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Comparative Size Distribution and Feeding Ecology of *Polycheles typhlops* and *Stereomastis sculpta* (Decapoda, Polychelidae) in the Mediterranean Bathyal Mud Assemblage

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Polycheles typhlops Heller, 1862 and *Stereomastis sculpta* (S.I. Smith, 1880), occur in the northwestern Mediterranean as characteristic species of the slope and bathyal basin (ABELLO & VALLADARES, 1989). Santucci (1932) stated that *P. typhlops* acted as a necrofaunal species. However, Lagardère (1977) described it as a predator of bathypelagic crustaceans in the Bay of Biscay. The same author, from the foregut contents analysis of a few individuals, supposed that the diet of *S. sculpta* must be close to that of *P. typhlops*.

Three different kinds of bottom trawls were used: commercial demersal trawl nets equipped with a 6 mm mesh size codend, a modified Agassiz trawl, and a Marinovich deep-water bottom trawls. Codend mesh size was of 6 mm in all the different fishing gear used.

A total of 1869 individuals of *S. sculpta* and 736 of *P. typhlops* were studied. Sex, size (carapace length) and occurrence of ovigerous females were noted in every sample taken. Foregut contents of 168 *P. typhlops* (127 from the upper slope and 41 from the lower slope), and 153 *S. sculpta* from the bathyal basin were analysed. Prey items were identified to the lowest possible taxonomic level. Foregut contents were quantified: occurrence and relative abundance of preys were calculated.

The size range of *Polycheles typhlops* and *Stereomastis sculpta* was very similar. Size ranges of males and females were very similar in *S. sculpta*, whereas in *P. typhlops* males are clearly smaller than females.

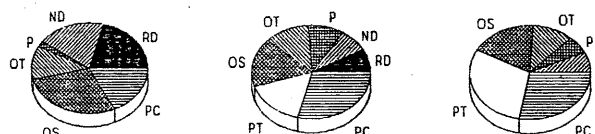
Sizes of *P. typhlops* showed a general tendency to decrease with increasing depth. Ovigerous females were more abundant in the upper distribution levels of the species. Recruitment apparently takes place at the deepest levels of the species distribution range, where almost exclusively only juveniles individuals are found. This tendency shows an inverse pattern to that of most littoral and shallow water decapods, in which recruitment usually takes place in shallower waters.

S. sculpta did not apparently show any clear tendency in its size distribution in relation to depth. The largest individuals and the ovigerous females occurred mainly between 1900-2200 m.

The diet of the two species of Polychelidae studied is mainly based on the capture of small epibenthic peracarid crustaceans and other preys such as polychaetes and small decapods (*Plesionika acanthonotus*, *Fontophilus norvegicus*). Scavenging is also important. Thus, we can find remains of large decapod crustaceans (*Aristeus antennatus*), cephalopods (*Histioteuthis*) or fish. Bathypelagic crustaceans (euphausiids, *Pasiphaea*, Sergestidae), basis of their diet according to Lagardère (1977) seem to have only a seasonal importance, and are restricted to the upper slope (500-700 m).

In the upper slope, burrowing crustaceans (*Calocaris macandreae* and *Alpheus glaber*) are also important in the diet and constitute about 20% of the diet. They disappear in deeper areas. Detritus of pelagic origin, such as pteropod remains (*Clio pyramidata*, *Cavolinia*) and globular foraminiferans (*Globorotalia*, *Orbulina*, *Globigerinoides*) also constitute an important part of the diet in areas deeper than 1000 m in the two species studied. Foraminiferans, not quantified as relative abundance values in this study, occur more frequently in areas deeper than 1000 m (40% in *P. typhlops* and 60% in *S. sculpta*), whereas in the upper slope their occurrence shows very small values (5% in *P. typhlops*).

P. typhlops (600-700 m) *P. typhlops* (1000-1200 m) *S. sculpta* (1700-2200 m)



- Comparative diets of Polychelidae. RD: Reptantia decapods; ND: Natantia decapods; P: Polychaetes; OT: Others; O: Osteichthyes; PT: pteropods; PC: Peracarid crustaceans

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Rapp. Comm. int. Mer Médit., 32, 1 (1990).

B-V7

Contribution to the knowledge of the accompanying fauna of *Aristeus antennatus* (Risso, 1816) on the bathyal bottoms in the S.E. of Spain

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On the epibathyal and mesobathyal bottoms of the continental talus of the S.E. of Spain, there are some fishing areas relatively abounding in *Aristeus antennatus* (Risso, 1816). Some samplings of the captures of *A. antennatus* have been achieved from 1.987 in these areas subjected to fishing exploitation, noting down the accompanying species which came up during the different trawling.

Later some experimental fisheries have been carried out in the same areas, with the usual mesh used in this fishery, joining firmly at the cod-end another thicker net, separating and identifying the different species. This has allowed to work out some faunistic lists indicating the abundance of each species.

The relations between *A. antennatus* and its possible predators and preys have been studied in several areas of the western Mediterranean: in the Ligurian Sea, RELINI ORSI AND WURTZ (1977), RELINI AND ORSI RELINI (1987) and in the Catalan Coast CARTES AND SARDA (1989).

The first results obtained in the Spanish South-east are shown in this work, pointing out that in all the sampling areas the main species which show up on the thicker net are the following: *Symphurus ligulatus* and *Symphurus nigrescens* which mean between 5,5-9,5 cm., with a maximum of 6,5 cm. (28%). Several species of Mictophidae show up also, although in a slight proportion. The main crustaceans dominating are: *Pasiphaea sivado*, depending on the area it varies between 1,6% and 12% of the whole capture, being the cephalothorax length (Lc) of 9 and 21 mm. classes and a maximum of 15% in individuals of Lc= 19 mm., there are also some egged-females (Lc= 18 mm.) and *Plesionika heterocarpus*.

On the cod-end the main predators are: *Scylliorhinus canicula* and *Galeus melastomus*, the former was very abundant in the sampling area of less depth (275-400 mts.) representing 24% of the whole capture, the latter has a steady presence, the size has a wide range 10,5-61,5 cm., the higher percentages are in 13 and 14 cm. (17%).

Among the species of fishing interest *A. antennatus* stands out, its abundance in all the cases was over 50% of the whole capture of commercial species. Among the fish *Micromesistius putassou* is very abundant in the epibathyal area, the captured individuals are of 7-37 cm., although more than 50% of the whole of the sampling ones are between 16,5-19,5 cm. classes. On the mesobathyal bottoms *Phycis blennoides* has a steady presence, its capture has varied being sometimes 12%, these individuals fluctuate between 11-41 cm., corresponding those with a higher size to the deep areas (650 mts.), 52% of the sampling individuals are between 14-16,5 cm.. Another characteristic species is *Helicolenus dactylopterus*, being 85% of the examined individuals between 9,5-16,5 cm., corresponding the higher percentages (9,3%) to a whole length equal to 10,5 cm.

In this Table we show some species captured in the fishing areas of *Aristeus antennatus*:

FISH

- Fam. Macrouridae
- *Coelorrhynchus coelorrhynchus* (Risso, 1810)
- *Nezumia sclerorhynchus* (Valenciennes, 1838)
- *Trachyrhynchus trachyrhynchus* (Risso, 1810)
- Fam. Squalidae
- *Etmopterus spinax* (Linnaeus, 1758)
- Fam. Scylliorhinidae
- *Galeus melastomus* (Rafinesque, 1810)
- *Scylliorhinus canicula* (Linnaeus, 1758)
- Fam. Congridae
- *Conger conger* (Linnaeus, 1758)
- Fam. Gadidae
- *Micromesistius putassou* (Risso, 1826)
- *Phycis blennoides* (Brünich, 1768)
- *Antonogadus megalokynodon* (Kolombatovic, 1894)
- Fam. Stomiidae
- *Stomias boa* (Risso, 1810)
- Fam. Alepocephalidae
- *Alepocephalus rostratus* (Risso, 1820)
- Fam. Trachichthyidae
- *Hoplostethus mediterraneus* (Cuvier, 1829)

CRUSTACEANS

- Fam. Pandalidae
- *Plesionika martia* (A. Milne Edwards, 1883)
- *Plesionika edwardsii* (Brant, 1851)
- *Plesionika gigliolii* (Senna, 1903)
- Fam. Polychelidae
- *Polycheles typhlops* Heller, 1862
- Fam. Xanthidae
- *Geryon longipes* A. Milne Edwards, 1881
- Fam. Homolidae
- *Paramola cuvieri* (Risso, 1816)

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Rapp. Comm. int. Mer Médit., 32, 1 (1990).