Detection of Floating Plastic Pollution in Cabrera Archipelago Maritime Terrestrial National Park, Spain

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Plastic moves throughout the marine environments through biotic (i.e. biofouling) and abiotic factors (i.e. winds, currents) as it passes from the sea surface to the water column, reaching the sediments and putting at risk the biota that inhabits all compartments of the marine environment. This study aims at identifying floating plastic pollution in the marine protected area of Cabrera Archipelago Maritime Terrestrial National Park (Cabrera) to identify the abundance of micro-litter items on the sea surface through manta net surveys and macro-litter on the sea surface through visual surveys. Cabrera MPA is located ~5km off the southeast coast of Mallorca in the Balearic Island Archipelago (western Mediterranean Sea). A total of 52 manta net tows were conducted between July and August of 2019 and 2020. The manta net used was a standard Hydro-bios manta net with a mesh size of 335 μm. Twenty-two macro-litter visual surveys were performed simultaneously with the manta trawl (MPs) surveys in 2020. All micro-litter surveys contained MPs particles with an average of $255,878 \pm 144,676$ items/km^2 observed. In terms of polymer characterization, the majority of the items were high-density polyethylene (HDPE; 65%) followed by polypropylene (PP; 21%) and low-density polyethylene (LDPE; 12%). For the visual surveys for macro marine litter, an average of $2,028 \pm 2,084$ ML items/km^2 identified from the 22 surveys. Although previous studies have reported the potential for MPAs to becomes sinks for plastic pollution (Compa et al., 2022). The results from this study highlight its pervasiveness from the small micro-litter size class to large marine litter items and its high spatial variability floating on the sea surface.