

Inventory of marine Copepoda and Cladocera (Crustacea) in Norway: COPCLAD

T. Falkenhaug¹, A. Hobæk², E. Willassen³

¹*Institute of Marine Research, Norway*

²*Norwegian Institute for Water Research NIVA, Norway*

³*Natural History Collections, Bergen Museum, University of Bergen, Norway*

Copepods (Copepoda) and water fleas (Cladocera) occupy a key role in the marine food chain, and have great importance as a link between phytoplankton and higher trophic levels. Despite of their important ecological role, the knowledge on their taxonomy and distribution in Norway is still inadequate and incomplete. Although the systematic of the most common species of copepods are well known from the early work of Sars (1903-1918), new molecular methods have revealed several cryptic species of copepods.

The project COPCLAD (Inventory of marine Copepoda and Cladocera in Norway, 2015-2017) will perform a comprehensive inventory of marine planktonic copepods and water fleas in the Norwegian EEC and the Arctic ocean. The aim is to provide a total species list of copepods and cladocerans in Norwegian waters. All species will be submitted for DNA barcoding through NorBOL, which is the Norwegian part of the global 'Barcoding for Life Initiative'. This is the first major barcoding activity of copepods and cladocerans in Norway.

The project is collecting samples from coastal and off-shore locations including the regions Skagerrak, North Sea, Norwegian Sea, Barents Sea and the Arctic Ocean (57°- >80°N). Sampling covers the whole water column (0-1000 m), over a wide salinity gradient: from inner estuaries (<10 ppt) to open ocean (>35 ppt). Traditional morphological and recent molecular techniques are combined and applied for species identifications. DNA sequence analyses are based on mitochondrial cytochrome c oxidase subunit I (COI). In order to enable molecular and morphological analysis of the same specimens, we applied a non-destructive DNA extraction method. This method retains the exoskeleton of the specimen, which allows each DNA barcode to be linked to a voucher specimen for future references.

This project is funded by the Norwegian Taxonomy Initiative (NTI) which aims to increase the knowledge of Norwegian species diversity and distribution, with main focus on poorly known taxa. In view of current climate change, as well as the continuing pressure by invading species, there is a clear need for updating the national knowledge base on occurrence and distribution of marine copepods and water fleas. The results from this project will serve as a baseline summary for the detection and analysis of any future changes in species diversity or distribution, including introduction of alien species in Norwegian waters.