

ANALYSIS OF OCCURRENCE OF MICROPLASTICS IN THE DIGESTIVE TRACT OF THE EUROPEAN SEABASS (*DICENTRARCHUS LABRAX*) CULTIVATED IN THE CANARY ISLANDS

INTRODUCTION

The European seabass is distributed in the eastern Atlantic, from Iceland and Norway to Senegal, including the Canary Islands, the Mediterranean and the Black Sea. It is a demersal species that inhabits coastal waters down to 100 m deep, in various types of estuary and lagoon bottoms, although in the northern zone they migrate to deeper waters of the high seas during winter. It is a species of great commercial interest that is currently produced around several hundred thousand tons per year. In fact, it is the most important and widely cultivated commercial fish in the Mediterranean whose main producers are Greece, Turkey, Spain, Croatia and Egypt. In Spain, the Canary Islands, is the second major producer¹.

Microplastics have been observed in a wide variety of fish with considerable variability in levels of contamination in different species and geographic locations². Farmed fish are not exempt of this problem and their monitoring is of special interest since little is known concerning the accumulation of microplastics in fish from major fish farms and mariculture areas.

In the present work we have studied the presence of microplastics particles in the digestive tracts of several specimens of the European seabass cultivated in fish farms located in Canarian waters. The specimens were bought in local markets to guarantee their origin. After the dissection and extraction of the digestive tracts, their content was digested with KOH and the content filtered. Microplastics were visualized under a stereomicroscope and classified by shape, size and colour. From the 45 examined specimens, 66.7 % presented microplastics, mainly fibres (94.6 %), with an average of 2.2 items per fish and blue as the predominant colour (45 %).

EXPERIMENTAL

SAMPLING LOCATION

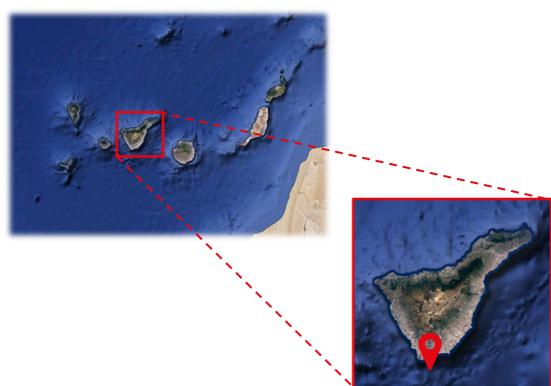


Fig. 1. Location of the Tenerife island and of sampling location. (fish cultivars).

SAMPLED SPECIES



Dicentrarchus labrax

SAMPLE TREATMENT AND MICROPLASTIC ANALYSIS



45 specimens bought in local markets were measured and weighed. Their digestive tracts were extracted.

Before digestion



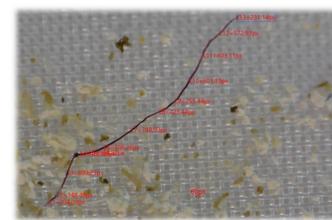
After digestion



The content of the digestive tracts was digested with KOH 10 % (w/v) for 24 h at 60 °C



Vacuum assisted filtration and washing with Milli-Q water



Microplastic size measuring



Visual counting and classification in a stereomicroscope

RESULTS AND DISCUSSION

Table 1. Average length and weight of the studied specimens.

FL (cm)	SL (cm)	Weight _{sp} (g)	Weight _{dt} (g)
37.52	33.74	660.50	11.03

FL (furcal length), SL (standard length), weight_{sp} (specimen weight) and weight_{dt} (digestive tract weight)

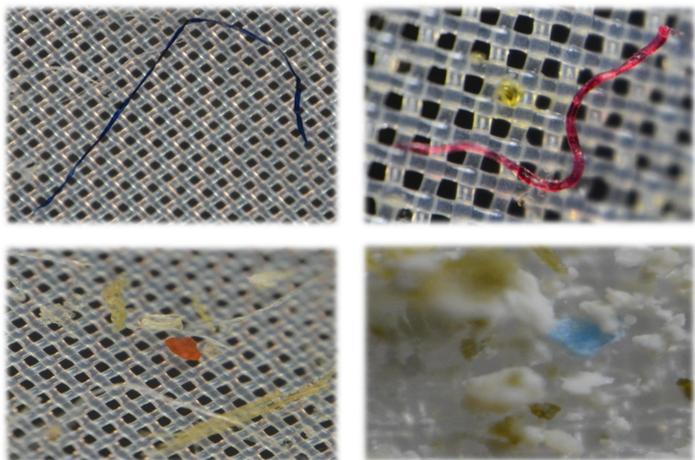


Fig. 2. Stereomicroscope images of some of the fibres and fragments found in fishes digestive tracts.

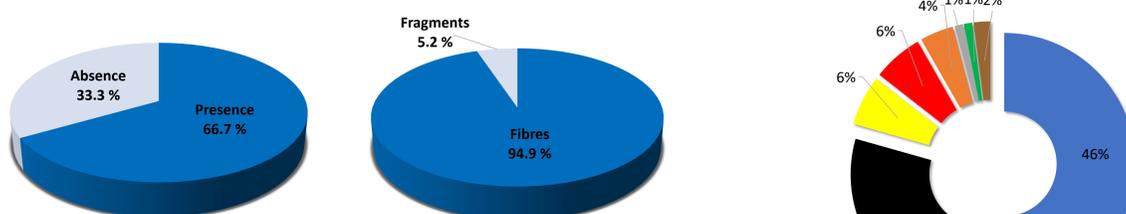


Fig. 3. Presence and type of microplastics in the 45 European seabass digestive tracts specimens.

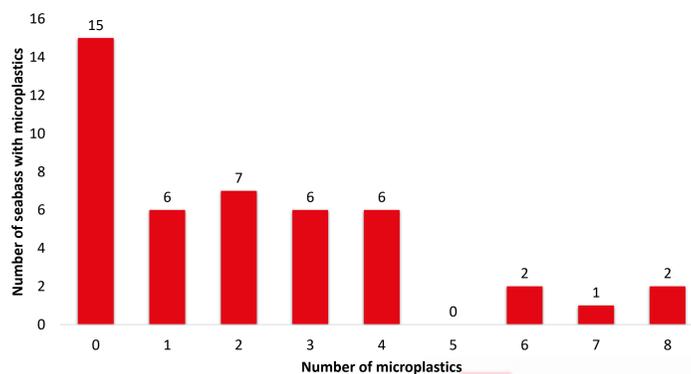


Fig. 4. Number of specimens with a specific number of microplastics in their digestive tracts.

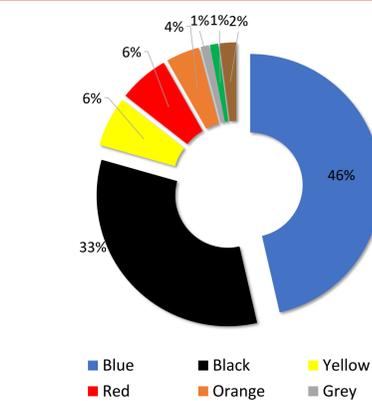
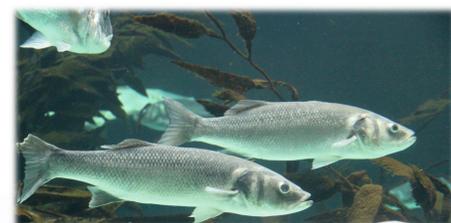


Fig. 5. Colours distribution of microplastics found in fishes digestive tract.



CONCLUSIONS

- From the analysis of the 45 specimens of *Dicentrarchus labrax*, 66.7 % of the specimens presented microplastics in their digestive tracts, with an average of 2.2 items per fish.
- Regarding morphological classification, only fibres (94.6 %) and fragments (5.4 %) were found in the analysed samples. The fibres had an average length of 2187 µm (range 337-7277 µm).
- From the colours classification, it was found that most microplastics were blue (46 %), followed by black (33 %), although other colours were also found.
- IR analyses is being carried out in order to determine the composition of the plastic particles found in *Dicentrarchus labrax*.

REFERENCES

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