

Preliminary evaluation of microplastic ingestion and phthalates load in Mediterranean Lanternfish (*Myctophum punctatum*)



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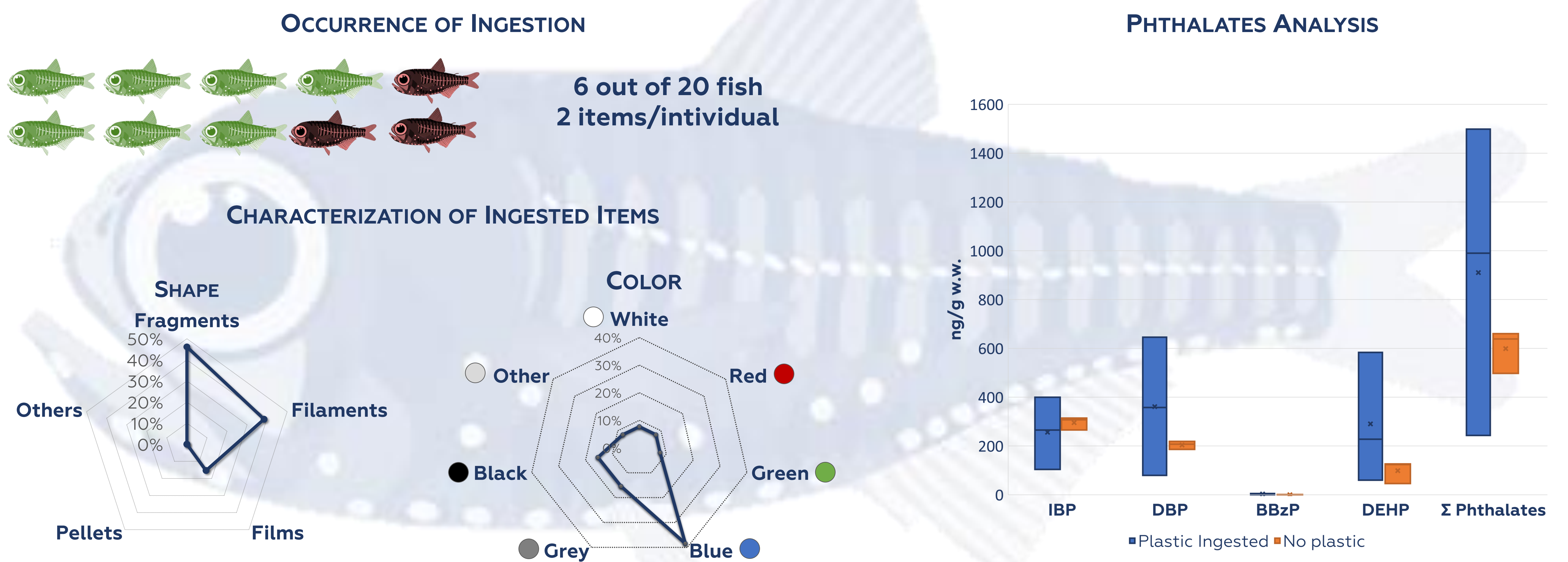
INTRODUCTION

Myctophids play a key role in trophic webs from the continental slope and pelagic waters linking the zooplankton to top predators, such as cetaceans. They feed mainly on copepods, euphausiids, amphipods, and decapods during upward nightly migration into the epipelagic zone where floating plastic debris is described to accumulate. As a consequence of their vertical migration, these fish may reflect the ingestion of microplastics (MPs) along the water column and be exposed to load of hazardous chemicals such as Phthalates Esters (PAEs) leached from these particles.

MATERIAL & METHODS

Within the Plastic Busters MPAs project, 20 specimens of *Myctophum punctatum* have been collected using a plankton net during a sampling campaign carried out in the North-Western Mediterranean Sea during summer 2018. Fish were properly processed to evaluate the potential relationship between the ingestion of MPs and the levels of chemicals released from the ingested particles. The gastrointestinal tract of each organism was chemically digested using KOH and filtered through a glass-fiber membrane. Levels of four different phthalates (DIBP, DBP, DEHP and BBzP) were evaluated in the fish muscle, as plastic tracers. MPs isolated were characterized by size, shape, colour, and chemical composition by FTIR spectroscopy.

RESULTS



The presence of MPs confirms the hazard associated with the debris ingestion for this species and its transfer throughout the marine trophic web. The chemical analysis revealed for the first time the levels of PAEs in the muscle tissue of Mediterranean lanternfish, confirming their bioavailability for these organisms. Being these toxic chemicals used as plasticizers, their presence could be due to the leaching of these compounds from floating plastic debris ingested during the feeding activity. The results provide data on an ecologically valuable and poorly investigated species, emphasizing the challenges between the plastic debris accumulation and the associated risks to wildlife.