



International
Science Council

SCAR Sub-Group

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Person
Responsible:

EG-ABI

LS

Ben Raymond

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Expert Group on Antarctic Biodiversity Informatics (EG-ABI)

2020-22 Report

Summary

Report Author(s)

Ben Raymond (Australia), Anton Van de Putte (Belgium), Zephyr Sylvester (USA), and the EG-ABI core group

Summary of activities from 2020-22

The Expert Group on Antarctic Biodiversity Informatics was formed in 2012, and its initial 8-year term extended in 2020 for two years to 2022. The extension was accompanied by a change in leadership (office-holders and new core group members) and a refocusing of the group's mission and terms of reference towards tools and resources for data access, integration, analysis, and synthesis, and enabling the community to produce and utilize those resources. In March 2021 we held an online information session and established a mailing list.

The COVID-19 pandemic was a challenge for our group, as of course it was for everyone. Nevertheless, we collectively managed some good outcomes with collaborations on various projects (see projects and publications below), and continued development of tools, primarily R packages for data access, analysis, and visualization.

In the latter part of 2022 we will look to continue our current projects and also help the community re-establish links post-pandemic. We will use EG-ABI funds to offer some small travel bursaries and a data-visualisation (or similar) competition with some small prizes. These will be focused on, but not exclusive to, early-career researchers and those from countries with developing Antarctic programs.

Renewal request

EG-ABI has reached the end of its current term. However, it is clear that the need for data-focused science tools and capabilities continues to grow at a rapid pace. The various EG-ABI projects that are underway and the potential for continued, valuable community outputs means that EG-ABI is extremely well placed to continue to lead and assist the Antarctic science community in this area.

We therefore request a renewal of the group for an additional 8-year term to 2030. See the "Future plans" section, below, for work plans for the remainder of 2022 and into 2023. Work plans for later years will be developed in response to emerging

EG-ABI: 2020-22 Report, cont.

needs, opportunities, and directions of the broader Antarctic and Southern Ocean communities.

Summary Budget 2021 to 2024

	2021	2022	2023	2024
	Spent	Carryover plus allocation	Request	Request
(US\$)	2568	4787	2000	2000

Progress to date

Sub-group Outcomes Summary

Sub-group	Activity/Outcome/Benefit/Achievement
EG-ABI	<p>The SCAR/rOpenSci collaboration. 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.</p> <p>During 2021 and 2022, EG-ABI has been working with the SCAR ImPACT (persistent organic pollutants) group (CI Susan Bengtson-Nash) to collate data on POPs in the Southern Ocean, and build an interactive web application for researchers to visualise this data. At the time of writing (June 2022) this app is in an early but operational form. On the basis of this work, we reached out to the Plastic action group (Ilaria Corsi) to extend this work to a similar app for microplastics. This work is anticipated to be completed in late 2022 or early 2023.</p>
EG-ABI	<p>The RAATD project. Since 2015, EG-ABI has been collaborating with EG-BAMM and the broader Antarctic science community on the Retrospective Analysis of Antarctic Tracking Data project. The first papers from RAATD were published in 2020 (and reported in our last report to Delegates) but collaborations stemming from this work continue, and have led to new publications using the RAATD data set and methodologies (see publications list, below). In October 2021 a workshop took place in collaboration with CESAB (the Centre for the Synthesis and Analysis of Biodiversity, France), to look at continued follow-up projects to RAATD.</p>
EG-ABI	<p>(With EG-BAMM) The Diet and Energetics Database continues to prove useful to the Southern Ocean research community (see publications below). We have begun discussions with the chief editor and editorial board of Polar Biology on a mechanism to make it easier for authors of diet/energetics papers in Polar Biology to get their data into the SCAR database. The editors are supportive of this idea, which will increase data availability for the community and potential for new science. One hurdle to this idea, and to the maintenance and continued entry of data into this database more generally, is the time required for data reformatting and entry. We propose to ease some of this burden by using EG-ABI funds for data entry. This data entry work can be primarily aimed at early career researchers and those from countries with developing Antarctic programs, thereby also acting as a conduit for those researchers to the wider community of diet/energetics researchers.</p>

EG-ABI: 2020-22 Report, cont.

EG-ABI	Spatial modelling. A number of groups in the SCAR community are developing and applying methods for spatial biodiversity modelling, including species distribution and habitat selectivity models. Given the wide applicability and interest in these techniques, EG-ABI is working to improve collaboration within the community by helping with communication, access to software and data, and sharing of expertise. EG-ABI will engage researchers within the community with an interest in spatial modelling to establish project need, scope and format.
EG-ABI	The Register of Antarctic Species is an authoritative inventory of Antarctic And Southern Ocean Organisms. EG-ABI is engaged with this project, primarily via biodiversity.aq, with particular attention to supporting researchers to use RAS in their wider biodiversity analysis workflows. One of the aspects we are further exploring is the inclusion of trait data into RAS, which can be of particular interest in mechanistic modeling approaches.

Sub-group Cash Flow

(Since previous report to Delegates in 2020)

Sub-group	Allocation	Amount spent		
		2020	2021	2022
EG-ABI	To ImPACT for data entry		820	

Future plans

Planned activities in 2022 to 2024

Sub-group	Planned activity
EG-ABI	In conjunction with the ImPACT and Plastic groups, we will finish the R/Shiny data visualisation apps.
EG-ABI	Continued data entry into the Diet and Energetics Database, and maintenance/extension of the associated R software packages.
EG-ABI	Community development has been, and continues to be, a vitally important theme of EG-ABI workplans. Refer to our 2017 report to EXCOM and workshops, outreach activities, and collaboration spaces established since then. We propose to use part of our 2022 fund allocation for travel bursaries, to help researchers to reconnect after the pandemic, and to work on any kind of biodiversity informatics-related collaborations. We are also planning to run a data-visualisation (or similar) competition online later in 2022, with some small prize money. Details are yet to be finalized, but the competition will be structured to encourage collaboration and connections across researchers and disciplines.

EG-ABI: 2020-22 Report, cont.

	See “Planned use of funds”, below. Early-career and researchers from countries with developing Antarctic programs will be encouraged to apply for these.
EG-ABI	<p>Follow-on activities from the RAATD project will continue, with varying levels of involvement from EG-ABI members. Examples include:</p> <p>Following on the RAATD post-CESAB meeting, a postdoctoral fellow, Anne-Sophie Bonnet-Lebrun from the French CNRS laboratory Centre d’Etudes Biologiques de Chizé (on an ASOC contract), has been tasked to work on the use of RAATD data into a wider scheme. Her first task is to evaluate the overall data availability (all taxa combined) in the Southern Ocean. Once this assessment is done she will use the data available to define the ecogeographical regions that are relevant to all taxa for conservation purposes.</p> <p>Sarah Becker and Cassandra Brooks (UC Boulder) are coordinating some complementary work on identifying areas that meet the KBA (key biodiversity area) criteria in the Southern Ocean, using (in part) the RAATD data sets. An initial workshop will be undertaken during the SCAR 2022 conference, with participation of EG-ABI members.</p>
EG-ABI	The spatial modelling project will move into a community engagement phase, soliciting collaboration and input from researchers actively working in biodiversity modelling areas. Resources (papers, software, data, tutorials and other guides) and a communication forum will be established and populated.
EG-ABI	Other EG-ABI activities will continue as required, including contributions to the Register of Antarctic Species, maintaining the SCAR GitHub presence, and engaging with the broader community through Slack and other mechanisms.

Planned use of funds for 2022 to 2024

Year (YYYY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
2022	Travel bursaries (4 @ 500 USD each)	2000		
2022	Data entry for the Diet and Energetics Database (estimated 70 hours @ 30USD per hour, with the work spread across two or three people)	2100		
2022	Data visualisation competition prize money	650		
2023	Data entry for the Diet and Energetics Database	1500		
2023	Travel/workshop support	500		
2024	Data entry for the Diet and Energetics Database	1500		
2024	Travel/workshop support	500		
Total				

Any additional detail on funds usage and desired results/outcomes

Percentage of the budget to be used for support of early-career researchers

2022: 50%

2023: 50%

2024: 50%

Percentage of the budget to be used for support of scientists from countries with developing Antarctic programmes

2022: 50%

2023: 50%

2024: 50%

Membership

Leadership

Role	First Name	Last Name	Affiliation	Country	Primary Language	Email	Date Started
Chief Officer	Ben	Raymond	Australian Antarctic Division	Australia	English	ben.raymond@aad.gov.au	2012
Deputy chief officer, SCADM liaison	Anton	Van de Putte	Royal Belgian Institute of Natural Sciences and Université libre de Bruxelles	Belgium			2012
Secretary*	Zephyr	Sylvester	University of Colorado Boulder	USA			2021
Communications officer*	Svenja	Halfter	Institute for Marine and Antarctic Studies, University of Tasmania	Australia	German / English	Svenja.Halter@utas.edu.au	2021
Core group member*	Briannyn	Woods	Institute for Marine and Antarctic Studies, University of Tasmania	Australia	English	Bree.Woods@utas.edu.au	2021
Core group member	Claudia	Andrade Díaz	University of Magallanes	Chile		claudia.andrade@umag.cl	2022
Core group member	Huw	Griffiths	British Antarctic Survey	UK	English	hfg@bas.ac.uk	2012
Core group member	Kerstin	Jerosch	Alfred Wegener Institute	Germany	German	Kerstin.Jerosch@awi.de	2018
Core group member	Lucas	Krüger	Instituto Antártico Chileno	Chile			2021
Core group member, EGBAMM liaison	Yan	Ropert-Coudert	CNRS CEBC-La Rochelle Université; French Polar Institute	France	French	yan.ropert-coudert@cebc.cnrs.fr	2012

*(Please identify early-career researchers with * in first column)*

Other members

EG-ABI is an inclusive group and membership is open to anyone. Members are welcome to engage with EG-ABI to whatever degree suits them, from actively collaborating in EG-ABI projects, participating in selected workshops and other events, or simply observing communication on the mailing list or other information channels.

Additional information (optional)

Notable Papers

1. Reisinger R, et al. (2021) Habitat model forecasts suggest potential redistribution of marine predators in the southern Indian Ocean. Diversity and Distributions <https://doi.org/10.1111/ddi.13447>
A follow-up paper from the RAATD project that looks at the potential shift of important southern Indian Ocean habitat under climate change scenarios.
2. France, Australia, Belgium, Germany, the United Kingdom, the United States, and South Africa (2021) Information Paper IP049: The Retrospective Analysis of Antarctic Tracking Data identifies Areas of Ecological Significance in the Southern Ocean. ATCM XLIII and CEP XXIII 2021, Paris, France / [Online](#)
and
France, Australia, Belgium, Germany, the United Kingdom, the United States, and South Africa (2021) Working Paper WP51: The Retrospective Analysis of Antarctic Tracking Data (RAATD): Areas of Ecological Significance in the Antarctic marine environment. ATCM XLIII and CEP XXIII 2021, Paris, France / [Online](#)
Papers to the ATCM and CEP on the RAATD project outcomes.
3. Reisinger R, et al. (in press) Predator-derived bioregions in the Southern Ocean: characteristics, drivers and representation in Marine Protected Areas. Biological Conservation
Another follow-up paper from the RAATD project.
4. Schaafsma FL, et al. (2022) Allometric relationships of ecologically important Antarctic and Arctic zooplankton and fish species. Polar Biology <https://doi.org/10.1007/s00300-021-02984-4>
A compilation, including new data, of length-weight and other allometric equations. This publication built on and contributed to the SCAR Diet and Energetics database.
5. Brooks CM, et al. (2020) Progress towards a representative network of Southern Ocean protected areas. PLoS ONE <https://doi.org/10.1371/journal.pone.0231361>
An analysis of the coverage of current and proposed MPAs in the Southern Ocean, considering (amongst other things) the pelagic and benthic bioregionalisation analyses that EG-ABI members have previously contributed to.
6. Van de Putte AP, et al. (2021) From data to marine ecosystem assessments of the Southern Ocean: achievements, challenges and lessons for the future. Frontiers in Marine Science. <https://doi.org/10.3389/fmars.2021.637063>

A contribution from EG-ABI members to the MEASO special issue, touching on informatics considerations in the context of marine ecosystem monitoring and assessment.

7. Neder C, Fofonova V, Androsov A, Kuznetsov I, Abele D, Falk U, Schloss IR, Sahade R, Jerosch K (2022) Modelling suspended particulate matter dynamics at an Antarctic fjord impacted by glacier melt. Journal of Marine Systems 231. <https://doi.org/10.1016/j.imarsys.2022.103734>

EG-ABI member paper, which serves to translate the changing environment at the WAP due to glacier melt into numbers, and thus to establish protection measures.

8. Woods B, Trebilco R, Walters A, Hindell M, Duhamel G, Flores H, Moteki M, Pruvost P, Reiss C, Saunders RA, Sutton C, Gan Y-M, Van de Putte A (2022) Myctobase, a circumpolar database of mesopelagic fishes for new insights into deep pelagic prey fields. Scientific Data. <https://doi.org/10.1038/s41597-022-01496-y>

A database of mesopelagic fish trawl data, available via the R package ecosystem being developed by EG-ABI and collaborators.

Direct support from outside organisations received for your activities

None in 2020-2022

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

Within SCAR

1. ImPACT and Plastic-AG, R/Shiny apps as mentioned above
2. EG-BAMM, Diet and Energetics Database and the RAATD project (and follow-on activities)
3. SCAR Antarctic biodiversity Portal - biodiversity.aq

Outside SCAR

1. rOpenSci, for R software development and community resources
2. CoastCarb. Kerstin Jerosch is co-leader of the CoastCarb Data Information System work package. Elements of this (particularly the online visualisation and analysis tool development) share commonalities with EG-ABI activities.

Outreach, communication and capacity-building activities

- In March 2021 we held an online EG-ABI information session
- In October 2021 a workshop took place in collaboration with CESAB, to look at follow up projects to RAATD.

Contributions to equality, diversity, and inclusion (EDI)

Selection of the new EG-ABI core group was conducted with a view to balanced representation across gender, career stage, scientific background, and geographic location.

EG-ABI events are run under a code of conduct (e.g. <https://github.com/SCAR/EGABICourse19/blob/master/coc.md>) that celebrates and promotes diversity and inclusion.

SCAR fellowship reviewers

First Name	Last Name	Email	Principal Expertise
Ben	Raymond	ben.raymond@aad.gov.au	modelling, analytics, data synthesis