



MICROPLASTIC ABUNDANCE, DISTRIBUTION AND CLASIFICATION IN THE SIRIU RESERVOIR - BUZAU RIVER, ROMANIA

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Microplastic (MP) pollution investigations on riverine – lacustrine systems have known an intensively scientific interest, in the last years, due to the gaps in ecological status of these environments. Freshwater reservoirs collect high volumes of litter, especially during high flood periods, accumulating them in the sediments of the adjacent rivers (Castañeda et al., 2014) and inside the reservoirs, on depositional banks, as well as in the surface water layer of the reservoir (Su et al., 2016).

This study presents initiatory research of microplastic pollution in an artificial lake – river system in Romania. The study area of Siriu Lake –

Buzau River is located in the southern area of Eastern Carpathians, upstream localities comprise a population less than 10.000, as well as low agriculture and tourism activities are reported.

During the flood period (November 2022), 6 water samples, 7 sediment samples and 2 sediment cores (45 cm length) were collected, in order to evaluate the MP pollution degree. Quantification of MPs were performed at NIRD GeoEcoMar laboratory, by microscopic investigations on the samples conclude an average concentration of 3 particles per m^3 of filtered surface water and an average abundance of 268 particles per kg of sediment. Highest MP concentration were identified in the Buzau River, downstream the reservoir (up to 6 MP/ m^3) and in the confluence point of the river with the reservoir (445 MP/Kg). Most of the particles observed in both water and sediment samples are fibers (77.6%), followed by fragments (12.1%), foils (8,7%) and spherules (1.6%). More than half of the particles are black colored, as well as blue, green, white/transparent, red and yellow particles were observed.

Qualitative investigations using micro-FT-iR on several polycarbonate and fiberglass membranes conclude main presence of polyethylene, polypropylene, polyacrylonitrile and polyethylene terephthalate.

On-field observations and MP characteristics determined a proximal source of the plastic pollution, as most of the identified particles were generated by macroplastics as bags, products related with domestic construction, vehicle tires and textile items.

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