



Paper 5

SG

Person  
Responsible:

Agenda 2.1

LS

Yan Ropert-  
Coudert

## SCAR Executive Committee Meeting 2017

Brno, Czech Republic, 31 July - 2 Aug 2017

### Life Sciences Group 2016-2017 Report

#### **Report Author(s):**

Y. Ropert-Coudert (CO), M. Shepanek (Deputy-CO), I. McDonald (Secretary)

#### **Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

The major highlight of Life Science activities is yet to come for 2017 as the SCAR Biology Symposium will be held the week following the deadline for submitting this report, i.e. the 10-14 July 2017 in Leuven, Belgium. Life Sciences has helped in preparing this major event. In addition to this, Life Sciences, and its related AGs and EGs, has been active in producing reports to SCATS, attending meetings such as the Monaco Assessment phase II or in disseminating information to its community and beyond, as the LS and related AGs and EGs' reports will demonstrate.

#### **Recommendations that EXCOM should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

NEED APPROVAL: Life Sciences would like to open a discussion with EXCOM on the possibility to adapt the rules for funds use by the AGs and EGs. Currently, the (non-written?) rules for using the money allocated by the Delegates do not authorize groups to purchase material or to hire a technical expert for a specific purpose that would serve the group aims. While it is understood that SCAR is a committee and not a mean agency Life Sciences has had to answer comments from the Delegates regarding the use of the funds that were (citing) "primarily used for people to conduct workshops and travelling around". The Delegate further added that there seemed to be a lack of more "concrete" actions. If this is a stance shared by EXCOM Life Sciences would then argue that concrete actions may occasionally require funds to be used to obtain material goods or expert time in order to be addressed. This is

especially the case for the AGs and EGs' scientists that generally come from various countries and institutions that are not necessarily willing to allocate national funds for what they see as an external group. SCAR funds provided by the Delegates could thus help tremendously in achieving goals that necessitate specific devices or expertise. Such a practise should, of course, not become a common approach and would need to be highly justified to and strictly supervised by the Secretariat.

INFORMATION: Life Sciences has stopped requesting reports to the AG Ocean Acidification, following the (almost) complete absence of communication and exchanges over the past years. In Kuala Lumpur it was decided that no new funds would be allocated to this AG over the 2017-18 exercise.

INFORMATION: The timing of the report, a week before the SCAR biology symposium means that many (most) groups have not yet used their 2017 funds. The Biology symposium represents the highlight of the Life Science activities and a major opportunity for the AGs and EGs to hold their meetings.

## Progress and Plans:

### **Major Activities and Significant Progress from the past year (<500 words):**

Life Sciences is primarily responsible for five Expert Groups (ANTOS, EG-ABI, EG-BAMM, SO-CPR and the SCAR-COMNAP JEGHBM) and four Action Groups (ISSA, BEPSII, Ocean Acidification and Remote Sensing). ANTOS and ISSA are cross disciplined with PS and GS. Ocean Acidification and Remoting Sensing are shared with PS. In addition, Life Sciences is involved in the SCAR-SCOR co-sponsored ICED program.

Life Sciences' routine activities include the maintenance of the webpage of the SG, the updating of the mailing list of national representatives and AGs/EGs, the communication of various relevant information to the group, the participation to meetings, workshops, popular meetings to represent Life Sciences and disseminate its activities to other scientific communities or to the public, reviewing some of the SCAR Fellowships (visiting professors for 2017), writing letters of support and recommendations. Among the 2017 activities we wish to highlight the following:

- Coordinating the assistance of Life Science Delegates in facilitating the responses of National Committees and Representatives to the request by SCAR on the use of drones in Antarctica, a paper which was submitted to the CEP meeting in Beijing last week.
- Elaborating, together with other Life Sciences representatives, of the SCAR Code of Conduct on the use of Wildlife to be submitted to the CEP of the ATCM via SCATS (5 SCAR affiliated members and 3 external experts were consulted for this).
- Participating to the preparation of the Biology Symposium in Leuven, Belgium in July (abstracts review, selection of keynote speakers, etc.).

- Compiling the Life Sciences activities that address the priorities of the Committee on Environmental Protection.
- Participating to the Monaco Assessment Phase 2 in Monaco, 3-5 July 2017.
- The CO of LSG is also involved in the EG-BAMM (serving as secretary since 2009) and as such participated to the production of the documents necessary for the review of the EG, organized a workshop dedicated to Retrospective Analysis of Antarctic Tracking Datasets (a key project of the EG) and currently supervises a post-doctorate student to work on this project (Dr. Ryan Reisinger from South Africa on a CESAB grant, France).

**Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

- SCAR Biology Symposium, Leuven, Belgium, 8-14 July 2017 (including Priority Threat Management Workshop, EGBAMM and RAATD group meeting, MEASO preparation meeting, etc.)
- CESAB-RAATD workshop, September 2017
- CESAB-RAATD workshop, March 2018
- MEASO/ICED/SOOS Conference, Hobart, Australia, April 2018
- SCAR OSC, Davos Switzerland, August 2018

Among the major items to be noted from the AGs and EGs reports, Life Sciences wish to mention that two major initiatives will take place in the coming years: on land (ANTOS) and at sea (Benchmarking ICED/SOOS). Increasing fund requests are suspected to emerge from these, as ANTOS has already noted that they will request 10 000 USD per year to conduct their activities.

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

Xavier JC, Brandt A, Ropert-Coudert Y, Badhe R, Gutt J, Havermans C, Jones C, Costa ES, Lochte K, Schloss IR, Kennicutt MC II, Sutherland WJ (2016) Future Challenges in Southern Ocean Ecology Research. *Frontiers in Marine Science* 3: 94

Ropert-Coudert Y (2017) "Une aire marine en Antarctique permettrait de protéger les ressources alimentaires de plus de 75 000 couples de manchots Adélie" A Marine Protected Area in Antarctica would protect the food resources of more than 75 000 pairs of Adelie penguins. *LE MONDE* (French major press), published on the 28/06/2017 at 15h08.

SCAR's Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica. IP 53 CEP ATCM.

**If your Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

Non applicable. See EGs and AGs for new data generated.

## Budget

### Planned use of funds for 2017 and 2018

The funds use described below only concerns the general funds allocated to Life Sciences. For a breakdown of the funds use by AGs and EGs, please see the reports of the different groups. As a quick summary please note that ANTOS will decide on funds use for 2017 and 18 at the SCAR Biology symposium in July, BEPSII and Remote Sensing will not use their 2017 funds and will use all their funds in 2018 to attend the OSC Davos meeting. Finally at the time of completing this report JEGHBM had not yet provided us with a complete report, especially regarding the budget plans.

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
07-17	Travel grant Biology Symposium (Yamasaki)	415	Yan Ropert-Coudert	docyaounde@gmail.com
07-17	Travel grant Biology Symposium (Secco)	420	Yan Ropert-Coudert	docyaounde@gmail.com
07-17	Travel fees LS CO	300 (roughly)	Yan Ropert-Coudert	docyaounde@gmail.com
07-17	Hotel fees LS CO	800	Yan Ropert-Coudert	docyaounde@gmail.com
08-18	Travel assistance for COs of Life Science	2000 (roughly)	Yan Ropert-Coudert	docyaounde@gmail.com

### Briefly describe what the funds will be used for and what the desired results are:

835 USD have been used to assist young students to travel to the SCAR Biology symposium in July 2017.

1100 USD will be used to allow YRC to attend the SCAR Biology Symposium. We estimate roughly the cost of travelling of Life Sciences COs to the Open Science Conference of SCAR, Davos, Switzerland in 2018 to 2000 USD.

### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017: 50%

2018: ?

### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):

2017:

2018:

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR** (eg. Funds from another organization for a workshop):

The Centre d'Etudes pour la Synthèse et l'Analyse de la Biodiversité, in France is funding YRC for him to conduct a series of workshops between 2017 and 2019 on the Retrospective Analysis of Antarctic Tracking Datasets (a key project of EG-BAMM). The latest workshop took place in spring 2017 and gathered a dozen of experts, mostly from SCAR. The next workshop will take place in September 2017. See more details on the EG-BAMM report.

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

- Supervising all SCAR Life Science groups
- Strong links with SCATS (Codes of Conducts, shared representations at various meetings, etc.)
- Increasing interactions with CCAMLR (Marine Protected Areas)
- Collaborations with the french Comité National Français pour la Recherche en Antarctique (CNFRA, YRC acting as vice-president)
- the PEW marine foundation (YRC is a PEW fellow since 2017)
- Exchanging information on Marine Protected Areas issues with ASOC.

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network.** (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):

Life Sciences maintain a mailing list of national representatives, AGs and EGs chief officers, which includes an APECS representative. In addition Life Sciences has a twitter account (or a Facebook) but clearly the CO of the group is absolutely helpless with it and has been relying on the secretariat and the good will of Anton van de Putte to post news for the group. Participation to an APECS webinar in France to present SCAR.

*As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.*

Yan Ropert-Coudert (yan.ropert-coudert@cebc.cnrs.fr)

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
CO	Yan	Robert-Coudert	CEBC-CNRS	France	docyaounde@gmail.com	08/2017	08/2021
Dep-CO	Marc	Shepanek	NASA	USA	marc.a.shepanek@nasa.gov	08/2017	08/2021
Sec.	Ian	McDonald	Waikato Univ.	New Zealand	irmcdon@waikato.ac.nz	08/2017	08/2021

*\* Please include any APECS representative / Junior Officers*

### Other members

First Name	Last Name	Affiliation	County	Email
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### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*

See ANTOS, BEPSII, and JEGHBM reports.



**SCAR Group**

SG

**ANTOS**

PS/LS/GS

Person Responsible: Craig Cary and  
Vonda Cummings

## **SCAR Executive Committee Meeting 2017**

**Brno, Czech Republic, 31 July - 2 Aug 2017**

# **Antarctic Near-shore and Terrestrial Observing System (ANTOS) 2016-2017 Report**

### **Report Author(s):**

Craig Cary – University of Waikato, New Zealand  
Vonda Cummings – NIWA, New Zealand

### **Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

The ANTOS Action Group hosted a workshop at the 2016 SCAR Open Science Conference (OSC) in Kuala Lumpur, Malaysia on 21 August, 2016 that was attended by 50 researchers representing 16 countries (Argentina, Australia, Belgium, Brazil, Canada, Chile, Czech Republic, France, Germany, Italy, Japan, Korea, New Zealand, Sweden, United Kingdom, and USA). The report of this workshop is available on the website, and contains an update of ANTOS achievements during its 2 years as an action group. ANTOS was approved as an Expert group in August 2016. For more details, and to sign up to the mailing list, please visit <http://www.scar.org/antos>. The ANTOS committee has been developing various action items discussed at the workshop including developing and implementing an international survey to identify long term datasets, continuing the database development, and developing a technical manual to describe the needed technology to enable National Programs to establish ANTOS installations.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

None



## Progress and Plans:

### Major Activities and Significant Progress from the past year (<500 words):

The ANTOS Action Group hosted a workshop at the 2016 SCAR Open Science Conference (OSC) in Kuala Lumpur, Malaysia on 21 August, 2016. Major activities include:

- (1) ANTOS became an Expert Group at the KL meeting in 2016.
- (2) **The ANTOS tiered measurement system:** Preliminary guidelines for a 3-tiered system (i.e., recommendations for three possible levels of resource investment at an observation site) were developed at a previous workshop (August 2015), for the measurement of physical habitat properties, biological colonization processes, biodiversity, spatial distribution of biota, ecosystem function, and genetic/genomic diversity in both terrestrial and marine habitats. These were discussed and critiqued at the KL meeting. Each site would consist of a hardware installation coupled with a local and/or regional biological and environmental assessment, mapping, and monitoring schedule, depending on the tier (investment) level. Multiple tiers allow for different levels of investment across national program. This flexibility is anticipated to encourage greater participation from national programs that may be resource-limited. Detailed guidelines can be found in the ANTOS: Report on 2015 International Workshop: [http://www.scar.org/scar\\_media/documents/science/antos/2015-ANTOS-Workshop-Report.pdf](http://www.scar.org/scar_media/documents/science/antos/2015-ANTOS-Workshop-Report.pdf)
- (3) **Database management:** KOPRI has led the design of a database management schema and web-portal to manage data that will be collected across the ANTOS network. The database is being designed with the anticipation that raw data will be relayed from data loggers at field installations via satellite to a database server, but also with the acknowledgement that data will likely need to be physically retrieved from some data loggers. Both original data and derived data products will be backed up at multiple physical locations. A web-based user interface (UI) is being designed, by which researchers will be able to manage data streams, and which will also provide a platform for data sharing. KOPRI and the ANTOS community will make use of current, widely used metadata standards (such as EML) as they develop the database. The database is now nearing completion and will need testing using our 2 installations in Northern Victoria Land
- (4) **Survey launch:** The ANTOS committee, led by Byron Adams and Emmanuelle Sultan, designed a web-based survey that will be used to poll the international research community about where infrastructure currently exists to collect long-term ecological and environmental data, where long term data are already being collected, and where investment is most needed to collect such data. The ANTOS action group will solicit participation in the survey from across the international



Antarctic research community. This will be made live after the SCAR Biology meeting.

- (5) **Atlas of Ice Free Areas of Antarctica (AIFAA)**. The British Antarctic Survey (BAS) hosted a small workshop in Cambridge, UK with the goal of gathering and curating summary information about named, ice-free, terrestrial features in Antarctica. The anticipated product (expected in 12-18 months), which will be an open access document, will provide insight about terrestrial areas that should be prioritized as prospective ANTOS sites. In a similar effort, Aleks Terrauds will soon be publishing a similar product describing the attributes of Antarctic Conservation Bio-Regions (ACBRs).

**Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

As an expert group, ANTOS will seek to expand membership and produce the deliverables that were designed under the action group. The proposed duration of the expert group will be 6-8 years, beginning in 2017. Expanded membership will include increasing the involvement of early and mid-career researchers and under-represented countries. The budget requested will be \$10,000/yr for the duration of the expert group. Deliverables and terms of reference will include:

- (1) The active solicitation of membership from developing countries.
- (2) Conducting a survey to identify potential high priority ANTOS sites. The survey has already been designed by the action group (questions presented and discussed at this workshop).
- (3) Developing a formal paper of site recommendations based on data collected from the survey described above.
- (4) Developing a proposal with endorsement from COMNAP.
- (5) Developing a document of proposal guidelines for researchers seeking support from their national programs to install an ANTOS site.
- (6) Developing a website that implements the database management program that is being designed by KPRI.
- (7) Scheduling a workshop for the SCAR Biology meeting in Belgium 2017 to promote cross-discipline collaboration.
- (8) Ensuring the expert group has representatives from other relevant SCAR groups (e.g. ANTPAS, Arctic network, remote sensing, APECS).

Specific action items currently being worked on from the KL ANTOS workshop are as follows:

1. Developing sub-groups within the framework of the ANTOS Expert Group to assist in quicker development of database and technical aspects of ANTOS installations. These sub-groups are being developed to include enthusiastic members of the international Antarctic community interested in these topic areas with a strong emphasis on early career researchers and those scientists from countries with developing Antarctic programmes.

2. The existing long term database survey will be launched following the SCAR Biology meeting in July. The data will assist ANTOS in deciding where ANTOS installations around the continent are critical. Our hope is that the data will be presented for discussion and decision at the Open Science Conference in Davos next year.
3. Database design and management plan will be finalized and presented at the Davos meeting next year. Our hope is that the database will be functional and receiving data from our two current ANTOS installations in Northern Victoria Land.
4. The ANTOS committee sees engage with COMNAP to be critical to our success. Over the next few months we will endeavor to establish a working group within ANTOS specifically to begin to forge this relationship through direct contact with key COMNAP members and committees.

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

Report on the 2016 Antarctic Near-shore and Terrestrial Observing System (ANTOS) Action Group Workshop. [http://www.scar.org/scar\\_media/documents/science/antos/2015-ANTOS-Workshop-Report.pdf](http://www.scar.org/scar_media/documents/science/antos/2015-ANTOS-Workshop-Report.pdf))

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

## Budget

### Planned use of funds for 2017 and 2018

We will discuss this at the SCAR Biology meeting in July 2017 as to how these funds will be distributed. It is likely that some funds will be used to support the sub-groups interacting or to support facilitating attendance of early career and scientists from countries with developing Antarctic programmes to attend the scheduled ANTOS workshop at the Open Science Conference in Davos.

> Post Leuven discussion: all funds are requested to be rolled onto 2018 for Davos meeting (all participants to Leuven 2017 managed to attract fundings to support their attendance).

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email

### Briefly describe what the funds will be used for and what the desired results are:

Attendance by key individuals representing national programs to the Davos workshop is critical. Since ANTOS represents a significant long term investment from the National Programmes it is essential that we have significant buy-in from both researchers and COMNAP.

### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017: 0%

2018: To be advised after Scar Biology. It is anticipated that at least 25% of available funds will be spent on early career researchers and scientists from countries with developing Antarctic programmes.

### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):

2017: 0%

2018: To be advised after Scar Biology and consultation with committee. It is anticipated that at least 25% will be spent on early career

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):**

NZARI – supported both co-chairs to attend the KL meeting. All committee members attending the past workshops have been supported by their respective national programmes or other national agencies. In addition, the workshop at the University of Waikato was supported directly by the University by providing the venue and food service.

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

- We funded Eric Sokol (Early Career, Univ. of Colorado) to attend the KL meeting using SCAR ANTOS support.
- 2 of the ANTOS committee members are considered early career
- Charles Lee, Univ. of Waikato, Early Career brought on the lead technical effort within ANTOS
- NZ Antarctic conference poster on ANTOS – June 2017
- NZ CEP representatives have been briefed at regular intervals on ANTOS development.
- Co-chairs have been invited to attend the SOOS Ross Sea Working Group Workshop in China in Sept 2017.
- ANTOS meeting scheduled for the SCAR Biology meeting in Belgium on July 9<sup>th</sup>, 2017. This will consist of a closed committee meeting in the morning and an open meeting for the entire community in the afternoon. Several committee members unable to attend the meeting will connect through video conferencing.

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one**

**or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

S. Craig Cary – caryc@waikato.ac.nz

Vonda Cummings - vonda.Cummings@niwa.co.nz

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
<b>Co-Chair</b>	Craig	Cary	U. of Waikato	NZ	Caryc@waikato.ac.nz	8/2014	8/2018
<b>Co Chair</b>	Vonda	Cummings	NIWA	NZ	Vonda.Cummings@niwa.co.nz	8/2014	8/2018

*\* Please include any APECS representative / Junior Officers*

### Other committee members

First Name	Last Name	Affiliation	Country	Email
Byron	Adams	BYU	USA	byron_adams@byu.edu
Charles	Lee	Waikato		cklee@waikato.ac.nz
Dana	Bergstrom	AAD	Australia	dana.bergstrom@aad.gov.au
Eli	Verleyen		Belgium	Elie.Verleyen@UGent.be
Emmanuelle	Sultan	Museum National d'Historie Meleuelle	France	esulod@locean-ipsi.upmc.fr
Marcela	Libertelli	Instituto Antártico Argentino	Argentina	mibertelli5@yahoo.com.ar
Megumu	Tsujimoto	MPR	Japan	megumutsujimoto@gmail.com
Pete	Convey	BAS	UK	pcon@bas.ac.uk
Sharon	Robinson	Woolingong University	Australia	sharonr@uow.edu.au
Soon Gyu	Hong	KOPRI	Korea	
Stefano	Schiaparelli	Unige of MNA	Italy	stefano.schiaparelli@unige.it

In addition we have over 75 members currently listed to receive ANTOS updates through our listserver representing over 16 countries.

Possible APECs and SCAR Geo and Physical science program reps will be discussed and invited to be on the committee following the SCAR Biology meeting in July.

**Requests to the Secretariat:**

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*

Help with establishing connections with COMNAP!



SCAR Group

SG

Person  
Responsible:

BEPSII

PS/LS/GS

J. Stefels

## SCAR Executive Committee Meeting 2017

Brno, Czech Republic, 31 July - 2 Aug 2017

# Biogeochemical Exchange Processes at Sea-Ice Interfaces BEPSII - Action Group 2016-2017 Report

**Report Author(s): Jacqueline Stefels**

**Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

The **BEPSII research community** is a global community of sea-ice researchers including biogeochemists, atmospheric scientists, oceanographers and sea-ice physicists to address fundamental communication and methodological issues in sea-ice biogeochemistry.

BEPSII held a 3-day workshop in April 2017, joined by the new SCOR Working Group (#152) on Measuring Essential Climate Variables in Sea Ice (ECV-Ice). Twenty-six scientists from Australia, Belgium, Canada, Finland, France, Germany, Japan, the Netherlands, Norway, Switzerland, the United Kingdom, and the United States gathered in La Jolla, California to discuss the results of the past year's activities, plan upcoming activities, and to present scientific talks and posters.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

Please note the following:

Since travel and meeting costs for the 2017 meeting could be covered by support from IASC, SOLAS and CLiC, it was decided to **leave all SCAR support for the 2018 meeting**, which will be held alongside the POLAR2018 conference.



## Progress and Plans:

### Major Activities and Significant Progress from the past year (<500 words):

BEPSII started as a working group of SCOR (WG#140) in 2012. This first phase finished in 2016, after which the community decided to continue and seek for endorsement from various science programs. In 2016, BEPSII was approved by SOLAS (Surface-Ocean Lower-Atmosphere Studies) and CliC (Climate and Cryosphere) as a longer-lived activity and by SCAR as an Action Group under the LS-SG. Given the relatively new and small research community working on sea-ice biogeochemistry, BEPSII unites scientists from both the Arctic and the Antarctic.

This 2<sup>nd</sup> phase of BEPSII is focused on developing the tools to tackle big-picture questions about the global relevance of biogeochemical processes within and around sea ice, including climate-change feedbacks. During the April 2017 meeting, the BEPSII objectives were updated as follows:

- Develop dedicated consistent methodologies for sea ice biogeochemical research;
- Establish effective sea-ice biogeochemical data archiving approaches and databases;
- Foster process studies to determine impacts on ecology and biogeochemical cycles;
- Foster technological developments and international knowledge transfer towards large-scale, autonomous and high-frequency sampling of sea-ice biogeochemical parameters;
- Improve the representation and evaluation of sea-ice biogeochemistry in regional and Earth system numerical models;
- Synthesize and integrate observational and modeling efforts; and
- Develop conceptual models describing sea-ice interactions in or with the Earth system.

A set of 5 task groups were formed to forward the BEPSII objectives, which comprise the basis of a 5-year science plan currently being drafted. The task groups and their leaders are:

- Methodologies (=SCOR-WG152 “ECV-Ice”): Francois Fripiat (Max Plank Institute for Chemistry), Daiki Nomura (Hokkaido University), Brent Else (University of Calgary)
- Data Collation: Klaus Meiners (Australian Antarctic Division), Lisa Miller (Institute of Ocean Sciences, Canada)
- Modelling and Observational Process Studies: Nadja Steiner (Institute of Ocean Sciences, Canada), Hauke Flores (Alfred Wegener Institute)
- Syntheses: Delphine Lannuzel (University of Tasmania), Martin Vancoppenolle (LOCEAN/IPSL, France)
- Outreach: Letizia Tedesco (Finnish Environment Institute), Bruno Delille (Université de Liège)

Specific subtasks of each of the groups were formulated. The complete science plan will be posted on the BEPSII website.

### Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):

In addition to fostering new experimental and modeling approaches to enhance our understanding of biogeochemical exchange processes at sea-ice interfaces, some major activities planned for the coming 3 years include:

- method intercalibration experiments for the measurement of gas exchange, primary production and trace metals;
- advising the MOSAiC (Multidisciplinary drifting Observatory for the Study of Arctic Climate) field program, planned to take place during the period Oct. 2019 – Sept. 2020;
- 1-D and 3-D model intercomparisons of sea ice algae production; and
- a field school (tentatively scheduled for spring 2019);

The next community activity is planned during the 3 days preceding the SCAR/IASC open science conference POLAR2018, in June 2018. Besides updates on task-group activities, we plan to organize a synthesis workshop to summarize existing knowledge of changes for a number of selected physical and biogeochemical variables and parameters, representative of the sea-ice ecosystem and to make a first tentative analysis of the effects of the predicted changes in the sea-ice horizon. Currently, the potential impacts of climate change on sea-ice environments and of their marine and biogeochemical consequences are poorly documented. There has been limited work on the expected changes, and the information is scattered. While sea ice is changing dramatically in the Arctic, overall Antarctic sea-ice extent has increased and is masking severe regional changes in sea-ice conditions. We still do not understand the consequences of these changes on marine biogeochemical cycles. This prevents predictions of the broader impact of ongoing climate change and obscures our awareness of the potential consequences, which may be severe. The synthesis workshop during POLAR2018 will in first instance focus on the Arctic. Extension of this approach towards Antarctic sea-ice developments will be discussed.

During the POLAR2018 OSC, several of BEPSII's young investigators will convene session OS-2 on "Interdisciplinary research on sea-ice biogeochemistry and associated ecosystems".

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

During 2017, the BEPSII Special Feature in *Elementa, Science of the Anthropocene* will be finalized as an important end product of BEPSII's first phase under the umbrella of SCOR. All papers are open-access. The last paper of the special feature, which reviews data on sea-ice algal biodiversity from both the Arctic and Antarctic, has recently been submitted and an introductory review paper is under construction.

Papers can be downloaded from the *Elementa* site:

<https://www.elementascience.org/collections/special/special-feature-biogeochemical-exchange-processes-at-sea-ice-interfaces-bepsii/>

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

N. a.

## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
06-18	annual meeting	5000	Stefels	j.stefels@rug.nl

### Briefly describe what the funds will be used for and what the desired results are:

We applied for meeting room facilities in Davos, from 15-18 Jun 2018 and anticipate 30-45 participants. The usual number of participants to the BEPSII meetings is around 30, but since Polar2018 will be both Arctic and Antarctic and several sea-ice sessions are scheduled, we anticipate a larger number attending this meeting.

In addition to the Task-group updates and science presentations, we have also scheduled discussion sessions on the impact of near-future sea-ice change, with the aim to produce a position paper on expected changes in ecology and BGC related to physical sea-ice changes.

To support as many of our network to come to both the BEPSII meeting and Polar2018, we have also applied for support from the EuroMarine Network. If granted, this means that SCAR funds will be mainly used for non-European participants, with priority to those who have no other means of funding and who contribute actively to the goals of BEPSII.

### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017:

2018: 50%

### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here:

<http://www.scar.org/finances/contributions>):

2017:

2018: 30%

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):**

For 2017, we received funds from IASC, SOLAS and CLiC (see above)

For 2018, we applied for funds from the EuroMarine Network (see above).

In both 2017 and 2018, SCOR provides funding for full members of the ECV-ice working group, who have strong overlap with BEPSII's task group 1.

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

SOLAS and CLiC have endorsed BEPSII as a longer-lived activity. In 2017 BEPSII received support through IASC as a cross-cutting activity.

In addition, several members of the BEPSII community represent links to other groups, such as SCAR's Expert Group "ASPeCT" and a new emerging IGAC activity on chemistry, biology and physics in cold regions, "CATCH".

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

The BEPSII mailing list comprises of approximately 130 participants from 17 countries. One of the 5 task groups is specifically dedicated to Outreach. We currently maintain several social media to reach different communities:

- BEPSII website: <https://sites.google.com/site/bepsiiwg140/home> (links from the SCAR website refer to this site)
- BEPSII Twitter profile: @BEPSII\_seaice
- BEPSII Facebook page: <https://www.facebook.com/SCOR.BEPSII/>
- BEPSII *Elementa* special feature website: <https://home.elementascience.org/special-features/biogeochemical-exchange-processes-at-sea-ice-interfaces-bepsii/>

In addition, as activity of the Outreach task group, the organization of a summer school or "field school" for Ph-D candidates and post docs is under investigation.

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

Maria van Leeuwe: [m.a.van.leeuwe@rug.nl](mailto:m.a.van.leeuwe@rug.nl)

Janne-Markus Rintala: [janne.rintala@helsinki.fi](mailto:janne.rintala@helsinki.fi)

Klaus Meiners: [Klaus.Meiners@aad.gov.au](mailto:Klaus.Meiners@aad.gov.au)

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started
Chair	Jacqueline	Stefels	University of Groningen	Netherlands	<a href="mailto:j.stefels@rug.nl">j.stefels@rug.nl</a>	Sept. 2016
co-chair	Janne-Markus	Rintala	University of Helsinki	Finland	<a href="mailto:janne.rintala@helsinki.fi">janne.rintala@helsinki.fi</a>	Sept. 2016
connect to ASPeCT	Klaus	Meiners	Australian Antarctic Division	Australia	<a href="mailto:Klaus.Meiners@aad.gov.au">Klaus.Meiners@aad.gov.au</a>	Sept. 2016
member	Maria	van Leeuwe	University of Groningen	Netherlands	<a href="mailto:m.a.van.leeuwe@rug.nl">m.a.van.leeuwe@rug.nl</a>	Sept. 2016
member	Jeff	Bowman	Scripps Institute of Oceanography	USA	<a href="mailto:jsbowman@ucsd.edu">jsbowman@ucsd.edu</a>	Sept. 2016

*\* Please include any APECS representative / Junior Officers*

### Other members

First Name	Last Name	Affiliation	County	Email
Nadja	Steiner	Fisheries & Oceans Canada	Canada	<a href="mailto:Nadja.Steiner@canada.ca">Nadja.Steiner@canada.ca</a>
Martin	Vancoppenolle	LOCEAN – UPMC, Paris	France	<a href="mailto:martin.vancoppenolle@locean-ipsl.upmc.fr">martin.vancoppenolle@locean-ipsl.upmc.fr</a>
Bruno	Delille	University of Liege	Belgium	<a href="mailto:Bruno.Delille@ulg.ac.be">Bruno.Delille@ulg.ac.be</a>
Letizia	Tedesco	SYKE, Helsinki	Finland	<a href="mailto:Letizia.Tedesco@ymparisto.fi">Letizia.Tedesco@ymparisto.fi</a>
Hauke	Flores			
Francois	Fripiat	MPI	Germany	<a href="mailto:f.fripiat@mpi.de">f.fripiat@mpi.de</a>
Daiki	Nomura	Hokkaido University	Japan	<a href="mailto:daiki.nomura@fish.hokudai.ac.jp">daiki.nomura@fish.hokudai.ac.jp</a>
Delphine	Lannuzel	University of Tasmania	Australia	<a href="mailto:Delphine.Lannuzel@utas.edu.au">Delphine.Lannuzel@utas.edu.au</a>
Lisa	Miller	Fisheries & Oceans Canada	Canada	<a href="mailto:Lisa.Miller@dfo-mpo.gc.ca">Lisa.Miller@dfo-mpo.gc.ca</a>

These members are BEPSII steering committee members, in addition to the SCAR AG members. In addition there are 100+ more persons on the mailing list.

### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*

Until now, we mostly used Skype as an online meeting tool, but we are thinking of using a more dedicated meeting tool to use, if needed with more subscribers. Help from SCAR would be welcome.

We are also looking for a way to easily maintain a mailing list where people can subscribe and unsubscribe.



SCAR Group

SG

Person

Responsible:

xxx

PS/LS/GS

xxx

## SCAR Executive Committee Meeting 2017

Brno, Czech Republic, 31 July - 2 Aug 2017

# Integrated Science for the Sub Antarctic 2016-2017 Report

**Report Author(s): Gary Wilson**

**Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

The timing of this report is a little unfortunate as we will hold a workshop in association with the SCAR Biology Symposium in Leuven, Belgium on July 15 2017. At this stage most of our effort is in preparation. At the Symposium we will also select new officers as Prof Stephen Chown has stepped down from the Action Group after being elected as President of SCAR. We expect to use SCAR funds for venue hire and catering for the workshop, but we do not have a specific amount yet.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

## Progress and Plans:

### **Major Activities and Significant Progress from the past year (<500 words):**

In the last Austral Summer, the Swiss Polar Institute undertook the Antarctic Circumnavigation Expedition. While not an ISSA initiative many ISSA researchers have been contributing. The first Scientific Results will begin to be shared at a workshop in Switzerland in September, 2017.

The South Atlantic Environmental Research Institute have been progressing the plans for a Research Station on South Georgia to address many of the ISSA initiatives. The next planning meeting will be held in July 2017.

### **Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

We expect to publish an action/position paper for integrated Sub Antarctic research following the symposium. We already have issues identified from our last workshop in Punta Arenas and we will now add actions and suggested directions from the next workshop. We also expect to include a current status of understanding.

We also expect to see a number of presentations in association with the next SCAR Open Science Conference in Davos.

### **Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

See above

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**



## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
07-17	Workshop	\$500	Gary Wilson	Gary.wilson@otago.ac.nz
03-18	Publication costs	\$500	Gary Wilson	
06-18	Meeting at SCAR OSC	\$500	Gary Wilson	
04-18	Travel assistance for participants	\$1500	Gary Wilson	

### Briefly describe what the funds will be used for and what the desired results are:

The funds are being directed toward activities that will bring a wide range of participants to meetings, especial non-traditional participants who have strong Sub Antarctic presence.

### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017: 50%  
2018: 50%

### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):

2017: 30%  
2018: 50%

## Linkages

Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

The New Zealand Antarctic Research Institute has supported travel of a number of participants in meetings

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

Gary Wilson

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
Chair	Gary	Wilson	Otago University	New Zealand	Gary.wilson@otago.ac.nz		
	Bettine	Van Vuuren		South Africa			

[SCAR Group Name]: 2016-2017 Annual Report, cont.

	Marc elo	Leppe		Chile			
	Dana	Bergstr om		Austra lia			
	Aleks	Teraud s		Austra lia			
	Pete	Convey		UK			

*\* Please include any APECS representative / Junior Officers*

**Other members**

First Name	Last Name	Affiliation	County	Email

**Requests to the Secretariat:**

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*



SCAR Group

SG

Person  
Responsible:

AG Remote  
Sensing

PS/LS

Hans-Ulrich  
Peter

## SCAR Executive Committee Meeting 2017

Brno, Czech Republic, 31 July - 2 Aug 2017

# SCAR Action Group “Development of a satellite-based, Antarctic-wide, remote sensing approach to monitor bird and animal populations” 2016-2017 Report

**Report Author(s): Osama Mustafa & Hans-Ulrich Peter**

**Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

- Organizing session during SCAR Open Science Conference 2016
- Organizing Action group-meeting during SCAR Open Science Conference 2016
- Initiation and preparation of an official request of SCAR to Copernicus Program/European Space Agency (ESA) concerning coverage of satellites
- Presentation of first results of the coverage extension at the Annual Forum for Remote Sensing and Copernicus 2017
- Organizing a workshop during SCAR Biology Symposium 2017

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

no

## Progress and Plans:

### Major Activities and Significant Progress from the past year (<500 words):

- Organizing session during the SCAR Open Science Conference 2016

August 22 and 23, 2016: Session 21: Remote sensing of the Antarctic environment: Multidisciplinary Advances: Convener : Hong Tat Ewe, Shridhar Jawak, Rob Massom, Oscar Schofield & Hans-Ulrich Peter  
20 talks and 16 poster presentations. One young scientist got financial support from the Action Group

- Organizing Action group-meeting during SCAR Open Science Conference 2016

August 20, 2016: Joint meeting of the SCAR Action Group on remote sensing of animals and the new SOOS working Group Censusing Animal Populations from Space (CAPS). Half of the day was devoted to SCAR Action Group business, and half to discussing the CAPS pack-ice seal census project.

- Initiation and preparation of an official request of SCAR to European Space Agency (ESA) concerning coverage of satellites

Following a discussion at the workshop during SCAR OSC 2016 members of the Action Group initiated and prepared an official request of SCAR as representative of the Antarctic scientific community to the European Space Agency (ESA) on expanding the coverage of Sentinel-2 mission satellites. In November 2016 this request was positively answered and fully supported by ESA. The image acquisition of Sentinel-2 was extended from its former limitation to 56°S to the Antarctic continent for selected periods of the season 2016/17 and with regular coverage from 2017/18 season on. With this, Antarctic researchers from various fields have the opportunity to use the free available and high quality imagery of this new platform.

- Presentation of first results of the coverage extension at the Annual Forum for Remote Sensing and Copernicus 2017

At the Annual Forum for Remote Sensing and Copernicus 2017 first results in consequence of the extension of Sentinel-2 coverage could be presented. The analysis outlines the potential of Sentinel-2 images for monitoring bird populations in the Antarctic.

- Organizing workshop during SCAR Biology Symposium 2017

July 9, 2017: Workshop “Drones in Polar Biology” will be held: Organized by H.-U. Peter, O. Mustafa & M.-C. Rümmler

Drones (UAVs) are used more and more in different fields of Antarctic science. This technology is used for groundtruthing of satellite imagery and as a standalone remote sensing survey method. To discuss the opportunities and challenges of this promising technology the AG wants to use the occasion of the SCAR Biology Symposium 2017 for a side event workshop.

Topics of the workshop will be:

- Monitoring of Antarctic wildlife, esp. penguins and seals
- Botanical and physiological research
- Avoidance of disturbance of birds and seals: recommendations for guidelines for CEP

**Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

The AG will follow the future developments: Recent technology in geospatial science over the last decade have motivated major advances in our understanding of the Antarctic continent and surrounding oceans. These developments have (and will) included the use of new satellite remote sensing platforms (e.g. WorldView, Sentinel and Landsat series of satellites) and methods to obtain geospatial information, such as, automatic/ semi-automatic extraction of information from remote sensing images, new mapping techniques for ice sheet properties (roughness, thickness and velocity) usage of remotely sensed data for Antarctic glaciological and mass balance studies and ice sheet flow and geodynamics over short temporal scales. Other important points are remote sensing of the marine cryosphere (including sea ice and its snow cover) and its interactions with ocean and atmosphere and generation of digital elevation models (DEMs) of Antarctic regions. The fast developments in monitoring bird and seal populations and habitats with remote sensing applications used unmanned aerial vehicle (UAV) including disturbance capability and environmental impacts of UAVs on bird and seal populations.

Another development is the use of Autonomous Underwater Vehicle (AUV) technology to investigate small-scale characteristics and changes. Much of this research is cross-disciplinary in its nature and this has led to noteworthy advances across a range of Antarctic scientific disciplines.

The Action Group will focus in the future on such multi-disciplinary research and includes new and emerging research frontiers in Antarctic science. The AG will merge snow and ice studies with climate research, ice-ocean interaction, and animal monitoring via remote sensing. The next meeting will be during SCAR Biology in Belgium (2017) and SCAR/IASC Conference in Davos (Switzerland) 2018.

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

Ancel, A., Cristofari, R., Trathan, P.N., Gilbert, C., Fretwell, P.T., Beaulieu, M., 2017. Looking for new emperor penguin colonies? Filling the gaps. Glob. Ecol. Conserv. 9, 171–179. doi:10.1016/j.gecco.2017.01.003

- Burton-Johnson, A., Black, M., Fretwell, P.T., Kaluza-Gilbert, J., 2016. A fully automated methodology for differentiating rock from snow, clouds and sea in Antarctica from Landsat imagery: A new rock outcrop map and area estimation for the entire Antarctic continent. *Cryosphere Discuss.* 1–16. doi:10.5194/tc-2016-56
- Fretwell, P.T., Scofield, P., Phillips, R.A., 2017. Using super-high resolution satellite imagery to census threatened albatrosses. *Ibis* 159, 481–490. doi:10.1111/ibi.12482
- Hodgson, J.C., Baylis, S.M., Mott, R., Herrod, A., Clarke, R.H., 2016. Precision wildlife monitoring using unmanned aerial vehicles. *Sci. Rep.* 6, 22574. doi:10.1038/srep22574
- Humphries, G.R.W., Naveen, R., Schwaller, M., Che-Castaldo, C., McDowall, P., Schrimpf, M., Lynch, H.J., 2017. Mapping Application for Penguin Populations and Projected Dynamics (MAPPPD): data and tools for dynamic management and decision support. *Polar Rec.* 53, 160–166. doi:10.1017/S0032247417000055
- Korczak-Abshire, M., Kidawa, A., Zmarz, A., Storvold, R., Karlsen, S.R., Rodzewicz, M., Chwedorzewska, K., Znój, A., 2016. Preliminary study on nesting Adélie penguins disturbance by unmanned aerial vehicles. *CCAMLR Sci.* 23, 1–16.
- LaRue, M.A., Stapleton, S., Anderson, M., 2017. Feasibility of using high-resolution satellite imagery to assess vertebrate wildlife populations: Satellite Imagery for Wildlife Research. *Conserv. Biol.* 31, 213–220. doi:10.1111/cobi.12809
- Lynch, H.J., White, R., Naveen, R., Black, A., Meixler, M.S., Fagan, W.F., 2016. In stark contrast to widespread declines along the Scotia Arc, a survey of the South Sandwich Islands finds a robust seabird community. *Polar Biol.* doi:10.1007/s00300-015-1886-6
- McDowall, P., Lynch, H.J., 2017. Ultra-Fine Scale Spatially-Integrated Mapping of Habitat and Occupancy Using Structure-From-Motion. *PloS One* 12, e0166773.
- Mustafa, O., Esefeld, J., Grämer, H., Maercker, J., Rümmler, M.-C., Pfeifer, C., 2017. Monitoring penguin colonies in the Antarctic using remote sensing data. *Texte Texte.*
- Southwell, C., Emmerson, L., Takahashi, A., Barbraud, C., Delord, K., Weimerskirch, H., 2017a. Large-scale population assessment informs conservation management for seabirds in Antarctica and the Southern Ocean: A case study of Adélie penguins. *Glob. Ecol. Conserv.* 9, 104–115. doi:10.1016/j.gecco.2016.12.004
- Southwell, C., Emmerson, L., Takahashi, A., Kato, A., Barbraud, C., Delord, K., Weimerskirch, H., 2017b. Recent studies overestimate colonization and extinction events for Adélie Penguin breeding colonies. *The Auk* 134, 39–50. doi:10.1642/AUK-16-125.1
- Witharana, C., LaRue, M.A., Lynch, H.J., 2016. Benchmarking of data fusion algorithms in support of earth observation based Antarctic wildlife monitoring. *ISPRS J. Photogramm. Remote Sens.* 113, 124–143. doi:10.1016/j.isprsjprs.2015.12.009
- Witharana, C., Lynch, H., 2016. An Object-Based Image Analysis Approach for Detecting Penguin Guano in very High Spatial Resolution Satellite Images. *Remote Sens.* 8, 375. doi:10.3390/rs8050375



Youngflesh, C., Jenouvrier, S., Li, Y., Ji, R., Ainley, D.G., Ballard, G., Barbraud, C., Delord, K., Dugger, K.M., Emmerson, L.M., Fraser, W.R., Hinke, J.T., Lyver, P.O., Olmastroni, S., Southwell, C.J., Trivelpiece, S.G., Trivelpiece, W.Z., Lynch, H.J., 2017. Circumpolar analysis of the Adélie penguin reveals the importance of environmental variability in phenological mismatch. *Ecology* n/a-n/a. doi:10.1002/ecy.1749

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

no

## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
06-18	SCAR/IASC - Meeting Davos: for young participants	2x1000 (from LS & PS)	H.-U. Peter	<a href="mailto:bpe@uni-jena.de">bpe@uni-jena.de</a>

**Briefly describe what the funds will be used for and what the desired results are:**

Invitation of young participants for the SCAR Meeting: financial help

**Provide an estimate on the % of the budget to be used for support of early career researchers:**

2017: (will be used in 2018)

2018: 100 %

Budget Justification (please indicate % of budget to support early career scientists and scientists from countries with small Antarctic programmes):

**Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):**

2017:

2018: ?

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):**

The AG is supported by LS and PS.

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

LS, PS, EGBAMM, CAPS

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

The results of several group members regarding the disturbance of wildlife by drones were the base for a number of conference papers submitted to ATCM/CEP giving an input for the discussion on guidelines for the use of drones near bird and seal concentrations.

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to act form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications.

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

Please ask me: Hans-Ulrich.Peter@uni-jena.de

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
Chair	Hans-Ulrich	Peter	Polar and Bird Ecology Group Jena	Germany	bpe@uni-jena.de	2014	?
Co-Chair	Osama	Mustafa	ThINK	Germany	Osama.mustafa@think-jena.de		


*\* Please include any APECS representative / Junior Officers*

#### Other members

First Name	Last Name	Affiliation	County	Email
Barbara	Bollard Breen	Auckland University of Technology	New Zealand	bbreen@aut.ac.nz
Horst	Bornemann	AWI	Germany	
Peter	Fretwell	BAS	UK	ptf@bas.ac.uk
Mike	Goebel	NOAA	USA	mike.goebel@noaa.gov
Mark	Hindell	University of Tasmania	Australia	mark.hindell@utas.edu.au
Ewe	Hong Tat	Universiti Tunku Rahman	Malaysia	eweht@utar.edu.my
Shridhar	Jawak	Nat. Centre for Antarctic & Ocean Research	India	shridhar.jawak@gmail.com
Malgorzata	Korczak-Abshire	Polish Academy of Sciences	Poland	mka@ibb.waw.pl
Douglas	Krause	NOAA	USA	douglas.krause@noaa.gov
Erik	Kusch		Germany	erik@i-solution.de
Michelle	La Rue	University of Minnesota	USA	larue010@gmail.com
Heather	Lynch	Stony Brook University	USA	heather.lynch@stonybrook.edu
Rob	Massom	Australian Antarctic Division	Australia	Rob.Massom@aad.gov.au
Paul	Morin	Polar Geospatial Center	USA	lpaul@umn.edu
Osama	Mustafa	ThINK	Germany	osama.mustafa@think-jena.de
Dominik	Nachtsheim	TiHo	Germany	Dominik.Nachtsheim@tih

	<b>eim</b>	<b>Hannover</b>		<b>o-hannover.de</b>
<b>Christian</b>	<b>Pfeifer</b>	<b>ThINK</b>	<b>Germany</b>	<b>christian.pfeifer@think-jena.de</b>
<b>Sharon</b>	<b>Robinson</b>	<b>University of Wollongong</b>	<b>Australia</b>	<b>sharonr@uowmail.edu.au</b>
<b>Marie-Charlott</b>	<b>Rümmler</b>	<b>Jena University</b>	<b>Germany</b>	<b>marie-charlott.ruemmler@uni-jena.de</b>
<b>Oscar</b>	<b>Schofield</b>	<b>Rutgers University</b>	<b>USA</b>	<b>oscar@marine.rutgers.edu</b>
<b>Mathew</b>	<b>Schwaller</b>	<b>NASA Goddard Space Flight Center</b>	<b>USA</b>	<b>mathew.r.schwaller@nasa.gov</b>
<b>Colin</b>	<b>Southwell</b>	<b>Australian Antarctic Division</b>	<b>Australia</b>	<b>Colin.Southwell@aad.gov.au</b>
<b>Phil</b>	<b>Trathan</b>	<b>BAS</b>	<b>UK</b>	<b>pnt@bas.ac.uk</b>
<b>Goncalo</b>	<b>Vieira</b>	<b>Universidade de Lisboa</b>	<b>Portugal</b>	<b>vieira@campus.ul.pt</b>
<b>Henry</b>	<b>Weimerskirch</b>	<b>CEBC CNRS</b>	<b>France</b>	<b>henriw@cebc.cnrs.fr</b>

### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*



**SCAR Group**

SG

Person

Responsible:

**SO-CPR**

LS

Kunio

Takahashi

## **SCAR Executive Committee Meeting 2017**

**Brno, Czech Republic, 31 July - 2 Aug 2017**

# **EG-Continuous Plankton Recorder and the SCAR Southern Ocean CPR Survey (SO-CPR) 2016-2017 Report**

### **Report Author(s):**

Kunio Takahashi

### **Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

We have completed about 50 CPR tows during the 2016/17 Antarctic field season from research vessels from Australia, New Zealand and Japan. Approximately 250,000 nautical miles have been sampled since the commencement of the SO-CPR Survey in 1991, representing some 50,000 samples for nearly 260 zooplankton taxa coupled with environmental data.

The workshop on a special report of the Status and Trends of Southern Ocean Zooplankton was conducted in late November 2016 at National Institute of Polar Research Japan. The purposes of the workshop were to summarize the SO-CPR Survey activities of the first 25 years of the survey, and to advance the writing task of the Status and Trends Report of Southern Ocean Zooplankton.

The standards workshop was held at the Australian Antarctic Division on 12 to 16 December 2016. The purposes of the workshop were to confirm that consistent and high standards of species identification, methodology, and data quality were being maintained amongst main analysts in the SO-CPR Survey.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*



## Progress and Plans:

### **Major Activities and Significant Progress from the past year (<500 words):**

We have completed about 50 CPR tows during the 2016/17 Antarctic field season from research vessels from Australia, New Zealand and Japan. Approximately 250,000 nautical miles have been sampled since the commencement of the SO-CPR Survey in 1991, representing some 50,000 samples for nearly 260 zooplankton taxa coupled with environmental data.

As a last task of the EG-CPR of eight years, we are continuing to work on a special report to SCAR on the Status and Trends of Southern Ocean Zooplankton. This report will bring together all information from 25 years of the SO-CPR Survey into one report. In order to advance the writing task of the Status report, we held a workshop in Tokyo to set the framework of the report, collate publications and commence the review. We were reviewing all publications, more than 50, which included peer reviewed papers, proceedings, reports, and theses. We aim to complete and present report at the SCAR Business Meetings and Open Science Conference in Switzerland 2018.

Our important future task for maintaining high quality data is developing and enhancing the skills of current and new technicians. Therefore, as first step, we held the workshop with important technicians at the AAD in December 2016. The primary aim of the workshop was to confirm that main analysts of the long-standing SO-CPR survey are maintaining consistent high standards of species identification, methodology, and data quality. A secondary aim of the workshop was to discuss future training methods such as a SO-CPR procedures manual and zooplankton counting rule book. We re-assessed the current taxonomic and counting rules from the larger workshop report in Tokyo 2010 and we updated the SO-CPR taxonomic list. The new counting rule and taxonomic list will be further described in a new procedures manual.

### **Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

We proposed production of a special report to SCAR on the status and trends of Southern Ocean zooplankton, as a last task of the EG-CPR of eight years. This would be based primarily on SO-CPR data (cross-referenced with other studies, if available), and would collate current knowledge of the status of zooplankton including known species, community structure and biogeography, and perhaps assessment of their possible roles in the ecosystem. Much of this work has already been published in CPR-based research papers, atlases, reviews, and theses (>50 in total). The report will also identify any trends (seasonal or long-term) in relation to changes in abundance, shifts in distribution, timing of events, or changes in composition and community composition. It will bring together in one document all information derived from

25 years of the SO-CPR Survey. We set the aim of completing the report for presentation at the SCAR Business Meeting and Open Science Conference in Switzerland 2018.

To date we have surveyed approximately 70% of the Southern Ocean, but clearly there are distinct gaps where sampling has been limited or has not occurred because of the lack of shipping activity. To expand the program we are at various stages of involving and assisting other nations in participating. We are planning a training workshop for 2017 to help India initiate Southern Ocean CPR work. We have had discussions with scientists at the Goa National Centre for Antarctic and Oceanic Research (NCAOR) about running a CPR from Goa to Antarctica during the annual resupply of India's Antarctic station. To achieve this we will need to provide the necessary training to participants. The training workshop is currently scheduled on August or September 2017.

The SO-CPR Database Group will focus more on maintaining the quality control and assurance of data entered into the SCAR SO-CPR Database. Our dataset is an important SCAR Business Product, and is dependent on regular taxonomy and methodology standardization workshops to maintain and ensure quality assurance and control of the data. We agreed that there should be a larger workshop every two years to ensure that the high standards of the SO-CPR program are maintained. We will plan a larger standardization workshop in 2018. Countries interested in joining SO-CPR will be encouraged to participate in those workshops

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

Publications

Kunio T. Takahashi, Graham W. Hosie and Tsuneo Odate (2017)  
Intra-annual seasonal variability of surface zooplankton distribution patterns along a 110°E transect of the Southern Ocean in the austral summer of 2011/12.

Polar Science 12: 46-58 DOI: 10.1016/j.polar.2016.06.09

Kunio T. Takahashi, John A. Kitchener, Karen Robinson and Graham W. Hosie (2017)  
Report on the Southern Ocean Continuous Plankton Recorder (SO-CPR) Standards Workshop 2016: SCAR SO-CPR Database Export Group.  
Antarctic Record (in press).

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

The SCAR SO-CPR Database is registered with the Australian Antarctic Data Centre (AADC), and can be accessed at  
[http://data.aad.gov.au/aadc/metadata/metadata.cfm?entry\\_id=AADC-00099](http://data.aad.gov.au/aadc/metadata/metadata.cfm?entry_id=AADC-00099).

From there it is distributed to various databases including GACS, biodiversity.aq, OBIS, GBIF, the Atlas of Living Australia, and others.

## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
08-09/2017	Training workshop in India	3000	Kunio Takahashi	Takahashi.kunio@nipr.ac.jp
2018	Standards workshop	3000	Kunio Takahashi	Takahashi.kunio@nipr.ac.jp

#### Briefly describe what the funds will be used for and what the desired results are:

We are continuing to work with NCAOR in Goa India to provide a training workshop on Southern Ocean CPR methodology and taxonomy in order to bring them into the SO-CPR programme. The training workshop is currently scheduled on September 2017. I am going to invite Mr. John Kitchener (Deputy Chair of EG-CPR, AAD) to the India training workshop and to use a SCAR budget for his travel fund.

#### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017: 0%  
2018: ?

#### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):

2017: 0%  
2018: ?

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR** (eg. *Funds from another organization for a workshop*):

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

The SO-CPR Survey is a founding member of the Global Alliance of CPR Surveys (GACS). The general goal of GACS is to understand changes in plankton biodiversity at ocean basin scales through a global alliance of CPR surveys.

The database is hosted by the Australian Antarctic Data Centre. The data are shared with GACS, transmitted to SCAR's biodiversity.aq, transmitted to other data portals such as Ocean Biogeographic Information System (OBIS) and Atlas of Living Australia, and the data are offered to CCAMLR.

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network.** (*coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved*) (**<250 words**):

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Terminated
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<b>Chair</b>	Kuni o	Takah ashi	NIPR	Japan	Takahashi.kun io@nipr.ac.jp	2012	
<b>Deputy Chair</b>	Joh n	Kitche ner	AAD	Australia	John.Kitchene r@aad.gov.au	08/20 16	

*\* Please include any APECS representative / Junior Officers*

#### Other members

First Name	Last Name	Affiliation	County	Email
<b>Karen</b>	Robinson	NIWA	NZ	Karen.robinson@niwa.co.nz
<b>Marianne</b>	Wootton	SAHFOS	UK	mawo@sahfos.ac.uk
<b>Hans</b>	Verheye	DEA	South Africa	hans.verheye@gmail.com
<b>Philippe</b>	Koubbi	UPMC	France	philippe.koubbi@upmc.fr
<b>Erik</b>	Muxagata	URG	Brazil	e.muxagata@gmail.com
<b>Julie</b>	Hall	NIWA	NZ	j.hall@niwa.co.nz
<b>Ben</b>	Raymond	AAD	Australia	Ben.Raymond@aad.gov.au
<b>Graham</b>	Hosie	SAHFOS	Australia	graham.hosie@iinet.net.au

#### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*



**SCAR Group**

SG

Person  
Responsible:

**ICED**

PS/LS/GS

Nadine  
Johnston

## **SCAR Executive Committee Meeting 2017**

**Brno, Czech Republic, 31 July - 2 Aug 2017**

# **Name of SCAR Co-Sponsored Group** **2016-2017 Report**

**Report Author(s):** The Integrating Climate and Ecosystem Dynamics in the Southern Ocean programme (ICED): Nadine Johnston (Programme Manager), Rachel Cavanagh (Executive Officer) and Eugene Murphy (ICED SSC Chair), British Antarctic Survey, UK.

### **Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

ICED is a regional programme of Future Earth and the Scientific Committee on Ocean Research's (SCOR) Integrated Marine Biosphere Research programme (IMBeR), and is a Co-sponsored Group of SCAR. ICED is undertaking integrated circumpolar analyses to improve our understanding of change and the implications for Southern Ocean ecosystems and their management. By providing a focus for linking Southern Ocean research communities across disciplines a diverse range of science is underway. Recent highlights include an expanding body of research on key species and food webs, on the links between biogeochemistry and ecology, and on the effects of change. ICED's current major focus is to build on this to comprehensively assess (and where possible quantify) the impacts of change on Southern Ocean ecosystems. This will be achieved through the analysis and integration of available data together with the development of models, scenarios and projections. These activities and outputs will provide valuable information for ecosystem-based management and policy.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

ICED wishes to continue to work with SCAR to complement and add value to our work, learn from shared experience, and collectively address common goals. We would like SCAR to particularly note the mutually beneficial opportunities for strengthening interactions and

collaborations with ICED. This includes (i) our work with the Commission for the Conservation of Marine Living Resources (CCAMLR) and the Committee for Environmental Protection (CEP), see below Plans and Linkages, and (ii) our work on models, scenarios and projections of change in Southern Ocean ecosystems (including our upcoming projections workshop and the ICED-sponsored International conference on Marine Ecosystem Assessment of the Southern Ocean (MEASO) in 2018, see below under Plans). As such we recommend that where possible, SCAR encourages, endorses and participates in these activities.

## Progress and Plans:

### **Major Activities and Significant Progress from the past year (<500 words):**

#### **I Understanding and quantifying the state and variability of Southern Ocean ecosystems:**

ICED has continued to develop whole ecosystem level understanding of the structure and functioning of Southern Ocean of ecosystems, their variability and response to change across a range of spatial and temporal scales. We have focused detailed work on key species from Antarctic krill to whales (e.g. Silk et al. 2016; Jackson et al. 2016, Xavier et al. 2016), the structure of food webs (e.g. Horswill et al. 2016), and comparative studies with the Arctic, focussing on the role of biodiversity in ecosystem structure and function (Murphy et al. 2016a), and developing ecosystem essential ocean variables (eEOVs, Constable et al. 2016). We have also examined physical, chemical and biological interactions (e.g. Hunt et al. 2016) and the effects of past and recent variability and change, such as ocean acidification (e.g. Bellerby et al. in prep., Heiden et al 2016, Manno et al. 2016, Trimborn et al 2016).

#### **II Improving scenarios, predictions and projections of future Southern Ocean ecosystems at multiple scales:**

We have used the above research to further our model development, working towards a suite of models of physical dynamics (ocean circulation and climate), biogeochemical cycles, and biological dynamics (life histories, population dynamics, food web structure) within a hierarchical framework of models of different spatial, temporal and trophic resolution. The ultimate aim is to advance end-to-end ecosystem modelling approaches that integrate physical, chemical and biological processes. We have used our understanding of drivers and impacts of climate change (under I above) to produce scenarios and projections of change. We have examined output from global climate models to model the future under- ice habitats of Antarctic krill (Melbourne-Thomas et al. 2016) and generated an ICED community paper (Cavanagh et al. sub.) presenting findings from a previous ICED workshop (Southern Ocean Food webs and Scenarios of Change) with a focus on sea ice (given its crucial ecological role and the challenges it presents to climate modellers).

**III Improving and achieving sustainable ocean governance:** Building on our work to date, we have strengthened the interface between science and policy to ensure that ICED science is relevant and utilized by policy makers. As a result of our dialogue, formal inputs and participation in meetings of the Antarctic Treaty System (ATS), via the CEP and CCAMLR (United Kingdom, 2016, 2017, Murphy et al 2016b) and SCAR (SCAR 2016) there is now



formal recognition by the ATS of a role for ICED in providing valuable external input (Grant and Penhale, 2016 a, b, c, Belchier 2016, SC-CAMLR 2017). Closer collaborations between the above (and others) will generate a step change in our ability to jointly identify and solve problems. We are currently organizing an ICED Projections Workshop with CCAMLR (to be held alongside and contribute to the ICED-sponsored MEASO conference, 2018, see below). ICED will also input to CCAMLR WG-EMM Argentina, 2017 (Murphy et al. submitted). ICED scientists have also continued to participate in the development of the Ross Sea Marine Protected Area and provided scientific contributions to CCAMLR, IWC, Agreement on the Conservation of Albatrosses and Petrels and the Convention for the Conservation of Antarctic Seals (see selected references).

### **Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

#### **Forthcoming science publications include:**

- **A synergistic approach to understanding the ecological effects of climate change. Cavanagh et al. (sub.).** This interdisciplinary work presents the findings from the ICED Workshop on Southern Ocean Food webs and Scenarios of Change with a focus on sea ice given its crucial ecological role and the challenges it presents to climate modellers. The representation of sea ice in existing global climate models was evaluated, with an emphasis on ecologically relevant aspects. With this as a foundation, ICED will now work towards a set of community-agreed future scenarios for the Southern Ocean, followed by a focus on projections. The outcomes of this work will also be used in the upcoming ICED (and CCAMLR) Projections workshop focused on Antarctic krill (see below);
- **Future directions in Southern Ocean ecosystems research' (running title). (in prep.). Johnston et al. and the ICED SSC** This manuscript will include motivations for the development of the ICED Programme in coordinating and directing circumpolar integrated ecosystem science, its achievements to date, and future scientific directions in Southern Ocean ecosystems and climate research;
- **Southern Ocean Acidification (in prep.). Bellerby, Constable, Hoppema, Hoppema, Kurihara, Lenton, Lo Monaco, Lovenduski, Meredith, Murphy, Shadwick, Suckling Trimborn. SCAR Reports.** SCAR formed an Action Group (AG) on Ocean Acidification to write this report. The AG and publication has been led by Richard Bellerby (ICED scientist and SSC member), and includes contributions from Constable (ICED SSC scientist member) Murphy (ICED scientist and SSC chair).

#### **Forthcoming activities include:**

- A range of ICED-led meetings to synthesise our research to date, forming a comprehensive view of status and changes in Southern Ocean ecosystems. Planned activities include:

## [SCAR Group Name]: 2016-2017 Annual Report, cont.

- ICED co-sponsored MEASO meeting, Hobart, Australia, 2018. This conference will mark 10 years since the launch of ICED and provide a forum for presenting syntheses and recent science from ICED scientists and the wider Southern Ocean science community, and consideration of future scenarios and projections of change in Southern Ocean ecosystems. The conference is also endorsed by SCAR (Ant-TERA, AntEco and Life Sciences Groups, and SCAR Expert group on Antarctic Climate Change and the Environment), SOOS, IMBeR and Climate Impacts on Oceanic Top Predators (CLIOTOP).
- Collaborations to strengthen our role within bodies such as CCAMLR's Scientific Committee (SC-CCAMLR), CEP, SCAR and Future Earth to ensure the provision and uptake of policy relevant science in management and conservation. This includes:
  - An ICED Projections Workshop (in close collaboration with CCAMLR, and will take place alongside MEASO 2018). This will be focused on assessing the potential impacts of climate change on the krill-centred ecosystem the Antarctic Peninsula and Scotia Sea region. This will serve as a model for projecting the impacts of future change on other species and regions across the Southern Ocean. This work will not only be relevant to the work of CCAMLR, but also to bodies such as CEP, SCAR, IPCC, and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).
  - ICED input into CCAMLR WG-EMM, Argentina, Jul 2017. This will provide an opportunity to update CCAMLR on our collaborations to date and to further develop the science for the ICED Projections Workshop.
- ICED input to a range of meetings in 2017 including: Third International Symposium on Krill, University of St Andrews, Scotland, UK, Jun, 2017; Advances in Marine Ecosystem Modelling Research, AMEMR, Plymouth, UK, Jul 2017; SCAR Biology meeting, Brussels, Jul, 2017; IMBeR IMBIZO V, Woods Hole, USA, Oct 2017.
- ICED SSC Meeting 2018 – associated with MEASO 2018.

### **Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

N.B. Many of these involve collaborations with SCAR scientists and scientists from other relevant programmes.

#### **Selected publications**

##### **Reports and Books**

Bellerby, R, Andrew Constable, Mario Hoppema, Haruko Kurihara, Andrew Lenton, Claire Lo Monaco, Nikki Lovenduski, Michael Meredith, Eugene Murphy, Elizabeth Shadwick, Coleen C. Suckling, Scarlett Trimborn. Southern Ocean Acidification report (In Prep).

Constable, Andrew J.; Meredith, Michael P.; Ducklow, Hugh W.; Murphy, Eugene J.; Linse, Katrin; Kawaguchi, So. 2016. Impacts and effects of ocean warming on Antarctic ecosystems and species. In: Baxter, J. M.; Laffoley, D. D'A., (eds.) Explaining ocean warming: causes, scale, effects and consequences. Gland, Switzerland, IUCN, 337-355.

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Siegel, Volker; Watkins, Jonathan L. 2016. Distribution, biomass and demography of Antarctic krill. In: Siegel, Volker, (ed.) *Biology and ecology of Antarctic krill*. Switzerland, Springer International Publishing, 21-100. (Advances in Polar Ecology).

Seddon N and Cavanagh RD. 2016. The Value of Biodiversity in the Anthropocene', guest edited by Professor Nathalie Seddon (University of Oxford) and Dr Rachel Cavanagh (British Antarctic Survey). Special Feature of the Proceeding of the Royal Society B.

Tarling, Geraint A.; Fielding, Sophie. 2016. Swarming and behaviour in Antarctic krill. In: Siegel, Volker, (ed.) *Biology and ecology of Antarctic krill*. Switzerland, Springer International Publishing, 279-320. (Advances in Polar Ecology).

Trathan, Philip N.; Hill, Simeon L. 2016. The importance of krill predation in the Southern Ocean. In: Siegel, Volker, (ed.) *Biology and ecology of Antarctic krill*. Switzerland, Springer International Publishing, 321-350. (Advances in Polar Ecology).

Xavier, J. C., Fugmann, G., Beck, I., Huffman L. & Jensen, E. (2016). Education on biodiversity of the Polar Regions. In Castro, P., Azeiteiro, U.M., Bacelar Nicolau, P., Leal Filho, W., Azul, A.M. *Biodiversity's and Education for Sustainable Development (ESD) in the series Umweltbildung, Umweltkommunikation und Nachhaltigkeit - Environmental Education, Communication and Sustainability*, Peter Lang. Peter Lang GmbH International Academic Publishers Frankfurt am Main: 43-56 ISBN: 978-3-319-32317-6 (Book chapter).

### Papers

Belchier. (2016). Report of the Chair of the Scientific Committee on the CCAMLR Scientific Committee Symposium (Hobart, Australia, 13 and 14 October 2016). SC-CAMLR-XXXV/12. CCAMLR Scientific Committee XXXV 2016

Cavanagh, Rachel D.; Hill, Simeon L.; Knowland, Cheryl A.; Grant, Susie M. 2016a. Stakeholder perspectives on ecosystem-based management of the Antarctic krill fishery. *Marine Policy*, 68. 205-211. 10.1016/j.marpol.2016.03.006 <<http://dx.doi.org/10.1016/j.marpol.2016.03.006>>

Cavanagh, Rachel D.; Broszeit, Stefanie; Pilling, Graham M.; Grant, Susie M.; Murphy, Eugene J.; Austen, Melanie C. 2016b. Valuing biodiversity and ecosystem services: a useful way to manage and conserve marine resources? *Proceedings of the Royal Society of London, B*, 283 (1844), 20161635. 10.1098/rspb.2016.1635 <http://dx.doi.org/10.1098/rspb.2016.1635>

Cavanagh, RD, Murphy EJ, Bracegirdle T, Turner J et al. Submitted. Synergistic approaches to understanding the ecological effects of climate change.

Cherel, Yves; Xavier, Jose C.; de Grissac, Sophie; Trouvé, Colette; Weimerskirch, Henri. 2017. Feeding ecology, isotopic niche, and ingestion of fishery-related items of the wandering albatross *Diomedea exulans* at Kerguelen and Crozet Islands. *Marine Ecology Progress Series*, 565. 197-215. 10.3354/meps11994 <<http://dx.doi.org/10.3354/meps11994>>

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Constable, Andrew J.; Costa, Daniel P.; Schofield, Oscar; Newman, Louise; Urban, Edward R.; Fulton, Elizabeth A.; Melbourne-Thomas, Jessica; Ballerini, Tosca; Boyd, Philip W.; Brandt, Angelika; de la Mare, Bill; Edwards, Martin; Eléaume, Marc; Emmerson, Louise; Fennel, Katja; Fielding, Sophie; Griffiths, Huw; Gutt, Julian; Hindell, Mark A.; Hofmann, Eileen E.; Jennings, Simon; La, Hyoung Sul; McCurdy, Andrea; Mitchell, B. Greg; Moltmann, Tim; Muelbert, Monica; Murphy, Eugene; Press, Tony; Raymond, Ben; Reid, Keith; Reiss, Christian; Rice, Jake; Salter, Ian; Smith, David C.; Song, Sun; Southwell, Colin; Swadling, Kerrie M.; Van de Putte, Anton; Willis, Zdenka. 2016. Developing priority variables ("ecosystem Essential Ocean Variables" — eEOVs) for observing dynamics and change in Southern Ocean ecosystems. *Journal of Marine Systems*, 161. 26-41. 10.1016/j.jmarsys.2016.05.003 <http://dx.doi.org/10.1016/j.jmarsys.2016.05.003>.

Grant S, Penhale P. (2016). Report of the Joint CEP / SC-CAMLR Workshop on Climate Change and Monitoring, Punta Arenas, Chile, 19-20 May 2016. Working Paper 53. Antarctic Treaty Consultative Meeting XXXIX. ATCM XXXIX 2016

Grant S, Penhale P. (2016). Co-conveners' Report of the Joint CEP–SC-CAMLR Workshop on Climate Change and Monitoring – Introduction for WG-EMM-16. WG-EMM-16/30. CCAMLR Working Group on Ecosystem Monitoring and Management 2016

Grant S, Penhale P. (2016). Conveners' Report of the Joint CEP/SC-CAMLR Workshop on Climate Change and Monitoring. SC-CAMLR-XXXV/07. CCAMLR Scientific Committee XXXV 2016

Heiden JP, Bischof K, Trimborn S. 2016. Light intensity modulates the response of two Antarctic diatom species to ocean acidification, *Frontier Marine Science* 3: 260. DOI: 10.3389/fmars.2016.00260.

Horswill, C.; Ratcliffe, N.; Green, J.A.; Phillips, R.A.; Trathan, P.N.; Matthiopoulos, J. 2016. Unravelling the relative roles of top-down and bottom-up forces driving population change in an oceanic predator. *Ecology*, 97 (8). 1919-1928. 10.1002/ecy.1452 <http://dx.doi.org/10.1002/ecy.1452>.

Hughes, K. A., Liggett, D., Roldan, G., Wilmotte, A, and Xavier, J. C. (2016). Narrowing the science/policy gap for environmental management. *Antarctic Science* 28: 325 DOI: <http://dx.doi.org/10.1017/S0954102016000407>

Hunt, George L.; Drinkwater, Kenneth F.; Arrigo, Kevin; Berge, Jørgen; Daly, Kendra L.; Danielson, Seth; Daase, Malin; Hop, Haakon; Isla, Enrique; Karnovsky, Nina; Laidre, Kristin; Mueter, Franz J.; Murphy, Eugene J.; Renaud, Paul E.; Smith, Walker O.; Trathan, Philip; Turner, John; Wolf-Gladrow, Dieter. 2016. Advection in polar and sub-polar environments: Impacts on high latitude marine ecosystems. *Progress in Oceanography*, 149. 40-81. 10.1016/j.pocean.2016.10.004 <<http://dx.doi.org/10.1016/j.pocean.2016.10.004>>

Johnston, Murphy, Cavanagh *and the ICED SSC*. In prep. Southern Ocean Ecosystem Science: the evolution, achievements and future directions of SCOR and Future Earth's multidisciplinary international Programme 'Integrating Climate and Ecosystem Dynamics in the Southern Ocean' (ICED).

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Manno, Clara; Peck, Victoria L.; Tarling, Geraint A. 2016. Pteropod eggs released at high pCO<sub>2</sub> lack resilience to ocean acidification. *Scientific Reports*, 6. 25752. 10.1038/srep25752 <<http://dx.doi.org/10.1038/srep25752>.

Murphy, Eugene J.; Cavanagh, Rachel D.; Drinkwater, Ken F.; Grant, Susie M.; Heymans, J.J.; Hofmann, Eileen E.; Hunt, George L.; Johnston, Nadine M. 2016a. Understanding the structure and functioning of polar pelagic ecosystems to predict the impacts of change. *Proceedings of the Royal Society of London, B*, 283 (1844), 20161646. 10.1098/rspb.2016.1646 <<http://dx.doi.org/10.1098/rspb.2016.1646>.

Murphy, E., Cavanagh, R., Johnston, N., Hofmann, E. and Constable, A. (2016b). Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) programme: developing links between ICED and CCAMLR. WG-EMM-16/22. CCAMLR.

Murphy, Cavanagh, Johnston, Hofmann, Constable and others. (in prep). Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) programme: developing ICED and CCAMLR joint activities. WG-EMM-2017.

Negri, A., Daneri, G., Ceia, F., Vieira, R., Cherel, Y., Coria, N., Corbalán, A., **Xavier, J. C.** (2016). The cephalopod prey of the Weddell seal, *Leptonychotes weddellii*, a biological sampler of the Antarctic marine ecosystem. *Polar Biology* 39:561-564 DOI 10.1007/s00300-015-1794-9.

Pedro, S., **Xavier, J. C.**, Tavares, S., Trathan, P. N., Ratcliffe, N., Paiva, V. H., Renata Medeiros, Pereira, M. E., & Miguel A. Pardal, M. A. (in press). Mercury accumulation in Gentoo penguins *Pygoscelis papua*: spatial, temporal, and sexual intraspecific variations. *Polar Biology* DOI 10.1007/s00300-015-1697-9

Pereira, J. M., Vítor H. Paiva, V. H. & **Xavier, J. C.** (in press). Seabirds mapping the distribution of elusive cephalopod species. *Marine Ecology Progress Series* <https://doi.org/10.3354/meps12020>

Santiago, V., Rodrigues, T. B., Henriques, S., **Xavier, J.**, Salcedo, S., da Luz, H. N., Fonseca, J., Maia, A., Patrício, J., Sousa, G., Gil-Mohapel, J., Xastre, C., Rocha, A., Araújo, V., Taveira, A., Marques, P., Ferreira, C., Fortuna, M., Gomes, J. S., Duarte, R. dos S., & Ferreira, H. (2016). A round the world with Portuguese scientists: activities of Portuguese language. Correia, T., Moscoso, J., Santiago, V., Duarte, R. dos S. & Oliveira, R. (editors). London (in Portuguese).

SCAR (2016). Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) programme: Workshop Paper 14. Joint CEP/SC-CAMLR Workshop. Punta Arenas, Chile, 19 - 20 May 2016.

SC-CAMLR, 2016. Report of the Thirty-Fifth Meeting of the Scientific Committee, Annex 6 (Report of the Working Group on Ecosystem Monitoring and Management). CCAMLR, Hobart, Australia.

Schmidt, Katrin; Schlosser, Christian; Atkinson, Angus; Fielding, Sophie; Venables, Hugh J.; Waluda, Claire M.; Achterberg, Eric P. 2016. Zooplankton gut passage mobilizes lithogenic iron for ocean productivity. *Current Biology*, 26 (19). 2667-2673. 10.1016/j.cub.2016.07.058 <<http://dx.doi.org/10.1016/j.cub.2016.07.058>>

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Seco, J., Daneri, G., Ceia, F. R., Vieira, R. P., Hill, S. L. & **Xavier J. C.** (in press). Distribution of short-finned squid *Illex argentinus* (Cephalopoda: Ommastrephidae) inferred from the diets of Southern Ocean albatrosses using stable isotope analyses. *JMBA*.

Seco, J., Roberts, J., Ceia, F., Baeta, A., Ramos, J. A., Paiva, V. & **Xavier, J. C.** (2016). Distribution, habitat and trophic ecology of Antarctic squid *Kondakovia longimana* and *Moroteuthis knipovitchi*: inferences from predators and stable isotopes. *Polar Biology* 39: 167-175 DOI 10.1007/s00300-015-1675-2

Schulz K. G, R. G. J. Bellerby, R. Bermúdez, J. Büdenbende<sup>r</sup>, T. Boxhammer, J. Czerny, A. Engel, S. Febiri, A. Ludwig, M. Meyerhöfer, A. Larsen, A. Paul, M. Sswat, and U. Riebesell. Phytoplankton community composition and succession at increasing levels of atmospheric carbon dioxide: insights from mesocosm studies. 4th International symposium on The ocean in a high-CO<sub>2</sub> world, Hobart, Australia, 3 May 2016 - 6 May 2016.

Silk, Janet R.D.; Thorpe, Sally E.; Fielding, Sophie; Murphy, Eugene J.; Trathan, Philip N.; Watkins, Jonathan L.; Hill, Simeon L. 2016. Environmental correlates of Antarctic krill distribution in the Scotia Sea and southern Drake Passage. *ICES Journal of Marine Sciences*, 73 (9). 2288-2301. 10.1093/icesjms/fsw097 <<http://dx.doi.org/10.1093/icesjms/fsw097>>

Trimborn S, Thoms S, Brenneis T, Heiden JP, Beszteri S, Bischof K. 2016. Two Southern Ocean diatoms are more sensitive to ocean acidification and changes in irradiance than the prymnesiophyte *Phaeocystis antarctica*, *Physiologia plantarum*. DOI: 10.1111/ppl.12539.

United Kingdom (2016). Report on the activities of the Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) programme. Information Paper 64. Antarctic Treaty Consultative Meeting XXXIX Information Paper 64. Santiago, Chile, 23 May - 1 June 2016

United Kingdom (2017) Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) programme. Antarctic Treaty Consultative Meeting LX, Information Paper 52. 22 May 2017 - 01 Jun 2017, Beijing, China.

Xavier, Jose Carlos; Ferreira, Sónia; Tavares, Sílvia; Santos, Nuno; Mieiro, Cláudia Leopoldina; Trathan, Phil N.; Lourenço, Sílvia; Martinho, Filipe; Steinke, Dirk; Seco, José; Pereira, Eduarda; Pardal, Miguel; Cherel, Yves. 2016. The significance of cephalopod beaks in marine ecology studies: Can we use beaks for DNA analyses and mercury contamination assessment? *Marine Pollution Bulletin*, 103 (1-2). 220-226. 10.1016/j.marpolbul.2015.12.016 <<http://dx.doi.org/10.1016/j.marpolbul.2015.12.016>>

Xavier, J.C., Peck, L., Fretwell, P. & Turner (in press). Climate change and polar range expansions: could cuttlefish cross the Arctic? *Mar. Biol.* 163 DOI 10.1007/s00227-016-2850-x.

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email

### Briefly describe what the funds will be used for and what the desired results are:

ICED activities planned for 2018 (see above under Plans) will benefit from SCAR involvement and expertise and as such may benefit from SCAR funds. This could include, for example, financial assistance for attendance of key individuals involved in other SCAR groups at our workshop on projections, and ongoing work with CCAMLR and CEP.

### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017:

2018:

### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):

2017:

2018:

## Linkages

### Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):

## [SCAR Group Name]: 2016-2017 Annual Report, cont.

We will receive funds from IMBeR to conduct an SSC meeting alongside the MEASO conference in Apr 2018. This will include travel and subsistence for some SSC members.

### **Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

As mentioned above (Progress), over the last two years a series of activities between SCAR, ICED, the Southern Ocean Observing System (SOOS), CEP and SC-CAMLR have begun to identify and address questions of common interest relating to the provision of information on climate change, and the integration of such information into management decisions (SCAR, 2016; Grant et al. a,b,c 2016; Belchier, 2016). The ICED community has also continued to participate in the development of Marine Protected Areas and provide scientific contributions to CCAMLR, IWC, ACAP, CCAS.

#### *SCAR*

ICED contributed to the annual SCAR report and Science Highlights for the Antarctic Treaty Consultative Meeting (ATCM) 2016; ICED has continued to collaborate with SCAR's AnT-ERA programme via the output of the SCAR Cross-Program Workshop; ICED SSC member, Richard Bellerby, leads SCAR's Action Group on Ocean Acidification; ICED has a close partnership with SOOS with members of ICED also on the SOOS SSC and participated in the SOOS regional workshop on the West Antarctic Peninsula; ICED scientists contributed various oral presentations and posters at the SCAR OSC in 2016 and ICED SSC member Andrew Constable presented an overview of the ICED programme, including planned activities and opportunities in conjunction with SOOS and SCAR, to the SCAR Executive Committee Meeting. These plans were endorsed and promoted by the SCAR Life Sciences Group.

#### *CCAMLR (and SCAR)*

Following ICED's participated as a member of the SCAR delegation at the second Joint Workshop of the CCAMLR Scientific Committee and the Antarctic Treaty's Committee on Environmental Protection (CEP), 19-20th May 2016, Punta Arenas, Chile, the report and recommendations encouraged development of links between ICED, SCAR and SC-CAMLR (Grant et al. 2016). At the CCAMLR WG-EMM-2016 meeting ICED proposed joint activities with CCAMLR and SCAR with a view to providing information that could be used in conservation and management decision making (Murphy et al. 2016a). During SC-CAMLR in 2016, there was agreement to develop these joint activities with ICED and SCAR focused on the impacts of climate change in Southern Ocean ecosystems (SC-CAMLR, 2017), and that these would initially be developed through a workshop focussed on the impacts of climate change in Southern Ocean ecosystems (see Plans above). ICED also commented on the draft CCAMLR Climate change response work program and within this the potential for joint activities between ICED and SCAR is evident.

#### *CEP*

ICED has continued to engage with CEP and submitted a paper for the 2017 ATCM (United Kingdom 2017) and CEP meeting, and have continued our input to the CEP climate change programme planning.



#### *IMBeR and Future Earth*

ICED is a regional programme of IMBeR and as such connects upwards to Future Earth. Through these links ICED is continuing to raise the international profile of Southern Ocean science and ensure that our activities reflect international as well as regional priorities.

#### *ESSAS*

The papers led by Hunt et al. (2016), on the role of advection in polar ocean ecosystems and Murphy et al. (2016b) on polar ocean food web diversity, structure and functioning were the result of collaborations between ICED and ESSAS. Further collaborative activities are being considered.

#### *EURO-MARINE Consortium*

ICED was represented at this year's General Assembly meeting, ensuring links between ICED and the shared vision of this European network whilst building on the legacy of EUR-OCEANS in developing the ICED network and science strategy. As part of this event delegates also attended the EuroMarine event "Blue Science for Blue Growth, EuroMarine: connecting ideas and people" at the European Parliament to showcase and promote the network highlighting its role in assisting scientists to collaborate, innovate and advocate marine science.

## **Outreach and Capacity Building**

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

#### **Outreach and Capacity Building**

ICED has continued to progress with education and outreach activities, highlights include:

- Antarctic Treaty Consultative Meeting, 2016, Santiago de Chile, Chile: coordination of the Inter-sessional Contact Group on education and outreach;
- Polar Educators National Workshop, Lisbon, 5 March 2016;
- An educational book emphasizing the relevance of Antarctic science, in related to other fields (Xavier et al. 2016)
- A paper focused on evaluating the impact of educational activities (Santiago et al. 2016)

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR

groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End

*\* Please include any APECS representative / Junior Officers*

### Other members

First Name	Last Name	Affiliation	County	Email

### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*



SCAR Group

SG

Person

Responsible:

EG-BAMM

LS

Mark Hindell

## **SCAR Executive Committee Meeting 2017**

**Brno, Czech Republic, 31 July - 2 Aug 2017**

# **Birds and Marine Mammals** **2016-2017 Report**

**Report Author(s): Mark Hindell, Yan Ropert-Coudert**

**Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

EG-BAMM has been in existence for 8 years, and so at the 2016 SCAR delegates meeting in Kuala Lumpur, it was decided that the expert group would be renewed pending an independent review to be held in 2017. A written account of the groups' terms of reference and activities for the first 8 years was prepared by the group and is currently with the reviewers. The group maintained its usual range of activities in 2016 and 2017, participating in several international fora, such as CCAMLR and SOOS, as well as being part of several SCAR programs, most notably SCATS, ANT-Eco and ANT-Era.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

Due to increasing demand for the tag-resighting capacity and the time constraints it imposed on the group, Monica Muelbert, Mark Hindell and Yan Ropert-Coudert will continue to try to initiate an on-line tag re-sight portal as part of the EG-BAMM web page with the help of an IT engineer who will be specifically hired for this occasion for about 2 months. The envelope needed for hiring a specialist is around 9 000 U\$. External source of funding will be sought but help from SCAR would be greatly appreciated in this matter. A contact has been made with Dr. Grant Humphries, already involved in the MAPPD project.

## Progress and Plans:

### Major Activities and Significant Progress from the past year (<500 words):

**A. RETROSPECTIVE ANALYSIS OF ANTARCTIC TRACKING DATA** (Mark Hindell, Yan Ropert-Coudert). The group conducted a series of workshops in Aix-en-Provence (Sept. 2016, March 2017) that assemble an international team of 12 scientists with expertise in databases and data management, statistical modelling of animal movement data and ecology of Southern Ocean birds and mammals. The overarching goals of the RAATD project are to undertake a multi-species assessment of habitat use of Antarctic top predators in the Southern Ocean based on existing animal tracking data to identify Areas of Ecological Significance, that are important for foraging to a range of predators and which have high diversity. The team worked on the compilation of the data and preparation of the draft data paper, and on the statistical analysis and modelling.

**B. TAG RE-SIGHTS** (Monica Muelbert, Mark Hindell, Yan Ropert-Coudert). There is on-going and increasing demand for EG-BAMM to coordinate tag and band re-sights. This year we continued to circulate photos to the broad EG-BAMM membership to successfully identify individuals.

**C. HEALTH MONITORING** (Andrés Barbosa). The group has published a review paper about macroparasites in penguins in Parasitological Research Monographs. In 2016, the group also produced several posters on display at OSC SCAR, the 9<sup>th</sup> International Penguin Conference, Cape Town, and the International Albatross and Petrels conference, Barcelona. The group was commissioned by the WG of Ecosystem Management and Monitoring of the CCAMLR to review the “Protocol for taking samples for pathological analyses” (work in progress). Two initiatives expected to be carried out during the Antarctic field season of 2016/2017 were postponed to 2017/2018. For the citizen science initiative, as the collaboration with Hurtigruten navy company did not work, the group will contact directly IAATO to progress on this. Regarding the Adelie network, several research groups were contacted and are now preparing the sampling protocol to be implemented the next field season.

**D. WG TROPHIC INTERACTIONS** (Jose Xavier). The group is focusing on advancing on the crustacean guide for the Southern Ocean. The review of the importance of crustaceans in top predators from the southern ocean, and the assessment of the most important crustacean species (in terms of distribution, allometric equations, relevance to top predators’s diets, and identification features) are now finalized. The various sections are currently being reviewed by crustacean experts. The next step consists in assessing the photographs of crustacean species and diagrams needed for the guide.

Another activity of the trophic interactions WG is the Stable Isotope database. Work in progress led by Luis Huckstadt (Univ. Santa Cruz, USA), working also closely with Anton Van de Putte and Ben Raymond (SCAR SCADM). There are still on-going

discussion regarding how to integrate with the Australian Antarctic Data Center's existing database. The University of Tasmania's Antarctic Gateway project is also interested in working with EG-BAMM to develop a comprehensive, open-access database of prey isotope values, so this promises to be a very valuable product for our group.

**Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

EG-BAMM's vision is registered over the long-term and the group represents a beacon for anyone with a question on meso- and top-predators in the Southern Ocean. EG-BAMM will continue to facilitate integrated ecological research on the marine ecosystems of the Southern Ocean to ensure the most effective monitoring, conservation and management of the organisms in the region. Among the main tasks for the coming 3-5 years are:

- **RAATD:** We will release in 2018 a paper highlighting the Areas of Ecological Significance for the 17 species of predators selected and relating them to the projected scenarios of climatic changes and human use of the Southern Ocean. This will be done in collaboration with CCAMLR and IATOS colleagues. We are aiming a high-profile journal for what will be a substantial contribution to our understanding of the critical habitats that need urgent protection in the Southern Ocean. This paper will be accompanied by a data paper that describe the nearly 3 million locations dataset that EG-BAMM has assembled. We plan to release several additional scientific papers based on this dataset.
- **MEASO & BENCHMARKING:** The SCAR co-sponsored groups ICED (Integrating Climate and Ecosystem Dynamics in the Southern Ocean) and SOOS are multi-national, trans-disciplinary programs that are planning large scale initiatives to facilitate information flow and foster international collaboration. Several members of EG-BAMM are involved in this major initiative. ICED is organising a conference in 2018 ([www.MEASO2018.aq](http://www.MEASO2018.aq)) with a principle focus on assessing the status and trends of habitats, species and food webs in the Southern Ocean. The results from the RAATD project will be crucial in contributing to the elaboration of the transect routes for the ships of the Southern Ocean ecosystem monitoring.
- **Tag resighting online form:** depending on the status of SCAR finances EG-BAMM will continue its effort in facilitating exchanges of information on seals and birds tag resighting by hiring a data-base manager to construct an online platform where users will be able to post resighting information to the EG-BAMM community as well as receive direct feedback from the community.
- **Health Monitoring:** The group has been commissioned by the WG of Ecosystem Management and Monitoring of the CCAMLR to review the "Protocol for taking samples for pathological analyses". Considering the 20 years since the organization of the 1998 workshop of Antarctic wildlife diseases in Australia, a Polar Wildlife Health and Diseases Workshop will be organized in Davos (Switzerland) as a side event to the SCAR-IASC Open Science Conference in 2018. In this workshop common problems to the Arctic

and Antarctic wildlife health and collaborations with the IASC working group of terrestrial biology (Thierry Boulinier) to implement a Polar wildlife health monitoring and surveillance program will be discussed and a session on “Polar wildlife – Ecology, health and disease” will be organized by Meagan Dewar and Andrés Barbosa for the group, together with an Arctic researcher (Susan Kutz). A proposal of research collaboration has been made by Clive McMahon to look at how pathogen diversity, in particular viral diversity, changes with respect a number of environmental co-variables e.g. proximity to stations, population density, stable or rapidly changes areas (e.g. peninsula vs east Antarctic) and general faunal diversity among others. This proposal will be discussed during the next SCAR Biology Symposium in Leuven in July 2017 and probably implemented for the next field season 2017/2018.

- **New initiative:** EG-BAMM is collaborating with the Polar Poo initiative proposed by Meagan Dewar and Alex Thornton the use of the Oxford Nanopore Technologies’ MinION, a portable genomic sequencer, as a non-invasive field sequencing tool for the molecular analysis of diseases (and other factors such as diet or genomics) present in Antarctic wildlife. This initiative will be present in the next SCAR Biology Symposium in Leuven in July 2017 and probably implemented for the next field season 2017/2018.

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

DIAZ, JI., FUSARO, B., VIDAL, V., GONZALEZ-ACUÑA, D., COSTA, ES., DEWAR, M., GRAY, R., POWER, M., MILLER, G., BLYTON, M., VANSTREELS, R., BARBOSA A. (2017). Macroparasites in Antarctic penguins. In, Klimpel, S., Kuhn, T., Mehlhorn, H (Eds.) Biodiversity and evolution of parasitic life in the Southern Ocean. Chapter 9. Springer International Publishing.

Gutt J, Constable A, Cummings V, Hosie G, McIntyre T, Mintenbeck K, Murray A, Peck L, Ropert-Coudert Y, Saba GK, Schofield O, Schloss I, Stefels J, Takahashi K (2016) Vulnerability of Southern Ocean biota to climate change. Information Summary. Antarctic Environment Portal. ([https://www.environments.aq/information - summaries/vulnerability-of-southern-ocean-biota-to-climate-change/](https://www.environments.aq/information-summaries/vulnerability-of-southern-ocean-biota-to-climate-change/))

Hays GC, Ferreira LC, Sequeira AMM, Meekan MG, Duarte CM, Bailey H, Bailleul F, Bowen WD, Caley MJ, Costa DP, Egu  luz VM, Fossette S, Friedlaender AS, Gales N, Gleiss AC, Gunn J, Harcourt R, Hazen EL, Heithaus MR, Heupel M, Holland K, Horning M, Jonsen I, Kooyman GL, Lowe CG, Madsen PT, Marsh H, Phillips RA, Righton D, Ropert-Coudert Y, Sato K, Shaffer SA, Simpfendorfer CA, Sims DW, Skomal G, Takahashi A, Trathan PN Wikelski M, Womble JN, Thums M (2016) Key questions in marine megafauna movement ecology Trends in Ecology and Evolution 31(6): 463-475

**Papers to ATCM**

2016 – Spain, United Kingdom, Portugal, Belgium, Bulgaria, Chile, Italy. Enhancing Antarctic Education and Outreach Visibility. ATCM XXXIX/WP20 (Jos   Xavier was the coordinating-contributor from Portugal)

2016 – Portugal, Brazil, Bulgaria, France and the United Kingdom. POLAR WEEKS: an Education and Outreach activity to promote Antarctic science and the Antarctic

[SCAR Group Name]: 2016-2017 Annual Report, cont.

Treaty System. ATCM XXXIX/IP7 (José Xavier was the coordinating-contributor from Portugal)

2016 - Bulgaria, Belgium, Brazil, Chile, Portugal and United Kingdom. First report of the Interessional Contact Group on Education and Outreach. ATCM XXXIX/WP24 (José Xavier was the coordinating-contributor from Portugal)

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

EG-BAMM is currently preparing a data paper that will accompany the main scientific outcome of its RAATD project.

## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
07-17	Meeting at SCAR Biosympo CO	\$4000	Mark Hindell	Mark.hindell@utas.edu.au
07-17	Travel grant APECS Biosympo	\$500	Mark Hindell	Mark.hindell@utas.edu.au
06-18	Meeting at SCAR OSC for CO	\$5000	Mark Hindell	Mark.hindell@utas.edu.au

**Briefly describe what the funds will be used for and what the desired results are:**

- 2500 USD are requested for the travel fees and hotel of the CO of EG-BAMM to attend Scar Biology Symposium at Leuven in 2017. A travel grant to fund an EG-BAMM APECS member has been allocated to Dominik Nachstein to travel from Germany to Leuven.
- 4000 USD are requested for the travel fees and hotel of the COs of EG-BAMM to attend Scar Biology Symposium in Leuven 2017. 5000 USD are requested for the travel fees and hotel of the COs of EG-BAMM to attend Scar OSC in Davos in 2018. A travel grant to fund an EG-BAMM APECS member will also be included in this envelope.

**Provide an estimate on the % of the budget to be used for support of early career researchers:**

2017: 25%

2018: 25%

**Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):**

2017: ?

2018: ?

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):**

The Centre for the Synthesis and Analysis of Biodiversity (CESAB) in France is supporting the SCAR Retrospective Analysis of Tracking Data (RAATD) through a series of workshops in Aix en Provence and funding for a post-doc hosted at CEBC-CNRS. The CESAB fund a total of 4 to 5 1-week workshops to be held in Aix-en-Provence, France in 2017 and 2018. In April 2017 we welcomed one the post-doctorate fellow, Dr. Ryan Reisinger from South Africa, who started a 2-year contract at the Centre d'Etudes Biologiques de Chize, France under the supervision of Dr. Ropert-Coudert.

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

- **CCAMLR:** EG-BAMM has strong links with CCAMLR through both the SCAR representation at CCAMLR of Prof. Hindell and the collaboration of CCAMLR to the RAATD project (provision of Fisheries layers for the modelling effort of important ecological areas in the Southern Ocean). The RAATD project is obviously of major interest to CCAMLR for Marine Protected Areas planning purposes. Members of EG-BAMM are already engaged at diverse levels with CCAMLR in the elaboration of Marine Protected Areas (Yan Ropert-Coudert for instance) or as SCAR representative at various CCAMLR meetings (Prof. Phil Trathan).
- **Birdlife International:** EG-BAMM interacts with this large multi-national organisation concerned with the conservation of birds in several ways. Our members contribute to their procellariiform tracking database, and were also on the scientific steering committee for the new penguin tracking database.
- **SOOS:** EG-BAMM have been involved with the Southern Ocean Observing System in several ways. Several members contributed to the initial development of SOOS though both its strategic and implementation plans, particularly in the biological responses theme. EG-BAMM also has representatives on several SOOS working groups, such as the Censusing Animal Population from Space Working Group, as well as each of the regional working groups which are currently working towards the design and implementation of long-term biological monitoring programs. Finally EG-BAMM contributed to the SOOS/SCOR ecological Essential Ocean Variables (eEOV) working group, which sought to identify the best ecological variables to be used in long-term monitoring studies in the Southern Ocean.
- **IMBER:** EG-BAMM contributes to the Integrated Marine Biogeochemistry and Ecosystem Research project through membership on Southern Ocean Benchmarking steering committee. We are also increasingly involved in the Climate Impacts On TOP Predators (CLIOTOP) program.



- **SCATS:** Members of EG-BAMM are regularly consulted on SCATS issues (Code of Conducts on Wildlife Use IP53, Guidelines on UAVs impact on wildlife, Guidelines on underwater noise impact, de-listing of Antarctic fur seals from the ATS endangered species list...). Three core members of EG-BAMM are also members of SCATS: Prof. Mark Hindell, Dr. Yan Robert-Coudert and Dr. Akinori Takahashi. In 2018, Prof. Mark Hindell will be ending his terms at SCATS. EG-BAMM will seek one of its member to replace Dr. Hindell if SCATS expresses the need for another top predator representatives besides Drs. Robert-Coudert and Takahashi.
- **OTHERS:** EG-BAMM members are also part of the ANT-ERA and ANT-ECO steering committees, and we also have membership in EG-ABI.

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

**BOOK:** Xavier, J. C., Fugmann, G., Beck, I., Huffman, L. & Jensen, E. (2016). Education on biodiversity of the Polar Regions. In Castro, P., Azeiteiro, U.M., Bacelar Nicolau, P., Leal Filho, W., Azul, A.M. Biodiversity's and Education for Sustainable Development (ESD) in the series Umweltbildung, Umweltkommunikation und Nachhaltigkeit - Environmental Education, Communication and Sustainability, Peter Lang. Peter Lang GmbH International Academic Publishers Frankfurt am Main: 43-56 ISBN: 978-3-319-32317-6

**EVENT:** 2017 - Cattadori, M., Cicconi, A., Azinhaga, P., Dooley, J., Huffman, L., Trummel, B., Xavier, J. C., Wesche, G., Wilkening, B. (2017). Education Meets science: Bringing polar research into the classroom. III PEI Workshop, 11-14 April, Roveretto, Italy. (J.C. Xavier as co-organizer + invited speaker)

**EVENT:** 2016 - Azinhaga, P., Ferreira, S., Boto, B. & Xavier, J. C. Workshop nacional de educação e ciência: da investigação polar à sala de aula. Instituto de Educação, Universidade de Lisboa, 5 March 2016 (J.C. Xavier as co-organizer + invited speaker + discussion panelist) Activities with Schools

**EVENT:** Working closely with Polar Educators International (PEI) and Association of Polar Early Career Scientists (APECS), on the International educational activity POLAR WEEKS (used to promote EGBAMM related research).

**ROUTINE ACTIVITIES:** The tag-resight is an important scientific and also outreach activity, as often the re-sights are made by members of the public.

*As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.*

Mark Hindell: [mark.hindell@utas.edu.au](mailto:mark.hindell@utas.edu.au) (already listed as a reviewer)

Yan Ropert-Coudert: [yan.ropert-coudert@cebc.cnrs.fr](mailto:yan.ropert-coudert@cebc.cnrs.fr) (already listed as a reviewer)

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
CO	Mark	Hindell	UTAS	Australia	Mark.hindell@utas.edu.au	2009	2024
Sec.	Yan	Ropert-Coudert	CEBC-CNRS	France	Yan.ropert-coudert@cebc.cnrs.fr	2009	2024

*\* Please include any APECS representative / Junior Officers*

### Other members

First Name	Last Name	Affiliation	Country	Email
Anton	VAN DE PUTTE		Belgium	
Akinori	TAKAHASHI		Japan	
Jean-Benoit	CHARRASSIN		France	
Ben	RAYMOND		Australia	
Jose	XAVIER		Portugal	
Ari	FRIEDLANDER		USA	
Richard	PHILLIPS		UK	
Phil	TRATHAN		UK	
Bruno	DANIS		Belgium	
Daniel	COSTA		USA	
Horst	BORNEMANN		Germany	
Mary-Ann	LEA		Australia	
Monica	MUELBERT		Brazil	
Peter	RYAN		South Africa	
Andres	BARBOSA		Spain	

In addition to this core group, EG-BAMM has a mailing list (google mail) of active members that amounts to more than 203 people from 19 countries, with a strong emphasis on countries that were traditionally engaged in seabirds and marine mammals work (Australia, USA, France, South Africa, Japan and UK). The EG-BAMM mailing list includes a link to the APECS mailing list. Clive McMahon from the Sidney Institute of Marine Science (Australia) and Thierry Boulinier from the Centre de Ecologie Fonctionnelle et Evolutive de Montpellier (France) are poised to join the Health Monitoring working group. The RAATD team was very pleased to welcome Dr Ryan Riesinger, the CESAB post-doc who will be based and CEBC and work full time on the project.

### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*



SCAR Group

JEGHBM

SG

LS

Person Responsible: Dr Anne Hicks

## **SCAR Executive Committee Meeting 2017**

**Brno, Czech Republic, 31 July - 2 Aug 2017**

# **Joint Expert Group on Human Biology and Medicine 2016-2017 Report**

**Report Author(s): Dr Anne Hicks; Dr Nathalie Pattyn; Dr Mark Shepanek**

### **Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

2016: input to COMNAP "Winterover difficulties" symposium  
Kuala Lumpur meeting  
Preparation of POLAR2018

2017: Preparation of POLAR2018  
Preparation of Brno meeting

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

Nil

## **Progress and Plans:**

### **Major Activities and Significant Progress from the past year (<500 words):**

Renewal of the executive  
New liaison with APECs: Cyril Jaksic  
Preparation of a consensus statement based on the latest sleep research at altitude in Antarctica with regard to flight safety.  
Participation to the scientific committee of the SCAR Biology conference 2017, including the set-up of a Human Biology session and participation to outreach activities.

**Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

Issue of the consensus statement with regard to flight crews sleeping at altitude during Antarctic operations. Target: Brno meeting 2017.

Discussion of how to define the futility of MEDEVAC operations. Start: Brno meeting 2017.

Framework for prizes/funding initiatives: to be formalized at Brno meeting 2017.

Outreach activity with regard to living and working in Antarctica for POLAR 2018.

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

Nil: some group members are involved in research; however, the group doesn't fund research as such. And so, no research output is part of our achievements as such.

One of the main achievements of the group, as discussed in Kuala Lumpur with the SCAR representative, is the ability to consult with colleagues about operational medical decisions. This does not produce a tangible output as such, but is invaluable to all members and is one of the main reasons for members to travel to attend the meetings. Indeed, this is the sole forum where this kind of peer communication is possible.

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

Nil

## Budget

**Planned use of funds for 2017 and 2018: TBD at Brno meeting 2017.**

[illegible]

**Briefly describe what the funds will be used for and what the desired results are:**

Communication/poster award for POLAR 2018  
Travel grant for members whose participation is not covered by their NAP/early career researcher with a contribution to the upcoming meeting => need for an evaluation framework to decide on fund allocation.

**Provide an estimate on the % of the budget to be used for support of early career researchers:**

2017: 0  
2018: 50%

**Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):**

2017: 0  
2018: 0

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):**

Nil

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

COMNAP

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

Coordination of all medical professionals involved in NAPs.  
Support of new members (either new NAPs, or new medical personnel in their roles supporting their NAP).

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

Marc Shepanek [marc.a.shepanek@nasa.gov](mailto:marc.a.shepanek@nasa.gov)

Anne Hicks [annehicks1@nhs.net](mailto:annehicks1@nhs.net)

Nathalie Pattyn [Nathalie.pattyn@mil.be](mailto:Nathalie.pattyn@mil.be)

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
Chief Officer	Anne	Hicks	NHS	UK	<a href="mailto:annehicks1@nhs.net">annehicks1@nhs.net</a>	30/08/2016	30/08/2020
Deputy Chief Officer	Giichiro	Ohno	NIPR	Japan	<a href="mailto:oonog@mb.infoweb.ne.jp">oonog@mb.infoweb.ne.jp</a>	30/08/2016	30/08/2020
Secretary	Nathalie	Pattyn	Belgian MOD	Belgium	<a href="mailto:Nathalie.pattyn@mil.be">Nathalie.pattyn@mil.be</a>	30/08/2016	30/08/2020
Secretary	Paul	Laforet	TAAF	France	<a href="mailto:Paul.laforet@taaf.re">Paul.laforet@taaf.re</a>	30/08/2016	30/08/2020

*\* Please include any APECS representative / Junior Officers*

### Other members

First Name	Last Name	Affiliation	County	Email

### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*

Management of web page as part of the SCAR website



**SCAR Group**

SG

Person  
Responsible:

**ABI**

LS

Bruno Danis

## **SCAR Executive Committee Meeting 2017**

**Brno, Czech Republic, 31 July - 2 Aug 2017**

# **SCAR Expert Group on Antarctic Biodiversity Informatics 2016-2017 Report**

### **Report Author(s):**

Bruno Danis, Ben Raymond

### **Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

The Expert Group on Antarctic Biodiversity Informatics is involved in a series of ongoing, long-term projects and developments pertaining to the exploration of complex data to delineate patterns in ecological, biogeographic or taxonomic processes. The projects that ABI is engaged in include:

- The Biogeographic Atlas of the Southern Ocean (BASO)
- The Register of Antarctic Species (RAS)
- The microbial Antarctic Resources System (mARS)
- The Retrospective Analysis of Antarctic Tracking Data (RAATD)
- The Southern Ocean Diet and Energetics Database

The ABI group is also contributing to SCAR projects such as Quantarctica (data product generation and recommendations) and the Composite Gazetteer (R package for Antarctic place names).

Its members have and participated in several workshops dedicated to these projects, and met remotely on several occasions. They have been selected to ensure liaison with other relevant working groups within and beyond SCAR. On other grounds, EG-ABI has been strongly involved in the upcoming SCAR Biology Symposium (Leuven, Belgium, 10-14th of July), giving it a very data-

oriented flavor, in terms of promoting free and open access to raw biodiversity information.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

One of the main challenges for Antarctic biodiversity is the pace at which environmental changes are occurring, compared to the remaining knowledge gaps. Fundamental research to help fill these gaps (e.g. basic knowledge about the natural history of Antarctic organisms) and management planning to mitigate the impacts of environmental change (e.g. MPA proposals) can be time consuming processes. Biodiversity informatics approaches (e.g. development of predictive modelling frameworks and shared data resources) can assist these efforts, for example by providing timely and standardized data publication, and software tools that address the technical needs of the Antarctic research community.

There is scope for the SCAR community to make a better use of informatics approaches in general, and to improve collaboration between groups working in this space. EG-ABI asks EXCOM to consider mechanisms by which these might be improved. EG-ABI is well placed to play a key role, and indeed already does so within the projects that its members are currently participating. Concretely, EXCOM could consider recommending that the research community approaches EG-ABI when a new biodiversity meta-analysis, or conservation effort is initiated, to help with data preparation, model development, documentation, and curation, preferably at the early stages of development so that ABI can coordinate with other SCAR groups as appropriate (e.g. with SCADM to ensure compliance with SCAR's data policy).



## Progress and Plans:

### Major Activities and Significant Progress from the past year (<500 words):

The various projects ABI members were involved with have made steady progress, but are all long-term developments that are mostly based on in-kind support. Thanks to SCAR funding, the core people involved in these projects are able to meet regularly and make progress, often back to back with other meetings. A lot is also happening at the level of liaison with other SCAR-linked initiatives, such as SOOS, EG-BAMM, AntERA, AntECO, SCADM,... through multiple participations by our EG members.

Some particular highlights of progress include:

- Continued participation and support of the RAATD project (with the EGBAMM group), in particular establishing a rigorous framework for data validity checking and modelling code to support the project.
- Development of a framework for the Diet and Energetics database, including templates for data entry, seeding of an initial data collection from the previous SO Diet Database, and development of an R package to facilitate access and use of SO diet and energetics data (see <http://data.aad.gov.au/trophic> and links therein).
- Establishment of a SCAR github page (see below).
- Development of R packages to support the SCAR community's research in several areas, including:
  - a package to help with Antarctic place names (see <https://github.com/SCAR/antanym> and <http://www.scar.org/2017/1052-r-users-place-names>)
  - habitat suitability modelling of animal tracking data (see <https://github.com/AustralianAntarcticDataCentre/availability>)
  - diet and energetics data (<https://github.com/SCAR/sohungry>)
  - creating and maintaining local mirrors of environmental (satellite/model) data to support activities such as species distribution modelling (<https://github.com/AustralianAntarcticDivision/bowerbird>)
  - provide simple functions to build species distribution models and ready to use sets of marine biological and environmental data SDMPlay (Guillaumot et al. 2016, <https://github.com/charleneguillaumot/SDMPlay>)

### Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):

- Further advances in the Register of Antarctic Species
- Further advances in the dynamic version of the BASO (Biogeographic Atlas of the Southern Ocean)
- Further advances in the mARS initiative
- General support to digitization and sharing of raw Antarctic biodiversity data

- In conjunction with biodiversity.aq, SCADM, and LifeWatch.eu, coordination and establishment of a shared computational platform to support modelling activities such as species distribution modelling
- Continued participation in the RAATD project (see BAMB report), in particular the development of modelling techniques and code to support this work
- Population of the Diet and Energetics database, release of an R package to support its use, and preparation of initial papers. A number of SCAR researchers and groups have already engaged with this project to contribute data and/or collaboration; the SCAR Biology symposium will be used as an opportunity to widen the community involvement.

**Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

- First version of the new Register of Antarctic Species:  
<http://ras.biodiversity.aq>
- Participation in the organisation of the SCAR Biology Symposium (Leuven, 2017)
- Various R packages, as described above
- Establishment of a SCAR github page, which will be used as a forum for developing and sharing SCAR-related research software (such as the R packages noted above). See <https://github.com/SCAR/>

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
07-17	mARS workshop	1000	Alison Murray	Alison.Murray@dri.edu
06-18	CO travels to Davos	2000	Bruno Danis	bdanis@ulb.ac.be
06-18	ABI digitization grants for Davos	5x1000	Bruno Danis	bdanis@ulb.ac.be

#### Briefly describe what the funds will be used for and what the desired results are:

1000 USD travel support to Alison Murray (DRI): participation in the mARS-related activities during the SCAR Biology Symposium in 2017.

For the Davos meeting in 2018, there will be 2000 USD used for COs to travel and attend the meeting. 5000 USD will be kept for an ABI digitization grant initiative to deliver 5 grants of 1000 USD each. ABI will indeed support software development and data integration efforts, by encouraging researchers to prepare and submit datasets to ongoing synthesis activities (e.g. the diet and energetics database), or contribute to software development that supports SCAR research. Participants will be asked to hand in a short description of their project, which will allow ABI to select grant recipients, organise support (e.g. software mentors), and help them with the design aspects at an early stage. Projects will primarily be selected to align with existing SCAR and ABI initiatives, but selection will also consider projects that address new areas or opportunities that will benefit the SCAR community. This scheme will be targeted in particular towards early career researchers and those from countries with developing Antarctic programs.

#### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017: 0  
2018: 80

these are indicative figures and will depend on the prioritization of submitted projects in the limitations of available budget.

#### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):

2017: 0

2018: 50

these are indicative figures and will depend on the prioritization of submitted projects in the limitations of available budget.

## Linkages

**Please describe any direct support you receive for your activities beyond SCAR** (eg. *Funds from another organization for a workshop*):

The Belgian Science Policy (BELSPO) supports ABI activities, through research programmes (BRAIN-BE) and through in-kind support. Similar arrangements exist with other national programs of ABI members (e.g. the Australian Antarctic program).

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

SCAR groups:

- SOOS: Southern Ocean Observing Systems
- BAMM: Birds and Marine Mammals
- AntERA: Antarctic Thresholds - Ecosystem Resilience and Adaptation
- AntECO: State of the Antarctic Ecosystem
- SCADM: Standing Committee on Antarctic Data Management
- SCAGI (particularly with respect to place names)
- Quantarctica

Other groups, beyond SCAR: ABI members are related to many groups beyond SCAR. A full list can be provided upon request.

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network.** (*coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved*) (<250 words):

EG-ABI communicates on a regular basis, and members meet in the framework of ongoing projects (see details above). Its effectiveness as a network allows to ensure the group uses similar technical standards and that it follows a vision of free and open access to raw data and code. Thanks to the trust that has been built among the network, a lot can happen in an informal, agile way.

In terms of capacity building, ABI is now considering using its funding to encourage scientists to publish raw data and code through its virtual infrastructures.

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

Bruno Danis, [bdanis@ulb.ac.be](mailto:bdanis@ulb.ac.be) (already on the reviewer list)

Ben Raymond, [ben.raymond@aad.gov.au](mailto:ben.raymond@aad.gov.au) (already on the reviewer list)

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
<b>CO</b>	Bruno	Danis	Université Libre de Bruxelles	Belgium	bdanis@ulb.ac.be	July 2013	
<b>Secretary</b>	Ben	Raymond	Australian Antarctic Division	Australia	Ben.Raymond@aad.gov.au	July 2013	

*\* Please include any APECS representative / Junior Officers*

### Other members

First Name	Last Name	Affiliation	Country	Email
Anne-Sophie	Archambeau	Museum d'Histoire Naturelle de Paris	France	archambeau@gbif.fr
Horst	Bornemann	Alfred Wegener Institut	Germany	hbornemann@awi-bremerhaven.de
Claude	De Broyer	Royal Belgian Institute of Natural	Belgium	claudedeBroyer@natural-sciences.be

		Sciences		
Huw	Griffiths	British Antarctic Survey	United Kingdom	hjb@bas.ac.uk
Alison	Murray	Desert Research Institute	United States of America	Alison.Murray@dri.edu
Anton	Van de Putte	Royal Belgian Institute of Natural Sciences	Belgium	antonarctica@gmail.com
Yan	Robert-Coudert	Centre d'Etudes Biologiques de Chizé	France	docyaounde@gmail.com
José	Xavier	University of Coimbra	Portugal	ccx@cantab.net

### Requests to the Secretariat:

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*

# SCAR BIODIVERSITY INFORMATION TOOLS: A NEED TO SHARE THEIR USE TO THE SCAR COMMUNITY

The Expert group on Antarctic Biodiversity Informatics (EG-ABI)

SCAR has developed a valuable suite of tools to manage, share and discover biological, environmental, geographical, chemical and physical data, which help to address Article III of the Antarctic Treaty. These data provide a fundamental backbone for SCAR's scientific work. It is increasingly common now that SCAR researchers and groups are developing software tools that facilitate access to these data and their use in modelling and other analytical frameworks.

The Expert Group on Antarctic Biodiversity Informatics (EG-ABI) has been tasked to facilitate the use of informatics techniques within the SCAR biology community. EG-ABI's role is both an active one (members are directly involved in projects), as well as one of support and facilitation: EG-ABI acts to connect different researchers and groups, and build collaborative networks. EG-ABI's tasks therefore include disseminating this suite of tools to the community, fostering the development of new tools, and supporting communication and collaboration between groups working on related activities.

EG-ABI works closely with other SCAR groups to coordinate these activities across the SCAR community. In particular, EG-ABI coordinates with SCADM in order to link with other international data management bodies, facilitate compatibility of data stored in national data centers, and assist scientists in enhancing their data and analytical profiles.

Here are the tools that are highly relevant to - and should be used by - the SCAR community:

- > Data discovery:
  - the [Antarctic Master Directory](#) (AMD)
- > Data publishing:
  - the [Integrated Publishing Toolkit](#) (IPT)
- > Data products and integration
  - The [Register of Antarctic Species](#) (RAS)
  - The [Biogeographic Atlas of the Southern Ocean](#) (dynamic version coming soon)
  - The [Retrospective Analysis of Animal Tracking Data](#) (RAATD)
  - The [Biodiversity Data Portal](#)
  - The [Microbial Antarctic Resource System](#) (mARS)
  - The [Southern Ocean Diet and Energetics database](#) (SODiet)

Some of these projects (e.g. RAATD, SODiet) comprise both data integration as well as statistical analysis and modelling. Furthermore, many of these products and projects have associated software tools available or in development, such as application program interface for data access, or support for specific analysis/visualisation frameworks (e.g. custom R packages that allow users to retrieve and analyse data in the R statistical modelling software).

We believe these tools can play a crucial role in some of the recent initiatives launched by SCAR or collaborating programs. Potential application areas include understanding patterns of biodiversity, conservation management and planning activities (e.g. marine protected area planning), identifying essential ecosystem variables, defining species and habitats to protect, and conducting priority threat management.

It is the goal of EG-ABI to facilitate use of these applications, and informatics approaches more generally, to be used by a larger community than is currently the case. Pursuing a more coordinated approach will bring a range of benefits, including:

- filling gaps in the functionality of the current suite of tools;
- reducing the incidence of "reinventing the wheel", where different groups develop similar tools or techniques independently, thereby potentially wasting effort as well as risking incompatibility between approaches;
- ensuring that the SCAR community as a whole adopts similar data standards and data models, so that tools and approaches are more transferable across groups and study domains;
- building of social strengths and scientific collaborations across the SCAR community, including technical/development matters, research and policy use of the tools, training users, and engaging early-career researchers to not only participate in the projects but also to take the lead on continuing and extending these ideas.

One of the roles of EG-ABI should be to facilitate needs of new groups regarding database/tool building for new projects to avoid risk of duplication of effort and divergence of standards, as noted above. However, we also recognize that continual improvement of tools and approaches is critically important, and so an openness to new ideas and a diversity of approaches is valuable. This balance between maintaining common approaches while still encouraging diversity and improvement can be a difficult one. Factors that can help maintain this balance include good communication within the community, a common set of science goals, and a clear pathway to make these outputs available for others to use. EG-ABI has a role in all of these.

Thus there is a need to inform the SCAR community of available biodiversity tools (e.g. through the various SRPs, EG, AG), and of EG-ABI's role in guiding and furthering these developments and promoting their use in the SCAR community. This could be achieved through various means: i) requesting the community to acknowledge and cite tools they used in their articles, talks, etc.; ii) requesting organizers of meetings and symposia add a page to the abstract registration website where they could ask submitting authors to select tools they used and groups they are included in; iii) organize "digitization" workshops to help the community share, integrate, and publish their data; iv) organize software development projects and workshops to help the community build appropriate analytical tools, and train people in their use; v) propose SCAR grants to assist with these efforts (particularly iii and iv), and vi) include chief officers (or their delegate) from relevant Action Groups and Expert Groups in the core members of EG-ABI. This is a non-exhaustive list of potential actions that could be undertaken, and we are seeking



advice from the EXCOM on how to progress further in these matters, and make sure the community is aware of available products and engages with EG-ABI at an early stage of the development of new programs.



SCAR Group

SG

Person

Responsible:

xxx

PS/LS/GS

xxx

## SCAR Executive Committee Meeting 2017

Brno, Czech Republic, 31 July - 2 Aug 2017

# Integrated Science for the Sub Antarctic 2016-2017 Report

**Report Author(s): Gary Wilson**

**Summary of activities from 2016-17 and any other important issues or factors (<150 words):**

The timing of this report is a little unfortunate as we will hold a workshop in association with the SCAR Biology Symposium in Leuven, Belgium on July 15 2017. At this stage most of our effort is in preparation. At the Symposium we will also select new officers as Prof Stephen Chown has stepped down from the Action Group after being elected as President of SCAR. We expect to use SCAR funds for venue hire and catering for the workshop, but we do not have a specific amount yet.

**Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):** *Please indicate if approval is necessary or if they are just asked to note information.*

## Progress and Plans:

### **Major Activities and Significant Progress from the past year (<500 words):**

In the last Austral Summer, the Swiss Polar Institute undertook the Antarctic Circumnavigation Expedition. While not an ISSA initiative many ISSA researchers have been contributing. The first Scientific Results will begin to be shared at a workshop in Switzerland in September, 2017.

The South Atlantic Environmental Research Institute have been progressing the plans for a Research Station on South Georgia to address many of the ISSA initiatives. The next planning meeting will be held in July 2017.

### **Major Future Initiatives and Actions, including rough timeline, for at least the next 2 years (<500 words):**

We expect to publish an action/position paper for integrated Sub Antarctic research following the symposium. We already have issues identified from our last workshop in Punta Arenas and we will now add actions and suggested directions from the next workshop. We also expect to include a current status of understanding.

We also expect to see a number of presentations in association with the next SCAR Open Science Conference in Davos.

### **Please list any new outputs and deliverables (including publications and products that your group feels are part of your achievements):**

See above

**If your Expert/Action Group produces data, please report any new data generated and links to inclusions to the Antarctic Master Directory, etc.**

## Budget

### Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
07-17	Workshop	\$500	Gary Wilson	Gary.wilson@otago.ac.nz
03-18	Publication costs	\$500	Gary Wilson	
06-18	Meeting at SCAR OSC	\$500	Gary Wilson	
04-18	Travel assistance for participants	\$1500	Gary Wilson	

### Briefly describe what the funds will be used for and what the desired results are:

The funds are being directed toward activities that will bring a wide range of participants to meetings, especial non-traditional participants who have strong Sub Antarctic presence.

### Provide an estimate on the % of the budget to be used for support of early career researchers:

2017: 50%  
2018: 50%

### Provide an estimate on the % of the budget to be used for support of scientists from countries with developing Antarctic programmes (as listed here: <http://www.scar.org/finances/contributions>):

2017: 30%  
2018: 50%

## Linkages

Please describe any direct support you receive for your activities beyond SCAR (eg. Funds from another organization for a workshop):

**Please list any major collaborations your group has with other SCAR groups and with organisations/groups beyond SCAR:**

The New Zealand Antarctic Research Institute has supported travel of a number of participants in meetings

## Outreach and Capacity Building

**Please describe any outreach, communication and capacity building activities that your group participates in. Also provide information on activities that demonstrate effectiveness as a network. (coordinating activity for your discipline/topic, i.e. mailing list and diversity of scientists involved) (<250 words):**

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Professor Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. **Please list one or more people (name and email address) from your Group who would be willing to serve as reviewers for the next few years.**

Gary Wilson

## Membership

### Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
Chair	Gary	Wilson	Otago University	New Zealand	Gary.wilson@otago.ac.nz		
	Bettine	Van Vuuren		South Africa			

[SCAR Group Name]: 2016-2017 Annual Report, cont.

	Marc elo	Leppe		Chile			
	Dana	Bergstr om		Austra lia			
	Aleks	Teraud s		Austra lia			
	Pete	Convey		UK			

*\* Please include any APECS representative / Junior Officers*

**Other members**

First Name	Last Name	Affiliation	County	Email

**Requests to the Secretariat:**

*If there are specific administrative tasks you would like help with such as your webpages, mailing list, online meeting tools, etc., please include them below:*

## **SCAR Integrated Science for the Sub-Antarctic (ISSA) Action Group progress report following the ISSA Workshop at the SCAR Biology Symposium, July 2017.**

**Date: July 18, 2017**

### **ISSA Objectives:**

- 1) Provide a comprehensive overview of past and current sub-Antarctic science,
- 2) Identify pressing science questions for current and future work based on national priorities, strengths, and 1<sup>st</sup> SCAR Horizon Scan questions,
- 3) Identify key lessons for science, conservation, and policy across the region,
- 4) Develop a network of scientists across the region, including support for early career researchers.

Objective 2 was completed at ISSA's **first workshop** held in Cerro Castillo (Torres del Paine) in advance of the Southern Connections Conference in Punta Arenas in January 2016.

The group included representatives from Chile, New Zealand, Australia, South Africa, USA and the UK and the AntEco and AnT-ERA SCAR Scientific Research Programmes.

We were hosted by the mayor of Cerro Castillo who kindly offered accommodation in the town Hosteria and a meeting venue at the town library.

The Goals of the workshop were to identify contemporary emerging scientific questions that are circum-subantarctic in scale and global in impact. We explored taking a common approach to addressing these questions from across the subantarctic at various sites.

During the two day workshop, individuals addressed the following questions within the group:

1. What are the key research questions that are common to the sub-Antarctic (physical and biological)
2. How can/should we measure them in common way
3. What are the critical timescales / approaches required
4. How do we develop a time series that spans from the LGM to the future super warm interval
5. What options exist for starting the work in each region
6. What are the barriers to making the measurements
7. How can we link to/inform management approaches/policy development
8. What is the state of current knowledge (to feed into the paper you suggest)
9. How might we adapt the LTER approach to develop a common proposal - what would our key initial hypotheses be, our first set of questions, and our common approach to data collection, analysis and handling?

Work groups discussed the following topics:

1. What defines the Subantarctic and its importance?
2. The key values and benefits of the region.
3. Identified pressing science questions for the Subantarctic including those already identified by the SCAR horizon scan.

4. Outlined existing efforts, opportunities for collaboration and current gaps.
5. How we can work collaboratively and in an integrated and standardized way to achieve wider goals?
6. Who the key stakeholders are and their motivations / interest ?
7. What the significant challenges are to an integrated Subantarctic science initiative?

By the end of the workshop the group identified key priority areas for research across the circum-subantarctic region:

- 1. Climate prediction** - Using the unique properties of the Subantarctic to quantify and predict changes propagating to the rest of the world. The Subantarctic offers a very important link between the Antarctic and the lower latitudes as they allow attribution of changes, an opportunity of year round monitoring of physical and biological systems. The group also recognized the opportunities presented by the diversity of the Subantarctic islands and region, the range of latitudes, the links to all the Southern Hemisphere Oceans and the range of iconic species around the Subantarctic.
- 2. Carbon sink / source** – The Subantarctic is the world’s most important region for sequestering of Anthropogenic CO<sub>2</sub> through marine ecosystem services. Tracking and predicting this into the future will help inform CO<sub>2</sub> emission targets and policies. An important topic includes the island effect – where the islands are eroding into the Southern Ocean and providing important nutrient sources to drive the drawdown of carbon.
- 3. Life in transition in space and time** – The Subantarctic offers a unique opportunity to understand biological resilience adaptation and response to change across steep gradients. A particularly interesting opportunity exists around the historical culling of top predators and subsequent response of the ecosystem. The region also holds an important history of human presence and human legacy in the Southern Ocean. Opportunities exist to consider resistance, resilience, recovery, restoration and connectivity of species and ecosystems.
- 4. Defining the origin of the Subantarctic ocean, atmosphere (westerlies), landscape and biome** – The Subantarctic biome is unique and directly linked to the isolating effects of the Antarctic Circumpolar Current and Westerly Winds. Historical biogeography, its heterogeneity and homogeneity presents an opportunity to understand the long term evolution of the Southern Hemisphere Ocean and Climate system.
- 5. Biological resources** – The Subantarctic is still a very important fishing ground and there is important work to be done to understand future sustainability and responsible exploitation underpinned by science.
- 6. Conservation, protection and restoration** – The Subantarctic Islands also provide important nodes for the understanding of invasive species, heritage, understanding contemporary biodiversity and Marine Protection. In a circum-subantarctic sense there is a strong need for systematic conservation planning.

Developing an implementation plan to progress some of the research priorities has been slower than planned due to extenuating circumstances amongst the original leadership team: Gary Wilson (chair) has been tied-up for a year with a family illness, and Steven Chown (co-chair) became SCAR president and had stepped down from his ISSA role

In 2018, we have been able to get the ISSA implementation plan back on track:

**A recent second workshop** was held in Leuven following the SCAR Biology Symposium in July 2017. A new cohort of researchers were engaged given the location of the 2<sup>nd</sup> workshop.. The participants considered practical steps the ISSA Action Group could take to give effect to



the priority areas identified in the first workshop, as well as addressing the other ISSA objectives.

The group included representatives from Canada, Chile, France, New Zealand, Australia, South Africa, and the UK. Participants represent members from SCAR-SCATS AntEco, AnT-ERA SCAR Scientific Research Programmes, ANTOS, EGBAM, APECS members were also present and participants on the recent ACE expedition.. Apologies were received from Argentinian, Norwegian and UK representatives. There were researchers from the following disciplines: plant physiology, marine mammals, terrestrial invertebrates, molecular genetics, biogeography, conservation science, climate science, oceanography, and geology.

### **Participants considered the following agenda:**

1. A summary presentation of the outcomes of the Cerro Castillo meeting
2. How can we should we answer the questions posed from the Cerro Castillo meeting?
  - 2.1 What data sets / species
  - 2.2 How do we collect the data?
  - 2.3 Data time-series – what do we have / what do we need?
  - 2.4 Latitudinal gradients / transects
  - 2.5 How do we connect observations temporally and spatially
3. What resources / logistics are needed / available
4. Progress reports from each sector – existing efforts / planned efforts
5. What are the new opportunities – new stations / voyages
  - 5.1 potential links to other SCAR programmes (e.g. ANTOS, others?)
6. How can we ensure progress – what do we need to do in ISSA to help?
7. Next steps for ISSA
  - 7.1 Publications – High level summary / position paper – “importance of the Subantarctic” – setting up the current knowledge and posing the important questions and directions from the framework that came out of the Cerro Castillo meeting. Others? Who can contribute?
  - 7.2 Workshops / meetings
8. Officers of ISSA
9. Any other business

New opportunities were identified for ISSA

- Broader APECS engagement (APECS members)
- Alignment with current policy and governance frameworks (all participants)
- South American Antarctic meeting in late 2017 (Chile)
- New research vessels coming online (Australia and France)
- ANTOS are cementing their different “Tier” observatories providing opportunity for the creation of a subgroup within ANTOS of SUBANTOS, based in the sub-Antarctic.
- Overlapping efforts with the ACE expedition. ACE is able to assist with a current snapshot, but ISSA will still need to spearhead the development of timeseries to address the ISSA research questions, so it’s a great addition to ISSA.

### **Immediate Actions arising from meeting:**

1. Collate existing subantarctic relevant research strategies from Subantarctic nations
2. Collate existing metadata via survey

3. Carry out survey (following the ANTOS model) to compile current research activities in the Subantarctic
4. Identify Policy synergies and where there is opportunity for future research
5. Identify links to ANTOS relevant for subantarctic installations
6. Prepare manuscript on the “Importance of the Subantarctic” as a guiding document to assist future applications for funding/expedition support aiming for submission to a hi-impact journal.
7. Plan a workshop for a contemporary sub-Antarctic ecosystem assessments under IUCN criteria (to be held within 12 months)
8. Arrange workshop to assemble a coordinated view on how species are behaving between different subantarctic sites and settings to provide a predictive management tool.
9. Update SCAR ISSA web site, create an ISSA list server for information exchange and knowledge management
10. Investigate expedition opportunities to establish baselines and opportunities for ANTOS installations on subantarctic islands and nearby marine settings
11. Circulate a list of appropriate data repositories/ portals where sub-Antarctic biodiversity data can be held
12. Workshop participants to identify relevant key papers and Co-Chairs will compile and circulate
13. Prepare ISSA slides for use at other meetings to encourage wide participation in ISSA.

#### **Progress on ISSA objectives to date, following Leuven Workshop**

Objective 1. A strategy to acquire and collate information on of past and current sub-Antarctic science was developed

Objective 2. A strategy to collate national priorities was developed and we now aim to determine their alignment with SCAR Horizon Scan questions and existing research.

Objective 3. Science questions have been identified. A summary of existing policy and conservation strategies has been proposed.

Objective 4. A network of scientists is now connected through ISSA, including representatives from APECs who are committed to engaging early career researchers through existing networks

#### **Current Committee:**

Gary Wilson (New Zealand, Co-Chair)  
Justine Shaw (Australia, Co-Chair)  
Dana Bergstrom (Australia, ANTOS rep)  
Marius Rossouw (South Africa, APECS rep)  
Claudia Maturana (Chile, APECS rep)  
Ian Hogg (Canada, ACE rep)  
Bettine van Vuuren (South Africa)  
Andrew Lowther (Norway)  
Irene Schloss (Argentina)  
Thomas Saucedo (France)  
Pete Convey (UK)