

Assessing the impact degree and areal degradation extent of the benthic ecosystem caused by different human activities.

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Abstract:

How sustainable are human activities and at what pace do they impact the ecosystem? An ongoing debate urging for uniform assessments. The EU Nature Directives (Marine Strategy Framework, Habitat and Water Framework Directives) provide good bases for scientifically sound assessments. However, they all have different assessment criteria, hampering the objective comparison of the impact degree and the areal extent of degradation caused by human activities. In this study, we applied a harmonized and uniform set of biodiversity indicators, as defined for MSFD-Descriptor 1 with respect to the benthic ecosystem in the Belgian North Sea. We assessed the impact of dredge disposal and aggregate extraction, two activities only allowed in dedicated zones, and compared this to the impact of the more widespread fishery activity. At certain pressure thresholds (e.g. volume disposed, volume and frequency of extraction, number of trawls), all activities caused a decrease in benthic habitat quality. However, for each activity the thresholds and the areal extent of degradation were quite different dependent on the benthic habitat type in which the activity took place. Such detailed insights on pressure footprints are necessary, to allow for an integrated evaluation of the biodiversity status across multiple activities within different marine regions.

Key words: benthic ecosystem, pressure footprint, biodiversity indicators, harmonized assessment