more scaleable and allow for a streamlined budgeting-reporting-auditing process.

Member Participation and Capacity Building

65. COMNAP is exploring and about to trial a number of ways to facilitate member participation in meetings and intersessional group work, especially for members that do not routinely use English as a working language. COMNAP cannot properly achieve its goals if a number of members cannot adequately participate to the debates and contribute their valuable skills, experience and views. A number of new meeting procedures will be trialled at the upcoming annual meeting COMNAP XVII in Sofia, intended to provide more visual and printed material, longer in advance. The new IT support infrastructure will provide more intuitive user interfaces relying more on clear, logical workflow and on graphics and less on detailed wording. A multilingual interface may be considered for a number of important tools when made possible and practical by the platforms used. The platform used for the new group collaboration portal already includes natively an extensive multi-lingual and multi-alphabet capability.

66. Capacity building between National Programs is already implicit within COMNAP objectives and terms of reference and is embedded in the structure and procedures of the organisation. Increased member participation as described above will also contribute to improve capacity building, as will the new IT support infrastructure. This capacity building is naturally focused on increasing each program's ability to manage and carry-out their operations, ultimately to the benefit of all stakeholders that rely on these Antarctic operations for any of their activities.

Appendix 1

COMNAP Groups

Terms of Reference (TORs), Tasks and Membership ("Groups" include Committees, Working Groups, Coordinating Groups and Networks) as at 07 May 2005.

Notes: Tasks indicated are tasks for the period July-2004 to June-2005, that is between the 2004 annual meeting COMNAP XVI to the 2005 annual meeting COMNAP XVII. Some of these tasks may have been completed already. The origin shown is the 2-letter ISO 3166-1-alpha-2 country code of the National Antarctic Program that person is affiliated with.

COMMITTEES

<table>
<tr><th colspan="3">Executive Committee (EXCOM)</th></tr>
<tr><th>Name (Function) Term</th><th>Origin</th><th>Group Role, Terms of Reference (TORs), Tasks</th></tr>
<tr><td>Gérard Jugie (Chair)
Chair 08-2004 to 07-2007</td><td>FR</td><td rowspan="8">EXCOM is responsible for COMNAP matters between Council meetings that are chaired by the Council Chairperson.

The Committee has a membership comprising
• the Council Chairperson ('Chair'),
• three COMNAP representatives ('Rep'),
• the SCALOP Chairperson ('SCALOP Chair') and
• the Executive Secretary ('Exec Sec').

In addition, the retiring council chairperson ('Past Chair') remains on the Committee for one year following his/her retirement. The term of COMNAP members on the Committee is three years.

The Executive Secretary is secretary to both COMNAP and EXCOM and is a non-voting member of EXCOM.</td></tr>
<tr><td>Jorge Berguño (Rep)
Rep 08-2003 to 07-2006</td><td>CL</td></tr>
<tr><td>Yeadong Kim (Rep)
Rep 08-2004 to 07-2007</td><td>KR</td></tr>
<tr><td>Henry Valentine(Rep)
Rep 08-2004 to 07-2007</td><td>ZA</td></tr>
<tr><td>Karl Erb (Past Chair)
Past Chair 08-2004 to 07-2005</td><td>US</td></tr>
<tr><td>Kim Pitt (Acting SCALOP Chair)
Acting SCALOP Chair to 07-2005</td><td>AU</td></tr>
<tr><td>Non-voting member:</td><td></td></tr>
<tr><td>Antoine Guichard (Exec Sec)
Exec Sec 10-2003 to 09-2009</td><td>n/a</td></tr>
</table>

Standing Committee on Antarctic Logistics and Operations (SCALOP)		
Kim Pitt (Acting Chair) *Acting Chair to 07-2005*	AU	**TORs** • Provide COMNAP with technical advice on Antarctic logistics and operations; • Investigate and, where necessary, arrange for research on operational problems identified by COMNAP and its working groups, and • Address technical and operational matters of mutual interest to other national operators. • On behalf of COMNAP – monitor, review, report and advise on AINMR **Tasks** • Establish an AINMR standard reporting format for the web site. • Conduct inter-sessional work for possible further discussion at COMNAP XVII on: (1) what are the opportunities for SCALOP to capitalize on the theme of the Bremen symposium to work at the direction of COMNAP on IPY matters and to proactively seek ways to assist and advise (2) where do we want SCALOP to be in ten years time? What would the membership wish SCALOP to have achieved by 2015? (3) is there potential for IPY exchange of operations and logistic personnel?
Membership of SCALOP comprises the director/manager of logistics and operations of each National Antarctic Program.		

Joint SCAR-COMNAP Steering Committee for Antarctic Data Management (STADM)		
TBA (SCAR) (Chair)	n/a	**TORs (under review)** • Oversee the work of the Joint Committee on Antarctic Data Management (JCADM) to ensure that the Antarctic Master Directory (AMD) will meet the needs of the scientific community and is progressively achieving increased utilisation. • Evaluate reports on the development of the AMD (providing feedback to JCADM) and advise the SCAR/COMNAP executive committees on whether to make payments to the Global Change Master Directory (GCMD) according to their delivery against JCADM requirements. **Tasks (under consideration)** • Evaluate extent to which JCADM addresses IPY data management needs.
TBA (SCAR)	n/a	
Anders Karlqvist (COMNAP) *to 07-2005*	SE	
Ex-officio guest(s) to parts of the Committee's meetings:		
Taco de Bruin (JCADM Chief Officer)	n/a	

WORKING GROUPS

Working Group on Air Operations (AIROPS)		
Valery Klokov (Chair) *Chair 08-2004 to 07-2007*	RU	**TORs** • Continue implementation of ATCM Recommendation XV-20 of 1989. • Maintain the AFIM with timely distribution of amendments. • Share and discuss operational experience and information on new technology related to Antarctic air operations and associated communication, navigation, the avoidance of mutual interference, and contingency response. • Review the air transport aspects of international cooperation in Antarctic science and support. • Continue to review developments in the use of existing or additional air links, and the use of blue ice or compacted snow landing sites. **Tasks** • Investigate member policies on airfield access.
Alejandro Roberto Vergara	AR	
Kim Pitt	AU	
Jose Fernandes Nunes	BR	
Jose I Cardosa	BR	
Luiz A Iozzi da Silva	BR	
Leopoldo Moya	CL	
Carlos S Piuo	CL	
Jun Wu	CN	
Hartwig Gernandt	DE	
Henrik Sandler	FI	
Patrice Godon	FR	
Bhaskara Rao	IN	
Nino Cucinotta	IT	
Kazuyuki Shiraishi	JP	
Dong-Yup Kim	KR	
John Guldahl	NO	
Julian Tangaere	NZ	
Jorge Kisic	PE	
Magnus Augner	SE	
John Pye	UK	
Erick Chiang	US	
Bernabe Gadea	UY	
Richard Skinner	ZA	

Working Group to Monitor the Liability Annex (MOLIBA)		
John Dudeney (Chair) *Chair to 07-2005*	UK	**TORs** • Respond to questions from the ATCM relating to liability that lie within COMNAP's competence • Provide comments to the ATCM on issues relating to liability where COMNAP has expertise.
Mariano Arnaldo Memolli	AR	
Jose Iran Cardosa	BR	
Shijie Xu	CN	
Hartwig Gernandt	DE	
Hannu Gronvall	FI	
Prem Pandey	IN	
Valery Lukin	RU	
Erick Chiang	US	

Working Group on Ship Operations (SHIPOPS)		
Manuel Catalan (Chair) *Chair 08-2004 to 07-2007*		**TORs** • Give consideration to, and make recommendations on, further developments as well as promote the introduction of appropriate information on shipping in Antarctic waters. • Assess and evaluate relevant recommendations and measures of maritime and other organizations as well as provide input and, if necessary, take part at relevant meetings **Tasks** • Survey members on the use of heavy fuels and the release (and taking on) of ballast water in the Southern Ocean • Develop a paper on the heavy fuel issue for submission to ATCM XXVIII. • Develop a short briefing on the ballast water issue and forward to SCAR for inclusion in their paper to ATCM XXVIII. • Answer the International Hydrographic Organisation (IHO)'s Hydrographic Committee on Antarctica (HCA) questionnaire and participate through the SHIPOPS Chair in the 4th HCA meeting • Interact with COMNAP Secretary to improve the Ship Position Reporting System (SPRS). • Continue to monitor the SPRS.
Ricardo Oyarbide	AR	
Kim Pitt	AU	
Jose Iran Cardosa	BR	
Jorge Berguño	CL	
Jun Wu	CN	
Hartwig Gernandt	DE	
Rafael Cabello Peñafiel	EC	
Jose Diaz	ES	
Henrick Sandler	FI	
Patrice Godon	FR	
Nino Cucinotta	IT	
John Guldahl	NO	
John Pye	UK	
Erick Chiang	US	
Carlos Tenaglia	UY	
Richard Skinner	ZA	

Symposium Working Group (SYMP)		
Kim Pitt (Chair) *Chair08-2004 to 07-2006*		**TORs** • Review the previous Symposium on Antarctic Logistics and Operations and develop plans for the next event. **Tasks** • Liaise with organisers of the Bremen symposium about publication of the symposium's proceedings.
Patricio Eberhard	CL	
Harwig Gernandt	DE	
Patrice Godon	FR	
P C Pandey	IN	
Kazuyuki Shiraishi	JP	
Jan Stel	NL	
Julian Tangaere	NZ	
Valery Klokov	RU	
John Pye	UK	
Erick Chiang	US	

Working Group on Tourism and NGOs (TANGO)		
Olav Orheim (Chair) *Chair to 07-2006*	NO	**TORs** • Review activities of common concern to national operators including non-IAATO operations and adventure tourism activities. **Tasks** • Survey members to gather statistics and other information on the interaction between national operators and tourist activities.
Tony Press	AU	
Patricio Eberhard	CL	
Genzheng Jia	CN	
Heinz Miller	DE	
Manuel Catalan	ES	
Prem Pandey	IN	
Jan Stel	NL	
Lou Sanson	NZ	
Valery Lukin	RU	
Anders Karlqvist	SE	
John Pye	UK	

COORDINATING GROUPS

Coordinating Group on Education and Training (CEDAT)		
Lou Sanson (Acting Chair) *Acting Chair to 07-2005*	NZ	**TORs** • Guide and coordinate the progress of the Information and Training networks and report to COMNAP on the activities of the networks at its annual meeting, and inter-sessionally should the need arise. • Guide and support, as needed, the development of the networks and review the terms of reference each year.
Ex-officio guest(s) to parts of the Coordinating Group's meetings:		
Patricio Eberhard (TRAINET Coordinator - *to 07-2007*)	CL	
Jan Stel (INFONET Coordinator - *to 07-2007*)	NL	

Coordinating Group on Energy Management (CENMAN)		
David Blake (Chair) *Chair 08-2003 to 07-2006*	UK	**TORs** • Develop goals and provide guidance on the development of energy management practices with a view to reducing environmental impacts and reliance on fossil fuels. • Monitor the progress of the Energy Management Network (ENMANET) and report to COMNAP on the activities of the network at its annual meeting, and inter-sessionally should the need arise; and • Review the terms of reference and tasks each year. **Tasks** • Identify high priority technology issues beyond energy management that COMNAP should study.
Patrice Godon	FR	
Julian Tangaere	NZ	
Ex-officio guest(s) to parts of the Coordinating Group's meetings:		
Chris Paterson (ENMANET Coordinator - *to 07-2006*)	AU	

Medical Coordinating Group (COMED)		
Gérard Jugie (Acting Chair) *Acting Chair to 07-2005*		**TORs** • Task and oversee the work of Medical Network (MEDINET) • Report to COMNAP on the activities of the network at its annual meeting. • Review the terms of reference and tasks each year.
Kim Pitt	AU	
Erick Chiang	US	
Ex-officio guest(s) to parts of the Coordinating Group's meetings:		
Claude Bachelard (MEDINET Coordinator - *to 07-2006*)	FR	

Environmental Coordinating Group (ECG)		
Lou Sanson (Chair) *Chair08-2003 to 07-2006*	NZ	**TORs** • Provide liaison between COMNAP/SCALOP and the Antarctic Environmental Officers Network (AEON). • Direct the development and preparation of responses to COMNAP requests with copies of all charges to AEON to be sent electronically to all MNAPs.. • Report to COMNAP on the activities of the network at the annual meeting, and inter-sessionally, as issues arise. • Develop methods for coordination of monitoring activities to avoid wasteful duplication and ensure effective use of resources. **Tasks** • Assist AEON with the revision of the Practical Guidelines on Environmental Monitoring. • Provide liaison between COMNAP and the organisers of the Biological Monitoring Workshop • Coordinate preparations of a an information paper reporting on the Biological Monitoring Workshop to ATCMXXVIII or ATCMXXIX.
Tony Press	AU	
Heinz Miller	DE	
Henry Valentine	ZA	
Ex-officio guest(s) to parts of the Coordinating Group's meetings:		
Rebecca Roper-Gee (AEON Coordinator – *to 07-2008*)	NZ	

IPY Coordinating Group (IPYCG)		
Anders Karlqvist (Chair) *Chair to 07-2007*	SE	**TORs** • Encourage multi-national logistical partnerships and the integration of technological developments to advance the scientific goals established for IPY • Track progress by the virtual IPY Network (IPYNET), consisting of all members of the AMEN list, in developing new or strengthening existing partnerships or in advancing technological developments in furtherance of IPY goals • Review the IPYCG terms of reference at each annual meeting. **Tasks** • Develop a draft report on the above activities for consideration by EXCOM and the COMNAP membership, for eventual submission to ATCM XXVIII. • Report to COMNAP at COMNAP XVII in Sofia.
Patricio Eberhard	CL	
Yaedong Kim	KR	
Valery Lukin	RU	
Henry Valentine	ZA	

NETWORKS

Antarctic Environment Officers Network (AEON)		
Rebecca Roper-Gee (Coordinator) *Coordinator to 07-2008*	NZ	**TORs** • Exchange information and ideas about practical and technical environmental issues on Antarctica. • Promote mutual understanding among Network members on the practical application of the Environmental Protocol to national programs. • Respond to requests from COMNAP for advice on environmental issues. **Tasks** • Complete the revision of the Practical Guidelines on Environmental Monitoring that will be submitted to CEP VIII.
Rodolfo Sánchez	AR	
Nesho Chipev	BG	
Maaike Vancauwenberghe	BE	
Tania Brito	BR	
Olav Loken	CA	
Patricio Eberhard	CL	
Wang Yong	CN	
Joachim Ploetz	DE	
Jose Moran	EC	
Javier Martinez Aranzaba	ES	
Mika Kalakoski	FI	
Yves Frenot	FR	
Prem Pandey	IN	
Sandro Torcini	IT	
Kenji Ishizawa	JP	
In-Young Ahn	KR	
Karen Kooi-de Bruyne	NL	
Birgit Njaastad	NO	
Stanislaw Rakusa-Suszczewski	PL	
Victor Pomelov	RU	
Johan Sidenmark	SE	
Sveta Kovalyonok	UA	
Rod Downie	UK	
Aldo Felici	UY	
Henry Valentine	ZA	

Energy Management Network (ENMANET)		

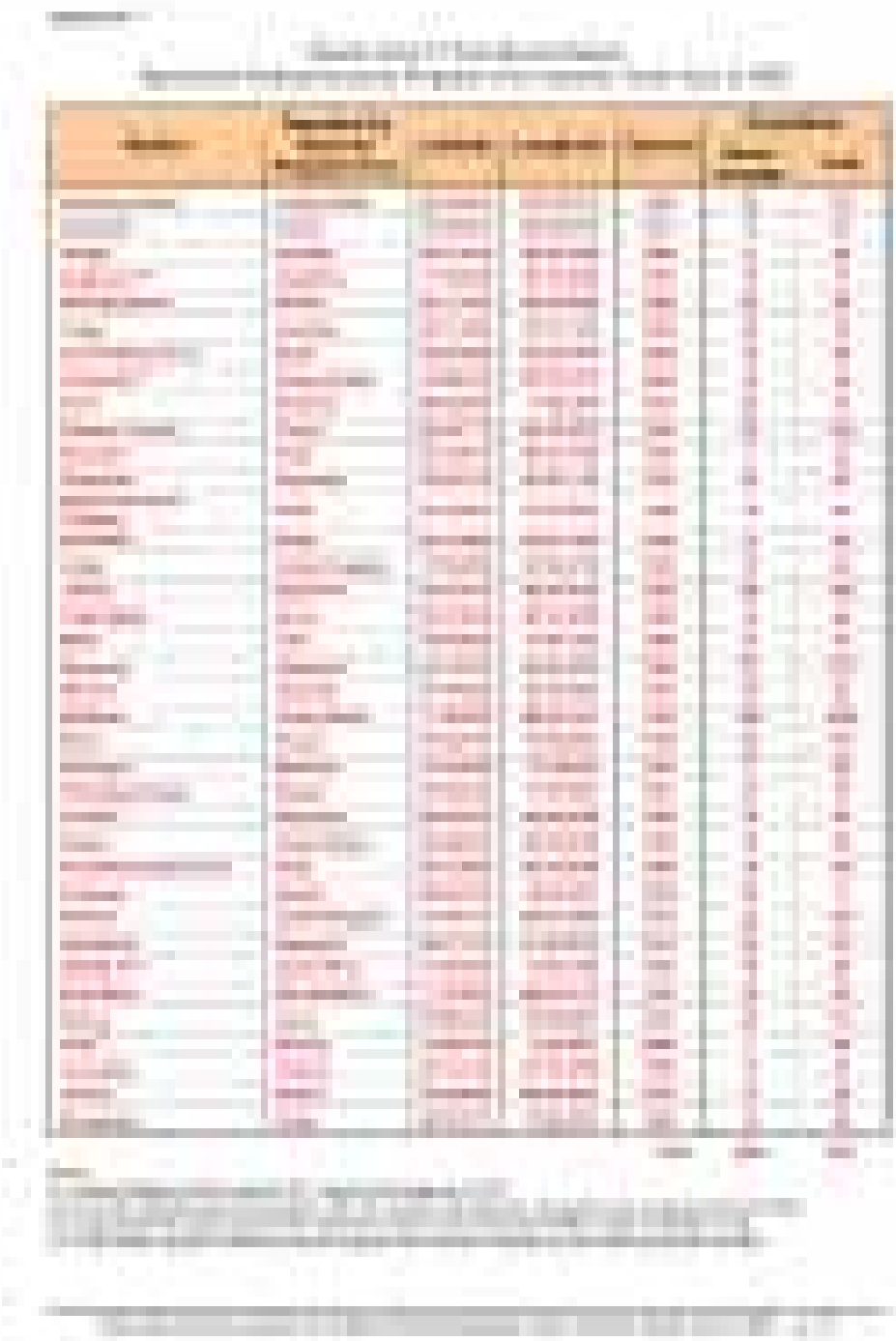
Chris Paterson (Coordinator)
Coordinator to 07-2006
	AU	**TORs**
		• Determine the extent to which national Antarctic programs effectively utilise energy management and conservation processes. This includes the employment of both conventional and alternative energy technologies. Specifically the working group shall examine:
		  • the type of systems employed;
		  • the maximum and average power output of the systems;
		  • the capital and operating costs; and
		  • problems encountered in operation, if any.
		• Facilitate the exchange of operating experience and encourage cooperative projects in energy management; identify other technical areas meriting attention.

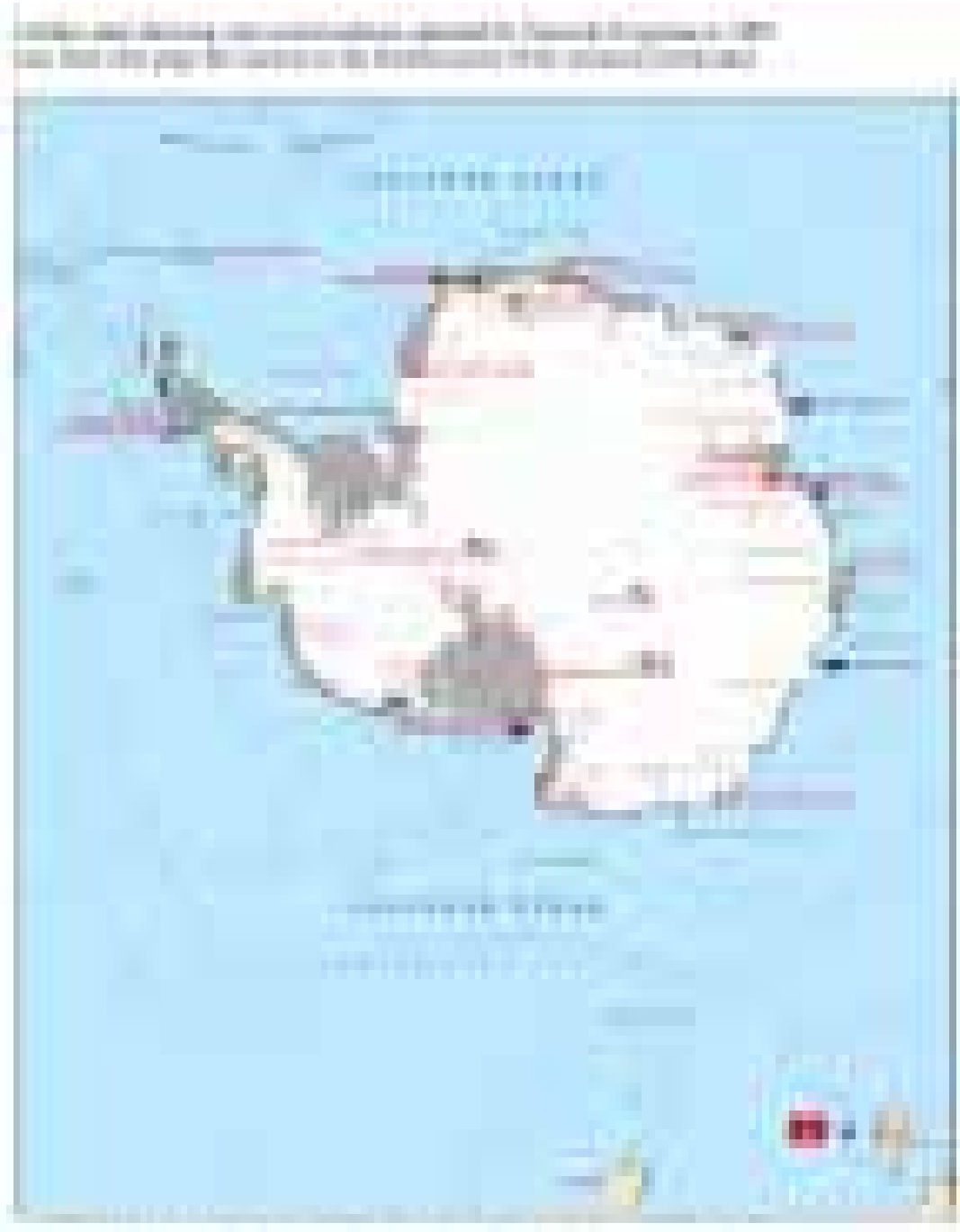
Luis Eduardo Lopez	AR	
David Domenech	CL	
Saad El Naggar	DE	
Jordi Sorribas	ES	
Henrik Sandler	FI	
Alain Pierre	FR	
TVP Bhaskara Rao	IN	
Camillo Calvaresi	IT	
Kenji Ishizawa	JP	
Peter Brookman	NZ	
Fernando Jiminez	PE	
Ulf Hedman	SE	
Daniel Ressia	UY	
Henry Valentine	ZA	

Antarctic Information Officers Network (INFONET)		
Jan Stel (Coordinator) *Coordinator to 07-2007*	NL	**TORs** • Exchange information and experience on information and education programs. • Promote initiatives between NAPs in order to develop and facilitate closer cooperation.
Sergio Policastro	AR	
Jose Iran Cardosa	BR	
Bonni Hrycyk	CA	
Patricio Eberhard	CL	
Shijie Xu	CN	
Macarete Pauls	DE	
Manuel Catalán	ES	
Henrik Sandler	FI	
Yves Frenot	FR	
Prem Pandey	IN	
Nino Cucinotta	IT	
Kazuyuki Shiraishi	JP	
Younho Lee	KR	
John Guldahl	NO	
Emma Reid	NZ	
Stanislaw Rakusa-Suszczewski	PL	
Katarzyna Salwicka	PL	
Valery Lukin	RU	
Magnus Augner	SE	
Gennadi Milinevsky	UA	
Linda Capper	UK	
Bernabe Gadea	UY	
Henry Valentine	ZA	

Medical Network (MEDINET)		
Claude Bachelard (Coordinator) *Coordinator to 07-2006*	FR	**TORs** • Exchange information and experience on medical support in national Antarctic programs. • Promote initiatives between national Antarctic programs in order to develop and facilitate closer cooperation. • Respond to requests from COMNAP for advice on medical issues. **Tasks** 1. Prepare and disseminate a common format for the presentation of summer medical standards and medical information (This will include the categorisation of medical standards, for example by location, type of activity undertaken, duration, age of personnel). 2. Establish common standards for medical screening for the interchange of personnel between national programs. 3. Establish a database of current national program medical capabilities, including: - facilities and equipment; - staffing, level of skills and medical fitness requirements for medical personnel; and - formats for medical information for use in medivacs. 4. Consider baseline and standardised procedures on above capabilities. 5. Establish an anonymised database of medical events. 6. Share medical aspects of "Major Incident Plans". 7. Develop guidelines for management of altitude sickness prevention and treatment in Antarctica.
Sergio Mendes Garrido	AR	
Jeff Ayton	AU	
Maaike Vancauwenberghe	BE	
Nestor Miranda	BR	
Francisco Junior	BR	
Peng Xie	CN	
Antonio Bendala Ayuso	ES	
Veikko Kujala	FI	
Eberhard Kohlberg	DE	
Fabio Catalano	IT	
Yusei Ikeda Haruo Mikami	JP	
Daison Kim	KR	
Jonathan Pascoe	NZ	
John Guldahl	NO	
Arturo Villena	PE	
Lui Cloque Pacheco	PE	
Gennady Gorbunov	RU	
Krister Eklad	SE	
Moisejenko Yevgen	UA	
Iain Grant	UK	
Roberto Lagomar-Sino	UY	
L J Smith	ZA	

Training Network (TRAINET)		
Patricio Eberhard (Coordinator) *Coordinator to 07-2007*	CL	**TORs** • Exchange information and experience on training programs including manuals, techniques, procedures and training aids; and • Promote initiatives between national programs in order to develop and facilitate closer cooperation.
Richard Mulligan	AU	
Victor Figueroa	AR	
Jose Iran Cardoso	BR	
Bonni Hrycyk	CA	
Wang Yong	CN	
Hartwig Gernandt	DE	
Manuel Catalan	ES	
Mika Kalakoski	FI	
Prem Pandey	IN	
Costanza Pagni	IT	
Jan Stel	NL	
Julian Tangaere	NZ	
John Guldahl	NO	
Victor Pomelov	RU	
Simon Gill	UK	
Brian Stone	US	
Albert Lluberas	UY	
Richard Skinner	ZA	





ANNEX G

REPORTS PURSUANT TO ARTICLE III-2 OF THE ANTARCTIC TREATY

Report of the Antarctic and Southern Ocean Coalition (ASOC)

ATCM XXVIII

I. Introduction

ASOC extends its formal thanks to the Government of Sweden for hosting this ATCM.

We look forward to this meeting adopting a new Annex to the Protocol setting out rules and procedures regarding emergency response action and liability for failing to do so, based on the fruitful intersessional meeting held last in New York in April, at which ASOC was pleased to participate. If concluded and adopted in Stockholm, this will be another historic milestone in the development of the Antarctic Treaty System (ATS).

ASOC calls upon all Parties, Observers and Experts at this XXVIII ATCM to rededicate themselves to ensuring comprehensive implementation of the Protocol, and concerted efforts to ensure the comprehensive protection of the entire Antarctic and Southern Ocean environment, as the common heritage of all humankind, by using all of the relevant structures and institutions of the ATS in a fully cooperative and synergistic way. In this context, it is exciting that CCAMLR is about to embark on a process of giving serious consideration to creating Marine Protected Areas. ASOC believes that there is a significant continuing role for the CEP, particularly in relation to use of Annex V of the Protocol, in those discussions over the next few years and hopes that useful working mechanisms to allow this will be elaborated.

II. ASOC Worldwide

- ASOC maintains a Secretariat in Washington DC, USA – and a global website *(http://www.asoc.org)*, which contains all ASOC papers produced in recent years, a list of staff and member groups, and links to many other relevant sites, including national programs and SCAR.
- A European branch of ASOC, Stichting Antarctica Network, was registered in The Netherlands in September 2004.
- ASOC campaigns are coordinated by a team of specialised representatives located in: Asia (Seoul, South Korea), Australia-New Zealand (Canberra, Australia), Europe (Amsterdam, The Netherlands), South America (Puerto Madryn, Argentina), and Southern Africa (Cape Town, South Africa).

III. ASOC Information Papers for XXVIII ATCM

In addition to this report, ASOC has tabled four Information Papers and is putting one forward jointly with UNEP:

1. A Note On The Vulnerability Of Cetaceans In Antarctic Waters To Noise Pollution (XXVIII ATCM /IP059)
2. Some Legal Issues Posed By Antarctic Tourism (XXVIII ATCM/IP071)
3. Development Pressures on the Antarctic Wilderness (XXVIII ATCM/IP074)

4. The Antarctic and Climate Change (XXVIII ATCM/IP104)
5. Antarctic tourism graphics - tabled jointly with UNEP - (XXVIII ATCM/IP?)

IV. Key Issues for XXVIII ATCM

1. Antarctic Tourism

ASOC is encouraged that regulation of tourism is now being given serious consideration. However, significant elements of commercial tourism – elements which we believe must be considered in any regulatory structure to be agreed by Parties – still require substantive discussion. These elements include strategic consideration of the overall scale and trajectory of commercial tourism in Antarctica, the acceptability of particular types of activity, and the risks posed to the stability of the Antarctic Treaty System as a result of some legal uncertainties surrounding these activities. We look to see the opening of discussion on at least some of these at XXVIII ATCM in Stockholm.

It is important that Parties take substantive steps over the next few ATCMs towards an appropriate legally-based regulatory structure for this burgeoning industry.

ASOC was pleased to participate in the useful ICG on accreditation led by the UK. Like many Parties, ASOC sees accreditation as a positive mechanism. However, we see it as merely one mechanism, and not a sufficient basis for the regulation of commercial tourism in Antarctica.

For this ATCM ASOC has tabled an Information Paper addressing some legal issues posed by tourism, including jurisdiction in relation to tourism operations, property rights, and usufructuary rights.

A second Information Paper, tabled jointly with UNEP, presents a series of maps that provide a geographic overview of Antarctic tourism. The maps show the distribution of tourism activities, including tourist numbers and activities, and the countries that are more involved in the tourism industry as sources of passengers, location of tourism companies, or where vessels engaged in Antarctic tourism are flagged.

2. Liability

Progress on the long-awaited Liability regime is essential. It is greatly encouraging that an Annex on Response Action and Liability for damage to the Antarctic environment may now be within grasp at this ATCM. ASOC commends Parties for their efforts, and thanks the chair of the Working Group, Mr. Don MacKay for his diligence in guiding this important work. We encourage Parties to complete and adopt this Annex via a Measure in Stockholm. This will be an historic step toward meeting the Parties legal obligations under Articles 15 and 16 of the Protocol. ASOC believes that there may need to be further coverage in order to meet all of the obligations of the Protocol, and accordingly we look forward to an appropriate “bridging” framework in this Annex which would leave open the possibility of future annexes.

3. Sustainable Environmental Management

Several initiatives underway address key mechanisms under the Protocol for the sustainable environmental management of Antarctica and its dependent and associated ecosystems, including a more effective and complete implementation of Annexes I and V of the Protocol. ASOC supports many of these initiatives and has actively contributed to some of them, as described below. However, we note that there are many challenges ahead and gaps still to cover, particularly concerning consistent implementation of the Protocol by all Parties, the protection of the Antarctic marine environment, and

the growing pressure of research and commercial activities on the Antarctic region, including in hitherto remote areas.

Since XXVII ATCM/CEP VII ASOC has participated in the Intersessional Contact Groups dealing with updating EIA guidelines for cumulative impacts and with environmental monitoring. ASOC is pleased with the depth of the discussion in these groups. However, there remain key issues that need addressing by the CEP in order to ensure a more effective assessment and monitoring of cumulative impacts. This may require establishing mechanisms for sharing of information among operators working in the same parts of Antarctica, including willingness to prepare joint or regional EIAs.

In addition, ASOC has contributed to the work of the international co-ordination group overseeing the German research project "Risk assessment for Fildes Peninsula and Ardley Island and the development of management plans for designation as Antarctic Specially Protected or Managed Areas". In this connection, ASOC has produced a compilation of observations made by ASOC-member Greenpeace at several sites on Fildes Peninsula between the late 1980s and the late 1990s. The resulting report, *Environmental Reports of Fildes Peninsula, 1988-1997: Benchmarks for Environmental Management*, is available on request.

ASOC hopes that the experience on Fildes Peninsula, where development pressures and the sprawl of research bases have resulted in significant environmental damage that quite possibly cannot be justified by the corresponding scientific output, will inform developments elsewhere in the Antarctic so that the errors of the past are not repeated again now that the Antarctic Environmental Protocol has entered into force. This is particularly relevant in view of the numerous infrastructure projects in Antarctica currently underway, as described in ASOC paper XXVIII ATCM/IP074, including those that may arise as a result of the forthcoming, and important, International Polar Year.

In this context, ASOC welcomes Sweden's call for a strategic discussion on future environmental challenges in Antarctica and its dependent and associated ecosystems. ASOC looks forwards to a suitable discussion of both generic and specific issues of sustainable environmental management under the Protocol during the meetings of the CEP and the ATCM.

4. Antarctic Subglacial Lake Exploration and Research

ASOC continues to encourage all Parties involved in subglacial lake exploration and research to adhere to the guiding principles of subglacial lake exploration enunciated at the SCAR/COMNAP Cambridge 1999 workshop and subsequently adopted by SCAR. These principles include that research should be internationally coordinated, multi- and interdisciplinary in scope, and that the design and execution of the program has non-contaminating techniques and minimum disturbance as fundamental considerations throughout the process.

In the particular case of Lake Vostok, ASOC submits that consideration should be given to at least a temporary designation as a 'protected area' under Annex V of the Protocol.

5. Biological Prospecting

ASOC looks forward to a robust discussion of Biological Prospecting in the Legal and Institutional Working Group and in the CEP. We urge that the Parties utilize the Precautionary Principle on this issue, and establish a formal mechanism for dealing with potential commercial bio-prospecting issues before conflict arises, including appropriate regulatory procedures.

6. International Polar Year 2007

ASOC looks forward to participating in the International Polar Year 2007-08. ASOC encourages all Antarctic Treaty states to ensure that the IPY 2007-2008 leaves a legacy of environmentally

responsible scientific practice that is compatible with the designation, objectives and principles of the Antarctic Treaty and its Environmental Protocol, and international sustainability principles.

V. Broader Antarctic Environmental Issues

1. Southern Ocean Fisheries

ASOC was again an active NGO Observer at XXIII CCAMLR, where it became apparent that the lack of adequate enforcement of conservation measures continues to be a serious challenge for CCAMLR. Illegal, Unregulated and Unreported (IUU) fishing for toothfish remains at unsustainable levels, including unregulated catches in Areas 47, 51 and 57, outside the Convention Area. Sightings over the last four months of several vessels not licensed to fish in the Convention Area, operating just outside CCAMLR waters, are a worrying signal that the unregulated plunder of toothfish stocks in the Southern Ocean continues, and that CCAMLR currently lacks the mechanisms to put an end to this situation.

ASOC welcomes the adoption, at XXIII CCAMLR, of a centralised Vessel Monitoring System (VMS). While this is an important step forward, currently VMS is only required within the Convention Area and not throughout the whole fishing trip, making it possible for vessels to avoid CCAMLR controls for an important part of their operations. Other important opportunities for strengthening CCAMLR enforcement were missed at CCAMLR XXIII, such as the adoption of an electronic Catch Documentation Scheme (eCDS). Although this system has been on successful trial for the two previous seasons, CCAMLR Members as a whole could still not agree to implement a compulsory eCDS for all toothfish shipments.

In addition to the measures outlined above, available mechanisms include cooperative use of satellite imagery in order to pinpoint and track IUU fishing vessels, coupled to vigorous use of enforcement vessels and various port-state enforcement options. DNA testing of toothfish imports by port state on a random basis is another tool that may be used to control illegal trade. Some CCAMLR Parties are already using some of these measures with good results, which proves that illegal toothfish fishing and trade can be eradicated if the political will exists to use the available technologies. ASOC urges this ATCM to send a strong signal that the Parties are prepared to take the necessary political steps to shut down the illegal pirate fishery within three years, by greatly increasing the cooperative use of enforcement assets available to the governments as a group.

ASOC has updated its IUU vessel 'Red List'[1] to continue assisting governments and interested parties in identifying and scrutinising vessels that may be involved in IUU fishing in the Southern Ocean.

Some important fisheries management decisions recently taken by the Commission are worryingly lacking the precautionary, ecosystem-based management approaches mandated by Article II of the Convention:

- At XXIII CCAMLR, the Scientific Committee was unable to provide scientific advice to the Commission in relation to the toothfish fishery in Area 48.3, and the catch limit finally established by the Commission was far from precautionary.
- Concerning Antarctic krill fishing, information tabled at XXIII CCAMLR clearly indicates that this fishery is subject to growing interest from an increasing number of states, and that new technologies are being used that could change the economics of the fishery in a very short time. The operations of a vessel flagged to a non-CCAMLR state raised concerns that this fishery, which is currently not subject to VMS or to CCAMLR's System of Scientific

Observation, might be attracting the attention of IUU operators. In spite of this, and of the fact that a rapid expansion of the krill fishery would have important adverse impacts on the Antarctic food chain, no progress was made at XXIII CCAMLR in tightening controls in relation to this fishery, nor in the subdivision of precautionary catch limits among Small Scale Management Units (SSMUs).

ASOC welcomes the progress made at XXIII CCAMLR towards establishing a CCAMLR strategy on Marine Protected Areas (MPAs). ASOC hope that the first MPA workshop will be convened before XXIV CCAMLR, and hopes that this workshop, unlike the recent CCAMLR Symposium in Valdivia (Chile), will be open to proposals and participation by experts from the broader scientific and NGO communities. ASOC would be pleased to participate in this meeting.

One of the greatest and most immediate threats presently facing the Antarctic environment – which the Protocol seeks to secure – is posed by unsustainable fishing in the Southern Ocean, particularly as a result of IUU operations. It is therefore both appropriate and necessary for the ATCM to seriously address the pressing need to adopt and implement an adequately controlled, precautionary management of Antarctica's marine resources, and for responses to be taken by ATCPs both jointly and at national levels. This includes the establishment of a representative network on MPAs in the Southern Ocean, a goal that is consistent with CCAMLR's conservation and management principles and with Annex V to the Madrid Protocol.

2. Agreement on the Conservation of Albatrosses and Petrels

ASOC participated at the first meeting of Parties to the Agreement on the Conservation of Albatrosses and Petrels (ACAP). ASOC encourages all ACAP Range States, particularly those who are also Parties to ATS treaties that have not yet ratified this agreement, to do so as soon as possible. At the same time ASOC also recommends that both the ATCM and CCAMLR propose concrete mechanisms for co-operation with the ACAP Secretariat.

3. Marine Acoustic Technology

At recent ATCM and CCAMLR meetings, ASOC has raised the issue of acoustic pollution in the Antarctic Treaty Area, and the potential impacts the technologies producing the noise has on the marine environment at all levels of the ecosystem. We have submitted a further Information Paper this year to provide Delegates with information on recent scientific, legal and political developments, as well as a short commentary and recommendations. We hope this could lead to agreement in CEP VIII on a first set of concrete recommendations to the ATCM to address acoustic pollution in the Southern Ocean and to minimize its impacts on the marine environment.

4. Revision of IUCN's Antarctic Conservation Strategy

ASOC was represented at the first meeting held by SCAR and IUCN to revise the IUCN Antarctic Conservation Strategy, in Stellenbosch, South Africa last month. This is an important exercise, given the unique role played by IUCN, with its membership structure comprising governments, agencies of government with conservation or environmental mandates, non-governmental organizations, scientists and lawyers. In this context, ASOC notes the new *Resolution on Antarctic Conservation* adopted at the Third World Conservation Congress in Bangkok in November 2004, which is being introduced at this meeting in an Information Paper from IUCN.[1]

[1] Available at *www.asoc.org*

Report by IUCN Submitted to the XXVIII ATCM

IUCN extends its formal thanks to the Government of Sweden for hosting this Antarctic Treaty Consultative Meeting.

The World Conservation Union brings together 82 States, 111 government agencies, more than 800 non-governmental organizations (NGOs) in a unique worldwide membership. In addition, more than 10,000 internationally-recognised scientists and experts from more than 180 countries volunteer their services to its six global commissions. Its 1000 staff members in offices around the world are working on some 500 projects. IUCN's mission is *"to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable"*.

IUCN has a long standing interest in Antarctic Conservation and welcomes the opportunity to assist Parties in their deliberations at the 28th ATCM.

1. IUCN Resolution on Antarctica and the Southern Ocean (November 2004)

The World Conservation Congress is the general assembly of IUCN members, which takes place every three to four years. The 3d IUCN World Conservation Congress took place in Bangkok, Thailand, in November 2004, and passed a Resolution on Antarctica and the Southern Ocean. The full text is provided in ATCM 28-IP64.

2. Antarctic and Southern Ocean Marine Protected Areas

With the coming into force in May 2002 of Annex V of the Antarctic Treaty's Environmental Protocol, there is now an explicit legal basis for the adoption of binding measures for the conservation of Antarctic Specially Protected Areas and Antarctic Specially Managed Areas throughout the treaty area. The Convention for the Conservation of Antarctic Marine Living Resources also contains strong conservation-oriented provisions for the opening and closing of areas for the purpose of scientific study or conservation. Thus Antarctica and the Southern Ocean provide an excellent testing ground from which to build experience for the development and management of MPAs beyond national jurisdiction. Such pilot cases can commence now, rather than waiting for the development of informal arrangements or formal legal agreements under the Convention on Biological Diversity or UNCLOS.

In November 2004, the Commission for the Conservation of Antarctic Living Marine Resources (CCAMLR) agreed to convene a technical workshop to discuss approaches to establishing MPAs in the Southern Ocean, including high seas areas.

Also in November 2004, IUCN's World Conservation Congress in Bangkok, Thailand adopted a resolution urging all Parties to the Environmental Protocol and CCAMLR to take steps to develop a comprehensive network of protected areas with special urgency being given to protecting marine habitats and biological diversity, and to provide comprehensive protection of the whole of the Ross Sea using a combination of Antarctic Specially Managed Areas and Antarctic Specially Protected Areas.

The CBD Secretariat recently commissioned two background papers with funding from the European Community on marine protected areas beyond national jurisdiction that may be of interest to the discussion of Marine Protected Areas in the ATS context, and that can be made available. One is a

study of scientific information on biodiversity in marine areas beyond the limits of national jurisdiction (UNEP/CBD.WG-PA/INF/1) and the other a study on legal aspects for the establishment of marine protected areas in marine areas beyond the limits of national jurisdiction (UNEP/CBD/WGF-PA/INF/2). The background legal study was prepared by IUCN's Global Marine Programme in conjunction with the IUCN WCPA Task Force on High Seas Marine Protected Areas.

These papers highlight the importance of Antarctica and the Southern Ocean as an area of high species richness that is already equipped with a functional legal framework for conservation action on the high seas. The scientific background paper notes that a preliminary survey of priority biodiversity areas includes seamounts in the Southern Ocean Convergence Zone and marine areas beyond national jurisdiction adjacent to islands in the Southern Ocean, among others. The legal paper highlights the importance of the Protocol to the Antarctic Treaty on Environmental Protection Annex V, as well as the conservation powers inherent in the Convention of the Conservation of Antarctic Marine Living Resources as frameworks already allowing for the establishment of protected areas in marine areas beyond national jurisdiction.

IUCN encourages the ATCM and its Committee on Environmental Protection to continue its tradition of promoting environmental conservation in Antarctica and the Southern Ocean by taking an active role with respect to promoting high seas MPAs within the region. The development of MPAs as a management and conservation tool in Antarctica and the Southern Ocean would enable the next step towards true ecosystem management of one of the earth's last relatively pristine large marine ecosystems. This would help cement the ATCM's role as the most progressive conservation body and as perhaps the best model for other areas of the world's oceans.

IUCN's Global Marine Programme, WCPA High Seas MPA Task Force, and Antarctic Advisory Committee would be pleased to develop additional background material on opportunities and priorities for high seas MPAs in Antarctica and the Southern Ocean, should the Committee find this of value.

3. Bioprospecting

IUCN recently produced a background paper "Bioprospecting marine resources: Conservation concerns and management implications" which can be provided to ATS discussion on this subject. Some points of interest are worth repeating here to assist in the discussion of this agenda item in the Antarctic and Southern Ocean context:

- The lack of information about the habitat of the targeted species, the viability of the population, life-history characteristics and their distribution and abundance leads to uncertainty in conservation and management.
- Initial collections for screening purposes are reported to require relatively small amounts of marine organisms. The reality is that collection processes are very poorly documented, and confidentiality agreements that are common for such surveys complicate access to such information.
- Currently, sample size in initial screening collections may be limited to 0.5-1 kg. However, even this mass of tissue can be harmful to local marine populations of species whose distribution is unknown and may be very restricted geographically.
- When a bio-product has proved to present interesting and promising properties, the commercial source of choice for the pharmaceutical industry is its synthesis, which allows the company to control all aspects of production. But, unlike terrestrial bio-compounds, many bioactive marine natural products, particularly those used in the pharmaceutical field, are extremely complex in structure, and require intensive multi-step processes that are not

amenable to economic, industrial-scale synthesis. The supply of sufficient quantities of the source organism (biomass supply) has been recognised as a major limitation in the development of marine bioproducts. In the development phase, if the compounds cannot be synthesised or obtained by fermentation technology, they can only be obtained through harvesting from the wild.

- The sample size of a marine organism collected for screening purposes is generally on the order of grams or kilograms of wet weight. However, the quantities required for the development phase and in clinical trials are on the order of tons or thousands of tons (estimations of biomass needed for the development of a Halichondrin from Lissodendoryx sp. is about 5000 tons), because bioactive products are normally present at very low yields in the source organism. In many cases the natural abundance of source organisms will not support product development based on wild harvesting.
- One challenge is the use of the term "bioprospecting". While different papers and publications agree on the essence of what bioprospecting is, they differ on how far 'bioprospecting' extends down the path toward commercialisation. In dealing with marine genetic resources beyond national jurisdiction, the chain of activities involved in the development of marine bio-products may require further clarification so that management approaches can ensure conservation and sustainable use of the natural resources.
- The above mentioned resolution adopted at IUCN's World Conservation Congress in Bangkok encourages Parties to the Antarctic Treaty and to CCAMLR to examine and resolve the legal and environmental issues surrounding bioprospecting and to regulate this activity if it is to be permitted in Antarctica and the Southern Ocean; IUCN welcomes the opportunity to assist in these developments.

4. Introduction of Non-native Species, Parasites and Diseases

Globally, harmful non-native species, including but not limited to pathogens, are a major threat to biological diversity. At a global scale, the natural biogeographical barriers of oceans, mountains, rivers and deserts provided the isolation essential for unique species and ecosystems to evolve. Now these barriers increasingly lose their effectiveness - as economic globalisation has resulted in an exponential increase in the deliberate or accidental movement of organisms from one part of the world to another through trade, transport, travel and tourism. While the majority of non-native species may never develop "invasiveness", those that do have been absolutely devastating (e.g. see *www.issg.org*). The Antarctic, in spite of its remoteness and "inhospitable" environment is not immune from this threat, both in terrestrial and marine environments. The IUCN 'Guidelines for the Prevention of Biodiversity Loss caused by Alien Invasive species" can be accessed on line:

English *http://www.iucn.org/themes/ssc/pubs/policy/invasivesEng.htm*

Spanish *http://www.iucn.org/themes/ssc/pubs/policy/invasivesSp.htm*

French *http://www.iucn.org/themes/ssc/pubs/policy/invasivesFr.htm*

IUCN defines *Alien species* (non-native, non-indigenous, foreign, exotic) as "a species, subspecies, or lower taxon occurring outside of its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could not occupy without direct or indirect introduction or care by humans) and includes any part, gametes or propagule of such species that might survive and subsequently reproduce."

IUCN defines *Alien invasive species* (invasive alien species, environmental pests) as "an alien species which becomes established in natural or semi-natural ecosystems or habitat, is an agent of

change, and threatens native biological diversity". In the context of the Antarctic, it must be noted that in addition to biodiversity , other Aspecific Antarctic values are at risk, notably wilderness or intrinsic values. Those threats include more than impacts on biodiversity only, including changes to "pristineness", affecting the "existence value", and last but not least, interfering with scientific values. It can therefore be argued that the need for preventative and precautionary action against alien (= non native) species is even more obvious in the Antarctic.

Several recent studies documents species introductions into Antarctic and Southern Ocean waters. The likelihood of transport of invasive species into the Southern Ocean may increase in future as a consequence of the growth of tourism, fisheries and science activities in the region. It is also possible that global change, particularly global warming, may increase the rate of successful establishment of alien species by reducing differences in environmental conditions between donor and recipient environments. Marine debris, and shipping are the two major vectors for marine species introductions into the Southern Ocean and deserve an increasing attention. IUCN strongly recommends further actions within the framework of the Treaty to prevent species introductions, particularly in the marine environment in order to conserve the integrity of the unique Antarctic system.

IUCN would warmly welcome the opportunity to contribute to the further development of practical and/or institutional solutions to this threat to Antarctic biological and other values, through its Antarctic Advisory Committee and Its Invasive Species Specialist Group (of the Species Survival Commission), we are hopeful that intersessional work on the Introduction of Non-native Species, Parasites and Diseases can further address this challenge.

5. Antarctic Conservation Strategy

As part of the World Conservation Strategy developed by the IUCN during the 1980s there was a need to develop a regional policy for Antarctica. The IUCN Commission on National Parks and Protected Areas (CNPPA), in 1987 produced a publication entitled *Conserving the Natural Heritage of the Antarctic Realm*. In 1989, the Director General established a working group to respond to the call for the preparation of a strategy for Antarctic conservation. The resulting document *Strategy for Antarctic Conservation* was published in 1991, after revision in the light of the discussions held at the IUCN General Assembly. This has provided an over-arching framework for Antarctic conservation for the last 15 years. But conservation and environmental management are dynamic and developing fields and a review of the Strategy has been initiated in a process involving SCAR, IUCN, and other interested parties.

Report of the International Association of Antarctica Tour Operators 2004-2005 Under Article III (2) of the Antarctic Treaty

The International Association of Antarctica Tour Operators (IAATO) is pleased to present a report of its activities to ATCM XXVIII, Stockholm, Sweden June 6-17, 2005, in relation to Article III (2) of the Antarctic Treaty.

IAATO is a member organization founded by seven companies in 1991 to advocate, promote and practice safe and environmentally responsible private-sector travel to the Antarctic. During the 2004-2005 season IAATO had 70 Members, and as of May 5, 2005, the Association grew to 78 Members during the annual meeting. Overall tourism numbers reached at least 30,232, including seaborne, air overflights and land-based tourism. Despite the increase in tourists, numbers of vessels and aircraft operations the season went smoothly and IAATO Members continued to support established practices that have proved to be effective and offer a strong degree of protection to the areas visited. IAATO operators are mostly business competitors of one another yet they are willing to work closely together to develop and impose best practices upon themselves. For industry to agree to set limits is rare in today's world and there is no other model that has been as successful as IAATO's for the last 15 years continuously. As an Association, IAATO seeks to raise the operational standards of Members and the industry as a whole. To do so requires an infrastructure, a forum and a time and economic commitment by each company.

IAATO has continued to focus its activities in several key areas including:

- providing a forum for Members to resource information needed to effectively manage their individual operations but yet plan strategically with all other operators. This is done through regular email network and by maintaining useful documents on the website and at the annual meeting;.
- uploading a new and user friendly, quick-loading IAATO website;
- activating the IAATO Tourism Database and successfully uploading all available Post Visit Site Reports into the database. 2003-2004 tourism statistics were computed and posted on IAATO's website. The database has additional capability that is used to compile all company, vessel and activity information and track IAATO's activities. IAATO posted over 60 different data reports on tourism statistics on *www.iaato.org* as a matter of interest to the general public. The 2004-2005 data will be available in July;
- improvements were made to the Standard Post Visit Site Report Form in order to be more inclusive of all tourism activities and data collection (See ATCM XXVIII, IP 89);
- IAATO made available to the public on the IAATO website Visitor Guidelines. (Recommendation XVIII-1 in English, German, Italian, Spanish, French, Dutch, Japanese, Chinese and Russian.) IAATO has always used these guidelines but with only the exception of a few languages all were hard copies versus computer versions;
- updated the "Seasonal Operational Procedures" found on the Members-Only page of the website to assure greater protection of the Antarctic;
- commissioned a computer programming company to design an automated ship schedule that individual companies can input their itineraries directly on line and make changes to as often as needed prior to the season. This will improve efficiency, safety, and overall communication prior to the season. When more cost efficient communication networks are installed on all vessels, companies can access ship schedules from the vessel. IAATO also has been liaising with COMNAP to be "more inclusive" of all ships operating in Antarctica;

- promote Vessel and Aircraft Coordination by using an all inclusive ship schedule, vessel call data and emergency response list. This list is shared with COMNAP and those National Antarctic Programs that interact with tour operators on a regular basis throughout the season;
- continued use of the IAATO Member Emergency Medical Evacuation Response (EMER) action plan;
- adherence to the IAATO Site Specific Guidelines (ATCM XXVI IP72) established in 2003. Thirty-two sites were identified and limits set accordingly. IAATO also has trial tested for two years ten Site Specific Guidelines prepared by the United Kingdom (four of which were submitted to ATCM XXVI and ATCM XXVII/WP26 and to ATCM XXVIII) to evaluate their effectiveness to address impacts and concern towards growth in the tourism industry. IAATO will provide a separate paper to ATCM XXVIII on Site Guidelines and the findings of our results;
- continued to support all methods necessary to eliminate the potential spreading of Antarctic diseases and translocation of species;
- participation in several Intersessional Working Groups (ICG's) ;
- participation in international meetings and liaising with National Antarctic Programs, government agencies of the sub-Antarctic island groups, and scientific and environmental organizations as needed;
- closely coordinated with Provisional Members in their start-up operations and offered support to companies who have employees new to the business;
- created an IAATO Newsletter which can be found on line at *www.iaato.org;*
- established additional sound business practices to improve the capability to promote IAATO as a worldwide resource for Antarctic tourism;
- commissioned a project to analyze 5 years of visits to sites in the Antarctic Peninsula (See ATCM XXVIII IP 81);
- furthered work on the proposed IAATO internal Accreditation Scheme as per (See ATCM XXVII IP 69).

1. IAATO Membership and Activities

1.1 Founded by seven private tour operators in 1991, the International Association of Antarctica Tour Operators had 70 Members during the 2004-2005 season from Argentina, Australia, Belgium, Canada, Chile, France, Germany, Italy, Netherlands, New Zealand, Norway, United Kingdom, United States. A Membership Directory can be found on the IAATO web site at *www.iaato.org*. IAATO's fiscal year runs from July 1-June 30 of each year which is also consistent with an Antarctic operating season.

1.2 Members during 2004-2005 are:

29 Full Members: Abercrombie and Kent, Inc./Atholl Shipping Corporation, Adventure Associates, Adventure Network International/Antarctic Logistics & Expeditions, Antarctica XXI, Aurora Expeditions, Cheesemans' Ecology Safaris, Clipper Cruise Line/New World Ship Management Company LLC, Crystal Cruises, Inc., Expeditions Inc., Golden Fleece Expeditions Ltd., Hapag Lloyd Kreuzfahrten, Heritage Expeditions, Holland America Line, Lindblad Expeditions, Mountain Travel-Sobek, Oceanwide Expeditions, Ofotens og Vesteraalens Dampskibsselskab ASA, Pelagic Expeditions, Peregrine Shipping, Polar Star Expeditions, Princess Cruises, Quark Expeditions, ResidenSea, Saga

Shipping Company Ltd, Thika Travel, Travel Dynamics International, Victor Emanuel Nature Tours, WildWings, and Zegrahm Expeditions Inc.

Full Members included one land-based operator, ship operators, companies that charter ships and/or organize groups to Antarctica and companies that reserve space from other ship operators.

9 Provisional Members: Antarpply, Antarctic Horizons, Antarctic Shipping, Compagnie des Iles Du Ponant, DAP Antartica, Elegant Cruises and Tours, Fathom Expeditions, Tooluka Ltd., and plantours and Partner GmbH.

Provisional Members included a land/sea-based operator, ship operators, small vessel/yacht operators, a company that charters vessels from existing Members and a land based operator.

32 Associate Members: Adventure Life Journeys, Amazing Cruises and Travel, Inc., Antarctica Tasmania, Inc., Asteria Expeditions, Beluga Expeditions & Adventures BV, C&O Tours S.A., Croydon Travel, Cruceros Australis, ExpeditionTrips.com, Falkland Conservation, the Falkland Islands Company Ltd Shipping Agency, Falkland Islands Tourism Galapagos Travel, Grand Nord-Grand Large, Helicopters New Zealand Ltd, Inspire, Journey Latin America, Lan Chile, Lone Ranger, Navalia s.r.l., Patagonia World, Radisson Seven Seas Cruises, Ship to Shore Inc./shopAntarctica.com, Sintec Tur, Students On Ice, Sulivan Shipping Services Limited, TAMIC S.A., Tauck World Discovery, Tucan Travel Pty Ltd., Waterline Yahcts, West Point Island, World Expeditions.

Associate Members are travel companies, government offices, conservation groups and ship agencies that reserve space on Full and Provisional Member vessels and/or aircraft or offer support services to the tour operators, or are involved in conservation work. IAATO also had one private yacht as an Associate member. The owners found it useful to use IAATO's resources when planning their Antarctic trip, filing Advance Notification and their Initial Environmental Evaluation.

***Note:** For the 2005-2006 season IAATO Membership will include the following additional 8 Members, G.A.P. Adventures, Orion Expedition Cruises, Le Sourire, Ocean Expeditions, Rederij Bark Europa, Sea, Ice & Mountains Adventures, Kotick Charters Ltd and Latitude Océan. Six out of the 8 companies are sailing vessel/yacht operators.

1.3 Membership Categories

During the 2004-2005 season, IAATO had Members in each of the following Membership categories:

1. Organizers of expedition ships that carry less than 200 passengers or small sailing vessels that carry less than 12 passengers. The limit of 100 passengers ashore at one site at one time applies. **(22 Members)**
2. Organizers of vessels carrying 200-500 passengers who are making passenger landings. Stringent restrictions on landing activities of time and place apply. The limit of 100 passengers on shore at one site at one time also applies. **(4 Members)**
3. Organizers of cruise ships making no landings (cruise only). Cruise ships carrying more than 500 passengers are not permitted to make any landings. **(3 Members)**
4. Organizers of land-based operations**. (2 Members)**
5. Organizers of air operations with over-flights only. **(2 Members)**
6. Organizers of air/cruise operations. **(1 Member)**
7. Companies in support of Antarctic tourism. **(36 Members)**

***Note:** Full, Provisional, and Probational status occurs within categories 1-7.

1.4 Bylaws Changes: There were minor Bylaws Changes during 2004-2005. IAATO Bylaws and Objectives can be found on line at *www.iaato.org*.

2. 2004-2005 Statistics

2.1 IAATO Member Activities

From November 2004 to March 2005, a total of 16,955 passengers/tourists landed in the Antarctic on 29 commercially organized expedition vessels, 130 passengers/tourists participated in a fly cruise program and 878 land-based tourists flew, skied, climbed, camped or simply participated in day or overnight trips to Antarctica. In addition, 4,358 tourists travelled on three (IAATO-Member) large cruise only vessels (on 4 departures), and 462 passengers/tourists participated in air over flights to Antarctica.

An all inclusive overview of the Antarctic tourism industry can be found in the IAATO Overview of Antarctic Tourism (ATCM XXVIII-IP82).

2.2 Tourism numbers increased during the 2004-2005 season from the previous season. Data on tourism activities and actual numbers of non-IAATO operators has become more readily available over the years and, therefore, overall numbers are higher this year not only because of additional statistical data being available, but also because of an increase in the Antarctic tourism industry as a whole.

3. Participation in Organized Meetings during 2004-2005

3.1 IAATO held its 16th General Meeting, May 2-5, 2005 in Hamburg, Germany. A total of 111 participants attended which included 84 people representing 49 Member companies and our new Provisional Member applicants, one non-IAATO operator plus 25 representatives from governments, universities, conservation and private research organizations.

Several Members once again sponsored the attendance of their expedition team. Participating were 8 Captains and 12 Expedition Leaders. It is essential that our field personnel are brought into the discussions as they add a reality check into all discussions and final decisions.

We were pleased that Mr. Jan Huber from the Antarctic Treaty Secretariat (ATS) was able to join us for the first time and all our members look forward to future cooperation with the ATS.

IAATO appreciates the participation by respective governments and non governmental organizations. The following governments sent representatives: the German Foreign Ministry office, Umweltbundesamt (Federal Environmental Agency-Germany), Swedish Tourism Authority, Australian Antarctic Division, United Kingdom Foreign and Commonwealth office, British Antarctic Survey, United States-Office of Polar Programs, National Science Foundation, and Raytheon Polar Services. During the last decade approximately 65% of the nationalities of the tourists' visting Antarctica come from the United States, Germany, the United Kingdom and Australia. IAATO was pleased that the corresponding governments were present. IAATO encourages government interactions with tour operators and considers it very important that governments share their concerns with operators. Other organizations/universities in attendance included the United Kingdom Antarctic Heritage Trust, and the Antarctic Research Trust, University of Jena, Southampton Institute, and the United Kingdom Hydrographic Office.

IAATO Members appreciated the participation of the Executive Secretary of the Arctic Expeditions Cruise Operator's Organization (AECO) in our annual meeting in order to better address Arctic (particularly Svalbard) concerns since some IAATO members operate in Svalbard but are not members of AECO. The input from the Governor of Svalbard's office and World Wildlife Fund-Arctic and Spitsbergen Travel added yet another polar element to

the work that IAATO considers. AECO used this opportunity to hold one meeting during the evening and during one luncheon concurrently.

The complete agenda can be found on IAATO's web site at *www.iaato.org* under information papers. Included in this year's agenda was a discussion on IAATO business (new members, members changing categories, review of observer reports, committee reports, committee discussions, International Polar Year), station visits, landings and site guidelines, future computerized versions of ship schedules, quality reporting on post visit site reports, marine operators issues, supervision of staff, passengers, crew, marine-related topics, updated from the United Kingdom Hydrographic Office (UKHO), accreditation, environmental impact assessments, updates from Port Lockroy, human impacts on King George Island, AECO, Arctic conservation and research proposals.

IAATO will most likely hold its 17th General Meeting in the United States in May 2006 (final dates to be decided). Interested parties that would like to attend or participate should contact the IAATO Secretariat at *iaato@iaato.org*.

3.2 IAATO had several representatives at the COMNAP/SCAR meeting in Bremen in July 2004. Overall it was an impressive meeting with very important and positive interactions between national operators and the science community. IAATO attended parts of the COMNAP-TANGO and the Air Operations working groups.

3.3 IAATO was very pleased to send one participant to the IHO/IHB Meeting in Greece in September 2004. IAATO supports and encourages the work the IHO is doing on improving charting and navigational aids in Antarctica and other parts of the world. Safety and navigation are extremely important concerns to vessel operators who feel that improved charting will greatly reduce the risk of accidents and potential environmental damage. The focused work done by the Antarctic Committee of this group is valuable for all ship operators.

3.4 IAATO sent one representative to Bryan, Texas to attend the NSF/SCAR/COMNAP Environmental Monitoring Meeting. The meeting was an excellent forum for discussing various biological indicators and looking at future ways to further identify cumulative impacts as a result of human activity in Antarctica.

3.5 IAATO valued the time spent with the informal working group of liability representatives in New York City, April 2005, and applauds this group in its efforts to move liability forward at ATCM XXVIII.

3.6 Several IAATO Members met with their various governments during the last year to discuss tourism issues in the Antarctic and Arctic. Members felt that these meetings proved extremely useful. IAATO encourages Parties to interact with their resident tour operators whenever possible so that both stakeholders can gain a better understanding of each other's concerns.

4. Field Coordination

4.1 IAATO compiles seasonal updated information; including vessel call data, a comprehensive ship schedule, emergency contact information, expedition leader schedules, and yearly seasonal operational procedures. During the 2004-2005 season there was heavy ice throughout parts of the Antarctic Peninsula for most of the season. This situation truly tested the abilities of the ships to communicate with each other and find suitable landing sites while still maintaining the one ship at one site at one time principle, given the ice restrictions, particularly in the Lemaire Channel and surrounding areas. The ships successfully maintained IAATO's operating philosophy despite the growth in tourism.

4.2 IAATO's comprehensive directory of vessel call data and ship schedules are shared with COMNAP and other government office to encourage improved communication and operational coordination. COMNAP's MINIATOM is an extremely useful tool for tour operators trying to contact stations or government vessels. As IAATO vessels transport numerous scientists and support personnel to Antarctica each year in addition to requesting tourist visits to stations, it is helpful when station contact information is up-to-date for communication, planning and emergency purposes. IAATO also encourages COMNAP to have an emergency call list of commercial operators to contact in case of emergencies.

4.3 Expedition leaders and ship's officers circulate advance day-to-day itineraries and maintain regular contact throughout the season to coordinate site visits and exchange general information such as ice conditions, weather, landing recommendations, and concern about potential environmental impacts, etc. A key factor in managing Antarctic tourism and mitigating potential environmental impact is to ensure that no two ships land passengers at the same place at the same time. An example of the annual instructions to ships' captains, radio officers and expedition leaders is included as Appendix A.

4.4 Details on IAATO's Emergency Medical Evacuation Response plan (EMER) have been presented at previous ATCMs. IAATO Member Aerovias DAP offered this service for Members during the 2004-2005 season. Aerovias DAP performed a total of two tourist medical evacuations for members from King George Island to Punta Arenas.

5. Environmental Impact Assessment

5.1 Argentina, Australia, Canada, Chile, France, Germany, The Netherlands, New Zealand, Norway, United Kingdom and United States received Environmental Impact Assessments (EIA's) from Members operating vessels or land-based programs.

5.2 IAATO is concerned about non-IAATO operator activities, the Association urges Contracting Parties to ensure that obligations of the Environmental Protocol are being met and that Environmental Impact Assessments are being submitted and that detailed mitigation measures are included.

5.3 IAATO would also request that when non-IAATO operators submit EIA's that reference IAATO's operational procedures contact IAATO for verification. It is not possible for non-IAATO operators to have the breadth or understanding of the numerous operating strategies IAATO has developed over the years.

6. Procedures to Prevent the Introduction of Alien Organisms

6.1 For the past six seasons, IAATO's Boot and Clothing Decontamination Recommended Guidelines and Translocation of Diseases Protocol have proven to be effective. These guidelines unofficially have been operative for the last twelve years by most Members. Past ATCM papers have included this important guideline. Both the above-mentioned guidelines have been tabled previously as attachments at SATCM XII, ATCM XXIV, ATCM XXV and XXVII (in IAATO's Annual Reports). A separate paper has been tabled to ATCM XXVIII on this subject matter.

6.2 For the past five seasons, IAATO has used a standard protocol to report any high mortality incidents and to avoid the introduction and translocation of alien diseases. The only reported incident was at Cooper Bay in South Georgia due to Avian Cholera. (See page 10, Section 13.)

7. Reporting of Tourism and Non-governmental Activities and Data Base

7.1 Antarctic tour operators use the standard Post Visit Site Report form. IAATO modified the report slightly and changes have been submitted separately to reflect the increased number of activities. IAATO encourages the use of the revised form and discontinue the use of outdated reporting forms. IAATO proposes to ATCM the adoption of the changes made by IAATO to the form. (ATCM XXVIII IP 89.)

7.2 IAATO continues to support the use of this single form, which reduces the burden of paperwork and facilitates the study of the scope, frequency and intensity of tourist activities. IAATO would like to encourage Parties to send IAATO a copy of any forms received from non-IAATO operators in order for the data to be incorporated into IAATO's "Overview of Tourism" and the IAATO tourism data base. This will provide for greater transparency of all tourist activities and will further the ability to address cumulative impact issues. IAATO's data base will be able to access information from these forms and analyze, if necessary, statistics on site visitation.

8. Implementation of Recommendation XVIII-1 (Guidance for Those Organising and Conducting Tourism and non-Governmental Activities in the Antarctic and Guidance for Visitors to the Antarctic) and Other Guidelines

Recommendation XVIII-1, "Guidance for Those Organising and Conducting Tourism and non-Governmental Activities in the Antarctic" is provided to inform Members of key obligations and procedures to be followed.

8.1 IAATO is concerned about tourists travelling on non-IAATO vessels visiting the Antarctic who may not be aware of the Environmental Protocol and its obligations. Some of these vessels visit stations throughout the Antarctic Peninsula and it would be practical if station leaders were able to raise these issues with sailing vessel/yacht operators.

8.2 IAATO's standard operating procedures for implementing Recommendation XVIII-1 include the following:

- Mandatory briefings on each tour ship prior to arrival in the Antarctic. This presentation consists of the IAATO slide or PowerPoint presentation. This presentation can be viewed on line at *www.iaato.org* under "Guidance for Visitors" on the home page. Most expedition leaders will however enhance the presentation with additional slides.
- Passengers, ships' command, crew and expedition staff receive paper copies of Recommendation XVIII-1 "Guidance for Visitors to the Antarctic." Some companies distribute this document in pre-season materials in advance of departure, some on board the ship. In addition to receiving copies of the Recommendation, all passengers and ship's personnel are required to attend the briefing.
- Guidelines are available on the open pages on the IAATO website in English, Chinese (Mandarin), Dutch, French, German, Italian, Japanese, Russian and Spanish.

8.3 In addition, IAATO Members continue to use IAATO and/or company adopted guidelines which include: marine wildlife watching, site specific information, kayak, mountain climbing, camping, scuba, helicopter, Zodiac, Remote Operated Vehicle (ROV), boot and clothing decontamination and disease protocols.

9. Emergency Response Action and Contingency Planning

9.1 At IAATO's 14th General Meeting (2003) the IAATO-Wide Emergency Contingency Plan was agreed upon. This plan was submitted as a separate paper to ATCM XXVI/IP69. Operational focus referenced in this paper is part of the yearly checklist members are asked to include each season. The information on vessels shared amongst Members in the plan is essential for effective response action.

9.2 IAATO continues to update data on tour vessels' specifications and other information that would contribute to assisting in case of an emergency. Information is being added to the IAATO database for future reference.

9.3 Members have Shipboard Oil Pollution Emergency Plans (SOPEP) in place on their vessels that satisfy Regulation 26 of Annex I of MARPOL. A "Special Antarctic Addendum" to the SOPEP was developed by IAATO and distributed to Members for implementation and comment in 1998 (ATCM XXII/IP104). While the Addendum has no legal status, it includes notice to contact Antarctic stations in the vicinity of any marine pollution incident, along with appropriate national authorities.

9.4 The IAATO-wide EMER plan has been in place for at least the past seven seasons in order to reduce the need to impact scientific stations in the Antarctic Peninsula with tourism-related medical problems. A standard medical information checklist is available for new Members in order to ensure adequate medical supplies are available on board vessels.

10. Scientific and Information Support

Members continue to provide logistic and scientific support to National Antarctic Programs and to the sub-Antarctic Islands, providing a cost-effective resource for the scientific community. During the 2004-2005 season, scientists, support personnel and gear from various National Antarctic and Sub Antarctic Programs were provided transport to and from stations, field sites and gateway ports. A partial list of scientific support is included as Appendix D. Further descriptions are noted below.

Specific requests for logistic or other support should be made to Members or the IAATO Secretariat. For a complete Membership directory, please refer to the IAATO web site at *www.iaato.org.*

11. Conservation Research, Academic and Scientific Support

Members and their passengers continued the tradition of direct financial contributions to many organizations active in Antarctica. Appendix C provides a partial list of donations.

12. Observers On Board Member Vessels

IAATO requires Provisional and Probational Members to carry an observer before they are eligible to apply for Full Membership. During the 2004-2005 season, IAATO appointed 5 observers to sail on Provisional Member vessels and one land-based operation. IAATO prefers to use a qualified National Program observer from the country in which the company is registered. When not available, IAATO will appoint an appropriate person with broad

experience in Antarctic and or related matters. IAATO has a checklist for observers, which has been tabled at ATCM XXIV/IP-73 and ATCM XXV/IP74. In addition, ATCM XIX Resolution 5 (1995) Antarctic Treaty Inspection Checklists is also provided to the appointed observer. IAATO vessels have been carrying observers since 1991.

13. With Thanks — Cooperation with National Programs

The following provided assistance and operational guidelines to IAATO during the 2004-2005 season, for which Members are grateful:

- to ALL Antarctic and sub-Antarctic station and island personnel who have welcomed our groups and provided a friendly, educational and rewarding experiences for tourists;
- Chile: For the use of the runway at Marsh/Frei for medical emergencies in conjunction with Member Aerovias DAP;
- United Kingdom: United Kingdom Foreign and Commonwealth Office, British Antarctic Survey, Port Lockroy, and U.K. Antarctic Heritage Trust, Sub Antarctic Islands personnel and others for making visits an extremely educational and enjoyable experience and for providing Members with comprehensive guidelines for visits to BAS stations. IAATO is grateful for the U.K.'s support in limiting visits to stations to Members;
- Palmer, McMurdo and South Pole Station personnel for hosting organized visits throughout the season;
- others we might have missed.

Appendices

A. IAATO Pre-Season Antarctic Checklist 2004-2005 Season

B. 2004-2005 Expedition Leader and Ship's Officers Seasonal Instructions

C. Partial list of Donations for 2004-2005

D. Partial List of Science Support and Transport by IAATO Vessels in 2004-2005

Appendix A
IAATO Pre-Season Antarctic Checklist
2004-2005 Season
(August 5, 2004 version)

Seasonal Documents

- Expedition Leader and Ship's Officers Season Instructions: Memorandum to Antarctic Captains, Expedition Leaders and Radio Officers and IAATO Office Personnel
- Antarctic Communications Directory (COMNAP MINI-ATOM-Available October 2004)
- IAATO Vessel Call Data, 2004-2005 (available by October 2004)
- IAATO Ship Schedules (available by October 2004)
- Approved 2004-2005 Palmer Station Cruise Ship Visits
- Copy of Organizer's Environmental Impact Assessment (varies by organizer)
- Copy of all relevant permits (i.e. waste management permit, hut permit etc if appropriate)
- Expedition Leader's/Staff Resource Notebook
- IAATO Emergency and Medical Response Contingency Plan (EMER) (Signed copy)
- Additional Documents can be found on the IAATO members only section of the website

Reporting Requirements

- Post-Visit Report, Part 1 (Expedition Record) and Part 2 (Site Visit Record) 2004-2005 version (available in October 2004)
- Incident Reporting Form (IAATO Website)
- Whale Collision Reporting Form (IAATO website)
- End of Trip/Season Report that includes: Scientists transported, funds raised and any other relevant observations

Operating Guidelines

- Antarctic Peninsula Region Landing Sites (with Longitude and Latitude)
- ATCM Recommendation XVIII-1 (English, Spanish, French, Russian, German, Japanese, Italian, Chinese)
- IAATO Slide Presentation, Safety and Conservation Briefing
- CCAMLR Marine Debris in Antarctic Waters (placard)
- Help Stop Toothfish Poaching
- Introduction and Detection of Diseases in Antarctic Wildlife
- IAATO Boot and Clothing Decontamination Guidelines
- Virkon-Research findings have demonstrated the effectiveness of Virkon S as a boot wash to reduce the risk of inadvertent transmission of pathological micro-organisms on boots in the Antarctic.

- IAATO Wildlife Watching Guidelines
- Camping Guidelines, Kayak Guidelines, ROV Guidelines, Helicopter Guidelines for companies operating these activities
- Site Selection Criteria
- Radio Call Log
- Memo Explaining Vessel Call Data
- IAATO Emergency Contingency Planning
- ATCM XXVII Resolution 2 (2004) Guidelines for the Operation of Aircraft near Concentrations of Birds in the Antarctic
- Resolution 4 (2004) Guidelines On Contingency Planning, Insurance And Other Matters For Tourist And Other Non-Governmental Activities In The Antarctic Treaty Area
- ATCM XXVII Decision 4 Guidelines For Ships Operating in Arctic and Antarctic Ice Covered Waters
- ATCM XXVII Measure 2 Revised Management Plans for several areas. (IAATO will distribute when completed by the ATCM XXVII Secretariat)

Site Specific Guidelines

- IAATO Site Guidelines
- U.K. Working Paper 26 from ATCM XXVI and ATCM XXVII-Site Specific Guidelines for Penguin Island, Aitcho Islands, Jougla Point, Cuverville Island
- Additional Site Specific Guidelines for: Hannah Point, Turret Point, Yankee Harbour, Neko Harbor, Pleneau Island, Petermann Island, Paulet Island (produced by the United Kingdom to be used on a trial basis).

Procedures for Visiting Stations

- Procedures for Tourist or Non-Governmental Expeditions Re•uesting a Visit to BAS Research Stations or Historic Sites (IAATO website)
- Site Guidelines for Base A, Port Lockroy, Historic Site and Monument No 61 (IAATO website)
- Palmer Station Guidelines (3 parts)

Sub Antarctic Islands

- *Note for purposes of the ATCM report, this section was not included.

Resources

- Oceanites Compendium of Antarctic Peninsula Visitor Sites (July 2003 version)

- Updated List of Protected Areas (2003 was the latest version)
- Handbook of the Antarctic Treaty System 2002 (http://www.state.gov/g/oes/rls/rpts/ant/)
- Updated List of Protected Areas (2003)-(Note from IAATO: will circulate updated version if published)
- Relevant Management Plans for specific Antarctic tourist landing sites
- Appropriate and Relevant Domestic Legislation, per company, per country. For example, for US Companies, the US Antarctic Conservation Act 1978, public law 95-541 as Amended by the Antarctic Science, Tourism and Conservation Act of 1996 (Public Law 104-227) necessary for vessels carrying US Citizens. See ATCM XXV IP85 Regulatory Mechanisms That Address Antarctic Tourism for a list of domestic legislation for a complete list of domestic legislations. Other countries such as Argentina, Australia, Germany, Japan, New Zealand, United Kingdom etc. all have domestic legislation
- Convention on the Conservation of Antarctic Marine Living Resources (1980)
- Convention on the Conservation of Antarctic Seals (1972)
- Protocol on Environmental Protection of the Antarctic Treaty (1991)
- Albatross and Long Line Fisheries Lecture and Fund Raising information
- General Medical Information, Parts I, II and III (IAATO Website)

Inspection and Observer Checklist

- ATCM XIX 1995 Resolution 5, Antarctic Treaty Inspection Checklist for Tourist Ships
- IAATO Observers Checklist for Provisional and Probational Members

Tourism Statistics and Information

Antarctic Tourism statistics, graphs and charts compiled by IAATO and NSF

The Following ATCM XXVII Papers should be Available for Reference

- ATCM XXVII, Cape Town, South Africa, 2004 *http://www.ats.org.ar/27atcm/e/index.htm*
- ATCM XXVII IP 63 Overview of Tourism by IAATO
- ATCM XXVII IP 68 Report of the International Association of Antarctica Tour Operators (IAATO) (2003-2004)
- ATCM XXVII IP 69 IAATO's Formalization of an Accreditation Scheme and Internal Audit Process and the Associations' views on an ATCM Accreditation Scheme
- ATCM XXVII WP 13 Deception Island Antarctic Specially Managed Area (ASMA) Management Package (*Note this plan has not been approved, only submitted for approval and is now in an intersessional working group discussion but there is useful information in it)
- Measures 2-Additional agreed revised management plans agreed to at this meeting include: McMurdo Dry Valleys Antarctic Specially Managed Area Management Plans, Management Plans for Cape Denison, Commonwealth Bay, George V Land, East Antarctica, Revised Management Plans for ASPA 113, Litchfield Island, Arthur Harbour, Anvers Island, ASPA 122 Arrival Heights, Hut Point Peninsula, ASPA 13, Biscoe Point, Anvers Island, ASPA 149, Cape Shirreff, Livingston Island, South Shetland Islands

ATCM XXVI, Madrid, 2003

- ATCM XXVI IP 71 IAATO Overview of Tourism
- ATCM XXVI IP 72 Site Specific Guidelines 2003 in the Antarctic Peninsula
- ATCM XXVI IP 78 Report of the International Association of Antarctica Tour Operators (IAATO 2002-2003)
- ATCM XXVI IP 69 IAATO Wide Emergency Contingency Planning 2003-2004

ATCM XXV, Warsaw, 2002

- ATCM XXV IP 85 Regulatory Mechanisms That Address Antarctic Tourism
- ATCM XXV IP 72 Guidelines For Tourist Operations In Antarctica

Tourism Statistics for the previous season 2002-2003 can be found on the IAATO website under "Tourism Statistics." Statistics for 2003-2004 will be posted as soon as they are available. The new IAATO database has been structured so that data will be input directly from the reports which will allow us to run numerous data that was not possible in the past.

Note: Data was posted in October 2004.

Appendix B
Expedition Leader and Ship's Officers Seasonal Instructions-2004-2005 Season
(August 1, 2004 version)

TO: All IAATO Office Representatives, Antarctic Captains, Expedition Leaders and Radio Officers

The following information is included in order to further guide the exchange of information among vessels, and to assist with co-ordination of itineraries and to facilitate the end of season reporting. Note this plan is subject to change. If a change is required an update will be sent.

Exchange of Itineraries

- IAATO members agree to exchange itineraries and coordinate schedules. This is a key factor in self-regulation, monitoring of activities and also in effective emergency response.
- Consult the IAATO schedule to determine which vessels will be in your cruising area. Specific landing sites noted on the schedule are given landing priority as agreed to at the IAATO Annual 15th General Meeting, 2004. Expedition Leaders were asked to input day to day itineraries prior to the season. The final IAATO schedule that will be issued in October 2004 will have landing priorities. Any other changes or updates after this need to be done directly between the vessels.
- Itineraries must be communicated between vessels directly and not rely on corporate offices once the season begins.
- Be sure to also exchange environmental information and management recommendations for individual landing sites or other notices with your colleagues as the season progresses.
- Once again, a decision was made at the IAATO Annual 15th Meeting, 2004 to not rely on or use the In.Fue.Tur schedule and use only the IAATO schedule as the primary schedule. All Full Members present agreed to this.

Itinerary Changes

- If your final itinerary changes, circulate by GMDSS, Telex by broadcast mode or radio or fax. Confirm during Radio Chat time at 1930. (Please note that few tour vessels have regular real-time exchange of e-mail.) Since all ships are supposed to be equipped with a GMDSS radio station, they should be able to scan a frequency in the 6310 KZ band (24 hrs). By using broadcast mode (one way) ships can send itineraries, ice information and other information as needed. These transmissions will be picked up by all vessels and should be able to print out the incoming message immediately.
- To avoid conflicts, notify vessels in the region of any changes in planned itinerary as soon as practicable.
- Notification should be by GMDSS radio telex first then INM-C, fax, telex, VHF or HF (see below).
- Notify any vessel of intention to cancel a landing. Due to itinerary changes, weather, ice etc another vessel would appreciate having an additional landing option.

Landing Priority

- In general, priority is given to what is listed on the official IAATO schedule. Landing sites were pre- agreed prior to the season and resolved by all companies accordingly.
- In the event of conflict, expedition leaders should co-ordinate between themselves to determine priority, which is best accomplished through negotiation via HF or VHF.
- Please resolve any conflicts equitably. It is assumed that vessels visiting a site with some regularity will give way to a vessel that is not but any number of factors may come into play.
- Two vessels are not to land at the same place at the same time and, to avoid any potential environmental impacts, efforts should be made to spread out visits over time.

Station Visits

- Expedition Leaders must provide 72-hour notice to station leaders of any planned station visit.
- Follow individual procedures determined by national programs/station leaders.
- Provide timely notice of cancellation, generally 48 hours in advance.
- Please include any additional station contact information, standard procedures or incidents involving stations, ships or government personnel in your voyage report to the home office.

Station Guidelines for Palmer, Rothera, Signy and Port Lockroy, Base A

- Visits to Palmer Station are not allowed on Sundays and preferably not on Saturdays. All Palmer visits have been prearranged. Any changes, please advise Palmer as soon as possible. There is an official Palmer Station schedule issued each season. Provide Palmer Station with 72 hours notice even though you have a prearranged visit. See Palmer Station Guidelines for further information.
- Visits to British Stations (Rothera, Signy, Halley) have also been pre-arranged as per procedures by British Antarctic Survey.
- Port Lockroy: Base A has a specific visitation policy and site-specific guidelines provided by British Antarctic Survey. Please read these guidelines carefully.

Channel 16

- Channel 16 is used for hailing purposes only, NOT general communication.
- After making contact, immediately switch to another channel to continue conversation.
- Expedition Leaders should periodically review radio etiquette with staff. The airwaves during the height of the season in the Peninsula have been crowded, which is an issue with IAATO members and potentially with research stations. Take care to follow standard international procedures.

IAATO Radio Schedule

- IAATO members have agreed to implement a once daily radio schedule at 1930.

- Suggested HF hailing frequencies are: 4146 (1°), 6224 (2°)-SSB, 8294 (3°), to be finalized by radio officers during the season based on experience. Use 6224 whenever possible.
- Expedition leaders and or an appointed staff member should make use of this schedule whenever VHF communication is impossible for exchange information. This will reduce communication costs.
- Switch to another frequency for any extended conversation when talking on the above-mentioned HF (4146°, 6224°).
- Avoid long conversations over the radio if possible.
- Protocol for the 1930 chat time: All parties wanting to sort out schedules should make themselves known. Sort all itinerary business first and reschedule any other discussions for a later time. Anyone who simply wants to "chat" should find another time and frequency. ELs not available to talk at this time should appoint another individual to monitor in case a ship is trying to reach you.
- It is extremely important to not chatter on HF. In years past many EL's or staff simply did not listen to the chat channel because there were too many lengthy conversations. This channel must be open at 1930 for vessel scheduling and for communication of emergency situations. Again, if you need or want to chat longer, establish a different time and frequency.
- Vessels equipped with HF-Tlx should scan 6310.0 Khz TX/RX 24 hours.

Radio Log On, GMDSS Communication

- Each vessel should report the noon position (Ushuaia local time for the Peninsula Region) to each other via GMDSS radio telex or INM-C. Each radio officer should record this information.
- IAATO Radio Log On: At the beginning of the season, ships should use the Radio Log Form and sign off when they have established contact with a specific ship. At the end of the season, the Log should be sent to IAATO together with all the Post Visit Site Reports for evaluation.
- GMDSS (Global Maritime Distress Safety System) is the only reliable means of communication and it should be used daily by all ships.
- Since not all ships are equipped with GMDSS for all coverage, A1, A2, A3 and A4, ships without full coverage can only reliably communicate via INMARSAT-C. Therefore it is important for each ship to pre-establish by what means they will be communicating with each other. The INM-C and the pre-established GMDSS radio telex frequency will allow ships to share information daily. In an emergency, it is the only reliable means of communication.
- For additional information reference the agreed IAATO Wide Emergency Contingency Planning Agreement, 14th General Meeting, 2003 and ATCM XXVI Information Paper 69 on Contingency Planning.

EMER (Emergency and Medical Evacuation Response)

- Review the IAATO Emergency Contingency Plan included in your briefing package.
- The reporting scheme indicated above is an integral part of emergency response. Please ensure that it is followed and report any difficulties to your home office.

Post-Visit Reporting

The Process

- Following Antarctic Treaty recommendations, complete Part 1 and Part 2 of the standard Post-Visit Site Report for every expedition. The 2004-2005 version of the form should be the ONLY form completed for Antarctica. At the end of each voyage return the form and a computer disc to the home office. It is preferable that the form is emailed to IAATO and US NSF after each trip; however some companies prefer to review the forms first. It is therefore the company's responsibility to forward the form as soon as possible to IAATO and NSF and not wait until the end of the season. Email to *iaato@iaato.org* and to *nkennedy@nsf.gov.*
- Always submit a computer version and hard copy of each form. Information gleaned from this form is tabulated and circulated internationally by the National Science Foundation, USA and by IAATO in the form of statistics and input into the tourism database. IAATO recommends that the Ship, individual EL's and each home office keep copies of each Post Visit Site Report. In.Fue.Tur in Ushuaia also requests a copy of this form in order for them to compile their tourism information.
- EL's, please note that this information is used for tourism statistics that are tabled worldwide. Please do not hastily fill this out. If you have questions, consult your home office.
- We cannot accept hand written forms. All forms must be typed and on the official EXCEL format. If the form is not compatible with the computers on board ship notify your company representative immediately.
- Do not wait until the end of the season to send forms to IAATO and NSF and to your national authority. Due to the increased number of vessels during the season we need the reports periodically throughout the season.

The Standard Post Visit Site Report Form

- The form is in EXCEL Format. Drop down menus have been created to make it easier for all concerned. Spend some time learning how to fill the form out on the computer. The form does not need an original signature. EL's can type their name directly on the form.
- Do not include South Georgia or any other landing site outside of the Antarctic Treaty Area or north of 60ºS landing site information on this form. There is a separate form for South Georgia.
- Please note guests of the company, guest lecturers, and other "non-revenue passengers" should be reported as passengers for the purposes of this report unless they have specific staff roles ashore. In general, those responsible for supervising passenger operations ashore that report to the expedition leader are considered staff. Hotel staff, catering, chefs and deckhands are included as crew members, not staff, unless they are guiding tourists ashore and in Zodiacs.
- The standard list of "Antarctic Peninsula Region Landing Sites" and any new sites visited during the 2003-2004 season for Part 2 have been incorporated into the drop down menus. If those sites are not included then please note them as new sites and we'll add them to the list next year. Please correct duplications or inconsistencies. In general, the most specific place name is used. Most all the landing sites are in the drop down menus. For new sites, type in the name of the site, latitude and longitude at the bottom. It may mean that your list of landing sites will not be in chronological date order. Make additions to the list of landing sites as necessary.

- Do NOT add additional rows to either the nationalities or to the sites — use a separate sheet if you don't have enough space.
- Record one line item per each activity. For example, if at one site you are conducting multiple activities (boat landing, scuba driving, kayaking etc, make sure each activity is recorded separately). For example if 10 people are kayaking while 80 people are ashore, make sure your report reflects that.
- The 2004-2005 form will be completed prior to the start of the season and there will be additional instructions provided by our computer advisor at that time.
- It is important to fill out these forms correctly otherwise they will not import into the database.

End of Season Reports

- At the end of the season each company is responsible for providing IAATO with a final report.
- Assure that both an electronic copy and hard copy of the Post Visit Site Report Forms are correct and have been sent to IAATO and NSF and your national authority.
- Science Assist and Transport: Provide information on the number, nationality of each scientist or group and the destination to where the transport occurred.
- List any donations or funds raised on board for environmental or cultural causes (i.e. Save the Albatross, Bird Life International, Orca Project, Antarctic Heritage Trust, Scott Polar Research Institute, Allied Whale Campaign etc.). List to whom it was sent and the dollar, Euro etc amount sent. All this information is incorporated into IAATO's annual report. For detailed information see ATCM XXVII IP 68, IAATO Annual Report.
- Report any significant environmental impacts or changes that the officers, expedition staff noticed during the season.
- Report any type of problem with any Non- IAATO Member or Scientific Vessel or their passengers. If digital pictures are available please include.
- Submit the required incident report form to IAATO if there had been a problem. Use either the Whale report form or the Incident Report Form.
- Suggest ways of improving operational logistics and additional methods for minimizing environmental and potential cumulative impacts.

Have a safe and successful Antarctic season and if you have any questions please do not be afraid to ask.

Enjoy,

Denise Landau

Appendix C

2004-2005 Partial List of Donations

The following chart is a partial list of donations that were given by Members or raised by expedition staff and passengers on board vessels during the season. It is known that passengers make individual contributions to various organizations independent of organized campaigns. Not all IAATO Members provided a list prior to this report being submitted.

Member	Birdlife International-Albatross	Save the Albatross-Australia	Antarctic Heritage Trust and Donation to Ross Sea Huts	Other
Abercrombie & Kent/Atholl Shipping		$9,000 usd		
Zegrahm Expeditions	$17,300 usd			$5000 usd to Falklands Conservation from Peter Harrison/personal contribution
Quark Expeditions		4,858 usd	$22,030 usd	$430 (Stromness Fund, South Georgia) $115 Oceanites
Hapag Lloyd		$168 usd € 1,730	$79 usd € 1,430	€10,000 Tsunami Victims € 1,250 SOS Kinderdorfer
Polar Star Expeditions		4,006 usd		$620 usd, South Georgia Heritage Trust
Lindblad Expeditions				$92,464 usd for Oceanites $25,405 usd was raised for the South Georgia Museum
Heritage Expeditions		$603 usd	$3,360 usd	
Elegant Cruises		$7,106		$925 and £240 for the South Georgia Museum
Oceanwide Expeditions		€750		

Total	
Albatross	46,215.40 usd
Antarctic Heritage Trust	27,299.40 usd
South Georgia Museum	27,067.20 usd
Oceanites	92,579 usd
Falklands Conservation	5,000 usd
Tsunami Victims	12,000 usd
Kinderdorfer	1,600 usd
Total	**211,762 usd**

- The total is based on conversion rate of 1 •=1.28 usd
- At least 2 expedition staff also donated paintings for donation to an auction at the Royal Society of Protection of Birds in the UK which raised substantial funds for Albatross protection.
- The amounts do not include all vessels or private donations that tourists have made once at home. Many ships provide their passengers with a list of organizations of whom to donate to. In addition other organizations benefit indirectly from passengers donations.
- The information included above is based on what was provided to the IAATO Secretariat.

Appendix D

Partial list of Science Support and Transport by IAATO Vessels in 2004-2005

Member	Program Assisted	Other
Abercrombie & Kent/Atholl Shipping	South Georgia	3 Individuals to and from South Georgia
Adventure Network International/Antarctic Logistics and Expeditions	Chile	22 persons were provided transport of equipment and personnel at reduced cost from Patriot Hills to Chile.
Antarpply	Ukraine	Resupply for Vernadskiy Station
DAP	Various	Various scientists to and from King George Island
Elegant Cruises	Sea Mammal Research Unit, UK	4 Scientists were transported from Husvik, SG to Stanley
Hapag Lloyd	Various	24 Scientists were transported on behalf of Czech Private Base on Nelson Island, Alfred Wegener Institut, Deutsches Institute fuer Luft und Raumfahrt, University of Jena
Heritage Expeditions	New Zealand, Australia	In Nov, 2004, 6 scientists were transported from N.Z to Macquarie Island for the Australian Antarctic Division and Parks & Wildlife, Dec, 2004, 2 Albatross scientists were transported from N.Z. to the Auckland Islands group/Adams Island, Jan 5 and 11 departures, 2005-equipment and food from NZ to Campbell Island for NZ, D.O.C staff and in March, 2 D.O.C. staff from Auckland to Raoul and Kermadec group were transported.
Lindblad Expeditions	Oceanites	Carried scientists on every voyage for Oceanites. In addition drop off and pick up for Oceanites to/from Petermann was provided. Total of 16 individuals were provided with assistance. AKWIC was also supported on two voyages
Oceanwide Expeditions	Poland	19 Scientists/Field Personnel to and from Arctowski
Ofotens Og Vesteraalens Dampskibsselskab ASA (OVDS)	Poland	5 Scientists were transported to and from Arctowski
Plantours and Partner	Germany	5 Scientists to and from South America to Jubany
Saga Shipping	United Kingdom	1 person was transported to Port Lockroy on behalf of the United Kingdom Antarctic Heritage Trust
Quark Expeditions	Various	4 Scientists from the Australian Antarctic Division, 2 from the New Zealand Department of Conversation, 5 from Oceanites, and 1 from the U.K Antarctic Heritage Trust

Report by the International Hydrographic Organization (IHO) on "Cooperation in Hydrographic Surveying and Charting of Antarctic Waters"

Introduction

I would like to take this opportunity, to thank the authorities of the Antarctic Treaty System (ATS) for having invited the IHO. Once again the International Hydrographic Organization (IHO) is honoured to report to the Antarctic Treaty Consultative Meeting (ATCM) on the Cooperation in Hydrographic Surveying and Charting of Antarctic Waters. This report covers the period between the XXVIIth and XXVIII ATCMs.

IHO Member States are well aware of their responsibility to improve safety of life at sea, safety of navigation and the protection of the marine environment in Antarctica. The coordination to facilitate National Hydrographic Services to provide updated and reliable hydro-cartographic products is executed by the Hydrographic Committee on Antarctica, a committee that meets once a year to keep track on these efforts.

The recommendations the IHO submitted to the XXVIIth ATCM in Cape Town last year were fully endorsed. This expression of support has been very well received by the IHO, specially by its Hydrographic Committee on Antarctica.

The IHO Hydrographic Committee on Antarctica

We would like to provide a brief report on the work done by the Hydrographic Committee on Antarctica (HCA) that met in September 2004. Amongst other technical topics, the following issues were discussed:

a) the progress made in the scheming and production of international (INT) Charts;

b) the setting up of a Hydrographic Survey Programme Working Group;

c) the need to get some guidance on the establishment of terrestrial Aids to Navigation in Antarctica;

d) the need to keep updated the IHO S-55 Publication "Worldwide Status of Hydrographic Surveying and Nautical Charting"; and

e) cooperation with other international organizations.

As regard to the INT Chart production, out of 91 INT charts contained in the cartographic scheme, 45 have already been published (see Annex A). That means that there has been an approximate 50% increase since last year. Some of these charts, over 5, are already also available as electronic charts (ENC).

When preparing this report I recall that during the last ATCM I was requested to indicate when the complete cartographic scheme would be ready, and really that is a very difficult question to answer in the light of the growing new requirements. The HCA received a very interesting proposal from IAATO, for the inclusion of 11 new INT charts in the IHO INT chart scheme for the Antarctic Peninsula. These new charts would cover areas of great tourism interest and will facilitate safer operations. The HCA is considering the request and has become aware that requests for new additions

cannot be ignored. After the subject is studied, the HCA will identify the MS responsible for the production of the newly accepted charts.

The idea to set up a Hydrographic Survey Programme Working Group (HSPWG) has its roots on the need to improve effectiveness by establishing priorities. As a secondary benefit, the outcome could provide an indication to MS willing and aiming to take advantage of the International Polar Year (2008-2009) to orient their efforts on concrete needs. More information is provided below, under a special paragraph on the objectives and progress made by the HSPWG.

Proposals to establish terrestrial Aids to Navigation (AtNs) in Antarctica, where there exists potential risk for navigation, were offered by COMNAP. As a result, a list of those AtNs which have been recommended so far is maintained on the IHO website (*www.iho.shom.fr* > Reg Hydro Commissions > HCA). Interestingly, it was suggested that DGPS stations could be set up in the Antarctic Peninsula and that three stations would probably provide reasonable coverage.

The updating and maintenance of IHO Publication S-55 "Worldwide Status of Hydrographic Surveying and Nautical Charting" is considered vital to properly assess the actual situation regarding these two aspects, "surveying" and "charting", and to monitor its progress thereafter. S-55 consists essentially of a standardized database which is kept on the IHO website, and is updated as MSs provide new entries. This information serves as a useful resource for strategic planning, decision-making and the international coordination of a work program, and will assist in properly prioritising the work to be done. Therefore priority should be assigned to keep this publication updated.

Cooperation with other organizations has significantly improved, and representatives of IAATO, COMNAP, SCAR, IOC and IMO attended the 2004 HCA meeting.

- It has to be highlighted that cooperation with IAATO and COMNAP is extremely fruitful. In addition to their contribution to improving the INT Chart Scheme and identifying AtNs in Antarctica, as reported above, IAATO has kindly expressed its willingness to contribute with ships of opportunity to improve the level of hydrographic information gathering.
- Additionally, SCAR, IOC and IHO have joined their efforts in sponsoring the International Bathymetric Chart of the Southern Ocean (IBCSO) project, which was launched in July 2004. The intention is to built a 2.5 km grid bathymetric database for all waters south of 60°S.
- IHO and IMO continue to cooperate on improving the quality and availability of hydrographic information for operation in remote areas. Further plan are to develop relevant guidelines / requirements by 2006, to ensure the safety of navigation in remote areas and this work will involve a review of availability of international AtNs for vessels operating in remote areas.

Objectives of and Progress made by the HCA Hydrographic Survey Programme Working Group (HSPWG)

As mentioned above, the HCA considered that there was a need to develop a hydrographic survey plan for Antarctic waters, taking into consideration the requirements to complete the INT chart scheme. The objectives of HSPWG are the followings:

1. Establish prioritised HCA Statement of Survey Requirements:
    a. Identify special regional geographical factors e.g. ice cover; significant changes in shelf ice edge; complex bottom topography.
    b. Identify Maritime Shipping Routes and port/site calls and derive usage category (A = frequent; B = regular; C = infrequent), verifying INT chart coverage and availability.
    c. Identify and categorise existing coverage from S-59.

d. Develop assessment criteria and produce a prioritised statement of areas requiring survey.

e. Compare national prioritised lists of survey intentions and rolling programmes with the HCA statement. Provide advice to national hydrographic and marine scientific research programming authorities to avoid duplication and to utilise spare capacity. Liaise with COMNAP, SCAR and IAATO to utilise ships of opportunity.

2. Develop guidelines, complementing S-44, for gathering and submitting surveying observations in ships of opportunity[1].

3. Promote and co-ordinate hydrographic activity for maximum output during the International Polar Year (2007-2008) by advocacy for an IPY Hydrographic Initiative:

a. To develop a scheme for fully surveyed marine corridors in Antarctic Peninsula [and Ross Sea].

b. To seek support of IMO, IOC, ATCM, and IPY Planning Committee.

c. To develop a plan for survey and charting of marine corridors.

d. To seek national programming authorities' cooperation and involvement in implementing the plan.

e. To identify tasks for ships of opportunity. To include options for states without polar vessels to provide surveyors and equipment.

Progress so far achieved includes:

- assessment criteria to prioritise areas requiring surveys mainly around Antarctica, and the identification of maritime shipping routes;
- a scheme for a main corridor round the Antarctic Peninsula, labelled "Proposed Maritime Shipping Routes" (see Annex B);
- development of Guidelines for the collection of hydrographic information by tours vessels (intended for IAATO and COMNAP when finalized).

Conclusions

1. There has been good coordination and cooperation between the IHO and other international organizations interested in the Antarctica. The progress made and underway is greatly due to joint efforts. All seems to have a common understanding of the importance of conducting hydrographic surveys and making available reliable nautical charts. These two elements constitute the key factor for executing any activity in Antarctica, and therefore deserves priority.
2. The availability of INT Charts, from 29 last year to 45 nowadays, is a clear indication of the progress achieved so far by the IHO. Nevertheless, the survey of the Antarctic waters cannot be avoided and charts will be available only if Member States allocate resources and priority to do so. The potential increase in number of INT charts should constitute a warning sign to enhance national priorities and mobilization of resources.

[1] The term "Ships of opportunity" refers to ships other than those deployed for Hydrographic surveying for nautical charting purposes, e.g. cruise, research or re-supply vessels.

3. The setting up of an HCA Hydrographic Survey Programme Working Group should help identifying the best practice to take advantage of the existing possibilities to foster the INT chart coverage.

Proposal

It is recommended that the XXVIIIth ATCM:

1. accepts the IHO Report;
2. acknowledges the progress made in the production of INT charts;
3. expresses support for the activities the HCA is conducting with its Hydrographic Survey Programme Working Group;
4. considers inviting Members States to increase the hydrographic survey activity in Antarctica.

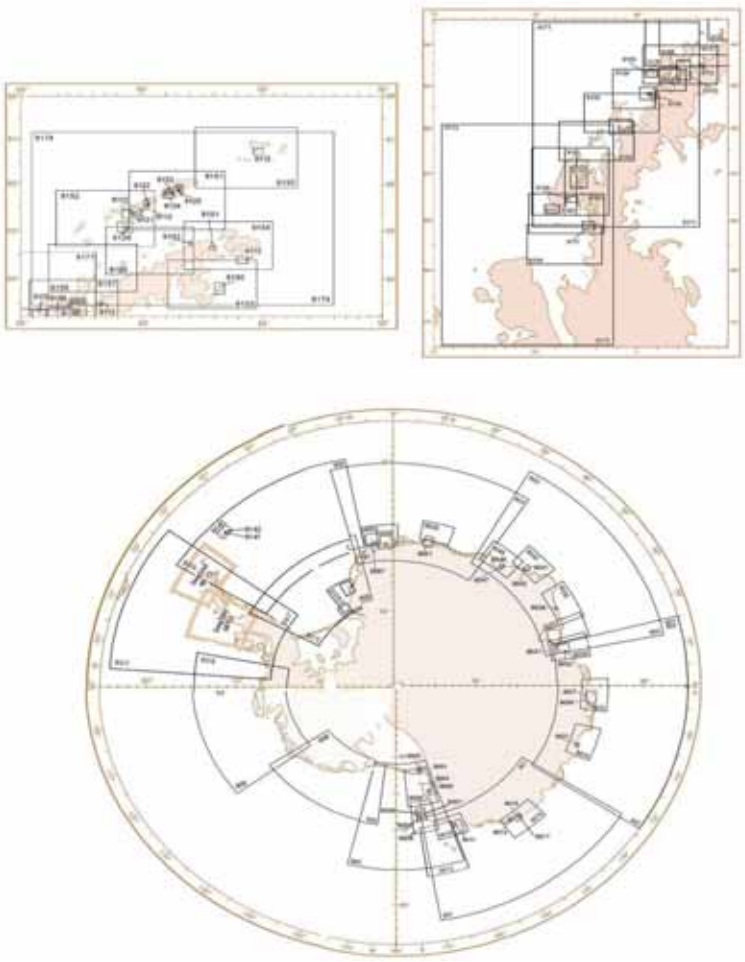
Monaco, May 2005

ANNEX "A"
STATUS OF INT CHART PRODUCTION IN ANTARCTIC WATERS
(April 2005)

INT No.	Producer	Date Last Edition	Scale 1:
900	NZ	1998	2 000 000
904	NO	2002	2 000 000
906	GB	2004	2 000 000
907	GB	2000	2 000 000
9005	IT	2000	50 000
9006	NZ	2003	50 000
9007	NZ	2003	60 000
9008	NZ	2003	200 000
9009	NZ	2004	500 000
9010	RU	2000	500 000
9011	RU	2000	200 000
9014	AU	2002	25 000
9015	FR	2004	500 000
9016	FR	2003	100 000
9017	FR	2002	20 000
9020	AU	1998	500 000
9021	AU	Proj. 2006	50 000
9025	RU	1999	500 000
9026	RU	1999	200 000
9027	RU	1999	10 000
9030	AU	1992	500 000
9031	AU	2002	500 000
9032	AU	2003	12 500
9033	AU	1991	500 000
9035	AU	1993	500 000
9036	AU	2005	25 000

INT No.	Producer	Date Last Edition	Scale 1:
9041	RU	1999	100 000
9042	RU	1999	12 500
9050	RU	1999	500 000
9051	RU	1998	200 000
9056	ZA	2005	300 000
9061	GB	2004	200 000
9102	CL	2003	10 000
9106	GB	1996	60 000
9109	GB	1999	25 000
9120	AR	2004	50 000
9121	ES	1998	35 000
9122	CL	1998	20 000
9141	GB	2004	50 000
9142	AR	2005	10 000
9150	BR	1999	200 000
9153	GB & AR	2004	150 000
9154	GB & AR	2002	150 000
9155	CL	2003	150 000
9156	AR	2005	150 000
9158	GB	2003	150 000
9159	GB	Proj. 2006	150 000
9160	GB	Proj. 2006	150 000
9163	GB	2005	150 000
9170	AR	1997	500 000
9172	RU	1999	500 000

INT CHART SCHEME FOR ANTARCTICA



ANNEX “B”

PART IV

ADDITIONAL DOCUMENTS FROM XXVIII ATCM

ANNEX H

ADDITIONAL DOCUMENTS

Statement of the Member States of the European Union that are also Antarctic Treaty Consultative Parties in the Working Group on Liability of the XXVIII Antarctic Treaty Consultative Meeting (See Paragraph 110 of the Final Report)

Mr. Chairman, dear colleagues,

On behalf of the Member States of the European Union that are also Antarctic Treaty Consultative Parties, the Netherlands recalls working paper XXVII ATCM/WP-34 and the relating statement it made during the XXVII ATCM. We sought your indulgence, understanding and assistance with respect to a question that stems from developments in Community law. These developments relate to the division of competence between the European Community and the Member States of the European Union in respect of some matters governed by the draft annex, namely some of the provisions on actions for compensation. Since the entry into force of a Community Regulation on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters, the jurisdiction of domestic courts within the European Community in those matters is governed by the relevant provisions of that Regulation. In order to safeguard the integrity of the said Regulation, the Council of the European Union has requested the Member States of the European Union that are also Antarctic Treaty Consultative Parties to ensure that the relevant Community rules continue to apply.

The discussions on the provisions on actions for compensation at the XXVII ATCM were fruitful and have further clarified the meaning of these provisions. We have further reflected on the matter in light of these discussions and the amendments made to these provisions. It has appeared during the XXVII ATCM that only a State Party can take response action pursuant to draft Article 5.2 and bring an action pursuant to draft Article 7.1. This understanding is reflected in the Final Report of the XXVII ATCM where the Chair of our Working Group noted general support that actions could only be brought by State Parties and, in this connection, also noted that there was a general understanding that only State Parties could take response action pursuant to draft Article 5.2 (para.150). Hence, the attribution of jurisdiction to domestic courts pursuant to draft Article 7.1 does not relate to civil and commercial matters under the Regulation.

Although the general understanding of this Working Group would seem to be inherent in the version of the draft annex that was circulated at the end of the XXVII ATCM, it could be further clarified by explicating that only State Parties can bring an action under draft Article 7.1. Such clarification would eliminate the risk that a domestic court permits agents and operators that have been specifically authorized by a State Party to take response action on their behalf under draft Article 5.2 to bring a direct action under draft Article 7.1. A proposal to that end has been discussed intersessionally and is reflected in a document, circulated by the Chair of our Working Group after the consultations in New York from 13 to 15 April, that contains revised draft articles reflecting the general consensus in the consultations.[1] Since this proposal reflects the general understanding of the Working Group on Liability at the XXVII ATCM, as noted in the Final Report of that meeting, we hope it is supported by our colleagues so that we can put this matter aside.

Thank you for your attention.

1The following proposal for the first sentence of draft Article 7.1 has been circulated: Only a Party that has taken response action pursuant to Article 5(2) may bring an action against a non-State operator for liability pursuant to Article 6(1) and such action may only be brought in the courts of the Party where the operator is incorporated or has its principal place of business or his or her habitual place of residence.

Remarks by Ambassador Hans Corell, Chairman of the XXVIIII Antarctic Treaty Consultative Meeting, at the presentation by the Scientific Committee on Antarctic Research

Stockholm, 8 June 2005

Your Majesty,
Distinguished participants,

May I, in my capacity as chairman of the Antarctic Treaty Consultative Meeting (ATCM), greet you all warmly welcome to this presentation by the Scientific Committee on Antarctic Research (SCAR).

SCAR is an inter-disciplinary committee of the International Council for Science (ICSU) and is charged with initiating, developing and coordinating high quality international scientific research in the Antarctic region, and on the role of the Antarctic region in the Earth system.

We are glad to have among us the President of SCAR, Professor Dr. Jörn Thiede. He is accompanied by Professor Steven Chown. We are looking forward to their presentations.

We are of course particularly honoured by the presence of His Majesty King Carl Gustaf.

His Majesty's presence is not a coincidence. It is based on a genuine interest in environment and matters of the kind we are engaged in. I am sure Professor Thiede knows more about His Majesty's interest than I do.

By way of example, I can mention that only a few days ago. His Majesty - together with his daughter Crown Princess Victoria, Crown Prince Frederik of Denmark and a group of fifteen international scientists - participated in the 7th Royal Colloquium, which was held on board the Icebreaker Oden. We are going to visit this icebreaker on Friday this week.

The participants in the colloquium, which was hosted by His Majesty, explored the scientific and policy implications of an "Arctic under Stress: A Thawing Tundra".

Allow me to quote the following from a statement that the participants elaborated and which they called "The Oden Declaration":

"The Arctic is now experiencing particularly rapid and severe climate change. Over the next 100 years, Arctic climate change is expected to accelerate, contributing to major physical, ecological, social, and economic changes, many of which are already apparent. Changes in the Arctic climate will affect the rest of the world through increased global warming and rising sea levels.

There is strong scientific evidence that these changes are beyond natural variability and are significantly influenced by human activities. These changes in the global environment carry risks for human well-being, especially for use of natural resources, such as fresh water. In many cases adaptation will be necessary, although difficult and costly. However, in low lying areas, such as some small island states, adaptation will be impossible. It is clear that we ourselves are changing the environment upon which we depend.

The scientific evidence is now strong enough, and the consequences for human well-being serious enough, that global change should be discussed, debated and addressed by societies around the world. We hope that the scientific discussions at this Royal Colloquium will help to inform this global debate."

I thought it appropriate to share this information with you. But now our focus should shift from the Artic to Antarctica!

Professor Thiede, you have the floor! You are most welcome!

Message from the XXVIII ATCM to Stations in the Antarctic

The twenty-eight Antarctic Treaty Consultative Meeting (XXVIII ATCM) was hosted by the Swedish Government in Stockholm from 6 June (the Swedish National Day) to 17 June 2005.

The inaugural speech, delivered by the Swedish Minister for Foreign Affairs, Ms. Laila Freivalds, noted that Antarctica demonstrates a great example of fruitful and expanding international co-operation that serves as a model of conflict prevention and peaceful collaboration. Since Sweden is a relatively small research nation in Antarctica, international co-operation with other countries' researchers and polar organizations is a main feature of our research program. Sweden's polar research covers both the Arctic and Antarctica. The Swedish Antarctic Research Program has its geographical focus on Dronning Maud Land, where our two research stations, Wasa and Svea, are located.

We welcome that the new Antarctic Treaty Secretariat in Buenos Aires is operational and are grateful to Mr. Jan Huber, the Executive Secretary, and his team for assisting the Meeting for the first time in their new capacity.

The Committeee for Environmental Protection (CEP) delivered a comprehensive report, bringing the environmental issues forward. Particularly important is the decision to commence elaborating a strategy for the future work of the Committee. This achievement is an effort in which all delegations should take pride, but the Chairman of CEP, Dr Tony Press (Australia), deserves special recognition for the way in which he guided the Committee through a busy agenda.

A major achievement of the Meeting was the finalization of Annex VI to the Protocol on Environmental Protection. We are grateful to all who have contributed to this work over the years. Our special thanks go to Ambassador Don MacKay (New Zealand), who skilfully guided the Working Group on Liability to this successful result.

From Stockholm (situated nearly 60 degrees N) the Delegations participating in the XXVIII Consultative Meeting send their compliments to all those personnel wintering in the Antarctic. The Delegations express their gratitude to those men and women for their unrelenting efforts to widen mankind's horizons while maintaining the spirit of the Antarctic Treaty on the unique continent (situated from 60 degrees S and onwards) to which the Treaty applies.

Hans Corell
Ambassador
Chairman of the XXVIII ATCM

Preliminary Agenda for ATCM XXIX

1. Opening of the meeting.

2. Election of Officers and creation of Working Groups.

3. Adoption of the Agenda and allocation of items.

4. Operation of the Antarctic Treaty System: Reports by Parties, Observers and Experts.

5. Operation of the Antarctic Treaty System: General matters.

6. Operation of the Antarctic Treaty System: Review of the Secretariat's situation.

7. Report of the Committee for Environmental Protection.

8. Liability: Implementation of Decision 1 (2005).

9. Safety and Operations in Antarctica.

10. Relevance of Developments in the Arctic and in the Antarctic.

11. The International Polar Year 2007/2008.

12. Tourism and Non-Governmental Activities in the Antarctic Treaty Area.

13. Inspections under the Antarctic Treaty and the Environment Protocol.

14. Science Issues, particularly scientific co-operation and facilitation.

15. Operational issues.

16. Education issues.

17. Exchange of Information.

18. Biological Prospecting in Antarctica.

19. Adoption of the Final Report.

20. Preparation of the XXX Meeting.

ANNEX K

LIST OF DOCUMENTS

Working Papers

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 01	CEP 3	Working Paper to initiate a strategic discussion on future environmental challenges in Antarctica and its dependent and associated ecosystems.	Sweden	X	X	X	X	
WP 02	CEP 4(g)	Systematic Environmental Protection in Antarctica: A draft Systematic Environmental-Geographic Framework for Antarctica created using Environmental Domains Analysis.	New Zealand	X	X	X	X	
WP 03	CEP 4(g)	Antarctic Protected Areas System: Lillie Marleen Hut, Mt. Dockery, Everett Range, northern Victoria Land, Antarctica. Proposal for Inclusion in the Antarctic Treaty List of Historic Sites and Monuments	Germany	X	X	X	X	Lillie Marleen Hut Fig. 1 Lillie Marleen Hut Fig. 2
WP 04	CEP 4(g)	Draft Revised Management Plan for ASPA 119 Davis Valley and Forlidas Pond, Dufek Massif	United States	X	X	X	X	ASPA 119 Map 1 ASPA 119 Map 2
WP 05	CEP 4(g)	Final Revised Management Plan for ASPA 149 Cape Shirreff and San Telmo Island, Livingston Island, South Shetland Islands	Chile United States	X	X	X	X	ASPA 149 MAP 1 ASPA 149 MAP 2 ASPA 149 MAP 3
WP 06	CEP 4(g)	Draft Management Plan for ASMA ? Amundsen-Scott South Pole Station, South Pole	United States	X	X	X	X	ASMA SOUTH POLE MAP 1 ASMA SOUTH POLE MAP 2 ASMA SOUTH POLE MAP 3 ASMA SOUTH POLE MAP 4
WP 07	CEP 4(g)	Revision of Management plan for ASPA No. 133 (Harmony Point)	Argentina Chile	X	X	X	X	
WP 08	CEP 4(g)	Revision of Management plan for ASPA 132 (Potter Peninsula)	Argentina	X	X	X	X	
WP 09	CEP 3	The Committee on Environmental Protection of the Antarctic Treaty: An overview and likely future scenarios	Argentina	X	X	X	X	
WP 10	CEP 6	State of the Antarctic Environment Reporting System: Report of the Intersessional Contact Group	Australia New Zealand	X	X	X	X	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 11	CEP 4(g)	A Review of the Antarctic Protected Areas System	New Zealand	X	X	X	X	
WP 12	ATCM 12	'Land-Based' Tourism in Antarctica	New Zealand	X	X	X	X	
WP 13	ATCM 18 CEP 7	Biological Prospecting in Antarctica	New Zealand Sweden	X	X	X	X	
WP 14	ATCM 15	Proposed Improvements to Measures Designed to Prevent Environmental Damage in Antarctica	Russian Federation	X	X	X	X	
WP 15	CEP 4(g)	Revised Management Plan for Antarctic Specially Protected Area 127 Haswell Island (Haswell Island and Adjacent Emperor Penguin Rookery on Fast Ice)	Russian Federation	X	X	X	X	
WP 16	ATCM 13 CEP 4(a)	Scott Base and Mcmurdo Station: Report of an inspection under Article VII of the Antarctic Treaty and Article 14 of the Protocol on Environmental Protection	Australia	X	X	X	X	Inspection Report Scott - McMurdo
WP 17	CEP 4(g)	Antarctic Protected Area System: Review of Antarctic Specially Protected Areas 155, 157, 158 and 159	New Zealand	X	X	X	X	ASPA 155 Tracked version ASPA 155 Map A ASPA 155 Map B ASPA 157 Tracked version ASPA 157 Map A ASPA 157 Map B ASPA 158 Tracked version ASPA 158 Map A ASPA 158 Map B ASPA 159 Tracked version ASPA 159 Map A ASPA 159 Map B
WP 18	ATCM 12	Report of the intersessional contact group on accreditation scheme for Antarctic tour operators	United Kingdom	X	X	X	X	
WP 19	CEP 4(b)	Draft CEE. Proposed construction and operation of Halley VI Research Station. Brunt Ice Shelf, Caird Coast, Antarctica.	United Kingdom	X	X	X	X	
WP 20	CEP 4(g)	Deception Island Antarctic Specially Managed Area (ASMA) Management Package	Argentina Chile Norway Spain United Kingdom United States	X	X	X	X	ASMA Deception Cover ASMA Deception Introduction ASMA Deception ASMA ASMA Deception ASPA 140 ASMA Deception ASPA 145 ASMA Deception Whalers Bay ASMA Deception Whalers Bay Appendix ASMA Deception Facilities Code of Conduct ASMA Deception Visitors Code of Conduct ASMA Deception Volcanic Alert ASMA Deception ASMA Rev1 ASMA Deception Volcanic Alert ASMA Deception ASMA Rev1

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 21	CEP 4(g)	Antarctic Specially Protected Area no. 120. Revised management plan Cape Geology archipelago. Jean Rostand, Le Mauguen (Former Alexis Carrel), Lamarck and Claude Bernard islands, The Good Doctor's Nunatak and Breeding site of Emperor penguins	France	X	X	X	X	ASPA 120 - Map 1
WP 21rev1	CEP 4(g)	Antarctic Specially Protected Area no. 120. Revised management plan Cape Geology archipelago Jean Rostand, Le Mauguen (Former Alexis Carrel), Lamarck and Claude Bernard islands, The Good Doctor's Nunatak and Breeding site of Emperor penguins	France	X	X	X	X	ASPA 120 Map 1
WP 22	CEP 4(g)	Proposal for classifying Historical Site No. 46 Port Martin (Adelie Coast) (66°49' S / 141°23' E) as a Specially Protected Area. Management Plan	France	X	X	X	X	
WP 23	CEP 5	Progress report of the CEP Intersessional Contact Group on Environmental Monitoring	France	X	X	X	X	
WP 24	CEP 4(g)	Intersessional Contact Group to Consider Antarctic Specially Protected Area at Dakshin Gangotri Glacier, Dronning Maud Land – Convener's report	India	X	X	X	X	
WP 25	CEP 4(g)	Antarctic Protected Areas System Proposed Management Plan for Dakshin Gangtori Glacier, Dronning Maud Land, Antarctic Specially Protected Area (ASPA) No XXX	India	X	X	X	X	ASPA Dakshin Gangotri Glacier Map 1 ASPA Dakshin Gangotri Glacier Map 2 ASPA Dakshin Gangotri Glacier Map 3 ASPA Dakshin Gangotri Glacier Map 4 ASPA Dakshin Gangotri Glacier Map 5 ASPA Dakshin Gangotri Glacier Map 6
WP 26	CEP 5	Working Paper on "Practical Guidelines for Developing and Designing Environmental Monitoring Programmes in Antarctica"	COMNAP	X	X	X	X	Guidelines Monitoring COMNAP Annex 1 Guidelines Monitoring COMNAP Annex 2
WP 27rev1	CEP 4(g)	Draft Antarctic Specially Managed Area (ASMA) Management Plan for the Larsemann Hills, East Antarctica	Australia China Russian Federation	X	X	-	X	ASMA Larsemann Map 1 ASMA Larsemann Map 2 ASMA Larsemann Map 3
WP 28	CEP 4(d)	Measures to address the unintentional introduction and spread of non-native biota and disease to the Antarctic Treaty Area	Australia	X	X	X	X	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 29	ATCM 17	Report of the Intersessional Contact Group reviewing the process for exchange of information	Australia	X	X	X	X	
WP 30	CEP 4(c)	Report of the ICG Established to Update the 'Guidelines for Environmental Impact Assessment in Antarctica' (1999)	Australia	X	X	X	X	Guidelines for EIA with amendments
WP 31	ATCM 12 CEP 4(g)	Site Guidelines for Land-Based Tourist-Visited Sites	United Kingdom Australia United States	X	X	X	X	Site Guidelines
WP 31rev1	ATCM 12	Site Guidelines for Land-Based Tourist-Visited Sites	United Kingdom Australia United States	X	X	X	X	SITE GUIDELINES FOR LAND-BASED TOURIST-VISITED SITES
WP 32	ATCM 13 CEP 4(a)	Report of Joint Inspections under Article VII of the Antarctic Treaty and Article 14 of the Environmental Protocol	United Kingdom Australia Peru	X	X	X	X	
WP 33	ATCM 14 ATCM 15 CEP 4(d)	De-listing Antarctic Specially Protected Species	SCAR	X	X	X	X	
WP 34	ATCM 14 ATCM 15 CEP 4(d)	Proposal to List a Species as a Specially Protected Species under Annex II	SCAR	X	X	X	X	
WP 35	CEP 4(g)	Review of the Admiralty Bay Antarctic Specially Managed Area Management Plan (ASMA No. 1)	Brazil Poland	X	X	-	X	ASMA 1 - Figure 1 ASMA 1 - Figure 2 ASMA 1 - Figure 3 ASMA 1 - Figure 4 ASMA 1 - Figure 5A ASMA 1 - Figure 5B ASMA 1 - Figure 5C ASMA 1 - Figure 6
WP 36	CEP 4(g)	Antarctic Protected Areas System. Management Plan for Scullin and Murray Monoliths, Mac Robertson Land, east Antarctica Antarctic Specially protected Area No. XXX	Australia	X	X	X	X	Scullin Murray Map A Scullin Murray Map B Scullin Murray Map C Scullin Murray Map D Scullin Murray Photograph A
WP 37	CEP 4(g)	Revision of Management Plan for Antarctic Specially Protected Area No. 150 (Ardley Island)	Chile	X	X	X	X	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 37rev1	CEP 4(g)	Revision of Management Plan for Antarctic Specially Protected Area No. 150 (Ardley Island)	Chile	X	X	X	X	
WP 38	ATCM 12	Protection of Antarctica's intrinsic values: Policy on non-government activities	Australia	X	X	X	X	
WP 39	CEP 4(g)	Listing of the Amundsen Tent on the List of Historic Sites and Monuments	Norway	X	X	-	X	
WP 40	CEP 4(c)	Assessment of environmental impacts of satellite facility at Troll	Norway	X	X	X	X	
WP 41	ATCM 9 CEP 4(f)	Proposal to submit a proposal to IMO to ban the presence of Heavy Fuel Oil (HFO) on board ships south of 60º South	Norway	X	X	X	X	
WP 41rev1	ATCM 9 CEP 4(f)	Proposal to submit a proposal to IMO to ban the presence of Heavy Fuel Oil (HFO) on board ships south of 60º South	Norway	X	X	X	X	
WP 42	CEP 4(g)	Antarctic Protected Areas System: Revised Management Plans for:: ASPA No. 101 Taylor Rookery, Mac. Robertson Land, East Antarctica, ASPA No. 102 Rookery Islands, Mac. Robertson Land, East Antarctica and ASPA No. 103 Ardery Island and Odbert Island, Budd.	Australia	X	X	-	X	Revised Plan ASPA 101 Revised Plan ASPA 102 Revised Plan ASPA 103 ASPA 101 Map A ASPA 101 Map B ASPA 101 Map C ASPA 102 Map A ASPA 102 Map B ASPA 102 Map C ASPA 103 Map A ASPA 103 Map B ASPA 103 Map C ASPA 103 Map D
WP 43	ATCM 5	Guidelines for the Submission and Distribution of Documents to the Antarctic Treaty Consultative Meetings and the Committee on Environmental Protection	ATS	X	X	X	X	
WP 44	ATCM 6	Antarctic Treaty Secretariat Report 1 September 2004 – 31 March 2005	ATS	X	X	X	X	Antarctic Treaty Secretariat Financial Report 2004 - 2005
WP 45	ATCM 6	Antarctic Treaty Secretariat. Draft Work Programme 2005/6	ATS	X	X	X	X	
WP 45rev1	ATCM 6	Antarctic Treaty Secretariat. Draft Work Programme for 2005/6	ATS	X	X	X	X	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 46	ATCM 5	Intersessional Consultation Process	Australia Japan	X	X	X	X	
WP 47	ATCM 8	Revised Chairman's Draft of Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty – "Liability for Environmental Emergencies"	New Zealand	X	X	X	X	
WP 48	ATCM 8	Outcomes of informal consultations convened by the Chairman of the Working Group on Liability in New York from 13 to 15 April 2005	New Zealand	X	X	X	X	
WP 48rev1	ATCM 8	Draft Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty	New Zealand	X	X	X	X	
WP 48rev2	ATCM 8	Chairman's Revised Draft of Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty – "Liability for Environmental Emergencies" and Draft Decision to Accompany the Adoption of the Text	New Zealand	X	X	X	X	
WP 48rev3	ATCM 8	Revised Chair's Text 8 June 2005	New Zealand	X	-	X	-	Draft Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty
WP 49	ATCM 8	Drafting and other proposals presented to the informal consultations convened in New York from 13 to 15 April 2005, which require further consideration	New Zealand	X	X	X	X	
WP 50	ATCM 5	Draft decision confirming the recognition of Ukraine as a Consultative Party	ATS	X	X	X	X	
WP 50rev1	ATCM 5	Decision confirming the recognition of Ukraine as a Consultative Party	ATS	X	X	X	X	
WP 51	ATCM 3	Preliminary Agenda and Work Schedule for ATCM XXVIII	ATS	X	X	X	X	
WP 51rev1	ATCM 3	Agenda and Work Schedule for ATCM XXVIII	ATS	X	X	X	X	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 51rev2	ATCM 3	Agenda and Work Schedule for ATCM XXVIII	ATS	X	X	X	X	
WP 51rev3	ATCM 3	Agenda and Work Schedule for ATCM XXVIII	ATS	X	-	-	-	
WP 51rev4	ATCM 3	Preliminary Agenda and Work Schedule for ATCM XXVIII	ATS	X	-	-	-	
WP 51rev5	ATCM 3	Preliminary Agenda and Work Schedule for ATCM XXVIII	ATS	X	-	-	-	
WP 51rev6	ATCM 3	Preliminary Agenda and Work Schedule for ATCM XXVIII	ATS	X	-	-	-	
WP 52	CEP 4(f)	Marine Debris: Global and Regional Impacts	Chile	X	X	-	X	
WP 53	ATCM 5	The enquiry procedure of Article 18	Chile	X	X	X	X	
WP 54	ATCM 5	Proposed amendment to the Rules of Procedure for Antarctic Treaty Consultative Meetings Decision 1 (2004). Participation of third countries in Antarctic Treaty Consultative Meetings	Chile	X	X	X	X	
WP 55	ATCM 5	The Attendance of non-Party States at Consultative Meetings: A proposed change to the Rules of Procedures of the ATCM.	United Kingdom	X	X	X	X	
WP 56	ATCM 5	Proposed amendments to the Rules of Procedure (2004)	Australia Germany Japan Peru Sweden United Kingdom United States	X	X	X	X	
WP 57	ATCM 5	Consultative Status	United Kingdom	X	X	X	X	
WP 58-67		(Interim WPs containing texts of measures also available elsewhere)						
WP 68	ATCM 6	External audit of the Antarctic Treaty Secretariat	Argentina	X	-	-	X	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
WP 69	ATCM 8	Measure XXX (2005) Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty. Liability Arising From Environmental Emergencies	New Zealand	X	X	X	X	Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty. Liability Arising From Environmental Emergencies
WP 70	ATCM 7	Decision XXX (2005) Annex VI on Liability Arising from Environmental Emergencies to the Protocol on Environmental Protection to the Antarctic Treaty	New Zealand	X	X	X	X	
WP 71	ATCM 19	Draft Decision XXX (2005). Identification of activities covered by Article VII(5) of the Antarctic Treaty	Belgium Chile France Germany Italy Netherlands South Africa	X	X	X	X	
WP 72	ATCM 8	Draft Resolution XXX (2005). Scientific issues relating to the implementation of measures of reinstatement of the environment	Belgium Chile Finland France Germany Italy Netherlands Norway South Africa Spain Sweden	X	X	X	X	

Information Papers

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 01	ATCM 14	Polish Contributions to the Coastal and Shelf Ecosystem Program (Maritime Antarctica).	Poland	X	-	-	-	
IP 02	CEP 4(a)	Annual Report pursuant to the Protocol on Environmental Protection to the Antarctic Treaty	South Africa	X	-	-	-	
IP 03	ATCM 4	Report by the CCAMLR Observer a the Twenty-Eighth Antarctic Treaty Consultative Meeting	CCAMLR	X	-	-	-	
IP 04	CEP 4(a)	Renewable Energy Use at Field Camps in Antarctica	United States	X	-	-	-	
IP 05	ATCM 14	Scientific activities list for 2005-2006 Season	Brazil	X	-	-	-	
IP 06	CEP 4(c)	Environmental Impact Assessment on the Padre Balduino Rambo Refuge's dismantlement - Brazil	Brazil	X	-	-	-	
IP 07	CEP 4(a)	Informe anual de España de acuerdo con el Artículo 17 del Protocolo al Tratado Antártico sobre Protección del Medio Ambiente	Spain	-	-	-	X	
IP 08	ATCM 18 CEP 7	Biological Prospecting in Antarctica	Spain	X	-	-	X	
IP 09	CEP 4(a)	Rapport annuel présenté par la France conformément à l'article 17 du Protocole au Traité sur l'Antarctique relatif à la protection del'environnement 2005	France	-	X	-	-	
IP 10	CEP 4(a)	MISE EN OEUVRE DU PROTOCOLE DE MADRID RELATIF A LA PROTECTION DE L'ENVIRONNEMENT EN ANTARCTIQUE	France	-	X	-	-	
IP 11	ATCM 12	Consolidation of Regulations on Tourism and Non-Governmental Activities in Antarctica	France	X	X	-	-	
IP 12	ATCM 12	Creation of "Areas of Special Tourist Interest"	France	X	X	-	-	
IP 13	ATCM 12	Aspectos organizativos contribuyentes al establecimiento de un Sistema de Acreditación de Turismo Antártico	Uruguay	-	-	-	X	
IP 14	ATCM 14	India's Antactic Science Programme 2004-05	India	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 15	ATCM 17 CEP 9	Establishment of an Antarctic Discussion Forum of Competent Authorities	Germany Netherlands	X	X	-	X	
IP 16	CEP 4(g)	Progress Report on the Research Project “Risk assessment for Fildes Peninsula and Ardley Island and the development of management plans for designation as Antarctic Specially Protected or Managed Areas”	Germany	X	X	-	X	Fildes Peninsula - Figure 1 Fildes Peninsula - Figure 2 Fildes Peninsula - Figure 3
IP 17	CEP 4(c)	Annual list of Brazilian Environmental Evaluations prepared in accordance with Annex I, Article 6, Paragraph 1 of the Protocol - 2004/2005 Season	Brazil	X	-	-	-	
IP 18	ATCM 4	Report by the International Hydrographic Organization (IHO) on “Cooperation in Hydrographic Surveying and Charting of Antarctic Waters”	IHO	X	X	-	X	
IP 19	ATCM 15	Towards the creation of a Marine Protecte Area around South Africa's Sub-Antarctic Prince Edward Islands	South Africa	X	-	-	-	
IP 20	ATCM 12	The admissibility of land-based tourism in Antarctica under international law	Germany	X	-	-	-	
IP 21	CEP 4(a)	Annual Report pursuant to the Protocol on Environmental Protection to the Antarctic Treaty	Belgium	X	-	-	-	
IP 22	ATCM 12 CEP 5	Antarctic Site Inventory: 1994-2005	United States	X	-	-	-	
IP 23	CEP 4(c)	Annual List of any Initial Environmental Evaluations prepared in accordance with Annex I, Article 2, of the Protocol (Annex I, Article 6, lit. b, of the Protocol) and also ATCM Resolution 6 (1995) 2004/2005 Season	South Africa	X	-	-	-	
IP 24	ATCM 4	Report of the Depositary Government of the Antarctic Treaty and its Protocol (USA) in accordance with Recommendation XIII-2	United States	X	-	-	-	Status Treaty Status Protocol Status Measures
IP 24rev1	ATCM 4	Report of the Depositary Government of the Antarctic Treaty and its Protocol (USA) in accordance with Recommendation XIII-2	United States	X	-	-	-	Status Treaty Status Protocol Status Measures
IP 25	CEP 4(b)	ANDRILL – The Approved McMurdo Sound Portfolio Projects. Final CEE update	Germany Italy New Zealand United States	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 26	CEP 4(a)	Annual Report of New Zealand pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty	New Zealand	X	-	-	-	
IP 27	CEP 4(g)	Antarctic Protected Area System: Reviews of Antarctic Specially Protected Areas 116 and 131	New Zealand	X	-	-	-	
IP 28	CEP 4(g)	Antarctic Protected Area System: McMurdo Dry Valleys ASMA Management Group	Italy New Zealand United States	X	-	-	-	
IP 29	CEP 4(g)	A Review of the Antarctic Protected Areas System	New Zealand	X	-	-	-	
IP 28	CEP 4(g)	Antarctic Protected Area System: McMurdo Dry Valleys ASMA Management Group	Italy New Zealand United States	X	-	-	-	
IP 29	CEP 4(g)	A Review of the Antarctic Protected Areas System	New Zealand	X	-	-	-	
IP 30	CEP 4(b)	Draft Comprehensive Environmental Evaluation (CEE) Rebuild and Operation of the Wintering Station Neumayer III and Retrogradation of the Present Neumayer Station II	Germany	X	-	-	-	
IP 31	ATCM 4	Report by the Head of the Australian Delegation in his capacity as Representative of the Depositary Government for the Convention on the Conservation of Antarctic Marine Living Resources to the Twenty-Eighth Antarctic Treaty Consultative Meeting	Australia	X	-	-	-	
IP 32	ATCM 4	Progress with the implementation of the Agreement on the Conservation of Albatrosses and Petrels (ACAP): Report to ATCM XXVIII & CEP VIII from the ACAP Interim Secretariat hosted by the Australian Government	Australia	X	-	-	-	
IP 33	ATCM 14	Highlights of the Australian Antarctic Science Program 2004/2005	Australia	X	-	-	-	
IP 34	ATCM 11 ATCM 16	The Development of an International Antarctic Institute – A Joint venture between the University of Tasmania and international partner institutions	Australia	X	-	-	-	
IP 35rev1	ATCM 4	Report by the Head of the Australian Delegation in his capacity as Representative of the Depositary Government for the Agreement on the Conservation of Albatrosses and Petrels to the Twenty-Eight Antarctic Treaty Consultative Meeting	Australia	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 36	CEP 10	Report of the CEP Observer to the twenty third meeting of the scientific committee to CCAMLR, 25 to 29 October 2004	Australia	X	-	-	-	
IP 37	CEP 4(e) CEP 5	Reducing sewage pollution in the Antarctic marine environment using a sewage treatment plant	United Kingdom	X	-	-	-	
IP 38	ATCM 9	Report on the research study undertaken by the UK investigating interactions between humans and leopard seals in Antarctica	United Kingdom	X	-	-	-	
IP 39	CEP 4(a)	Annual Report pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty	Italy	X	-	-	-	
IP 40	CEP 4(c)	Talos Dome Ice Core Project (TALDICE): Initial Environmental Evaluation for Recovering a Deep Ice Core at Talos Dome, East Antarctica: Comments from CEP Contact Points.	Italy	X	-	-	-	
IP 41	CEP 4(g)	Brief report on Edmonson Point Management Plan progress	Italy	X	-	-	-	
IP 42	CEP 4(c)	Construction of the Czech Antarctic station on the James Ross Island Activities performed in the year 2004, and during the austral summer of 2004/05	Czech Republic	X	-	-	-	
IP 43	CEP 4(a)	ACT of August 6, 2003 on Antarctica and on amendment to some laws	Czech Republic	X	-	-	-	
IP 44	CEP 4(g)	Environmental Domain Analysis for the Antarctic Continent	New Zealand	X	-	-	-	Environmental Domain Analysis for the Antarctic Continent
IP 45	ATCM 11	Activity of the Russian Federation for preparation and holding of the International Polar Year 2007/08	Russian Federation	X	-	-	-	
IP 46	ATCM 14	Results of investigations under the subprogram "Study and Reserch of the Antarctic" of the Federal Program "World Ocean" in 2004	Russian Federation	X	-	-	-	
IP 47	ATCM 12 CEP 4(e)	Evacuation of AN-3T aircraft from the Amundsen-Scott station	Russian Federation	X	-	-	-	
IP 48	ATCM 8 ATCM 12	On possible regulation on non-governmental activity in the Antarctic Treaty area	Russian Federation	X	-	-	-	
IP 49	CEP 4(e)	Waste water treatment in Antarctica. A feasibility study for grey water treatment at Wasa station	Sweden	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 50	ATCM 15	Communication in polar regions. A study to guide and aid organizers and participants of Polar expeditions	Sweden	X	-	-	-	
IP 51	ATCM 15 CEP 4(a)	Wind power in Antarctica. A feasibility study for Wasa	Sweden	X	-	-	-	
IP 52	CEP 5	Initial Approach to Biological Monitoring in the Uruguayan “Artigas” Base	Uruguay	X	-	-	X	
IP 53	CEP 4(a)	Informe anual de acuerdo con el Artículo 17 del Protocolo al Tratado Antártico sobre la Protección del Medio Ambiente	Uruguay	-	-	-	X	
IP 54	CEP 5	Relevamiento magnético de las inmediaciones de la BCAA. Segunda etapa, marzo 2005	Uruguay	-	-	-	X	
IP 55	ATCM 16	1er. Simposio sobre Actividades e Investigación Científica en la Antártida	Uruguay	-	-	-	X	
IP 56	ATCM 12	Visitors Programme to the "Artigas" Antarctic Scientific Base (BCAA)	Uruguay	X	-	-	X	
IP 57	ATCM 14	Campaña 2005 del Servicio Geográfico Militar en la Antártida	Uruguay	-	-	-	X	
IP 58	CEP 4(c)	List of Initial Environmental Evaluations (IEE) prepared by Uruguay in 2004	Uruguay	X	-	-	-	
IP 59	CEP 4(c)	A Note On The Vulnerability Of Cetaceans In Antarctic Waters To Noise Pollution	ASOC	X	-	-	-	
IP 60	ATCM 4	Retrospection in Antarctica. Report of the Delegation of Romania	Romania	X	-	-	-	
IP 61	ATCM 14	Romanian Scientific Antarctic Activities in cooperation with China, Russian Federation and Belgium	Romania	X	-	-	-	
IP 62	ATCM 14	Romanian Scientific Antarctic Activities 2005-2006. Scientific Program Summary in cooperation with Australia	Romania	X	-	-	-	
IP 63	CEP 4(d)	Introduction of Non-native Species, Parasites and Diseases	IUCN	X	-	-	-	
IP 64	ATCM 4 CEP 4(g)	Resolution on Antarctic Conservation adopted at the 3d World Conservation Congress, Bangkok, November 2004	IUCN	X	-	-	-	
IP 65	CEP 4(a)	Report on the implementation of the Protocol on Environmental Protection as required by Article 17 of the Protocol	United Kingdom	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 66	CEP 4(b)	Draft Comprehensive Environmental Evaluation (CEE). Proposed Construction and Operation of Halley VI Research Station, Brunt Ice Shelf, Caird Coast, Antarctica	United Kingdom	X	-	-	-	Full version of draft CEE
IP 67	ATCM 9 CEP 4(f)	The Use of Heavy Fuel Oil in Antarctic Waters	COMNAP IAATO	X	-	-	-	
IP 67rev1	ATCM 9 CEP 4(f)	The Use of Heavy Fuel Oil in Antarctic Waters	COMNAP IAATO	X	-	-	-	
IP 68	ATCM 4	SCAR Report to XXVIII ATCM	SCAR	X	-	-	-	SCAR Report to XXVIII ATCM
IP 69	ATCM 14 ATCM 15 CEP 5	Biological Monitoring of Human Impacts in the Antarctic	SCAR	X	-	-	-	
IP 70	ATCM 17	9th Joint (SCAR-COMNAP) Committee on Antarctic Data Management (JCADM 9. Buenos Aires, September 12-16 2005)	Argentina	X	X	-	X	
IP 71	ATCM 12	Some legal issues posed by Antarctic tourism	ASOC	X	-	-	-	
IP 72	CEP 4(c)	Initial Environmental Evaluation for the establishment of a satellite reception and command facility (TrollSat) and a Norwegian Institute for Air Research (NILU) Laboratory as an integral part of the Troll Station in Dronning Maud Land, Antarctica	Norway	X	-	-	-	IEE TrollSat and NILU
IP 73	ATCM 15 CEP 4(a)	New Belgian research station in the Sør Rondane, Antarctica, 2004-2005 BELARE site survey expedition	Belgium	X	-	-	-	
IP 74	CEP 3 CEP 4(a)	Development Pressures on the Antarctic Wilderness	ASOC	X	-	-	-	
IP 75	CEP 4(c)	Baseline of the environment in the surroundings of the Czech Antarctic station	Czech Republic	X	-	-	-	
IP 76	CEP 5	Environmental monitoring of the Indian Permanent Station Maitri in pursuant to the Protocol on Environmental Protection to the Antarctic Treaty	India	X	-	-	-	
IP 77	ATCM 4	Report submitted to Antarctic Treaty Consultative Meeting XXVIII by the Depositary Government for the Convention for the Conservation of Antarctic Seals in accordance with Recommendation XIII-2, Paragraph 2(d)	United Kingdom	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 77rev1	ATCM 4	Report submitted to Antarctic Treaty Consultative Meeting XXVIII by the Depositary Government for the Convention for the Conservation of Antarctic Seals in accordance with Recommendation XIII-2, Paragraph 2(d)	United Kingdom	X	-	-	-	
IP 78	ATCM 16 ATCM 17	Diseño e implementación de la página WEB del Instituto Antártico Ecuatoriano (INAE)	Ecuador	-	-	-	X	
IP 79	ATCM 15	Decreto Ejecutivo de la creación del Instituto Antártico Ecuatoriano	Ecuador	-	-	-	X	
IP 80	ATCM 15 CEP 4(a)	India's endeavour for a new research Station in Antarctica- a report	India	X	-	-	-	
IP 81	ATCM 12	Site Guidelines Analysis	IAATO	X	-	-	-	
IP 82	ATCM 12	IAATO Overview of Antarctic Tourism. 2004-2005 Antarctic Season	IAATO	X	-	-	-	
IP 83	CEP 4(c)	A Report on The Environment of Great Wall Station and Zhongshan Station In current years for ATCM	China	X	-	-	-	
IP 84	CEP 4(a)	Annual Report of China pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty	China	X	-	-	-	
IP 85	ATCM 14	Biodiversity in the Antarctic	SCAR	X	-	-	-	
IP 86	ATCM 14	Ciencia Argentina en la Antártida	Argentina	-	-	-	X	
IP 87	ATCM 14	Report of the scientific research during the IX Expedition (Advance Report) 8 December 2003 - 24 February 2004	Ecuador	X	-	-	-	
IP 88	ATCM 14	Guía Geológica de los alrededores de la Estación Científica Ecuatoriana ''Pedro Vicente Maldonado'' (PEVIMA)	Ecuador	-	-	-	X	Guía Geológica
IP 89	ATCM 12	Proposed Amendments to the Standard Post Visit Site Report Form by the International Association of Antarctic Tour Operators (IAATO)	IAATO	X	-	-	-	
IP 90	ATCM 12	IAATO Site Specific Guidelines in the Antarctic Peninsula	IAATO	X	-	-	-	
IP 91	ATCM 14 ATCM 15	The Chinese National Antarctic Inland Expedition to Dome A	China	X	-	-	-	
IP 92	ATCM 15	Report on the air rescuing a Chinese Expeditioner by American airplane from South Pole Station	China	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 93	ATCM 18 CEP 7	Recent Developments in Biological Prospecting Relevant to Antarctica	UNEP	X	-	-	-	
IP 94	ATCM 11	Progress implementing the International Polar Year 2007–2008	SCAR	X	-	-	-	
IP 95	ATCM 4 ATCM 12	Report of the International Association of Antarctica Tour Operators 2004-2005	IAATO	X	-	-	-	
IP 95rev1	ATCM 4 ATCM 12	Report of the International Association of Antarctica Tour Operators 2004-2005	IAATO	X	-	-	-	
IP 96	ATCM 12	An Update on IAATO's Accreditation and Audit Scheme	IAATO	X	-	-	-	
IP 97	ATCM 12 CEP 4(d)	Update on Boot and Clothing Decontamination Guidelines and the Introduction and Detection of Diseases in Antarctic Wildlife: IAATO's Perspective	IAATO	X	-	-	-	
IP 98	CEP 4(g)	Draft proposal for discussion to Antarctic Protected Areas System - Antarctic Specially Managed Area No XX "Petermann Island, Wilhelm Archipelago, Antarctic Peninsula"	Ukraine	X	-	-	-	
IP 99	ATCM 14	Ukrainian Antarctic Research for 2004-2005 summer season	Ukraine	X	-	-	-	
IP 100	ATCM 12 ATCM 14	Possibilities for environmental changes monitoring with the assistance of tourist ship cruises staff/passenger photography in Antarctic Peninsula region	Ukraine	X	-	-	-	
IP 101	CEP 4(a)	Annual report pursuant to Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty. The Ukraine (2005)	Ukraine	X	-	-	-	
IP 102	CEP 4(a)	Annual Report pursuant to the Article 17 of the Protocol on Environmental Protection to the Antarctic Treaty. Japan. 2004/2005 Season	Japan	X	-	-	-	
IP 103	ATCM 5	Revised Scoping Paper on intersessional consultation process between the Secretariat and ATCM	Japan	X	-	-	-	
IP 104	ATCM 11 ATCM 14 ATCM 16 CEP 4(a) CEP 6	The Antarctic and Climate Change	ASOC	X	-	-	-	
IP 105	CEP 4(e)	Four- year program for clean-up at Syowa Station	Japan	X	-	-	-	
IP 106	ATCM 11 ATCM 16	Outreach activity on the Polar Research in conjunction with IPY 2007-2008	Japan	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 107	CEP 4(c)	Annual list of Initial Environmental Evaluations (IEE) and Comprehensive Environmental Evaluations (CEE). Calendar year 2004	Australia	X	-	-	-	
IP 107rev1	CEP 4(c)	Annual list of Initial Environmental Evaluations (IEE) and Comprehensive Environmental Evaluations (CEE). Calendar year 2004	Australia	X	-	-	-	
IP 108	ATCM 4 ATCM 10	Report of the Antarctic and Southern Ocean Coalition (ASOC)	ASOC	X	-	-	-	
IP 109	ATCM 8	Chairman's report on informal consultations convened in New York from 13 to 15 April 2005	New Zealand	X	X	-	X	
IP 110	CEP 4(a)	Informe anual de acuerdo con el Artículo 17 del Protocolo al Tratado Antártico sobre Protección del Medio Ambiente	Chile	-	-	-	X	
IP 111	ATCM 5	Apéndice del Protocolo Arbitraje. Designación de Arbitros por parte de Chile	Chile	-	-	-	X	
IP 112	ATCM 14	Expedición científica al Polo Sur 2004	Chile	-	-	-	X	
IP 113	ATCM 15	Air Rescue Service	Chile	X	-	-	-	
IP 114	ATCM 16	1st Antarctic School Fair	Chile	X	-	-	X	
IP 115	ATCM 11	Census of Antarctic Marine Life - A SCAR-supported field activity for IPY 2007/08	Australia	X	-	-	-	
IP 116	CEP 4(a)	Annual Report to the Protocol on Environmental Protection to the Antarctic Treaty	Korea, Republic of	X	-	-	-	
IP 117	ATCM 4	Report by IUCN Submitted to the XXVIII ATCM	IUCN	X	-	-	-	
IP 118	ATCM 14	Collaborations with Other Parties in Science and Related Activities during the 2004/2005	Korea, Republic of	X	-	-	-	Scientific Collaboration with Other Parties
IP 119	ATCM 12	Antarctic Tourism Graphics. An overview of tourism activities in the Antarctic Treaty Area	ASOC UNEP	X	-	-	-	Antarctic Tourism Graphics. An overview of tourism activities in the Antarctic Treaty Area
IP 120	ATCM 5	Corrigendum of Final Report of 27 ATCM (2004) Pages 170-175: Rules of Procedure	Japan	X	X	X	X	REVISED RULES OF PROCEDURE (2004)
IP 121	CEP 4(d)	Information Paper on The Use of Ballast Water in Antarctica	COMNAP IAATO	X	-	-	-	

No.	Agenda Item	Title	Submitted By	E	F	R	S	Attachments
IP 122	ATCM 4	COMNAP Report to ATCM XXVIII	COMNAP	X	-	-	-	Terms of Reference (TORs) and Membership of COMNAP Committees, Working Groups, Coordinating Groups and Networks Details of the 37 year-round stations operated by the National Antarctic Programs in the Antarctic Treaty area in 2005
IP 123	ATCM 5	Annex II Review	ATS	X	X	X	X	Annex II with draft revisions
IP 124	ATCM 6	ATS Contributions 2005	ATS	X	-	-	-	
IP 125	ATCM 6	The Control System of the Argentine Republic	Argentina	X	-	-	-	

ANNEX L

LIST OF PARTICIPANTS

Participants: Consultative Parties

Delegation	Name	Function	E-mail
ARGENTINA	Minister Ariel Ricardo Mansi	Head of Delegation	aim@mrecic.gov.ar
	Ambassador Elda Sampietro	Special Consultant	esuec@mrecic.gov.ar
	Dr. Mariano Memolli	Delegate	dna@dna.gov.ar
	Dr. Sergio Marenssi	Delegate	smarenssi@dna.gov.ar
	Secretary Leandro Sánchez	Delegate	esuec@mrecic.gov.ar
	Secretary Vanina Yanino	Delegate	vya@mrecic.gov.ar
AUSTRALIA	Mr. James Larsen	Head of Delegation	james.larsen@dfat.gov.au
	Dr. Anthony Press	Alternate	tony.press@aad.gov.au
	Ambassador Richard Rowe	Delegate	richard.rowe@dfat.gov.au
	Ms. Ruth Stewart	Delegate	ruth.stewart@dfat.gov.au
	Mr. Andrew Jackson	Delegate	andrew.jackson@aad.gov.au
	Mr. Tom Maggs	Delegate	tom.maggs@aad.gov.au
	Mr. Ewan McIvor	Delegate	ewan.mcivor@aad.gov.au
	Dr. Stephen Powell	Delegate	stephen.powell@aad.gov.au
	Mr. Warren Papworth	Delegate	warren.papworth@aad.gov.au
	Mr. Michael Johnson	Delegate	michael.j ohnson@dfat.gov.au
	Mr. Philip Kimpton	Delegate	philip.kimpton@ag.gov.au
	Mr. Ben Galbraith	Delegate	ben.galbraith@development.tas.gov.au
BELGIUM	Mr. Chris Vanden Bilcke	Head of Delegation	chris.vandenbilcke@diplobel.fed.be
	Mrs. Maaike Van Cauwenberghe	Delegate	vcau@belspo.be
	Mr. Alexandre De Lichtervelde	Delegate	ilse.maene@omnia.be
	Mr. Hugo Decleir	Delegate	
	Mr. Robin Slabbinck	Delegate	
BRAZIL	Mr. Oto Agripino Maia	Head of Delegation	
	Ms. Ana Candida Perez	Delegate	
	Rear Admiral José Eduardo Borges de Souza	Delegate	joseeduardo@secirm.mar.mil.br
	Mr. Paulo Eduardo de Azevedo Ribeiro	Delegate	
	Ms. Tânia Brito	Delegate	
	Lieutenant Captain Ms. Vânia Cláudia de Assis	Delegate	vanassis@bol.com.br
BULGARIA	Mr. Christo Jivkov	Head of Delegation	
	Prof. Christo Pimpirev	Delegate	polar@gea.uni-sofia.bg
	Mr. Nesho Chipev	Delegate	chipev@ecolab.bas.bg
	Mr. Vladimir Dontchev	Delegate	dontchevvl@noew.government.bg
	Mr. Vassal Belogushev	Delegate	belv@moew.government.bg
	Mr. Valeri Trendafilov	Delegate	trendv@moew.government.bg
	Mr. Mihail Bozhkov	Delegate	mbozhkov@mfa.government.bg
	Mrs. Tzvetana Philipova-Marinkova	Delegate	
CHILE	Ambassador Jorge Berguño	Head of Delegation	jberguno@inach.cl
	Dr. José Retamales	Delegate	
	Mrs. Paulina Julio	Delegate	
	Ambassador María Teresa Infante	Delegate	
	Mrs. María Luisa Carvallo	Delegate	mlcarvallo@minrel.gov.cl
	Ms. Verónica Vallejos	Delegate	vvallejos@inach.cl
	Lieutenant-Colonel Max Piraino	Delegate	
	Colonel Guillermo San Martín	Delegate	
	Commander (R) Víctor Sepúlveda	Delegate	
	Major Miguel Figueroa	Delegate	
CHINA	Ambassador Chen Shiqiu	Head of Delegation	chen_shiqiu@mfa.gov.cn
	Mr. Wei Wenliang	Delegate	chinare@263.net.cn
	Mr. Gou Haibo	Delegate	gou_haibo@mfa.gov.cn
	Mr. Wang Yong	Delegate	wang_yong@263.net.cn
	Ms. Chen Danhong	Delegate	hydane@vip.sina.com
	Mr. Sun Haiwen	Delegate	
	Ms. Xu Heyun	Delegate	
	Mr. Kong Xiangwen	Delegate	kong_xiangwen@mfa.gov.cn
	Mr. Li Xiaofu	Delegate	
ECUADOR	Mr. Arturo Romero Velásquez	Head of Delegation	
	Mrs. Laura Donosa	Delegate	
FINLAND	Ambassador Erik Ulfstedt	Head of Delegation	erik.ulfstedt@formin.fi
	Director Maimo Henriksson	Alternate	maimo.henriksson@formin.fi
	Mr. Markus Tarasti	Delegate	markus.tarasti@ymparisto.fi
	Mr. Mika Kalakoski	Delegate	mika.kalakoski@fimr.fi
	Petteri Kauppinen	Delegate	
	Tuomas Kuokkanen	Delegate	tuomas.kuokkanen@ymparisto.fi
	Tiina Jokinen	Delegate	tiina.jokinen@formin.fi
	Jukka Nikulainen	Delegate	

Delegation	Name	Function	E-mail
FRANCE	Jean-Luc Florent	Head of Delegation (First week)	jean-luc.florent@diplomatie.gouv.fr
	Michel Trinquier	Head of Delegation (Second week)	michel.trinquier@diplomatie.gouv.fr
	Yves Frenot	Delegate	yfrenot@ipev.fr
	Michel Champon	Delegate	
	Jean-Jacques Reyser	Delegate	jjreyser@ipev.fr
	Laurence Petitguillaume	Delegate	laurence.petitguillaume@ecologie.gouv.fr
	Caroline Krajka	Delegate	caroline.krajka@diplomatie.gouv.fr
	Emmanuel Reuillard	Delegate	emmanuel.reuillard@taaf.fr
	Didier Guiffault	Delegate	didier.guiffault@ecologie.gouv.fr
	Anne Choquet	Delegate	anne.choquet@univ-brest.fr
	Ann-Isabelle Guyomard	Delegate	annguyomard@hotmail.com
GERMANY	Ambassador Friedrich Catoir	Head of Delegation	504-RL@diplo.de
	Sven Krauspe	Alternate	504-1@diplo.de
	Frithjof Maennel	Delegate	frithjof.maennel@bmbf.bund.de
	Helmut Krüger	Delegate	helmut.krueger@bmwa.bund.de
	Wolfgang P. Dinter	Adviser	wolfgang.dinter@bfn-vilm.de
	Heinz Miller	Adviser	hmiller@awi-bremerhaven.de
	Hartwig Gernandt	Adviser	hgernandt@awi-bremerhaven.de
	Matthias Füracker	Delegate	fueracker-ma@bmj.bund.de
	Bert-Axel Szelinski	Delegate	axel.szelinski@bmu.bund.de
	Silja Vöneky	Legal Adviser	svoeneky@mpil.de
	Norbert W. Roland	Adviser	nw.roland@bgr.de
	Manfred Reinke	Adviser	mreinke@awi-bremerhaven.de
	Antje Neumann	Adviser	antje.neumann@uba.de
INDIA	Mrs. Deepa Gopalan Wadhwa	Head of Delegation	
	Mr Narinder Singh	Alternate	
	Dr. P.C. Pandey	Delegate	pcpandey@ncaor.org
	Mr. Ajai Saxena	Delegate	ajai@dod.delhi.nic.in
	Dr. N. Khare	Delegate	
	Mr. Rakesh Kumar	Delegate	
	Ms. Deepa Gopalan Wadhwa	Delegate	
	Ms. Vani Rao	Delegate	
ITALY	Ambassador Arduino Fornara	Head of Delegation	arduino.fornara@esteri.it
	Ms Patrizia Vigni	Delegate	
	Mr Sandro Torcini	Delegate	
	Mr Bryan Bolasco	Delegate	
	Mr. Roberto Galloni	Delegate	
	Mr. Karl Turicchia	Delegate	
JAPAN	Mr. Kiyoshi Koinumah	Head of Delegation	takaaki.kato@mofa.go.jp
	Mr. Masaki Ejiri	Alternate	
	Mr. Akiho Shibata	Alternate	
	Mr. Takaaki Kato	Delegate	takaaki.kato@mofa.go.jp
	Mr. Taku Sasaki	Delegate	
	Mr. Noriaki Takagi	Delegate	
	Mr. Yuya Takabayashi	Delegate	
	Mr. Kousei Masu	Delegate	
	Mr. Toru Kimoto	Delegate	
	Mr. Yoichi Motoyoshi	Delegate	
	Dr. Hajime Ito	Delegate	
	Ms. Yukari Takamura	Delegate	
	Mr. Shinichi Akaike	Delegate	
	Mr. Yuichi Takehara	Delegate	
KOREA, REPUBLIC OF	Jong-kon Yoon	Head of Delegation	
	Heung-soo Kim	Delegate	
	Won-sik Lee	Delegate	
	Jae-soo Park	Delegate	
	Sang-joon Lee	Delegate	
	In-young Ahn	Delegate	
	Jae-yong Choi	Delegate	jchoi@kei.re.kr
NETHERLANDS	Ms. Janneke de Vries	Head of Delegation	janneke-de.vries@minbuza.nl
	Mr. Rene Léfeber	Alternate	rene.lefeber@minbuza.nl
	Mr. Dick de Bruijn	Delegate	
	Mr. Jan de Boer	Delegate	
	Mr. Kees Bastmeijer	Delegate	c.j.bastmeijer@uvt.nl
	Mr. Han Stel	Delegate	stel@nwo.nl
	Ms. Marlynda Elstgeest	Delegate	marlynda@oceanwide-expeditions.com
NEW ZEALAND	Mr Don MacKay	Head of Delegation	don.mackay@mfat.govt.nz
	Mr Trevor Hughes	Alternate	trevor.hugues@mfat.govt.nz
	Dr Neil Gilbert	Delegate	n.gilbert@antarcticanz.govt.nz
	Mr Lou Sanson	Delegate	l.sanson@antarcticanz.govt.nz
	Dr Harry Keys	Delegate	hkeys@doc.govt.nz
	Ms Rosemary Paterson	Delegate	rosemary.paterson@mfat.govt.nz
	Ms Elana Geddis	Delegate	elana.geddis@mfat.govt.nz
	Ms Alice Revell	Delegate	alice.revell@mfat.govt.nz

Delegation	Name	Function	E-mail
NORWAY	Ambassador Karsten Klepsvik	Head of Delegation	kkl@mfa.no
	Mr. Olav Orheim	Delegate	
	Ms. Kjerstin Askholt	Delegate	
	Mr. Stein Paul Rosenberg	Delegate	
	Ms. Ziv Bødtker	Delegate	
	Ms. Gry Waage	Delegate	
	Mr. Svein Tore Halvorsen	Delegate	
	Ms. Solveig Nowacki	Delegate	
	Ms. Inger Aarvaag-Stokke	Delegate	
	Ms. Aud Slettemoen	Delegate	
	Mr. Christopher Brodersen	Delegate	
	Mr. Jan Gunnar Winter	Delegate	
	Ms. Birgit Njaastad	Delegate	njaastad@npolar.no
	Mr. Jens H. Koefoed	Delegate	
	Mr. Steinar Sæterdal	Delegate	
PERU	Mr. Fortunato Isasi-Cayo	Head of Delegation	
	Mr. Juan Carlos Rivera	Delegate	
POLAND	Mr. Andrzej Misztal	Head of Delegation	andrzej.misztal@msz.gov.pl
	Monika Ekler	Delegate	
	Stanislaw Rakusa-Suszczewski	Delegate	profesor@dab.waw.pl
	Piotr Kaszuba	Delegate	
RUSSIAN FEDERATION	Ambassador Nikolay Sadchikov	Head of Delegation	
	Mr. Alexander Frolov	Vice Head of Delegation	
	Mr. Valery Lukin	Delegate	
	Mr. Valery Martyshchenko	Delegate	
	Mr. Valery Masolov	Delegate	
	Mr. Maxim Moskalevsky	Delegate	
	Mr. Yury Tsaturov	Delegate	seadep@mcc.mecom.ru
	Ms. Anna Shatounovskaya-Byurno	Delegate	
	Ms. Anna Bestramovich	Expert	
	Ms. Elena Kuznetsova	Expert	
	Mr. Andrey Kalinin	Expert	
	Mr. Victor Pomelov	Expert	
SOUTH AFRICA	Mr H R Valentine	Head of Delegation	henryv@antarc.wcape.gov.za
	Mr R N Skinner	Alternate	rskinner@deat.gov.za
	Ms S de Wet	Legal Advisor	dewetjgs@foreign.gov.za
	Mr. L Manley	Advisor	
	Prof. L Feris	Observer	
SPAIN	Ambassador Fernando de la Serna	Head of Delegation	fernandodela.serna@aeci.es
	Mr. Manuel Catalán	Delegate	
	Ms. Carmen-Paz Marti	Delegate	
	Colonel Antonio Nadal	Delegate	
	Ms. Ana Rodríguez	Delegate	
	Ms. Cristina Aguilar	Delegate	cristina.aguilar@mae.es
	Mr. Carlos Palomo	Delegate	carlos.palomo@md.ieo.es
SWEDEN	Mr. Greger Widgren	Head of Delegation	greger.widgren@foreign.ministry.se
	Dr. Marie Jacobsson	Alternate	marie.jacobsson@foreign.ministry.se
	Ms. Anna Carin Thomér	Delegate	annacarin.thomer@sustainable.ministry.se
	Professor Anders Karlqvist	Delegate	anders.karlqvist@polar.se
	Mr. Olle Melander	Delegate	olle.melander@tourist.se
	Dr. Marianne Lillieskö ld	Adviser	marianne.lillieskold@naturvardsverket.se
	Mr. Erik Lindfors	Adviser	erik.lindfors@foreign.ministry.se
	Mr. Kenneth Nordlander	Delegate	kenneth.nordlander@justice.ministry.se
	Mr. Thomas Ordeberg,	Adviser	
	Mr. Johan Pettersson	Adviser	johan.pettersson@sustainable.ministry.se
	Mr. Johan Sidenmark	Delegate	johan.sidenmark@polar.se
	Ms. Marina Axén	Adviser	marina.axen@industry.ministry.se
	Dr. Rolf Carman	Adviser	
	Professor Bo Fernholm	Adviser	bofernholm@nrm.se
	Ambassador Hans Linton	Adviser	
	Mr. Pål Wrange	Adviser	
	Ambassador Helena Ödmark	Delegate	
	Mr. Håkan Lundquist	Adviser	
	Mr. Thomas Utterström	Adviser	
	Ms. Berit Balfors,	Delegate	
	Ms. Antoienette Oscarsson	Delegate	
	Ms. Ann Thomsen	Delegate	
	Mr. Fredrik Gröndahl	Delegate	
	Ms. Sara Modin	Delegate	
UKRAINE	Mr. Andriy Gurzhiy	Head of Delegation	
	Mr. Valeriy Lytvynov	Delegate	uac@uac.gov.ua
	Mr. Gennadiy Milinevskyy	Delegate	science@uac.gov.ua
	Mr. Volodymyr Vaschenko	Delegate	
	Mr. Konstantin Billyar	Delegate	
	Mr. Eduard Terpytsky	Delegate	
	Mr. Andriy Marchenko	Delegate	

Delegation	Name	Function	E-mail
UNITED KINGDOM	Dr. Mike Richardson	Head of Delegation	mike.richardson@fco.gov.uk
	Ms. Jane Rumble	Delegate	
	Ms. Jill Barret	Delegate	
	Mr. Paul Davis	Delegate	
	Mr. David Stock	Delegate	david.stock@fco.gov.uk
	Ms. Sofia Norberg	Delegate	
	Ms. Alice Hague	Delegate	
	Mr. Robert Culshaw	Delegate	
	Mr. John Dudeney	Delegate	
	Mr. John Shears	Delegate	
	Mr. Chris Rapley	Delegate	
	Mr. Rod Downie	Delegate	
	Mr. Kevin Hughes	Delegate	
	Mr. Karl Tuplin	Delegate	
	Ms. Karen Wood	Delegate	
	Mr. Kenneth Boak	Delegate	
UNITED STATES	Mr. Raymond Arnaudo	Head of Delegation	arnaudorv@state.gov
	Mr. Fabio Saturni	Alternate	saturnifm@state.gov
	Mrs. Polly Penhale	Delegate	ppenhale@nsf.gov
	Mr. Karl Erb	Delegate	
	Ms. Aimee Hessert	Delegate	
	Mr. Mahlon Kennicutt II	Delegate	
	Mr. Ron Naveen	Delegate	
	Mr. Lawrence Rudolph	Delegate	lrudolph@nsf.gov
	Mr. Mark Simonoff	Delegate	
	Ms. Pamela Toschik	Delegate	
	Mrs. Victoria Underwood-Wheatley	Delegate	vunderwoodwheatley@sbcglobal.net
URUGUAY	Rear Admiral Hugo Viglietti di Mattia	Head of Delegation	hugoviglietti@yahoo.es
	Mr. Aldo Felici	Delegate	ambiente@iau.gub.uy
	Mr. Miguel Dobrich	Delegate	madonline21@hotmail.com
	Dr. Roberto Puceiro	Delegate	eliro@adinet.com.uy
	Dr. Nestor Julio Moreira	Delegate	
	Dr. Jorge Cassinelli	Delegate	
	Notary Doris Rodríguez	Delegate	drodriguez@mintur.gub.uy

Participants: Non Consultative Parties

Delegation	Name	Function	E-mail
CANADA	Kimberley Ferguson	Head of Delegation	
	Lorenz Friedlaender	Delegate	
	Kenneth Macartney	Delegate	
	Kimberly Phillips	Delegate	
	Dr. Aili Käärik	Delegate	
CZECH REPUBLIC	Mr. Jan ČíŽek	Head of Delegation	
	Mr. Pavel Sladky	Alternate	
	Mr. Pavel Prošek	Delegate	
	Mr. Petr Mixa	Delegate	
	Mr. Ondřej Vícha	Delegate	
DENMARK	Mrs. Lone Anderse	Head of Delegation	
ESTONIA	Mr. Mart Saarso	Head of Delegation	
	Mr Jüri Kahn	Delegate	
	Ms Maija Tasa	Delegate	
GREECE	Colonel George Macridis	Head of Delegation	
HUNGARY	Mr. Tamas Kiraly	Head of Delegation	
ROMANIA	Dr. Teodor Gheorghe Negoita	Head of Delegation	negoita_antarctic@yahoo.com
	Mr. Ciprian Popa,	Delegate	
	Dr. Florica Toparceanu	Delegate	
	Mr. Daniel Iftimescu	Delegate	
	Dr. Gabriela Bahrim	Delegate	
	Mr. Daniel Ionita	Delegate	
SLOVAKIA	Eva Surkova	Head of Delegation	eva_surkova@foreign.gov.sk
SWITZERLAND	Mrs. Evelyne Gerber	Head of Delegation	evelyne.gerber@eda.admin.ch
	Mr. Markus Börlin	Delegate	
	Valérie Diserens	Delegate	

IV. List of Participants

Participants: Observers

Delegation	Name	Function	E-mail
CCAMLR	Dr Denzil G M Miller	Head of Delegation	denzil@ccamlr.org
	Dr Edith Fanta	Delegate	
COMNAP	Mr. Gérard Jugie	Head of Delegation	gjugie@ipev.fr
	Mr. Antoine Guichard	Alternate	sec@comnap.aq
SCAR	Professor David W H Walton	Head of Delegation	d.walton@bas.ac.uk
	Professor Jörn Thiede	Delegate	jthiede@awi-bemerhaven.de
	Dr Colin P Summerhayes	Delegate	cps32@cam.ac.uk
	Professor Steven L Chown	Delegate	slchown@sun.ac.za
	Dr Peter D Clarkson	Delegate	pdc3@hermes.cam.ac.uk
	Dr Marzena I Kaczmarsk	Delegate	mik24@cam.ac.uk
	Dr David Carlson	Delegate	ipy2@bas.ac.uk

IV. List of Participants

Participants: Experts

Delegation	Name	Function	E-mail
ASOC	Dr. James Barnes	Head of Delegation	antarctica@igc.org
	Ms. Sarah Dolman	Delegate	
	Dr. Alan Hemmings	Delegate	
	Mr. Ricardo Roura	Delegate	
IAATO	Mrs. Denise Landau	Head of Delegation	iaato@iaato.org
	Mr. David Rootes	Delegate	
	Ms. Paula Kim Crosbie	Delegate	
IHO	Mr. Hugo Gorziglia	Head of Delegation	hgorziglia@ihb.mc
IMO			
IOC			
IUCN	Dr Maj de Poorter	Head of Delegation	m.depoorter@auckland.ac.nz
UNEP	Christian Lambrechts	Head of Delegation	christian.lambrechts@unep.org
	Sam Johnston	Delegate	
PATA			
WMO			
WTO			

Participants: Invited Guests

Delegation	Name	Function	E-mail
MALAYSIA	Ambassador Jasmi Md. Yusoff	Head of Delegation	
	Mrs. Razinah Ghazali		
	Mrs. Nur Izzah Wong Mee Choo		
	Dr. Azizan Abu Sama		

ANNEX M

NATIONAL CONTACT POINTS

Contacts: Consultative Parties

PARTY	ATCM REPRESENTATIVE	ATCM PARAGRAPH 3 (Treaty Matters)	ATCM PARAGRAPH 5 (Scientific and operational matters)
ARGENTINA	Mr. Ruben Nestor Patto Director, Antarctic Division Ministerio de Relaciones Exteriores, Comercio Internacional y Culto Esmeralda 1212 Buenos Aires, ARGENTINA Tel (direct): +54-11-4819-7419 Tel: +54-11-4819-7000 Fax (direct) Fax: Email: rpc@mrecic.gov.ar	Mr. Ruben Nestor Patto Director, Antarctic Division Ministerio de Relaciones Exteriores, Comercio Internacional y Culto Esmeralda 1212 Buenos Aires, ARGENTINA Tel (direct): +54-11-4819-7419 Tel: +54-11-4819-7000 Fax (direct) Fax: Email: rpc@mrecic.gov.ar	Dr. Mariano A. Memolli Director, Antarctic Programme Dirección Nacional del Antártico Cerrito 1248 Buenos Aires, ARGENTINA Tel (direct):+54-11-4813-7807 Tel: +54-11-4813-7807, 4816-2352 Fax (direct) +54-11-4813-7807 Fax: 4813-7807 Email: dna@dna.gov.ar
AUSTRALIA	Mr. Christos Moraitis Department of Foreign Affairs and Trade of Australia R.G. Casey Building, John McEwan Crescent Canberra, AUSTRALIA Tel (direct): +61-2-6261-3103 Tel: Fax (direct) Fax: Email: christos.Moraitis@dfat.gov.au	Ms. Marina Tsirbas Department of Foreign Affairs and Trade of Australia R.G. Casey Building, John McEwan Crescent Canberra, AUSTRALIA Tel (direct): +61-2-6261-3718 Tel: Fax (direct) +61-2-6261 2144 Fax: Email: marina.tsirbas@dfat.gov.au	
BELGIUM	Mr. Chris van den Bilcke Directorate General for Multilateral and Thematic Affairs Ministry of Foreign Affairs of Belgium Rue des Petits Carmes 15 Brussels, BELGIUM Tel (direct): +32-2-501-3712 Tel: Fax (direct) +32-2-501-3703 Fax: Email: chris.vandenbilcke@diplobel.fed.be	Mr. Chris van den Bilcke Directorate General for Multilateral and Thematic Affairs Ministry of Foreign Affairs of Belgium Rue des Petits Carmes 15 Brussels, BELGIUM Tel (direct): +32-2-501-3712 Tel: Fax (direct) +32-2-501-3703 Fax: Email: chris.vandenbilcke@diplobel.fed.be	Mw. Maaike van Cauwenberghe Programme Manager Federal Agency for Scientific, Technical and Cultural Affairs Straat van de Wetenschap Brussels, BELGIUM Tel (direct): +32-2-238-3678 Fax (direct) +32-2-230-59 12 Email:vcau@belspo.be

PARTY	ATCM REPRESENTATIVE	ATCM PARAGRAPH 3 (Treaty Matters)	ATCM PARAGRAPH 5 (Scientific and operational matters)
BRAZIL	Rear-Admiral Jose Eduardo Borges de Souza Manager of Brazilian Antarctic Program (PROANTAR) Committee on Maritime Affairs Brasilia, BRAZIL Tel (direct): +55-61-429-1318 Tel: Fax (direct) +55-61-429-1336 Fax: Email: joseeduardo@secirm.mar.mil.br	Mrs. Maria Teresa Mesquita Péssoa Head of Division for Marine, Antarctic and Outer Space Ministry of Foreign Affairs of Brasil Anexo I - sala 736, Esplanada dos Ministerios Brasilia, BRAZIL Tel (direct): +55-61-411 6730, 411 6282 Tel: Fax (direct) +55-61-411-6906 Fax: Email: mmesquita@mre.gov.br	Mr. Radii Fontes da Rocha Vianna Head, Division for Marine, Antarctic and Outer Space Affairs Ministry of Foreign Affairs of Brasil Anexo I - sala 736, Esplanada dos Ministerios Brasilia, BRAZIL Tel (direct): +55-61-411-6730 Tel: Fax (direct) Fax: Email: hadil@mre.gov.br
BULGARIA	Mr. Mihail Bozhkov Chief Expert, International Public Law Directorate Ministry of Foreign Affairs of Bulgaria Alexander Gendov Ner.2 Sofia, BULGARIA Tel (direct): +359-2-948-2166 Tel: Fax (direct) Fax: Email: mbozhkov@mfa.government.bg	Mr. Mihail Bozhkov Chief Expert, International Public Law Directorate Ministry of Foreign Affairs of Bulgaria Alexander Gendov Ner.2 Sofia, BULGARIA Tel (direct): +359-2-948-2166 Tel: Fax (direct) Fax: Email: mbozhkov@mfa.government.bg	Mr. Nesho Chipev Bulgarian Antarctic Institute 15, Tzar Osvoboditel Sofia, BULGARIA Tel (direct): Tel: +359-2-930-853 1 Fax (direct) Fax: +359-2-944-6487 Email: chipev@ecolab.bas.bg
CHILE	Mr. Cristián Maquieira Director, Department of Environment, Law of the Sea and Antarctic Affairs Ministry of Foreign Affairs of Chile Catedral 1143 Santiago, CHILE Tel (direct): +56-2-679-4373 Tel: Fax (direct) Fax: +56 2 699 6640 Email: cmaquieira@minrel.gov.cl	Mrs. María Luisa Carvallo Head of the Antarctic Department Ministry of Foreign Affairs of Chile Catedral 1143 Santiago, CHILE Tel: +56 2 679 4720 Fax: +56 2 673 2152 Email: mlcarvallo@minrel.gov.cl	Dr. José Retamales Director Instituto Antártico Chileno Plaza Muñoz Gamero 1055 Punta Arenas, CHILE Tel (direct): +56 61 29 8101 Tel: +56-61-29-8100 Fax (direct): +56 61 298 149 Fax: Email: jretamales@inach.cl
CHINA	Mr. Chen Shiqiu Head of Delegation for the 28 ATCM Ministry of Foreign Affairs of China No. 2 Chao Yang Men Nan Da Jie Beijing, CHINA Tel (direct): +86-10-65964198 Tel: Fax (direct) Fax: Email: chen_shiqiu@mfa.gov.cn	Ms. Ting Li Ministry of Foreign Affairs of China No. 2 Chao Yang Men Nan Da lie Beijing, CHINA Tel (direct): Tel: Fax (direct) Fax: Email: li_ting@mfa.gov.cn Ms. Han Yingda Dept. of Treaty and Law Ministry of Foreign Affairs of China No. 2 Chao Yang Men Nan Da lie Beijing, CHINA Tel (direct): +86-10-65963259 Tel: Fax (direct) +86-10-65963257 Fax: Email: han_yingda@mfa.gov.cn	Mr. Qu Tanzhou Chinese Arctic and Antarctic Administration 1 Fuxingmenwai Street Beijing, CHINA Tel (direct): +86-10-68047751, 68017624 Tel: Fax (direct) Fax: Email: qutanzhou@vip.sina.com

PARTY	ATCM REPRESENTATIVE	ATCM PARAGRAPH 3 (Treaty Matters)	ATCM PARAGRAPH 5 (Scientific and operational matters)
ECUADOR	Ambassador Eduardo Mora Ministry of Foreign Affairs of Ecuador Carrion 10-40 y Av. 10 de Agosto Quito, ECUADOR Tel (direct): Tel: +593-2-2993284 Fax (direct) +593-2-248-5166 Fax: Email: dgsubsobna@mmrree.gov.ec	Pablo A Bonifaz Arboleda Dirección General de Soberanla Nacional Ministry of Foreign Affairs of Ecuador Carrion 10-40 y Av. 10 de Agosto Quito, ECUADOR Tel (direct): Tel: +593-2-2993284 Fax (direct) Fax: Email: pbonifaz@mmrree.gov.ec	Mr. Rafael Cabello Peñafiel Oceanographic Institute of the Navy P.O. Box 5940, Base Naval Sur, Av. 25 de Julio Guayaquil, ECUADOR Tel (direct): +593-4-248-1300 Tel: +593-4-4248 1300 Fax (direct) Fax: +593-4-42485166 Email: proantec@inocar.mil.ec
FINLAND	Mr. Erik Ulfstedt Ministry of Foreign Affairs of Finland P.O. Box 176 Helsinki, FINLAND Tel (direct): +358-9-1605-5279 Tel: Fax (direct) Fax: Email: erik.ulfstedt@formin.fi	Mr. Erik Ulfstedt Ministry of Foreign Affairs of Finland P.O. Box 176 Helsinki, FINLAND Tel (direct): +358-9-1605-5279 Tel: Fax (direct) Fax: Email: erik.ulfstedt@formin.fi	
FRANCE	Mr. Michel Trinquier Sous-Directeur du Droit de la mer, des pêches et de l'Antarctique Ministry of Foreign Affairs of France 57 Boulevard des Invalides Paris, FRANCE Tel (direct): +33-1-5369-3653, 5369-3654 Tel: +33-1-4317-5353 Fax (direct) +33-1-5369-3 676 Fax: Email: michel.trinquier@diplomatie.gouv.fr	Ms. Caroline Krajka Ministry of Foreign Affairs of France 57 Boulevard des Invalides Paris, FRANCE Tel (direct): +33-1-5369 3655, 5369 3654 Tel: +33-1-4317-5353 Fax (direct) +33-1-5369 3676 Fax: Email: caroline.krajka@diplomatie.gouv.fr	Mr. Yves Frenot Institut Paul Emile Victor Technopole Brest-Iroise, BP75 Plouzane, FRANCE Tel (direct): +33-29-8056502 Tel: Fax (direct) +33-29-8056555 Fax: Email: y.frenot@ipev.fr
GERMANY	Mr. Friedrich Catoir Ambassador; Law of the Sea, Antarctica, Space and Environmental law. Ministry of Foreign Affairs of the Federal Republic of Germany Werderscher Markt 1 Berlin, GERMANY Tel (direct): +49-30-5000-2997 Tel: Fax (direct): 49-30-5000-52997 Fax: Email: 504-1@auswaertiges-amt.de	Mr. Friedrich Catoir Ambassador; Law of the Sea, Antarctica, Space and Environmental law. Ministry of Foreign Affairs of the Federal Republic of Germany Werderscher Markt 1 Berlin, GERMANY Tel (direct): +49-30-5000-2997 Tel: Fax (direct): 49-30-5000-52997 Fax: Email: 504-1@auswaertiges-amt.de	Dr. Hartwig Gernandt Director Logistics Alfred Wegener Institute for Polar and Marine Research Bremerhaven PO Box 120161 Bremerhaven, GERMANY Tel (direct): +49-471-4831-1160 Tel: Fax (direct) +49-471-4831-1355 Fax: Email: hgernandt@awi-bremerhaven.de
INDIA	Dr. H.K. Gupta Secretary Department of Ocean Development Mahasagar Bhawan, Block 12, CGO Complex, Lodhi Road New Delhi, INDIA Tel (direct): +91-11-2436-0874 Tel: +91-11-2436 2548 Fax (direct) +91-11-2436-0336 Fax: +91-11-2436 0336 Email: dodsec@dod.delhi.nic.in Mr. Ajai Saxena Director-Antarctic Department of Ocean Development Mahasagar Bhawan, Block 12, CGO Complex, Lodhi Road New Delhi, iNDIA Tel (direct): +91-11-2436 0865 Tel: +91-11-2436 2548 Fax (direct) Fax: +91-11-2436 0336 Email: ajai@dod.delhi.nic.in	Dr. P.S. God Department of Ocean Development Mahasagar Bhawan, Block 12, CGO Complex, Lodhi Road New Delhi, 1NDIA Tel (direct): +91-11-2436 0874 Tel: +91-11-2436 2548 Fax (direct) +91-11-2436 2644 Fax: +91-11-2436 0336 Email: dodsec@dod.delhi.nic.in Dr. H.K. Gupta Secretary Department of Ocean Development Mahasagar Bhawan, Block 12, CGO Complex, Lodhi Road New Delhi, 1NDIA Tel (direct): +91-11-2436-0874 Tel: +91-11-2436 2548 Fax (direct) +91-11-2436-0336 Fax: +91-11-2436 0336 Email: dodsec@dod.delhi.nic.in	Dr. Prem Chand Pandey Director National Centre for Antarctic & Ocean Research Research Headland Sada, Vasco-da-Gama Goa, INDIA Tel (direct): +91-832-252-0876 Tel: Fax (direct) +91-832-252-0877 Fax: Email: pcpandey@ncaor.org

PARTY	ATCM REPRESENTATIVE	ATCM PARAGRAPH 3 (Treaty Matters)	ATCM PARAGRAPH 5 (Scientific and operational matters)
ITALY	Ambassador Arduino Fornara Ministry of Foreign Affairs of Italy Piazzale della Farnesina, 1 Rome, ITALY Tel (direct): +39-06-369 1 8261 Tel: Fax (direct) Fax: Email: arduino.fornara@esteri.it Ms. Simone Landini Ministry of Foreign Affairs of Italy Piazzale della Farnesina, 1 Rome, ITALY Tel (direct): +39-06-3691-4668 Tel: Fax (direct) +39-06-3691-5159 Fax: Email: Simone.Landini@esteri.it	Ms. Simone Landini Ministry of Foreign Affairs of Italy Piazzale della Farnesina, 1 Rome, ITALY Tel (direct): +39-06-3691-4668 Tel: Fax (direct) +39-06-3691-5159 Fax: Email: Simone.Landini@esteri.it	Mr. Nino Cucinotta ENEA Consortium for the impelementation of the National Programme of Antarctic Research Via Anguillarese, 301 Roma, ITALY Tel (direct): Tel: Fax (direct) Fax: Email: direzione@consorzio.pnra.it Mr. Pietro Giuliani Italian National Agency for New Technologies, Energy and the Environment Rome, ITALY Tel (direct): Tel: Fax (direct) Fax: Email: internazio@enea.pnra.it
JAPAN	Koichi Ito Director, Global Environment Division Ministry of Foreign Affairs of Japan Kasumigaseki 2-2-1, Chiyoda-ku Tokyo, JAPAN Tel (direct): Tel: +81-3-3580-3311, 3581-1905 Fax (direct) Fax: Email: koichi.ito@mofa.go.jp	Mr. Takaaki Kato Global Environment Division Ministry of Foreign Affairs of Japan Kasumigaseki 2-2-1, Chiyoda-ku Tokyo, JAPAN Tel (direct): +81-3-5501 8245 Tel: +81-3-3580-3311, 3581-1905 Fax (direct) +81-3-5501-8244 Fax: Email: takaaki.kato@mofa.go.jp	
KOREA, REPUBLIC OF	Mr. Hai-ung Jung Director-General Treaties Bureau Ministry of Foreign Affairs of Korea Seoul, KOREA Tel (direct): +82-2-2100-7503 Tel: Fax (direct) Fax: Email: legalaffairs@mofat.go.kr		Jaeyong Choi Korea Ocean Research and Development Institute P.O. Box 29 Seoul, KOREA Tel (direct): Tel: +82-2-406 5820 Fax (direct) Fax: Email: jchoi@kei.re.kr
NEW ZEALAND	Mr. Trcvor Hughes Head, Antarctic Policy Unit Ministry of Foreign Affairs and Trade of New Zealand 195 Lambton Quay, Private Bag Wellington, NEW ZEALAND Tel (direct): +64-4-439-8570 Tel: Fax (direct) +64-4-439-8 103 Fax: Email: trevor.hughes@mfat.govt.nz	Mr. Trevor Hughes Head, Antarctic Policy Unit Ministry of Foreign Affairs and Trade of New Zealand 195 Lambton Quay, Private Bag Wellington, NEW ZEALAND Tel (direct): +64-4-439-8570 Tel: Fax (direct) +64-4-439-8 103 Fax: Email: trevor.hughes@mfat.govt.nz Ms. Alice Revell Ministry of Foreign Affairs and Trade of New Zealand 195 Lambton Quay, Private Bag Wellillgton, NEW ZEALAND Tel (direct): Tel: Fax (direct) Fax: Email: alice.revell@mfat.govt.nz	Lou Sanson Chief Executive Antarctica New Zealand Orchard Road, Private Bag 4745 Christchurch, NEW ZEALAND Tel (direct): +64-3-358-0209 Tel: +64-3-358-0200 Fax (direct) +64-3-358-0211 Fax: Email: l.sanson@antarcticanz.govt.nz
NORWAY	Mr. Karsten Klepsvik Royal Ministry of Foreign Affairs of Norway 7. Juni Plassen/Victoria Terrasse, P.O. Box 8114 DEP. Oslo, NORWAY Tel (direct): +47-2224 3428 Tel: +47-2224-3600 Fax (direct) +47-2224-9580 Fax: Email: kkl@mfa.no	Nir. Karsten Klepsvik Royal Ministry of Foreign Affairs of Norway 7. Juni Plassen/Victoria Terrasse, P.O. Box 8114 DEP. Oslo, NORWAY Tel (direct): +47-2224 3428 Tel: +47-2224-3600 Fax (direct) +47-2224-9580 Fax: Email: kkl@mfa.no	Ms. Birgit Njaastad Norwegian Polar Institute P.O. Box 399 Tromsø, NORWAY Tel (direct): +47-7902-2612 Tel: Fax (direct) Fax: Email: njaastad@npolar.no

PARTY	ATCM REPRESENTATIVE	ATCM PARAGRAPH 3 (Treaty Matters)	ATCM PARAGRAPH 5 (Scientific and operational matters)
PERU	Mr. Hugo de Zela Ministry of Foreign Affairs of Peru Jiron Ucayali 337 Lima, PERU Tel (direct): +51-1-311-2651 Tel: Fax (direct) +51-1-311-2659 Fax: Email: hdezela@rree.gob.pe	Mr. Victor Matallana Executive Secretary Peruvian Antarctic Institute Jiron Ucayalí 259 - 5to Piso Lima, PERU Tel (direct): +51-1-311-2595 Tel: +51-1-311-2596 Fax (direct) +51-1-426-7124 Fax: +51- 1-+5 1-1-426-7124 Email: fmatallana@rree.gob.pe	
POLAND	Mr. Andrzej Misztal Ministry of Foreign Affairs of Poland Warszawa, POLAND Tel (direct): +48-22-523-9424 Tel: Fax (direct) Fax: Email: andrzej.misztal@msz.gov.pl	Mr. Andrzej Misztal Ministry of Foreign Affairs of Poland Warszawa, POLAND Tel (direct): +48-22-523-9424 Tel: Fax (direct) Fax: Email: andrzej.misztal@msz.gov.pl	Prof. Dr. Stanislaw Rakusa-Suszczewski Director Department of Antarctic Biology & Arctowski Station UI. Ustrzyska 10/11 Warszawa, POLAND Tel (direct): Tel: +48-22-846-3383 Fax (direct) Fax: +48-22-846 1912 Email: profesor@dab.waw.pl
RUSSIAN FEDERATION	Mr. Pavel G. Dzyubenko Legal Department Ministry of Foreign Affairs of the Russian Federation Smolenskaya-Sennaya P1. 32/34 Moscow, RUSSIA Tel (direct): +7-95-241-7718 Tel: Fax (direct) +7-95-241-1166 Fax: Email: dp@mid.ru	Mr. Pavel G. Dzyubenko Legal Department Ministry of Foreign Affairs of the Russian Federation Smolenskaya-Sennaya P1. 32/34 Moscow, RUSSIA Tel (direct): +7-95-241-7718 Tel: Fax (direct) +7-95-241-1166 Fax: Email: dp@mid.ru	Mr. Yury Tsaturov First Deputy Head Federal Service for Hydrometeorology and Environmental Monitoring Novovagankovsky Street No. 12 Moscow, RUSSIA Tel (direct): +7-95-252-2729 Tel: Fax (direct) +7-95-252-2700 Fax: Email: seadep@mcc.mecom.ru
SOUTH AFRICA	Mr. Henry Valentine Director Antarctica and Islands Department Environmental Affairs and Tourism P.O. Box 8172 Roggebaai, SOUTH-AFRICA Tel (direct): +27-21-405-9404 Tel: Fax (direct) Fax: Email: henryv@antarc.wcape.gov.za	Mr. Henry Valentine Director Antarctica and Islands Department Environmental Affairs and Tourism P.O. Box 8172 Roggebaai, SOUTH-AFRICA Tel (direct): +27-21-405-9404 Tel: Fax (direct) Fax: Email: henryv@antarc.wcape.gov.za	Mr. Henry Valentine Director Antarctica and Islands Department Environmental Affairs and Tourism P.O. Box 8172 Roggebaai, SOUTH-AFRICA Tel (direct): +27-21-405-9404 Tel: Fax (direct) Fax: Email: henryv@antarc.wcape.gov.za

PARTY	ATCM REPRESENTATIVE	ATCM PARAGRAPH 3 (Treaty Matters)	ATCM PARAGRAPH 5 (Scientific and operational matters)
SPAIN	Mr. Fernando de la Serna Ministry of Foreign Affairs of Spain Madrid, SPAIN Tel (direct): +34-91-583-8247 Tel: Fax (direct) Fax: Email: fernandodela.serna@aeci.es	Mr. Fernando de la Serna Ministry of Foreign Affairs of Spain Madrid, SPAIN Tel (direct): +34-91-583-8247 Tel: Fax (direct) Fax: Email: fernandodela.serna@aeci.es	
SWEDEN	Mr. Greger Widgren Mnistry of Foreign Affairs of Sweden Stockholm, SWEDEN Tel (direct): +46-8-405-5421 Tel: +46-8-405-1000 Fax (direct) Fax: Email: greger.widgren@foreign.ministry.se	Mr. Greger Widgren Ministry of Foreign Affairs of Sweden Stockholm, SWEDEN Tel (direct): +46-8-405-5421 Tel: +46-8-405-1000 Fax (direct) Fax: Email: greger.widgren@foreign.ministry.se	
THE NETHERLANDS	Mr J. S. de Vries Arctic aid Antarctic Cooperation Hoogheemraadschap Hollands Noorderkwartier Gorslaan 60 Purmerend, NETHERLANDS Tel (direct): +31-299-348 4979 Tel: +31-299-66-3000 Fax (direct) Fax: Email: jameke-de.vries@minbuza.nl		Prof. Dr. J.H. Stel Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO) Laan van Nieuw Oost Iiidië 300, Postbus 93138 The Hague, NETHERLANDS Tel (direct): +31-70-344-0794 of Tel: Fax (direct) Fax: Email: stel@nwo.nl
UKRAINE	Mr. Valery Lytvynov Ukrainian Antarctic Center 16, Tarasa Shevchenka Blvd. Kyiv, UKRAINE Tel (direct): +380-44-235-6071 Tel: Fax (direct) +380-44-246-3880 Fax: +380-44-246-3880 Email: uac@uac.gov.ua		
UNITED KINGDOM	Mr. Mike Richardson Head, Polar Regions Section Foreign and Commonwealth Office King Charles Street London, UNITED KINGDOM Tel (direct): +44-20-7008-2616 Tel: +44-20-7008-2610 Fax (direct) Fax: Email: mike.richardson@fco.gov.uk	Mr. Mike Richardson Head, Polar Regions Section Foreign and Commonwealth Office King Charles Street Londoll, UNITED KINGDOM Tel (direct): +44-20-7008-2616 Tel: +44-20-7008-2610 Fax (direct) Fax: Email: mike.richardson@fco.gov.uk	Prof. Chris Rapley Director British Antarctic Survey High Cross, Madingley Road Cambridge, UNITED KINGDOM Tel (direct): +44-1223-22-1400 Tel: +44-1223-22-1400 Fax (direct) +44-1223-35-0456 Fax: +44-1223-36-2616 Email: c.rapley@bas.ac.uk
UNITED STATES	Mr. Raymond V. Arnaudo Deputy Director, Office of Oceans Affairs (OES/OA) Department of State 2201 C Street NW Washington, UNITED STATES Tel (direct): +1-202-647-3880 Tel: +1-202-647-4000 Fax (direct) Fax: Email: arnaudorv@state.gov	Mr. Raymond V. Arnaudo Deputy Director, Office of Oceans Affairs (OES/OA) Department of State 2201 C Street NW Washington, UNITED STATES Tel (direct): +1-202-647-3880 Tel: +1-202-647-4000 Fax (direct) Fax: Email: arnaudorv@state.gov	Fabio Saturni Department of State 2201 C Street NW Washillgton, UNITED STATES Tel (direct): Tel: + 1-202-647-4000 Fax (direct) Fax: Email: SaturniFM@state.gov
URUGUAY	Rear Admiral Hugo Viglietti di Mattia Presidente Antarctic Intitute of Uruguay Av. 8 de Octubre 2958 Montevideo, URUGUAY Tel (direct): +598-2-487-8341, 487-6004 Tel: Fax (direct) Fax: Email: presidente@iau.gub.uy	Mr. Hector Vedovatti Director Regional de Europa Ministry of Foreign Affairs of Uruguay Colonia 1206 P.S Montevideo, URUGUAY Tel (direct): +598-2-902-0423 Tel: Fax (direct) +598-2-901-8785 Fax: Email: dire31@mrree.gub.uy	Mr. Aldo Felici Antarctic Institute of Uruguay Av. 8 de Octubre 2958 Montevideo, URUGUAY Tel (direct): +598-2-487-8341 Tel: Fax (direct) Fax: Email: ambiente@iau.gub.uy

Contacts: Non Consultative Parties

PARTY	CONTACT
AUSTRIA	Ministry of Foreign Affairs of Austria. International Law Department. Balhausplatz 2 Vienna, AUSTRIA Tel (direct): Tel: Fax (direct) Fax: Email: abti2@bmaa.gv.at
CANADA	Mr. Fred Roots Environment Canada Ottawa, CANADA Tel (direct): Tel: Fax (direct) Fax: Email: Fred.roots@ec.gc.ca Mrs. Mary Simon Aboriginal and Circumpolar Affairs Department of Foreign Affairs and International Trade of Canada L.B. Pearson Building 125 Sussex Drive Ottawa, CANADA Tel (direct): Tel: Fax (direct) Fax: Email: acx@dfait-maeci.gc.ca
COLOMBIA	Mr. Guillermo Vanegas Sierra Director of Territorial Sovereignty Ministry of Foreign affairs of Colombia Bogota, COLOMBIA Tel (direct): +57-1-5625210, 5628555 Tel: Fax (direct) +57-1-5627610 Fax: Email: guillermo.vanegas@minrelext.gov.co
CUBA	Mr. Abelardo Morweno Fernández Ministry of Foreign Affairs of Cuba Calzada esq. Ave. De los Presidentes, Venado La Habana, CUBA Tel (direct): +53-7-553 140 Tel: Fax (direct) +53-7-553 140 Fax: Email: abelardo@minrex.gov.cu
CZECH REPUBLIC	Mr. Pavel Caban International Law Department Ministry of Foreign Affairs of the Czech Republic Loretánské nám. 5 Prague, CZECH REPUBLIC Tel (direct): +420-2-2418 2502 Tel: Fax (direct) +420-2-24 18 2038 Fax: Email: p.caban@post.cz Mr. Pavel Sladky Ministry of Foreign Affairs of the Czech Republic Loretánské nám. 5 Prague, CZECH REPUBLIC Tel (direct): Tel: Fax (direct) Fax: Email: pavel_sladky@mzv.cz Mr. Zilenek Venera Ministry of Foreign Affairs of the Czech Republic Loretánské nám. 5 Prague, CZECH REPUBLIC Tel (direct): Tel: Fax (direct) Fax: Email: venera@cgu.cz

PARTY	CONTACT
DENMARK	Mr. Jorgen Liljen-Jensen Law of the Sea and Antarctic Affairs Ministry of Foreign Affairs of Denmark Plads 2 Copenhagen, DENMARK Tel (direct): Tel: Fax (direct Fax: Email: hkp@dpc.dk
ESTONIA	Mr. Mart Saarso Responsible for Antarctic Affairs Ministry of Foreign Affairs of Estonia Islandivaljak 1 Tallin, ESTONIA Tel (direct): +372-63 1 7013 Tel: Fax (direct) +372-63 1 7097 Fax: Email: mart.saarso@mfa.ee
GREECE	Dr. Emmanuel Gounaris Ministry of Foreign Affairs of Greece 3 B 1 Direction Academas St. Athens, GREECE Tel (direct): Tel: Fax (direct) Fax: +30-01-201 368 2235 Email: giorgomi@otenet.gr
GUATEMALA	Amb. Mrs. Carla Rodriguez Direccion General de Relaciones Internacionales Multilaterales y Económicas Ministry of Foreign Affairs of Guatemala Guatemala, GUATEMALA Tel (direct): Tel: +502-2-348-0000 Fax (direct) Fax: Email: digrime@minex.gob.gt
HUNGARY	Mr. Tamás Csaba Department International Law Ministry of Foreign Affairs of Hungary Nagy Imre tér 4. V. em Budapest, HUNGARY Tel (direct): +36-1-458 1142 Tel: Fax (direct) +36-1-458 1091 Fax: Email: tcsaba@kum.hu
KOREA D.P.R. OF	Mr. 11 Uwang Ulioc Embassy of Democratic People's Republic of Korea in Sweden Norra Kungsvagen 39, Lidingo Stockholm, SWEDEN Tel (direct): +46-8-767 38 36 Tel: Fax (direct) +46-8-767 38 35 Fax: Email: koryo@telia.com
PAPUA NEW GUINEA	Office of the Prime Minister of Papua New Guinea Morauta House, P0 Box 639 Waigani, PAPUA NEW GUiNEA Tel (direct): Tel: +675-327-6525 Fax (direct) Fax: +675-323-3 943 Email: pmsmedia@pm.gov.pg Papua New Guinea High Commission in England London, UNITED KINGDOM Tel (direct): Tel: Fax (direct) Fax: Email: kekedoj@aol.com
ROMANIA	Mr. Teodor Negoita Romanian Center of Polar Research Bucharest, ROMANIA Tel (direct): Tel: +40-1-641-2987 Fax (direct) Fax: +40-1-3 12 1009 Email: negoita_antarctic@yahoo.com

PARTY	CONTACT
SLOVAKIA	JUDr. Eva Surkova International Law Department Ministry of Foreign Affairs of Slovak Republic Hlboká cesta 2 Bratislava, SLOVAKIA Tel (direct): +421-2-5978 3717 Tel: Fax (direct) Fax: Email: eva_surkova@foreign.gov.sk
SWITZERLAND	Mrs. Evelyne Gerber Direction du Droit International Public Federal Department of Foreign Affairs of Switzerland Bundesgasse 18 Berne, SWITZERLAND Tel (direct): +41-31-322 3169 Tel: Fax (direct) +41-31-322 1647 Fax: Email: evelyne.gerber@eda.admin.ch
TURKEY	Ms. Zeynep Savas Environmental Department Ministry of Foreign Affairs of Turkey Balgat 06100 Ankara, TURKEY Tel (direct): Tel: Fax (direct) Fax: Email:
VENEZUELA	Ministry of Foreign Affairs of Venezuela Caracas, VENEZUELA Tel (direct): Tel: Fax (direct) Fax: Email: dgspidm@mre.gov.ve

Contacts: Observers

ORGANISATION	CONTACT
CCAMLR	Dr. Denzil G.M. Miller Executive Secretary CCAMLR P.O. Box 213, North Hobart, 137 Harrington Street Hobart, AUSTRALIA Tel (direct): +61-3-6321-0366 Tel: Fax (direct) +61-3-6324-9965 Fax: Email: denzil@ccamlr.org Julie Catchpole CCAMLR P.O. Box 213, North Hobart, 137 Harrington Street Hobart, AUSTRALIA Tel (direct): Tel: Fax (direct) Fax: Email: Julie@ccamlr.org
COMNAP	Mr. Antoine Guichard Executive Secretary COMNAP Suit 25, Salamanca Square, GPO BOX 824 Hobart, AUSTRALIA Tel (direct): Tel: +61-3-6233-5498 Fax (direct) Fax: +61-3-+61-3-6233 5497 Email: sec@comnap.aq Dr. Gerard Jugie Chairman COMNAP Suit 25, Salamanca Square, GPO BOX 824 Hobart, AUSTRALIA Tel (direct): Tel: +61-3-6233-5498 Fax (direct) Fax: +61-3-+61-3-6233 5497 Email: gjugie@ipev.fr
SCAR	Mr. Peter Clarkson Secretary, S.C.A.R. Scientific Committee on Antarctic Research Scott Polar Research Institute, Lensfield Road Cambridge, UNITED KINGDOM Tel (direct): Tel: +44-1223-33-6550 Fax (direct) Fax: Email: pdc3@hermes.cam.ac.uk

Contacts: Experts

ORGANISATION	CONTACT
ASOC	Mr. Jim Barnes ASOC Antarctic and Southern Ocean Coalition 1630 Connecticut Ave. NW. Third Floor Washington, UNITED STATES Tel (direct): Tel: +1-202-234-2480 Fax (direct) Fax: + 1-202-387-4823 Email: antarctica@igc.org
IAATO	Mrs. Denise Landau Executive Director IAATO International Association of Antarctica Tour Operators P0 BOX 2178 Basalt, UNITED STATES Tel (direct): Tel: Fax (direct) Fax: Email: iaato@iaato.org
IHO	Mr. Hugo Gorziglia Director 2 IHO International Hydrographic Organization 4 quai Antoine ler, B.P.445 Monaco, MONACO Tel (direct): Tel: +377-93-10 81 00 Fax (direct) ax: +377-93-10-8140 Email: hgorziglia@ihb.mc
IMO	International Maritime Organization London, UNITED KINGDOM Tel (direct): Tel: +44-20-7357611 Fax (direct) Fax: +44-20-171-5873210 Email: info@imo.org
IOC	Mr. Patricio Bernal IOC Intergovernmental Oceanographic Commission Paris, FRANCE Tel (direct): Tel: +33-1-4568 1000 Fax (direct) Fax: +33-1-4567 1690 Email: p.bernal@unesco.org
IUCN	Ms. Maj de Poorter IUCN International Union for Conservation of Natural Resources Gland, SWITZERLAND Tel (direct): Tel: Fax (direct) Fax: Email: m.depoorter@auckland.ac.nz Mr. Alan Hemmings IUCN International Union for Conservation of Natural Resources Gland, SWITZERLAND Tel (direct): Tel: Fax (direct) Fax: Email: alan.d.hemmings@bigpolnd.com
PATA	PATA Pacific Asia Travel Association Bangkok, THAILAND Tel (direct): Tel: Fax (direct) Fax: Email:

ORGANISATION	CONTACT
UNEP	Mr. Christian Lambrechts UNEP United Nations Environmental Program Nairobi, KENIA Tel (direct): Tel: +254-2-623 470 Fax (direct) Fax: +254-2-623 846 Email: christian.lambrechts@unep.org
WMO	Mr. Ron Hutchinson WMO World Meteorological Organization Geneva, SWITZERLAND Tel (direct): Tel: Fax (direct) Fax: Email: r.hutchillson@mom.gov.au
WTO	WTO World Tourism Organization Madrid, SPAIN Tel (direct): Tel: +34-91-567 8100 Fax (direct) Fax: +34-91-571-3733 Email: omt@world-tourism.org