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Title: *Destination North - a note on the distribution of mesozooplankton in the West Spitsbergen Current in the gateway to the Arctic Ocean*

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Zooplankton form important links between pelagic primary producers and top consumers and play essential roles in biogeochemical cycles, including carbon cycle. Changes in zooplankton distribution and abundance can influence ecosystem structures and functions and have economic consequences. The West Spitsbergen Current (WSC) is the main conveyor of warm and biologically rich Atlantic waters into the Arctic Ocean (AO). The WSC has complex spatial structure and its impact on the Arctic ecosystem depends on the route along which it enters the AO. Therefore, the knowledge of its physical and biological dynamics is prerequisite for modeling and predicting the pelagic realm changes in the warming Arctic. Previous long term studies of the mesozooplankton dynamics in the WSC carried out by IO PAN were restricted to the epipelagial, based on assumptions suggesting that in summer the bulk of zooplankton dwell in the surface layers.

The present study was carried out in summer 2012 across two branches and within the entire depth of the WSC (0-1000 m), along transects at 77 °N and 79 °N. It aimed at revealing vertical and horizontal distributions of mesozooplankton in the WSC and their relations with the bio-physical properties of the water masses. The sampling included vertically stratified net tows (Multi Plankton Sampler, 0.180 mm mesh) and measuring of environmental variables (temperature, salinity, nutrients, chlorophyll a, phytoplankton) in association with continuous hauls within 0-40 m of Laser Optical Plankton Counter platform with Conductivity-Temperature-Depth and Fluorometer sensors.

The results of the study will provide new information on mechanisms and pathways of zooplankton transport with the Atlantic waters into the AO. They will be important for interpreting the existing long term data on zooplankton dynamics in the WSC and will assist planning future sampling activities. The results can aid modelling zooplankton relations to environmental factors, as well as support predicting zooplankton distribution as a result of water masses advection under future climate scenarios.