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Microplastics in Inland Saline Lakes of the Central Ebro Basin, NE Spain

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Abstract-

Saline lakes are rare and fragile habitats with a high conservation and scientific interest. We have studied the presence of microplastics (MPs) in the water of four inland saline lakes located in the Central Ebro Basin (CEB), NE Spain. Quantification and characterization of MPs were performed by optical microscopy and micro-Fourier Transform Infrared Spectroscopy (micro-FTIR). MPs analyzed covered the 5–5000 μm range. Most of the MPs collected were contained in the 250–500 and 500–1000 μm ranges. The concentration of MPs varied from 850 ± 271 to 1556 ± 59 MPs/L, fibers being the most dominant typology. Seven different colors were observed, the most abundant being black, and seven types of plastic were identified, polyester, polyethylene terephthalate, and nylon the most abundant. The smallest lakes presented a more homogeneous MP size distribution and a wider variety in color and polymer composition. This work shows that the MP concentration in these lakes is at least one order of magnitude higher than previous values reported in similar environments, and it is expected to multiply fast. This highlights the importance of the hydrological characteristics of these lakes, the evapotranspiration being the only water outflow, the atmospheric deposition of MPs, and other anthropogenic causes.

Index Terms- microplastics; saline lakes; wetlands; micro-FTIR

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