

# FEEDING HABITS OF THE SMALL-SPOTTED CATSHARK *SCYLIORHINUS CANICULA* (L., 1758) IN THE CENTRAL MEDITERRANEAN

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## INTRODUCTION

The catshark *Scyliorhinus canicula* (Fig.1) is a common demersal elasmobranch in the Mediterranean. It has a wide geographical and bathymetric distribution and is found primarily over sandy, muddy or gravelly bottoms [1]. Studies on the feeding habits have been made in various regions, but not in the Central Mediterranean. The present study addresses this gap by presenting information on the diet of the species for this region, for the first time.



Fig.1. *Scyliorhinus canicula*

## METHOD

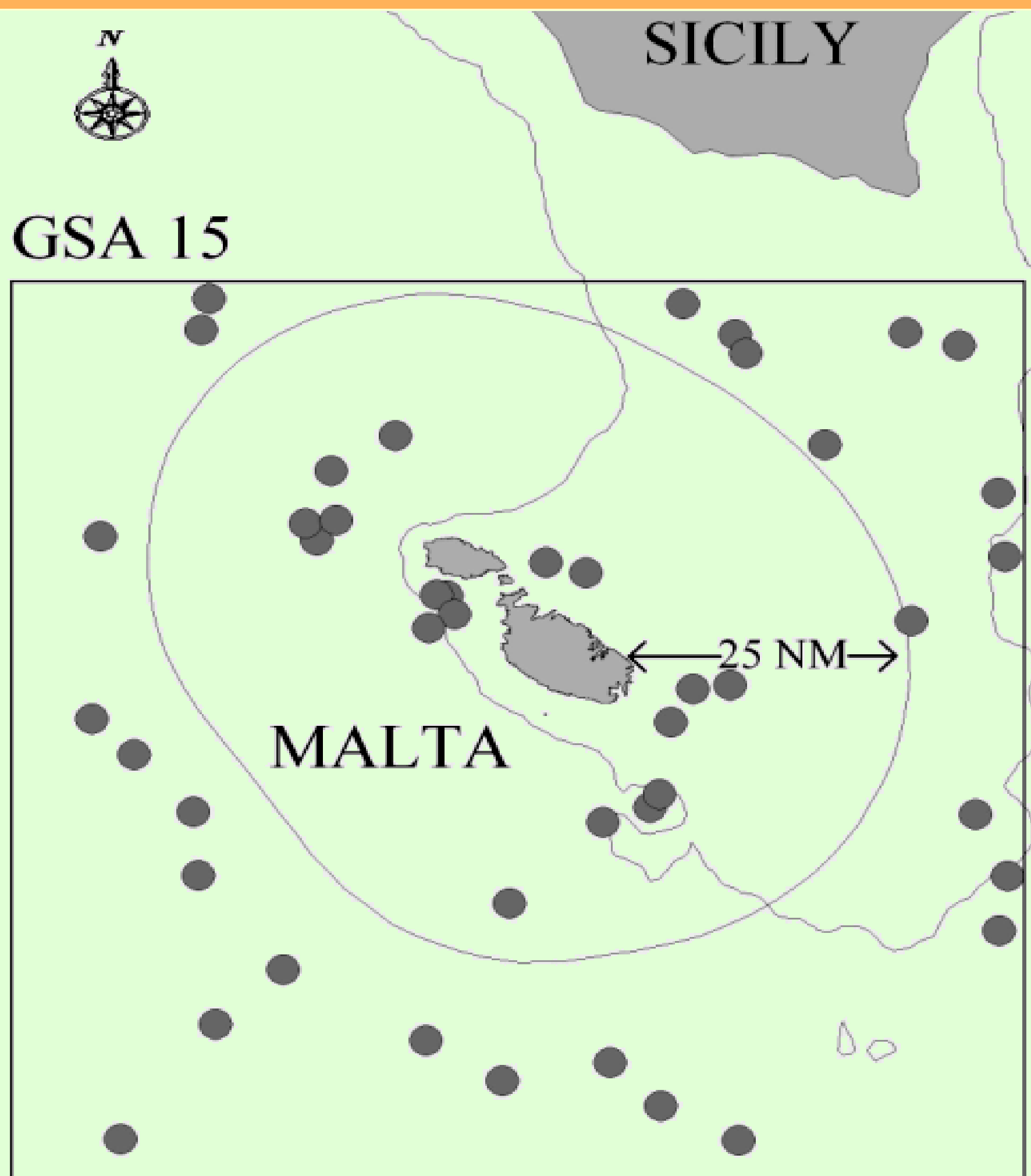


Fig. 2. Map showing locations sampled. The square represents the General Fisheries Commission for the Mediterranean's GSA 15. The 25 nautical mile Fisheries Management Zone around Malta is also shown.

- + Samples were collected from 45 stations as part of the ongoing MEDITS (Mediterranean International Trawl Survey) annual bottom trawl survey (Fig.2).
- + For each specimen, total length, weight, sex and maturity stage were recorded.
- + 532 stomachs were extracted, weighed, dissected and rinsed with 70% ethanol. The emptied stomachs were re-weighed to estimate the fullness of the stomach. Prey items were identified to the lowest possible taxon then weighted separately to the nearest 0.001 grams.
- + Stomach contents were analyzed using numerical percentage (N%) and percentage by weight (W%). Statistical differences in feeding habits in relation to size and sex were assessed using the Kruskal-Wallis and Mann-Whitney tests.



Fig. 3. Photograph showing the trawl net being hauled onboard the MV 'Sant' Anna'.

## RESULTS

- + 652 catsharks were caught from 25 of the 45 stations sampled.
- + The fish ranged from 14 cm to 52 cm total length and from 6 g to 437 g in weight.
- + Males were more abundant than females (sex ratio 1:0.75).
- + Of the 532 stomachs examined, 33 (6.2%) showed signs of regurgitation, 103 (19.4%) were empty and 396 (74.4%) contained prey.
- + The abundance of food items by mass varied significantly between the different categories (One-way ANOVA,  $P < 0.001$ ), and this was accounted for by the 'fish' category (Tukey *post-hoc* test,  $P < 0.05$ ) (Fig. 4).
- + 26 prey taxa were identified (Table 1).

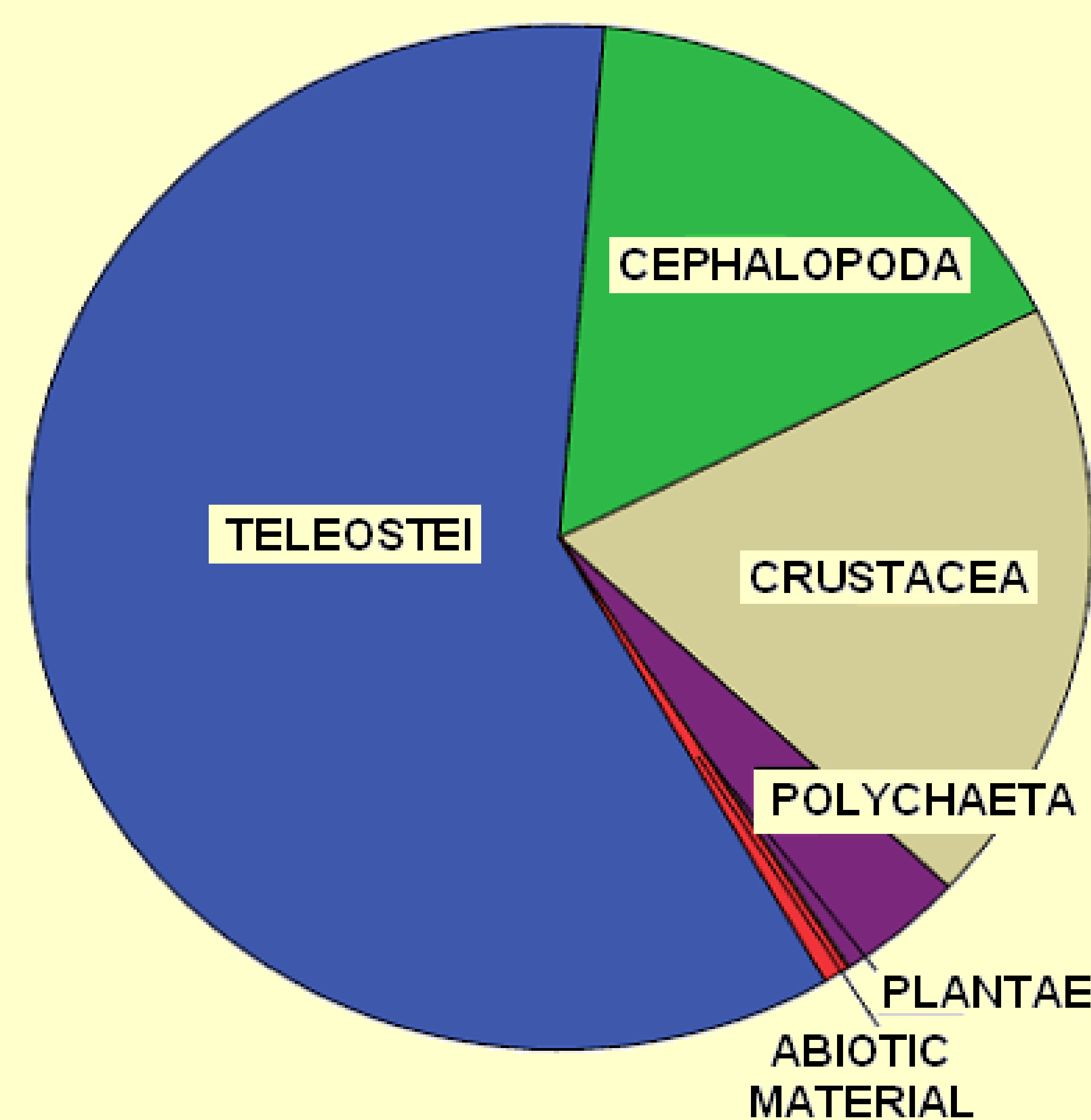


Fig. 4. Pie-chart showing the % by weight of the prey categories found in the stomachs of *S. Canicula*.

- + Significant differences in the weight of the different stomach content items were observed between mature males and females (Mann-Whitney U-test,  $P < 0.05$ ). Mature males consumed significantly more fish than did females, which consumed more crustaceans.
- + Diet also differed between the different size classes (Kruskal-Wallis test,  $P < 0.05$ ).

## DISCUSSION

- + Central Mediterranean *Scyliorhinus canicula* were found to have a high dietary diversity and to feed opportunistically on a wide range of macrozoobenthos and also on abiotic material, showing both predatory and a facultative scavenging, as reported by [3] for Isle of Man waters.
- + The presence of small catsharks in the stomach contents showed that there is also some degree of cannibalism.
- + The composition of the diet varied significantly with size as the larger and more mature individuals showed an increasing preference for fish and cephalopods, while smaller individuals showed a preference for crustaceans, probably because large individuals are able to ingest larger food items such as fish.
- + The preference for fish was more pronounced in mature males than in mature females, which may be related to sexual dimorphism in the shape of the mouth and teeth at maturity [3].

Table 1. The prey items identified.

Food Category (% by weight)	Identified prey items	Food Category (% by weight)	Identified prey items
Teleostei (58.67%)	<i>Argentina sphyraena</i>	Crustacea (19.25%)	<i>Alpheus glaber</i>
	<i>Echelus myrus</i>		Amphipoda
	<i>Gnathophis mystax</i>		<i>Atelecyclus rotundatus</i>
	<i>Macroramphosus scolopax</i>		<i>Chlorotocus crassicornis</i>
	<i>Trachurus trachurus</i>		Crangonidae
	<i>Zeus faber</i>		<i>Goneplax rhomboides</i>
Cephalopoda (16.36%)	<i>Eledone</i> sp.		<i>Munida</i> sp.
	<i>Octopus defilippi</i>		<i>Nephrops norvegicus</i>
	Sepiolidae		<i>Pagurus</i> sp.
Polychaeta (3.89%)	Aphroditidae		<i>Parapenaeus longirostris</i>
Plantae (0.06%)	<i>Posidonia oceanica</i>		Pasiphaeidae
			<i>Platysquilloides lillyae</i>
Cannibalism (1%)	<i>Scyliorhinus canicula</i>		<i>Sergestes</i> sp.
			Squillidae

## REFERENCES

- [1] - Serena F., 2005. *Field identification guide to the sharks and rays of the Mediterranean and Black Sea*. Rome, Italy: Food and Agriculture Organization of the United Nations; 97 pp.
- [2] - Lyle J.M., 1983. Food and feeding habits of the lesser spotted dogfish *Scyliorhinus canicula* (L.), in Isle of Man waters. *J. Fish Biol.*, 23: 725-737.
- [3] - Ellis J.R., Shackley S.E., 1995. Ontogenic changes and sexual dimorphism in the head, mouth and teeth of the lesser spotted dogfish. *J. Fish Biol.*, 47: 155-164.