

SCAR LIFE SCIENCES STANDING SCIENTIFIC GROUP (LSSSG)

Draft Report of the meeting at XXX SCAR, 5 - 7 July, 2008, Saint Petersburg, Russia

Attendees

- a. Country members**
- b. Additional members**
- c. Observers**

A list of names and addresses is in Annex 1.

1. Welcome, apologies and rules of procedure

A. Huiskes, Chief Officer, Life Sciences Standing Scientific Group, formally opened the meeting at 1400 and welcomed all members, observers and alternative members. Members were informed of the rules of procedure for SSGs. Members were invited to introduce themselves to the meeting, giving name, institution and Antarctic research interests. Not present were members from Chile, China, Finland, France, Malaysia, Norway, and Ukraine.

The CO asked for the submission of proposals for replacement of the CO. If the Secretary, K. Conlan is elected to CO, a new secretary will be needed.

The CO asked for a short time of silence in memory of Edith Fanta. He noted that she worked actively with the LSSSG for many years and was a great asset to SCAR. She was very keen that SCAR should include young people and she succeeded in that when she organized the 9th SCAR Biology symposium. In her honour he proposes the LSSSG to install the Edith Fanta award for the top oral and poster presentations by a young scientist at the 10th SCAR Biology Symposium in Sapporo, Japan, July 2009. The meeting agrees.

The CO asked that a member of the LSSSG attend a meeting on King George Island research tomorrow, where the input of biology is urgently needed. H.-U. Peter offered to go.

The CO asked that financial forms be completed to give an overview of financial requirements for the next 2 years.

2. Adoption of Agenda and timetable

The CO indicated some timetable changes for the meeting. Members were asked to propose additional agenda items and adopt the draft annotated agenda, the list of documents and the draft timetable for the meeting (Doc 1), suggesting additions and modifications where appropriate. No modifications were requested.

The annotated agenda of the meeting is in Annex 2 and the list of documents in Annex 3.

3. Report of the SCAR XXIX LSSSG meeting, Hobart 2006

Members approved the minutes of the SCAR XXIX LSSSG meeting, Hobart 2006 (Doc 2). The CO thanked Eric Woehler for having acted as secretary at short notice.

4. Contacts with ICSU unions

The CO reported on the relationship of SCAR with SCOPE and IUBS. IUBS is an organization that comprises about 40 different societies of every biological description. It was decided between the CO and the IUBS Representative, G. Knox that stronger involvement with IUBS was not necessary. Instead, it would be much better to contact the societies directly if collaboration was needed. Some members of EBA have already contacted one of these societies (physiology) and P. Convey gave a presentation at their meeting.

SCOPE is a different matter. It organizes conferences or assists in publishing books and reports whenever a problem in the environment is brought to its attention e.g. Antarctic and the Global Climate System could be published with the aid of SCOPE. People have to come to SCOPE with a proposal and then SCOPE will help organize their conference or help publish their book. The CO recommended that John Turner be appointed to be in touch with SCOPE regarding financing.

5. Matters Arising from the Expert Group on Human Biology and Medicine

I. Grant presented the HB&M meeting report (Docs 5 and 6). He noted that restricted budgets at the national level are reducing activities and that the HB&M will try to develop a more robust electronic communication to decrease costs. The majority of activity has been in developing the IPY activity "Taking the Arctic and Antarctic Pulse". Insufficient funding was raised, resulting in only smaller projects going forward. The HB&M is concerned that there are no Antarctic-wide epidemiological data. A disease reporting system similar to that in the US and UK is needed. COMNAP has agreed to host this on their website with a data collection form. This will trigger notification to medical officers of other programs so advance action can be taken. COMNAP is planning a full reorganization and MEDINET will be reorganized though maintained. The HB&M will seek to move its website management over to SCAR and ask for associated funding.

The HB&M was asked to comment on a report on pathogenic microbes in the Antarctic but it cannot do so until more information from the authors is received. The present feeling is that these are opportunistic pathogens that attack people with reduced immunity due to other problems. The exception possibly is in some fungal skin conditions, and a query of their presence will be added to the HB&M website form. The other claim about these fungi is that they deteriorate concrete, and the HB&M will examine the supporting data before coming to a decision.

The Psychology subgroup is working well but the Physiology subgroup is not. The HB&M recommends that bird researchers should be aware that seabirds are vectors for Lyme disease. The HB&M has been collecting bird ticks in the subantarctic and are looking for transmission of *Berillia endorpha*. Some data indicate these are present and therefore there is potential for transmission of Lyme disease to the Antarctic.

Members received the HB&M report with interest and asked what is known about seals and ticks. I. Grant replied that seals have not been studied by the HB&M. The birds studied for ticks were allbatross and some penguins. The EG Birds has offered to provide HB&M with more samples.

Recommendation XXX – LSSSG – 1 (Internal) (previously XXIX – LSSSG – 1)

Concerning the Membership of EGHB&M.

Noting that there remain large numbers of vacancies in national representation on EGHB&M:

- In that several nations have not nominated delegates to the Expert Group despite an active participation in science in the Antarctic.
- In that several people who have recently retired from EGHB&M have not been replaced despite contact between the executive of EGHB&M and the national nominating body.
- That ICSU committees representation is largely non existent or inactive.

Considering that this:

- Depletes the number of collaborators in research
- Reduces the scope of expertise available to EGHB&M
- Limits the overall functionality of the group
- Tends to hamper effort to stimulate participation in Health research in the Antarctic.

The EGHB&M and LSSSG recommends and requests that:

- SCAR maximizes influence on national appointing organizations and ICSU to nominate members for EGHB&M, and encourages support for attendance at meetings.

6. Scientific matters arising from the ATCM

M. Kennicutt, VP SCAR, presented the report on behalf of S. Chown, CO SC-ATS. He noted that SCAR has two missions: promoting Antarctic science and providing advice to the Antarctic Treaty meeting. He noted that the LSSSG is extremely important for how SCAR provides advice to the Treaty, and that the workload is growing. A management review chaired by C. Howard-Williams found that SCAR is responsive, providing state of knowledge, technical advice, management plans for SPA's, and peer reviews. When parties bring advice to the treaty they ask SCAR first, communicating this to the Treaty. It was once thought that CEP would take over the responsibility of providing advice but it is not going that way. So, the ATCM committee will get larger and its budget double from \$10 to 20K. CEP has the same problem SCAR does – too many issues. It is working toward a 5 yr plan and prioritizing so not all issues have to be looked at in the first year. Once the CEP plan goes forward then SCAR will develop a plan on how to deal with its workload. The recommendation is for CEP and SCAR to meet annually.

M. Kennicutt advised that National committees should keep delegates well informed as many times expertise may not be at the table. SCAR reports should be timed in such a way as to have time to review quality, with workshops or other meetings with those who are knowledgeable on the subject. More communication with CEP is required. The Antarctic Climate Change report is of high interest to the CEP and it is looking at producing a regular report like in the Arctic. Protected areas work has to be scientifically active so SCAR is looking at getting more involved again.

The Standing Committee on the Antarctic Treaty System has had two meetings intersessionally. Almost 20 different papers were provided by SCAR (large workload). Most of the topics are Life Sciences related. A Science Lecture is given at each meeting in order to ensure that science is introduced. Biologically relevant topics discussed have been overflight distances and how they were set; human disturbance to wildlife (advice was that it varies according to the situation); status of the Southern Giant Petrel (how do we know we are giving the most accurate advice since SCAR had to withdraw its paper due to new data coming available); the delisting of fur seals; how do you apply criteria to decide the status of a species (SCAR recommended using the IUCN criteria but since these criteria are for global populations, these must be modified with Antarctic based criteria, e.g. Ross Seal); introduced species and hull fouling; aliens project; Environmental Domains analysis (do specially protected management areas represent all the different biomes?); effects of marine acoustics (SCAR action group had a workshop and a report was written: the Treaty is asking for periodic updates to see if any change). There is a feedback loop as this affects how we do science. Other examples are bioregionalization of the Southern Ocean; Antarctic Climate Report (ACCE) (SCAR provides updates to the Treaty each year); IPY (a lot of activity relating to this); Census of Antarctic Marine Life (feeds in to CEP); bioprospecting (most are policy questions, not scientific and high priority). The Treaty was asked to provide an Antarctic viewpoint on persistent organic pollutants. Other issues are the streamlining of reviews of Management Plans for specially protected areas and specially managed areas, introducing biological information into domains analysis, aliens risk analysis, and a Code of conduct for field work.

Members adopted the report after a discussion on liability, funding and bioprospecting.

7. Antarctic Conservation in the 21st Century

The CO noted that in Hobart there was a discussion on a workshop report on Antarctic Conservation in the 21st Century convened by D. Walton. An update was required jointly with the IUCN. The matter is still under discussion, and this item will be carried over to the next meeting.

8. Antarctic Climate Change and the Environment

J. Turner presented an overview of the large draft report “Antarctic Climate Change and the Environment” (Doc 28) which is comparable to ACIA (Arctic Climate Impact Assessment). It will be reviewed by delegates in July and published by Springer in 2009.

Members asked for more input in order to provide a larger balance of biological information and it was agreed that there should be another meeting of the editors. The CO thanked J. Turner for his excellent presentation.

9. Environmental code of conduct for terrestrial scientific field research in Antarctica

The CO presented the environmental code of conduct for terrestrial scientific field research in Antarctica (Doc 29), which has been synthesized from previous codes of conduct during a workshop in June 2007 in the Netherlands and since then modified by comments of the various national programs, national operators and COMNAP. He also explained the procedure adopted to come to this document.

Members were asked to review the Code. The modified version is presented in Annex 4.

10. JCADM

T. de Bruin spoke to Doc 12, the report of the Joint Committee on Antarctic Data Management (JCADM), noting that JCADM consists of two parts, the National Antarctic Data Centre (archives the data long term) and Antarctic Master Directory (directory of >4700 dataset descriptions). IPY has caused a jump up to >4000 data retrievals per month relative to approximately 500/mo before IPY began. A draft strategy (SCAR Data and Information Management Strategy) has been developed to guide data management activities and to define how the Antarctic data management system should be implemented.

S. Gordon spoke to the Antarctic Master Directory, taking the Members through a keyword search, which will give subject, location of study, who holds the data, contact information and links to different projects. The key messages are that managing your Antarctic data is important and that you must ensure that your data is stored in a national data repository so it is easily accessible.

Members discussed the issue of South American data, where it is not clear where data should go. Links between SCAR MarBIN, OBIS and GBIF were discussed.

11. Evolution of SO-GLOBEC into ICED and SCAR/SCOR Expert Group on Oceanography

E. Hofmann presented a report on these activities.

SO-GLOBEC was krill-centric, looking at its food web interactions, animal energetics and climate relationships. Study centres are in Germany, US, Korea, UK, Australia. Two issues of Deep Sea

Research Part II (2004 and 2008) are devoted to results. A third volume is now being developed, which will have synthesis and integration papers. A lot of the modelling efforts are using the Regional Ocean Modelling System. It is coupled to dynamic sea ice, under-ice shelf and meso-scale atmospheric models. Winter cruises found that copepods dominated the biomass. Highest krill biomass was found in the inner shelf and fjords. In Fall 2001, hot spots of chlorophyll a, birds and mammals were found, corresponding with spots where warmer, high-nutrient circumpolar deep water intruded onto the shelf. Overwintering strategies of krill were also studied and it was found that, among many strategies, krill switch to a carnivorous diet in winter and reduce their metabolic rate (greater reduction at smaller body size). The implications are that there is an environmental structuring of biological production due to CDW. It was also found that biological production is episodic and confined to specific regions and that krill are not necessarily dominant. Alternative food webs occur in winter and fall when copepods are more abundant, and C transfer goes to amphipods, myctophids, icefish, and higher predators. When krill are really abundant, it goes straight to higher predators.

Integrating Climate and Ecosystem Dynamics (ICED): this is a circumpolar, interdisciplinary approach to understand climate interactions in the Southern Ocean. Implications for ecosystem function and feedbacks to biogeochemical cycles are derived. ICED is going forward to transition between IMBER and GLOBEC. A food web workshop was the first of a series of planned workshops. The intent was to develop a model for the entire SO and model its potential response to climate change and to climate variability. To do this, top predator modellers from other systems were invited, e.g. tuna food web modellers, where the models are well developed. An overview paper on SO food webs will be put into MEPS.

Southern Ocean Observing System (SOOS) Oceanography Expert Group: The objective is to design and implement an observing system that encompasses physical, biogeochemical and ecological processes. First stage is to produce a document that demonstrates why sustained observations are needed in the SO, what mix of observations are required (e.g. C cycling), what is presently done and possible, and a vision for the future. Existing measurements are by ARGO floats, array in the N Pacific, repeat hydrography lines. SOOS is planning to add biological sensors to the next generation of ARGO floats. Attaching CTD's to elephant seals has been very successful as seals can go into sea ice areas while ARGO floats cannot. Seals are giving many more measurements than ARGO floats (total South of 60°S: 8200 seal vs 900 ARGO; in sea ice: 4500 seal vs 140 ARGO). Future plans are to test gliders, which will give high resolution transects, and to use self-opening moorings called data pods which upload information to satellites (non-recoverable). Profiling floats last longer, measure more properties and go deeper. Next generation ARGO floats will go closer to the surface. SOOS is working on involving more countries and developing affordable sensors for biology and biogeochemistry. High resolution reanalysis products are very important and need to be routinely available.

Members received this report enthusiastically, raising questions on fluorometry, hydrophones, winter phytoplankton community change, involvement of the Continuous Plankton Recorder Program, shifts in krill-salp domination and their relationship to sea ice cover, and the development of biological hotspots along the west Antarctic Peninsula where rugged shelf topography and close proximity of the ACC cause upwelling of CDW. The CO thanked E. Hofmann for her report, noting the enthusiasm of the members for science.

12. SCAR matters

The Executive director of SCAR, C. Summerhayes, reported on recent progress and future plans for SCAR (Doc 3). He noted that SCAR membership is expanding. Romania has applied to join, the Astronomical Union is applying to join, and Malaysia is applying for an upgrade from Associate to Full membership. SCAR is now a Company Limited by Guarantee and shortly should be registered as a UK Charity. A 50th anniversary book is being produced that looks at SCAR's contributions over the last 50 years. SCAR is in the process of completing the Antarctic Climate Change and Environment

Review (ACCE). This will be published as a book early in 2009 and will be a significant contribution to the IPY. It is the definitive Antarctic authority and similar to the Arctic Climate Impact Assessment.

SCAR's 5 major scientific research programs have just had their 4 yearly external peer review with all receiving excellent ratings. SCAR has been reviewing the way in which it manages Antarctic scientific data and information and this has led to the development of a draft strategy on that subject. SCAR also provides a number of other services and products, eg MarBIN, the Seismic Data Library System, the Antarctic Digital Magnetic Anomaly Project, and the Composite Gazetteer of place names.

SCAR is currently reviewing its relationship with the Antarctic Treaty System. An interface between the Antarctic Community and the Committee on Environmental Protection (chaired by S. Chown) is being established. C. Summerhayes reminded the Members that SCAR needs the SSSGs to advise the ATS through SC-ATS where the frontiers of science are going to be in the near future and the implications of change for the future.

There was a proposal that the SCAR science business meetings should be separated in time from the Delegates meetings to allow time for the delegates to digest the reports and recommendations. However, this increase in number of meetings increases costs and it is felt that the two meetings are better held close in time.

With some 1400 registrants, 2008 has been the largest open science conference so far. Ways are being assessed to decrease registration fees. The next OSC will be in Buenos Aires in the southern winter of 2010. That same year SCAR is also co-sponsoring the 2nd IPY conference which will be held on June 8-12, 2010 in Oslo. SCAR science is at the forefront of many IPY projects. SCAR is now actively thinking about the IPY legacy. Observing systems will be key elements of the IPY legacy e.g. PAntOS and SOOS. The data and information management strategy is a key element in thinking about how we manage scientific data and information after the IPY. IPY is also about education and outreach. The main contribution is through the Fellowship program, with SCAR supporting 3-4 research fellows per year, at least one of these being a biologist.

SCAR is co-sponsoring with IASC the Association of Polar early Career Scientists (APECS). It is awarding 3 SCAR medals this year. Members were asked to give suggestions for medallists for 2010.

SCAR's partnership with other organisations is expanding, e.g. the World Climate Research Programme, the International Arctic Science Committee, and the newly formed International Association for Cryospheric Sciences.

Upcoming are the Delegates meeting in Moscow on July 14-16 and election of a new President and two new Vice Presidents. Changes in the Secretariat have occurred, with Mike Sparrow and Rosemary Nash currently in position.

Members asked for more information on the 5 research programs, fellowships, ACCE, and the 2010 meeting schedules. The CO thanked C. Summerhayes for his report.

13. Matters Arising from the Expert Group on Seals

M. Bester reported on progress of the Expert Group on Seals (Doc 13). He noted that the EG-S does not accept national activity reports anymore. The APIS program results are now being published and information can be found on the seals website. There are now 90 members in the EGS. Finances will need to be available to pull together the new EG Higher Predators. It is recommended that the new EG-HP continue to target individual researchers and research groups and retain separate listings in the current EG-S website in a new EG-HP. In addition, CCAS obligations should be carried

forward with CCAS being encouraged to call a meeting. Intersessionally, the Seals group provided advice on whether dogs should be allowed in the Antarctic and also on oil spill effects on seals.

The EG Birds and EG Seals will assemble an ad hoc group in preparation for merger to the EG Higher Predators.

The Members adopted the report with thanks.

14. Matters Arising from the Expert Group on Birds

D. Patterson-Fraser reported that there will be a gradual merger over 2-3 years of EG-Birds and EG-Seals with an executive committee from both groups. The intent will be to look at birds and mammals and how they respond to climate. Status and trends assessments may continue but broader ecological issues will be treated, such as human impact and conservation. The Terms of Reference for the EG Higher Predators is a work in progress and the group will tentatively meet some time in 2009.

D. Patterson-Fraser reported on the WG-EMM workshop. This focussed on area 48, looking at the krill dependent species. The group is trying to determine correction factors to put into a population model of predator demand on krill. CCAMLR now needs more information on specific topics to help fill in gaps of knowledge on predator populations (rather than status and trends reports) so that they can determine what the uncertainties are (i.e., how dependable the data are). This will assist CCAMLR in assessing the utility of older data for comparative purposes.

The members adopted D. Patterson-Fraser's report with thanks.

15. Formation of an Expert Group on Birds and Marine Mammals

The CO reported on progress on the planned merger of the Expert Groups on Seals and Birds into the Expert Group on Pelagic Predators (Doc 15). Members approved the merger after discussion on the name. It was agreed that the name would be changed to Expert Group on Birds and Marine Mammals. SCAR will be informed that the terms of reference will be reviewed. D. Patterson-Fraser will be CO, M. Bester Deputy CO and the Secretary has a vacancy.

It was agreed that the EG Birds and Marine Mammals will work closely with the new CCAMLR group on top predators. Annex 5 presents Doc. 15 as modified to reflect the Members' discussion.

Recommendation XXX – LSSSG – 2 (Internal)

Concerning the formation of an Expert Group on Birds and Marine Mammals

Noting that there is a benefit in merging the Expert Group on Birds and the Expert Group on Seals into one Expert Group on Birds and Marine Mammals (EGBMM)

The LSSSG requests the Delegates of SCAR to endorse the establishment of such a group with the following provisions by the Standing Scientific Group on Life Sciences (LSSSG):

- The Expert Group on Birds and Marine Mammals is established via a transitional period of two to three years, this at the discretion of the group. There will be an initial meeting of the group within one year. An evaluation of the group will be made after two years and be reported to the LSSSG meeting at XXXI SCAR in 2010. The outcome of the evaluation report will be decisive for further actions to be taken.
- The group will continue the research currently in progress in the two constituent groups.
- Meetings of the new group will be as much as possible combined. The group will meet in plenary or in two parallel sessions as they see fit and as the need arises.

- All members and co-opted members of the two constituent groups will automatically become members or co-opted members of the new group.
- In the transitional phase the group will seek extension of the membership with experts in the field of processing of large data sets and mathematical modelling.
- The group will consist of (i) a three person executive - initially to be led by a D. Patterson-Fraser (co-ordinator), M. Bester, and a Secretary (vacancy), (ii) A core group of invited experts (10-15 people) and (iii) co-opted members from the wider community, as required.
- The Expert Group will, wherever possible, seek formal collaboration with similar groups from other ATS bodies, especially with a view to facilitating data exchange and management to improve the information and advice provided by this group to SCAR and to the ATS.
- In one of its first meetings the group will discuss and adopt rules of procedure, especially with respect to the use of published and unpublished data.
- The provisional Terms of Reference for this group will be:
 - a. To quantify the role of birds and marine mammals in the Antarctic marine and terrestrial ecosystems
 - b. To work with other components of SCAR towards a multidisciplinary synthesis of biophysical and biochemical coupling mechanisms in the Antarctic.
 - c. To collate and provide information on the status and trends of populations of specific species in the SCAR area of interest based on needs identified by SCAR or by the group.
 - d. To provide advice to ATS bodies and others as requested from time to time, as agreed by SCAR, and in collaboration with these bodies including the exchange of data.
 - e. Contribute to the conservation and management of Antarctic and subantarctic birds and mammals through the appropriate utilisation and interpretation of currently available scientific data.

16. Progress report of the Scientific Programme Planning Group on Evolution and Biodiversity in Antarctica, The Census of Antarctic Marine Life and SCAR-MarBIN

Scientific Programme Planning Group on Evolution and Biodiversity in Antarctica

P. Convey reviewed the highlights of the EBA report (doc 16), focussing on publications, diversity of projects, and workshops and meetings held. It was noted that EBA is achieving good products and conducting a wide range of research. For outreach, there will be a regular newsletter, and the first, which has just been produced, will go to the delegates. EBA also has a completely new website. EBA has been fully integrated into the Antarctic data program and JCADM is using EBA as a flagship example.

Members adopted the report with thanks.

Census of Antarctic Marine Life and the IPY

M. Stoddart gave a presentation on CAML, showing the tracks of the 18 ships that have been involved in the last season. He noted that CPR coverage was particularly effective with approximately 40,000 km covered and new coverage in the Amundsen and Bellingshausen Seas. CAML data go straight into SCAR-MarBIN, and now 14,265 taxa and 8646 species have been documented. Dataflow show there are 49 different data sets, making SCAR-MarBIN an effective portal for marine species. The CAML program has sampled 350 sites around the Antarctic, including at great depth, with many types of sampling gear. Over 15,000 sample lots have been collected, with at least 900 bar code samples, and it is expected that at least 200 papers to come out, with a special volume of Deep Sea Research being published in 2010. There are 40 graduate students involved to

date and Time magazine has ranked CAML among the top 10 scientific discoveries in 2007. CAML has appeared in 124 media insertions in 25 languages.

Members adopted the report with thanks, noting the impressive increase in new marine species being discovered in the Antarctic.

SCAR-MarBIN project

C. De Broyer described the SCAR-MarBIN project, noting that it is an obligation to the Treaty to make data freely available. The CAML information component will be an IPY legacy. Its Terms of Reference are to compile, link, integrate and disseminate Antarctic marine biodiversity information, contribute to global biodiversity information, give feedback to biodiversity information needs from the ATS and SCAR, develop the Antarctic regional node of OBIS and manage data generated by CAML. Its objectives are open and free access to marine biodiversity data for science, conservation and management, to build a network of interoperable databases, expose data to OBIS/GBIF, and collaborate. SCAR-MarBIN has given links to various components of SCAR, also IWC, WWF/IPF, universities, and national programs. SCAR-MarBIN has 650,000 records from 80 data sets, and 3734 taxa are registered (46%). Distributions can be downloaded using Google Earth. There have been more than 70 million downloads since 2007, the largest being the CPR data.

Plans are to expand the portal, provide a data tool kit to enter your own data, an expedition data base for historical expeditions, expert's data base, online field guides, data exploration, barcode deep linking, and the RAPID project (quick identification using shape of animals).

SCAR-MarBIN is a CAML/IPY legacy, a world register of marine species (RAMS), contributed to the Status of the Antarctic marine environment report, and to Southern Ocean bioregionalization. It is bridging disciplines, is a global change benchmark, and is assisting with marine protected areas design.

SCAR-MarBIN now has 5 years invested and is a demonstrated tool for research and science-based decision making. Funding to SCAR-MarBIN will reduce after 2009 and it is recommended that cooperative funding begin in 2010.

The CO thanked C. De Broyer for his presentation.

Recommendation SCAR XXX - LSSSG- 3 (External)

Concerning the future of the SCAR Marine Biodiversity Information Network (SCAR-MarBIN)

Recognizing the achievements and crucial usefulness of the SCAR-MarBIN network in terms of compilation, integration, accessibility and dissemination of Antarctic marine biodiversity data for research, management, conservation and monitoring purposes,

Considering

- the SCAR involvement in the Global Biodiversity Information Facility (GBIF), as an associate member,
- the need to secure the IPY-CAML information legacy,
- the strong expression of interest by Parties at the CEP X (Kiev, June 2008) and by CCAMLR for the Southern Ocean bioregionalisation process,
- that Belgium alone will not be able to continue funding beyond 2009 and is seeking contributions from an international consortium,

The LSSSG *recommends and requests* that SCAR National Committees urge their national funding agencies to consider contributing to SCAR-MarBIN funding for the period 2010-2014.

17. Progress Report Action Group on Continuous Plankton Recorder Studies

G. Hosie spoke to Docs 17 and 18. He outlined the Terms of Reference, noting that the AG has expanded to Core Members from Australia, Japan, Germany, NZ, and the UK and to Associate Members in Canada, Japan, SAHFOS, CCAMLR, and SCAR MarBIN. He indicated that the CPR project wants to determine not just census but also processes. There are now about 22,000 records from 1991 to 2007 plus environmental data from the Scotia Arc to the Ross Sea, mostly for Sept-Apr for about 200 species of zooplankton. It is the largest data set within SCAR MarBIN. Surveys are hugely expanding as CPRs are put on more ships. There were 87 tows around Antarctica in 2007/8. Australia, Japan, Germany, NZ, Britain, USA, and Russia are involved and setting up their own programs. Over that time, 25,000 nautical miles or 5000 samples were added to the data set and also to CAML. There is considerable interest in the program with other countries planning to join. The data are being used for climate change and it is being found that there is a decrease in size of copepods world wide. In the sea ice zone, a change from krill to copepods is being seen. Data are also being used to study distribution patterns and by CCAMLR for fisheries needs. Due to the rapid expansion of this work, its projected long term nature, and its considerable linkages, it was recommended that the AG-CPR become Expert Group Status. A description of the EG-CPR purpose, users, membership and Terms of Reference is given in Annex 6.

Members received the reports with much interest and agreed that the AG-CPR should be converted into an Expert Group.

Recommendation XXX – LSSSG – 4 (Internal)

Concerning the formation of an Expert Group on Continuous Plankton Recorder Research

Noting that

- The sensitivity of plankton to changes in the environment makes them useful early warning indicators of the health of ocean systems.
- Continuous Plankton Recorders (CPRs) have been towed behind ships for 75 years in the North Sea and Atlantic Ocean to monitor the condition of those systems.
- These have been important in identifying major changes in the marine ecosystem which have ecological and economic impacts.
- The Southern Ocean CPR Survey was established in 1991 to map biodiversity of plankton in the region as well as monitor its health through studies of regional, seasonal, inter-annual and long-term variability in plankton patterns.
- It also serves as a reference on the status of the Southern Ocean for other monitoring programs.
- Changes in plankton abundances and patterns have already been detected and these are expected to have a significant effect on the rest of the ecosystem.

Considering that

- The SCAR SO-CPR Survey maintains a database on plankton abundance and distribution which is available for use by Antarctic community.
- The SO-CPR Survey was supported by an Action Group, and has been successful in the last two years.
- The SO-CPR Survey has become a hub linking SCAR, CAML, CCAMLR, SOOS, ICED and the developing Sentinel program.
- The SO-CPR Survey is a long-term on-going project and it is appropriate to have a long term group providing support and advice similar to the Council of Sir Alister Hardy Foundation for Ocean Science (northern hemisphere CPR surveys).
- The Expert Group will serve as a support and advisory group to help develop and expand the SO-CPR Survey. It will provide advice to SCAR and to the ATS.

The LSSSG recommends the Delegates of SCAR to endorse that the Action Group on Continuous Plankton Recorder Research becomes the Expert Group on Continuous Plankton Recorder Research, with the following Terms of Reference:

1. Provide guidance to the SCAR Southern Ocean CPR Survey in order to meet the survey objectives.
 - a. Map the biodiversity and distribution of plankton, including euphausiid (krill) life stages, in the Southern Ocean.
 - b. Use the sensitivity of plankton to environmental change as early warning indicators of the health of Southern Ocean, by studying spatial-temporal variation in plankton patterns.
 - c. Serve as reference on the general status of the Southern Ocean for other monitoring programs.
2. Develop and maintain the SO-CPR Database and to improve access for users.
3. Expand and enhance the SO-CPR Survey to include more ships and repeat transects around Antarctica.
4. Provide appropriate advice on CPR methodology, data and results to SCAR and to the ATS.

18. Informal report of the CCAMLR observer

G. Hosie reported on important issues (Doc 19) that came out of CCAMLR. Members were advised to refer to two reports written to CCAMLR and those written back by CCAMLR, which are on the LSSSG website. It was noted that the CCAMLR perception is that EBA is a terrestrial program with no relevance to CCAMLR. It is therefore recommended that the LSSSG develop and highlight the marine component of EBA.

CCAMLR has shown much interest in CAML and IPY, which resulted in Resolution 26. CCAMLR is concerned about how to measure change against a benchmark and CAML can provide a benchmark of biodiversity. The SO-CPR survey has been well received by CCAMLR. To increase linkage, CCAMLR has a person on the CPR action group. The SCAR MarBIN steering committee also has a CCAMLR person on the directorship. CCAMLR is now developing its own metadata system as a result. Bioregionalization is a hot topic for CCAMLR. Initially it was looking at developing Marine Protected Areas which was a protracted exercise. SCAR MarBin demonstrated the value of centralizing data and as a consequence, CCAMLR is now looking at bioregionalization with SCAR MarBIN providing all the benthic data. CCAMLR was very interested in the use of boosted regression trees to demonstrate hot spot locations. At one hotspot, correspondence was found with where elephant seals were going in the vicinity of Dumont D'Urville.

CCAMLR is very interested in what will come out of the merger of the SCAR Expert Groups on Birds and Seals. CCAMLR no longer needs trend data as they are redefining for themselves what kind of data they need. CCAMLR has developed a new Working Group on Status and Trends of Top Predator Populations that will have a strong quantitative and modelling group. They look forward to close collaboration with the LSSSG top predators group and CCAMLR would be favourable to a merger of the proposed two top predator groups. This would provide SCAR and CCAMLR with joint ownership of the same program.

SASOCS (Status of the Antarctic Southern Ocean Climate Systems) Paper and climate change: Norway and UK presented a joint proposal that climate change and its impact on physical and biological processes in the Antarctic marine ecosystem be placed on CCAMLR's agenda. On the request of CCAMLR, SCAR agreed to coordinate such a project provided that resources are made available. SOOS (SO Observing System) attracted much interest and it was recommended that climate change be added as a standing item in the SCAR report to CCAMLR. G. Hosie will continue to work with the UK and Norway to determine requirements and if SCAR can manage this project, preferably as a jointly owned project with CCAMLR

The CCAMLR-IWC workshop is scheduled for Aug 2008 in Hobart to review information required for developing ecosystem models in order to provide management advice. CCAMLR-XXVII will be from Oct 27 to Nov 7 2008 at CCAMLR headquarters in Hobart.

SCAR now has very good links with CCAMLR and it is now that some joint programs should be developed (top predators and climate change are the two recommended)

The CO thanked G. Hosie, noting that all Members agreed that the CCAMLR report has been adopted.

19. Presentation: Special Scientific Program Antarctica and the Global Climate System

J. Turner gave a presentation on progress with data compilation for Antarctica and the Global Climate System (AGCS), which is one of the five SCAR Scientific Research Programmes. The purpose of AGCS is to understand the mechanisms controlling the climate of the Antarctic – its cycles and variability, to explain why the climate has changed in the past, and to predict the future based on greenhouse gas emissions. The program is multidisciplinary with four themes of science: decadal time scale variability, global and regional signals in ice cores, natural and anthropogenic forcing on the Antarctic climate system, and the export of Antarctic climate signals. It is predicted that there will be a warming of 0.3°C per decade for future surface temperature (by 2100) assuming a doubling of CO₂. Antarctic sea ice has been increasing mainly because of the ozone hole but now a decrease is expected. Globally, larger decreases in sea ice in the Arctic are expected and currently, sea ice there is decreasing faster than in the models. In the Antarctic, heating gets transported out at depth by deep ocean currents. However, it is expected that there will be a decrease by 1/3 in Antarctic sea ice in the next century. El Nino also affects the Antarctic in many ways.

J. Turner described the Gomez ice core in the west Antarctic peninsula where warming of 5°C has occurred in 50 years. It is uncertain whether this is due to man but Gomez shows a doubling of accumulation of snow since 1850. Warming on the eastern side of the peninsula is caused by the ozone hole due to more tropical air getting in during the summer due to a 20% increase in speed of air movement.

J. Turner noted that the State of the Antarctic and Southern Ocean Climate System (SASOCS) is in press in Reviews of Geophysics. The ACCE report (Antarctic Climate Change and the Environment) will be published in 2009.

If AGCS continues, the intent is to build on activities that are unique to SCAR/AGCS, develop better links with the life scientists – e.g. providing future climate change scenarios, rotate members of the steering committee, develop better outreach, and consider how to get better involvement of the new Antarctic nations and have less of a Europe/US focus.

The Membership received the report with much interest, requesting that CCAMLR receive this information. It was agreed that a recommendation should be made to establish an Action Group on climate prediction of Antarctic physical and biological environment: include at microenvironment level (cm level). The SSG-PS will submit the recommendation to the delegates meeting also on behalf of the LSSSG.

20. Presentation: Special Scientific Program Subglacial Antarctic Lake Exploration

J. Priscu gave an overview of the SALE program, noting the extensive subglacial network of lakes and rivers, with 80% of the lakes occurring below sea level and the rest in mountains and most occurring close to the ice divides. There is evidence for hydrological linkages with huge outbursts lake to lake and then movement to the ocean. This makes Antarctica our planet's largest wetland. SALE now comprises 13 members from 9 nations in disciplines of geology, glaciology, ecology, microbiology, and limnology. Key achievements are the findings that subglacial accumulations of water are common features beneath thick ice and that there are big outburst discharges (floods). Thus, a spectrum of subglacial aquatic environments exists. Building of a SALE community is occurring through workshops and meetings to identifying major science and technology goals. SALE

is gathering a framework for a US Academies report on environmental stewardship of subglacial aquatic environments. Regular meetings serve as a forum for major outreach. SALE is an excellent SRP of SCAR with 83 publications over 2002-6.

National program lake studies are occurring at Ellsworth, Vostok, Mercer and Whillans ice streams, and Dome C. Ellsworth (UK study) is 2x10 km, approximately 100 m deep and beneath 3.4 km of ice. Mercer and Whillans ice streams (US study) is multidisciplinary. Here, the ice is moving over 100 m per year and microbes of different kinds are being found. Lake Vostok (Russian study) is 800 m deep and 14,000 km in surface area. Samples so far have been taken from the accretion ice. There have been a lot of drilling problems due to the deep depth of ice cover (4000 m ice) and the drill is currently stuck down at 3800 m.

Members were asked to view the SALE report on the website with recommendations. Of highlight is recommendation 6, that all Treaty Nations should be involved in the program.

Members received the report with great interest but expressed concern regarding the potential contamination of Lake Vostok, which is the largest lake. It was suggested that a code of conduct for subglacial environments be developed by SCAR to go forward to the Delegates. The Delegates will be requested to support the formation of an Action Group to form a Code of Conduct.

Recommendation XXX - LSSSG - 5 (Internal):

Concerning a Code of Conduct for the Exploration and Research of Subglacial Aquatic Environments

Noting that

- subglacial aquatic environments are becoming an increasingly important focus for Antarctic science.
- a primary focus of research will involve questions about microbial life in these unusual biomes that are now known to be quite prevalent across the Antarctic landscape beneath thick ice sheets.
- the scientific goals of this research will require entry, sampling, and emplacement of sensors in SAE at multiple sites.
- these environments are potentially sensitive to disturbance during efforts to enter and sample these environments in the conduct of important ground-breaking research.

Recognizing the value of these environments and the need to exercise wise environmental stewardship,

The LSSSG recommends to the Delegates Meeting of XXX SCAR that an Action Group comprised of suitable representatives from the three SSGs be formed, since a wide range of disciplines is involved in research in these environments, and since they bring differing but important perspectives on protecting these environments, to devise a “Code of Conduct for the Exploration and Research of Subglacial Aquatic Environments”.

21. Presentation: Special Scientific Program Antarctic Climate Evolution

G. Wilson was unable to present progress and highlights of the ACE program.

22. Presentation: Action Group On Antarctic Fuel Spills

M. Kennicutt described the new action group AGAFS, noting that its formation was spurred by the sinking of the M/V Explorer. The AGAFS Terms of Reference are to have a small membership that will co-opt expertise as needed. It will respond when requested for advice and direct, facilitate and

coordinate responses to requests. AGAFS will develop specific Terms of Reference to the issue at hand and confer with SCAR groups and other partner organizations (COMNAP)

Potential questions that will be asked of the group are whether there are ecological resources at risk within the vicinity of a release, are there specially protected or vulnerable species in the area that need special attention, how and where will the local prevailing oceanographic conditions affect the spill, the type of fuel, are there natural processes that will mitigate and can these be augmented, what are toxicological properties of the fuel release, are there special considerations that responders should be aware of, and what are the effective technologies.

AGAFS has not yet received a specific request so the group has not responded yet. The group will decide its scope once it is requested to do something.

The Members adopted the report with thanks.

23. Other meetings in the intersessional period 2006 – 2008

I Polar Symposium in Ecuador, 30 July 2008, Sta Elena, Ecuador. www.inae.gov.ec

IV Latin American Symposium on Antarctic Investigations, Sept 2008. www.inach.cl

XXXI Symposium on Polar Biology, 3-5 Dec. 2008, National Institute of Polar Research Tokyo, Japan

World Seabirds Conference, Victoria, BC, Canada, Sept. 2010

Albatross and Petrel Conference, Aug. 2008, Cape Town

Science Festival, Genova, Italy, 24 Oct. – 4 Nov. 2008

Evolution and molecular adaptation in Polar Regions, 3 Nov. 2008. Cinzia Verde, Coordinator. Sergey Bulat, Thomas Near, Lloyd Peck and Cinzia Verde, speakers. Guido di Prisco, moderator.

European Ecological Congress, 15-20 Sept. 2008, Leipzig, Germany, with several sessions of interest to us

Marine Biodiversity and Ecosystem Functioning meeting, 10-15 Nov 2008, Valencia, Spain (SCAR co-sponsor, session on CAML)

24. Highlights of National Research Programmes

The CO explained the different procedure in which National Program reports are presently submitted. This is now electronically and in a spreadsheet format. The reports are published on the SCAR website under the 'members only' section. A digestion of the reports submitted over the period 2006 – 2008 showed that the majority of the member countries have biological projects and that most of these are incorporated in the EBA research program. The number of Terrestrial research projects seemed to increase and equals more or less the number of Marine projects. Members adopted the highlights produced by the national programs.

25. IPY activities

D. Carlson spoke to Doc 23, noting that there has been \$410 M of new science funding plus approximately \$800M from existing science funds coming from 19 countries for IPY. This is exceptional, and is resulting in a huge amount of science in two years. There is also a very large amount of outreach (books, stamps, artwork, museum events and student-teacher training). The association of polar early career scientists has 1200 members from 41 countries. Observation networks, informed public, future scientists and political cooperation are also developing as projects. Data management projects are not yet funded and nations are being asked to provide national data coordinators, staff for identification, and long term archiving. Upcoming events are People Day Sep 2008, Above the Poles Day Dec 2008, IPY celebration Feb 2009, Polar Oceans Day Mar 2009, and IPY at ATCM and AC in Apr 2009. A further IPY conference will be held in 2012.

Members approved the activities and plans of SCAR in the framework of IPY.

26. Financial Requests

Budget requests LSSSG in US dollars

<u>Group</u>	<u>Description</u>	2009		2010	
		<u>Requested</u>	<u>Allocated by Delegates Meeting</u>	<u>Requested</u>	<u>Allocated by Delegates Meeting</u>
EGBMM	Constituting meeting				
	Meals and meeting costs	2000			
	Lodging	4000			
	Travel expenses	13500			
LSSSG	cross-linkages workshop	2000			
EG HB&M	Upgrading www.medicalantarctica.org	3000			
CPR-EG	Meeting costs	7000		7000	
SCAR-MarBIN	Annual workshop	5000		5000	
Total		36500	17000	12000	17000

27. Recommendations

The CO reviewed the list of Internal Recommendations submitted in 2006 in Hobart (Doc 2). Recommendations XXIX-2, 3 and 5 can lapse. Internal recommendation XXIX-1 (membership of LSSSG Expert Groups) (is XXX –LSSSG-1) and external recommendation XXIX-4 (flipper bands on penguins, (is XXX-LSSSG-6) still stand.

Members agreed with this status.

28. New Recommendations (revised)

A list of recommendations adopted by the LSSSG is given in Annex 7.

29. 10th SCAR Biology Symposium

M. Fukuchi reviewed progress toward the 10th SCAR Biology Symposium in Sapporo, Japan, 26 – 31 July 2009 (Doc 26). The organizing committee has recommended the primary theme of “**Antarctic Biology in the 21st Century: Advances In and Beyond IPY**” with up to 10 sub themes. Members

agreed with the title of the symposium but recommended that EBA work packages be incorporated into the conference sub themes. The list of sub-themes will be changed by the Local Organising Committee. There was some concern over timing of abstract submission, given that it is in advance of the Antarctic field season and therefore prevents new findings from being submitted as abstracts. Members also recommended that consideration be given to on-line publishing to reduce costs and delays while increasing number of authors and readership. The organizing committee will work toward accommodating to these recommendations.

30. Election of Office Bearers

A. Huiskes, CO, has completed his four year term. K. Conlan (Canada), secretary, will become the CO, G. Steel (New Zealand) will remain as Deputy CO for two more years and Deneb Karentz (USA) will become secretary. The new positions went uncontested.

Members welcomed the new committee.

31. Next LSSSG Meeting

The XXXIth SCAR meeting will be in Buenos Aires, Argentina, July 2010.

Members agreed that the LSSSG business meeting should be concurrent with XXXI SCAR.

32. Other business

King George Island Science

H-U Peter reported on a meeting on coordination of King George Island science. He reported that participants agreed that if it proved possible, working with COMNAP to persuade KGI operators to work together to support SCAR science, the KGI could end up as a model for how cooperative scientific research could be carried out across Antarctica.

It was recommended that SCAR and COMNAP be asked to consider the proposal that a working paper with a provisional title of "Major scientific themes that could be addressed by a coordinated approach to KGI science" should be addressed to the COMNAP meeting in Punta Arenas (June 2009) as the basis for a discussion on how such coordination might be achieved, and by what means.

Proposed SCAR AG Cold Seeps and Hydrothermal Vents

P. O'Brien gave a presentation on new and unusual features being found on the Antarctic sea floor (seamounts, cold seeps, hydrothermal vents, coral communities and sponge communities) and referred to CCAMLR conservation measure 22-06, which calls for the protection of vulnerable marine ecosystems. The SSG-Geosciences proposed to form an Action Group to review these sea floor features and communities. Proposed outputs are a field guide to seep and vent organisms, guides on how to recognize seeps and vents, a review of existing data to provide CCAMLR with a GIS of areas of confirmed, probable and possible seeps and hydrothermal vents, science papers arising from these, and advice to CCAMLR. The plan is to hold a workshop for production of the guides and guidelines in 2008-09, guides to CCAMLR in late 2009, a review of regional working group data in 09-10, and GIS data progressively delivered to CCAMLR. P. O'Brien asked for support of the LSSSG to form a combined action group between Geosciences and Life sciences.

The LSSSG supported this initiative and agreed that a recommendation for formation of this Action Group go forward.

Presentation on the new Korean and Japanese icebreakers

S.-H. Kang gave a presentation on Korea's new ice breaker, which will be operational in 2009. Focal areas are the Amundsen Sea in the Antarctic and the Chukchi Sea and the Canadian Basin in the Arctic.

M. Fukuchi gave a presentation on Japan's new icebreaker, which will work in the Indian Ocean sector.

33. Approval of Report and Closure

The secretary presented the LSSSG report to the members. Since the report is extensive, she recommended that she distribute it electronically for review and correction.

Members agreed that they should be given time after the meeting for review. In advance of meeting closure, the CO, A. Huiskes was thanked for his leadership and contributions to the LSSSG. The CO accepted with pleasure and closed the meeting.

Annex 1. XXX SCAR LSSSG meeting attendees**Country members**

Argentina	Dr Viviana Alder	Instituto Antártico Argentino Cerrito 1248 1010 - Buenos Aires ARGENTINA	viviana_alder@yahoo.com
Argentina	Dr Nestor Coria	Instituto Antártico Argentino Cerrito 1248 1010 - Buenos Aires ARGENTINA Tel and fax: +54 11 4275 7523	ncoria@dna.gov.ar
Australia	Dr Graham Hosie	Australian Antarctic Division 203 Channel Highway Kingston, Tasmania 7050 AUSTRALIA Tel: +61 3 6232 3364 Fax: +61 3 6232 3158	graham.hosie@aad.gov.au
Belgium	Dr Annick Wilmotte	University of Liege 4000 Liege BELGIUM Tel: +32 4 366 3856/3387 Fax: +32 4 366 3364	awilmotte@ulg.ac.be
Belgium	Dr Claude De Broyer	Belgian National Committee on Antarctic Research Institut Royal des Sciences Naturelles de Belgique Rue Vautier, 29 B-1000 Bruxelles BELGIUM Tel : +32 2 627 41 27 Fax: +32 2 627 42 77	claudede.broyer@naturalsciences.be
Brazil	Dr Lucia S. Campos	Federal University of Rio de Janeiro (UFRJ) Depto de Ecologia CCS-BL "A" Av. Prof. Rodolpho P. Rocco, 211 Ilha do Fundão, 21941-590 Rio de Janeiro – RJ BRAZIL Tel: +55 21 2562 6369 Fax: +55 21 2562 6361	campos-lucia@biologia.ufrj.br
Brazil	Dr Geny Cobra	Fiscry – Oswald Gruz Foundation Rua Beliscio Scoora, 602 Laranjeiras RJ – Rio de Janeiro	geny-cobra@gmail.com

		BRAZIL Tel: +55 2265 0163	
Canada	Dr Kathleen Conlan	Canadian Museum of Nature P.O. Box 3443, Stn D Ottawa, Ontario K1P 6P4 CANADA Tel: +1 613 364 4063 Fax: +1 613 364 4027	kconlan@mus-nature.ca
Germany	Prof Dr Wilhelm Hagen	University of Bremen Dept. of Marine Zoology P.O. Box 330440 D-28334 Bremen GERMANY Tel: +49 421 218 7145 Fax: +49 421 218 2285	whagen@uni-bremen.de
Germany	Dr Hans-Ulrich Peter	Polar and Bird Ecology Group Institute of Ecology, University Dornburger Str. 159 D-07743 Jena GERMANY Tel: +49 3641 949415 Fax: +49 3641 949402	bpe@uni-jena.de
Germany	Dr Joachim Ploetz	Afred Wegener Institute für Polar- und Meeresforschung Dept. of Ecology of Marine Animals Postfach 120161 27515 Bremerhaven GERMANY Tel: +49 471 4831 1309	joachim.ploetz@awi.de
Italy	Prof Guido di Prisco	Institute of Protein Biochemistry National Research Council Via Pietro Castellino 111 I-80131 Naples ITALY Tel: +39 081 6132 710 Fax: +39 081 6132 710	g.diprisco@ibp.cnr.it
Japan	Prof Mitsuo Fukuchi	National Institute of Polar Research 9-10 Kaga 1-chome Itabashi-ku Tokyo 173-8515 JAPAN Tel: +81 3 3962 5680 Fax: +81 3 3962 5743	fukuchi@nipr.ac.jp
Korea	Dr Sung-Ho Kang	Director, Division of Polar Biology and Ocean Sciences Korea Polar Research Institute (KOPRI) Songdo Technopark Get-Pearl Tower 750 Songdo Dong, Yeosu	shkang@kopri.re.kr

		Gu Incheon, 406-840 KOREA Tel: +82-32-260-6251 Fax: +82-32-260-6109	
Netherlands	Dr Ad H.L. Huiskes	Netherlands Institute of Ecology (NIOO-KNAW) Unit for Polar Ecology PO Box 140 4400 AC Yerseke THE NETHERLANDS Tel: +31 113 577 456 Fax: +31 113 573 616	a.huiskes@nioo.knaw.nl
New Zealand	Dr Gary Steel	Environment, Society, and Design Division Lincoln University PO Box 84 Canterbury NEW ZEALAND Tel: +64 03 325 3820 Fax: +64 03 325 3857	steelg@lincoln.ac.nz
Poland	Prof Dr Krzysztof Jazdzewski	Dept. Polar Biology and Oceanobiology University of Lodz 12/16 Banacha St. 90-237 Lodz POLAND Tel: (48-42) 635-44-45 Fax: (48-42) 635-46-64	kryjaz@biol.uni.lodz.pl
Russia	Dr Igor Melnikov	Shirshov Institute of Oceanology Moscow RUSSIA Tel: +7 095 124 5996 Fax: +7 095 124 5983	migor@online.ru
Spain	Dr Leopoldo G. Sancho	Dept. Biología Vegetal II Fac. Farmacia Universidad Complutense 28040 – Madrid SPAIN Tel: +0034 91 394 1771 Fax: +0034 91 394 1774	sancholg@farm.ucm.es
Sweden	Prof Bo Fernholm	Swedish Museum of Natural History P.O. Box 50007 SE-104 05 Stockholm SWEDEN Tel: +46 (0)8 519 541 10 Fax: +46 (0)70 866 41 10	bo.fernholm@nrm.se

United Kingdom	Dr Iain Grant	BASMUA+E Derriford Hospital Plymouth PL20 7PS UNITED KINGDOM Tel: +44 1752 792516/315220 Fax: +44 1752 792513/315219	iain.grant@phnt.swest.nhs.uk
United Kingdom	Dr Peter Convey	British Antarctic Survey High Cross Madingley Road Cambridge CB3 0ET UNITED KINGDOM Tel: +44 1223 221 588 Fax: +44 1223 221 259	p.convey@bas.ac.uk
United States	Dr Michael Goebel	Antarctic Ecosystem Research Division NOAA-NMFS 8604 La Jolla Shores Drive La Jolla CA 92037-1508 UNITED STATES OF AMERICA Tel: +1 858 546 5677 Fax: +1 858 546 5608	mike.goebel@noaa.gov
United States	Prof Deneb Karentz	University of San Francisco Dept. of Biology 2130 Fulton Street San Francisco CA 94116-1080 UNITED STATES OF AMERICA Tel: +1 415 422 2831 Fax: +1 415 422 6363	karentzd@usfca.edu
United States	Dr Mahlon C. (Chuck) Kennicutt II	Texas A+M University Department of Oceanography Admin Building Rm 318C College Station, TX 77843- 1112 UNITED STATES OF AMERICA Tel: +1 979 458 0115 Fax: +1 979 845 1855	m-kennicutt@tamu.edu
United States	Dr H Lester Reed	Multicare Health System Vice President Medical Affairs, Acute Care P.O. Box 331062 Fort Lewis WA 98433 UNITED STATES OF AMERICA Tel: +1 253 403 3344 Fax: +1 253 403 1180	lreed@multicare.org

Additional members

Expert Group on Birds and Marine	Prof Marthán N Bester	Mammal Research Institute Dept. of Zoology and Entomology	mnbester@zoology.up.ac.za
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Mammals		University of Pretoria Pretoria 0002 SOUTH AFRICA Tel: +27 12 420 2067 Fax: +27 12 420 2534	
Expert Group on Birds and Marine Mammals	Dr. Mark Hindell	School of Zoology University of Tasmania Hobart, Tasmania AUSTRALIA Tel: +61 3 6226 2645 Fax: +61 3 6226 2745	mark.hindell@utas.edu.au
Expert Group on Birds and Marine Mammals	Dr. Monica M. C. Muelbert	Oceanography Department – FURG Caixa Postal 474, C. Carreiros Rio Grande, RS BRAZIL Tel : +55 53 3233 6503 Fax : +55 53 3233 6601	monica.muelbert@furg.br
Expert Group on Birds and Marine Mammals	Dr Donna Patterson-Fraser	Polar Oceans Research Group P.O. Box 368 Sheridan, MT 59749 UNITED STATES OF AMERICA Tel: +1 406 842 7447 Fax: +1 406 842 7442	patterdo@3rivers.net
Scientific Committee of the Census of Antarctic Marine Life	Dr Michael Stoddart	Australian Antarctic Division Channel Highway Kingston, Tasmania 7050 AUSTRALIA Fax: +61 3 62 323583	michael.stoddart@aad.gov.au
Marine Biodiversity Information Network	Dr Bruno Danis	Royal Belgian Institute of Natural Sciences 29 Rue Vautier B-1000 Brussels BELGIUM Tel: +32 2 627 41 39 Fax: +32 2 624 42 77	bruno.danis@scarmarbin.be

Observers

Annex 2

SCAR LIFE SCIENCES STANDING SCIENTIFIC GROUP (LSSSG)

**XXX SCAR, 5 - 7 July, 2008,
Saint Petersburg, Russia**

Draft Annotated Agenda**1. Welcome, apologies and rules of procedure (Doc 8) (July 5, pm)**

Ad Huiskes, Chair, Life Sciences Standing Scientific Group, will formally open the meeting at 1300 and welcome all members, observers and alternative members. Members will be informed of the rules of procedure for SSGs. **Apologies will be noted.**

2. Adoption of Agenda and timetable (Doc 1) (July 5, pm)

Members will be asked to propose additional agenda items and adopt the draft annotated agenda, the list of documents and the draft timetable for the meeting (Doc 1), suggesting additions and modifications where appropriate.

3. Report of the SCAR XXIX LSSSG meeting, Hobart 2006 (Doc 2) (July 5, pm)

Members will be asked to approve the minutes of the SCAR XXIX LSSSG meeting, Hobart 2006 (Doc 2).

4. Contacts with ICSU unions (Chief Officer) (July 5, pm)

The CO will report on the relationship of SCAR with SCOPE and IUBS.
Members will be asked to discuss progress in this field.

5. Matters Arising from the Expert Group on Human Biology and Medicine (Grant) (Doc 4, 5, 6) (July 7, pm)

A progress report (Doc 4) will be given on the basis of national reports. An oral report will be given on the recent business meeting of the group. Progress on the information paper on pathogenic microbiota in Antarctica will be given, and also on the membership of EGHB&M, the possible merger of the EG with COMNAP-MEDINET, and the EGHB&M website Ongoing research and IPY, plans for the next session 2008 – 2009 (Doc 5) and items that should be brought to the attention of the Delegates Meeting (Doc 6). Progress on 2006 Recommendation XXIX – LSSSG – 1 (Internal), concerning the membership of LSSSG Expert Groups will be given.

Members will be asked to note progress made by the EGHB&M.

6. Scientific matters arising from ATCM (Kennicutt) (Docs 7 and 9) (July 5, pm)

M. Kennicutt will report to the Delegates from ATCM 30 (Doc 7) and progress made regarding the item monitoring of pathogenic microbiota in the Antarctic (Doc 9). He will also report on the workshop on the Southern Giant Petrel data, held in May 2008.

Members will be asked to note SCAR's active role in ATCM – matters, thanks to the effort of the CO ATM, S. Chown.

7. Antarctic Conservation in the 21st Century (Kennicutt) (July 5, pm)

M. Kennicutt will report on this joint effort with IUCN to address this issue.

Members will be invited to note progress.

8. Antarctic Climate Change and the Environment (Turner) (Doc 28) (July 7, pm)

J. Turner will present an overview of the activities in the past two years regarding the production of the ACCE report (Doc 28).

Members will be asked to discuss the ACCE report.

9. Environmental code of conduct for terrestrial scientific field research in Antarctica (CO) (Doc 29) (July 6, pm)

The CO will present the environmental code of conduct for terrestrial scientific field research in Antarctica (Doc 29), which has been synthesized from previous codes of conduct during a workshop in June 2007 in the Netherlands and since then modified by comments of the various national programs, national operators and COMNAP. He will also explain the procedure adopted to come to this document.

Members will be asked to adopt the Code.

10. JCADM (de Bruin) (Doc 12) (July 6, am)

T. de Bruin will present the report from JCADM (Doc 12), especially concerning progress in making data or meta-data available from commercial fishing activities under CCAMLR and from commercial bio-prospecting operations (2006 Recommendations XXIX – LSSSG – 2 and 3 (External)).

Members will be asked to discuss the relation between JCADM and the LSSSG and note the progress made.

11. Evolution of SO-GLOBEC into ICED and SCAR/SCOR Expert Group on Oceanography (Hofmann) (July 6, am)

E. Hofmann will report on these activities. Members are asked to discuss and subsequently adopt her report.

Members will be asked to note progress.

12. SCAR matters (Summerhayes) (Doc 3) (July 6, 0950-1010)

The Executive director of SCAR, C. Summerhayes, will report on recent progress and future plans for SCAR (Doc 3).

Members will be asked to discuss the report and note the progress made.

13. Matters Arising from the Expert Group on Seals (Bester) (Doc 13) (July 6, pm)

M. Bester will report on progress of the Expert Group on Seals, particularly on the delivery of data on the Ross Seal.

Members will be asked to discuss the report and note progress.

14. Matters Arising from the Expert Group on Birds (D. Patterson-Fraser) (July 6, pm)

Results of the Intersessional Workshop on Southern Giant Petrels and other issues related to Antarctic birds will be presented (Recommendation XXIX – LSSSG – 5 (External)). Progress on the 2006 Recommendation XXIX – LSSSG – 4 (External) concerning the use of flipper bands on penguins will be given. The CO-LSSSG will discuss the vacant post of CO in the EG.

Members will be asked to adopt the progress of the group, despite organisational difficulties.

15. Formation of an Expert Group on Birds and Marine Mammals (Chief officer) (Doc 15) (July 6, pm)

The CO will report on progress on the planned merger of the Expert Groups on Seals and Birds into the Expert Group on Pelagic Predators (Doc 15).

Members will be asked to approve of the merger and agree on the terms of reference of the new Expert Group.

16. Progress report of the Scientific Programme Planning Group on Evolution and Biodiversity in Antarctica (Convey), The Census of Antarctic Marine Life (Stoddart) and SCAR-MarBIN (de Broyer) (Doc 16) (July 6, pm)

- a. **Progress report 2006 – 2008 (Doc 16).** P. Convey will present the progress report of EBA for 2006-2008.
- b. **Census of Marine Life and the IPY (Stoddart).** M. Stoddart will present the progress on the Census of Antarctic Marine Life
- c. **SCAR-MarBIN project (De Broyer).** C. De Broyer will present a general progress report and will report on SCAR's associate membership of GBIF. B. Danis will present the main concrete results. An important point for discussion is the future funding of SCAR-MarBIN. The Belgian government will not continue funding at the current rate (150 000 EUR) beyond 2009. So the proposal is to set up an international consortium with the SCAR countries and other institutions (CCAMLR?) willing to support MarBIN for 2010-2014. Belgium could continue funding a part (hopefully the most important one) but other contributions will be necessary. A working paper will be tabled at Kiev ATCM on that topic.
- d. **Plans for the next session 2008 – 2010.** Plans for 2008-2010 will be discussed. ***Members will be asked to adopt the report and note the progress made.***
- e. **Periodic review of the project**

17. Progress Report Action Group on Continuous Plankton Recorder Studies (Hosie) (July 6, pm)

G. Hosie will present the progress on acquisition of continuous plankton recorder data. ***Members will be asked to approve of the report.***

18. Informal report of the CCAMLR observer (Doc 19) (Hosie) (July 6, am)

G. Hosie will speak to Doc 19, highlighting issues of particular importance to the LSSSG and progress on developing greater interaction with SCAR on Marine Protected Areas. ***Members will be asked to approve the closer relationship between the activities of the LSSSG and CCAMLR.***

19. Presentation: Special Scientific Program Antarctica and the Global Climate System (Turner) (July 7, pm)

J. Turner will give a presentation on progress with data compilation for Antarctica and the Global Climate System (AGCS), which is one of the five SCAR Scientific Research Programmes. ***Members will be asked to adopt the report.***

20. Presentation: Special Scientific Program Subglacial Antarctic Lake Exploration (Priscu) (July 6, am)

J. Priscu will report on progress in SALE with goals for the next session and beyond. ***Members will be asked to adopt the report.***

21. Presentation: Special Scientific Program Antarctic Climate Evolution (Wilson) (July 6, am)

G. Wilson will present progress and highlights of the ACE program. ***Members will be asked to adopt the report.***

22. Presentation: Action Group On Antarctic Fuel Spills (M. Kennicutt) (July 6, am)

M. Kennicutt will describe the new action group AGAFS.

Members will be asked to adopt the report.

23. Other meetings in the intersessional period 2006 – 2008 (Chief Officer) (July 7, pm)

The CO will advise the Delegates of meetings relevant for the LSSSG.

24. Highlights of National Research Programmes (Chief Officer) (July 7, pm)

The CO will summarize highlights of biological research undertaken by National Programs. These highlights will be submitted by the National Programme offices and will be posted on the web pages of the LSSSG.

Members will be asked to adopt the highlights produced by the national programmes.

25. IPY activities (Carlson) (Doc 23) (July 6, 10.10-10.30)

D. Carlson will provide an update on IPY activities involving or of interest to SCAR.

Members will be asked to approve of the activities and plans of SCAR in the framework of IPY.

26. Financial Requests – Integration (Chief Officers) (Doc 25) (July 7, pm)

The CO will present a budget for the LSSSG based on the financial requests of the subsidiaries made to the LSSSG.

Members will be asked to approve of the budget.

27. Recommendations (Chief Officer) (July 6, pm)

The CO will review the recommendations submitted in 2006 in Hobart, the response of the Delegates and the progress made during the intersessional period.

Members will be asked to judge which recommendations should stand and which should lapse.

28. New Recommendations (revised) (Chief Officer) (July 7, pm)

Members will be asked to review the new recommendations.

29. 10th SCAR Biology Symposium (Doc 26) (Fukuchi) (July 7, pm)

M. Fukuchi will review progress toward the 10th SCAR Biology Symposium in Sapporo, Japan, 26 – 31 July 2009 (Doc 26).

Members will be asked to approve the plans.

30. Election of Office Bearers (Chief Officer) (July 7, pm)

Members will be asked to elect a new CO and Secretary of the LSSSG.

Candidates for both the Chief Officer and the Secretary should be submitted on July 6th 12.00 noon. Candidates should be submitted in writing by two voting members of the group; the candidate should sign the document approving of the candidacy.

31. Next LSSSG Meeting (July 7, pm)

The XXXIth SCAR meeting will be in Buenos Aires, Argentina, July 2010.

Members will be asked to agree that the LSSSG business meeting will be concurrent with XXXI SCAR.

32. Other business (July 7, pm)

33. Approval of Report and Closure (July 7, pm)

Members will be asked to review and approve the LSSSG minutes and Executive Summary and close the meeting.

Annex 3.

List of Documents

Document	Agenda Item	Document Title	Presenter
1	2	Agenda, list of documents and timetable	A. Huiskes
2	3	Report of the SCAR XXIX LSSSG meeting, Hobart 2006	A. Huiskes
	12	SCAR matters	C. Summerhayes
4	5	Progress Report, Expert Group on Human Biology and Medicine	I. Grant
5	5	Plans for HB&M 2008 – 2009	I. Grant
6	5	Annex A to EGHB&M report to LSSSG 2008	I. Grant
7	6	Report to the Delegates from ATCM 30	M. Kennicutt
8	1	Rules of procedure for SSGs	A. Huiskes
9			
10			
11			
12	10	Report from JCADM	T. de Bruin
13			
14			
15	15	The future of the Expert Groups on Birds and Seals	A. Huiskes
16	16	Progress report of EBA for 2006-2008	G. Di Prisco and P. Convey
17	17	Expert Group on Continuous Plankton Recorder Research	G. Hosie
18	17	Action Group on Continuous Plankton Recorder Research (CPRAG) Report 2008	G. Hosie
19	18	Report of the CCAMLR observer	G. Hosie
20			
21			
22			
23	25	IPO-IPY planning document – 2008 and beyond	D. Carlson
24			
25	26	Financial Requests	A. Huiskes
26	29	10th SCAR Biology Symposium	M. Fukuchi
27			
28	8	Antarctic Climate Review	J. Turner
29	9	Environmental code of conduct for terrestrial scientific field research in Antarctica	A. Huiskes

Annex 4. Environmental Code of Conduct for Terrestrial Scientific Field Research in Antarctica

Background

SCAR has developed a Code of Conduct for the guidance of scientists undertaking terrestrial scientific field research in Antarctica. Reference was made to the need for this Code during CEP IX (Paragraph 132), where SCAR offered to make a version available. The following constitutes a text that has been discussed within the SCAR community and with COMNAP. Further input from COMNAP was received following the COMNAP meeting in June 2008 in St Petersburg, and at the meeting of the SCAR Standing Scientific Group on Life Sciences at XXX SCAR in July 2008 in St Petersburg, Russia. Amendments made during these meetings were inserted in the document, which will be submitted to the XXX SCAR Delegates Meeting in Moscow for comment. Once the document is completed it will be submitted as an Information Paper to the ATCM and CEP (in June 2009).

The requirement, expressed in this code of conduct, of avoiding introducing alien propagules is common in several management plans for Antarctic Specially Protected Areas and in operational procedures of research stations but expressed in different terminology and wording in the different protocols. A unified code of conduct for fieldwork anywhere in the Antarctic, including protected areas using a common terminology for the same process was felt necessary.

Introduction

Antarctica contains many unique geological, glaciological, and biological features. This landscape and its biological communities have limited natural ability to recover from disturbance. Many features could be easily and irreversibly damaged. This Code of Conduct provides recommendations on how you, scientists or associated personnel, can undertake scientific field activities so as to protect the Antarctic environment for future generations and to ensure that human presence will have as little impact as possible. All personnel undertaking scientific research should be familiar with this Code of Conduct.

The Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol) provides the basis for environmental protection and management in the Antarctic. Climate change and increasing pressure from human activities, such as research, suggest that more comprehensive guidelines are needed to protect the unique features of Antarctica. This Code of Conduct is intended to complement the relevant sections of the Protocol and provide guidance for all researchers conducting land based field research (limnological, terrestrial, coastal/littoral, glaciological, biological and geological) and conducted in the area of land and permanent ice south of 60 degrees South. A 'field' activity is defined here as any scientific activity, and the logistics to support this activity, which is conducted in the natural environment, irrespective of its duration.

All countries with permanent and summer scientific stations are encouraged to include this Code of Conduct within the operational procedures of the Station so as to ensure that personnel undertaking or supporting field scientific research follow this Code of Conduct.

It is recommended that this Code of Conduct be followed by all personnel undertaking scientific research to the maximum extent possible and as long as it does not affect the safety of the expedition.

General Guidelines

Antarctic scientists potentially have a higher chance of carrying alien propagules¹ to Antarctic [and subantarctic] ecosystems than other Antarctic travelers because their field of study often takes them to alpine or northern polar habitats. In the process of conducting research within these habitats Antarctic scientists can inadvertently pick up propagules on clothing, equipment and equipment cases. If these items are then taken to the Antarctic and they have not been cleaned/sterilised to

¹ Propagule: means of propagation e.g. seed, spore, egg, live insect

remove or kill the propagules, the opportunity to transfer such material to Antarctic ecosystems is created. The ecological potential for establishment of northern polar or alpine taxa is great as such species have pre-adaptations to cold environments. You should take care that your equipment is properly cleaned before it enters the Antarctic.

The implications of human transfer of taxa between locations can range from the modification of genetic structure of populations to changes in local biodiversity and subsequent flow-on effects on community dynamics. Such accidental movement of indigenous biota would also compromise scientific studies of molecular adaptation, regional evolution and biogeography and reduce the inherent value that Antarctica offers as a model scientific system with limited anthropogenic influence.

Your field activities in Antarctica should be designed to have as little environmental impact as possible.

Before going into the field

Report your planned activity to your National Operator as thoroughly as possible and well in advance, in order to allow a proper assessment of the environmental impact you may cause on the field site(s) you visit, as required by Annex I of the Protocol for Environmental Protection.

Everything taken into the field must be returned to your station for proper cleaning where that is feasible and safe to do so.

To avoid introduction of alien species, chemical contamination, and transfer of materials between sites,

- Ensure that all your equipment and clothing, including footwear, is thoroughly cleaned.
- Avoid taking unnecessary packaging and materials into the field. Remember that several products used for packaging are prohibited in Antarctica, such as polystyrene beads or chips
- Wherever possible, all precautionary measures should be taken to ensure collection and removal of human waste and grey water.

Once in the field

You should take particular care in areas with sensitive biological or geological features such as bird and seal colonies, roosting areas, vegetated areas, freshwater lakes and ponds, sand dunes, scree, fluvial terraces, ice core pyramids and ventifacts.

Avoid areas where wildlife is easily disturbed, especially during the breeding season. Remember that you are only allowed to cause disturbances to wildlife if scientifically justified and if you have been issued with a permit by an appropriate national authority

Even if you have a permit, avoid unnecessary disturbance to Antarctic flora and fauna.

Take only those samples (geological material, biological material, ice) for which you have permits and protect resources by taking as small a sample as needed.

You should map, record (preferably using GPS coordinates), and report to your national operator the location of any spill, camp site, soil pit, drilling site, sampling site, or any other disturbance for the benefit of future researchers.

You should try to minimise your impacts when moving around in the environment:

- Stay on established trails whenever possible.
- Avoid walking on vegetated areas, streambeds, lake margins, and delicate rock and soil formations.
- Restrict ground vehicle usage to snow and ice surfaces, or designated tracks, wherever possible.
- Where feasible, use recognized helicopter landing sites and ensure that markers for helicopter pads are clearly visible from the air.

- Minimise the disturbance to wildlife by following the ATCM guidelines for operations of aircraft near concentrations of birds.
- You should restore any disturbances caused by your activity.
- Algae and invertebrates live beneath stones. Moving rocks and stones should therefore be minimized. Please do not build cairns.

Management of scientific field sites

Prior to conducting any scientific activity, it is essential that you carefully consider and clearly define the scope of your activity, including its area, duration, and intensity.

Be aware of the cumulative impacts of the activity, both by itself and in combination with other activities within the region. Consider lower impact alternatives to the activity and re-use of existing facilities wherever possible.

In order to minimise environmental impacts of your field activity you should:

- Choose sites as close as possible to your research station, use existing pathways
- Limit the number of visitors to your field site to the appropriate number of people required to carry out the fieldwork.
- Where possible avoid areas that are especially vulnerable to disturbance such as vegetated areas, breeding sites, patterned ground, and water bodies.
- Re-use existing sites wherever possible.
- Make sites no larger than needed for the proposed scientific activities.
- Keep your site tidy during use.
- Avoid activities which could result in the dispersal of foreign materials into the environment. In particular, avoid the use of spray paint, and conduct activities such as sawing or unpacking inside a tent or hut.
- Secure equipment from being blown away or stolen by inquisitive birds (e.g. skuas, penguins).
- Ensure there is the capacity to prevent and respond promptly and effectively to any environmental accident or incident.

Restore sites as far as feasible when your work is complete and take GPS coordinates for future reference. Remember that sites may require subsequent monitoring to comply with the Protocol for Environmental Protection

As it is important to prevent the introduction of foreign materials and contaminants into the environment:

- Avoid materials liable to shatter at low temperatures, e.g., polyethylene based plastics.
- Take care when handling fuel, chemicals and isotopes (stable or radioactive).
- Store and handle fuel and chemicals using appropriate containers.
- Use drip trays where possible when handling fuels or other liquids and take special care when handling fuel in high winds.

You should report any environmental accident or incident to your national operator.

If you plan to install equipment in the field:

- Ensure an environmental impact assessment is undertaken prior to any installation, as required by Annex I of the Protocol for Environmental Protection.
- Clearly identify any equipment by country, name of the principal investigator and year of installation, and state the duration of the deployment.
- Make sure installations can be retrieved and removed when no longer required, unless it is impractical or result in a higher environmental impact.

Do not displace materials or collect samples of any kind, except for scientific and educational purposes.

When taking samples from live animals ensure that the requirements set out in the “SCAR Scientific Code of Conduct for Experiments on Animals” (in preparation) should be followed.

Field camps

Camping and scientific equipment should be appropriately cleaned before being brought into the Antarctic or before being transferred between sites.

Minimise the environmental footprint of your field camp by:

- Locating it as far as feasible from lake margins, stream beds and associated fans, and vegetated areas, to avoid damage or contamination.
- Taking special care to ensure that no food or wastes are accessible to animals.
- Re-using campsites whenever possible.
- Keeping it tidy during use and restoring it, as far as is feasible, after use.
- Using solar and wind power as much as possible to minimize fuel usage.

Ensure that equipment and supplies are properly secured at all times to avoid dispersion by high winds or helicopter downdrafts. Remember that in some locations, high velocity katabatic winds can arrive suddenly and with little warning.

Remember that if you are working in an ASPA or ASMA the management plan may have additional requirements for field camps, and you will need to follow any conditions contained in your entry permit.

Habitat specific guidelines

Lakes and streams

Choose sampling equipment which is the least destructive, when the aquatic or coastal environment is to be sampled. Sample carefully and avoid cumulative impact. Dredges, trawls and box corers should be used to a minimum as necessary for scientifically meaningful results, avoiding excessive and unnecessary sampling.

Aquatic ecosystems in Antarctica are extremely poor in nutrients (except those with animal influence) and thus very sensitive to anthropogenic pollution. All visitors must take care to eliminate or minimize releases of human waste wherever possible.

You should avoid walking in the stream and lake beds, or too close to their margins as this may disturb biota, affect bank stability and flow patterns. When a crossing must be made, use designated crossing points if available, otherwise walk on rocks.

Minimize the use of vehicles on lake ice if possible. If access to the water body is required for scientific research, use non-motorised boats whenever possible.

Ensure that all sampling equipment is tethered or otherwise secured and does not contaminate the water body.

Clean all sampling equipment before using it in another water body in order to avoid cross-contamination. Alternatively, use separate equipment in different sites.

Wherever possible you should use flumes, not weirs, when monitoring streams, or ensure that the stream will remain as it was before the study.

You should try to avoid the use of stable isotope tracers at the complete ecosystem level, use them as much as possible only in closed vessels. You should consider naturally occurring tracers. Radioactive isotope tracers should never be used, except in closed vessels. No stable or radioactive

isotope tracers waste should be disposed into ecosystems. You should document any tracer use (location, type of tracer, amount).

To avoid introduction of contaminants or disturbance of the stratification of the water body and its sediments:

- Do not swim or dive in lakes, unless it is required for scientific purposes.
- Remove all unwanted water and sediment materials from the site, even on permanently ice-covered lakes, rather than discharging them back into the lake.
- Ensure that you leave nothing frozen into the lake ice that may ablate out.
- Consider using ROV's as a tool for under water and under ice research, both in lakes and coastal/littoral habitats.

Terrestrial environments

Terrestrial vegetation comprises very slow growing species. Damage by trampling will extend for years or even decades. Many terrestrial invertebrate species live in soils and feed on soil algae.

You should use existing paths in order to avoid disturbing large areas of vegetation and soil.

Clean all equipment and footwear, as far as is feasible, between sites to avoid transfer of propagules among sites.

When sampling in vegetated areas, ensure that the vegetation is replaced and the site restored as far as is feasible.

Limit the use of mechanical equipment for sample collection, whenever possible.

When sampling soil in desert areas, use groundsheets to place excavated material on to minimise the extent of damage to the desert pavement. Backfill soil pits and as far as feasible replace the desert pavement materials at the soil surface to restore the site appearance.

Do not disturb or remove rocks, fossils, or ventifacts unless it is absolutely necessary for your research.

Glaciers and ice fields

Remember that the use of water in hot water drills could contaminate the isotopic and chemical record within the glacier ice.

Given that the hydrological systems under glaciers and ice sheets are connected to the wider environment and downstream contamination could occur, exercise caution when using chemical-based fluids to drill to the base of an ice sheet.

Annex 5. SCAR XXX Working Paper

Expert Group on Birds and Marine Mammals

1. The Expert Group on Seals (EGS) and the Expert Group on Birds (EBS) were both established in 2002 as part of the SCAR Review process.
2. The terms of reference (ToR) adopted for each of the groups were established at the same time. These are included at Appendix 1.
3. In essence, the ToRs of both groups address two major goals:
 - a. Promotion of research on birds or seals.
 - b. Provision of information on the status and trends of populations to address Antarctic Treaty System-related matters.
4. These two major goals are interrelated to the extent that lack of information on a given species or on some aspect of the population dynamics of that might trigger requests for further research.
5. The two groups provide information on the status and trends of typically pelagic vertebrates which return to land to breed. This information is provided to, or exchanged with Antarctic Treaty System (ATS) bodies such as the Committee for Environmental Protection (CEP), the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), the Agreement on the Conservation of Albatrosses and Petrels (ACAP), and the Convention on the Conservation of Antarctic Seals (CCAS), and other bodies such as the IUCN and BirdLife International.
6. This provision of information currently takes place using both published data and unpublished information and advice from experts in particular fields. This information is conveyed formally and informally to the various bodies requesting advice from SCAR.
7. The two groups operate quite similar in the field of data processing and could benefit from each other's experience.
8. One of the exciting prospects of a merger of the two Expert Groups into one new Expert Group on Birds and Marine Mammals (EGBMM) is the opportunity to develop new synergies. This is particularly true in the area of ecosystem structure and dynamics, bearing in mind that these predators can provide an integrated signal of changes in distribution and abundance of prey. Further, the physical and biological coupling mechanisms can be elucidated in these species, due to our ability to track them accurately, measure relevant life history characteristics, and even collected pertinent biological data and scales relevant to the organism (e.g. MEOP).
9. Therefore a new Expert Group combining the existing Expert Groups on respectively Birds and Seals will be beneficial to both disciplines.
10. The terms of reference need to reflect this and most importantly reinforce the idea of working with other SCAR bodies towards generating broader ecological syntheses. It will also be important for this group to ensure it remains distinctive to CCAMLR, which is also concerned with many of the same issues. However, CCAMLR is largely focused on management issues, and in particular management of krill fisheries. The new EGBMM can take a wider, more inclusive view of the Antarctic Marine ecosystem.

11. Request to the Delegates

Noting that there is a benefit in merging the Expert Group on Birds and the Expert Group on Seals into one Expert Group on Birds and Marine Mammals (EGBMM)

The LSSSG requests the Delegates of SCAR to endorse the establishment of such a group with the following provisions by the Standing Scientific Group on Life Sciences (LSSSG):

- The Expert Group on Birds and Marine Mammals is established via a transitional period of two to three years, this at the discretion of the group. There will be an initial meeting of the group within one year. An evaluation of the group will be made after two years and be reported to the LSSSG meeting at XXXI SCAR in 2010. The outcome of the evaluation report will be decisive for further actions to be taken.
- The group will continue the research currently in progress in the two constituent groups.
- Meetings of the new group will be as much as possible combined. The group will meet in plenary or in two parallel sessions as they see fit and as the need arises.
- All members and co-opted members of the two constituent groups will automatically become members or co-opted members of the new group.
- In the transitional phase the group will seek extension of the membership with experts in the field of processing of large data sets and mathematical modelling.
- The group will consist of (i) a three person executive - initially to be led by a D. Patterson-Fraser (co-ordinator), M. Bester, and a Secretary (vacancy), (ii) A core group of invited experts (10-15 people) and (iii) co-opted members from the wider community, as required.
- The Expert Group will, wherever possible, seek formal collaboration with similar groups from other ATS bodies, especially with a view to facilitating data exchange and management to improve the information and advice provided by this group to SCAR and to the ATS.
- In one of its first meetings the group will discuss and adopt rules of procedure, especially with respect to the use of published and unpublished data.
- The provisional Terms of Reference for this group will be:
 - f. To quantify the role of birds and marine mammals in the Antarctic marine and terrestrial ecosystems
 - g. To work with other components of SCAR towards a multidisciplinary synthesis of biophysical and biochemical coupling mechanisms in the Antarctic.
 - h. To collate and provide information on the status and trends of populations of specific species in the SCAR area of interest based on needs identified by SCAR or by the group.
 - i. To provide advice to ATS bodies and others as requested from time to time, as agreed by SCAR, and in collaboration with these bodies including the exchange of data.
 - j. Contribute to the conservation and management of Antarctic and subantarctic birds and mammals through the appropriate utilisation and interpretation of currently available scientific data.
- In one of its first meetings the group will discuss these terms of reference and may propose to change these.

Appendix 1

Terms of Reference SCAR Expert Group on Birds

1. Encourage, coordinate and support pure and applied research on Antarctic and subantarctic birds. Foster the entry of young scientists to these research efforts.

2. Undertake the on-going compilation and synthesis of existing long-term and broad-scale data on the distribution and abundance of Antarctic and subantarctic birds,
3. Contribute to the conservation and management of Antarctic and subantarctic birds through the appropriate utilisation and interpretation of currently available scientific data.
4. Provide scientific advice, information and recommendations to the Scientific Committee on Antarctic Research (SCAR), Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and other Antarctic Treaty System ATS fora in relation to all aspects of Antarctic and subantarctic ornithological issues such as tourism and logistics.

Terms of Reference SCAR Expert Group on Seals

1. Provide information on the status of Antarctic seal stocks, as specified by the Convention for the Conservation of Antarctic Seals (CCAS),
2. Provide an annual update on the number of seals killed or captured for commercial and scientific purposes, as specified by (CCAS),
3. Encourage research and exchange of information on Antarctic seals, and
4. Provide scientific advice and recommendation to SCAR and other relevant international organizers such as CCAS, CEP and CCAMLR.

Annex 6. Expert Group on Continuous Plankton Recorder Research

Purpose

The sensitivity of plankton to changes in the environment makes them useful early warning indicators of the health of ocean systems. CPRs have been towed behind ships for 75 years in the North Sea and Atlantic Ocean to monitor the condition of those systems. These have been important in identifying major changes in the marine ecosystem which have ecological and economic impacts. The Southern Ocean CPR Survey was established in 1991 to map biodiversity of plankton in the region as well as monitor its health through studies of regional, seasonal, inter-annual and long-term variability in plankton patterns. It also serves as a reference on the status of the Southern Ocean for other monitoring programs. Changes in plankton abundances and patterns have already been detected and these are expected to have a significant effect on the rest of the ecosystem. The SCAR SO-CPR Survey maintains a database on plankton abundance and distribution which is available for use by Antarctic community. The SO-CPR Survey was supported by an Action Group, and has been successful in the last two years. The SO-CPR Survey has become a hub linking SCAR, CAML, CCAMLR, SOOS, ICED and the developing Sentinel program. The SO-CPR Survey is a long-term on-going project and it is appropriate to have a long term group providing support and advice similar to the Council of Sir Alister Hardy Foundation for Ocean Science (northern hemisphere CPR surveys). The Expert Group will serve as a support and advisory group to help develop and expand the SO-CPR Survey. It will provide advice to SCAR and to the ATS.

Major clients, users of the data

- SCAR
- Census of Antarctic Marine Life (CAML)
- Commission for the Conservation of Marine Living Resources (CCAMLR)
- Southern Ocean Observing System (SOOS), then the Global Ocean Observing System (GOOS)
- Integrated Circum-Antarctic Ecosystem Dynamics (ICED)
- Southern Ocean Sentinel Program (SOS)

Membership

Core Members

Dr Graham Hosie (Co-Chair, Australia)
 Prof. Mitsuo Fukuchi (Co-Chair, Japan)
 Prof. Dr Uli Bathmann (Germany)
 Dr Don Robertson (New Zealand)
 Dr Peter Ward (United Kingdom)

Associate Members

Dr Brian Hunt (Canada)
 Dr Kunio Takahashi (Japan)
 Prof. Peter Burkill (Director SAHFOS)
 Dr Andrew Constable (CCAMLR)
 Dr Bruno Danis (SCAR-MarBIN)

Core members are owners/contributors of data. Membership will expand as nations join the SO-CPR Survey. Associate members by expertise in data management and analysis, or provide links with other key agencies.

Terms of Reference

5. Provide guidance to the SCAR Southern Ocean CPR Survey in order to meet the survey objectives.
 - a. Map the biodiversity and distribution of plankton, including euphausiid (krill) life stages, in the Southern Ocean.

- b. Use the sensitivity of plankton to environmental change as early warning indicators of the health of Southern Ocean, by studying spatial-temporal variation in plankton patterns.
 - c. Serve as reference on the general status of the Southern Ocean for other monitoring programs.
6. Develop and maintain the SO-CPR Database and to improve access for users.
7. Expand and enhance the SO-CPR Survey to include more ships and repeat transects around Antarctica.
8. Provide appropriate advice on CPR methodology, data and results to SCAR and to the ATS.

Data

Data are stored at the Australian Antarctic Data Centre (AADC) and SCAR-MarBIN. Free access is provided to the ATS.

Recommendation

The Life Sciences Scientific Standing Group recommends that the Action Group on Continuous Plankton Recorder Research becomes the Expert Group on Continuous Plankton Recorder Research.

Annex 7. Recommendations from the LSSSG meeting.**Recommendation XXX – LSSSG – 1 (Internal) (previously XXIX – LSSSG – 1)***Concerning the Membership of EGHB&M.**Noting* that there remain large numbers of vacancies in national representation on EGHB&M:

- In that several nations have not nominated delegates to the Expert Group despite an active participation in science in the Antarctic.
- In that several people who have recently retired from EGHB&M have not been replaced despite contact between the executive of EGHB&M and the national nominating body.
- That ICSU committees representation is largely non-existent or inactive.

Considering that this:

- Depletes the number of collaborators in research
- Reduces the scope of expertise available to EGHB&M
- Limits the overall functionality of the group
- Tends to hamper effort to stimulate participation in Health research in the Antarctic.

The EGHB&M and LSSSG recommends and requests that:

- SCAR maximizes influence on national appointing organizations and ICSU to nominate members for EGHB&M, and encourages support for attendance at meetings.

Recommendation XXX – LSSSG – 2 (Internal)*Concerning the formation of an Expert Group on Birds and Marine Mammals**Noting* that there is a benefit in merging the Expert Group on Birds and the Expert Group on Seals into one Expert Group on Birds and Marine Mammals (EGBMM)**The LSSSG requests** the Delegates of SCAR to endorse the establishment of such a group with the following provisions by the Standing Scientific Group on Life Sciences (LSSSG):

- The Expert Group on Birds and Marine Mammals is established via a transitional period of two to three years, this at the discretion of the group. There will be an initial meeting of the group within one year. An evaluation of the group will be made after two years and be reported to the LSSSG meeting at XXXI SCAR in 2010. The outcome of the evaluation report will be decisive for further actions to be taken.
- The group will continue the research currently in progress in the two constituent groups.
- Meetings of the new group will be as much as possible combined. The group will meet in plenary or in two parallel sessions as they see fit and as the need arises.
- All members and co-opted members of the two constituent groups will automatically become members or co-opted members of the new group.
- In the transitional phase the group will seek extension of the membership with experts in the field of processing of large data sets and mathematical modelling.
- The group will consist of (i) a three person executive - initially to be led by a D. Patterson-Fraser (co-ordinator), M. Bester, and a Secretary (vacancy), (ii) A core group of invited experts (10-15 people) and (iii) co-opted members from the wider community, as required.
- The Expert Group will, wherever possible, seek formal collaboration with similar groups from other ATS bodies, especially with a view to facilitating data exchange and management to improve the information and advice provided by this group to SCAR and to the ATS.
- In one of its first meetings the group will discuss and adopt rules of procedure, especially with respect to the use of published and unpublished data.
- The provisional Terms of Reference for this group will be:

- k. To quantify the role of birds and marine mammals in the Antarctic marine and terrestrial ecosystems
- l. To work with other components of SCAR towards a multidisciplinary synthesis of biophysical and biochemical coupling mechanisms in the Antarctic.
- m. To collate and provide information on the status and trends of populations of specific species in the SCAR area of interest based on needs identified by SCAR or by the group.
- n. To provide advice to ATS bodies and others as requested from time to time, as agreed by SCAR, and in collaboration with these bodies including the exchange of data.
- o. Contribute to the conservation and management of Antarctic and subantarctic birds and mammals through the appropriate utilisation and interpretation of currently available scientific data.

Recommendation SCAR XXX - LSSSG- 3 (External)

Concerning the future of the SCAR Marine Biodiversity Information Network (SCAR-MarBIN)

Recognizing the achievements and crucial usefulness of the SCAR-MarBIN network in terms of compilation, integration, accessibility and dissemination of Antarctic marine biodiversity data for research, management, conservation and monitoring purposes,

Considering

- the SCAR involvement in the Global Biodiversity Information Facility (GBIF), as an associate member,
- the need to secure the IPY-CAML information legacy,
- the strong expression of interest by Parties at the CEP X (Kiev, June 2008) and by CCAMLR for the Southern Ocean bioregionalisation process,
- that Belgium alone will not be able to continue funding beyond 2009 and is seeking contributions from an international consortium,

SCAR recommends that National Committees urge their national funding agencies to consider contributing to SCAR-MarBIN funding for the period 2010-2014.

Recommendation XXX – LSSSG – 4 (Internal)

Concerning the formation of an Expert Group on Continuous Plankton Recorder Research

Noting that

- The sensitivity of plankton to changes in the environment makes them useful early warning indicators of the health of ocean systems.
- Continuous Plankton Recorders (CPRs) have been towed behind ships for 75 years in the North Sea and Atlantic Ocean to monitor the condition of those systems.
- These have been important in identifying major changes in the marine ecosystem which have ecological and economic impacts.
- The Southern Ocean CPR Survey was established in 1991 to map biodiversity of plankton in the region as well as monitor its health through studies of regional, seasonal, inter-annual and long-term variability in plankton patterns.
- It also serves as a reference on the status of the Southern Ocean for other monitoring programs.
- Changes in plankton abundances and patterns have already been detected and these are expected to have a significant effect on the rest of the ecosystem.

Considering that

- The SCAR SO-CPR Survey maintains a database on plankton abundance and distribution which is available for use by Antarctic community.
- The SO-CPR Survey was supported by an Action Group, and has been successful in the last two years.
- The SO-CPR Survey has become a hub linking SCAR, CAML, CCAMLR, SOOS, ICED and the developing Sentinel program.
- The SO-CPR Survey is a long-term on-going project and it is appropriate to have a long term group providing support and advice similar to the Council of Sir Alister Hardy Foundation for Ocean Science (northern hemisphere CPR surveys).
- The Expert Group will serve as a support and advisory group to help develop and expand the SO-CPR Survey. It will provide advice to SCAR and to the ATS.

The LSSSG recommends the Delegates of SCAR to endorse that the Action Group on Continuous Plankton Recorder Research becomes the Expert Group on Continuous Plankton Recorder Research, with the following Terms of Reference:

9. Provide guidance to the SCAR Southern Ocean CPR Survey in order to meet the survey objectives.
 - a. Map the biodiversity and distribution of plankton, including euphausiid (krill) life stages, in the Southern Ocean.
 - b. Use the sensitivity of plankton to environmental change as early warning indicators of the health of Southern Ocean, by studying spatial-temporal variation in plankton patterns.
 - c. Serve as reference on the general status of the Southern Ocean for other monitoring programs.
10. Develop and maintain the SO-CPR Database and to improve access for users.
11. Expand and enhance the SO-CPR Survey to include more ships and repeat transects around Antarctica.
12. Provide appropriate advice on CPR methodology, data and results to SCAR and to the ATS.

Recommendation XXX - LSSSG - 5 (Internal):

Concerning a Code of Conduct for the Exploration and Research of Subglacial Aquatic Environments

Noting that

- subglacial aquatic environments are becoming an increasingly important focus for Antarctic science.
- a primary focus of research will involve questions about microbial life in these unusual biomes that are now known to be quite prevalent across the Antarctic landscape beneath thick ice sheets.
- the scientific goals of this research will require entry, sampling, and emplacement of sensors in SAE at multiple sites.
- these environments are potentially sensitive to disturbance during efforts to enter and sample these environments in the conduct of important ground-breaking research.

Recognizing the value of these environments and the need to exercise wise environmental stewardship,

The LSSSG recommends to the Delegates Meeting of XXX SCAR that an Action Group comprised of suitable representatives from the three SSGs be formed, since a wide range of disciplines is involved in research in these environments, and since they bring differing but important perspectives on protecting these environments, to devise a “Code of Conduct for the Exploration and Research of Subglacial Aquatic Environments”.

Recommendation XXX – LSSSG - 6 (External) (previously XXIX – LSSSG – 4)

Concerning the use of flipper bands on penguins

Recollecting Recommendations SCAR XXVII-Biol-2, SCAR XXVII-10, and SCAR XXVIII-10, discouraging the use of flipper bands for external marking of penguins.

Noting the substantial and increasing scientific evidence for adverse, cumulative long-term (i.e. greater than one year duration) impacts of flipper bands,

Recognising that banding studies of varying durations are still underway within some national programmes,

SCAR recommends that National Committees urge researchers to give careful consideration as to whether flipper bands should be used, and under what circumstances