

Are benthic food webs different on small spatial scales?

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Benthic food webs are very important as they provide food for higher trophic levels. However, during the last century North Sea benthos has been affected by different types of increasing anthropogenic pressures, such as fishing, windfarms and sand extraction. Studies concerning human activity consequences, especially the trawling effects on benthos, have shown changes in its abundance, biomass and production over various spatial and temporal scales. For fish, a decline in trophic level due to overfishing has been underlined both worldwide and for the North Sea. In general, the effects of human pressures on benthic communities are well understood and some studies have already highlighted that benthic trophic interactions can be regarded as being resilient by opportunistic feeding, i.e. most species being generalists, and trophic redundancy. However, there is still little detailed knowledge on benthic food web structure and trophic interactions of different habitats and communities.

In this study, we investigated the trophic levels and food webs of the macroinvertebrates and demersal fish in two different North Sea benthic communities based on stable isotope analysis (¹³C/¹²C and ¹⁵N/¹⁴N ratios). The samples were collected from the *Bathyporeia-Tellina* and Central North Sea communities in the German Bight. For the first time, the food webs of these two communities were analyzed, by comparing trophic parameters, such as carbon sources, trophic levels and feeding types. Similarities and differences in the trophic structure between the two communities are discussed against the background of natural conditions and anthropogenic disturbances. Thus our results provide valuable knowledge and a sound scientific baseline for understanding trophic functioning in the context of marine management and sustainable use of marine resources.

Keywords: stable isotopes; benthic assemblages; trophic levels; food webs