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Large-Scale Microzooplankton Abundance and Diversity in the North Sea in Mid-Winter

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Protists and other microzooplankters (20-200 μm) are often not sampled in ecosystem monitoring programs despite the trophodynamic importance of this size fraction as grazers in the microbial loop and as prey for larger zooplankton and early larval stages of fish. We investigated the microzooplankton composition, diversity and abundance at 40 stations across the North Sea (from 3.2° W-7.6° E and 50.5-59.8°N) in mid-winter of 2014. Microzooplankton was collected with a CTD rosette at 10 m depth and manually counted and identified to the lowest possible taxa. A total of 35 taxa of dinoflagellates and ciliates was identified. *Gymnodinium* spp and *Torodinium* sp contributed most to the total dinoflagellate abundance (34 and 24 %) and *Strombidium* spp was the most abundant ciliate taxon (52 % of total ciliate abundance). Total microzooplankton biomass ranged between 0.08 and 2.4 $\mu\text{g C} \cdot \text{L}^{-1}$, much lower than those observed in spring or summer (up to $> 100 \mu\text{gC L}^{-1}$). The highest biomass ($> 0.5 \mu\text{gC L}^{-1}$) were found in the English Channel, south of 52°N, in contrast with those calculated for stations north of 57°N ($< 0.2 \mu\text{gC L}^{-1}$). Changes in the community composition will be discussed in relation to observed gradients in hydrographic conditions and the ability of microzooplankton to support dietary requirements of overwintering larvae of marine fishes.

Keywords: microzooplankton, International Bottom Trawl Survey, larval fish

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