Deschutter Yana

Ghent University, Marine Biology Research Group

Author(s): Deschutter Yana([1]), Everaert Gert([2]), De Schamphelaere Karel([2]), De Troch Marleen([1])

Affiliation(s) :

([1]) Ghent University, Marine Biology Research Group, Belgium

([2]) Ghent University, Laboratory for Environmental Toxicology and Aquatic Ecology, Environmental Toxicology Unit, Belgium

Understanding the response of zooplankton biodiversity and functioning in the North Sea as multistressor environment

Marine ecosystems are increasingly experiencing multiple disturbances along with the expanding human population. Climatic change leads to physical stressors such as changes in sea water temperature, salinity, and pH, while dissolved nutrients and pollutants in the marine ecosystem are important chemical stressors resulting from human activities. There is still a lack of quantitative data and understanding on how these chemical stressors interact in marine ecosystems and how they combine with climate change. To guarantee a sustained biodiversity and ecosystem functioning in the future, the understanding of the relative importance of the main drivers of change within marine ecosystems is crucial. To obtain a relevant database to underpin ecosystem-based management, we sampled the zooplankton of the Belgian part of the North Sea and its harbors every month for one year (2015). The samples are being analyzed through a multimethodological approach including stereomicroscopic identifications combined with Zooscan analysis, fatty acid profilings and toxicological measurements. First results indicate that both zooplankton communities and toxicant concentrations are very dynamic and heterogeneous within our study area. The obtained database will provide the necessary elements for ecological models unraveling the relative effects of different stressors within the Belgian part of the North Sea. Understanding these interacting effects on various biological levels will help to develop sound Ecological Risk Assessment methods and to establish reliable water quality criteria of chemical pollutants. The developed models will be validated in controlled lab experiments with selected zooplankton species, providing for possible model species to be used as bio-indicators in the future.

Keywords: climate change, pollutants, zooplankton, ecological models