LifeWatch biodiversity data: Trends and dynamics of Copepods in the Belgian Part of the North Sea

Mortelmans Jonas, Ollevier Anouk, Hernandez Cis and Deneudt Klaas

Flanders Marine Institute (VLIZ), InnovOcean site, Wandelaarkaai 7, 8400 Oostende, Belgium
E-mail: jonas.mortelmans@vliz.be

Copepods are major actors in zooplankton communities and are unambiguously important in marine food webs: they are notable grazers of phytoplankton and are known as a major food source for many predators. Changes to the environment, naturally or anthropogenically induced, will quickly translate into altered copepod dynamics, hereby also affecting both higher and lower trophic levels. Despite their importance, copepods are hardly studied in the Belgian Part of the North Sea (BPNS) and only a hand-full of publications are available.

The study makes use of long-term zooplankton data series and associated water quality parameters collected by the Flanders Marine Institute in the framework of LifeWatch: zooplankton abundances are measured by the ZooScan plankton imaging device and are processed by ZooProcess and Plankton Identifier (PkID) in order to detect and classify the digitized objects. Associated technical aspects and important user notes on the data series are given. In addition, historic open-access datasets on copepod abundances from the BPNS are incorporated in order to compare new and historic dataseries and compare between traditional microscopy and new imaging techniques.

Discrepancies in copepod phenology and abundances between on-and-offshore regions are described and are observed to be mainly driven by temperature. The anomaly of copepod abundances in autumn 2018, with onshore stations dropping to near-zero abundances is likely originating from ongoing heat-waves, resulting in extreme seawater temperatures creating favouring conditions for specific predator species and harmful algal blooms. Anomalies in copepod abundance might provoke match-mismatches between functional groups heavily affecting marine communities. By documenting the potential of this exceptional data series on zooplankton, it is hoped to highlight this open-access dataset on zooplankton from the BPNS, and promote further re-use by the scientific community, as well as informing environmental policy makers.

Keywords: LifeWatch; Biodiversity data; Time series; Dynamics; Copepoda