
NEUSTONIC MARINE MICROPLASTICS AND ZOOPLANKTON IN THE COASTAL WATERS OF CABRERA MPA (North-Western Mediterranean Sea)

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Abstract

Currently, microplastics (< 5 mm) are ubiquitous in the marine environments posing a growing treat to marine protected areas (MPAs) created to prevent habitat lost and to preserves biodiversity.

Within the effects of microplastics (MP) on biota it is of special interest to highlight their effects on zooplanktonic organisms having a key role on local food web structures. As to which are the effects of MP abundances on zooplanktonic community assemblage and composition, particularly in coastal ecosystems, it is still an open question.

The present study addresses MP distribution and composition within *Cabrera MPA* (north-western Mediterranean Sea) as well its effects on local zooplanktonic community assemblage.

MP average abundances found within *Cabrera MPA* [0.35 (\pm 0.29) items/m³] showed higher values than those reported for the majority of western Mediterranean Sea basins and for the closest more anthropized area of Mallorca [0.16 (\pm 0.29) items/m³]. A micro-scale accumulation area was detected within *Cabrera MPA* presenting an MP abundance [19.32 (\pm 14.45) items/m³] higher than those reported for the subtropical gyres by previous studies. MP composition suggested far contamination sources as predominant.

Moreover, MP appeared able to influence the local zooplanktonic community assemblage without altering the zooplankton average abundance. An interesting positive correlation was found between MP and the abundance of the planktonic stage (*Tretomphalus*) of the foraminifer *Rosalina globularis*. This species seems able to utilize MP for its dispersion, while a negative correlation with Copepoda abundance was detected suggesting a role of this taxa in MP removal from surface waters.

This work highlights an important and complex interaction between zooplankton and MP, being able to mutually influence their distribution and composition. Moreover, results confirm that MPAs are not protected from MP pollution.

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