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In situ microplastics ingestion by Antarctic marine benthic invertebrates

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Microplastics have been recognised as persistent marine contaminants and mounting evidence supports their designation as anthropogenic stressors to marine organisms. Despite the remoteness of Antarctica, microplastics contamination has been reported in every marine environment investigated in this area to date. Due to ocean currents and frontal systems, microplastics may become entrapped within polar regions and increase bioavailibilty to inhabiting fauna. Antarctic marine benthic invertebrates represent a research priority due to their sensitivity to change as well as contribution to ecological functioning and food webs. The current study investigated microplastics ingestion by the epifaunal, carnivorous polychaete *Barrukia cristata* and the infaunal, filter-feeding bivalve, *Laternula elliptica*. Animals were collected by SCUBA adjacent to Rothera research station, Adelaide Island. After digestion in 10 % potassium hydroxide (KOH) followed by filtration, microplastics ingested by individual animals were separated. Microplastics were then counted and characterised by shape, colour, size and polymer type by Micro-Fourier transform Infrared spectroscopy. Polyethylene terephthalate (PET) was the most abundant polymer type, followed by polyacrylonitrile (PAN) and ethylene-vinyl acetate (EVA). Congruent to earlier reports, fibres were found to be the most abundant source of microplastics contamination. However, it must be highlighted that fragments were also recovered from the animals analysed. Results determined the current level of microplastics ingestion by two benthic marine invertebrates of different feeding strategies in coastal environments of the Antarctic Peninsula. These findings indicated the bioavailability of microplastics and highlighted the potential of trophic transfer throughout the Antarctic marine food web.