

 	<b>SCAR Sub-Group</b>	<b>EGABI</b>
	SG	LS
	Person Responsible:	Ben Raymond
<b>SCAR Delegates Report</b>		

## EGABI

### 2018-2020 Report

#### Summary (no more than one page)

##### **Report Authors**

Ben Raymond (Australia), Anton Van de Putte (Belgium), Bruno Danis (Belgium)

##### **Summary of activities from 2018-20**

The Expert Group on Antarctic Biodiversity Informatics was formed in 2012, with Bruno Danis as the chief officer and aiming to foster the application and development of biodiversity informatics in the SCAR community. In the subsequent 8 years, EGABI achieved a number of remarkable successes, contributing to such projects as the SCAR Biogeographic Atlas of the Southern Ocean, the Microbial Antarctic Resource System, and the Retrospective Analysis of Antarctic Tracking Data. Due to changes in work commitments, Bruno stepped down as chief officer in 2020, just prior to the end of the current EGABI term. Ben Raymond replaced Bruno as chief officer, with Anton Van de Putte as deputy.

Outcomes since 2018 include:

- (with EGBAMM) publication of the main Nature paper and data from the RAATD project
- formation of a collaboration with the rOpenSci project, which promotes and develops R software tools for computationally-driven science. Achievements from that collaboration so far include SCAR-specific R packages and workshops
- (with EGBAMM) expansion of the Southern Ocean Diet and Energetics database content (particularly with respect to energetics and DNA-based diet data), and contribution to an energetics review paper (Schaafsma et al. 2018)

EGABI: 2018-2020 Report, cont.

- community building and outreach: development of slack and GitHub spaces to better support community communication and collaboration

In terms of upcoming activities, EGABI has reached the end of its current term. However, the dynamics of the group, the various projects that are in development, and the potential for continued valuable outputs in this area means that we would like to ask to be continued for another term of 4 years. To this end, we have developed a revised mission and terms of reference document for the next iteration of the group (see [HERE](#)). The COVID situation, recent change of group chair, cancellation of the OSC, and late provision of the group renewal template has meant that we have not developed a formal group renewal proposal using the proper template. We apologize and are aware that the Delegates may therefore not be able to take a decision on the formal renewal of our expert group on that basis. Thus, we ask to be continued - without additional budget - for the next two years (until OSC 2022). During this time, membership of the core group (responsible for leadership of EGABI activities) will be refreshed. A revised plan for immediate and longer-term group activities will be developed based on that membership and in broader consultation with the SCAR community. We will also seek to establish greater visibility within the SCAR community, so that not only can EGABI efforts be better aligned with community priorities, but also so that EGABI tools and resources are more readily visible and available to all members of the community.

**Summary Budget 2018- 2020**

2018	2019	2020
Spent	Spent	Allocated
(US\$) 4469	0	5355

## Progress to date

### Outcomes/achievements summary table

Sub-group	Outcome/Achievement
<b>The SCAR/rOpenSci collaboration</b>	<p>rOpenSci is a non-profit initiative that promotes open and reproducible research, by developing and promoting R software tools that lower the barriers to working with scientific data sources, creating social infrastructure through a welcoming and diverse community, and building the capacity of software users and developers. EG-ABI started collaborating with rOpenSci in 2017 and this initiative has led to several blog posts, information sessions, establishment of a slack space, and development of a number of R software packages to assist the Antarctic and Southern Ocean science community.</p> <p>Two workshops were run in 2019 with support from rOpenSci (see “Linkages”, below), with a third planned to be held in conjunction with the Hobart SCAR meeting (but this has been postponed). These workshops were particularly aimed at students and early-career researchers (see breakdown, below).</p>
<b>RAATD project</b>	<p>Since 2015, EGABI has been collaborating with EGBAMM and the broader Antarctic science community on the Retrospective Analysis of Antarctic Tracking Data project. The first major publications hit the press in 2020 including a Nature paper and Nature Scientific Data paper. See <a href="https://scar.org/scar-news/eg-bamm-news/tracking-predators-southern-ocean/">https://scar.org/scar-news/eg-bamm-news/tracking-predators-southern-ocean/</a> for details.</p>
<b>Community development</b>	<p>Some additional EGABI efforts to build and support our community have included:</p> <ul style="list-style-type: none"> <li>- EG-ABI on behalf of SCAR established a SCAR organization account on the GitHub platform and has made it available to the SCAR community for development and promotion of SCAR software and other informatics products. See <a href="https://github.com/SCAR">https://github.com/SCAR</a> and <a href="https://scar.org/general-scar-news/scar-github/">https://scar.org/general-scar-news/scar-github/</a></li> <li>- Slack is a messaging and collaboration platform, and is particularly popular amongst software development and data analytics communities. EGABI has two Slack presences: one (the “SCAR Data Laundry”) in conjunction with biodiversity.aq to support Antarctic data users for general</li> </ul>

EGABI: 2018-2020 Report, cont.

	<p>biodiversity-analytics related topics, and the second with rOpenSci</p> <ul style="list-style-type: none"><li>- workshops as noted above</li></ul> <p>We believe that these and similar initiatives will become increasingly important in maintaining the SCAR community while physical meetings remain challenging.</p>
<b>mARS</b>	<p>The Microbial Antarctic Resource System for the discovery, access and analysis of molecular microbial diversity data has been updated to a new POLA3R system and is in early testing:</p> <p><a href="http://antabif.bebif.be/www/pola3r/">http://antabif.bebif.be/www/pola3r/</a></p>
<b>RAS</b>	<p>The Register of Antarctic Species is an authoritative inventory of Antarctic And Southern Ocean Organisms. Participants received training in the use of the online editing tools and how to add and validate information. Eight priority data types were determined such as feeding &amp; diet information, development, mobility and their importance to society, documented through Vulnerable Marine Ecosystem (VME) indicator taxa. In addition, efforts will be done to document the type locality of all RAS species, as well as making available an image of the holotype.</p>

## Notable Papers

1. Hindell, M.A., Reisinger, R.R., Ropert-Coudert, Y. *et al.* 2020. Tracking of marine predators to protect Southern Ocean ecosystems. *Nature* 580, 87–92. <https://doi.org/10.1038/s41586-020-2126-y>

This paper describes a novel method to determine areas that require protection from existing, developing and forthcoming threats, using electronic and satellite tracking data from birds and marine mammals.

This community-wide initiative, termed the Retrospective Analysis of Antarctic Tracking Data, was a project of SCAR's Expert Groups on Birds and Marine Mammals and Antarctic Biodiversity Informatics. Support was received from the Centre de Synthèse et d'Analyse sur la Biodiversité, France, and WWF-UK. SCAR engaged its extensive network of Antarctic researchers to assemble existing Southern Ocean predator tracking data.

2. Ropert-Coudert, Y., Van de Putte, A.P., Reisinger, R.R. *et al.* 2020. The retrospective analysis of Antarctic tracking data project. *Nature Sci Data* 7, 94. <https://doi.org/10.1038/s41597-020-0406-x>

This paper describes the dataset that was assembled for the RAATD analysis. After careful validation, the result was an enormous database of over 4000 individual animal tracks from 17 predator species with diverse prey requirements, collected by more than 70 scientists across 12 national Antarctic programs.

3. Schaafsma, F.L., Cherel, Y., Flores, H. *et al.* Review: the energetic value of zooplankton and nekton species of the Southern Ocean. 2018. *Mar Biol* 165, 129. <https://doi.org/10.1007/s00227-018-3386-z>

Understanding the energy flux through food webs is important for estimating the capacity of marine ecosystems to support stocks of living resources. The energy density of species involved in trophic energy transfer has been measured in a large number of small studies, scattered over a 40-year publication record. Here, we reviewed energy density records of Southern Ocean zooplankton, nekton and several benthic taxa, including previously unpublished data.

The data from this paper was entered into the SCAR Diet and Energetics Database and new functionality added to the sohungry and solong

## Linkages

**Direct support from outside organisations received for your activities**  
(Numbered list with values indicated, if direct cash support. Please restrict in-kind support to substantive in-kind support only)

SCAR Antarctic Biodiversity Portal, Royal Belgian Institute for Natural Sciences, Belgian Science policy 5000 euro travel support - [Southern Ocean Spatial Analysis and Modelling Course](#) (hosted by the SCAR Antarctic Biodiversity Portal, September

2019). In preparations for this workshop we investigated various funding options. Ant-ECO kindly agreed to provide \$5000 for travel support, allowing some early career scientists to participate who would otherwise not have been able to. After the completion of the workshop, external funding covering this \$5000 was obtained from biodiversity.aq/RBINS/BELSPO. As a result we refunded the money back to Ant-ECO, with the intention to provide travel support for Participation to the SCAR OSC - now on hold, of course.

### Major collaborations your sub-group has with other SCAR groups and with organisations/groups beyond SCAR

(Numbered list of substantive collaborations)

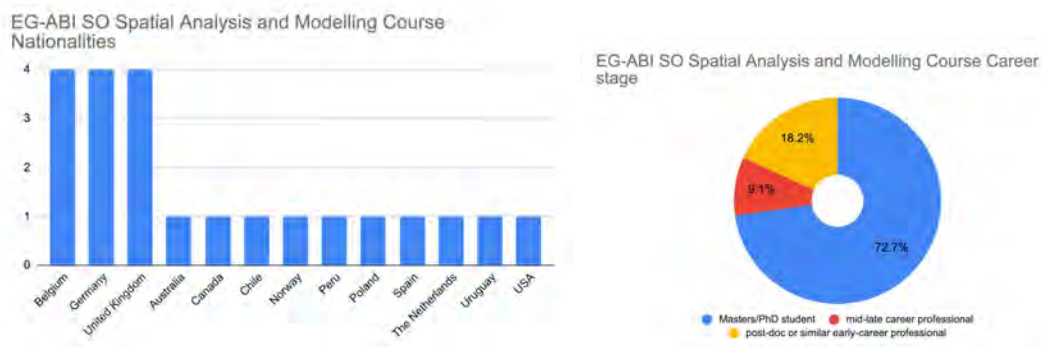
#### Within SCAR

1. EG-BAMM (RAATD, FRAPPé), SOOS (dissemination of RAATD data), Ant-Eco
2. Quantarctica (assisted with contribution of data layers into Quantarctica v3, developed R package so that R users can access Quantarctica layers direct in R)

#### Outside SCAR

1. Information about the SCAR/rOpenSci collaboration has been given above. Notably in 2019, two workshops were run by EGABI with support from rOpenSci:
  - Short Course: Tools for Southern Ocean spatial analysis and modelling (March 2019)
  - [Southern Ocean Spatial Analysis and Modelling Course](#) (hosted by the SCAR Antarctic Biodiversity Portal, September 2019)

These workshops were particularly aimed at students and early-career researchers.



2. GBIF capacity building funding proposal submitted, March-June 2020  
A funding proposal was submitted to GBIF's capacity enhancement support programme, proposing to address a range of activities including developing guidelines for digitizing Antarctic specimens and providing travel support to the planned Hobart analysis workshop (above). However, this funding application was not successful.
3. The Belgian Science Policy (BELSPO) supports ABI activities, through research programmes (BRAIN-BE), direct funding (workshop, above) and

through in-kind support. Similar in-kind arrangements exist with other national programs of ABI members (e.g. the Australian Antarctic program).

## Outreach and Capacity Building

### **Outreach, communication and capacity building activities**

See elsewhere in this report, including but not limited to:

1. Short Course: Tools for Southern Ocean spatial analysis and modelling (March 2019)
2. Southern Ocean Spatial Analysis and Modelling Course (hosted by the SCAR Antarctic Biodiversity Portal, September 2019)
3. Register of Antarctic Species workshop (November 2019, Ostend)
4. rOpenSci and SCAR Data Laundry slack spaces
5. SCAR GitHub space
6. Development of software tools (R packages) to improve the capacity of the SCAR community to undertake certain biodiversity-science tasks (packages include [solong](#), [sohungry](#), [quantarcticR](#), contributions to [SOMap](#), and more)

## Membership

### Leadership including core group

Role	First Name	Last Name	Affiliation	Country	Email	Date Started
<b>Chair (to 2020)</b>	Bruno	Danis	Université libre de Bruxelles	Belgium		
<b>Chair (from 2020; secretary prior to 2020)</b>	Ben	Raymond	AAD	Australia		
<b>Deputy chair (from 2020)</b>	Anton	Van de Putte	Royal Belgian Institute of Natural Sciences	Belgium		
<b>Core member</b>	Anne-Sophie	Archambeau	Muséum national d'Histoire naturelle	France		
<b>Core member</b>	Kerstin	Jerosch	AWI	Germany		
<b>Core member</b>	Claude	De Broyer	Royal Belgian Institute of Natural Sciences	Belgium		
<b>Core member</b>	Huw	Griffiths	BAS	UK		
<b>Core member</b>	Alison	Murray	Desert Research Institute	USA		
<b>Core member</b>	Yan	Ropert-Couderc	CNRS	France		
<b>Core member</b>	Jose	Xavier	University of Coimbra	Portugal		

*Please identify early-career researchers with \* in first column*

### Other members

Beyond the “core” leadership group, EGABI had an open membership model. This broader membership encouraged a diverse range of participation levels to suit individual preferences, from members who actively led and participated in EGABI projects through to those who engaged more peripherally, e.g. by



## EGABI: 2018-2020 Report, cont.

following EGABI activities, participating in courses, or using EGABI-developed tools. We did not attempt to specifically keep track of the broader membership.

## Final recommendations to Delegates (half page)

### **Final future research recommendations**

*What should SCAR's priorities be for future research in this area? Note that this section should not be used to propose new groups, for which a separate process should be followed with advice from your Science Group leader(s)*

For clarity, EGABI generally doesn't instigate scientific research projects under its own auspices - we collaborate with domain-specific groups on the computational aspects of such projects. EGABI therefore won't make "research" recommendations as such, but can make suggestions that are perhaps better characterized as "implementation" recommendations.

As outlined in our 2017 report to EXCOM, EGABI has pursued a community-focused approach to developing tools and platforms for computational biodiversity science. Shared tools and platforms bring benefits of increased collaboration and communication between projects, reduced duplication of effort, and opportunity for projects to build upon each other's work - reaching better outcomes that would be achieved otherwise. This has proven to be extremely useful, and we recommend that such approaches continue. Notably, the workshops (and other less formal training opportunities) that we have undertaken have been very popular and valuable to participants, especially early-career researchers, and we will aim to continue to provide such opportunities.

The limitations on travel and other physical meetings enforced by the COVID-19 pandemic have forced the scientific community to adopt remote collaboration tools to a greater extent than otherwise would have been the case. Improvements and emerging capabilities in remote collaboration tools and processes, triggered by the COVID response, will likely bring new opportunities that EGABI and the broader SCAR community might be able to take advantage of.

### **Final procedural recommendations**

*Please include here any operational insights that you would like to share with the Delegates, drawn from your experiences of running this sub-group.*

No procedural recommendations.