REPORT FROM THE SCAR DELEGATION TO XXX ATCM IN NEW DELHI

1. Introduction

The meeting in New Delhi took place at Vigyan Bhavan from 30 April to 11 May 2007.

The SCAR Delegation comprised Colin Summerhayes (Head), Steven Chown, and Chris Rapley who presented the SCAR lecture. The Director of the IPY-IPO was initially included in the SCAR Delegation, though it later turned out that ATCM provided him with a separate IPY-IPO name-plate.

Most of the Members of SC-ATS attended the meeting (S. Chown, C. Kennicutt, H. Miller, S. Marenssi), which facilitated decision making on key issues concerning SCAR's presentations to the CEP and the ATCM.

The SCAR lecture took place between 1130 and 1300 on Wednesday May 2. SCAR hosted a reception immediately after the lecture to bring delegates together. The Indian organisers shared the costs of the reception.

2. SCAR Input

SCAR provided 3 Working Papers and 9 Information Papers, but unfortunately had to withdraw one of the papers. Papers comprised those dealing with requests put to SCAR as well as those providing information to the CEP. The papers comprised:

WP 1 (withdrawn): Proposal to List Southern Giant Petrel as a Specially Protected Species under Annex II
WP 26: The Application of IUCN Endangerment Criteria at the Regional Level of the Antarctic Treaty Area
WP 27: Current Status of the Ross Seal (Ommatophoca Rossii): A Specially Protected Species under Annexe II
IP 05: State of the Antarctic and Southern Ocean Climate System (SASOCS)
IP 06: SCAR Annual Report to XXX ATCM
IP 15: Subglacial Antarctic Lake Environments (SALE) in the International Polar Year 2007-2008
IP 32 (jointly with Australia): Census of Antarctic Marine Life (CAML)
IP 37: Hull fouling as a source of marine invasion in the Antarctic
IP 49 (jointly with Australia): IPY Aliens in Antarctica
IP 52 (jointly with IPF, UNEP and IAI): The sixth Continent Initiative: Capacity Building in Antarctic Research during IPY 2007-2008
IP 73: IPY Report for ATCM XXX
IP124: SCAR Lecture - 'Climate Change and the Antarctic: What Next?'

3. Committee for Environmental Protection X

3.1 Disturbance effects on birds (and seals): review of science.

During a discussion of Site Guidelines, several Parties enquired how approach distances were determined and how overnight 'rest periods' from tourist visits had been decided on. After some discussion, France suggested that SCAR might be able to provide a review of the current science concerning disturbance effects on birds. The CEP then formally enquired whether SCAR was able to undertake such work. SCAR agreed to provide a review of the scientific information available on the effects of land-based disturbance on pelagic birds and seals, covering the available information for the Antarctic region and with some review of information available from other areas. At the meeting, South Africa offered to participate in and perhaps facilitate such a review. The CEP requested Parties to contribute whatever information they might have on disturbance issues to SCAR.

3.2 Southern Giant Petrel as a Specially Protected Species under Annex II to the Protocol

The proposed listing of the Southern Giant Petrel has a considerable history, being part of a process concerning an objective basis for identifying species that deserve recognition as Specially Protected Species under Annex II to the protocol. SCAR initially submitted a paper to XXIX ATCM on the global status of the species, but then withdrew that Working Paper at the meeting as a consequence of new information that had become available outside the Antarctic Treaty Area.

Recognizing a recent change in the global status of the species, Resolution 4 (2006) of XXIX ATCM requested that SCAR undertake a further review of the status of Southern Giant Petrel using all available data and provide a report at this meeting. SCAR undertook this review and, based on data in the public domain, submitted a Working Paper to the Treaty Secretariat for XXX ATCM.

Subsequent to that submission, SCAR's attention was drawn to the fact that new, **unpublished** data on the species at the South Orkney Islands had been collected, and that these data suggested that the designation of the species as 'critically endangered' might require revision.

The South Orkney Island trend was suggested to be an increase as follows:

3200 in 1968 (Patterson et al. in press)
1600 in 1975 (Patterson et al. in press)
1093 in 1984 (Patterson et al. in press)
2257 in 2001 (BAS unpublished)
2351 in 2006 (BAS unpublished)

Given that the large majority of the regional, that is Antarctic, population of the Southern Giant Petrel is found on the South Orkney and South Shetland Islands, The Chief Officer of SC-ATS immediately requested additional, unpublished information and advice from a range of scientists working in these areas, and from other organizations which have an interest in this species. The Chief Officer of SC-ATS also re-reviewed all available information in the public domain concerning this species in light of these data and the opinions expressed.

Based on careful consideration of all of the available data and opinions, SCAR presented the view through a "Non-Paper" at CEP X that the status of the regional population of the species could not be convincingly determined. SCAR noted that much of the data has not been subject to thorough review, or is considered only partially reliable, and the opinions of the experts working on the species are often contradictory. For example, those working at the South Orkneys argue that the populations are increasing, whilst those working at the South Shetlands are of the view that the opposite might be happening, though surveys are too incomplete to provide a definitive answer. Indeed, one expert noted:

"*In general, in areas with human impact giant petrels are decreasing, only partly compensated by other areas to which some birds relocate. A stronger protection is very important, not only in areas like King George Island with the highest density of stations in the Antarctic!"*

SCAR further noted that the scarcity of data, the lack of review of data that are available, and the inability of experts to reach consensus, meant that the picture was much more complex than SCAR's Working Paper originally suggested. This complexity meant that SCAR could not offer the CEP a clear, scientifically defensible statement about the status of the regional population of the Southern Giant Petrel.

Given that SCAR's role in the Antarctic Treaty System is to provide unambiguous, independent scientific information on questions of concern to the Treaty Parties, and because of the ambiguity of the current situation, SCAR elected to withdraw its Working Paper.

Given the situation, and Resolution 4 of 2006, SCAR proposed that it would facilitate a meeting of experts to review thoroughly the available information (of all kinds), and suggested that it might be held in conjunction with a CCAMLR workshop discussing similar issues (to be held in July 2008), to provide a final perspective on this issue. SCAR also proposed that, if requested to, it would report back to CEP XII on the outcome of that review meeting, though noting that the scientific perspective might well remain unchanged.

Many members of the CEP expressed their regret at the withdrawal of the SCAR Working Paper, and SCAR's actions generated a great deal of discussion. Indeed, one might argue that this was the most substantive discussion at the CEP meeting. Following this discussion, the CEP requested that SCAR expedite the workshop it was planning and report back to the CEP. The CEP also encouraged its members to provide appropriate data to SCAR, in a timely manner.

The entire situation was unfortunate for SCAR and raised concerns, at least in some quarters, about SCAR's ability to provide credible, timely advice to the ATS. This was particularly true because it was the second year in a row in which SCAR had withdrawn a Working Paper on this species. In consequence it raises several issues pertinent to the internal functioning of SCAR, amongst which the most significant are:

- The quality control and review process used by Expert Groups and others within SCAR when providing data to the SC-ATS.

- The communications from Members, to whom the Draft Working Paper was submitted for comment, to the appropriate scientists with their countries.

- The ways in which the efficacy of current SCAR structures to provide timely, current information could be improved.

To address this particular aspect of SCAR's advice to the ATS (i.e. status and trends of populations), SC-ATS has made a proposal to the SCAR Executive concerning changes to the way in which such information is gathered and reviewed, and presented to the ATS. Nonetheless, SC-ATS is grateful to all who have provided information for this process to date.

To address the request put to SCAR by the CEP, the SC-ATS proposes that, in collaboration with several other organizations, SCAR should hold a small meeting, in May 2008, to assess comprehensively the current status of the species. SCAR should then report back to the CEP. The Chief Officer of SC-ATS will arrange this meeting with the assistance of the SCAR Secretariat (provisional proposal is for a Cambridge meeting given that the location is central). This action has financial implications because it was not anticipated in the SC-ATS budget. Nonetheless, given that SCAR's reputation is very much at stake in this instance, it is proposed that the meeting go ahead, and that SC-ATS and LSSSG co-fund it, with additional budgetary assistance if required.

3.3 Application of IUCN Endangerment Criteria at the Regional level of the Antarctic Treaty Area

SCAR introduced Working Paper 26 on the Application of IUCN Endangerment Criteria at the Regional level of the Antarctic Treaty Area, noting the several important differences between regional and global listing procedures, the potential utility of the regional criteria for designation of Specially Protected Species under Annex II to the protocol, and the information required to undertake such a regional listing.

The CEP thanked SCAR for its work in this regard, which it found extremely helpful. New Zealand proposed that the CEP consider adding the guidelines contained in the paper to the CEP's own guidelines for managing specially protected species.

SCAR has now completed the request put to it by the CEP on guidelines for listing species at the regional level.

3.4 Current status of the Ross Seal as a Specially Protected Species

The status of the Ross Seal also has a considerable history. SCAR had noted previously that it would provide an update on this species (as with Fur Seals, for which the matter was resolved at XXIX ATCM). However, some delays were experienced in so doing because of the absence of analysis of data particularly from the Antarctic Pack Ice Seals Programme.

Nonetheless, the Expert Group on Seals provided a review of this species that was used as a basis for a Working Paper presented to the ATCM. Thus, at the CEP

meeting, SCAR introduced Working Paper 27, noting that the current status of the Ross Seal was based on a thorough review of available information, appended to the paper. SCAR further noted that the species was listed as 'Lower Risk, Least Concern' by the IUCN, but that on the basis of the available information the species could be considered data deficient.

In such a situation the IUCN Criteria suggest that no change should be effected to the species status. SCAR therefore recommended that further information should be collected to improve knowledge, especially given the baseline information now available from the Antarctic Pack Ice Seals Programme, and that the species remain on Annex II to the protocol. The CEP accepted SCAR's recommendation, and the Ross Seal remains the only Specially Protected Species under Annex II to the Protocol.

SCAR has now completed the request put to it by the CEP on the status of the Ross Seal.

3.5 Hull fouling

SCAR presented Information Paper 37, on hull fouling, indicating that it is an important route for the transport of marine non-native species to the Antarctic region. SCAR drew attention to the research required to fully understand the sources of and species contributing to hull fouling and the extent to which hull fouling could be reduced as a risk of introducing non-native species. The CEP thanked SCAR for this information.

3.6 Non-indigenous species in Antarctica

Australia and SCAR presented Information Paper 49 on the IPY Aliens in Antarctica project. They noted that substantive information would become available on the origins and transport routes of propagules of non-native species to the Antarctic. The CEP requested that SCAR and Australia keep the Parties informed about the outcome of this work.

As part of the general discussion on non-indigenous species, several other papers were presented, including one on routes of transport of non-native species from New Zealand to Antarctica, and two on the Global Invasive Species Information Network and the contribution that the IUCN could make to documenting invasive species impacts in the region.

In response to these papers, SCAR noted that its scientists hold a substantial database (the RiSCC/EBA database) on both indigenous and non-indigenous species found in the Antarctic region, including the Southern Ocean islands. Given the papers presented by IUCN, and the long history of collaboration between SCAR and the IUCN Invasive Species Specialist Group (IUCN-ISSG), it would be worthwhile for SCAR to consider how the interaction with IUCN-ISSG might be further explored.

During further discussions of non-indigenous species, the CEP requested an update from SCAR on its proposal that it would review codes of conduct for limiting the transfer of non-indigenous species among areas in Antarctica. SCAR noted that a

workshop on codes of conduct was to be held in May 2007 and that the outcome of this meeting would be reported to the CEP. The meeting requested that SCAR make the report of this meeting available to the ATS Secretariat as soon as it was available, to facilitate discussion and comment by Parties. SCAR agreed to do so.

3.7 Environmental Domains Analysis

At previous CEP meetings, SCAR agreed that it would provide a review of the environmental domains analysis that had been developed by New Zealand. The CEP requested an update of progress on this matter. SCAR reported that the review was in progress, but that rather than providing a desktop review it would perhaps be of more value to provide a review based on a biological data layer (the environmental domains analysis is based solely on abiotic variables). SCAR's RiSCC/EBA terrestrial species database would provide a basis for doing the latter. The CEP agreed that a review based on biological data would indeed be helpful and urged SCAR to have that review ready by CEP XI.

3.7 Marine Acoustics

Several papers were provided on marine acoustics, outlining the outcomes of recent workshops, providing information on new research on this topic undertaken elsewhere (especially Russian work, published in Russian, from the Barents Sea), and suggesting action to be taken by Parties. The workshop outcomes differed little from those of the previous SCAR workshops in terms of marine acoustic use for academic research (rather than for industrial purposes). The CEP thanked the various parties for the information presented.

Noting that Germany drew attention in the report of the CEP to effects of acoustics on marine mammals and strandings of cephalopods, SCAR asked that the ATCM report on the deliberations of the CEP reflect the fact that the reported strandings of squid had not taken place in the Antarctic. The wording proposed by Germany to cover the introduction of its Information Paper, and adopted in the CEP report, did not indicate whether the effects on marine mammals had been demonstrated in the Antarctic Region (they had not). This does not necessarily mean that species in the Antarctic would not be affected by acoustics, but does contrast strongly with the conclusions of the reports produced by SCAR on non-industrial acoustics.

Germany also provided information on a scientific meeting to be held on Marine Acoustics in Denmark later in 2007. It is suggested that SC-ATS sends a member to this meeting (and requesting D.W.H. Walton to attend would seem most sensible given his ongoing involvement in the issue, and cost-effective, given the venue of the meeting).

3.8 Bioregionalization of the Southern Ocean

Several papers were presented on bioregionalization of the Southern Ocean, and a very useful summary of the outcome of the first workshop on this issue held jointly by CCAMLR and the CEP was also made available. This work is going ahead and SCAR is represented by Dr. Graham Hosie (Member of SC-ATS). Much scope exists for

interaction with SCAR-MarBIN, and indeed SCAR-MarBin scientists (e.g. Bruno Danis) will be involved in the second workshop.

A small side meeting drew interested parties' attention to the forthcoming second bioregionalization workshop to be held in Belgium. SCAR is participating in this meeting via a SC-ATS representative and the SCAR MarBin programme.

3.9 Subglacial Antarctic lake environments

SCAR introduced IP 015 on "Subglacial Antarctic lake environments in the International Polar Year", noting the exciting research going on, and drawing attention to recent research suggesting from satellite data that subglacial lakes discharge from time to time into subglacial hydrological systems and in so doing may contribute to the speeding up of glaciers and ice streams. The Russian delegation noted that this was at present an unconfirmed hypothesis, while reporting that they had made little progress in further drilling at Lake Vostok, the drill having become stuck in the hole for a considerable period during the last season.

3.10 State of the Antarctic and Southern Ocean Climate System

SCAR introduced IP 05 on the "State of the Antarctic and Southern Ocean Climate System", noting that this was complementary to the SCAR Lecture (IP 124), which had been given to the ATCM by Professor Rapley, the SCAR President. IP5 represents Phase I of the review of Antarctic climate that SCAR had introduced at XXIX ATCM, and addresses what is known of the physics of the climate system of Antarctica and the Southern Ocean. The review will not be known as an 'assessment', but as the Review of Antarctic Climate and Environment. Phase II, which SCAR hopes to present to XXXI ATCM, will include a review of the response of the biota to climate change. These reviews are seen as essential aids to deciding what observations need to be made in future in the systems that are currently being designed to monitor the behaviour of the climate system and its effects, as the basis for understanding processes and underpinning forecasts of future change. SCAR drew attention to the fact that we know much less than might be imagined about the behaviour of ice sheets in a warming world, particularly as far as their mechanical degradation is concerned. A significant collaborative international research effort is needed to improve and enhance the capabilities of numerical models of ice sheet decay. Such research would help to ascertain the likelihood of there being thresholds within the climate system beyond which rapid decay of ice sheets might be expected that would lead to rapid rises in sealevel. SCAR pointed out that the deliberations of the Intergovernmental Panel on Climate Change were deliberately conservative on this issue, and that some scientists considered that there was a possibility that sealevel may rise up to 5 m by 2100, rather than the somewhat less than 1 metre forecast by the IPCC. The higher forecast was consistent with what we know of the last interglacial (125,000 years ago) when temperatures were approximately 2-3ºC more than today's and sealevel was 2-4 m higher. SCAR urged Parties to (i) improve, enhance and sustain observations of the climate system in the region, so as to detect, understand and underpin forecasts of climate change; and (ii) as a matter of some urgency to work together with SCAR to improve models of ice sheet dynamics in relation to sealevel rise.

3.11 International Polar Year

Chris Rapley introduced IP 73 and explained progress with the IPY. A number of Parties introduced papers describing their own activities within the IPY.

3.12 Resolution on Sustained Observations

In response to the interventions on Antarctic climate and on the IPY, the Parties supported a Resolution regarding the need to maintain and extend monitoring and sustained observations of the environment and the climate system.

3.13 Census of Antarctic Marine Life (CAML)

Australia introduced IP 32, Census of Antarctic Marine Life, noting that this SCAR programme was off to a good start with a cruise at the beginning of the year on Polarstern to look at re-colonisation of the seabed beneath the collapsed ice shelves in the Weddell Sea.

4. XXX ATCM

4.1 The SCAR Report

The SCAR President, Prof. Chris Rapley, introduced the SCAR Report to XXX ATCM (IP 06), drawing attention in particular to the need to develop observing systems as key legacies of the IPY, and noting SCAR's leadership role in this activity.

4.2 Hydrography

The representative of the International Hydrographic Office, in introducing his Information Paper, stressed the need for Parties to undertake comprehensive hydrographic surveys as an aid to navigation, and to exchange hydrographic information.

SCAR noted that hydrographic information (on the bathymetry) was also useful for geological interpretation, as a feature of ecosystems, and as essential input to ocean models, and reported that for undersampled areas of the world ocean, such as the Southern Ocean, SCOR and SCAR had recently written to their national committees asking them to ensure that Principal Investigators collected swath bathymetric data from unsampled areas and forwarded it to the appropriate World Data Centre, where it would contribute to the construction of the International Bathymetric Chart of the Southern Ocean (a SCAR and GEBCO project).

4.3 The SCAR Lecture

The SCAR Lecture - 'Climate Change and the Antarctic: What Next?' – was very well attended, and very well received. Several requests were made for copies of the PowerPoint slides (which are now on the SCAR web site). A press release on the SCAR Lecture was provided to the ATCM organizers, and Colin Summerhayes gave an interview on this topic to the Hindustan Times.

4.4 International Polar Year

Dave Carlson introduced IP 73 (IPY Report for ATCM XXX) with some recent updates from IPY. He reminded the group of central themes from the Edinburgh Declaration on IPY. He then described IPY launch activities. The IPY web site functions as the information centre for IPY activities – it already had a report from this ATCM meeting. Dr. Carlson showed the 228 endorsed IPY projects at the start of IPY, and emphasized the international nature of these projects. In terms of IPY funding, he estimated, for the 2-year IPY period, $820M in existing science funds (annual polar research resources reprogrammed for IPY) and $430M in new science funds, for a 2-year total of $1.25B. He emphasized the need for approximately $250M of additional funds. Many parties plan new ships and new or refurbished Antarctic bases during IPY. Although difficult to estimate, the total of these infrastructure investments during IPY probably runs to several 100 million dollars.

Dr. Carlson emphasized the urgency of plans for legacy activities, in particular for sustained observational capabilities and for networks of young scientists – the future generations of polar researchers. Finally, Dr. Carlson described plans for IPY science conferences approximately every 2nd year. He emphased two such events: a mid-term IPY assessment conference as part of the SCAR/IASC Open Science Conference in July 2008 (St. Petersburg) and an early science conference in May or Jun 2010 in Norway.

4.5 Aliens in Antarctica

SCAR introduced IP 49, IPY Aliens in Antarctica, noting that the cooperation of Parties and of COMNAP was sought to facilitate the collection of samples from visitors to Antarctica, and from cargoes, so as to identify the flux of spores, seeds and other propagules into the continent from elsewhere. SCAR noted that propagules may well have been introduced into Antarctica before Antarctic exploration began, as components of wind-blown dust. There was therefore merit in analysing dust in ice cores for pollen and the like, to establish a baseline for the non-human introduction of propagules.

4.6 State of the Antarctic and Southern Ocean Climate System

SCAR introduced IP 5, State of the Antarctic and Southern Ocean Climate System (SASOCS), noting that it was now clear that the Antarctic climate since the last glacial maximum has been quite variable on millennial and finer scales, and that observations sustained over the long term are therefore essential to enable us to differentiate between natural and human-induced climate change. This realisation underpins the proposal by the ICSU-WMO Joint Committee for the IPY that one of the IPY legacies should be sustained observing systems, and the proposal that the ATCM support a Resolution in support of sustained observations in the region.

SCAR listed the dramatic changes in climate that had occurred in the region, especially around the Antarctic Peninsula, where there was extraordinary warming, shrinkage of glaciers, shrinkage of sea ice, and the collapse of ice shelves. These changes were now believed to be driven by global warming, further evidence for which was the newly discovered tropospheric warming accompanied by stratospheric cooling over the Antarctic continent, and the warming of Southern Ocean waters.

SCAR noted that although the ice sheets play a critical role in controlling global sealevel, we are currently unable to effectively model the dynamic processes of ice sheet decay. SCAR therefore called on Parties to work closely with SCAR to improve ice sheet dynamic models so as to improve forecasts of sealevel change.

4.7 Subglacial Antarctic Lake Environments (SALE) in the IPY

SCAR introduced IP 15, Subglacial Antarctic Lake Environments (SALE) in the IPY, noting that these lakes seem to be part of a complex, continent-wide hydrological system comprising interconnected lakes and streams. This system is one of the Earth's last great unexplored frontiers and can be expected to contain clues about fundamental Earth and life processes. The latest SALE report is available through the SCAR web page.

SCAR noted that SALE is one of 5 major research projects detailed in IP 5, the SCAR Report to XXX ATCM, and which include research on the modern climate system, Antarctic climate history, the evolution of biodiversity, and sun-Earth interactions. Key upcoming meetings include the International Antarctic Earth Sciences meeting (Santa Barbara, August 2007), the SCAR-IASC Open Science Conference (St Petersburg, July 2008), and the 10th International Antarctic Biology Symposium (Sapporo, 2009).

4.8 The Sixth Continent Initiative

SCAR introduced IP 52, The Sixth Continent Initiative, noting that this addressed capacity building during the IPY, by means of support for fellowships to undertake research on Antarctic bases of from Antarctic ships. SCAR asked Parties to identify potential candidates for the fellowship programme, which is co-sponsored by the International Polar Foundation (IPF), the United Nations Environment Programme (UNEP), and the International Antarctic Institute (IAI).

Annex 1
Actions for SCAR arising from XXX ATCM

1. Codes of Conduct

- Provide report from codes of conduct workshop to ATS Secretariat as soon as it is available.

- Provide a Working Paper to XXXI ATCM on a proposed general code of conduct.

ACTION: Life Sciences Standing Scientific Group
COST: Covered already

2. Disturbance effects on birds and seals

- Organize an activity (workshop or review) to provide an overview of the available information on disturbance effects on birds and seals and whether rest periods have any scientific basis (but no recommendations on approach distances etc.).

- Provide a Working Paper on this topic to XXXI ATCM

ACTION: Life Sciences Standing Scientific Group
COST: $ 5000 (split with SC-ATS and securing additional $ 5000 possibly from RSA)

3. Status of Southern Giant Petrel

Organize a workshop to provide a final perspective on the Southern Giant Petrel status and population trends (and any mechanisms underlying these trends) and to make a recommendation regarding its status.

Provide a Working Paper to XXXI ATCM making a well-supported recommendation as to whether the species should be listed under Annex II.

ACTION: SC–ATS
COST: $ 5000 – $ 8000 and will need host

4. Environmental Domains Analysis

Organize an activity to provide a review of the environmental domains analysis based on biological data in the RiSCC/EBA database (ideally a single person does this full time and their review is subjected to web-based review by appropriate experts).

Provide a Working Paper to XXXI ATCM which constitutes a review of the environmental domains analysis.

ACTION: SC–ATS and LSSG/EBA
COST: $ 10 000 ($ 6000 from EBA committed, extra funds required)

5. Marine Acoustics

Arrange for a member of SC-ATS to attend meeting in Denmark.
If necessary, provide an Information paper to XXXI ATCM.

ACTION: SC–ATS
COSTS: $ 2500

6. State of the Antarctic Climate System
Provide an IP update including effects on organisms, at ATCM XXXI.

ACTION: AGCS
COSTS: $0

Possibly also provide an IP detailing progress in establishing observing systems

ACTION: SECRETARIAT
COST:$0

Action Items for SCAR remaining from XXIX ATCM
Terrestrial biodiversity
Provide a Working paper on state of knowledge concerning terrestrial biodiversity.

ACTION: SC – ATS and LSSG/EBA
COST: Already covered