

Relation between dredging intensity and frequency and its impact on a benthic sandy habitat

De Backer Annelies¹, Hostens Kris¹

¹ Institute for Agricultural and Fisheries Research (ILVO), Animal Sciences Unit, Aquatic Environment and Quality, Ankerstraat 1, 8400 Oostende, Belgium

Yearly, around three million m³ of marine sand is extracted from the Belgian part of the North Sea. This aggregate dredging activity is restricted to four concession areas, characterized by similar habitat and sediment characteristics. We assessed how the benthic sandy habitat is impacted by different degrees of dredging pressure in terms of extraction frequency and intensity. We evaluated the potential responses of the macrobenthos community to dredging pressure by means of structural and functional benthic characteristics. Structural changes in species number, composition, abundance and biomass were summarised by the benthic indicator BEQI. Functional changes were measured by the bioturbation potential and biological traits (BTA).

The most significant impact of dredging on the benthic community was observed in the most intensely dredged area (i.e. high extraction intensity and frequency), with significant changes in several benthic characteristics and a moderate to poor score for the benthic indicator BEQI. Furthermore, the heart-urchin (*Echinocardium cordatum*) was identified as the most sensitive species to dredging, because its abundance substantially decreased in all impacted areas, and it even disappeared from some zones. For the benthic functional characteristics, no impact of dredging was measured in any of the areas.

Our results suggest that the current benthic sandy habitats are resilient enough to buffer aggregate dredging when performed at low intensities or at high but infrequent intensities. However, when dredging is performed at high and frequent intensities, changes in sediments do result in clear structural changes in the benthos.

Keywords: macrobenthos, dredging intensity, structural and functional characteristics, Belgian part of the North Sea

Contact author: annelies.debacker@ilvo.vlaanderen.be, Institute for Agricultural and Fisheries Research, Aquatic Environment and Quality, Bio-environmental Research, Ankerstraat 1, 8400 Oostende, Belgium