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Plastic waste input from Guadalquivir River to the ocean

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Around 8 million tons of plastic waste are leaked from land into the ocean annually. One of the main pathways of plastic input into the ocean is rivers, but there is no comprehensive information about the amount and nature of litter transported. This study presents results of a monthly monitoring over a two years period in the estuary of Guadalquivir River, southern Spain. The samples, which consisted of passive hauls, were taken from a traditional glass eel fishing boat anchored with three nets working in parallel. The nets, with a mesh of 1 mm and an opening of 2.5 (width) × 3 (depth) metres, filtered around 60,000 m³ per sample. Our methodological approach allowed characterization of virtually all plastic sizes in river waters, comprising micro-, meso- and macroplastics. Plastic items were dominated by pieces of film (70% in number). Microplastics in the size interval from 2.5 to 4.0 mm represented half of the total identified items. Small fragments in Guadalquivir River comprised most of the plastic mass input to the sea. Our results support the relevance of fragmentation processes inland, and the role of rivers and estuaries as sources of microplastics to the ocean.