

MGF Ostsee

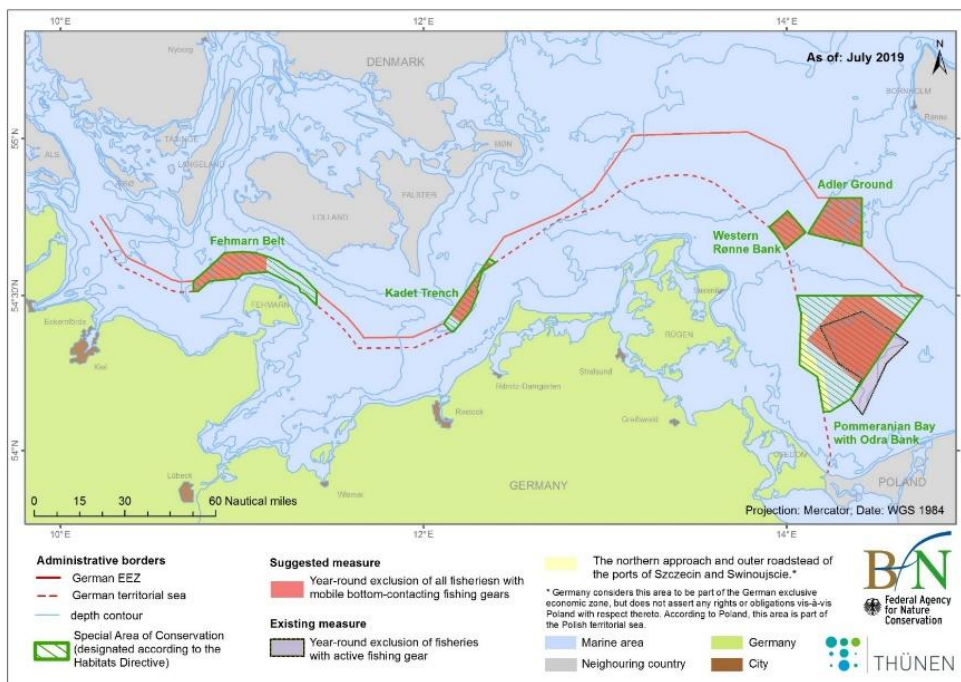


Exclusion of mobile bottom-contact fishing in Marine Protected Areas of the German EEZ of the Baltic Sea

Background

Marine Protected Areas (MPAs) are intended to maintain biodiversity, diverse ecosystem functions & achieve good environmental status according to the Marine Strategy Framework Directive (MSFD). However, mobile bottom fishing (MGF) still takes place in the MPAs of the German Exclusive Economic Zone (EEZ) & its negative impact on benthic ecosystems are documented worldwide. At present, knowledge about effects of MGF on the biodiversity & sediment functions of sandy & muddy sediment areas in the Baltic Sea is scarce. The impact depends on multiple factors as e.g.: gear size, sediment type & structure of the benthic community.

The plan to exclude MGF in parts of the MPAs in the near future provides a unique opportunity to study the concrete impact of MGF & the effects whether and how ecosystems regenerate after fisheries exclusion.



(1) Marine Protected Areas (MPAs) within the German EEZ of the Baltic Sea. Study areas of MGF-Ostsee are within the MPAs Fehmarn Belt, Rönne Bank & Odra Bank.

Approaches and Objectives

- (1) Suitable areas inside & outside (=reference) the MPAs were identified that have similar physico-chemical characteristics & are affected by comparable MGF-intensity. Data collected before the MGF exclusion form the basis for assessing future developments.
- (2) A complete survey of the entire benthic communities, from microorganisms to demersal fish, provides snapshots of the total benthic biodiversity. Sediment properties, biogeochemistry & sediment-water interactions, were measured before MGF-Exclusion. Assessments will show if and how the benthic ecosystems change after fisheries are excluded.
- (3) Experimental trawl surveys were conducted in nearshore areas to assess the short-term effects of MGF.

Funded by:



Results from MGF-Ostsee phase I (2020–2023)

First complete survey of the benthic food web & the associated sediment functions revealed:

- MPAs in the Baltic Sea represent strikingly different communities & food webs, probably due to differences in salinity & sediment properties.
- No or only minor differences were found between areas inside & outside the MPAs with respect to benthic biodiversity & sediment functions.
- Hydrooacoustic surveys of the sea bottom floor can be used to assess ongoing trawling activity by quantifications of trawl marks.

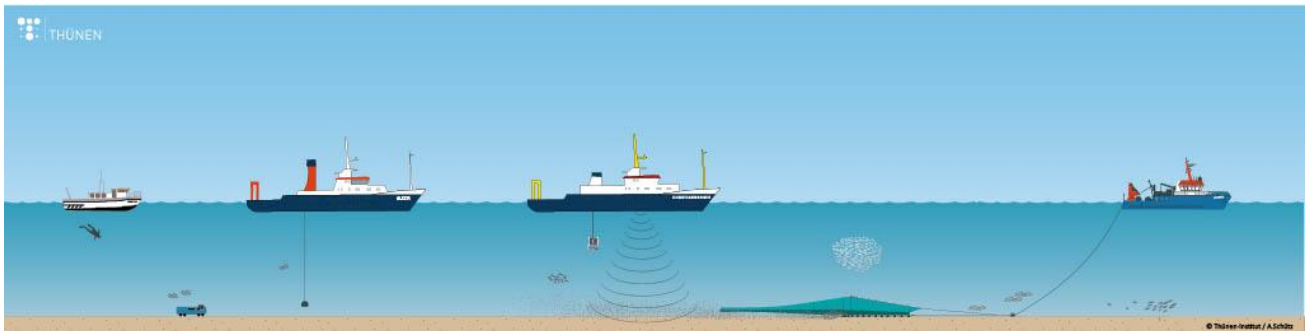
Preliminary results from MGF-Ostsee phase II (2023–2026)

1. Continuation of the sampling program

- By 2024, all study areas were sampled prior to the MBF exclusion, establishing a solid baseline for later comparisons.
- Intensive sampling revealed that the MPAs exhibit temporal variability, which needs to be considered in future monitoring efforts.
- Non-invasive methods such as the sampling of environmental DNA (eDNA), once properly calibrated, show promising results to be used as a supplement or alternative to traditional, invasive methods.

2. Successful completion of a coastal trawling experiment:

With the support of several research vessels, a fisheries research vessel, and research divers, short-term effects of MGF on sediment resuspension and benthic biota were successfully quantified.



(2) Scheme of the MGF-Trawling Experiment 2024

Consortium:

Universität
Rostock



Traditio et Innovatio



SENCKENBERG
NATURFORSCHUNG



DAM Forschungsmission „Schutz und nachhaltige Nutzung mariner Räume“

www.sustainMare.de; www.io-warnemuende.de/dam-mgf-ostsee-start.html

Contact: Prof. Dr. Klaus Jürgens, klaus.juergens@io-warnemuende.de, Institut für Ostseeforschung Warnemünde (IOW)



With funding from the:

