

Long-term changes in the macrofauna communities of the Otzumer Balje (East Frisian Wadden Sea) between 1998 and 2022

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In recent decades, the East Frisian Wadden Sea has been subject to several anthropogenic influences, such as a rising sea surface temperature and de-eutrophication processes since the late 1980s.

The Otzumer Balje is a tidal channel system located between the islands of Langeoog and Spiekeroog. Reiss & Kröncke (2001) first sampled the macrofauna of the Otzumer Balje in March and September 1998 and found three distinct macrofaunal communities: One on sandy sediments, one on muddy sediments and a “transitional” community.

In March and September 2022, the same stations were sampled again using a 0,1 m² Van veen grab. The aim was to find out if the structure and spatial distribution of the macrofauna communities has changed since 1998, and if the abundance and taxa number within the different communities have changed due to temperature increase and de-eutrophication.

The results showed that the general community pattern in the Otzumer Balje remained the same, though an ANOSIM test indicated significant changes in the structure of all three communities, both in March and in September. These changes were more pronounced in September than in March, which was also reflected in the characterizing taxa. While no significant changes in mean abundance and mean taxa number were found in March, a significant decrease for both variables was found in September 2022 compared to 1998 in all three communities. It is likely that these changes are linked to a reduced food availability in summer due to de-eutrophication processes.