Intersessional Report to the SCAR Executive Committee
Standing Scientific Group on Life Sciences
June 2007

Highlights


1. Introduction

The Standing Scientific Group on Life Sciences (SSG–LS) was constituted at XXVII SCAR in 2002.

Since XXIX SCAR the group comprises:

- **Expert Groups (EGs):**
  - Expert Group on Birds (EGB)
  - Expert Group on Seals (EGS)
  - Expert Group on Human Biology and Medicine (EGHB&M)

- **Scientific Programme Groups (SPGs):**
  - Evolution and Biodiversity in the Antarctic (EBA)
  - Subglacial Antarctic Lake Enviroments (SALE, jointly sponsored with the Geosciences Standing Scientific Group)

- **Action Groups (AGs):**
  - Action Group on the Census of Antarctic Marine Life (CAML)
  - Action Group on the Antarctic Marine Biodiversity Information Network (SCAR-MarBIN)
  - Action Group on Southern Ocean Continuous Plankton Recorder Survey (CPR)

2. IXth SCAR International Biology Symposium, Curitiba, Brazil, July 2005
A selected number of papers from this highly successful symposium has been published in Antarctic Science Vol. 19(2): 145-281, June 2007.

3. Xth SCAR International Biology Symposium, Sapporo, Japan, June/July 2009

The Xth symposium will be held in Sapporo, Japan, at Hokkaido University.

4. Expert Groups

*The Expert Group on Birds (EGB)*

played an important role in the implementation of the Agreement on the Conservation of Albatrosses and Petrels (ACAP). E. Woehler (Australia, Chairman of the Expert Group) received observer status to the First Meeting of Parties of ACAP. Together with J. Cooper (South Africa) he drafted an information paper on the activities of the EGB and the support this group could provide to the activities of ACAP. The EGB continued working on the list of Important Bird Areas of Antarctica and the islands of the Southern Ocean. 119 sites are now listed and information on these sites is being collected. Currently data on the Southern Giant Petrel are updated.

*The Expert Group on Seals (EGS)*

currently has a Chief Officer (M.N.Bester, South Africa), Deputy Chief Officer (K.M. Kovaecs, Norway), a Secretary (B.S. Stewart, USA), and an expanded group of seven members. All others with an expressed interest in the study of Antarctic seals have been co-opted as members (numbering 88). The group carried out most of its business by electronic means, and has maintained (a) an updated distribution list for communicating with the membership, and (b) the SCAR-EGS web site ([http://www.seals.scar.org/](http://www.seals.scar.org/)) which is linked both to the SSG-LS and SCAR web sites. Citations of current literature pertaining to Antarctic pinnipeds are listed separately and is posted on the EGS web site, while work continued on the 2006 – 2007 listing. The group was able to meet once (27 July 2005) since SCAR XXVIII, in association with the SCAR Biology Symposium in Curitiba, Brazil (25 – 29 July 2005), and again in Hobart, Australia at SCAR XXIX (11 July 2006). The current status of the stocks of Antarctic fur seals, Subantarctic fur seals and southern elephant seals, as far as it is known, was reviewed and posted on the EGS web site, while the status of the pack ice seals (Ross-, Weddell-, crabeater- and leopard- seals) still awaits the outcome of the APIS Program, which was established as a separate and independent SCAR Scientific Program Group. A summary update on the progress and products of the APIS Program was presented at the 2007 ATCM Meeting, and posted on the EGS website. In addition, a White Paper on the status of knowledge of the biology, distribution and abundance of the Ross seal, which militates against the removing of the species from the list of Specially Protected Species in Appendix A to Annex II of the Environmental Protocol, was tabled. With the production of its report the APIS SPG was dissolved.

The research roles of the two Expert Groups as stated in their Terms of Reference are now largely subsumed within the current Scientific Research Programme ‘Evolution and Biodiversity in the Antarctic’ (EBA). This means that the main functions of the two groups now largely concern the provision of information on the status and trends of typically pelagic vertebrates which return to land to breed. This information is conveyed formally and informally to the various bodies requesting advice from SCAR. Recently this service
provision function has been a questioning of the extent to which data and advice provided by SCAR are current and statistically robust. During its business meeting at XXIX SCAR in Hobart, the LSSSG discussed the options for a potential merger of the two Expert Groups to form an Expert Group on Higher Predators, and to extend the group with specialist in the field of data analysis and mathematical modelling, in order to increase the quality of the data provided to third parties. The two Convenors agreed to discuss all options with their members inter-sessionally and report back to the LSSSG. A working paper for the EXCOM meeting was drafted and commented on. The EGS agreed in general to the paper.

*The Expert Group on Human Biology and Medicine (EGHB&M)*

will have its intersessional meeting concurrent with the COMNAP XIX in Washington DC in July 2007 including a combined meeting with the COMNAP-Medinet group.

The planned merger between the EGHB&M and the COMNAP MEDINET group will again be discussed. The Chairman of the group is confident that such a merger will take place given agreement to hold joint meetings after the successful SCAR/COMNAP meeting in Hobart in 2006.

The group submitted a Human Biology and medicine IPY research proposal to the ICSU/WMO in January, 2004 entitled "Taking the Antarctic Arctic Polar Pulse: IPY 2007-2008" receiving ICSU/WMO IPY endorsement in April 2006. The focus of this IPY research effort is to:

1. to provide and coordinate a forum for medical, physiological, behavioural, clinical and biological scientists to promote high quality research in polar human biology in association with appropriate international scientific organizations;
2. to encourage cooperation in the continued evolution of high quality healthcare and the prevention of injury and disease in the Antarctic; and
3. to promote the full use of the unique environment of the Antarctic to allow understanding of major health problems in polar regions and other analogue or extreme environments in particular, and in mankind in general.

A key element of the project is the development of an Antarctic Health Events Register using e-health technology privacy enhanced, anonymisation technologies within international human research ethical frameworks. This database will provide baseline and legacy data for the next generation of human polar researchers. The project is currently in the coordination and fund-seeking phase, cementing critical international collaborations including that of COMNAP-Medinet.

5. **Scientific Programme Groups**

The SSG–LS is co-sponsoring the SALE SPG (SSG–G). This is reflected in the membership of biologists in the SALE SPG.
Evolution and Biodiversity in the Antarctic (EBA)

EBA's goals are to examine the evolution history of Antarctic organisms, the evolutionary adaptation of organisms to the Antarctic environment, the patterns of gene flow and consequences for population dynamics, the diversity of organisms, ecosystems and habitats in the Antarctic, and the impact of past, current and predicted future environments. Among other things EBA will lead to the production of scientific advice to the Antarctic Treaty parties and CCAMLR.

EBA participants organised and/or presented at a number of sessions and workshops within the SCAR Open Science Conference (Hobart), which also included presentations under two of our affiliated programmes – the Census of Antarctic Marine Life (CAML), and the Latitudinal Gradient Programme (LGP). Jointly with the SCAR Antarctic Treaty System Committee, EBA organised a targeted workshop on Antarctic terrestrial diversity (Stellenbosch, October 2006), which also performed the dual purpose of drafting the implementation plan for the IPY programme “Aliens in Antarctica”. EBA participated in the implementation workshop of the Dutch-led “Tarantella” IPY programme (Netherlands, October 2006). The EBA Co-Chairs participated, along with representatives of the other SCAR SRPs and SSSGs in a productive inter-programme cross-linkages workshop (Rome, November 2006). EBA representatives also participated in a SCAR-MarBIN workshop on marine biodiversity (Leuven, December 2006). EBA science was the focus of meetings and presentations (invited) to the Malaysian Antarctic Research Programme (Kuala Lumpur, August 2006) and South American Antarctic Science community (Concepcion, August 2006).

The Census of Antarctic Marine Life (CAML) is a major five-year international project to investigate the distribution and abundance of Antarctica's marine biodiversity. The aim is to study how biodiversity is affected by environmental change, and how change will alter the nature of the ecosystem services provided to the planet by the Southern Ocean. Although the majority of fieldwork (involving participation in c. 10 separate ship or cruise activities) will occur in 2007-08, during the International Polar Year (IPY), the first cruise, aboard AWI's Polarstern, was scheduled to investigate the waters around the Antarctic Peninsula, beginning in December 2006. The CAML Office is hosted by the Australian Antarctic Division and funded by the Sloan Foundation, and has a web site at www.caml.aq.

Two EBA-coordinated databases help to accommodate the needs of EBA and affiliated programmes. One is the RiSCC terrestrial/freshwater database held at the Australian Antarctic Division. The other is the Marine biodiversity portal (MarBIN). A significant science “highlight” arising from use of the first of these lies in the recent publication of a range of papers by different combinations of EBA members. Amongst other things, these papers emphasise that the biota of the Antarctic Peninsula is very different from that of the rest of the continent, with a striking biogeographical 'divide' existing between the two, and that there are now several lines of evidence suggesting that the Antarctic terrestrial biota does not have a 'recent' origin. These studies formed the core of EBA input into the SCAR Cross-linkages workshop.

EBA's activities in 2007 include:

1) Joint EBA-MERGE (IPY) session at Cryosphere Resources Conference (Salekahan, West Siberia) Siberian meeting (organised by T. Naganuma, WP2; possible special issue of journal Polar Sciences)
2) Joint EBA-ACE session at Antarctic Earth Sciences Symposium (Santa Barbara)

3) Earmarking of funds to enable collation of existing terrestrial biodiversity data and population of terrestrial biodiversity database (through University of Stellenbosch)

4) Invited EBA participation in MISA 3 conference and SCAR-ICSU workshop (Malaysia, March 2007), intended both as catalyst for IPY activities of Asian Antarctic operators, and advertisement of relevance of SCA activities to currently non-participant countries.

5) Completion of publication process (Antarctic Science special issue) of the dedicated output from the IX SCAR Biology Symposium (Curitiba)

6) Steering committee for X SCAR Biology Symposium, and also expected input to 3rd SCAR Open Science Conference

7) SCAR Inter-Programme workshop, and contribution to “Antarctic Climate Impact Assessment”

6. Action groups

*The AG on the Census of Antarctic Marine Life (CAML)*

CAML is a substantial field program under EBA with quite a big agenda over the next 2 years. It will be supporting a number of workshops as the various ship voyages return home. These will lead up to the final Census of Marine Life wrap-up in 2010. The first CAML cruise (on RV Polarstern) took place in 2006 into the Weddell Sea. The cruise was very successful and received substantial press coverage, not in the last place because of the collaboration with the Cousteau Society.

*The SCAR Marine Biodiversity Network (SCAR MarBIN)*

was developed Concurrent with the development of CAML. Belgium agreed to host SCAR MarBIN and has already deployed three staff people for a period of five years. SCAR MarBIN was fully functional at the start of the IPY and will serve amongst others as the data repository for the CAML project. Currently steps are taken to integrate SCAR MarBIN with international biodiversity networks; it will become the Antarctic node of the biodiversity programmes OBIS and GBIF.

In June 2007 SCAR-MarBIN held a workshop in Poland, attended by 32 participants of 11 countries. The main outcomes were:

- Admiralty Bay Benthos Diversity Database (ABBED) will be developed as a sub-network of SCAR-MarBIN, including long term data from Admiralty Bay, mainly from Polish, Brazilian, Belgian research. One dedicated IT will be hired, and based in Lodz, Poland. Long term objective is to designate Admiralty Bay as a CAML legacy site.

- Arctic Ocean Diversity (ArcOD) data system to be implemented on SCAR-MarBIN transfer. All data systems will be following SCAR-MarBIN/OBIS standards. One dedicated IT will be hired, and based in Fairbanks, Alaska. Developments will be shared. Possibility of BiPolar connections by the end of IPY.

- A Data Management Protocol (DMP) will be prepared for CAML cruises usage. DMP will be developed in conjunction between SCAR-MarBIN, JCADM, AADC.
• Deeplinking technology will be implemented for georeferenced Barcoding capabilities. New sequences to be deposited in GenBank/BoL, linked to SCAR-MarBIN at the specimen level. This feature will be developed in collaboration with CAML barcode manager at BAS.

• An Interactive Antarctic Field Guide (AFG) will be developed as a collaborative feature at the SCAR-MarBIN webportal. The I-AFG is based on the AFG built up by Andrew Clarke and David Barnes (BAS), which includes information on ca. 400 species.

• Development of the Register of Antarctic Marine Species will be speeded up by integration of existing information available at AADC (eg on Protista). Microbes are also considered, through collaboration with the Ribosomal Database Project.

• Interactive Identification Keys (IIKs) will be added to the website to ease the burden on taxonomists. The keys will use a databased, polytomous model (NeMys), developed at University of Ghent. First taxa to be added: Nematodes, Amphipods, Sea Urchins, Ophiuroids, Ostracods. IIKs will also be made portable for field use.

• A repository for fast description of numerous new species (Morphotypes) will be created (MorphoBase). This tool will allow users to upload a picture/illustration of a new species together with a fast description and basic morphometric parameters. It will be designed to avoid effort duplication and follow-up of species discovery during CAML.

• SCAR-MarBIN was invited to take part in the Bioregionalisation of the Southern Ocean process. Coordinators will attend the Brussels meeting in August 2007.

• Online Ecosystem visualization Tools were examined and will be developed in the future, in collaboration with Ben Raymond (AAD).

• Optimization of Gazetteer and maps databases was sought through interaction between SCAR-MarBIN, AADC and BAS.

• The IMERS expedition data module, developed by VLIZ was presented and will go through a beta testing phase, using a set of virtual cruisers. This is to ensure the data module is ready for field in October 2007. It will be part of a Cruise Leaders data management kit.

• Metadata translation tools will be developed in close collaboration with AADC to ensure consistency between IMIS and AMD metadata records.

• Closer collaboration will be sought with SOOS, by participation to the October meeting in Bremen. Graham Hosie (AAD) will represent SCAR-MarBIN.

• An Online Data user survey will be conducted soon, using the OBIS user survey as a template.

• SCAR-MarBIN Website will be included in the CoML website survey.

The Action Group on Continuous Plankton Recorder Research (CPRAG) was formed during the SCAR XXIX meeting in Hobart 2006. It's purpose is to support and develop the SCAR Southern Ocean CPR Survey based at the Australian Antarctic Division. The CPR Survey is mapping the biodiversity and distribution of plankton, including euphausiids (krill) life stages, and then using the sensitivity of plankton to environmental change as early warning indicators of the health of Southern Ocean. CPRAG has additional
terms of reference to develop and maintain the SO-CPR Database and to improve access for users, and to expand and enhance the SO-CPR Survey to include more ships and repeat transects around Antarctica. CPRAG as also been tasked to investigate converting the Action Group to an Expert Group on CPR research. CPRAG commenced with four core members: co-chairs G. Hosie (Australia) and M. Fukuchi (Japan), and U. Bathmann (Germany) and D. Robertson (New Zealand) who collectively represent the countries who own the data. P. Ward has since become another core member as UK has joined the Survey. Additional expert members will be invited onto the AG as required, including a member each from Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Sir Alister Hardy Foundation for Ocean Service (SAHFOS), which leads the northern hemisphere CPR surveys, in order to provide cross linkages and collaboration. The data set holds more than 100,000 records for about 200 zooplankton species from the Scotia Arc east to the Ross Sea. The data are currently stored at the Australian Antarctic Data Centre and SCAR-MarBIN. The SO-CPR data is the second largest data set at SCAR-MarBIN and has recorded the highest number of downloads (approximately 1.3 million) so far for 2007. The SO-CPR Survey will be a major contribution to the Census of Antarctic Marine Life in 2007-08 with a circum-Antarctic CPR survey conducted from at least 10 vessels. The CAML-CPR survey is expected to bring new member countries into the CPR Survey, including France, and a South American consortium of Brazil, Peru, Chile, Argentina, Uruguay and Ecuador. In support of this, we will be conducting a training workshop in September 2007 in South America. In May 2007, G. Hosie met with M. Meredith, AGCS-Oceans, and P. Ward, BAS, to discuss common analysis of ocean, climate and CPR data. The group agreed that such a process would be possible and invaluable to SCAR and the wider Antarctic community, but support would be required for a person with the appropriate quantitative and analytical skills to conduct this work. CPRAG is designed to meet electronically, although face-to-face meetings occur when the opportunity arises.

7. Additional Issues

Under the auspices of the SSG-LS and with support of the SC-ATS a workshop was held to draft an ‘Environmental Code of Conduct for LAND-BASED scientific field research in Antarctica’ (Rilland, The Netherlands, 1-2 June, 2007). The organisers wanted COMNAP to be involved in the process, hence the Convenor of AEON attended the workshop.

Ad Huiskes
Chief Officer
SCAR Standing Scientific Group on Life Sciences

Yerseke, June 2007
### List of Acronyms and Abbreviations

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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>ACAP</td>
<td>Agreement on the Conservation of Albatrosses and Petrels</td>
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<td>ACE</td>
<td>Antarctic Climate Evolution</td>
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<td>AEG</td>
<td>Antarctic Environmental Gradient</td>
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<td>AG</td>
<td>Action Group</td>
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<td>AGCS</td>
<td>Antarctica and the Global Climate System</td>
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<td>APIS</td>
<td>Antarctic Pack Ice Seals</td>
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<td>ATCM</td>
<td>Antarctic Treaty Consultative Meeting</td>
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<td>AWI</td>
<td>Alfred-Wegener-Institut für Polar- und Meeresforschung</td>
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<tr>
<td>BAS</td>
<td>British Antarctic Survey</td>
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<tr>
<td>CAML</td>
<td>Census of Antarctic Marine Life</td>
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<tr>
<td>CCAMLR</td>
<td>Commission for the Conservation of Antarctic Marine Living Resources</td>
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<tr>
<td>COMNAP</td>
<td>Council of Managers of National Antarctic Programmes</td>
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<tr>
<td>CPR</td>
<td>Continuous Plankton Recorder</td>
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<tr>
<td>CPRAG</td>
<td>Action Group on Continuous Plankton Recorder Research</td>
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<tr>
<td>EASIZ</td>
<td>Ecology of the Antarctic Sea-Ice Zone</td>
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<td>EBA</td>
<td>Evolution and Biodiversity in the Antarctic</td>
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<td>EG</td>
<td>Expert Group</td>
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<td>EGB</td>
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<td>EGHB&amp;M</td>
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<td>EGS</td>
<td>Expert Group on Seals</td>
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<tr>
<td>GBIF</td>
<td>Global Biodiversity Information Facility</td>
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<td>IAI</td>
<td>International Antarctic Institute</td>
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<td>ICSU</td>
<td>International Council for Science</td>
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<td>IPY</td>
<td>International Polar Year</td>
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<td>IUCN</td>
<td>World Conservation Union</td>
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<td>LGP</td>
<td>Latitudinal Gradient Project</td>
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<td>MarBIN</td>
<td>Marine Biodiversity Network</td>
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<td>MEDINET</td>
<td>Medical Network</td>
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<tr>
<td>MERGE</td>
<td>Microbiological and Ecological Responses to Global Environmental Changes in Polar Regions</td>
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<td>NSF</td>
<td>National Science Foundation</td>
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<tr>
<td>OBIS</td>
<td>Ocean Biogeographic Information System</td>
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<td>OPP</td>
<td>Office of Polar Programs</td>
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<tr>
<td>RiSCC</td>
<td>Regional Sensitivity to Climate Change in Antarctic Ecosystems</td>
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SALE Subglacial Antarctic Lake Environments
SCAR Scientific Committee on Antarctic Research
SC–ATS Standing Committee for the Antarctic Treaty System
SPG Scientific Programme Group
SSG–G Standing Scientific Group on Geosciences
SSG–LS Standing Scientific Group on Life Sciences
VLIZ Vlaams Instituut voor de Zee (Flanders Marine Institute)