

Habitat suitability as a modelling tool for macrobenthic communities: An example from the Belgian part of the North Sea

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Being ecologically important and well-known, the spatial distribution pattern of the macrobenthos is often used to support an ecologically sustainable marine management. Although being increasingly demanded, full coverage spatial macrobenthos distribution maps are however generally lacking. This study therefore aimed at demonstrating the usefulness of habitat suitability modelling as a full coverage mapping tool through (1) the construction of a habitat suitability model for the macrobenthic communities in the Belgian part of the North Sea (BPNS) and (2) predicting the full coverage spatial distribution of macrobenthic communities within the BPNS. Discriminant function analysis (DFA) objectively selected median grain size and sediment mud content and omitted bathymetry, slope and distance to the coast to represent the most important environmental variables determining the macrobenthic community distribution. The consequent empirical habitat suitability model, using both median grain size and mud content, showed an *a posteriori* average CCI (i.e. Correctly Classified Instances) of 79% (community-dependent CCI ranging from 72 to 86%). The application of the habitat suitability model on the full coverage maps of median grain size and sediment mud content, taken from literature, allowed to reliably assess the distribution of the macrobenthic communities within 96.3% of the 53297 BPNS grid cells with a resolution of 250 m. Next to its applicability to the BPNS, the model is further anticipated to potentially perform well in the full Southern Bight of the North Sea.

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