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**V. Fagiano, M. Compa, C. Alomar, M. Morató, S. Deudero, 2023. [The hyperbenthic environment: A forgotten habitat for plastic pollution](#)**

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**Abstract:** This study investigates the abundances and composition of microplastics (MP) among the shallow layers of a coastal Mediterranean Marine Protected Area (Cabrera MPA), seafloor sediments, hyperbenthic environment, and the water column. The mid waters samples were collected mid-way between the sea surface and the seafloor and hyperbenthic samples at the water layer adjacent to the seafloor. Sampling was carried out on patchiness seafloor of *Posidonia oceanica* meadows. The seafloor sediments showed a mean abundance of  $378,769.20 \pm 508,109.11$  MPs/m<sup>3</sup>, three orders of magnitude higher than the hyperbenthic ( $209.17 \pm 117.07$  MPs/m<sup>3</sup>), and the mid waters layer ( $106.48 \pm 107.17$  MPs/m<sup>3</sup>). An increasing vertical gradient in MP abundances, mainly composed of fibers was observed. Fibers were made-up mainly of polystyrene (PS, 25 %), expanded polystyrene (EPS, 18 %) and cellulose acetate (CA, 16 %). The results stress the need to increase efforts to find solutions to mitigate fiber pollution in the marine environment.

**Keywords:** Microplastic, Hyperbenthic environment, Sediments, Fibers, Benthic boundary layer