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# Microplastic ingestion by polar marine invertebrates with different feeding types

Julian Blumenroeder\*<sup>1,2</sup>, Cath Waller<sup>1</sup>, David Ka Barnes<sup>2</sup>, and Magnus Johnson<sup>1</sup>

<sup>1</sup>University of Hull [United Kingdom] – Cottingham Rd, Hull, Yorkshire HU6 7RX, UK, United Kingdom

<sup>2</sup>British Antarctic Survey – High Cross, Madingley Road, Cambridge CB3 0ET, United Kingdom

## Abstract

Microplastics have been found in the most remote regions of planet Earth, such as the deep sea and both poles. While an increasing number of studies have recorded microplastics in Arctic and Antarctic water and sediment, relatively little is known about the interactions of polar organisms and plastic pollution. As research in other parts of the world suggest negative impacts for marine biota when interacting with plastics, it is safe to hypothesize this is also true for animals living in higher latitudes. Furthermore, polar organisms are highly specialised and have a narrow adaptation window. This in combination with long food processing times and short annual feeding periods is likely to further increase the vulnerability of polar biota towards microplastics.

This study aims to investigate the factors influencing the vulnerability of benthic Arctic and Antarctic invertebrates, including taxa, feeding type, functional group, morphology, and habitat. This will create a holistic picture of the impact of microplastics on these animals and mechanisms behind it.

In the Arctic brittlestars were found to ingest significantly more plastic fibres than both star fish and bivalves both in regard to body weight and individuals per animal group. This suggests that the opportunistic feeding approach of brittlestars increases the exposure and potential intake of microplastics, compared to suspension feeding bivalves and deposit-feeding starfish.

**Keywords:** microplastics, polar, feeding types

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\*Speaker