# Determination of the Presence of Microplastics in Intertidal Sediments of Deception Island, Antarctica

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**Abstract**

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Microplastic pollution represents one of the major current environmental concerns due to its ingestion by marine organisms, its potential for bioaccumulation and biomagnification in the food web, and its role as vectors for harmful substances. These particles, measuring less than 5 mm, have been detected in all ecosystems, including the most remote areas of the planet, such as Antarctica. Specifically, marine sediments serve as sinks for microplastics, potentially causing harmful effects on benthic ecosystems. This study aimed to determine the presence of microplastics in the sediments of 10 sites from Deception Island (South Shetland archipiélago, Antarctica). Replicate samples were collected from above the intertidal drift line (i.e., the last high tide mark) and processed using Microplastic Isolation Units. This method allows for the separation of microplastics and sediment based on density differences using a hypersaline solution. Observation and microplastic extraction were conducted using a binocular loupe. Particle images were processed using the image analysis software *ImageJ Fiji*, enabling detailed characterization of particle morphology and color. Finally, analysis was performed by the Marine Research Institute (INMAR) using Fourier Transform Infrared Spectroscopy (FTIR) to determine the chemical composition of the particles, confirming their plastic nature and polymer type. Additional analyses were performed to characterize the sediment, aiming to examine variability among different sampling stations and particle characteristics. This comprehensive approach provides valuable insights into microplastic pollution in this remote region, contributing to the understanding of global environmental pollution and its implications for polar ecosystems.

**Keywords:** microplastics, antarctica

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