
Microplastics in the ice algae *Melosira arctica* - plasticising a vector to planktonic grazers and benthos

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Abstract

Plastic pollution has become ubiquitous even in remote polar ecosystems such as the Arctic.

Previous research at HAUSGARTEN observatory with Fram infrastructure has shown that microplastic concentrations are particularly high in water and sediment samples taken close to the marginal ice zone and in sea ice cores and zooplankton grazers associated with sea ice.

Here, we analysed samples of the ice algae *Melosira arctica* that attach to ice floes and often form long filaments, curtains, nets and other growth forms, which could capture microplastics released from melting sea ice. Samples and field and procedural blanks were taken opportunistically in Fram Strait during a helicopter-based ice sampling campaign in summer 2021 and analysed by μ -Raman.

Microplastics were found in all samples in significant quantities across a variety of polymer types and particles sizes. Whilst more data are needed our results indicate that ice algae could be an important sink and also accelerate the transport of microplastics to the deep seafloor, since ice algae are known to form aggregates that accelerate their sinking rates. Ice algae could thus also be vectors for microplastics into benthic or zooplankton food webs.

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