

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale



**Primo simposio di Biologia Sperimentale
applicata al mare e all'ambiente**

*First symposium on experimental biology:
sea and environment*

Trapani, Italy, 24-25 May 2019

ABSTRACT BOOK

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threat to marine environment. Microplastics were reported in several marine environments, from the surface to bottom. Moreover, is well known their occurrence in the gastrointestinal tract (GIT) of several fish species from oceans and closed and semi-closed basins. In order to explore the microplastics contamination of our seas and in particular of the central Mediterranean Sea, the present study focuses on two demersal fish species: *Zeus faber* (John Dory) and *Lepidopus caudatus* (silver scabbardfish) from a fishery exclusion area (Gulf of Patti, Messina, Sicily, Italy). Visual sorting, using a dissecting microscope of the gastrointestinal tract of 67 specimens (35 *Z. faber* and 32 *L. caudatus*), was performed under controlled conditions, to avoid atmospheric contamination. The characterization of extracted microplastics was performed using a Raman spectroscopy. The results showed that the 51.4% of *Z. faber* and 78% of *L. caudatus* specimens were positive to plastic particles, with 2.1 and 4.8 item/specimen respectively. Of these particles, mostly were represented by microplastic (98.4% in *Z. faber* and 94% in *L. caudatus*) and mesoplastics for the remaining percentages. Both fragments and fibers of various colors showed an overall composition of polypropylene (PP), polyamide (PA), nylon and, to a lesser extent, polyethylene (PE). From our results it is conceivable that also in Gulf of Patti plastics ingestion is a serious threat to marine species. Further studies are necessary to deepen the knowledge about microplastic intestinal uptake to comprehend the real risks for the final consumer.

MICROFIBERS OCCURRENCE IN THE MEDITERRANEAN SEA: EVIDENCE OF INGESTION BY DEMERSAL-SEMIPELAGIC (BOOPS BOOPS) FISH SPECIES

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Microfibers pollution has increased severely in almost every marine environment around the world, becoming a serious threat to marine habitats and biota. This study reported the presence of artificial cellulose fibers in the gastrointestinal tracts (GIT) of a commercially relevant demersal-semipelagic fish species (*Boops boops*) in the Mediterranean Sea. The samples were collected during an experimental trawl survey in the Fishery Exclusion Zone of the Gulf of Patti (38.19S–14.94W; 38.315S–15.06W; 38.17S–15.16W; 38.24S–15.21W), Messina Italy, on June 2017. Overall, 30 specimens of *B. boops* were examined. Results highlighted the ingestion of cellulose fibers in 63,3% of the total investigated bogues. Ingested fibers were detected at first using stereomicroscope and Scanning Electron Microscope (SEM), categorized according to size class, color and subsequently characterized using Raman spectroscopy technique. The study showed the presence of different colors and lengths of cellulose fibers with a maximum length of 30 mm and a minimum of 0,5 mm. All analyzed samples appeared black and red, 76 and 4 respec-

tively. The study highlighted only the presence of cellulose fibers into the gastrointestinal tract of the bogues specimens and not plastic.

PRESENCE OF MICROPLASTICS IN THE GASTROINTESTINAL TRACT OF TWO SEABREAMS SPECIES (*PAGELLUS ERYTHRINUS* AND *PAGELLUS BOGARAVEO*)

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Microplastic pollution is probably one of the most discussed topics worldwide over the last few years. Due to their very small size (<5 mm), microplastics (MPs) can be ingested by a wide range of marine organisms, from zooplankton to large pelagic and benthic fishes. Once entered the trophic chain, MPs can be transferred along it through biomagnification processes not yet fully understood. Recent studies have shown how the ingestion of MPs can cause physiological injuries and general loss of welfare in aquatic organisms. However, not much is known about the actual damages caused by microplastics. The aim of this study was to investigate the presence of MPs in the gastrointestinal tract (GIT) of two high-values fish species in Mediterranean Sea, *Pagellus erythrinus* (Linnaeus, 1758) and *Pagellus bogaraveo* (Brünnich, 1768). A total of 39 specimens (15 *P. erythrinus* and 24 *P. bogaraveo*) were caught in the waters of Tyrrhenian Sea, between Rasocolmo Cape and Termini Imerese (Geographic coordinates: 38.350946S – 15.542023W; 38.306726S – 15.547955W; 38.229888S – 15.573224W; 38.0085189S – 14.589696W). During laboratory analysis, MPs were collected through visual sorting method, under controlled condition, to prevent airborne contamination. Microplastics composition were subsequently analysed using micro-Raman and FT-IR spectroscopies. The results showed that MPs were found in the GIT of 4 specimens; all microplastics found were black and fibrous. The most frequently observed polymer was Nylon 66 (Polyamide). The data collected in this study confirm that microplastics contamination is a serious and growing threat for marine ecosystems and their functioning.

EXTREMOTOLERANT BLACK YEASTS FROM THE DEPTHS OF THE MEDITERRANEAN SEA

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The black yeast-like fungus *Hortaea werneckii* was isolated for the first time in the Mediterranean Sea during two oceanographic cruises, from samples collected at different stations and depths (from surface to 3400 m) and resulted to