

PRELIMINARY DATA ON THE REPRODUCTION OF MEDITERRANEAN ANCHOVY IN GREEK WATERS

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Abstract

In the Thracian Sea, gonadal maturity of the Mediterranean anchovy peaks in early summer. Size of specimens ranged between 110 and 155 mm TL, males dominating among smaller fish, while females were encountered more frequently in large size groups. Anchovy batch fecundity was estimated by counting oocytes of the largest modal size present in the ovary and was found to range between 2704 and 9.239 oocytes.

Keywords : Teleostei, reproduction, Aegean Sea

Mediterranean anchovy along with sardine constitute the bulk of pelagic catches. The Aegean Sea anchovy catches rank first, and contribute to the combined Mediterranean catches by 36%. Although up to 1987 anchovy catches presented an ascending trend, recent fishery data indicated that the production of anchovy is now following a declining trend. In fact, this decreasing trend is obvious in the whole Mediterranean, and coupled with a parallel increase of the fishing effort, suggests possibly a problem of over-fishing.

The present study provides preliminary data on the sexual maturity, the sex-ratio and the fecundity of the Mediterranean anchovy in the Thracian Sea, contributing to the better knowledge of the species reproduction in this area, which is considered among the most important anchovy fishing grounds in Greek waters.

In June and July 1999, samples of adult anchovies were collected from commercial vessels (purse-seines), as well as by using a hired vessel, fishing outside the commercial fishing grounds, but inside the study area. Immediately after their collection, and in order to prevent deterioration of the ovaries, the abdominal cavity of adult specimens was opened and they were preserved in 10% formalin solution. During sample analysis, the total weight (W; nearest 0,1g), gutted weight (EW; nearest 0,1g), total length (LT; cm, nearest 1mm), gonad weight (GW; nearest 0,1g) and maturity stage according to the Holden & Raitt scale (1) were recorded. Batch fecundity was evaluated by counting oocytes belonging to the largest modal size group, present in the ovaries of 11 females.

Our data revealed that during the sampling period, spawning activities of anchovies were in progress since the 71.5% of the males and the 65.3% of the females were in the IIIrd and IVth maturity stage of the Holden & Raitt scale (1). The gonads of the 20% of the males and the 21.7% of females were at a spent condition. The considerably limited presence of virgin specimens (stage I) should be underlined, reflecting the absence of young anchovies (<110 mm TL) from our samples, mainly due to gear selectivity.

Regarding sex-ratio, males dominated till 134 mm TL, while in the length interval 134-138 mm the sex-ratio did not differ significantly from the theoretical 1:1 value. In larger specimens, however, females outnumber males, dominating completely beyond 146 mm. Males were more numerous than females in all samplings, except during the end of the spawning season, when females dominated (Fig. 1). One-way analysis of variance indicated significant differences between the mean lengths of males and females ($F=68.35$, $P<0.001$).

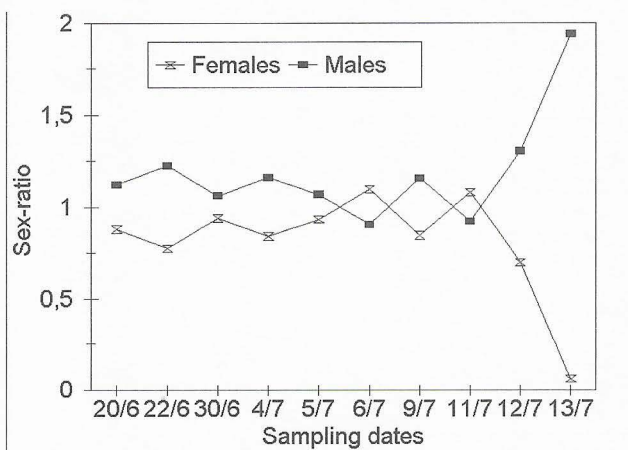


Figure 1. Sex-ratio of the Thracian Sea anchovy in June-July 1999.

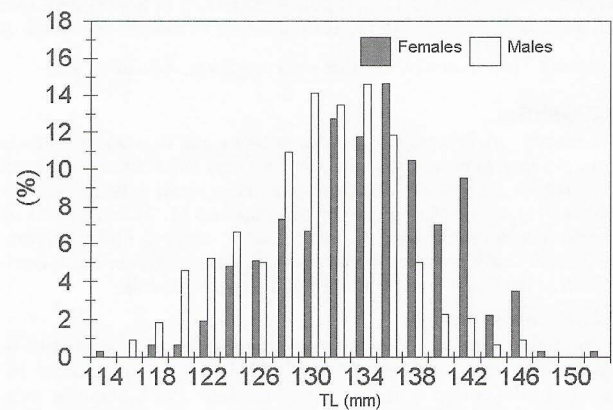


Figure 2. Length frequency distribution of the anchovy collected in the Thracian Sea in June and July 1999.

The study of the length frequency distribution of the anchovies collected in the Thracian Sea revealed that the bulk of the males was comprised between 126 and 136 mm TL, while the majority of the females was between 130 and 144 mm TL. The fact that females reached bigger sizes than males was also mentioned for the anchovy of the Adriatic (2).

Since no hydrated oocytes were found in the samples, fecundity was estimated by counting the largest and most advanced oocytes (Fig. 3). Batch fecundity of the Thracian Sea anchovy appeared to range between 2704 and 9.239 oocytes, values that do not seem to differ significantly from those mentioned for the anchovy of west Mediterranean (3).

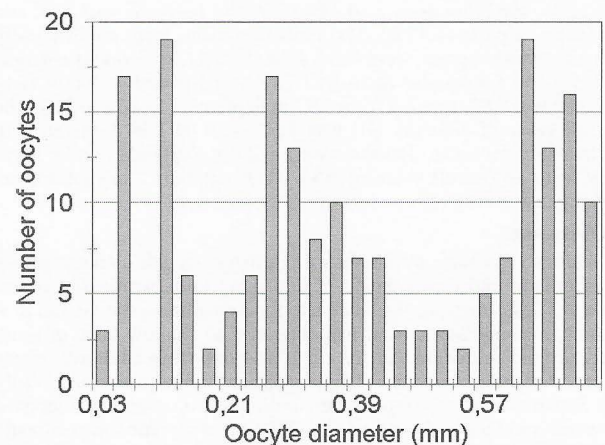


Figure 3. Distribution of the oocyte diameters (maximum dimension) found in the ovary of a 136 mm female anchovy collected in the Thracian Sea in June 1999.

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