
Comparing presence of plastic in fishes of the Mediterranean Sea

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Abstract

The presence of plastic in the marine ecosystems has become a major problem for marine life. The Mediterranean Sea is one of the most polluted seas on Earth. Identifying the variability of plastics uptake by different commercial marine fish species which have different roles in the food web will allow for a better understanding of the impact that plastics have at the level of the individual, species, environment, and ecosystem. In terms of ecological and environmental strategies, the species selected for this study are two species that are pelagic (*Engraulis encrasicolus* and *Scomber scombrus*) and two species that are demersal (*Scyliorhinus canicula* and *Mullus barbatus*). The samples are collected from the Alboran Sea (western Mediterranean) to quantify the relationship between plastic prevalence and the environment and feeding behavior in the selected fish species. These collected samples were also compared to published literature values which covered a broader geographical range. The total data showed that the frequency of plastic presence in fishes increased longitudinally when moving west to east towards the eastern Mediterranean Sea. Samples from the Alboran Sea study sites showed that the predominant fiber color was black and the predominant plastic polymers was anthropogenic cellulose. At the Alboran Sea study site the highest plastic occurrence was found in *S. scombrus*, whereas in the published literature the highest occurrence of plastics in digestive tracts was found in *E. encrasicolus*. In the total data, differences in plastic presence were found among species ($X = 364.9$, $df = 27$, $p < 0.01$) and the presence of plastics was higher in pelagic than demersal groups ($W = 622148$, $p < 0.01$). This study supports the idea that following standardized protocols and quantifying plastic presence and composition may be essential to understanding potential impacts on marine ecosystems.

Keywords: elasmobranch, fisheries, marine litter, microplastic, plastic pollution.

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