



SCAR Executive Committee Meeting 2017

Brno, Czech Republic, July 2017

State of the Antarctic Ecosystem **(AntEco)** **2016-2017 Report**

Report Authors: Jan Strugnell, Huw Griffiths, Don Cowan, Anton van de Putte, Aleks Terauds, Conxita Avila, Stefano Schiaparelli, Guido di Prisco, Andres Barbosa Alcon, Craig Cary, Annick Wilmotte, Alison Murray, Angelika Brandt, Pete Convey

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

AntEco recognises the importance of the SCAR Biology Symposium as a major opportunity to bring together the community and facilitate workshops and collaborations. We have concentrated our limited funds on travel support for 35 participants (from 13 countries) with particular attention to less well-represented SCAR members and early career researchers. We also part-sponsored an APECS meeting at SCAR Biology and Polar Gordon Research Conference and Gordon Research Seminar.

Recommendations that EXCOM and Scientific Group Chief Officers should consider (if any):

We, the AntEco steering committee, believe that the community needs to start planning for the next generation of biological themed SRPs. To this end we will hold a discussion around this topic at the SCAR Biology Conference.

Progress and Plans:

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

- SCAR Biology Conference planning
- SCAR OSC 2018 planning and sessions submitted
- A report on the major findings of the SO-AntEco expedition to the South Orkney Islands MPA has been submitted to CCAMLR.

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

- SCAR Biology
- Planning for the next OSC
- Developing ideas for a synthesis products and meetings (to be discussed at SCAR Biology Symposium during the AntEco public session)

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

The AntEco community has published over 100 scientific papers in the last 12 months. Some highlights are listed below with others contributed by our members listed in **Appendix 1**.

Gutt J, Isla E, Bertler N, Bodeker GE, Bracegirdle TJ, Cavanagh R, Comiso JC, Convey P, Cummings V, De Conto R, DeMaster D, di Prisco G, d'Ovidio F, Griffiths H, Khan AL, López- Martínez J, Murray A, Nielsen U, Ott S, Post A, Ropert-Coudert Y, Saucède T, Scherer R, Schiaparelli S, Schloss I, Schofield O, Smith CR, Stefels J, Stevens C, Strugnell JM, Trimbom S, Verde C, Verleyen E, Wall DH, Wilson NG, Xavier JC Cross-disciplinarity and priorities for advancing Antarctic ecosystem research *Marine Genomics In submission*

Chown SL, Brooks CM, Terauds A, Le Bohec C, van Klaveren-Impagliazzo C, Whittington JD, Butchart SH, Coetzee BW, Collen B, Convey P, Gaston KJ, Gilbert N, Gill M, Hoft R, Johnston S, Kennicutt MC, 2nd, Kriesell HJ, Le Maho Y, Lynch HJ, Palomares M, Puig-Marco R, Stoett P & McGeoch MA (2017) Antarctica and the strategic plan for biodiversity. PLoS Biology 15:e2001656.

Amesbury, Matthew J., Roland, Thomas P., Royles, Jessica, Hodgson, Dominic A., Convey, Peter, Charman, Dan J.. (2017) Widespread biological response to recent rapid warming on the Antarctic Peninsula. Current Biology. 10.1016/j.cub.2017.04.034

Waller, C. L., Griffiths, H. J., Waluda, C. M., Thorpe, S. E., Loaiza, I., Moreno, B., ... & Hughes, K. A. (2017). Microplastics in the Antarctic marine system:

An emerging area of research. *Science of the Total Environment*, 598, 220-227.

Roberts, Stephen J., Monien, Patrick, Foster, Louise C., Lofffield, Julia, Hocking, Emma P., Schnetger, Bernhard, Pearson, Emma J., Juggins, Steve, Fretwell, Peter, Ireland, Louise, Ochyra, Ryszard, Haworth, Anna R., Allen, Claire S., Moreton, Steven G., Davies, Sarah J., Brumsack, Hans-Jürgen, Bentley, Michael J., Hodgson, Dominic A.. (2017) Past penguin colony responses to explosive volcanism on the Antarctic Peninsula. *Nature Communications*, 8. 16 pp. doi:10.1038/ncomms14914

Pecl GT, Araújo MB, Bell JD, Blanchard J, Bonebrake TC, Chen I-C, Clark TD, Colwell RK, Danielsen F, Evengård B, Falconi L, Ferrier S, Frusher S, Garcia RA, Griffis R, Hobday AJ, Janion-Scheepers C, Jarzyna MA, Jennings S, Lenoir J, Linnetved HI, Martin VY, McCormack PC, McDonald J, Mitchell NJ, Mustonen T, Pandolfi JM, Pettoelli N, Popova E, Robinson SA, Scheffers BR, Shaw JD, Sorte CJB, Strugnell JM, Sunday JM, Tuanmu M-N, Vergés A, Villanueva C, Wernberg T, Wapstra E, Williams SE (2017) Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being *Science*. 335: 6332, eaai9214

Xavier, J.C., Brandt ,A., Ropert-Coudert, Y., Badhe, R., Gutt, J., Havermans, C., Jones, C., Costa, E.S., Lochte, K., Schloss, I.R., Kennicutt, M.C. II, Sutherland,W.J. (2016): Future Challenges in Southern Ocean Ecology Research. *Frontiers in Marine Sciences* 3:94. doi: 10.3389/fmars.2016.00094.

SCAR ANTOS

Antarctic Near-shore and Terrestrial Observation System (ANTOS) started out as a SCAR Action Group in August 2014. The group's aim is to coordinate biologically focused data collection that is necessary to assess environmental and biological variability and change in terrestrial and near-shore habitats across the Antarctic continent. ANTOS will recommend technical guidelines for an internationally-coordinated installation of sensor networks, and standards for long-term data collection, storage, and sharing among national programs. 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>.

Facilitating Ex Situ Antarctic conservation: the establishment of an international Antarctic Genetic Archive (AGAr).

Through initial support from Antarctica New Zealand and the New Zealand Antarctic Research Institute (NZARI) an international archive of Antarctic genetic diversity has been established at the University of Waikato, New Zealand. The Antarctic Genetic Archive (AGAr) has the ability to receive DNA from all types of environmental samples (soil, filtered water, tissue, plant etc.) and store and manage these samples using available barcoded archive technologies. A centralized database has been designed to capture critical meta-data that will be searchable online.

This new repository is now open to all international programs working on aspects of Antarctic environmental research thereby centralizing the archiving, protection, and distribution of Antarctic biodiversity and genetic complexity in perpetuity. It is hoped that the facility will provide full coverage of the continent and research programs underway. Simple sampling kits have also been designed to capture “samples of opportunity” from expeditions to remote regions where biologists are not present. Field researchers would be provided with preservation kits and instructions prior to going into the field. On return from the ice the kits will be sent directly to the archive for processing. Selected samples would be extracted, amplified and archived by the facility with split samples shipped to the sister facility for replication. Researchers currently with major collections are also encouraged to deposit selected samples for archiving. The archive has been designed specifically to make available unique DNA samples from remote areas of the continent to any Antarctic researchers thereby facilitating extremely difficult comparative studies and reducing the direct and indirect impacts need to revisit already sampled sites.

Significant Deviations from the Implementation Plan, if any:

No significant deviations from plan, but the programme has been extended by two years.

Steps taken to address individual points from your External Review, if any:

- Brought an Asian member onto steering committee (Japan)
- Brought a South American member onto steering committee (Argentina)
- Targeted funding to nations with less-well developed Antarctic programmes
- Encouraging/requesting that funding recipients acknowledge AntEco in their presentations and publications

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

AntEco encourages our programme members to include their data in appropriate databases rather than specifically funding data generation. Examples of newly accession data highlighted from our members are as follows:

Dataset on Antarctic and sub-Antarctic intertidal organisms from Waller et al., 2016 submitted to biodiversity.aq
(http://ipt.biodiversity.aq/resource?r=bas_intertidal)

The draft genome of the Antarctic cyanobacterium *Phormidesmis priestlyii* ULC007 was deposited at DDBJ/ENA/**GenBank** under the accession MPPI00000000.

Pessi et al. (2016) data : Full 16S rRNA gene sequences obtained in this study were submitted to GenBank under the accession numbers KT753316-KT753327 (strain sequences), and KT753328-KT753400 (representative sequences of the OTUs observed by pyrosequencing)

Jancusova et al. (2016) : Genbank accession numbers : 16S rRNA gene sequences : JN979956 – JN979965 and ITS sequences : JN966937 - JN966946

Winter Picoplankton Diversity and Distribution in the US Antarctic Marine Living Resources Study Area - Northern Antarctic Peninsula. Submitted to SCAR - Microbial Antarctic Resource System. Metadata Dataset
<https://doi.org/10.15468/0zsina>. GBIF UUID: [d87b829c-43d6-4b21-afb4-37e66915c6d4](https://doi.org/10.15468/0zsina).

ipt.biodiversity.aq

data.biodiversity.aq

Budget

Planned use of funds for 2017 and 2018

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
2017	Travel support SCAR Biology	19500	Huw & Jan	jan.strugnell@jcu.edu.au hjj@bas.ac.uk
2017	APECS meeting at SCAR Biology	500	Henrik Christiansen	henrik.christiansen@kuleuven.be
2017	Existing commitment for travel from 2016	1000	Melinda Waterman	melindaw@uow.edu.au
2018	SCAR OSC meetings	TBC	Steering Committee	See membership table
2018	SCAR OSC travel	TBC	Steering Committee	See membership table
2018	Workshop	5000	Alison Murray	Alison.Murray@dri.edu
2018	Synthesis projects	TBC	Steering Committee	See membership table

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

The majority of funds for 2017 are allocated to the SCAR biology symposium to ensure that the AntEco community is well represented at this very important meeting. APECS Belgium are also being sponsored for a side event at this meeting.

The funds for 2018 include a commitment to fund a workshop as part of the Ecoinformatics and Systems Biology theme (theme leader: Alison Murray, Desert Research Institute, USA). This meeting will have initial funding from AntEco but will also attract further external funding.

Other 2018 funds will be spent on attendance of the SCAR OSC and associated side meetings and synthesis projects.

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

2017: 75% (including the APECS meeting)
 2018: TBC

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: ~20% (with some overlap with early career researcher funding)

2018: TBC

Linkages

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

2017: British Antarctic Survey Collaboration Voucher Scheme: £6,000 – to fund analysis and reporting to CCAMLR of the SO-AntEco expedition results.

See Appendix 2 for AntEco related external Science Funding (including grants and national programme funding).

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

Don Cowan - International collaborator in NZARI-funded Collaborative Research Program: **Resilience in Antarctic biota and ecosystems**; 2017-2019

SCAR Biology symposium is a strong collaboration between Life Sciences, AntEco and AntERA.

Jan Strugnell (AntEco chair) and Pete Convey have been invited to give plenary lectures at the September 2017 PAIS conference in Trieste, Italy.

Members of AntEco serve on Delegations the Committee on Environmental Protection of the Antarctic Treaty. AntEco continues to work closely with the SCAR Standing Committee on the Antarctic Treaty System (SCATS) largely through Aleks Terauds.

AntEco chairs (Huw & Jan) are on the MEASO Conference and Benchmarking Steering Committee

Jan Strugnell is a member of the oversight committee for the Australian Academy of Science Early Career researcher conference 'The Antarctic frontier: developing research in an extreme environment'.

See output list and appendix 1, especially Gutt et al (submitted) collaboration with AnTERA and AntClim21

Outreach and Capacity Building

Please describe your outreach, communication and capacity building activities. 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):

Our Mailing list has 325 members globally.

SCAR Biology Facebook page (<https://www.facebook.com/SCARBiology/>) managed by AntEco team members has 518 followers and is regularly updated.

Organisation of symposium “Unlocking a continent: scientific research at the Belgian Princess Elisabeth Station, Antarctica 2008-2016” - 29/04/16 : Belgian National Committee for Geodesy and Geophysics (BNCGG) - Belgian National Committee on Antarctic Research (BNCAR) 2016 Symposium, Royal Academy of Sciences, Brussels, Organisation : Frank Pattyn, Thierry Camelbeeck and Annick Wilmotte

Organisation of Mini-symposium MS 3. Linking Antarctic science with environmental protection: Celebrating the 25th anniversary of the Madrid Protocol, Kuala Lumpur, Malaysia. 23/08/2016 : Organisers : José Xavier (PT) – Annick Wilmotte (BE)- – Kevin Hughes (UK) - Gabriela Roldan (ARG) – Jeronima Lopez-Martinez

Wide audience conferences during the cycle ‘Cours Espace Universitaire’ in Liège, Belgium:

- 1) Wilmotte Annick, Le traité sur l’Antarctique, une gouvernance originale pour un continent exceptionnel, Cours Espace Universitaire, Liège, 18/02/ 2016
- 2) Wilmotte Annick. S’adapter pour survivre : la biodiversité terrestre antarctique, Cours Espace Universitaire, Liège, 03/03/ 2016

AE Murray has been involved educating the Planetary Science Community in the USA about value of using Antarctic Ecosystems to establish benchmarks for life detection on Ocean Worlds. This has been communicated as her role as Co-Chair of the Europa Lander Science Definition Team, through writing of a report that has been released in February 2017; and through the following presentations:

Hand, KP, AE Murray, J Garvin, Europa Lander Science Definition Team Report Town Hall. Astrobiology Science Conference, Mesa, AZ, April, 2017.

Hand, KP, AE Murray, J Garvin, Europa Lander Science Definition Team Report Town Hall. Lunar and Planetary Sciences Conference, The Woodlands, Texas, March, 2017.

Hand, KP, AE Murray, J Garvin, Europa Lander Science Definition Team Update. Outer Planets Advisory Group, Atlanta, Georgia, February, 2017.

Murray, AE, J Garvin, KP Hand. Europa Lander Science Definition Team Update. Space Studies Board Committee on Astrobiology and Planetary Sciences, Irvine California, September, 2016.

Murray, AE, J Garvin, KP Hand. Europa Lander Science Definition Team Update. Biosignatures of Extant Life on Ocean Worlds, Goddard Space Flight Center, Greenbelt, Maryland, September, 2016.

Launch of the first gallery of 3D models of Antarctic organisms on the web thanks to the collaboration between the Italian National Antarctic Museum (MNA) and Sketchfab (<https://sketchfab.com/MNA>). The first model can be accessed at:

<https://sketchfab.com/models/25c6475793e34976ae839098b6794568>

Media coverage:

TVE (“El escarabajo verde”), La Sexta, Turner Ed., UBTV...

<http://www.rtve.es/alacarta/videos/el-escarabajo-verde/escarabajo-verde-antartida-capitulo-1-paralelo-60/4041760/>

<http://www.rtve.es/alacarta/videos/el-escarabajo-verde/escarabajo-verde-antartida-capitulo-2-hielo-traslucido/4026968/>

http://www.lasexta.com/noticias/ciencia-tecnologia/cientificos-espanoles-descubren-en-la-antartida-particulas-para-fabricar-medicinas-que-estan-en-peligro-por-el-cambio-climatico_2017040958ea5e0d0cf2abec9e143eec.html

Media interviews:

<http://www.rubitv.cat/20170609/12903/rubi-ja-te-presencia-a-l-antartida-gracies-al-bioleg-joan-gimenez-membre-d-una-expedicio-cientifica>

<http://www.xiptv.cat/1moncat/capitol/del-baix-llobregat-a-lantartida>

<http://www.somgarrigues.cat/entrevistes/12/en-ciencia-es-mes-estable-fer-la-tesi-que-haver-la-acabat>

Seminars and talks in schools:

E. Ballesté: 29 May 2017 “Montserrat” School, Reus, Catalonia, to 3rd grade kids.

Several video conferences by our team from the Spanish Base Gabriel de Castilla (Deception Island). January-March 2017

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

Anton Van de Putte antonarctica@gmail.com

Huw Griffiths hjg@bas.ac.uk

Concepcion Avila Escartin conxita.avila@ub.edu (available after Summer 2017)

Aleks Terauds aleks.terauds@gmail.com

Mary-Anne Lea maryanne.lea@utas.edu.au

Craig Cary caryc@waikato.ac.nz

Peter Convey pcon@bas.ac.uk

Membership

Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
Chief Officer	Jan	Strugnell	James Cook University	AUS	jan.strugnell@jcu.edu.au	2012	
Chief Officer	Huw	Griffiths	BAS	UK	hjg@bas.ac.uk	2012	
Deputy Chief Officer	Don	Cowan	U. Pretoria	RSA	don.cowan@up.ac.za	2012	
Deputy Chief Officer	Pete	Convey	BAS	UK	pcon@bas.ac.uk	2012	

* Please include any APECS representative / Junior Officers

Other members

First Name	Last Name	Affiliation	County	Email
Aleks	Terauds	AAD	AUS	aleks.terauds@gmail.com
Angelika	Brandt	Senckenberg Museum	DE	angelika.brandt@senckenberg.de
Alison	Murray	DRI	USA	Alison.Murray@dri.edu
Annick	Wilmotte	U. Liège	BEL	awilmotte@ulg.ac.be
Craig	Cary	U. Waikato	NZ	caryc@waikato.ac.nz
Guido	di Prisco	U. Naples	IT	guido.diprisco@ibbr.cnr.it
Claudio	Gonzales-Wevar	U. Chile	CHI	omeuno01@hotmail.com
Dom	Hodgson	BAS	UK	daho@bas.ac.uk
Anton	van de Putte	RBINS	BEL	antonarctica@gmail.com
Stefano	Schiaparelli	U. Genoa	IT	Stefano.Schiaparelli@unige.it
Mary-Ann	Lea	IMAS, U Tas	AUS	MaryAnne.Lea@utas.edu.au
Conxita	Avila	U. Barcelona	ESP	conxita.avila@ub.edu
Andres	Barbosa Alcon	MNCN	ESP	barbosa@mncn.csic.es
Lucas	Ruberto	Instituto de Nanobiotecnología	ARG	luruberto@gmail.com
Satoshi	Imura	NIPR	JPN	imura@nipr.ac.jp
Julian	Gutt	A. W. Inst.	DE	julian.gutt@awi.de

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:

We appreciate the support from the Secretariat that we currently receive for finance, mailing list and website matters. If SCAR is considering producing more education and outreach materials or tools then we would love to be involved.

Appendix 1. AntEco Publications 2016-17:

- Abneuf, Mohammed A., Krishnan, Abiramy, Aravena, Marcelo Gonzalez, Pang, Ka-Lai, Convey, Peter, Alias, Siti Aisyah. (2016) Antimicrobial activity of microfungi from maritime Antarctic soil. *Czech Polar Reports*, 6. 141-154. 10.5817/CPR2016-2-13
- Aliyu H, De Maayer P, Cowan DA (2016) The genome of the Antarctic polyextremophile *Nesterenkonia* AN1 reveals adaptive strategies for survival under multiple stress conditions. *FEMS Microb Ecol*. 92: fiw032
- Amesbury, Matthew J., Roland, Thomas P., Royles, Jessica, Hodgson, Dominic A., Convey, Peter, Charman, Dan J.. (2017) Widespread biological response to recent rapid warming on the Antarctic Peninsula. *Current Biology*. 10.1016/j.cub.2017.04.034
- Angorge I, et al. (2017) Exploring South Africa's southern frontier: A 20-year vision for Polar Research through the South African National Antarctic Programme. *S.A. J. Sci.* In Press
- ANGULO-PRECKLER C, LEIVA C, AVILA C and TABOADA S. (2017) "Soft-bottom macroinvertebrate communities from shallow waters of Deception Island (South Shetland Islands, Antarctica): a paradise for opportunists and a hidden link to megafauna" *Marine Environmental Research* 127:62-74.
- ANGULO-PRECKLER, C., TUYA, F., AVILA, C. (2017) "Abundance and size patterns of echinoderms in coastal soft-bottoms at Deception Island (Antarctica)" *Continental Shelf Research* 137:131-141.
- Archer SDJ, McDonald IR, Herbold CW, Lee CK, Niederberger TS, Cary S.C. Temporal, regional and geochemical drivers of microbial community variation in the melt ponds of the Ross Sea region, Antarctica. (2016). *Polar Biology* 39(2):267-282 01 Feb 2016
- Avila C, Núñez-Pons L, Moles J. In press. From the tropics to the poles: A comparison of chemical defensive strategies in sea slug Molluscs (*Euthyneura*). Book chapter in: *Marine Chemical Ecology* (CRC Marine Science). VJ Paul, M Puglisi, M Becerro (eds.). CRC Press, 2nd Ed.
- Avila C. 2016a. Biological and chemical diversity in Antarctica: from new species to new natural products. *Biodiversity* 17(1):1-7.
- Avila C. 2016b. Ecological and pharmacological activities of Antarctic marine natural products. *Planta Medica* 82(09/10):767-774
- Beet C, Hogg I, Collins G, Cowan D, Wall D, Adams B. (2016) Genetic diversity among populations of Antarctic springtails (*Collembola*) within the Mackay Glacier ecotone. *Genome*. 10.1139/gen-2015-0194
- Bokhorst, Stef, Convey, Peter, Huiskes, Ad, Aerts, Rien. (2016) *Usnea antarctica*, an important Antarctic lichen, is vulnerable to aspects of regional environmental change. *Polar Biology*, 39. 511-521. 10.1007/s00300-015-1803-z
- Bokhorst, Stef, Convey, Peter. (2016) Impact of marine vertebrates on Antarctic terrestrial micro-arthropods. *Antarctic Science*, 28. 175-186. 10.1017/S0954102015000607

- Brandão, S. N., Stuhlmann, A., Vital, V., Brandt, A. (2016): Biogeography of Abyssocythere and Dutoitella (Ostracoda), with description of three new species. *Zootaxa* 4139 (3): 391–418.
- Brandt, A. (2016): Tiefseebiodiversität am Beispiel des Kurilen-Kamtschatka-Grabens. In: Lozán, J. L. et al. (Hrsg.). *Warnsignal Klima: Die Biodiversität*. pp. 128-133. Online: www.klima-warnsignale.uni-hamburg.de. doi:10.2312/warnsignal.klima.
- Brandt, A., Gutt, J., Hildebrandt, M., Pawlowski, J., Schwendner, J., Soltwedel, T., Thomsen, L. (2016): Cutting the umbilical - new technological perspectives in benthic deep-sea research. *Journal of Marine Systems and Engineering* 4, 36; doi:10.3390/jmse4020036.
- Brandt, A., Linse, K., Ellingsen, K., Somerfield, P. (2016): Depth-related gradients in community structure and relatedness of bivalves and isopods in the Southern Ocean? *Progress in Oceanography* 144: 25–38, doi: <http://dx.doi.org/10.1016/j.pocean.2016.03.003>
- Cannone, N., Guglielmin, M., Convey, P., Worland, M.R., Favero Longo, S.E.. (2016) Vascular plant changes in extreme environments: effects of multiple drivers. *Climatic Change*, 134. 651-665. 10.1007/s10584-015-1551-7
- Carapelli, Antonio, Convey, Peter, Frati, Francesco, Spinsanti, Giacomo, Fanciulli, Pietro P.. (2017) Population genetics of three sympatric springtail species (Hexapoda: Collembola) from the South Shetland Islands: evidence for a common biogeographic pattern. *Biological Journal of the Linnean Society*, 120. 788-803. 10.1093/biolinnean/blw004
- Chown, SL, Brooks, CM, Terauds, A, Le Bohec, C, van Klaveren-Impagliazzo, C, Whittington, JD, Butchart, SHM, Coetzee, BWT, Collen, B, Convey, P, Gaston, KJ, Gilbert, N, Gill, M, Hoft, R, Johnson, S, Kennicutt, MC, Kriesell, HJ, Le Maho, Y, Lynch, HJ, Palomares, M, Puig-Marco, R, Stoett, P, McGeoch, MA. (2017) Antarctica and the Strategic Plan for Biodiversity 2011–2020. *PLOS Biology*, 15. 10 pp. 10.1371/journal.pbio.2001656
- Chown, Steven L., Convey, Peter. (2016) Antarctic Entomology. *Annual Reviews of Entomology*, 61. 119-137. 10.1146/annurev-ento-010715-023537
- Coetzee, Bernard W.T., Convey, Peter, Chown, Steven L.. (2017) Expanding the protected area network in Antarctica is urgent and readily achievable. *Conservation Letters*. 10.1111/conl.12342
- Constable, A.J., Costa, D.P., Schofield, O., Newman, L., Urban Jr., E.R., Fulton, E.A., Melbourne-Thomas, J., Ballerini, T., Boyd, P.W., Brandt, A., de la Mare, W.K., Edwards, M., Eléaume, M., Emerson, L., Fennel, K., Fielding, S., Griffiths, H., Gutt, J., Hindell, M.A., Hofmann, E.E., Jennings, S., La, H-S, McCurdy, A., Mitchell, B.G., Moltmann, T., Muelbert, M., Murphy, E., Press, A.J., Raymond, B., Reid, K., Reiss, C., Rice, J., Salter, I., Smith, D.C., Song, S., Southwell, C., Swadling, K.M., Van de Putte, A., Willis, Z., (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, doi: 10.1016/j.jmarsys.2016.05.003.
- Convey, Peter. (2017) Antarctic ecosystems. In: Reference Module in Life Sciences, Elsevier, 10.1016/B978-0-12-809633-8.02182-8
- David, C., Schaafsma, F.J., van Franeker, J.A., Lange, B., Brandt, A., Flores, H. (2017): Community structure of under-ice fauna in relation to winter sea-ice habitat properties from the Weddell Sea. *Polar Biology* 40:247-261.
- De Pooter, Daphnis; Appeltans, Ward; Bailly, Nicolas; Bristol, Sky; Deneudt, Klaas; Eliezer, Menashè; Fujioka, Ei; Giorgetti, Alessandra; Goldstein, Philip; Lewis, Mirtha; Toward a new data standard for combined marine biological and environmental datasets-expanding OBIS beyond species occurrences *Biodiversity Data Journal* 5 2017 Pensoft Publishers

- De Scally S, Frossard A, Hogg I, Cowan DA, Makhalanyane T. (2016) Antarctic microbial communities are functionally redundant, adapted and resistant to short term temperature perturbations. *Soil Biol. Biochem.* 103: 160-170
- di Prisco G, Verde C 2017 The unique haemoglobin system of migratory *Pleuragramma antarctica*: correlation of haematological and biochemical adaptations with mode of life. In: *Advances in Polar Ecology: The Antarctic Silverfish: A Keystone Species in a Changing Ecosystem* (Vacchi M, Pisano E, Ghigliotti L, eds), pp 47-65. Springer
- Engelen, Andreas, Convey, Peter, Popa, Ovidiu, Ott, Sieglinde. (2016) Lichen photobiont diversity and selectivity at the southern limit of the maritime Antarctic region (Coal Nunatak, Alexander Island). *Polar Biology*, 39. 2403-2410. 10.1007/s00300-016-1915-0
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Appendix 2. AntEco External Science Funding 2016-17:

2016: South African National Research Foundation SANAP program:
R450,000 (Cowan)

2017: South African National Research Foundation SANAP program:
R380,000 (Cowan)

BELSPO project CCAMBIO (Climatic change and Antarctic microbial
diversity) (www.ccambio.ulg.ac.be) for research

BELSPO project MICROBIAN for research

FNRS FRIA PhD fellowship to Igor S. Pessi for research

Belgian Coordinated Collections of Microorganisms funding the BCCM/ULC
public collection of cyanobacteria, that is focussing on Antarctic
cyanobacterial strains (<http://bccm.belspo.be/about-us/bccm-ulc>).

2017-2019: Co-Investigator of the project "Enzymes of a cold-active metabolic
pathway for the biosynthesis of long-chain omega-3 fatty acids:

biotechnological applications". Italian National Programme for Antarctic Research (PNRA). Total Funding: EURO 94,500.00

2017-2019: Co-Investigator of the project "Journey to the cold and back: comparative genomics and transcriptomics in Antarctic and sub-Antarctic notothenioids". Italian National Programme for Antarctic Research (PNRA). Total Funding: EURO 138,500.00

Belspo AntaBIS building a Virtual lab for the Antarctic and the Southern ocean, part of EU-lifewatch

Methanogenic biodiversity and activity in Arctic and Sub-Antarctic ecosystems affected by climate change. (Sub-award) ERANET-LAC. Total award amount \$598,734. Total award period 9/1/15 – 8/31/18. (AE Murray)

Importance of heterotrophic and phototrophic N₂ fixation in the McMurdo Dry Valleys on local, regional and landscape scales- NSF/OPP (\$467,728, 6/1/013-5/31/17). (SC Cary)

Understanding Terrestrial Microbial Biocomplexity in an Antarctic Desert: Resolving Universal Drivers of Community Structure and Function in a Trophically Simple System. Department of Energy, Community Sequencing Project, Joint Genome Institute. (\$150,000 in kind, 2012-2017). (SC Cary)

New Zealand Terrestrial Antarctic Biocomplexity Survey sequencing project. Joint Genome Community Sequencing Program. Joint Genome Institute, Walnut Creek, USA (\$190,000 in kind) (SC Cary)

Development of an International Genetic Repository for Antarctica. Antarctica New Zealand. (\$100,000, 2013-2017) (SC Cary)

Evidenced-based Risk Assessment of the McMurdo Dry Valley Ecosystem. (MBIE, \$2.5M , 2014-2018) (SC Cary)

A multidisciplinary approach to understanding the vulnerability of Antarctica's physical and eco-systems to changing global climate. International Relationships Fund. MBIE (\$450,000/3 years). (SC Cary)

Resilience in Antarctic biota and ecosystems. NZARI Type B proposal. (\$1.1M, 2016-2019) (SC Cary)

2017-2019: PI of the project "'TNB-CODE" - Terra Nova Bay barCODing and mEtabarcoding of Antarctic organisms from marine and limno-terrestrial environments". Italian National Research Antarctic Program (PNRA). Total Funding: EURO 104000