IOW press release from June 20, 2016

First comprehensive inventory of the entire Baltic sea floor

The renowned ICES Journal of Marine Science published most recently the first comprehensive survey of the distribution of macrozoobenthos communities in the entire Baltic Sea – a study done by the IOW scientists Mayya Gogina and Michael Zettler and a team of co-authors. Based on the abundance of certain species at more than 7.000 locations, they identified 10 major communities. In the most northern areas, benthic communities with only few major key species belonging to crustaceans, polychaetes and bivalves (e.g. Monoporeia affinis*,* Marenzelleria *spp. und* Macoma balthica*, respectively) exist. They dominate most of the Baltic Sea north of the Bornholm Basin, which means nearly 60 % of the whole sea floor of the Baltic.*

Areas with oxygen depletion, widely spread in the deep basins of the central Baltic Sea, expectedly show nearly no communities. This changes when turning to the Western Baltic Sea, where salinity and oxygen is rapidly increasing towards the transition zones to the North Sea. The taxonomic diversity increases and the communities change within a much smaller spatial range. In total, the study comprises more than 1.000 taxonomic units (i.e. species).

In addition to these studies, Mayya Gogina and her colleagues investigated in which way these structures change, if instead of the abundance of certain species, their percentage of the total biomass at a sampled location is taken into account. The result shows a different picture: instead of 10, 17 major communities in the Baltic Sea are shown. According to this characterization, the most widespread community includes, apart from already mentioned *Macoma balthica* and *Monoporeia affinis*, the "aquatic sow bug", *Saduria entomon*. Even though there might be just few individuals of the bug, the mere size of *Saduria* (up to 9 cm) among the otherwise much smaller organisms leads to its high dominance in the total biomass.

The macrozoobenthos, on which the article focusses, comprises all animals larger than 1 mm living at the bottom of waters. They are in charge of important tasks effecting the whole ecosystem: some of them bioturbate the sea floor thus influencing the burial of pollutants. Others, so called filterers, take suspended matter from the water, thereby cleaning it, decreasing turbidity and allowing more light to penetrate into the deeper horizons. In terms of biodiversity, the macrozoobenthos plays an important part with 2.035 different species in total being recorded for the entire Baltic. Therefore, to avoid negative changes, during the planning of any offshore construction activities the possible impact on benthic communities should be assessed. Mayya Gogina describes the use of the survey: “We offer basic information on the distribution of macrofauna in the Baltic Sea as a management tool for marine spatial planning and fisheries.”

The authors of this study collected and standardized data taken during a period between 2000 – 2013 from all the Baltic Sea countries. By means of statistical methods and mod-

els, separated data sets evolved to coherent spatial maps. However, Mayya Gogina indicates three weaknesses, which have to be overcome in the future: the majority of the applied data (70%) were taken during spring to summer. The results therefore mainly refer to this period. Besides, the data are poor in the deep basins of the central Baltic Sea. Interpolations related to these areas have to be handled with caution. Last, but not least, all inner coastal waters were excluded because the communities living there are strongly dominated by freshwater species and therefore not representative for the entire Baltic Sea. Further investigations have to eliminate these gaps.

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Figue 1a: Map showing the distribution of the 10 major macrozoobenthos communities based on the abundance of the occurring species

Figure 1b: Legend to Fig. 1a

Figure 2a: Map showing the distribution of the 17 major macrozoobenthos communities bases on the biomass of the occurring species

Figure 2b: Legend to Fig. 2a

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