

HIFMB NEWS #02/19

Top Story: The Weddell Sea Marine Protected Area project + New at HIFMB: Prof. Dr. Thilo Gross + Research: 5 selected publications + View from Northwest



Weddell seal with captured Antarctic toothfish

photo © Jessica Neir

The long and winding road toward protection of a pristine Antarctic ecosystem - the Weddell Sea Marine Protected Area project

The Strategic Plan for Biodiversity 2011-2020 of the Convention on Biological Diversity and the United Nations Sustainable Development Goal 14 provide for the designation of at least 10% of coastal and offshore marine areas as Marine Protected Areas (MPAs) worldwide by 2020. Currently, close to 8% of the oceans are designated MPAs, albeit many MPAs are quite small and within national jurisdiction. Several initiatives are currently underway to establish large MPAs in the Convention Area of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) as parts of the global MPA network.

Germany plays a leading role in the development of Antarctic MPAs. At the CCAMLR Commission Meeting (Hobart, Tasmania) in 2012, Germany announced that it was willing to take the initiative in developing a MPA in the Weddell Sea, one of the last pristine areas in the Southern Ocean. The German Federal Ministry of Food and Agriculture, representing Germany within CCAMLR, then asked the Alfred Wegener Institute (AWI) to establish the scientific basis the Weddell Sea MPA (WSMPA) could be based upon. A small project team was formed at the AWI with HIFMB's Thomas Brey and Katharina Teschke as team members. Katharina remembers very well these early days →

» Effective protection (of Antarctica) requires professional integrity from all parties involved and sound scientific knowledge. «

Audun Halvorsen, State Secretary, Ministry of Foreign Affairs of Norway

→ of the WSMPA project team. We all were novices to this work, we had not the slightest idea about the forthcoming scientific and political ramifications, but excitement, curiosity and a good measure of bravado made us jump straight into the WSMPA adventure. What did we know ...

Over the last six years, the WSMPA team compiled, cleaned and analysed a huge amount of data, which has been produced by scientists from more than twenty countries. From these data sets, hundreds of data layers were produced using diverse modelling techniques and geographic information systems to obtain a representative and holistic picture of the Weddell Sea ecosystem, ranging from environmental (e.g., topography, sea ice dynamics) to oceanographic (e.g., temperature, salinity) to biological features (e.g., species distribution, biodiversity patterns). Several iterations of data analysis and discussions within CCAMLR working groups identified an area of approx. 2 million-km² that qualified for protection. Finally, at the CCAMLR meeting in October 2016 (Figure below) the CCAMLR's Scientific Committee, an advisory board composed of international scientists, judged this work to constitute "the best available science" regarding the potential development of a WSMPA.

This was an important project milestone and paved the way for negotiations on the design of the actual WSMPA including a management and research and monitoring plan. So where are we now? Thomas, meanwhile promoted to the position of the German Representative at the Scientific Committee of CCAMLR, can tell: We are grinding along at a snail's pace.

So far, the CAMLR Commission is far from reaching common accord on the WSMPA proposal (and any other MPA proposal). CCAMLR member states do not agree on the necessity and role of MPAs in the Antarctic. Some members take a decidedly anti-MPA stand and try to delay or even to halt the process of implementing Antarctic MPAs at all levels of CCAMLR. The basic issue here is that these members see their long distance fisheries - globally and hence in the Antarctic, too - as a question of national significance or even sovereignty which may be restricted by a MPA. Regarding the Weddell Sea, the highly prized Antarctic toothfish, sometimes referred to as "white gold" is the problem (Figure front page). CCAMLR fishing member states see a resource that may be suitable for future commercial exploitation. Non-fishing states emphasize a precautionary approach. They are more concerned with the vulnerability to fishing of the toothfish population as this fish is very long-lived (up to 50 years) and slow-growing.

At present, the situation in CCAMLR appears to be relatively deadlocked, owing to the fact that current positions are politically and less scientifically determined. Apparently, a breakthrough at much higher political levels would very much facilitate the implementation of Antarctic MPAs. Nevertheless, we remain optimistic. Establishing a WSMPA is a long-term objective and no business for the fainthearted. We succeeded in turning one fishing member state into a supporter of the WSMPA already, and we continue our efforts in exploring common ground with those members that still oppose our proposal.



The opening day of the CCAMLR meeting in Hobart, Australia – Monday October 17, 2016.

photo © Chris Johnson/blog.nationalgeographic.org

More Information

- + Atlas of Marine Protection www.mpatlas.org
- + Convention on Biological Diversity (CBD) – Strategic Plan for Biodiversity 2011-2020, including Aichi Biodiversity Targets www.cbd.int/sp
- + MPAs and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) www.ccamlr.org/en/science/marine-protected-areas-mpas
- + Protected Planet: An initiative by IUCN with the collaboration with UNEP-WCMC www.protectedplanet.net/marine
- + United Nations Sustainable Development Goals sustainabledevelopment.un.org/

PERSONALIA

Prof. Dr. Thilo Gross



Prof. Dr. Thilo Gross, previously Professor of Computer Science at the University of California, Davis (USA), has been appointed as HIFMB professor in "Biodiversity Theory".

Thilo has chosen an unusual interdisciplinary career path. Following a MSc in Physics and a PhD in Natural Sciences in Oldenburg, he has held a postdoctoral position in the Chemical Engineering Department at Princeton University, and subsequently led a research group at the Max-Planck Institute for Physics of Complex Systems. He joined the Engineering Maths Department of the University of Bristol in 2011, where he was promoted to Reader in the following year.

In his work he develops new methods for the analysis of dynamical networks with a particular focus on ecological and social systems. He has repeatedly succeeded in establishing new methodologies and applying them to answer important questions in applications.

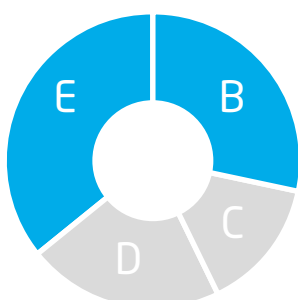
After 7 years as a reader in Bristol and a full professorship in Davis, Thilo now returns to Oldenburg and will set up and lead the working group Biodiversity Theory at the HIFMB.

His research focuses on the development of theory and mathematical modeling in functional biodiversity research in order to gain a better understanding of the fundamental relationships between marine biodiversity and ecosystem function. One focus is the integration of classical models of theoretical ecology with spatial, evolutionary and biogeochemical approaches.

HIFMB TEAM

Fun Facts

What is on your Christmas wishlist this year?



- A 0 % Candy cane and chocolate
- B 29 % Handknitted wool socks
- C 14 % Ending climate change
- D 21 % Ending plastic pollution in the oceans
- E 36 % Ending global species extinction

RESEARCH

5 selected recent publications

Biscontin A, Martini P, Costa R, Kramer A, **Meyer B**, Kawaguchi S, et al. Analysis of the circadian transcriptome of the Antarctic krill *Euphausia superba*. *Scientific Reports*. 2019;9(1):13894.

Eriksson BK, **Hillebrand H**. Rapid reorganization of global biodiversity. *Science*. 2019;366(6463):308-9.

Maureaud A, **Hodapp D**, van Denderen PD, **Hillebrand H**, Gislason H, Spaanheden Dencker T, et al. Biodiversity-ecosystem functioning relationships in fish communities: biomass is related to evenness and the environment, not to species richness. *Proceedings of the Royal Society B: Biological Sciences*. 2019;286(1906):20191189.

Roca IT, Van Opzeeland I. Using acoustic metrics to characterize underwater acoustic biodiversity in the Southern Ocean. *Remote Sensing in Ecology and Conservation*. 2019, <https://doi.org/10.1002/rse2.129>

Wolf KKE, Romanelli E, Rost B, **John U**, Collins S, Weigand H, et al. Company matters: The presence of other genotypes alters traits and intraspecific selection in an Arctic diatom under climate change. *Global Change Biology*. 2019;25(9):2869-84.

+ More on google scholar: bit.ly/2yQtmso

VIEW FROM NORTHWEST #2:

Science, not silence

When thinking about Friday's for Future (F4F), I remembered a book I read quite a while ago. Describing a travel to an inhabited moon ("Les États et Empires de la Lune"), the 17th century satirical and utopian author Cyrano de Bergerac (later becoming immortal as main figure of Rostand's theatre play) compares the lunar state he finds to the pre-Enlightenment (and anti-science) European societies of his time. One aspect



"Science not silence" - sign on a recent Fridays for future demonstration in Oldenburg.

the travelling Earthling discovers is that in lunar societies young people were ruling because – as his lunar guide puts it – “you know that only [the] youth is capable of action” [my translation from a German edition, “Die Reise zum Mond”, Insel Taschenbuch].

To me, it seems that the response to the F4F movement, their actions and demands, is filled by a similar disbelief that a movement of teenagers, most of which are not able to vote yet, is able to set a political agenda. The political responses range from outright negative statements to different levels of support, but across this spectrum the “professional” statements share a very patronizing language obviously not taking F4F seriously. Many comments circulate around side aspects such as the right to perform school strikes (or not) or the role of initiator Greta Thunberg (by the way: personal attacks on a 16-year old represent an erosion of democratic culture I had believed being impossible in year 2019). What is obviously missing from the political treatment of F4F, however, is a wide-ranged discussion of their postulations and the underlying knowledge.

This phenomenological treatment of F4F remarkably differs from how F4F is discussed in the scientific community. The movement for climate justice received (and receives) a lot of support from individual researchers globally, many of them leading climatologists, and entire groups such as Scientists for Future (S4F), which in Germany, Switzerland and Austria has 26,000 supporters. Even when scientists criticize F4F for overstatements or too simple argumentations, the discussion remains about content and evidence for (or against) certain statements.

Interestingly, the public response to S4F has almost been as patronizing as the response to F4F itself, calling the researchers' engagement an “embarrassing opportunism” (commentary by R. Müller, Frankfurter Allgemeine, June 21, 2019). The criticism implies that scientists, whose professional life derives from skeptical, debate-oriented approaches to knowledge, embrace popular statements in an unthinking and naïve way to achieve an “advantage”. This criticism does not spell out what this opportunistic advantage could be, but more fundamentally it completely ignores the most plausible explanation for why researchers leave their cliché ivory tower to support F4F: many scientists are concerned about current environmental trend not despite but because of their scientific background and knowledge.

Cyrano de Bergerac also described such reactions: “But, you will say, all the laws in our world zealously emphasize the awe owed to the aged.... But all those who introduced these laws were also old men who feared that the young could justifiably drive them out of the possession of the supremacy which they had forced”.

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Sincerely, Helmut Hillebrand

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