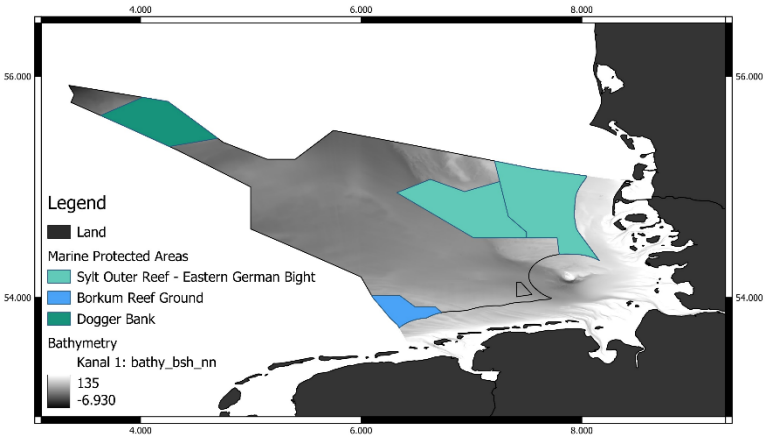
MGF-Nordsee

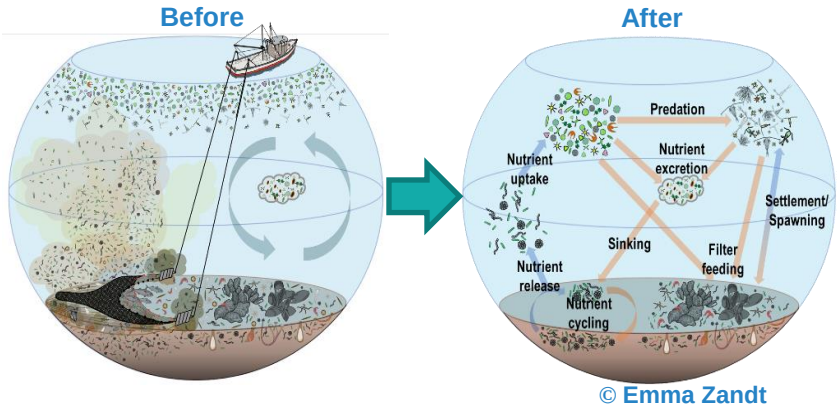
Exclusion of mobile bottom-contact fishing in Marine Protected Areas of the German EEZ of the North Sea

Background



Marine conservation measures within the designated protected areas of the German Exclusive Economic Zone (EEZ) represent a key management approach to counteract the steady decline of fish stocks, the destruction of marine habitats and the loss of biodiversity, and to achieve good environmental status of the seas in accordance with the Marine Strategy Framework Directive (MSFD). In the marine protected areas (MPAs) "Borkum Reef Ground" and "Sylt Outer Reef - Eastern German Bight" of the German EEZ of the North Sea, the use of mobile bottom fishing (*mobile grundberührende Fischerei=MGF*) has therefore been excluded since 2023. At the Amrum Bank area, a complete exclusion of fishing has also been decided. Measures for the marine protected area "Dogger Bank" are still under discussion.

Reducing the disturbance by MGF may result in changes in seafloor morphology, marine sediment biogeochemistry, and bentho-pelagic exchange processes. Biotic communities in and on sediment may redevelop, leading to regeneration of structure, function, and biodiversity. However, actual effects and influences of MPAs on habitats and the ecosystem have been rarely studied to date. One reason for this is often the lack of baseline data prior to the enforcement of marine conservation measures. Therefore, in Phase I of *MGF-Nordsee*, a comprehensive baseline status of the three German MPAs in the North Sea was recorded. In Phase II, after MGF exclusion was implemented in two MPAs, we can investigate possible initial changes on the characteristic habitats and communities and their typical species using a BACI (Before-After-Control-Impact) approach and track effects of the marine conservation measures. *MGF-Nordsee* uses a modern ecosystem approach that focuses on physical and biotic effects of the MGF, biological communities, energy and material fluxes and food web structures.



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Objectives

Assessment of initial effects of the MGF exclusion

The results of Phase I suggest that the three MPAs of the German North Sea differ significantly from each other, both in their physical and geomorphological characteristics, as well as in their biological communities and biogeochemical processes. The influence of MGF seems to be strongly dependent on the type of sediment being fished and the fauna present. For the first time, *MGF-Nordsee* provides a complete picture of the MPAs of the North Sea and the influence of MGF; from sediment morphology, bacteria and exchange rates, benthos and bentho-pelagic coupling, to vertebrates and food webs.

While Phase I assessed the current state of MPAs, in Phase II of *MGF-Nordsee* we are focusing on two core objectives.

1) Investigation of the physical, biological, and biogeochemical MGF exclusion effects on the ecosystem of the MPAs.

2) Further development of an integrative monitoring approach that intercalibrates and combines alternative and conventional methods.

Thus, on the one hand, the effect of MGF measures can be investigated, and on the other hand, in the long term, a monitoring concept can be established for the MPAs that is as gentle as possible. With the monitoring concept we aim to reduce invasive methods, if they can be replaced by alternative, less to non-invasive methods. *MGF-Nordsee* is working in close exchange and interaction with the German Federal Agency for Nature Conservation to ensure that applicable action knowledge is generated that can be used for future decisions.

Project period: Phase I 01.03.2020 – 28.02.2023; Phase II 01.03.2023 – 28.02.2026

Consortium

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