

# OCCURRENCE AND CONCENTRATION OF MICROPLASTICS IN A FRESHWATER ENVIRONMENT: THE STUDY CASE OF ANTO RIVER

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Monitoring studies have quantified microscopic plastic debris also in freshwater systems. Rivers may transport microplastics (MPs) to marine habitats suggesting an overlooked and significant component of the global microplastic life cycle. The present study aims to investigate the abundance and composition of MPs in an Italian river (Ofanto) evaluating the presence of temporal trends in response to hydrological parameters. River surface samples were collected during February, April, October, December 2017 and May 2018; all of them were taken from the same point closed to the river mouth. MPs were collected by three surface plankton nets fixed in the middle of the river simultaneously for two different time slot for a total of six replicates for each campaign. After processing, a visual and chemical characterization has been carried out. MPs were categorized according to size, colour and morphology. MP concentrations (expressed as mean value  $\pm$  dev.st.) ranged from  $0.93 \pm 0.4$  p/m<sup>3</sup> to  $12.56 \pm 4.83$  p/m<sup>3</sup> showing values comparable to or greater than those reported in other studies. A statistically significant difference in the average MP concentrations found in different campaigns has been observed, suggesting thus a temporal variation in plastic abundances. These differences could be explained by the hydrology of the river that influence, with physical forces, (such as flow velocity, the water level of the river and seasonal variability of water flows) the concentrations of particles. MPs were found more abundant during wet periods (February 2017 and May 2018) indicating a presumable land-based origin from the surrounding agricultural areas. Shape distribution showed the dominating occurrence of fragments and flakes (56% fragments and 26% flakes) in similar proportion during all campaigns.