REPORT FROM THE SCAR DELEGATION TO XXXI ATCM IN KIEV, UKRAINE

1. Introduction

The meeting in Ukraine took place at the Hotel Rus, Kiev, from 2nd to 13th June 2008.

The SCAR Delegation comprised Colin Summerhayes (Head of Delegation), Steven Chown (leading the CEP Delegation), Mike Sparrow, and Louis Lanzerotti who presented the SCAR lecture. SCAR also represented the IPY-IPO.

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.

2. SCAR Input

SCAR provided two Working Papers and five Information Papers (two on behalf of the IPY International Project Office). Papers comprised those dealing with requests put to SCAR as well as those providing information to the CEP, specifically:

WP10: Status of the Regional, Antarctic Population of the Southern Giant Petrel – progress (and its revision 1 which included the outcome of the workshop on this question held by SCAR)

WP 12: Human Disturbance to Wildlife in the Broader Antarctic Region: A Review of Findings

IP 59: International Polar Year 2007-2008 Planning Document: 2008 and Beyond (presented by SCAR on behalf of the IPY)

IP 60: SCAR Lecture – Space Weather and its Effects

IP 62: Antarctic Climate Change and the Environment: A Progress Report

IP 74: SCAR Annual Report 2007 – 2008

IP 88: The Antarctic Treaty Summit (presented by SCAR on behalf of the IPY)

The papers are available for download from the SCAR web site at http://www.scar.org/treaty/atcmxxxi/index.html

3. Committee on Environmental Protection XI

3.1 Human Disturbance to Wildlife in the Broader Antarctic Region

SCAR introduced WP 12, noting that the paper was prepared in response to a request made at CEP X for a report on the current state of knowledge with respect to human disturbance of wildlife, and based on a commissioned study undertaken by Dr. Marienne de Villiers of South Africa. SCAR drew attention to the Working Paper's two major conclusions and three recommendations. Specifically, SCAR noted that the effects of human disturbance on Antarctic wildlife are highly variable and that no 'one size fits all' solution can be applied to managing human disturbance effects on wildlife. SCAR also noted with concern the decline in the numbers of long-term

studies being undertaken and recommended that parties encourage long-term work that will help improve management of wildlife populations in the region. SCAR also recommended that studies that are site-, timing-, and species-specific are required to produce results that are of use in the management of human activities near wildlife aggregations, and that investigations of interactions between human disturbance and other factors affecting wildlife populations are urgently required.

SCAR was congratulated on its report by many delegations, several of which noted the importance of undertaking long-term research, especially in the context of other factors affecting wildlife populations in the region. SCAR was thanked by the CEP for its comprehensive, informative and useful paper and noted that the contents thereof would be widely used by CEP members.

3.2 Status of the Regional, Antarctic Population of the Southern Giant Petrel
This matter has a long history and was the subject of some embarrassment to SCAR at CEP X when SCAR had to withdraw its Working Paper on the matter, and issue a statement as to why it had done so. Subsequently a workshop to resolve the status of this species was held in Cambridge (May 2008) and a revision to WP10 based on the outcome of this meeting was produced. SCAR presented WP10 rev.1 to the CEP. This workshop reviewed all available data thoroughly and developed an assessment of the regional status of the Southern Giant Petrel according to the criteria developed by the IUCN.

On the basis of this assessment SCAR recommended to the CEP that according to the IUCN Red List Categories and Criteria, the Southern Giant Petrel population south of 60°S is of Least Concern, and does not qualify as Critically Endangered, Endangered, Vulnerable or Near Threatened. It also pointed out that this was true of the population north of 60°S, based on a similar assessment undertaken at the workshop on data from this region. SCAR thus recommended that the present data and analysis do not support the designation of the Southern Giant Petrel as a Specially Protected Species under Annex II to the Protocol on Environmental Protection.

SCAR was widely congratulated within the CEP for its excellent report and members commented that this is exactly the way that science and policy should interact in this context. The CEP accepted the SCAR recommendation and took it forward to the ATCM.

As part of its Working Paper SCAR made a call for additional censuses and demographic work on the species. SCAR Delegates should encourage researchers in their countries to examine the recommendations in this regard, to send further comments on the proposals to ACAP, and where possible to send on their data on this species to ACAP. The Working Paper is attached to this report as Appendix 1.

3.3 International Polar Year 2007-2008 Planning Document: 2008 and Beyond (Also submitted to ATCM)
On behalf of the International Polar Year (IPY) Project Office, which was unable to attend the meeting, SCAR presented IP 59 on the "IP - Planning for 2008 and Beyond". The presentation focused on the development of IPY legacies. The various IPY projects represent US$ 800 million in funding existing activities during the 2 year

IPY period, plus US$ 400 million in new science funds as of early May, making a total spend of $ 1.2 billion, none of it representing major infrastructure.

Sustaining this funding for science will be an important part of the IPY legacy. The presentation highlighted the need to sustain observing networks; data collection, management and exchange; the development of future researchers; the environmental legacy; political cooperation and an informed public. An informed public could be a key to sustained resources for all the other activities. While the science is well funded, and aspects like observing systems, future researchers, and outreach to inform the public and gain political cooperation and moderately developed, the same cannot be said of data or the environmental legacy. The IPY paper noted that national funding is needed for national IPY data coordinators. Progress is slow and the help of Parties was requested.

The CEP Chairman urged Parties to support IPY Legacy activities.

3.4 Antarctic Climate Change and the Environment: A Progress Report
(Also submitted to the ATCM)
SCAR presented IP 62 on this topic. The paper is an update on the paper that SCAR presented in New Delhi, and includes a review not only of the physics of the climate system but also its biological effects. It is the executive summary of a book-sized product that will shortly be out for review by the wider scientific community. It expands on the IPCC report of February 2007, which was global and could not spare much time for Antarctica. SCAR's presentation focussed on the last 50 years and the next 100 years. The report will be circulated widely for comment, including to the CEP and CCAMLR, to enable feedback to be assimilated before publication.

The report was very well received, but stimulated little debate, the discussion on climate issues focusing instead on the control of emissions in the Antarctic. SCAR was asked to bring updates on Antarctic climate change to future CEP meetings.

3.5 Environmental Domains Analysis
New Zealand submitted the final version of the Environmental Domains Analysis (EDA) (WP 27) which it has been working on for several years. The EDA was accepted by the CEP and it was suggested that this form the basis for explicit conservation planning in the region, and perhaps also for understanding various environmental risks. SCAR agreed to assess the extent to which the EDA might form a useful surrogate for biodiversity information, and report on the extent of the biodiversity information available for the region. SCAR also agreed that as part of this process it could undertake a risk assessment for invasions based on these two different sets of data.

3.6 Persistent Organic Pollutants
A request was made by the Stockholm Convention for information on persistent organic pollutants in the Antarctic Treaty Area, via an Information paper (IP 97) submitted by Chile. SCAR had prepared or this discussion with a briefing paper from the Action Group on Environmental Contamination in Antarctica. Following discussion, SCAR agreed to provide a review of such information for submission to the CEP by CEP XII.

3.7 Management plans for ASPAs and ASMAs
SCAR was requested to resume its provision of advice on these plans, but on scientific issues only, that would be clearly defined in the context of each plan. SCAR noted that this is in keeping with its review of SC-ATS, the outcome of which would be serving at the SCAR Delegates meeting in 2008.

3.8 Aliens in Antarctica
The CEP requested that as soon as provisional information was available from the IPY Aliens in Antarctica project SCAR should make this available in conjunction with the parties leading and undertaking the project.

4. Antarctic Treaty Consultative Meeting
4.1 SCAR Annual Report 2007 – 2008
On behalf of the SCAR President, Vice President Sergio Marenssi presented in Spanish a comprehensive report (IP 74) on SCAR's activities in the intersessional period, noting that SCAR's two main functions are international coordination of pan-Antarctic science, and providing scientific advice to the Treaty System, and that this is SCAR's 50th anniversary year. SCAR now leads a network of the four main bodies of the International Council for Science (ICSU) that are concerned with scientific research in the Polar Regions and/or the cryosphere; these include SCAR, the World Climate Research Programme (WCRP), the International Arctic Science Committee (IASC), and the newly formed International Association for Cryospheric Sciences (IACS) of the International Union for Geodesy and Geophysics (IUGG). Creation of this 4-component network will help to ensure that polar scientific research is effectively coordinated. SCAR is making major contributions to the International Polar Year (IPY) 2007-2009, and organising the first IPY Science Conference (July 8-11 2008, St Petersburg, Russia). During the intersessional period SCAR's research focused on five key themes in Antarctic science: (i) the modern ocean-atmosphere-ice system and its role in global climate change; (ii) the evolution of climate over the past 34 million years since glaciation began; (iii) the response of life to change; (iv) preparations to study subglacial lakes and their environs; and (v) the response of the Earth's outer atmosphere to the changing impact of the solar wind at both poles. He reminded Parties of the several SCAR papers or the ATCM/CEP meetings, and about the SCAR lecture. He also noted that SCAR is working to improve the way in which it provides advice to the Treaty System, and to that end held a workshop in Cambridge, UK, in May 2008, which was attended by Neil Gilbert (Chair of CEP), and Tito Acero (ATS Secretariat). SCAR is grateful to the assistance of experienced people from the Treaty System in taking this forward.

The report was well received.

4.2 SCAR Lecture – Space Weather and its Effects
The SCAR lecture, on "Space Weather and its Effects", and providing SCAR with an opportunity to highlight the work of ICESTAR, was given by Professor Louis Lanzerotti of New Jersey Institute of Technology, a member of the US National Academy of Engineering, and took place between 11h30 and 12h30 on Wednesday June 4th. It was very well received.

4.3 Bioprospecting

A discussion on the question of bioprospecting in the Antarctic Treaty Area arose in the Legal and Institutional Working Group of the ATCM. SCAR was asked to advise on bioprospecting and specifically to provide the following to ATCM XXXII:

1. Review the most recent published research that may involve bioprospecting in the Antarctic Treaty region, and provide an assessment of these efforts from discovery to development to commercialization to product use, based on fundamental scientific principles.

2. Provide a survey of ongoing bioprospecting research being undertaken within the SCAR community.

SCAR agreed to do so. This will involve a review of existing databases, including the Antarctic biological prospecting database.

4.4 Climate Change
(also addressed under CEP)

Under Agenda item 13 of the ATCM, SCAR reminded Parties that Paper IP 62 drew attention to 8 statistically significant changes in the Antarctic that had taken place since 1950 or 1970 and that seemed to be caused by global warming associated in some instances with extreme stratospheric cooling caused by the ozone hole; both the warming and the stratospheric cooling were anthropogenic. The eight examples were:

(i) steepening of the pressure gradient between mid latitudes and Antarctica, causing the circumpolar winds to increase by 15-20% since the late 1970s.
(ii) fewer but more intense cyclones in the circumpolar trough;
(iii) summer warming on the eastern side of the Antarctic Peninsula, related to the stronger winds carrying warm air across the Peninsula;
(iv) decay of the ice shelves on the eastern side of the Peninsula (same cause);
(v) warming of West Antarctica since 1800 as shown by the Siple Dome Ice Core;
(vi) loss of ice in the Amundsen Sea embayment at the same rates as ice loss in Greenland (e.g. Pine Island Glacier), caused by a warming ocean undermining the glacier;
(vii) warming of the Southern Ocean between 700-1000 m;
(viii) tropospheric warming at 5 km above sea level at rates higher than elsewhere in the world.

4.5 IPY
(also addressed under CEP)

During ATCM agenda item 10, SCAR also introduced IP 62, noting that around 45% of IPY programmes had major funding, and around 30% had at least partial funding, SCAR drew attention to the need to sustain the high output of high quality scientific papers on the Antarctic region that would stem from the IPY investments. SCAR agreed with the Australian delegation's observation that increasing fuel prices would make it even more imperative that scientists collaborate internationally in the future to tackle key scientific questions in an interdisciplinary and pan-Antarctic way. SCAR noted that IPY was leading to more bipolar research, which would lead to improved understanding of topics like ice sheet change and sea level. This trend should continue.

SCAR reminded Parties that observing systems to provide the information required to understand and be able to forecast variability and change are expected to be a key legacy of the IPY, and that Resolution 3 (2007) called for Parties to maintain and extend the appropriate systems to capture this information through long-term monitoring and sustained environmental observation. Two key questions arise: what are the most effective tools and systems to provide the required information? and how can the necessary observations be maintained over terms longer than the traditional research funding grants?

The ATCM Chairman urged Parties to commit to the implementation of Resolution 3 (2007) so as to maintain the IPY legacy.

4.6 Hydrographic Surveying

Commenting on WP 38 (hydrographic surveying), SCAR noted that in November 2007 together with SCOR it had issued a SCAR Circular (768) on the need for national scientific organizations to gather Southern Ocean bathymetric data and submit it to a recognized database. As pointed out by Dr Schencke during the International Hydrographic Office's Seminar for the ATCM, these data are essential for geological, geochemical and geophysical analysis, the identification of habitats, and as a critical controlling parameter on the output of advanced ocean circulation and tidal models. Bearing that in mind SCAR and SCOR had recommended that funding agencies worldwide should

(i) encourage project scientists to incorporate in their proposals requests to collect and process multi-beam bathymetric data;

(ii) fund multi-beam bathymetry data acquisition and processing on all research vessels equipped with multi-beam echo-sounders, whether on transit or on location;

(iii) ensure that the data are submitted together with track data to the World Data Center for Marine Geology and Geophysics.

In addition SCAR and SCOR recommended that principal investigators use the track maps from that data center to identify gaps that need filling with new data, and allocate sufficient time on transit to fill such gaps. This will contribute to the database for the International Bathymetric Chart of the Southern Ocean (IBCSO), as well as making a contribution to charts for safe navigation.

ATCM Resolution D called for Parties to collect hydrographic and bathymetric data on all voyages, to forward data to the appropriate chart producer, and to improve charting and surveying in the region.

5. Products to be delivered by ATCM XXXII

ATCM XXXII will take place in Baltimore, USA, from April 6-17, 2009. As a result of this early date, the deadline for working papers to be submitted to the Antarctic Treaty Secretariat is 20 February 2009. To give effect to its work in the ATCM/CEP, SC-ATS will have to undertake the work undertaken as indicated in the Table below. The work is budgeted for in 2008 and 2009, and in keeping with the need to keep SCAR Delegates informed of budget requests, the budget for 2010 is also included with an indication of what might emerge.

SC-ATS Activity	**2008**	**2009**	**2010**
Persistent organic pollutants (for 2009)	2500	2500	0
Biodiversity and EDA Assessment (for 2009/10)	5000	3000	0
Alien risk assessment (for 2009)	1000	1000	0
Conservation planning assessment (for 2010)	2000	1000	0
Management plans consideration (all years)	1000	1500	2500
Bioprospecting (for 2009)	3000	2000	0
Aliens in Antarctica (for 2009 and 2010)	0	2500	1500
Matters arising from SCAR SSGs and Delegates	0	1500	2500
ATCM & CEP requests	0	0	3500
Conservation Science for Antarctica (for 2011)	0	0	5000
Climate change update	0	0	0
SCAR Annual Report (all years)	0	0	0
IPY report (on behalf of IPY-IPO) (all years)	0	0	0
Code of Conduct for Fieldwork (2009)	0	0	0
Travel to ACAP/CCAMLR (all years)	5000	5000	5000
Totals	**19500**	**20000**	**20000**

Appendix 1: Status of the Regional, Antarctic Population of the Southern Giant Petrel – Progress (XXXI ATCM WP 10 rev.1)

1. At XXV ATCM Resolution 1 (2002) noted that the CEP had decided to adopt the IUCN criteria on endangerment to establish the degree of threat to species, and requested SCAR to assist in reviewing those species which were classed as "vulnerable", "endangered" or "critically endangered" (taking into consideration regional assessments of populations), as well as reviewing those species classed as "data deficient" or "near threatened" which occurred in the Antarctic Treaty Area.
2. Working Paper XXVIII ATCM WP34 proposed how the IUCN criteria for assessing endangerment could be applied to Antarctic bird species and provided a classification of threat for endangered bird species. The paper then suggested a procedure and provided a format, using data for the Southern Giant Petrel as an example, for the process by which future proposals could be made to the Committee for Environmental Protection for listing species as Specially Protected Species.
3. At XXIX ATCM SCAR tabled WP038 proposing that, on the basis of an earlier review by Birdlife International, the Southern Giant Petrel met the global criteria for the Vulnerable category of endangerment and should be designated as Specially Protected Species. However, after the paper was submitted new survey data became available from populations outside the Antarctic Treaty area, which indicated that a re-assessment of global endangerment was necessary in the light of the substantially increased global population.
4. Recognizing this 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 the review and based on data in the public domain submitted Working Paper 01 to ATCM XXX.
5. 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. Therefore at ATCM XXX SCAR withdrew WP01, and proposed that a workshop be held to review the status of the regional, Antarctic populations of the species. In Resolution 2 of XXX ATCM, SCAR was requested to "*complete a review as soon as practical of the population status and trends of the southern giant petrel in the Antarctic Treaty area including an assessment of:*
(1) whether this species fulfils the criteria for designation as a Specially Protected Species under Annex II of the Protocol at a regional scale (the Antarctic Treaty area), and;
(2) the demographic mechanisms underlying any changes in the population size."
6. SCAR will hold an expert workshop, on 19 and 20 May 2008, to consider the status of Antarctic regional populations of the Southern Giant Petrel and make to make recommendations concerning the degree of endangerment of these populations, in keeping with the IUCN approach to regional assessments as adopted at ATCM XXX and based on ATCM XXX WP26.
7. SCAR will make the report and recommendations of the workshop available as rapidly as possible, and in advance of ATCM XXXI, for discussion by Parties at the meeting.

Addendum to XXXI ATCM WP10

Status of the Regional, Antarctic Population of the Southern Giant Petrel – Workshop Outcome and Recommendations

Introduction

1. At XXV ATCM Resolution 1 (2002) noted that the CEP had decided to adopt the IUCN Criteria on endangerment to establish the degree of threat to species, and requested SCAR to assist in reviewing those species which were classed as "vulnerable", "endangered" or "critically endangered" (taking into consideration regional assessments of populations), as well as reviewing those species classed as "data deficient" or "near threatened" which occurred in the Antarctic Treaty Area. Working Paper XXVIII ATCM WP34 proposed how the IUCN Criteria for assessing endangerment could be applied to Antarctic bird species and provided a classification of threat for endangered bird species. The paper then suggested a procedure and provided a format, using data for the Southern Giant Petrel as an example, for the process by which future proposals could be made to the Committee for Environmental Protection for listing species as Specially Protected Species.

2. Following various changes to the nature, extent and availability of population level data for Southern Giant Petrel, and discussions at several ATCMs (reviewed in XXXI ATCM WP10), in Resolution 2 of XXX ATCM, SCAR was requested to "*complete a review as soon as practical of the population status and trends of the southern giant petrel in the Antarctic Treaty area including an assessment of:*
(1) whether this species fulfils the criteria for designation as a Specially Protected Species under Annex II of the Protocol at a regional scale (the Antarctic Treaty area), and;
(2) the demographic mechanisms underlying any changes in the population size."

3. SCAR undertook to hold a workshop to consider the status of the Antarctic population (south of 60°S) of the Southern Giant Petrel and to make recommendations concerning the degree of endangerment of this regional population, in keeping with the IUCN approach to regional assessments as adopted at ATCM XXX and based on ATCM XXX WP26.

4. The nature, scope and timing of the workshop were advertised to all SCAR National Committees, directly to experts in the field, to other interested parties via directed e-mails, and onwards to others via several other mechanisms. SCAR also made requests to experts working on Southern Giant Petrel, to SCAR National Committees, and to potential data custodians, that any information or data on the species be made available to SCAR so that it might utilize these data during the workshop assessing the current status and trend of the species population found south of 60°S. Similar calls were made by the CEP to Parties.

5. The workshop was held in Cambridge U.K., on 19 and 20 May 2008, and included Stuart Butchart (BirdLife International), Steven Chown (SCAR, Chair), Jeroen Creuwels (Netherlands), Harry Keys (New Zealand), Donna Patterson (U.S.A.), Hans-Ulrich Peter (Germany), Richard Phillips (U.K.), and Flavio Quintana (ACAP).

6. For the purposes of the workshop, an extensive database on abundance and abundance trends of the species at all known breeding sites was compiled, based on the thorough compilation of Patterson et al. (ms. in press with data up to 1999/2000), and updated both with data made available for the present assessment, and with unpublished data made available to Donna Patterson (i.e. up to and including the 2007/2008 season where such data were made available). Owing to data propriety, neither the full original nor the summary data are presently available for public scrutiny, but negotiation to make at least the summary data and assessment spreadsheets available is underway.

7. These data were then thoroughly scrutinized during the workshop in the context of the IUCN Red List Criteria: A (Declining population), B (Range size, fragmentation, etc.), C (Small population size, decline, fragmentation, etc.), D (extremely restricted population size or distribution) – E (Quantitative analysis of extinction probability), and recommendations made on the status of the Southern Giant Petrel south of 60°S.

8. The workshop participants also considered several of the problems encountered when considering these data, and made recommendations concerning methods for future population estimates.

Outcomes – Status and data for IUCN Criteria B to E

9. The best estimate of the current global population of the Southern Giant Petrel includes approximately 54 086 breeding pairs, acknowledging that data are unavailable for a few sites, and that the most recent population estimates for a number of others might be as much as 70 years old.

10. Of these pairs, *c*. 21% are found south of 60°S, that is a total of *c*. 11 012 pairs. The large majority of these pairs are found in the Antarctic Peninsula region, with a much smaller population in East Antarctica. The pairs are distributed across a very large area (Extent of Occurrence (EOO) >20 000 km^2; Area of Occupancy (AOO) > 2000 km^2) in more than 10 discrete and spatially well-separated locations (as defined by IUCN).

11. Present data suggest that populations north and south of 60°S are not genetically distinct. In several instances, banding of many birds and ongoing monitoring for band resightings have not revealed the interchange in adult birds that might be expected if birds regularly moved between distant sites, such as between sites north and south of 60°S.

12. Irrespective of whether demographic exchange occurs between populations of birds north or south of 60°S, the nature of the Antarctic Treaty System means that a powerful mechanism exists to give effect to special protection at a regional level should this be required, and therefore a regional assessment is justified.

13. For the Southern Giant Petrel the following data are relevant to assessments for IUCN Criteria B to E:

(1) For Criterion B, the species has an EOO > 20 000 km^2 (includes at sea range), an AOO > 2000 km^2 (includes breeding range only), and more than 10 spatially separated breeding locations;
(2) For Criterion C, it has a regional population of > 10 000 individuals;
(3) For Criterion D, it has a regional population > 1000 individuals and an AOO > 20 km^2 and occurs at more than five spatially separated locations;
(4) For Criterion E, the species has not been the subject of any quantitative modelling assessments of extinction risk.

14. Current data show that known breeding sites of the species in East Antarctica have low abundances, that these sites are separated in some instances by large distances (> 1000 km), and that together the East Antarctic sites are far removed from the closest other breeding colonies (> 1000 km).

Outcomes – Trend data for IUCN Criterion A

15. Current data show that considerable complexity exists in trend assessments for several reasons. These include the tendency for birds at some sites to move colony if persistently disturbed, usually to nearby sites; the lack of distinction between Northern and Southern Giant Petrel in early counts (pre 1960s); unreliability of early counts (apparent rounding to thousands can be indicative that early counts were approximations), the absence of reliable, comparable time series from many sites; data incompatibilities because of different methods and the timing of counts (discussed in detail by Creuwels *et al*. 2005, *Polar Biology* 28: 483-493); and apparent confusion resulting from different site names.

16. Reliable trend data show that different breeding colonies may show completely different trends even though they may not be especially distant (e.g. Nebles Point and the islands of the Fildes Strait).

17. At those sites where data have been collected consistently over the long-term, some years may show substantial reductions in numbers of breeding pairs. However, what appears to be the case is that birds have often elected not to breed for some reason and the number of breeding pairs returns to previous levels in the years thereafter. The 2007-2008 season was characterized by such a low breeding pair event at several sites owing to heavy snowfall.

18. For the application of Criterion A, an assumption was made of a mean generation length of 21.3 years (calculated as 1/mean annual mortality + age at first breeding = 1/0.07 + 7 = 21.3 years – based on data provided by Schreiber & Burger 2002 – *Biology of Marine Birds*, CRC Press, Boca Raton), and assessments were made over three generations (64 years), in keeping with the IUCN procedure (see the Red List Guidelines available at: http://www.iucnredlist.org/info/categories_criteria). For sites that did not have appropriate time series data (e.g. counts for a single year only) rates of change were extrapolated from nearby sites. For those sites with good time series data an exponential model was applied to the data and the population value for the start year was estimated from the model, with the value for the final year of the census time series used as it was given. Outlying values were rejected based on examination of the data. Where doubts existed about very early counts these were excluded from the time series. In all cases, model outcomes for each site were scrutinized by experts at the meeting and a decision taken about the reliability of the

outcome based on experience of the sites. Where considerable doubt existed about population trend data and the reliability thereof, stability was assumed (5 of 53 sites).

19. For the regional population south of 60°S two approaches were applied for the assessment of trends based on IUCN Criterion A2 (i.e. change over the past 64 years or three generations). First, for a 'best estimate' scenario, the rates of change calculated for all sites based on (a) time series data and exponential models; (b) two data points (where only two estimates were available); (c) a single data point (where only one estimate was available) plus an extrapolated value for 1944 (the start of the three-generation period) based on trends from the nearest suitable site(s); or (d) an assumption of stability given concerns over data and uncertainty over direction of trend. These were applied to all 53 breeding sites for which at least a single count was available (ten sites for which the species had been recorded as 'present' at some point, but without any quantitative estimate, were excluded; these are not expected to bias or change the overall result). A mean rate of change across all sites was then calculated based on the assumption of a constant exponential rate of population change. Second, in all instances where population growth was indicated based on extrapolation from nearby sites, a 'worst case' scenario was taken by assuming such populations were stable (i.e. no population increase or decline). The overall population trend was then recalculated as described above.

20. Because a regional population assessment requires knowledge of what is happening to populations outside the region of interest, the procedures described in points 18 and 19 above were also applied to population data from all sites north of 60°S for which data were available. Data for all sites were then combined to produce estimates of the global population trend for the species.

Outcomes of the assessment against IUCN Criteria A to E

21. For Criterion A2, the best estimate of the population trend is a 30.7% increase in the Southern Giant Petrel population south of 60°S over the past three generations (1944 – 2008). The worst case scenario indicates a 7.1% increase in the Southern Giant Petrel population south of 60°S over the past three generations (1944 – 2008). In consequence, and according to the IUCN global criteria (which must be applied to a regional population as the first step in a regional assessment), the regional population south of 60°S is of Least Concern. That is, it does not qualify as Critically Endangered, Endangered, Vulnerable or Near Threatened.

22. For populations north of 60°S, the best estimate of the population trend is a 13.8% increase in the Southern Giant Petrel population over the past three generations (1944 – 2008). The worst case scenario indicates a 10.2% decline north of 60°S over the past three generations (1944 – 2008). Both of these scenarios indicate that the population north of 60°S is of Least Concern according to the IUCN Criterion A2.

23. Combining the trend data for both regions gives a best estimate of a 17% increase, and a worst case scenario. of -7.2% decline. Again, the outcome of a global assessment against Criterion A2 is Least Concern.

24. Based on the present data (see points 10 and 13 above), the Southern Giant Petrel also qualifies as Least Concern under the IUCN Red List Criteria B to E, for populations south of 60°S, north of 60°S, and for all populations combined.

25. **Hence the overall assessment for populations south of 60°S is Least Concern.** Given the lack of immigration from north of 60° (see point 11 above), no adjustment has to be made to the outcome of the assessment based on the approach recommended by the IUCN for regional assessments. It is worth noting that even if such immigration was demonstrated, the increasing trends north of 60°S also means that no adjustment has to be made based on the approach recommended by the IUCN for regional assessments. Hence the regional extinction risk of Southern Giant-petrel populations south of 60°S is categorised as Least Concern.

26. **The present assessment indicates that the global Red List category for Southern Giant-petrel should also be Least Concern.** In the 2008 IUCN Red List (released by BirdLife International on 19 May 2008), the species is listed as Near Threatened (having been downlisted from Vulnerable in 2007). However, given the outcome of the assessment reported here, BirdLife International will now re-assess the species for the 2009 IUCN Red List, and will invite comments on a proposal for downlisting to Least Concern at www.birdlifeforums.org in due course.

Caveats and further considerations

27. Although considerable confidence can be placed on the fact that the most comprehensive data have been used for a rigorous and quantitative scrutiny, several caveats should be raised. First, all estimates are subject to some uncertainty and in this case considerable intrinsic variability in populations means that variances were high for some models. Second, for many sites data are not current. That is, counts may have been made more than 10 years ago and in a few instances as much as 70 years ago. Nonetheless, by comparison with assessments for other bird species globally, the data are extensive. Third, data on fledging success, juvenile and adult survival, and breeding frequency are available for only a few breeding sites, and much variation exists between these site-specific data. In consequence, demographic modelling for assessments of likely future change cannot readily be undertaken for the species as a whole, or indeed for the population south of 60°S. It is clear, therefore, that additional studies of the species are required.

28. Although the Southern Giant Petrel varies regionally in its sensitivity to human disturbance, at several breeding sites disturbance by National Operators and by umanaged tourism/visitation has caused either emigration or breeding failure, and may continue doing so in the absence of any change in current procedures or in the absence of adherence to guidelines for particular areas (e.g. management plans for ASMAs, or extant guidelines for the operation of aircraft near concentrations of birds).

29. Sensitivity of this species to disturbance means that a careful trade-off is needed between the requirements of data collection for the assessment of population trends, and disturbance as a consequence of such work. However it is clear that experienced observers using appropriate methodology can collect suitable data without affecting survival and/or fledging rates.

30. Current population and population trend data do not allow easy assessment of the reasons for population declines away from breeding sites (i.e. at sea).

Requirements for censuses

31. To obtain trend estimates for Southern Giant Petrel, when observers experienced with the species are available, breeding sites should be censused in the following way

(1) As soon as possible after all pairs at a site have laid eggs (*c*. November 25th for the Peninsula area) or as close as possible to that date (keeping to the same date each year a census is done) ACTIVE NESTS should be counted.

(2) Active nests are nests observed to contain an egg or chick (see Creuwels *et al*. 2005, *Polar Biology* 28: 483-493).

(3) Because of the approach distance required to ensure that birds incubating eggs or brooding young chicks do not desert their eggs only observers experienced with the species should undertake the counts.

(4) The required information for such a census is:

i. Locality name and position to the nearest decimal minute, or second.
ii. Date (day, month, year) of census.
iii. Name and employing institution of observer(s).
iv. Weather conditions with wind speed, snow cover and visibility given as a minimum.
v. A description of the observation procedure used and approach distance to the breeding birds.
vi. The approximate area covered by the breeding birds (state the units used).
vii. The number of active nests.

32. If observers experienced with the species are not available, the following census method should be applied:

(1) As soon as possible after all pairs at a site have laid eggs (*c*. November 25th for the Peninsula area) or as close as possible to that date (keeping to the same date each year a census is done) APPARENTLY OCCUPIED NESTS should be counted at a distance from the breeding site that does not disturb the birds.

(2) Apparently occupied nests are well-constructed nests occupied by at least one, apparently breeding, bird (see Creuwels *et al*. 2005, *Polar Biology* 28: 483-493).

(3) The required information for such a census is:

i. Locality name and position to the nearest decimal minute, or second.
ii. Date (day, month, year) of census.
iii. Name and employing institution of observer(s).
iv. Weather conditions with wind speed, snow cover and visibility given as a minimum.
v. A description of the observation procedure used and approach distance to the breeding birds.
vi. The approximate area covered by the breeding birds (state the units used).
vii. The number of apparently occupied nests.

(4) If at all possible the apparently occupied nest count should be done on several different days under different conditions. The minimum number of apparently occupied nests should then be recorded.

33. The above methods of observation should be undertaken on an annual basis if the aim is to collect data on population trends. Data on a less frequent basis may not enable assessment of inter-annual variability and could make trend assessments more difficult.

34. Additional data on fledging success, breeding frequency, and juvenile and adult mortality can ensure that a better understanding of likely future trends in the population can be obtained and may help identify potential causes of population change. To estimate fledging success on an annual basis the following approach should be adopted only by observers experienced with this species:
(1) Undertake a census of active nests as in Point 31 above.
(2) Undertake a chick count when the chicks are unguarded, but have not yet fledged, *c*. mid-February at the earliest, and preferably later (early April).
(3) Do not attempt to census the numbers of young chicks because of the high risks of nest desertion.

35. If sites are unlikely to be visited annually, and only an estimate of the number of birds present can be made, then this should be made by counting the apparently occupied nests. If the birds are not nesting provide all the data that are usually reported for nest counts, but then give a count of the number of birds present, stating clearly that no birds appeared to be nesting.

36. For areas that are not frequently visited, stating that no Southern Giant Petrels are present is important. Modern distribution and abundance modelling techniques are improved considerably if real absence (rather than presumed absence) data are available.

37. Observers are encouraged to send count data to the Secretariat of the Agreement on the Conservation of Albatrosses and Petrels (www.acap.aq).

Recommendations

38. According to the IUCN Red List Categories and Criteria, the Southern Giant Petrel population south of 60°S is of Least Concern, and does not qualify as Critically Endangered, Endangered, Vulnerable or Near Threatened. Therefore, the present data and analysis do not support the designation of the Southern Giant Petrel as a Specially Protected Species under Annex II to the Protocol on Environmental Protection.

39. Additional censuses of breeding sites and of fledging success should be undertaken in a consistent manner on a regular basis to enable better estimates to be made of current trends in the Southern Giant Petrel population (north and south of 60°S). Should such work indicate a change in the status of the species, it should be re-assessed.

40. Further quantitative work should be undertaken, using both current and new data, so that quantitative demographic models can be applied to the species. Because these models rely on carefully collected, time series information, the collection of such information is encouraged.

41. Sites that have been censused more than 10 years ago should be revisited at an appropriate time so that an assessment of the status of the species at these sites can be made.

42. The lessons learned from this process should be applied to other species. Most significantly, conservation decision-making at the species level is most effective when good, comprehensively analyzed time series data on population size, trends and demographic rates are readily available for the focal species across a range of sites throughout its distribution. The collection of such data is frequently not considered a high priority by science funding agencies, despite the need for such data and analysis thereof by those organizations charged with environmental protection.