

COMPARATIVE STUDY OF MICROPLASTIC INGESTION IN COMMERCIAL FISH SPECIES FROM MACARONESIA

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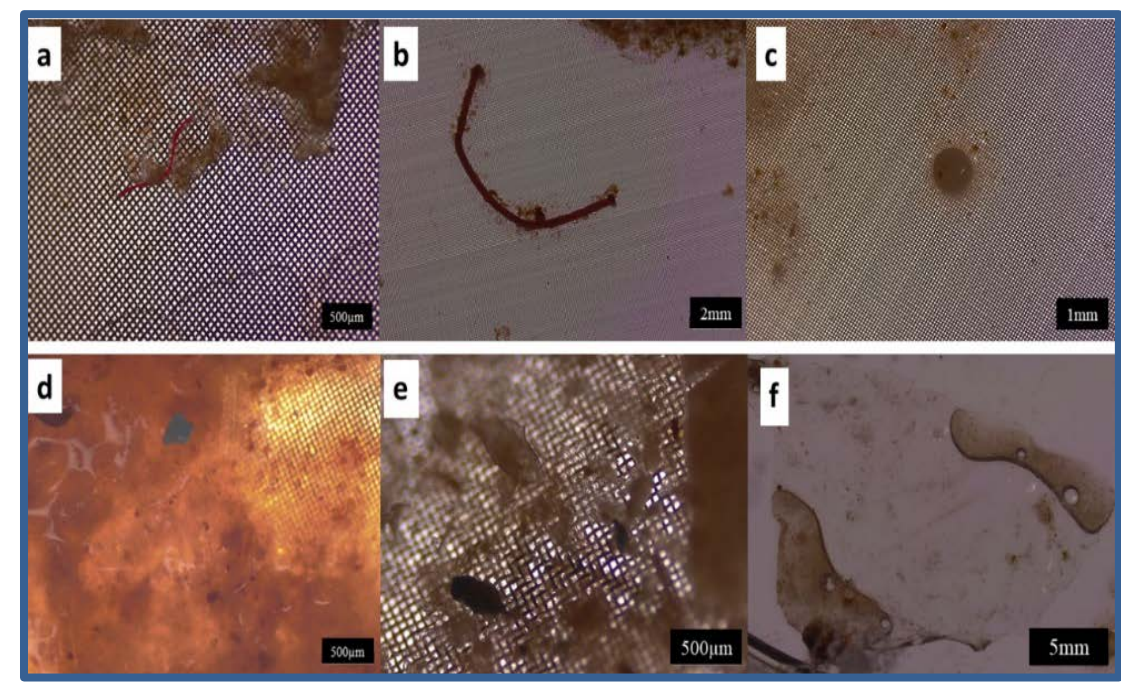


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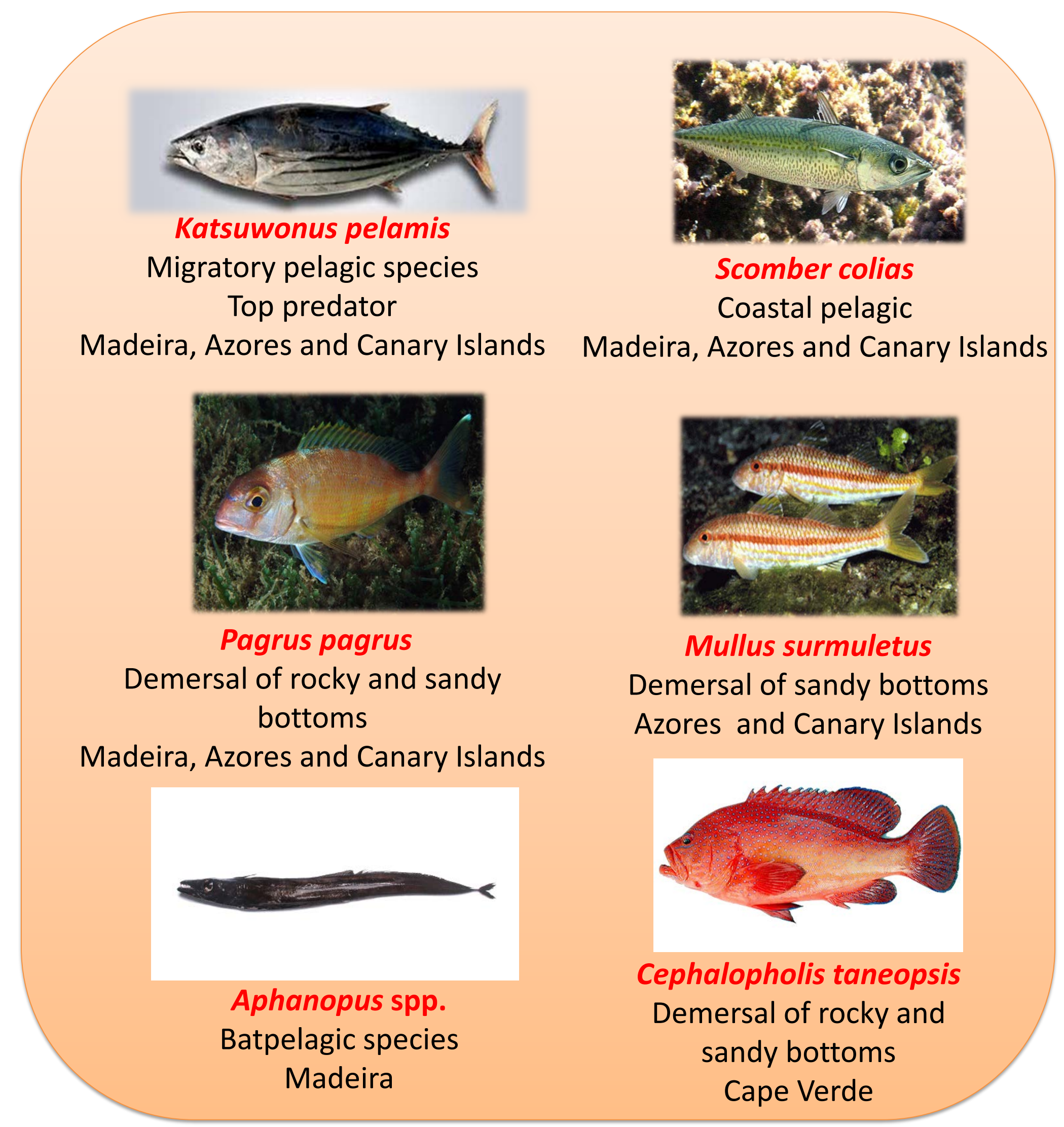
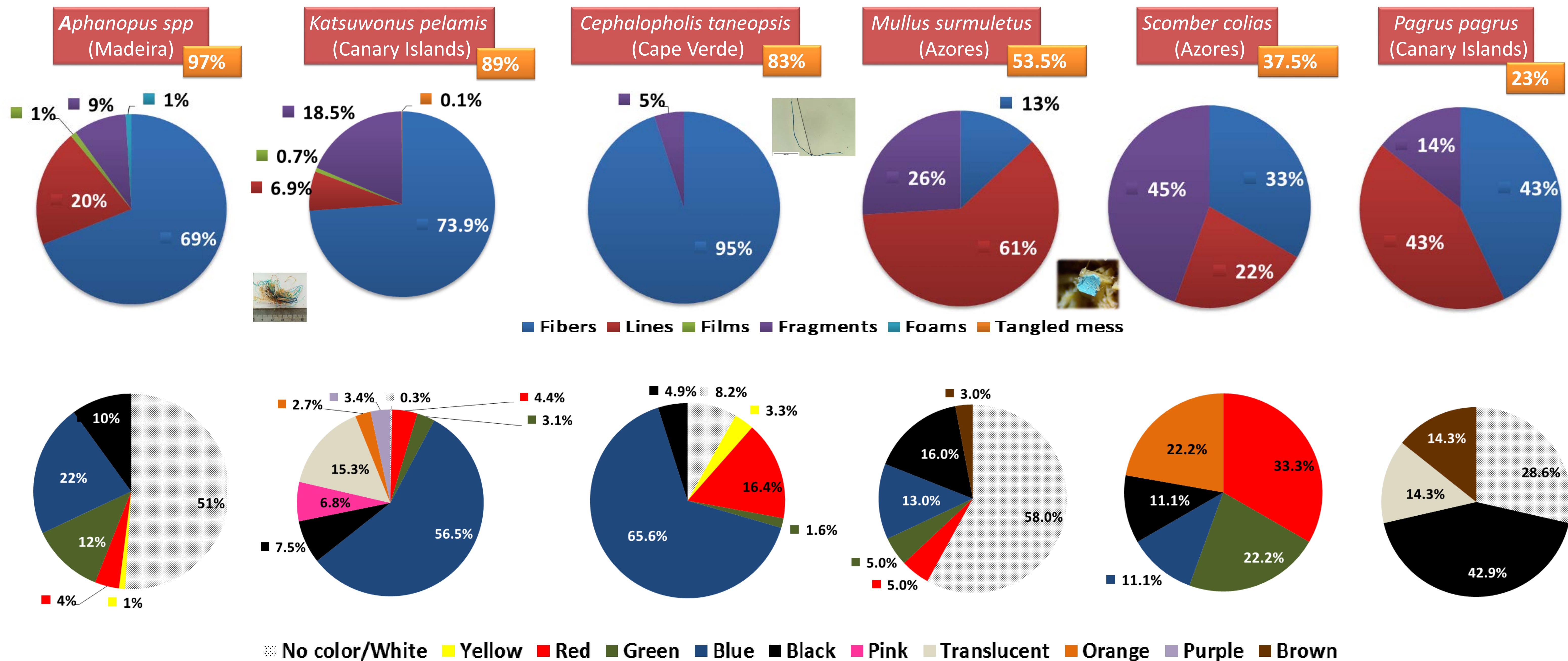
The Gastrointestinal Content (GI) of **634 fishes** belonging to seven species from the four Macaronesian archipelagos were analysed in order to study the ingestion of microplastics (MPs). These seven species were chosen according to their different habitats and feeding behaviour, as well as being representative of the different archipelagos: *Katsuwonus pelamis* (181), *Scomber colias* (121), *Pagrus pagrus* (60), *Mullus surmuletus* (60), *Aphanopus spp.* (60) *Cephalopholis taneopsis* (70) and *Selar crumenophthalmus* (21).

MATERIAL & METHODS

All organisms were weighed and measured for total length before dissection. The GI tract was weighed and digested with a 10% KOH solution for 24 h at 60°C. The material was filtered through a 25 µm metal filter, examined and counted under a stereo microscope



RESULTS



Species	Year	Location	Nº	Length (cm)	Mass (g)	Items/individual	Fishes with MPs (%)
<i>Scomber colias</i>	2019	Madeira	60	25.5 ± 1	161.5 ± 21.5	1.5 ± 2.05	57%
	2020	Azores	62	29 ± 2	183 ± 42.5	0.78 ± 1.21	37.5%
	2021	Canary Islands	62	28 ± 5	282 ± 126	1.25 ± 0.45	47%
<i>Pagrus pagrus</i>	2017	Madeira	60	33 ± 4	590 ± 223	1.7 ± 1.7	67%
	2020	Azores	81	43.5 ± 1.5	762 ± 131	0.3 ± 0.4	26%
	2021	Canary Islands	30	31 ± 2	442 ± 68	1.17 ± 0.41	23%
<i>Katsuwonus pelamis</i>	2020	Madeira	60	53 ± 3.9	3051.5 ± 806	1 ± 6	37%
	2020	Azores	60	51 ± 3	2308.5 ± 355	0.84 ± 1.62	47%
	2021	Canary Islands	61	50.5 ± 7	3420 ± 5061	5.05 ± 4.2	89%
<i>Mullus surmuletus</i>	2019	Azores	64	22.5 ± 1	141 ± 19.5	1.23 ± 1.5	53.5%
	2021	Canary Islands	60	21.2 ± 1.4	177 ± 52	1.70 ± 0.95	30%
<i>Aphanopus spp.</i>	2020-2021	Madeira	60	113 ± 8.1	2016 ± 338	7.0 ± 7.0 2.7 ± 1.6	97%
<i>Cephalopholis taneopsis</i>	2020-2022	Cape Verde	56	28 ± 2	340 ± 60	3.9 ± 1.5	82.6%

CONCLUSIONS

- The highest incidence of MPs was found in *Aphanopus spp.*, (97%), *Katsuwonus pelamis*, (89%) from the Canary Islands and *Cephalopholis taneopsis*, (83%).
- The other species had moderate values, *Scomber colias*, (37-57%), *Pagrus pagrus*, (23-67%) and *Mullus surmuletus*, (30-54%).
- Fibres (27-97%) and lines (6-60%) predominated in most species.
- Fragments varied between 6-24% with the exception of fishes from the Azores which had 52-79% of fragments. No pellets were observed in any of the organisms.
- The predominant colours were blue (11-66%) and black (15-43%), with the exception of *Mullus surmuletus* from Azores, (58%) *Aphanopus spp.*, from Madeira (51%) and *Pagrus pagrus* (43%) from Canary Islands which had transparent MPs.
- The colour of the MPs found in the GI tract could indicate selective ingestion based on colour in pelagic fishes, together with accidental ingestion of transparent MPs due to reduced visibility at depth in demersal fishes.

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