



**XXXI SCAR Delegates Meeting**

**Buenos Aires, Argentina, 9-11 August 2010**

Agenda Item: 5.2

Person Responsible: Kathleen Conlan

**Report of the SCAR Standing Scientific Group – Life Sciences (SSG-LS),**

**XXXI SCAR, 30 July - 2 August 2010, Buenos Aires, Argentina**



## Executive Summary

**Title:** Report of the SCAR Standing Scientific Group – Life Sciences (SSG-LS), XXXI SCAR, 30 July - 2 August 2010, Buenos Aires, Argentina

**Author:** Kathleen Conlan, Chief Officer

**Relevant URLs or references to other reports:** <http://www.scar.org/researchgroups/lifescience/>.

### Important Issues or Factors:

1. With the planned end of the SCAR Scientific Research Programme “Evolution and Biodiversity in the Antarctic” (EBA) in 2013, the SSG-LS has separately endorsed each of the following new proposed Programme Planning Groups (PPGs) for Delegate approval:
  - State of the Antarctic Ecosystem (AntEco)
  - Antarctic Ecosystems: Adaptations, Thresholds and Resilience (AntETR)
2. The SSG-LS ran the highly successful SCAR X Biology Symposium with 113 oral and 122 poster presentations given under the six sub-themes of EBA. A special issue of “Polar Science” will be published shortly. New initiatives were a special session for APECS (Association of Polar Early Career Scientists), awards for the early career scientist presentations and an outreach session.
3. South Africa and Spain offered to host the SCAR XI Biology Symposium in 2013. By closed ballot, Spain was selected. This Symposium will showcase the accomplishments of EBA and set the stage for the two new SRPs (if approved).
4. Members of the SSG-LS were co-authors of the ACCE Report, showing that Antarctic life is clearly showing climate change effects and predicting the scenario for the next 100 years.
5. The EG-CPR has produced the Southern Ocean Zooplankton Atlas which will enable monitoring and prediction of zooplankton changes. The EG-CPR will be a core program of SOOS and provide a link to CCAMLR.
6. The EG-Birds and Marine Mammals is establishing links with CCAMLR and SOOS through its top predator tracking database.
7. The EG-Human Biology and Medicine is small but scientifically active. It wishes a closer link of SCAR with COMNAP in respect to research into human biology and medicine.
8. The IPY programme Census of Antarctic Marine Life will end this year (2010). It will synthesize its achievements in a special science publication and a video. It has been highly successful and has left a large legacy.
9. The SSG-LS will sponsor a workshop on King George Island to establish the scope of current and future research and develop a strategic plan for handling future collaborative efforts there.
10. The SSG-LS is forming two additional cross-linkages (in addition to its two current cross-linkages with the SSG-PS and GS): (1) ATHENA, an Expert Group to steward subglacial lake exploration and (2) a cross-Action group with the SSG-PS on Ocean Acidification. Further cross-linkages with both PS and GS will be established through its two proposed PPGs.
11. Subsidiary group funding requests are in excess of expected allocation by 39% in 2011 and 51% in 2012, an indication that the SSG-LS may have difficulty completing its tasks.

### Recommendations/Actions, Justification and Outcomes:

1. The SSG-LS asks that the Delegates recommend to National Committees that they urge their national funding agencies to consider contributing to the SCAR Marine Biodiversity Information Network (SCAR-MarBIN) funding for the period 2011-2015. This will enable SCAR to continue to efficiently contribute data and expertise, enable SCAR-MarBIN to be the main biodiversity data provider to SOOS, and enable SCAR to be actively associated with emerging initiatives.
2. The SSG-LS asks that the Delegates advise that SCAR adopt the revised Code of Conduct for Use of Animals for Scientific Purposes in Antarctica and requests that National Committees support the paper when it is submitted to the ATCM by SCAR in 2011. Recognising that animals are sentient beings and need to be treated ethically when involved in scientific experiments, this revised Code of Conduct will conform to good practice.
3. The SSG-LS asks that SCAR reconsider the scheduling of the biennial Open Science Conference in the face of growing concerns over carbon release by participant travel and the known impacts of excess carbon on the Antarctic environment.
4. The SSG-LS asks that SCAR consider ways in which to increase its allocations, given the large discrepancy between funds requested and allocated.

## SCAR STANDING SCIENTIFIC GROUP - LIFE SCIENCES (SSG-LS)

XXXI SCAR, 30 July - 2 August 2010,  
Buenos Aires, Argentina

Chief Officer: Kathleen Conlan (Canada)

Deputy Chief Officer: open

Secretary: Deneb Karentz (USA)

Attendees: Appendix A

Agenda and reports: Appendix B and <http://www.scar.org/researchgroups/lifescience/>.

Minutes: will be posted at <http://www.scar.org/researchgroups/lifescience/>.

### 1. Major future initiatives and actions

**1.1 Proposed new Scientific Research Programmes** (agenda item 26, Docs 13 and 14) *Dominic Hodgson and Julian Gutt*

With the planned end of the SCAR Scientific Research Programme “Evolution and Biodiversity in the Antarctic” (EBA) in 2013, the SSG-LS has separately endorsed each of the following new proposed Programme Planning Groups for Delegate approval:

- a. State of the Antarctic Ecosystem (AntEco) (Doc 13)
- b. Antarctic Ecosystems: Adaptations, Thresholds and Resilience (AntETR) (Doc 14)

These were developed at the following planning meetings:

- Where to Next? Ideas for the New SCAR Biology Programs, 29 July 2009 in conjunction with SCAR X Biology Symposium, Sapporo, Japan
- Scientific Program Planning Workshop, 27-28 May 2010, Castiglioncello, Italy with 25 participants from 12 nations.

Meeting minutes are at <http://www.scar.org/researchgroups/lifescience/>.

### 2. Major activities and significant progress

#### **2.1 Major Meetings**

**SCAR X Biology Symposium** (agenda item 19, Doc 20) *Mitsuo Fukuchi*

The SSG-LS sponsored the SCAR X Biology Symposium on 26-29 July 2009 in Sapporo, Japan. The theme was “Antarctic Biology in the 21<sup>st</sup> Century—Advances in and beyond IPY—“. The response was excellent with 113 oral and 122 poster presentations given under the six sub-themes of EBA. A special issue of “Polar Science” will be published in 2010, containing six review and 18 research papers. New initiatives were:

- special session for APECS (Association of Polar Early Career Scientists)
- awards for the early career scientist presentations
- outreach session with the general public

The huge success of the Symposium was thanks to the very capable organization of Mitsuo Fukuchi and his LOC, who were very influential with Japanese funding agencies. The result was that the conference had a surplus, which enabled monetary awards to early career scientists, publication of results and coverage of expenses of keynote speakers.

## **2.2 Major Reports**

- The EG-CPR has produced the Southern Ocean Zooplankton Atlas which demonstrates ranges, seasonality and persistent hotspots of zooplankton abundance. This will enable monitoring and prediction of zooplankton changes. It is in press as part of the Polar Science Special issue of papers presented at the SCAR X Biology Symposium.
- Members of the SSG-LS were co-authors of the ACCE Report, showing that Antarctic life is clearly showing climate change effects and predicting the scenario for the next 100 years.

## **2.3 Subsidiary Bodies outcomes**

### **2.3.1 Expert Groups**

#### **EG-Human Biology and Medicine** (agenda item 22, Doc 7) *Marc Shepanek (USA)*

The EG-HB&M is still having difficulty coordinating National SCAR Committee representation. However, Russia, South Korea and Switzerland have now proposed new members. The EG-HB&M reminded the SSG-LS of the potential for Lyme Disease to enter the Antarctic via seabirds and cautions awareness of ticks as the vectors. Particular research interest in the US and Australian programs has focussed on bone mineral density and vitamin D levels in the Antarctic Population. The EG has maintained contact with colleagues in COMNAP's former MEDINET and continues to work on projects, particularly a disease reporting system. The EG is still investigating joint SCAR-COMNAP working in this field.

#### **EG-Birds and Marine Mammals** (agenda item 23, Doc 6) *Mark Hindell (Australia)*

The EG-BAMM has identified 165 scientists working on top predators in the Southern Ocean from 19 countries. They have developed a website for posting news, information and guidelines, including all the functionalities to search, browse and display the tracking data of top predators that are contained in SCAR-MarBIN (: <http://egbamm.olympic-network.com/SCAR2/>). The EG is also developing a meta-database of all tracking data on top predators work in the Southern Ocean. The next, and more challenging, step is to compile raw tracking data of top predators in the SCAR-marBIN database. Finally, the EG is working with the Census of Antarctic Marine Life to conduct a biogeographic synthesis for top predators for conservation and management in the Southern Ocean.

#### **EG-Continuous Plankton Recorder** (agenda item 24, Doc 22) *Mitsuo Fukuchi (Japan)*

The EG-CPR's new Southern Ocean Zooplankton Atlas will be a significant contribution to defining zooplankton biogeography and identify persistent hotspots which coincide with predator distribution patterns. This Atlas will provide essential data to EG-BAMM, CAML, SOOS and CCAMLR. The draft SOOS Implementation plan has recommended that the SO-CPR Survey be maintained and expanded and in particular fill gaps in the Pacific and Atlantic sectors and in winter. A member of CCAMLR continues to serve on the EG-CPR. Biogeographic analysis of the CPR data is continuing as the main zooplankton contribution to the CAML Biogeographic Synthesis Atlas for the Southern Ocean.

The EG-CPR is still analysing the apparent shift from krill to mesozooplankton dominance observed in the sea-ice zone of eastern Antarctica. The large blooms of pelagic foraminiferans observed in 2005 may be a result of elevated chlorophyll *a*. Although numbers have reduced, there are still localised large blooms south of Tasmania and New Zealand.

The dataset currently holds ~25,800 records at 5 nmile resolution for about 230 species and krill developmental stages plus environmental data up to the end of the 2007/08 season (March 2008). This represents approximately 70% of the Southern Ocean. The 2009/10 data will extend the data

base to ~30,000 records. Data are held at the AADC and accessible through SCAR-MarBIN (<http://www.scarmarbin.be/>). It continues to be one of the largest data sets in MarBIN and consistently receives high download requests.

There were 51 tows in 2008/09 and 45 tows in 2009/10. Vessels from Australia, New Zealand, Japan and Brazil are involved with Chile coming on stream. The Drake Passage and Ross Sea annual surveys will provide valuable new data in two important fishing regions. Training courses are being regularly run in order to expand the program to other countries and standardize methods. CPR surveys are expanding globally and the aim is to develop a global CPR database.

### **2.3.2 Other initiatives**

#### **Census of Antarctic Marine Life (CAML) agenda item 25b *Vicky Wadley (Australia)***

The International Polar Year programme CAML was the biggest-ever survey of Antarctic marine life with 18 voyages over the span of the IPY. Products were:

- 400,000 bacterial tag sequences
- Inventory of 9,346 species of which hundreds are new to science
- DNA barcoded 15,000 sequences
- Access to 1.1 million distribution records
- Hundreds of scientific publications and media articles
- Online encyclopaedia and illustrated keys

As a result, numerous discoveries were made about the Southern Ocean:

- High species richness, with some species being apparently bipolar
- No evidence to date of introduced species
- Single benthic bioregion under the Antarctic Circumpolar Current (ACC)
- Communities under iceshelves change drastically when the iceshelf collapses
- Octopus colonisation pathway is northwards from the Southern Ocean via the deep sea

The Census of Antarctic Marine Life has left a large legacy. It has:

- Produced a robust data baseline for future change
- Developed a virtual legacy with the data portal SCAR-MarBIN
- Developed a bio-regionalisation for conservation
- Identified sentinel species for the Southern Ocean Observing System
- Produced species lists, publications and field guides
- Developed a network in 30 countries, 7 in South America
- Trained scientists in the International Polar Year

A synthesis of CAML results will be published in a special volume of Deep-Sea Research. CAML has also produced a video about its achievements which will be shown in early October at the finale of the Census of Marine Life in London.

#### **SCAR Marine Biodiversity Information Network (SCAR-MarBIN) agenda item 25c *Bruno Danis (Belgium)***

The SCAR-MarBIN philosophy is to build a network with free and open access to support Antarctic science. Since 2005 the web portal has had 800,000 visitors and 5,800,00 hits and 39 million records have been downloaded. The first Registry of Antarctic Marine Species (RAMS) has 16,000 taxa. Geographic data are interfaced with OBIS, GBIF, etc. Projects can make custom field guides, georeference genetic data, and access the biogeographic atlas of the Southern Ocean, etc. The Antarctic Biodiversity Information Facility (ANTABIF), which provides terrestrial data as well as marine, has been functional since mid-June 2010 ([www.biodiversity.aq](http://www.biodiversity.aq)). Associations have been established with other biodiversity databases; e.g., Global Biodiversity Information Facility (GBIF), Polar Information Commons (PIC), Intergovernmental Science – Policy Platform on Biodiversity and Ecosystem Processes (IPBES).

**Action:** Given the value of and range of SCAR-MarBIN activities and the need for a reliable and sufficient funding, the SSG-LS recommends to the Delegates:

**Recommendation SCAR XXXI – SSG-LS-2 – External**

*Concerning the future of the SCAR Marine Biodiversity Information Network (SCAR-MarBIN) as a major component of the Antarctic Biodiversity Information Facility (ANTABIF)*

*Recognizing the achievements, the crucial usefulness and potentials 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,*

*Stressing the need for SCAR to continue to efficiently contribute data and expertise to GBIF (Global Biodiversity Information Facility) as an Associate Participant,*

*Considering the critical role of SCAR-MarBIN as the main biodiversity data provider to SOOS (Southern Ocean Observation System),*

*Stressing the interest for SCAR to be actively associated with emerging initiatives such as the world-scale IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), or the PIC (Polar Information Commons),*

*SCAR recommends to National Committees that they urge their national funding agencies to consider contributing to SCAR-MarBIN funding for the period 2011-2015.*

**2.3.3. Other matters**

**Working paper: SCAR Code of Conduct for Use of Animals for Scientific Purposes in Antarctica** (agenda item 17, Doc 2) *David Walton (UK)*

The first code of conduct on animal research was provided by SCAR in 1990 and adopted by the Treaty in 1994. Now, 20 years later, the code needs to be updated for the 21<sup>st</sup> century. The code of conduct is not a legal document, it only provides guidelines. There was discussion about wording of the document (e.g., Does it support or only complement national laws and policies? What is meant by “experimentation”?, etc.). The document was edited and the revised version adopted.

**Action:** The SSG-LS submits a recommendation to the Delegates for acceptance of the Code of Conduct.

**Recommendation SCAR XXXI – SSG-LS-1 – External**

*Concerning the importance of ethical treatment of animals in scientific experiments*

*Recognising that animals are sentient beings and need to be treated ethically when involved in scientific experiments*

*Noting that the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica that was adopted in 1990 at XXI SCAR and in 1994 by the ATCM is now in need of revision to conform to good practice*

*Recommend that SCAR adopt the revised Code and request National Committees support the paper when submitted to the ATCM by SCAR in 2011.*

**Informal report of the CCAMLR Observer** (agenda item 16, Doc 17) *Mark Hindell (Australia)*

There are a number of SCAR activities of relevance to CCAMLR: The Census of Antarctic Marine Life (CAML), the SCAR Marine Biodiversity Information Network (SCAR-MarBIN), the Expert Group on Birds and Marine Mammals (EG-BAMM), the SCAR/SCOR developing Southern Ocean Observing System (SOOS), and the Antarctic Climate Change and the Environment (ACCE) report. The SCAR Observer to CCAMLR, Mark Hindell, reported on these developments.

CCAMLR welcomed the report and in particular the desire for SCAR to forge closer links, noting the potential for productive linkages between the SCAR EG-BAMM and its Working Group on Ecosystem Monitoring and Management (WG-EMM), especially noting the plans for SCAR to develop a tracking database of birds and mammals in the Convention Area. The committee

specifically noted the value of this work to WG-EMM and its work on developing Marine Protect Areas (MPAs). CCAMLR recognised the value of obtaining input from the CEP and SCAR to discussions on MPAs, to ensure harmonisation across the Antarctic Treaty System, and to facilitate the provision and use of the best available scientific data. It agreed that experts/observers from the CEP and SCAR should be invited to attend meetings of CCAMLR's WG-EMM and to participate in inter-sessional work on the topic of MPAs, as appropriate.

**Selection of the site for the XI SCAR Biology Symposium** agenda item 29, Doc 21 (part) *Don Cowan (South Africa) and Leopoldo García Sancho (Spain)*  
South Africa and Spain presented proposals for holding the 11<sup>th</sup> SCAR Biology Symposium in 2013. Voting was by closed ballot and Spain was selected.

### 3. Strategic consideration of issues, concerns, problems

#### **3.1 Comments on Joint SSG meetings and on the Draft SCAR Strategic Plan 2011-2016**

The SSG-LS viewed the joint session of SSGs as a positive change in format and agreed that it should be continued.

##### **3.1.1 SCAR and Climate Change** (agenda item 4) *John Turner*

The SSG-LS was asked to comment on the request to provide annual reports on climate and biology to the ATS. So far it has been difficult to obtain responses. Suggestions to improve reporting included using action and expert groups to provide highlights, increasing size of groups, extending the list of people to approach, hiring a postdoc to review journals and write a summary article, and requesting that SCAR should be compensated for service to the Treaty.

##### **3.1.2 Cross-SSG Action Group on King George Island** (agenda item 9) *Sergio Marensi*

The SSG-LS noted that the report from the King George Island Cross-SSG Action Group that was presented at the joint SSG meeting was very negative and further clarification of the report was needed. Following a meeting with Sergio Marensi, the SSG-LS noted the substantial scientific and operational activities at King George Island, the need to gather information to develop cooperative initiatives and avoid logistical and scientific duplication and overlap (e.g., temporal, spatial, thematic), and optimize efforts and costs by sharing logistics and scientific infrastructure wherever possible.

**Action:** the SSG-LS recommends that a SCAR-sponsored workshop be held to establish the scope of the current and future research, and develop a strategic plan for handling future collaborative efforts at King George Island. This SCAR-sponsored workshop would gather scientific and operational representatives from each country currently involved in research at King George Island.

##### **3.1.3 Cross-SSG Action Group on Prediction of Changes in the Physical and Biological Environments of the Antarctic** (agenda item 11, Doc 5) *Julian Gutt*

The SSG-LS is very active in this group with contributors to the ACCE report having added a substantial biological component.

##### **3.1.4 SCAR Strategic Plan 2011-2016 (v 5.1)** (agenda item 15, Doc 11) *Chuck Kennicutt (SCAR President)*

SSG-LS members in general support the 5.1 version of the strategic plan. There was some consensus that SCAR science should include the term “extreme”, as well as “cold” to be fully inclusive of all Antarctic organisms. It was also felt that the Strategic Plan should clearly emphasize that SCAR is an organization of volunteers that does not fund science. There was also

the suggestion that SCAR is a small coordinating organization run by volunteers, but perhaps presenting itself as a large organization.

### **3.1.5. SCAR Open Science Conference**

The SSG-LS was unable to discuss this topic thoroughly due to time constraints. It was evident, though, that this was a topic that invoked lively interest and should be afforded more opportunity for debate. Comments given before this topic had to be closed by time constraints were as follows. There was concern about the large amount of CO<sub>2</sub> being generated to attend this conference and that SCAR should be exemplary in reducing this load, especially given the impact of elevated CO<sub>2</sub> on the Southern Ocean and terrestrial ecosystems. A suggestion is to reduce the OSC to every 4 years, with the intervening 2 years being filled by SRP science conferences such as the SCAR Biology Symposium. Recognizing that SCAR Business and Delegates meetings need to be held every 2 years, the SSG-LS suggested that in the non-OSC years, science presentations could be made to the Delegates as Keynote addresses.

Comments on aspects of the OSC operation were also made:

- Keynotes and regular talks must be standardized to allow going from room to room, to attend different papers during the same session.
- Need sufficient notice for meetings, registration, abstract submission - some participants cannot attend because of short notice and insufficient time to apply for travel funds and plan other activities.
- Theme of 2012 OSC should accommodate EBA since it will be the wind up for this program and special sessions will be needed. SSG-LS needs to suggest sessions for meeting that reflect all programs. Next OSC should pay more attention to SRPs and other SCAR programs.

## **3.2 New cross-linkages**

### **3.2.1 Proposed new Cross-Expert Group “Advancing TecHnological and ENvironmental stewardship for subglacial exploration in Antarctica (ATHENA)”** (agenda item 8, Doc 9)

*Jemma Wadham (UK) and Peter Doran (USA)*

The SSG-LS endorsed the creation of ATHENA after it was verified that each of the SSGs would provide funding of \$2K/year for 2 years.

### **3.2.2 Proposed new Cross-Action Group on Ocean Acidification** (agenda item 28, Doc 10)

*Richard Bellerby*

The SSG-LS endorsed the creation of an ocean acidification expert group with the SSG-PS and Terms of Reference are being developed. No funding requests were received at the time of the meeting but subsequently a request for \$2K/yr was received from the SCAR Secretariat.

## **3.3 Financial plan** (agenda item 30) *Kathy Conlan (CO, SSG-LS)*

While SCAR now allocates block funding to each SSG for dissemination by the CO, the following provides a guide on requests. Note that funding requests are in excess of expected allocation by 39% in 2011 and 51% in 2012, an indication that the SSG-LS may have difficulty completing its tasks.

## SSG-LS Funding requests and proposed allocation (USD x 1000), 2011-12

Group	Purpose	Requested		Proposed Allocation	
		2011	2012	2011	2012
AntEco	Programme planning meeting	5	5	3.75	3.75
AntETR	Programme planning meeting	5	5	3.75	3.75
EG-HB&M	Website, meeting	3	3	2	2
EG-BAMM	Website, tracking data	4	4	3	3
EG-CPR	Maintain identification standards, exchanges and collaborations	4	4	3	3
SCAR-MarBIN	Annual workshop	5	5	4	4
Cross AG-PCPBE	Annual meeting	4	4	3	3
Cross AG-Seeps and Cold Vents		0	0	0	0
New Cross EG-ATHENA	Planning workshop, website	2	2	1	1
New Cross AG-Ocean Acidification	Website	2	2	1	1
SSG-LS	Student travel awards for OSC at SCAR XXXII	0	3	0	0
<b>Total requested</b>		<b>34</b>	<b>37</b>	<b>24.5</b>	<b>24.5</b>

Note: \$17K allocation for SSG-LS plus \$3.75K for each SRP – PPG pending Delegate approval. EBA has separate budget.

### **3.4 Other Business**

#### **3.4.1 Highlights of National Research Programmes** (agenda item 21) *Dana Bergstrom (Australia) and Lucia S. Campos (Brazil)*

The SSG-LS was alerted to two National Research Programme highlights

(<http://www.scar.org/about/nationalreports/>):

- The Australian Antarctic Division has released the Scientific Strategic Plan for the next 10 years (<http://www.aad.gov.au/>). Research will focus on 4 themes: (1) Climate Processes and Change; Environmental Change and Conservation of (2) Terrestrial and Nearshore Ecosystems and (3) the Southern Ocean; (4) Frontier Science.
- The Brazilian government has a new incentive for research and two multi-institutional projects have been funded for Antarctica (5-year programs) with international collaboration (cryosphere and environmental divisions).

**3.4.2 Election of Office Bearers** (agenda item 32, Doc 4) *Kathy Conlan (CO, SSG-LS)*

The SSG-LS was unable to find a volunteer for the position of Deputy Chief Officer following the resignation of Gary Steele (NZ). The position has been left open.

**3.4.3 Association of Polar Early Career Scientists (APECS)** *José Xavier (Portugal)*

APECS is a bipolar organization with 2400 members from 45 countries. A major goal is to provide networking for early career scientists by providing venues for interaction between members and through a mentorship program. It has memorandums of understanding with SCAR, IASC, etc. and APECS members serve on international steering committees. A key point was that early career scientists could help SCAR achieve its goals. They are involved in IPY and conduct education and outreach.

**Appendix A. Attendees of the 2010 SSG-LS Business Meeting**

<b>Country</b>	<b>Representative (*lead)</b>	<b>Email</b>
Argentina	Viviana Alder* Nestor Coria Marie Liliana Quartino Esteban Barrera Oro	viviana_alder@yahoo.com ncoria@dna.gov.ar lquartino@dna.gov.ar ebarreraoro@dna.gov.ar
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Bulgaria	no representative	
Canada	Kathy Conlan*	kconlan@mus-nature.ca
Chile	León Bravo*	labravo@gmail.com
China	no representative	
Ecuador	no representative	
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Norway	no representative	
Peru	no representative	
Poland	no representative	
Portugal	José Xavier*	jxavier@zoo.uc.pt
Russia	no representative	
South Africa	Steven Chown* Bettine J. van Vuuren	slchown@sun.ac.za bjvv@sun.ac.za
Spain	Leopoldo G. Sancho*	sancholg@farm.ucm.es
Sweden	no representative	
Switzerland	no representative	
Ukraine	no representative	

<b>Country</b>	<b>Representative (*lead)</b>	<b>Email</b>
United Kingdom	Pete Convey* Dominic Hodgson David Walton	pcon@bas.ac.uk dah@bas.ac.uk dwhw@bas.ac.uk
United States	Alison Murray* Diana Wall Marc Shepanek Deneb Karentz	Alison.Murray@dri.edu diana@nrel.colostate.edu marc.shepanek@nasa.gov karentzd@usfca.edu
Uruguay	no representative	

non-voting representative from the Association of Polar Early Career Scientists: José Xavier

#### **Observers:**

<b>Country</b>	<b>Name</b>
Argentina	Sergio Mareussi
Australia	John Gunn
Australia	Mark Hindall
Brazil	Monica Muelbert
Germany	Horst Bornumann
Malaysia	Michael Wong
South Africa	Jennifer Lee
United States	Chuck Kennicutt Phillip Taylor Roberta Marinelli Lee Standish (also APECS)

**Appendix B. Documents available from the 2010 business meeting of the SSG-LS.** (Documents available at <http://www.scar.org/researchgroups/lifescience/>)

<b>Document #</b>	<b>Document Title</b>	<b>Presenter</b>
1	Annotated Agenda	Kathy Conlan
2	Code of Conduct for Use of Animals for Scientific Purposes in Antarctica	David Walton
3	EBA Progress Report 2008 – 2010	Guido Di Prisco Pete Convey
4	Chairs Terms of Reference	Kathy Conlan
5	Cross-SSG Action Group on Prediction of Changes in the Physical and Biological Environments of the Antarctic	Julian Gutt
6	Report EG-Birds & Mammals	Mark Hindell
7	Report EG-Human Biology & Medicine	Marc Shepanek
8a, 8b	Southern Ocean Observing System a. white paper, b. summary	Mike Sparrow
9	Proposal for ATHENA	Jemma Wadham Peter Doran
10	Southern Ocean Acidification	Richard Bellerby
11	SCAR Strategic Plan	Chuck Kennicutt
12	Report of the SCAR XXX SSG-LS meeting, St. Petersburg 2008	Kathy Conlan
13	Proposal for new SRP: AntEco	Dominic Hodgson
14	Proposal for new SRP: AntETR	Julian Gutt
15	2008 LS Recommendations	Kathy Conlan
16	Subglacial code of conduct	Chuck Kennicutt
17	CCAMLR observer report	Mark Hindell
19	Funding request for SCATS	Steven Chown
20	Report on 10 <sup>th</sup> Biology Symposium	Mitsuo Fukuchi
21	Spanish proposal for 11 <sup>th</sup> Biology Symposium	Leopoldo García Sancho
22	CPR report	Mitsuo Fukuchi