

Characterization of microplastics in seawater, fish, and mussels from the Adriatic Sea

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INTRODUCTION

- marine fish and bivalves take up microplastic (MP) through ingestion or water filtration, but research on occurrence, distribution and identification of accumulated MP is still limited
- novel data on the distribution and types of MPs in specific tissues of bivalves and fish from the Adriatic Sea are presented
- the mass of the plastic waste in fish trawl in the Adriatic Sea represents 15-20 % of the total catch

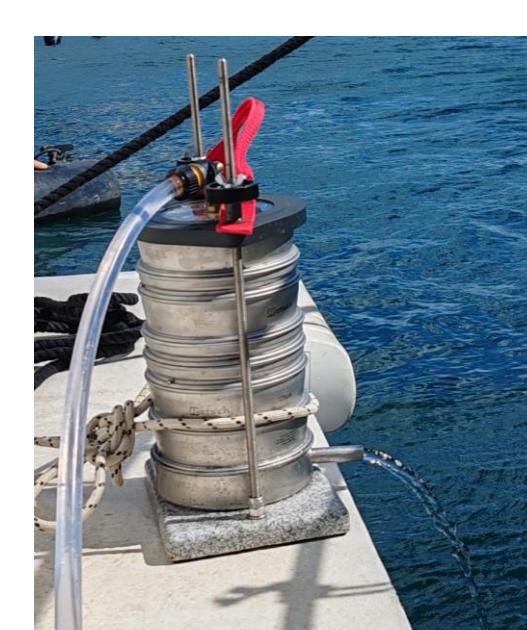
METHODOLOGY

sampling area



SEAWATER

filtration: 1000 L pumped through set of sieves



> 1 mm
1 mm – 500 µm
500 – 125 µm
125 – 63 µm

vacuum filtration over gold-coated polyester filters (5 µm pore size)



ORGANISMS

sea bream
(*Sparus aurata*)



gills
gonads

mussels
(*Mytilus galloprovincialis*)



gills
mantle

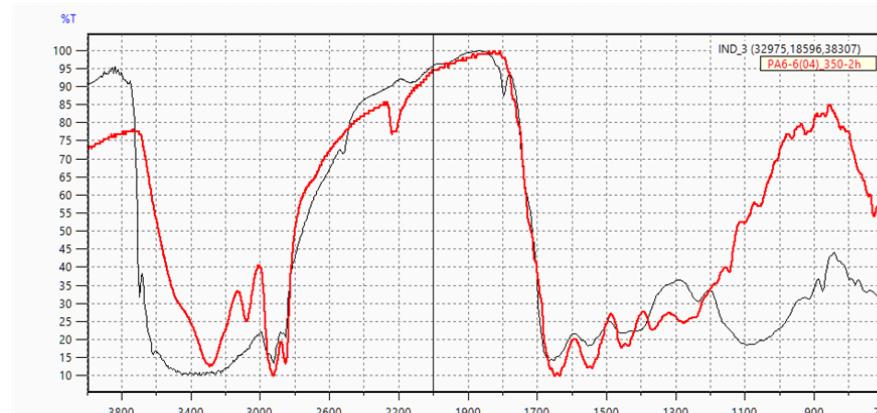
digestion by HNO₃ at 85 °C for 3.5 h

protective cabinet and "blank sample" were used to check the accuracy of the work and to prevent contamination

RESULTS

SEAWATER

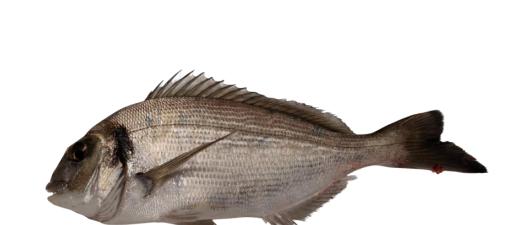
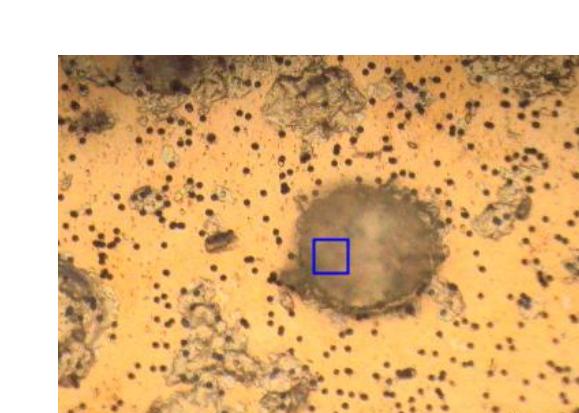
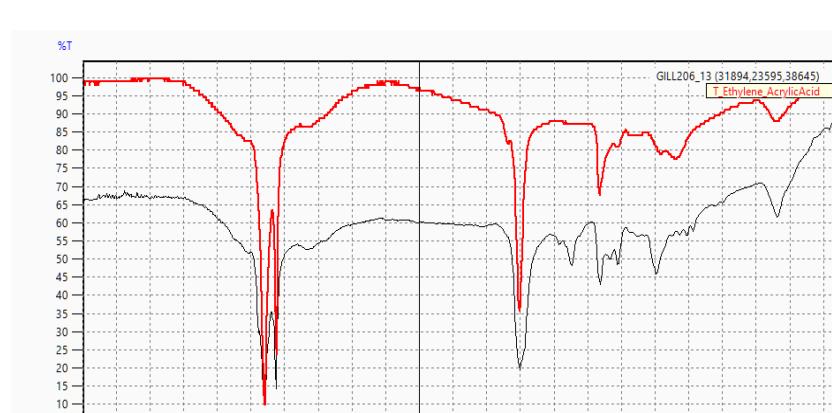
polyamide



- higher MP abundance in smaller size fractions
- fibres were the most common shape

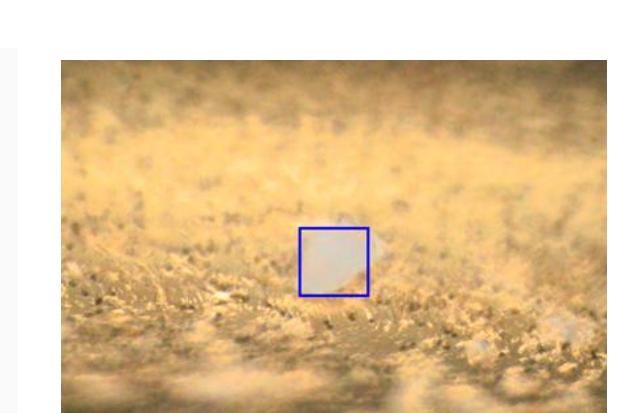
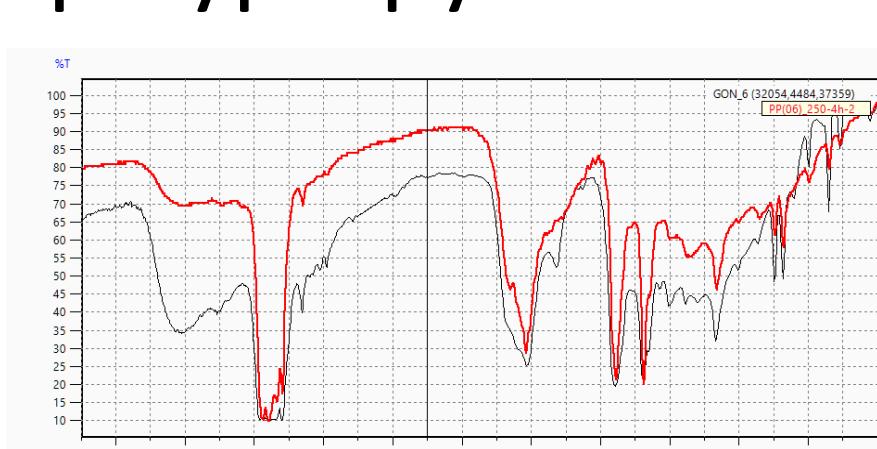
SEA BREAM

gills poly(ethylene-co-acrylic acid)



- although MPs were found in all tissues, the majority of isolated particles were of non-plastic origin

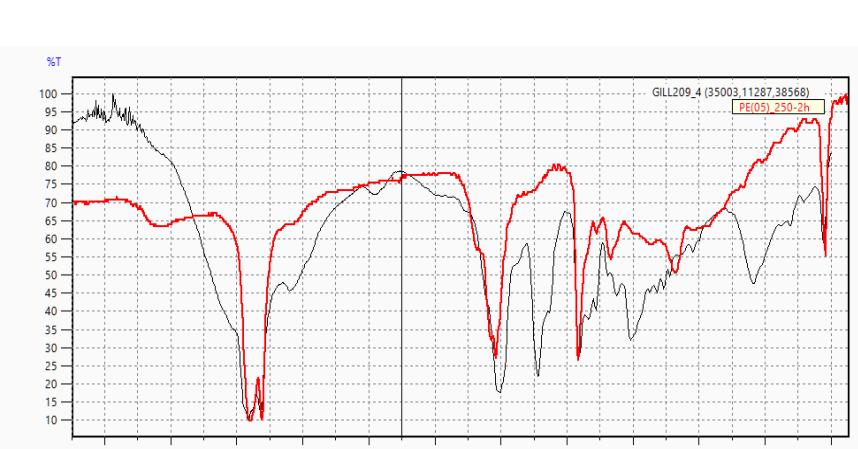
polypropylene



MUSSELS

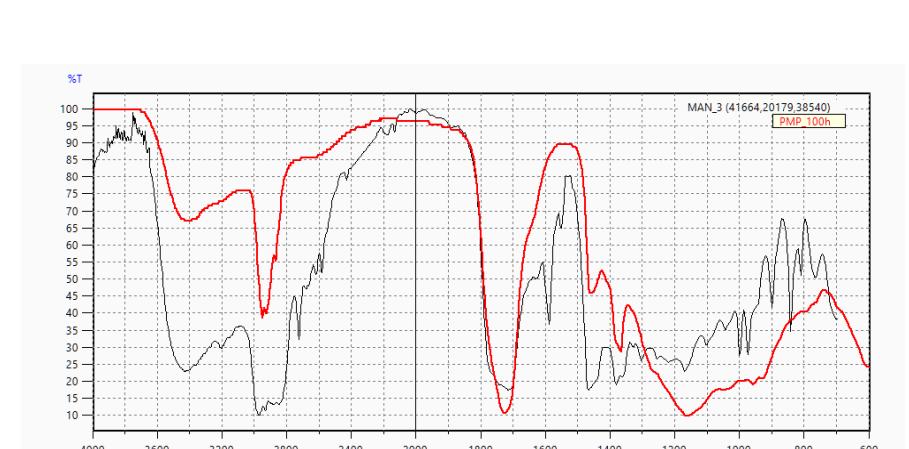
gills

polyethylene

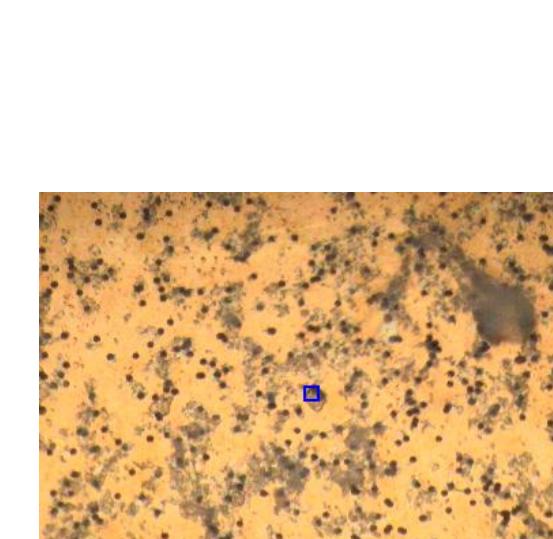
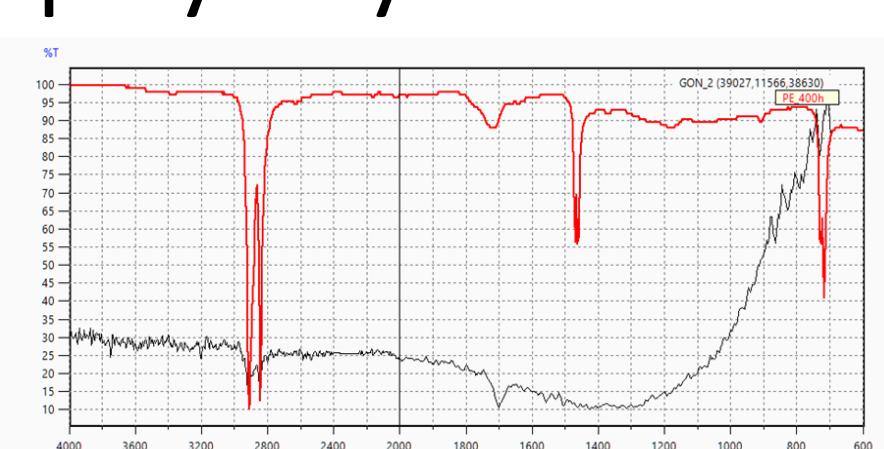


mantle

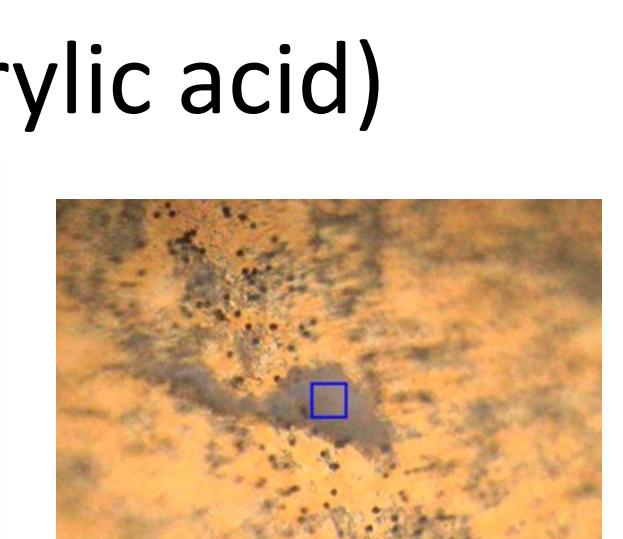
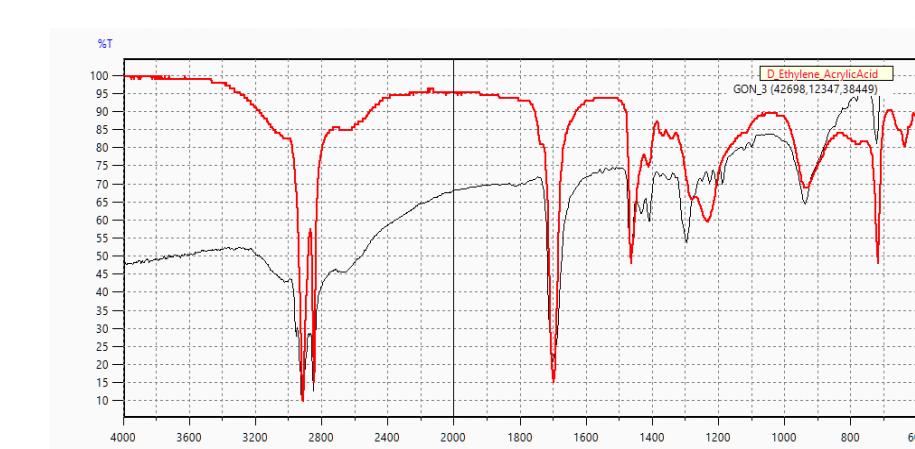
polymethylpentene



polyethylene



poly(ethylene-co-acrylic acid)



CONCLUSIONS

MP presence was confirmed in both seawater and marine organisms in the Adriatic Sea, underlining the need for continued monitoring of their exposure, accumulation, and potential biological impacts