

# Presence, distribution and characterization of microplastics in commercial organisms from Adriatic Sea



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## Introduction

The presence of microplastics in the marine environment has raised scientific interest particularly during the last decade. Several organisms can ingest microplastics with potentially adverse effects on the digestive tract, respiratory system and locomotory appendages [1]. However, a clear evidence of tissue accumulation and transfer of such microparticles in wild organisms is still lacking, partially hampered by technical difficulties in isolation and characterization protocols from biological samples [2].

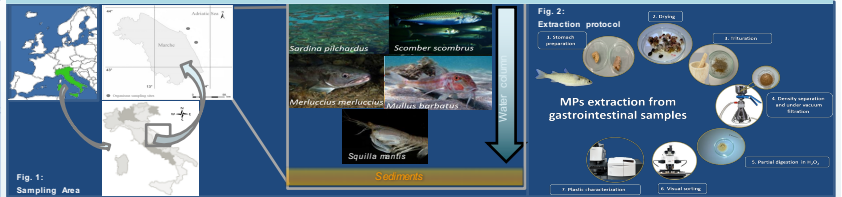
## Aims

1. Evaluate the presence, distribution and characterization of microplastics in several commercial species, including both vertebrates and invertebrates from the Central of the Adriatic sea.
2. Evaluate different susceptibility to microplastics ingestion in different marine species.

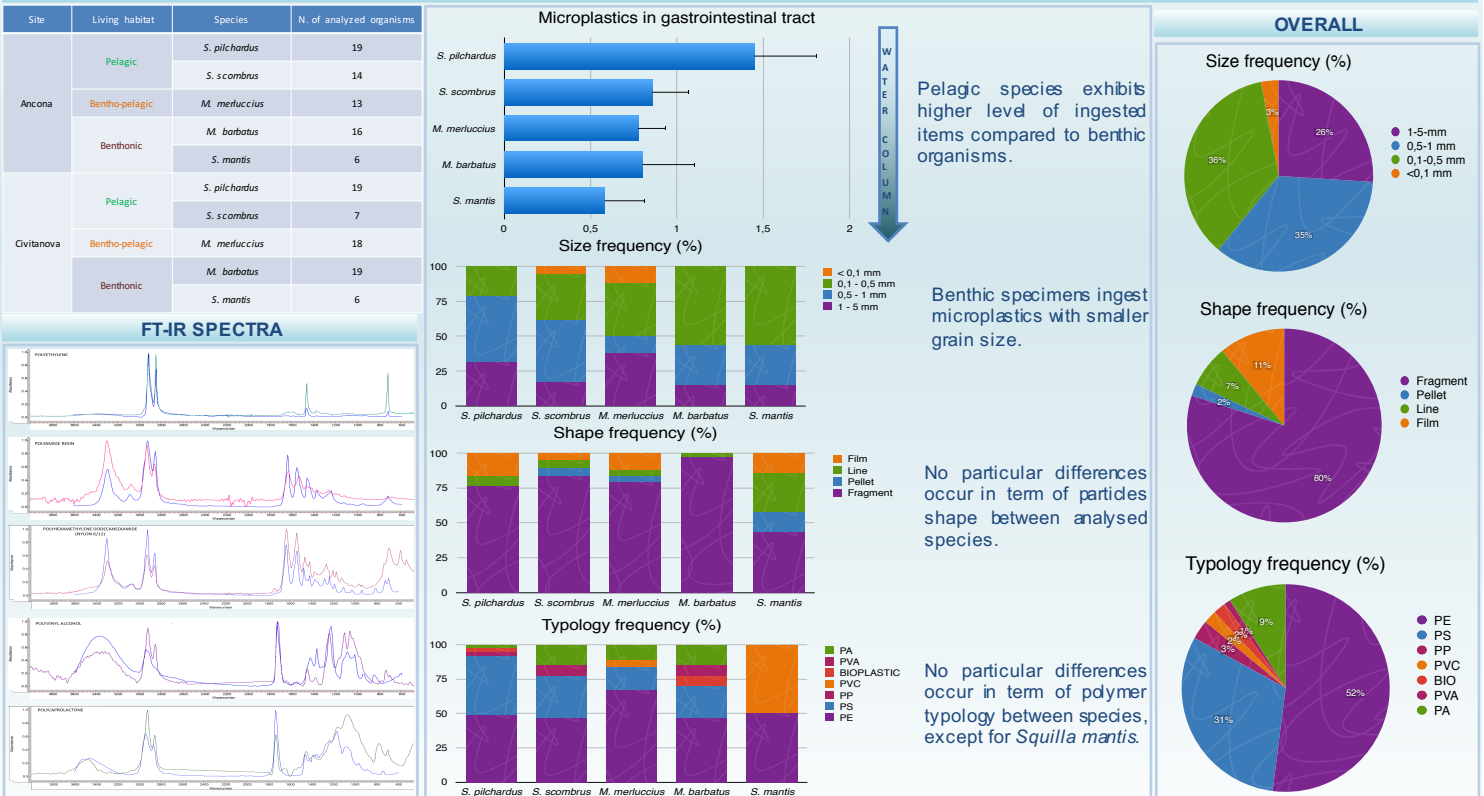
## Materials and methods

Fish and mantis shrimp were collected from two sites located along the Marche coast about 2 nautical miles from the coast (Fig. 1). Organisms from the two sites were sampled in the same day using gill nets. Gastrointestinal tracts of fish and whole soft tissue of invertebrates, were dissected and stored at -20°C until the analysis. A recently validated extraction protocol [3] was applied to extract microplastics from organisms tissues. Extracted particles were characterized in term of size, shape and polymer typology (Fig. 2).

## Investigated area and extraction protocol



## Results



## Discussion and conclusions

1. Microplastics items were mostly represented by fragments and film, while PE, PS and PA were the dominant polymers.
2. 45% of analysed organisms were positive to microplastics ingestion.
3. Invertebrates typically exhibited a lower frequency of microplastics in soft tissue in respect to the stomach of fish, but with a higher potential of particles transfer to human consumers.

In conclusion this study provided new insights on the presence, distribution and typology of microplastics in commercial organisms, representing an important baseline assessment on the level of this kind of contamination in Adriatic biota.

## REFERENCES

- [1] Wright et al., 2013. Environmental Pollution 178, 483-92.
- [2] Cole et al., 2013. Environmental Science & Technology, 47, 6646-55.
- [3] Avio et al., 2015. Marine Environmental Research, 111, 18-26.

