



ENVIROMENTAL MICROPLASTICS AND EVIDENCE OF CONSUMPTION BY *Branchinecta gaini* AND *Boeckella poppei* IN A REMOTE ANTARCTIC LAKE.

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Plastic pollution poses a global threat to aquatic ecosystems due to its persistence and widespread dispersion. Antarctic ecosystems are no exception, with plastics detected in seawater, marine sediments, meltwater streams, and marine organisms. However, no prior studies have investigated microplastic (MP) pollution in Antarctic lakes and its consumption by invertebrates. This research assessed MP densities in an Antarctic lake and experimentally evaluated their ingestion on a native copepod (*Boeckella poppei*) and an anostracan (*Branchinecta gaini*) under varying conditions, including MP concentrations and biofilm presence. Water samples from Ionosferico Lake (King George/25 de Mayo Island, Antarctica) were collected in 2023, and MPs were analyzed by micro-Fourier transform infrared spectroscopy. Microplastic densities ranged from 0.35 to 1.61 items/m³ with average sizes of 2.0 ± 1.5 mm (mean $\pm$ SD), and fibers were the most abundant particle type (>80%). The primary polymers identified were polyester (65%) and acrylic (16%). As model organisms, *B. gaini* and *B. poppei* were collected from the same lake and used in bioassays, including the use of lake water and irregularly shaped polyethylene and polypropylene particles, two of the most widely produced plastics globally. Experimental results showed no significant alteration in survival but confirmed MP ingestion in both species, albeit with low grazing rates, and *B. poppei* ingested more biofilm-coated MPs.



This study provides the first evidence of MPs in an Antarctic lake and their ingestion by two key species in this ecosystem, establishing a baseline for understanding MP contamination and biological interactions in Antarctic freshwater environments.

Palavras-chave: *Antarctica; microplastics; aquatic pollution; zooplankton; plastisphere*