

**De Backer Annelies**

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## ***Long-term ecosystem changes in the Belgian North Sea revealed by 30 years environmental monitoring of soft sediment fauna***

More than 30 years environmental monitoring revealed shifts in the coastal macrobenthos community and the offshore demersal fish assemblage of the Belgian North Sea (BNS) in the beginning of the years 2000. The shift in the offshore demersal fish assemblage could be related to climate parameters, while the coastal macrobenthic shift was mainly related to physical habitat changes.

Since 1984, several locations in the BNS have been yearly sampled in autumn, considering three ecosystem components: macrobenthos, epibenthos and demersal fish. As the samples are not directly impacted by human activities (except fisheries), the time series allowed us to study the 'natural' variability over time. For all ecosystem components, a clear differentiation between a coastal and offshore assemblage was seen, so we investigated whether both changed differently over time, and whether the three ecosystem components showed similar trends. We linked the observed biological changes to a number of environmental variables, reflecting both climate and physical changes. Besides long-term trends at the assemblage level, some trends were apparent at species level as well. Some Lusitanian fish species, like lesser weever *Echiichtys vipera*, solenette *Buglossidium luteum*, scaldfish *Arnoglossum laterna* and sand sole *Pegusia lascaris*, increased in numbers since the late 90s. On the other hand pouting *Trisopterus luscus* showed a steep decline over time, which seems to be correlated to the NAO index. The density of the bivalves *Abra alba* and *Kurtiella bidentata* and the ophiuroid *Ophiura ophiura* increased significantly since 2004 in the coastal area, related to an increase of finer sediments. Another bivalve *Spisula subtruncata* was the only benthic species showing a strong decreasing trend over time.

*Keywords: time series, ecosystem changes, macrobenthos, epibenthos, demersal fish, Belgian part of the North Sea*