

Effects of Multiple Stressors on The Benthic Ecosystem in the Barents Sea

Jørgensen LL, Primicerio R., Fossheim M., Anisimova N., Ljubin P.

Arctic marine environments are experiencing many human-induced and natural pressures, including climate change, harvest, introduced species, pollution from ship traffic, fossil fuel exploitation, etc. The size and complexity of the Arctic benthos poses many challenges to predict how these potential cumulative pressures affect benthic species and to detect biodiversity changes. The Barents Sea, one of the shelf oceans in the Arctic, represents a transition from warm Atlantic to cold Arctic waters and consequently an area for climate change studies. Since 2007, the Norwegian-Russian annual ground fish surveys in the Barents Sea, were added benthic taxonomists and a still developing standardized monitoring of invertebrates from the fish trawls. The intension is to develop a time and cost efficient method with simple and transparent analyze tools that easily can be adopted by other national ground fish surveys. The data base, including 3073 stations, 23 Phyla, 49 taxon groups, 590 species, abundance and biomass, are continuously developing and improving and presented a baseline map (Jørgensen et al 2014). Coding species vulnerability toward trawling (Jørgensen et al, accepted and in pres), temperature affinity, and preference to invasive top-predators can indicate geographical areas of particular concern where these factors act solely or as multiple impact factors. Developing environmental considerations that balance the fishing industry need for the Barents Sea resource services are particularly demanding in geographical areas with multiple impact factors acting simultaneously in a continues natural fluctuating and dynamic Barents Sea. We will present the benthic Norwegian-Russian baseline map and possible indicators to follow effects from climate, trawl and invasive species in the Barents Sea.

Jørgensen L.L, Ljubin P, Skjoldal HR, Ingvaldsen RB, Anisimova N, Manushin I. (2014).

Distribution of benthic megafauna in the Barents Sea: baseline for an ecosystem approach to management. ICES Journal of Marine Science; doi:10.1093/icesjms/fsu106

Jørgensen L.L, Planque B, Thangstad TH, Certain G (in pres). Vulnerability of megabenthic species to trawling in the Barents Sea. ICES Journal of Marine Science (accepted 17.05.2015)