

Plastic ingestion and phthalate ester loads in different tissues of a stranded fin whale (*Balaenoptera physalus*): a case study in the Mediterranean Sea

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Introduction and objectives

Plastic ingestion in cetaceans is a well-understood phenomenon both in the Mediterranean Sea and globally. However, the evaluation of microplastics (MPs), especially in mysticetes, remains poorly studied due to difficulties in sampling and analytical procedures and the lack of standardized methods (Zantis et al., 2021). Nevertheless, the large number of synthetic items floating in their feeding ground, secondary ingestion by contaminated prey and the potential release and accumulation of contaminants (i.e., Phthalate esters) from ingested plastic pose a serious threat to these organisms. Accordingly, the *Balaenoptera physalus* (Linnaeus, 1758) feeding primarily on planktonic euphausiids are described to be particularly vulnerable to the ingestion of MPs (Fossi et al., 2012 and 2016) and proposed as wide-scale indicators of the MPs pollution throughout the pelagic environment (Fossi et al., 2018).

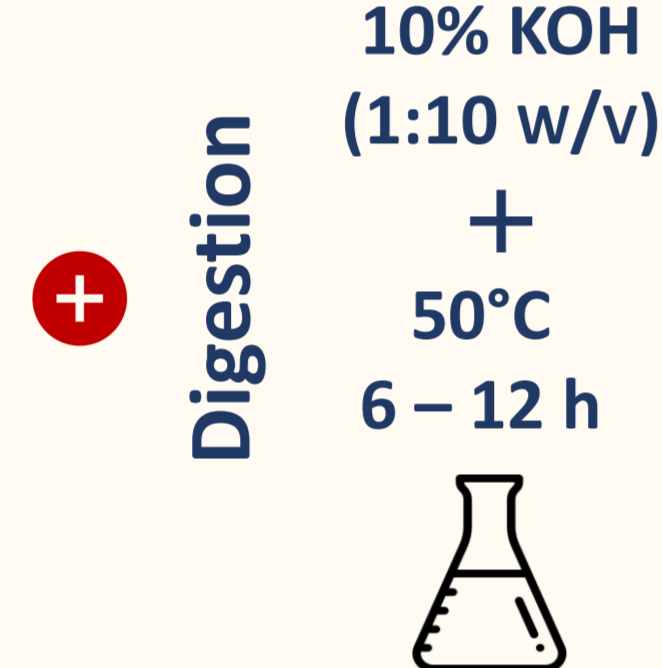
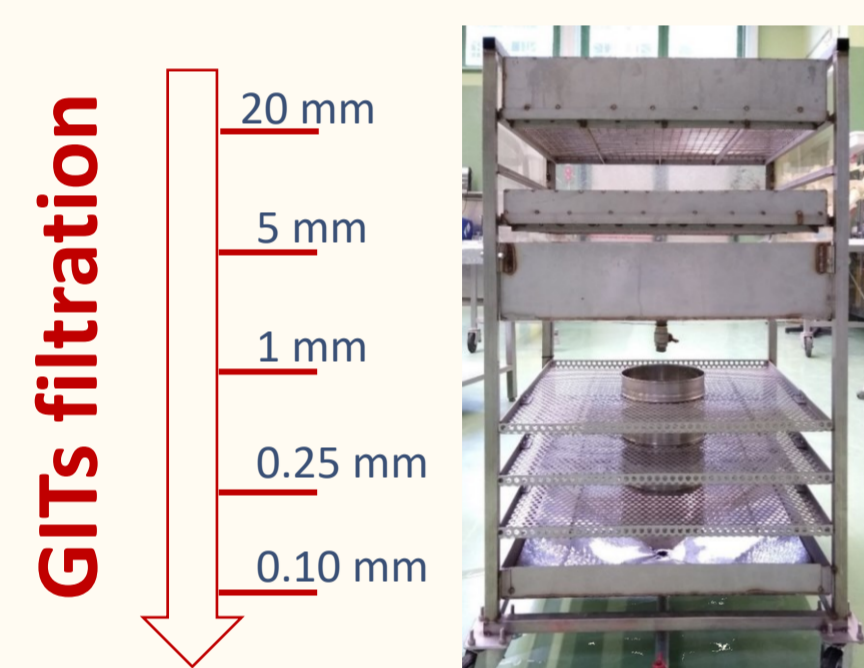
- For the first time in the Mediterranean Sea, the stomach and a sub-sample of the intestine of a fin whale stranded in Sorrento in 2021 (Tyrrhenian Sea, Italy) were examined for plastic detection
- Phthalate levels were evaluated in eight different biological tissues



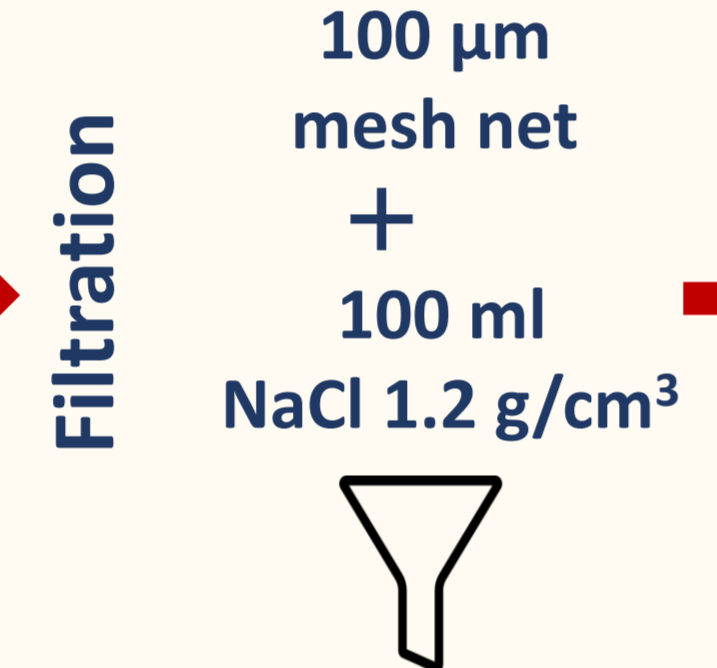
Materials and methods

Plastic litter extraction and characterization

Corazzola et al., (2021)



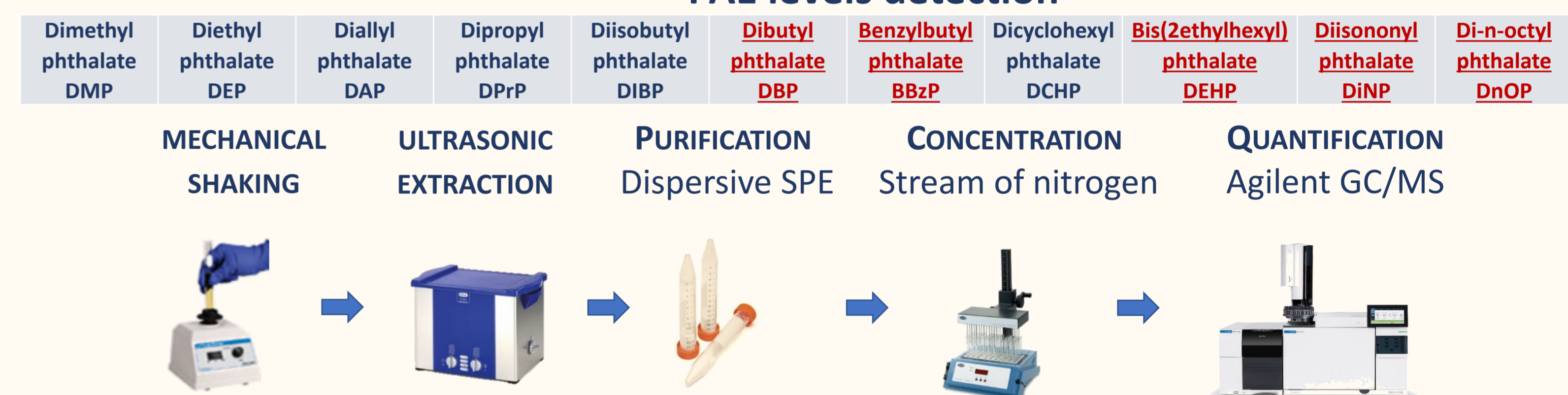
Giani et al., (2019)



Sorting and
characterization

Size class
Shape
Color
Polymer detection

PAE levels detection



Listed as reprotoxic category 1B substances under EU Regulation (EC) 1272/2008

Plastic litter ingestion

37 plastic particles

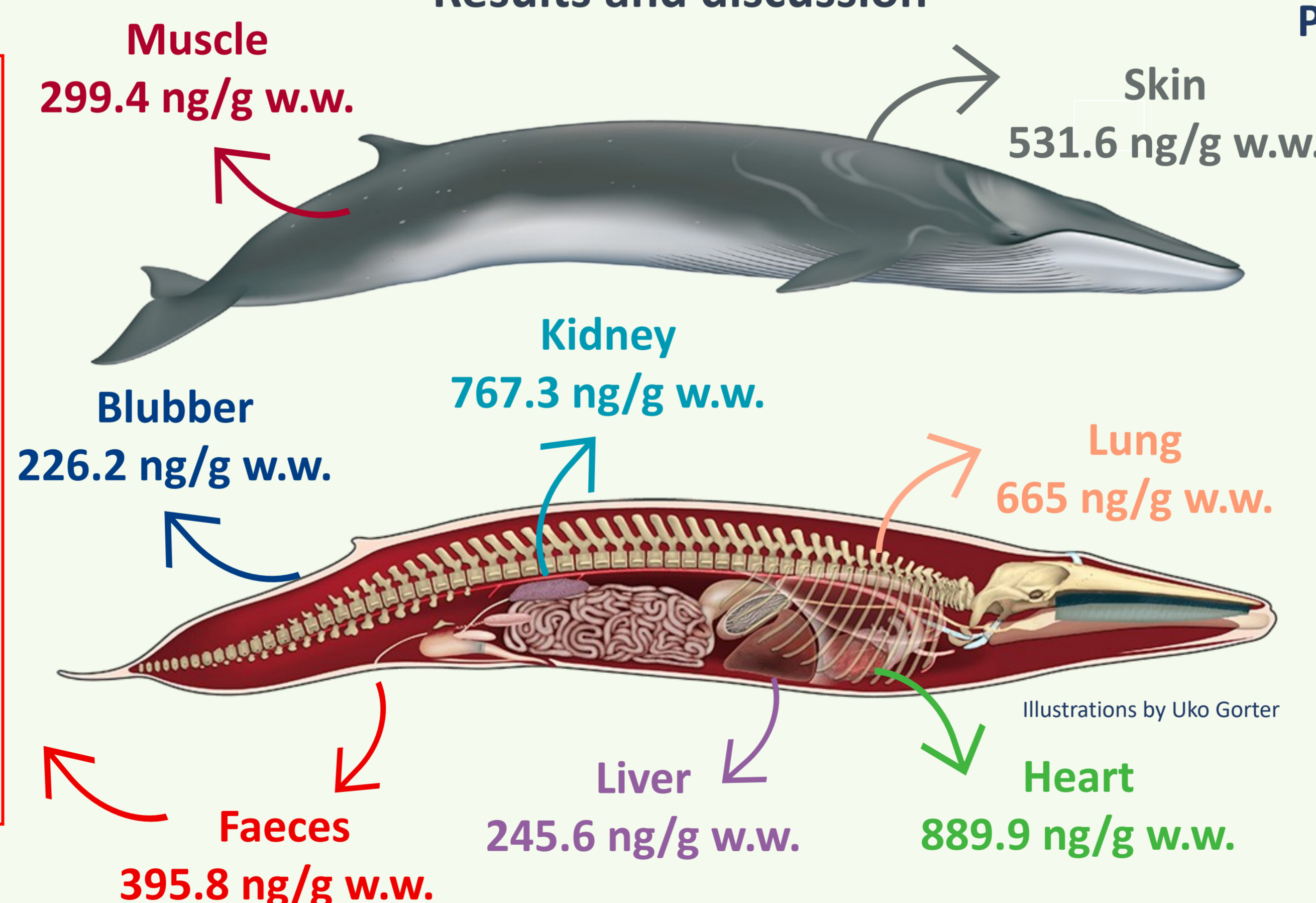
Large MPs (1 - 5 mm)
68%

Fragments, films, and filaments
(74%, 14%, and 6%, respectively)

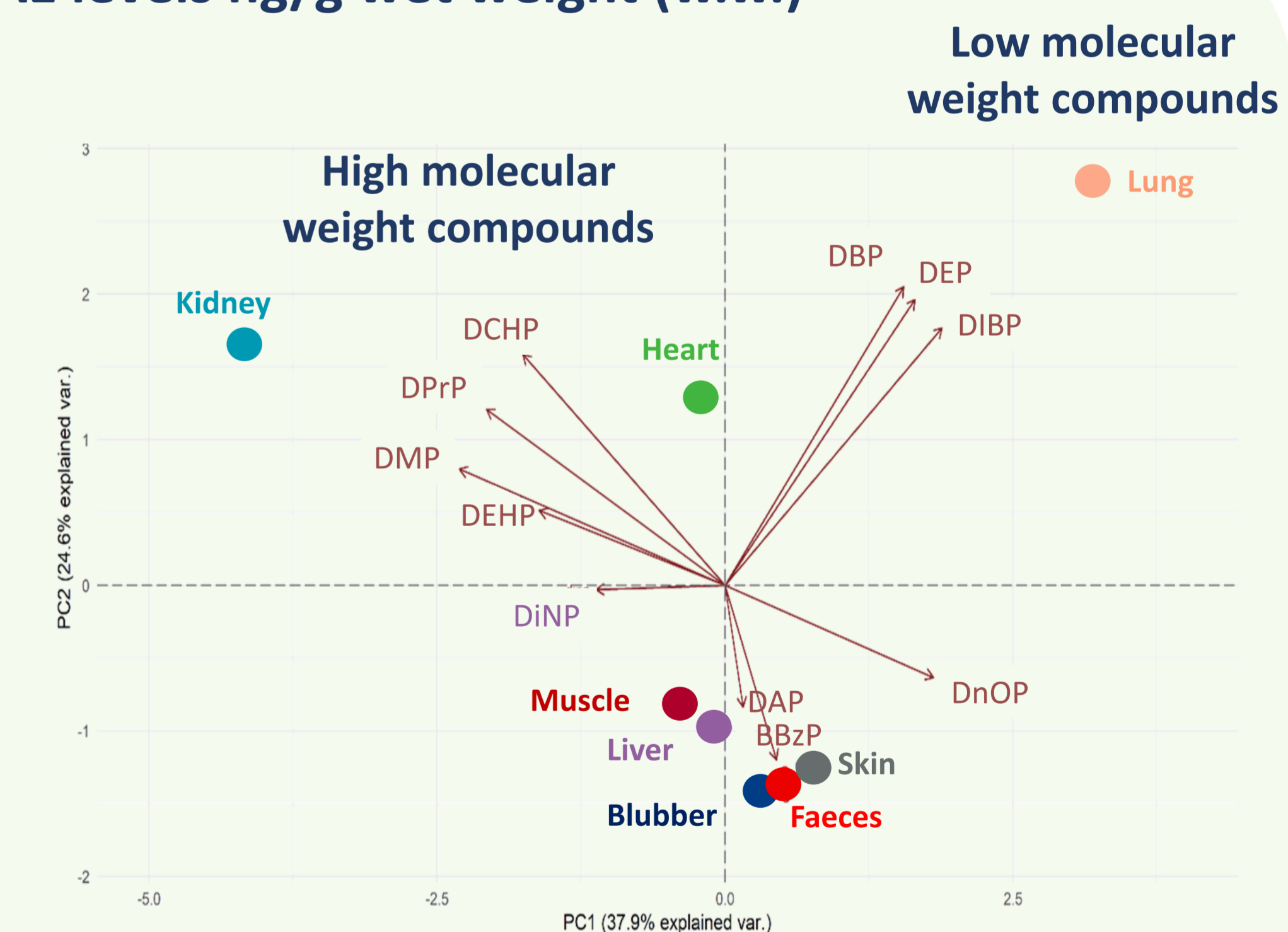
Polymer analysis
PE and PP 96%

The estimated intestinal length of the studied fin whale accounts for approx. **110m (27% sampled)**. This would lead to an estimate of up to **140 MPs**

Results and discussion



PAE levels ng/g wet weight (w.w.)



Conclusions

These data highlight for the first time the ingestion of synthetic particles by the Mediterranean fin whale and shed the light on the potential relationship between the presence of plastic and the leaching of phthalates. Further analysis is needed to better investigate the different accumulation patterns among biological tissues analysed stressing their metabolic pathways, as well as the potential toxicological effects on this endangered species.

Acknowledgments

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