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Floating marine macro litter distribution in White, Barents and Kara seas in 2021

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Among other marine environmental problems, the issue of marine litter accumulation in the World Oceans is of increased interest. It is relevant not only in areas with direct intense anthropogenic pressure, but also in remote and presumably pristine areas, such as the Arctic Sea. As the concentration of plastic waste in the marine environment increases, it can have impacts on various components of the marine ecosystem, at sea, on the seafloor, on the coasts and in particular in accumulation areas, while it also can negatively affect human social and economic activities. To reduce the release of plastic debris into the marine environment, litter occurrence and pathways need to be studied in order to identify litter sources, requiring monitoring studies that provide comparable results. Here we present the results of studies of the level of pollution by floating marine debris carried out using ship-based visual observations through a harmonised methodology, developed to obtain comparable data. The observations were carried out in the White Sea, Barents Sea and the Kara Seas during a research cruise of the Floating University project by the Shirshov Institute of Oceanology Russian Academy of Sciences in 2021. The studies included training and involvement of a large number of students as observers. Floating macro litter was observed in all study areas along the vessel's route. In total 2500 km route and 19,8 km² were covered with observations. The concentration of litter varied on observed transects from 0 to 226 items/km², with a mean value of 10.1 items/km². 95% of registered items were made of plastic, the most common were unidentified, weathered plastic objects that could indicate the long presence of litter items in the environment.