

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

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## Abstract

*Scyliorhinus canicula* collected from 45 stations during the MEDITS annual bottom trawl survey had a Total Length range of 14-52 cm; males were more abundant than females. Of 532 stomachs sampled, 74.4% had identifiable prey material that indicated opportunistic feeding on a wide range of macrobenthic fauna. Teleosts and crustaceans were the most important prey groups (58.7 %/w and 19.3 %/w respectively). Cannibalism was also observed. There were significant differences in diet composition between the sexes and between different size classes for males and females combined.

**Keywords:** *Elasmobranchii, Fisheries, Food Webs, Sicilian Channel*

## Introduction

The catshark *Scyliorhinus canicula* is a common demersal elasmobranch in the Mediterranean. It has a wide geographical distribution and a bathymetric distribution ranging from shallow water to 550 metres depth, and is found primarily over sandy, muddy or gravelly bottoms [1]. Studies on the feeding habits of *Scyliorhinus canicula* have been made in various regions but not to date 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.

## Material and Methods

The study was conducted in the General Fisheries Commission for the Mediterranean's Geographical Sub-Area (GSA) 15. Samples were collected in June 2006 from 45 stations as part of the ongoing MEDITS (Mediterranean International Trawl Survey) annual bottom trawl survey (Fig.1). For each specimen, total length, weight, sex and maturity stage were recorded. For males, the maturity stage determination was based on the length and degree of calcification of the pterygopods, while for females, determination was based on the degree of development of the distal part of oviducts and of the shell gland, on the presence of embryos, and on the dimensions of the eggs in the ovary [2]. In all, 532 stomachs were extracted; these were weighed, dissected and rinsed with 70% ethanol to ensure that all contents were removed, and the emptied stomachs were re-weighed to estimate the fullness of the stomach. The prey items were identified to the lowest possible taxon then weighted separately to the nearest 0.001 grams. Individual catsharks were checked for any signs of regurgitation. 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.

## Results

A total of 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. In all, 26 prey taxa were identified. The main prey items by weight were teleost fish (58.67%, dominated by *Trachurus trachurus* and *Macroramphosus scolopax*), crustaceans (19.25%, dominated by *Alpheus glaber* and *Chlorotocus crassicornis*), unidentified octopuses and cuttlefish (16.36%), polychaetes of the family Aphroditidae (3.89%) and a small percentage of *Posidonia oceanica* leaves (0.06%) and abiotic material (0.77%). One specimen had a juvenile *S. canicula* in a primary state of digestion in its stomach, which suggested cannibalism (1%/w). 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,  $P < 0.05$ ). 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 mouth and teeth at maturity [4].

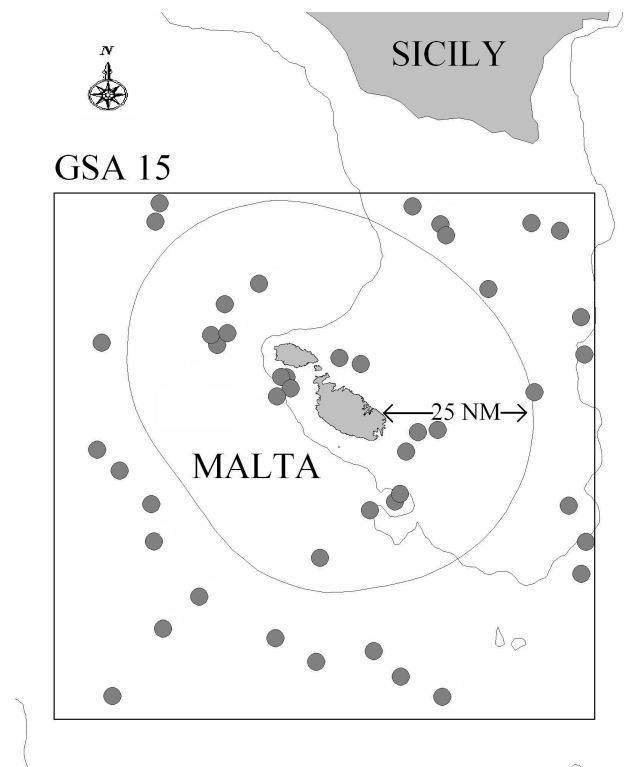


Fig. 1. Map showing the position of General Fisheries Commission for the Mediterranean's GSA 15 (the square) and the 45 stations sampled (the dots). The 25 nautical mile Fisheries Management Zone around Malta is also shown.

## References

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