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Small zooplankton in the Arctic; overlooked but considerable?

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Zooplankton with body size < 1mm are generally underestimated due to the use of sampling tools that are biased towards the larger species. This decelerates our build-up of knowledge on the function of food web dynamics. The aim of this study was to investigate the relative contribution and importance of small zooplankton to Arctic zooplankton communities. To obtain robust data on all size-fractions, zooplankters were sampled with WP-2 (90 – 180 µm mesh), and water bottles (Go-Flo, 30 L). Data were collected in the northern Barents Sea, the Fram Strait and north of Spitsbergen. It is demonstrated that zooplankton with an approximate body size < 1 mm are severely underestimated by zooplankton nets > 90 mesh size. Nauplii and small copepod species were numerically dominating in all sampled areas, and the contribution of smaller taxa made a significant contribution also in terms of biomass, ranging from 10 - 100 % of the total zooplankton biomass in the upper 100 m. Due to the inverse correlation between body size and Production/Biomass ratio, small-sized zooplankton may contribute significantly to total mesozooplankton production. In addition, their high size-specific grazing rates and ability to overwinter in surface waters, implies a high impact on arctic food webs. To build new knowledge on the role of zooplankton for carbon cycling in the Arctic, sampling tools must be designed to catch a larger size-fraction of the mesozooplankton community than the commonly used WP-2.

Keywords: Zooplankton, arctic, small copepod taxa, nauplii, Oithona spp.

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