

HIFMB NEWS #01/19

Introducing IPBES' 2019 Global Assessment on Biodiversity and Ecosystem Services + View from Northwest + »All the speakers were top notch« + First workshop with new collaborators + New HIFMB Focus Group on Marine Molecular Ecology + 5 selected publications + Research Areas



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Introducing IPBES' 2019 Global Assessment on Biodiversity and Ecosystem Services

The IPBES 2019 Global Assessment Report on Biodiversity and Ecosystem Services is the first global synthesis of the state of nature, ecosystems and nature's contributions to people since the Millennium Ecosystem Assessment published in 2005, and the first that is inter-governmental. Often described as the 'IPCC for Biodiversity', IPBES is the global science-policy forum tasked with providing the best available evidence to all decision-makers for people and nature. It's whose mission is to strengthen the knowledge foundations for better policy based on expertise across all disciplines and knowledge communities.

The IPBES 2019 Global Assessment has been prepared by 150 international experts from natural and social sciences from 50 countries. Three years in development, at a total cost of more than US\$2.4 million, the IPBES Global Assessment draws on 15000 references, including scientific papers and government information. It is also the first global assessment ever to systematically examine and include indigenous and local knowledge (ILK), issues and priorities. It has been discussed, finalized and considered for approval at the seventh session of the IPBES Plenary (#IPBES7) hosted at UNESCO headquarters in Paris this spring. →

»The loss of species, ecosystems and genetic diversity is already a global and generational threat to human well-being. Protecting the invaluable contributions of nature to people will be the defining challenge of decades to come. Policies, efforts and actions - at every level - will only succeed, however, when based on the best knowledge and evidence. This is what the IPBES Global Assessment provides.«

Sir Robert Watson – IPBES Chair

→ Three years ago, HIFMB's Ute Jacob has been nominated by KDM and BMBF to join the team of experts on the IPBES Global Assessment. In total 7 German Scientists were part of the Global Assessment (see picture below). Being a marine ecologist at heart with a main interest in how to conserve biodiversity and ecosystem services Ute did not know what to expect but jumped right in. From the first Lead Author meeting in Bonn (followed by Leipzig, Cape Town and Frankfurt) she has been mainly part of the Nature Chapter, to ensure together with other marine experts that Marine Biodiversity was addressed properly, in the Topics »Nature« and »Nature's Contributions to People«, mainly focusing on the definition of the marine units of analysis and ocean acidification. This was a true team effort, evaluating and summarizing the huge body of research and report on the status of Marine Biodiversity and trends of its contributions to people – so where are we at?

The Global Assessment offers an integrated overview of where we stand in relation to key international goals, including the Sustainable Development Goals (SDGs), the Aichi Targets and the Paris Agreement on climate change. The expected impacts of the Global Assessment are:

1. Provision of an evidence knowledge base to inform policy and decision makers
2. Analysis of the implications of the loss of biodiversity for achieving the Paris Climate Agreement, global biodiversity targets, and the Sustainable Development Goals,
3. A multidimensional valuation of common global assets,
4. Awareness Raising of the importance of transformational multi-sectoral policies and governance structures and
5. Being a starting point for in-depth analyses of the role of conservation and management actions and their global implications.



*German IPBES Experts at the German Parliamentary Breakfast, from left to right Dr. Ute Jacob (HIFMB), Dr. Jens Jetzkowitz MfN, Berlin), Prof. Dr. Almut Arneith (KIT), Prof. Dr. Josef Settele (UFZ, Halle), Prof. Dr. René Haak (BMBF), Prof. Dr. Ralf Seppelt (UFZ, Leipzig und MLU Halle-Wittenberg), Prof. Dr. Julian Gutt (AWI), Dr. Mariam Akhtar-Schuster (Deutsche IPBES Koordinierungsstelle, Bonn/Berlin).
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With the IPBES Global Assessment we provided the evidence that globally – nature and its contributions to people are being degraded at an alarming rate – despite major previous intergovernmental and government actions. Decisions in the past between our livelihoods and sustaining the environment for nature and our future generations, we have generally chosen our livelihoods. This, obviously, is too short lived – we need a change in the current paradigm of economic growth and transform it towards a global sustainable economy. With this evidence base the lack of management actions cannot be justified by lack of knowledge – now we know and we need to take action.

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EDITORIAL

View from Northwest



It is my pleasure to welcome you to the very first issue of the HIFMB newsletter, which I hope you will enjoy. We intend to use this format to inform about the work going on in our institute, strengthening our interaction with stakeholders of all kind with interest in marine conservation: fellow scientists, agencies, teachers, and the public in general. Thus, we are looking forward to your feedback and upcoming discussion.

HIFMB is a new collaborative institute, founded 2 years ago by the Alfred-Wegener-Institute, Helmholtz Centre for Polar and Marine Research, and the University of Oldenburg. These two years have been exciting times with a crew of early career and established researchers starting new projects while at the same time establishing the long-term perspective through (still ongoing) hires of new professors and planning a new building. As the director of this endeavor, I am fully aware how privi-leged I am by this once-in-a-lifetime chance of creating a new research environment. A tiny bit of this privilege is that I am allowed to share some personal views on science and ecology in general, and marine conservation in special, in this section, which we decided to call »View from North-west«, reflecting our geographic location in the northwest corner of continental Europe. It shame-lessly paraphrases a series of editorials in the journal *Oikos*, where John Lawton shared his »Views from the Park« in the late 90's, which inspired me when I was a PhD student and young postdoc. Obviously, HIFMBnews is not *Oikos* and I am not John Lawton, but I hope you will find the thoughts shared here engaging.

In this respect, I want to close this first View from Northwest with a shout out for synthesis efforts. Recently, we hosted the current director of NCEAS (National Centre for Ecological analysis and Synthesis), Ben Halpern, at HIFMB. NCEAS played a major role in my career, as I co-led a synthesis group on comparing trophic structure across ecosystems when I was a fresh faculty member. For me, the strongest legacy of this group is not the series of (well-cited) papers we produced, but the fun of sharing views inspired by different research perspectives. In this sense, I hope HIFMB is and will be a place of similar open exchange of scientific viewpoints.

Sincerely, **Helmut Hillebrand**
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PUBLISHER

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Newsletter #01/2019



The participants of the 2nd HIFMB symposium.

Impression from poster session with HIFMB postdoc Dr. Julia Strahl and Dr. Phumelele Gama from Nelson Mandela University, Port Elizabeth.



EVENTS

»All the speakers were top notch«

The 2nd Symposium on Functional Marine Biodiversity was held at State Museum for Nature and Man in Oldenburg on 3. - 5. June 2019.

Over 150 participants from 33 institutions from 11 countries participated in the conference to discuss future research in functional marine biodiversity. Such international spread of participants generated a vibrant atmosphere and all four sessions were filled with debates informed by a wide range of theoretical, practical and cross-disciplinary perspectives. The selection of the talks for the sessions was diverse but very focused and »completed a full story line« -ranging »from data to governance and of different methodologies and applications«.

Thank you to all speakers for the interesting insights and outstanding presentations you made!

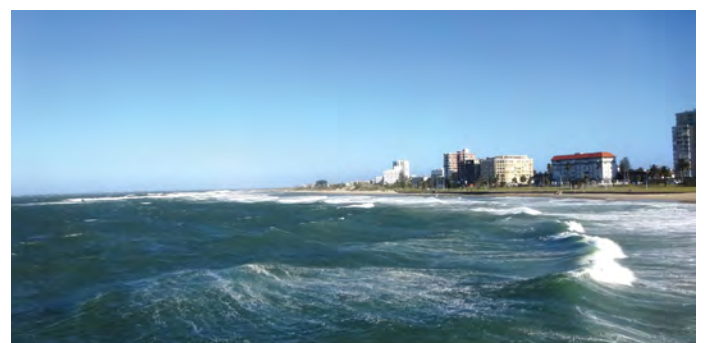
The symposium on Functional Marine Biodiversity takes place every two years with invited extended lectures only and plenty of time for discussion after the talks and between sessions. The next symposium will take place in early summer 2021 – the exact dates and location will be announced here!

COLLABORATION

First workshop with new collaborators

Financed by the German Science foundation, a first synthesis and scoping workshop brought together about 20 researchers from HIFMB, the University of Oldenburg, and the Institute for Coastal and Marine Research (CMR) from the Nelson Mandela University (NMU) in Port Elizabeth, South Africa. The participants used three days in June 2019 to develop joint research topics, aiming at common publication of existing data and new projects understanding community dynamics in coastal areas. Future projects can be based on commonalities between the Southern North Sea region and Eastern Cape Province regarding strong estuarine influence and terrestrial-marine linkages (saltmarshes, dune ecosystems). One attendant from NMU summarized it nicely: »The discussions were fruitful and have

most certainly provided opportunities for quick joint outputs and long-term collaboration«. A second workshop this year will take place in November 2019 in Port Elizabeth.



Port Elizabeth



Sarah Taudien, Alica Ohnesorge, Silke Laakmann (v.l.)

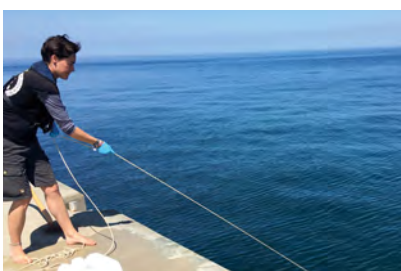
COOPERATION

New HIFMB Focus Group on Marine Molecular Ecology

A new HIFMB Focus Group has started work at HIFMB. The team headed by Silke Laakmann is dealing with the estimation of marine metazoan biodiversity and its changes by using novel molecular tools.

To assess and better understand spatial and temporal patterns of marine biodiversity and their changes, the HIFMB Focus Group Marine Molecular Ecology contributes to estimate marine metazoan biodiversity by using novel molecular genetic tools for the simultaneous species identification in marine communities. The group evaluates how the genetic material in the sea water, referred to as environmental DNA (eDNA), mirrors the biodiversity in the field and estimates the methodological sensitivity. Together with HIFMB scientists and collaborators the Focus Group integrates eDNA analyses in marine biodiversity and ecosystem functioning research by the (1) comparison to conventional methods, (2) evaluation of best-practice protocols, and (3) combined analysis of communities and environmental parameters.

The HIFMB Focus Group is made up of the lead and two early career researchers and enables outstanding junior researchers who have already gained research experience after completing their doctorate to realise their own research project and to qualify for a another leadership position. The group is supported for five years.



RESEARCH

5 selected recent publications

Brose U., Archambault P., Barnes A.D., Bersier L.-F., Boy T., Canning-Clode J., Conti E., Dias M., Digel C., Dissanayake A., Flores A.A.V., Fussmann K., Gauzens B., Gray C., Häussler J., Hirt M.R., **Jacob U.**, et al. (2019). Predator traits determine food-web architecture across ecosystems. *Nature Ecology & Evolution*.

Hodapp D., Hillebrand H. & Striebel M. (2019). Unifying the Concept of Resource Use Efficiency in Ecology. *Frontiers in Ecology and Evolution*, 6, 233.

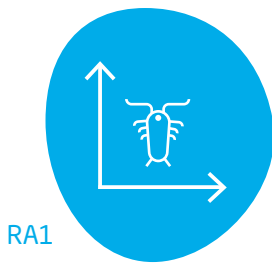
Jonkers L., **Hillebrand H.** & Kucera M. (2019). Global change drives modern plankton communities away from the pre-industrial state. *Nature*.

Kågesten G., **Fiorentino D.**, Baumgartner F. & Zillén L. (2019). How Do Continuous High-Resolution Models of Patchy Seabed Habitats Enhance Classification Schemes? *Geosciences*, 9, 237.

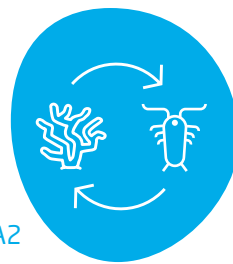
Laakmann S., Markhaseva E.L. & Renz J. (2019). Do molecular phylogenies unravel the relationships among the evolutionary young »Brafordian« families (Copepoda; Calanoida)? *Molecular Phylogenetics and Evolution*, 130, 330-345.

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

Research Areas



RA1



RA2



RA3

Current knowledge on functional marine biodiversity only partially meets the societal demand for predictive scenarios on how and why biodiversity will change over the short- and long-term, how these changes will affect marine ecosystems and their services and how society can adapt to or mitigate the changes. HIFMB has been set up to develop the scientific basis for marine conservation and marine ecosystem management by analyzing the functional role of biodiversity in marine ecosystem and understanding the general principles constraining this role. HIFMB thereby establishes the necessary knowledge and tools to predict future changes in biodiversity and ecosystem function and to analyse their consequences for human well-being.

HIFMB will accomplish this mission by three integrated research areas (RA1 – 3).

RA1 focuses on »Quantifying and understanding the rate of marine biodiversity change«, comprising integrative research on the magnitude and mechanisms of current and future biodiversity change in the ocean. This includes the need to understand the »sources« of biodiversity dynamics, i.e., which mechanisms shape temporal and spatial dynamics in species composition and to model the »drivers« of future biodiversity as a consequence of interacting changes and adaptive responses.

RA2 »Quantifying and understanding the functional consequences of marine biodiversity change« links changes in species composition (observed and predicted, RA1) to ecosystem properties and processes. Twenty-five years of research on the role of biodiversity for ecosystem functioning (BEF) has yielded an impressive and quite coherent body of literature, which still needs to be transferred to natural ecosystems by including in situ consequences of adaptation, replacement, extinction risk and evolution of organisms. Through analyses of functional networks and links to ecological theory, RA2 aims to identify general principles in the relationships between functional biodiversity and major ecosystem processes that can facilitate the development of a standardized management framework, which is at the core of RA3 »Developing tools for managing marine biodiversity and ecosystem services«.

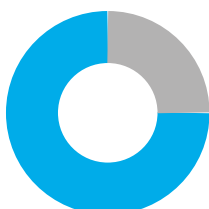
RA3 asks i) what strategies do we need to develop effective marine biodiversity conservation? and ii) how can conservation of species be integrated into the adaptive management of ecosystem functions (ESFs) and services (ESSs)? Marine biodiversity conservation so far mainly focuses on area-based approaches as they are common in the terrestrial realm, and governance and decision processes are often organized around single-sectors (e.g. fisheries, tourism), challenging holistic approaches to ESS-based management. However, marine ecosystems are characterized by strong spatial and temporal turnover in conditions and biodiversity, such that conservation and ESS management must rely on concepts beyond area protection, taking into account such temporal and spatial dynamics, adaptation and plasticity.

HIFMB TEAM

Fun Facts

Holidays at the sea or in the mountains. At least for HIFMB employees quite a clear answer.

We prefer ...



the mountains.