DISTRIBUTION AND GROWTH PATTERNS OF A DEEP-SEA MEDITERRANEAN FISH: *ALEPOCEPHALUS ROSTRATUS*

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Alepocephalus rostratus Risso, 1820 is the only Alepocephalidae innhabiting the Mediterranean. Although in this area it is one of the predominant species in the deep–sea fish communities (STEFANESCU *et al.*, 1992), its biology is scarcelly known. The present study aimed at examining the abundance and bathymetric trends of this species in the upper and middle slope, and at determining its growth patterns in the Northwestern Mediterranean.

A. rostratus was collected in the Catalan Sea, in six cruises on board the R/V "García del Cid": RETRO I (April'91), RETRO II (December'91), RETRO III (March'92), ZONAP 0592 (May'92), RETRO IV (July'92) and BATMAN (March'94). A total of 104 hauls were made between 147 and 1317 m depth, using semi–balloon otter–trawls. Its percentage of appearance in each cruise ranged from 33.3 to 67.9% of the hauls.

The total length (TL) of all specimens was measured to the nearest cm. In random subsamples the weight (TW) was determined to the nearest 0.1 g, and sagittae otoliths were extracted. Its maximum length (OL) were measured to the nearest 0.1 mm using a caliper, and they were weighed (OW) to the nearest 0.1 mg. Otoliths were read by the two authors, following standard techniques (MORALES–NIN, 1987), and only coincident interpretations were accepted. The length–weight relationships for fish and otoliths, and the correlation between fish length and otolith size, were calculated applying linear and exponential regression equations. The age–length relationship was calculated, and the von Bertalanffy growth function (VBGF) was fitted. Because there is no birth–date data on this species, the number of rings was considered as the age.

A. rostratus appeared in hauls below 600 m depth, and was mainly associated with depths greater than 1000 m. In the upper slope (12 hauls on 604 m mean depth) it was scarce : a total of 9 fishes with a biomass of 983 g were captured. It was abundant in the middle slope (12 hauls on 1 237 m mean depth), where 1425 fishes with a biomass of 287 220 g were caught. A total of 2 396 specimens between 1 and 45 cm were measured. Its average size increases progressively from 600 to 1000 m depth (Table I). It is due to the presence of the smaller (1–10 cm) and greater (39–45 cm) individuals from 600 to 1000 m and 1200 to 1300 m depth, respectively, while the other specimens were uniformly distributed along the whole range. In all cases the highest correlations were obtained using exponential regression, with a positive allometry in the weight growth of the specimens in relation to length. A negative allometry was found in the growth of otoliths, and in the relationship between fish length and otolith size. This implies a relative decrease of the otolith size with age.

Length	Depth-strata (m)						
cm	650	750	850	950	1050	1150	1250
Mean	35	32	38	4	42	23	2192
Range	1-10	3-26	8-38	4-35	11-38	20-37	11-45
x	7.77	10.59	20.47	22.18	25.07	28.87	28.79
std	8.50	5.61	8.85	7.14	6.39	4.83	5.50

Table I.- Length distribution by depth from 600 to 1300 m. Data were pooled for the six cruises, and 100 m depth intervals were considered.

The greatest age observed was 23 years, though this age–class and the age–classes oldest than 15 years are poorly represented in the population. A great percentage of individuals studied (until 50%) ranged from 7 to 12 years. The presence of many age-classes seems to be a common feature of all deep–sea fish populations (GAGE & TYLER, 1991).

Parameter	Estimate		std	Confidence limits
Linf (cm)	45	1,32	42,87	48,05
K (yr-1)	0,09	0,01	0,07	0,10
t0	-3,10	0,26	-3,61	-2,59

Table II.- VBGF parameters determined from the age-length relationship.

The parameters of the VBGF (Table II) and the growth curve (Fig. 1), obtained from the interpretation of the growth rings in otoliths, showed a low growth rate. This added to the population structure of this species, dominate by adult fish, its high maximum length, its longevity and its low fecundity (GOLOVAN & PAKHORUKOV, 1980), correspond to a typical k–type life history strategy. Although it is not by all means the general rule in the deep–sea organisms (GAGE & TYLER, 1991).

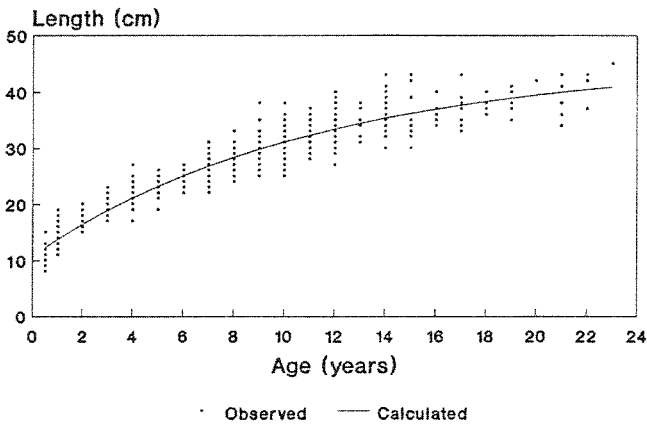

Fig. 1.- Age-length relationship and VBGF curve determined from otoliths.

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