

Oral Communication 20

Microplastic occurrence and distribution in the Ave River estuary

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Abstract

Background: Microplastics (MPs) have been found in all types of aquatic ecosystems, posing a threat to the environment, wildlife and human health [1-3]. Although rivers act as marine litter pipelines to the ocean, estuaries can act as buffer zones preventing garbage from reaching the sea, thus, acquired data on those ecosystems contribute to a better understanding on the entry of litter into the ocean from terrestrial sources [4]. As such, knowledge of estuarine hydrodynamics is critical to understand problems such as water quality, residence time and dispersion rate of pollutants [5]. In addition, scientific data on MPs in Portugal aquatic ecosystems is scarce. **Objective:** This study aimed to: 1) evaluate and characterize MPs in the Ave Estuary water column, and 2) identify the potential sources, and analyse the main hydrodynamic patterns and the water residence time to understand the MPs transport patterns. **Methods:** Short-term campaigns were performed to measure vertical profiles of velocity, salinity, temperature and pH in the Ave Estuary. MPs particles were sampled using a planktonic horizontal trawl, processed following standardized protocols [6], identified, measured, and sorted by shape and colour [7,8]. **Results:** This study revealed a clear stratification of the Ave Estuary, as well as considerable contamination by MPs (annual average density of 63.1 ± 4.7 MPs/m³) with a significant prevalence of blue (34%) fragments (53%), measuring between 0.5 mm and 1 mm (42%). **Conclusions:** The obtained results showed a very strong seasonal pattern, and pointed to public litter, tourism and fishing activities as potential main sources of MPs in the study area and to an urgent need for adequate management of MPs and of marine and coastal ecosystems. This study represents a contribution to the pressing need of temporal and spatial monitoring on MPs pollution in estuaries and other coastal ecosystems.

Keywords: microplastics; emerging contaminants; estuarine hydrodynamics; coastal ecosystems

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