

Preliminary study on the seasonal distribution of teleosteans larvae in the Aegean Sea.  
I. Fam. Serranidae

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At least eight species of serranids are known to occur as adults in the Aegean Sea (PAPACONSTANTINO, 1988), of which the following six have been recorded as larvae during routine ichthyoplankton surveys carried out in the central Aegean Sea : *Anthias anthias*, *Callanthias ruber*, *Epinephelus alexandrinus*, *Serranus hepatus*, *S. cabrilla* and *S. scriba*. Results are presented in this study on the distribution, abundance and depth distribution of serranid larvae collected between June 1990 and February 1991 in a total of 21 stations off the Eubia coasts and the Pelion peninsula, visited at approximately bimonthly intervals.

Sampling at each station was conducted with a BONGO net, towed horizontally at a ship's speed of 2.5 knots at desired depths, and a MARK III high speed sampler, towed obliquely from near the bottom to the surface, at a ship's speed of 5 knots. The BONGO net was fitted with gauzes of 500  $\mu$  mesh aperture and the MARK III with gauzes of 250  $\mu$ . Additional sampling was carried out in a number of stations using a METHOT mid-water trawl with a cod-end mesh aperture of 2.0 mm for catching late larvae and post-metamorphosed fish. In the laboratory the eggs and larvae of all fish species were extracted from the samples, identified to the lowest possible taxon, counted and measured. Numbers per haul were converted to numbers per 1000 m<sup>3</sup> of sea water using the flowmeter readings. Table I shows the seasonal and vertical distribution of the serranid larvae, respectively, using the BONGO net data series. It appears that with the exception of *C. ruber*, all other species seem to be summer or late summer spawners. The data suggest that *S. hepatus*, *S. cabrilla* and *S. scriba* inhabit the upper water layer, while *A. anthias* and *C. ruber* were also found in deeper layers.

Table 1 - Seasonal and vertical distribution of serranid larvae (larvae per 1000 m<sup>3</sup> sea water), using the Bongo net data series.

Species	Month					Depth		
	June	July	September	December	February	0-50	51-100	101-205
<i>A. anthias</i>	-	-	2.3	-	-	1.1	0.6	4.2
<i>C. ruber</i>	4.6	1.9	1.7	6.4	3.3	1.7	3.3	5.1
<i>E. alexandrinus</i>	-	-	1.1	-	-	1.1	0.6	-
<i>S. cabrilla</i>	13.9	1.9	12.0	-	-	18.4	10.0	-
<i>S. hepatus</i>	60.3	145.8	620.3	-	-	388.4	463.0	92.1
<i>S. scriba</i>	-	-	8.0	-	-	11.5	2.2	-

The MARK III net caught significantly fewer larvae (in total, 1111 larvae over the surveyed period, of which 59 belonged to serranids) in comparison to the BONGO net (17720 larvae of which 1283 belonged to serranids), due to the much lower volumes of water filtered and shorter hauling times of the first instrument. However, the MARK III sampled more efficiently the water column, due to its finer meshes, and gave a higher average concentration of eggs and larvae than the BONGO net (Table 2). The METHOT trawl caught relatively fewer larvae and an insignificant number of eggs, as expected, due to its coarse meshes. The most complete coverage of the sampling area with this instrument occurred in September 1990, and yielded 813 larvae (out of which 170 belonged to serranids, almost exclusively *S. hepatus*). *S. hepatus* was the most abundant species, followed by *S. cabrilla*. About 95% of the total collected larvae belonged to *S. hepatus*, of which 89.3% were fished in September. Fig. 1 shows the horizontal distribution of *S. hepatus* larvae caught with the three sampling instruments used is shown in Fig. 2.

The length distribution of *S. hepatus* larvae caught in different sampling periods were compared, and no significant differences were found. These results indicate that breeding is continuous, beginning probably in May, and is completed in late September, with a peak spawning in late August, which is in accordance with the results of a study of the gonadal maturation cycle of this species in the Aegean Sea (PAPACONSTANTINO, unpublished data). However, differences in the length distribution of *S. hepatus* larvae caught in inshore and offshore stations were found, suggesting a gradual dispersal from spawning sites occurring in shallower waters to deeper ones.

Two spawning subareas in of *S. hepatus* were found in the sampling area : one at the north of the Skiathos channel, which is influenced by the N. Aegean Sea hydrographic system, and the other at the Trikeri channel. The highest densities were found in the second area, which is influenced by the Evoikos gulf hydrographic system and is characterised by a broad continental shelf.

Table 2.- Absolute and average number per 100 m<sup>3</sup> filtered water over the surveyed areas sampling period with BONGO net and MARK III.

		BONGO net		MARK III	
		Number	Number/100 m <sup>3</sup>	Number	Number/100 m <sup>3</sup>
June	Eggs	5779	1633	373	2552
	Larvae	1509	375	211	1045
	Serranid larvae	68	18	9	50
July	Eggs	2361	896	232	2677
	Larvae	605	202	185	1883
	Serranid larvae	80	32	10	102
September	Eggs	2345	530	132	1921
	Larvae	11615	2522	595	5719
	Serranid larvae	1129	236	40	401

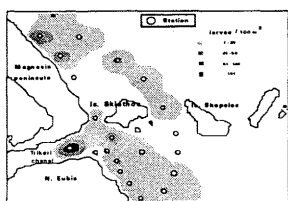


Fig. 1

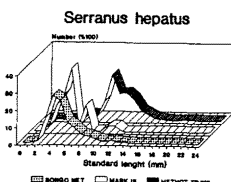


Fig. 2

REFERENCES

PAPACONSTANTINO C., 1988. - National Center for Marine Research Hellenic Zoological Society Ed., Athens, 257 p.