Long-term trends in soft-bottom fauna based on 30 years biodiversity monitoring

Annelies De Backer, Gert Van Hoey, Kris Hostens

Institute for Agricultural and Fisheries Research (ILVO), Aquatic Environment and Quality, Bio-environmental research group, Ankerstraat 1, B-8400 Oostende, Belgium

Email: annelies.debacker@ilvo.vlaanderen.be

Situated within the southern North Sea, the Belgian marine realm forms a unique marine ecosystem, characterized by shallow sandbanks and gullies. Like in other systems, human activities intensified strongly during the past decades.

From 1984 onwards, several locations (outside direct human impact) were yearly sampled for macrobenthos, epibenthos and demersal fish in autumn. This provided a unique dataset to study natural variability over time within the soft-bottom ecosystem. Both coastal and offshore assemblages of each ecosystem component were sampled, which permitted to detect if the coastal and offshore area changed differently over time within one ecosystem component. Furthermore, these long-term data enabled to identify whether the different ecosystem components showed similar or different trends over time. Observed changes were linked to physical and climate-related environmental variables.

Overall, the soft-bottom ecosystem possessed high ecological stability over time. Nevertheless, a shift in both the coastal macrobenthos and the offshore demersal fish assemblage was revealed around the year 2004. Shifts in offshore demersal fish could be related to climate parameters, while the coastal macrobenthic shift was mainly related to physical changes. Other trends were only apparent at the species level for instance typical southern species showed distinct increases since the late 90's.

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