SPECIES ABUNDANCES OBSERVED IN AN ICHTYOPLANKTONIC ASSEMBLAGE IN THE GULF OF IERISSOS (THRACEAN SEA, GREECE)

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Abstract

A series of fish larvae species from the Ierissos Gulf were collected using a bongo-net during three expeditions, in June, September and November 2004. After identifying and analysing the samples, seasonal variations of species characterizing the ichtyoplanktonic assemblages were found. The European anchovy (*Engraulis encrasicolus*) was the dominant species in June and September.

Keywords : Ichthyoplankton, Aegean Sea, Biodiversity.

Introduction

The coastal marine ecosystem of Strymonikos Gulf, is one of the richest fisheries grounds in Greece and major source of income for the local fishermen. The area of Ierissos, a small bay in the eastern side of Strymonicos, is known for its richness in ichtyoplankton [1] due to the local rivers inflow and the strong influence of Black sea water [2]. Trawl fishing is banned in the area of Ierissos Gulf, creating good conditions for the local spawning and nursery grounds. The main objective of this work is to identify characteristic species of the ichtyoplanktonic assemblage and its seasonal changes in the Ierissos Gulf.

Material and methods

Specimens were collected with a bongo-net (mesh size: 250 and 500 μm). Samplings took place in 2004 during three daily surveys carried out in June, September and November. A flowmeter determined the water volume filtered. The sampling grid consisted of 14 stations placed in transects perpendicular to the coast. The larvae were identified to the lowest possible taxonomic level, counted and measured. Maximum tow depth and volume of water filtered were used to standardize abundance in number of larvae per 10 m^2 [3]. PRIMER v5 software [4] was used for the data analysis as well as STATISTICA v7 statistical software. A matrix of taxa abundance per station was constructed and the Bray-Curtis similarity matrix was generated which was subjected to cluster analysis (using forth root transformation in order to give weight to less abundant species). The characteristic species in each month were determined with SIMPER, using forth root transformation (species with contributed less than 10% were not considered in the analysis). Furthermore, differentiations between months was tested with ANOSIM (pairwise test). Samples from stations 1, 11, 13 and 14 during the November survey were omitted because they had less than 6 taxa.

Results

A total of 2697 larvae were collected and identified. The species characterizing the larval assemblage in each month and their order according to their percentage contribution were: *Engraulis encrasicolus* (23.97% contribution), *Sardinella aurita* (16.71%) and *Serranus hepatus* (15.79%) in June; *E. encrasicolus* (27.44%), *S. hepatus* (20.04%) and *Cepola macrophtalma* (17.76%) in September; and *C. macrophtalma* (26.45%), *Ceratoscopelus maderensis* (20.13%), *E. encrasicolus* (16.10%) and *Sardina pilchardus* (14.13%) in November.

Cluster analysis (Fig. 1) showed an evident similarity of samples within each month and defined two groups: one for June and September (Summer) and another one in November (Autumn). The pairwise test showed a significant dissimilarity between months (June-September: R=0.84; June-November: R=0.84; September-November: R=0.77).
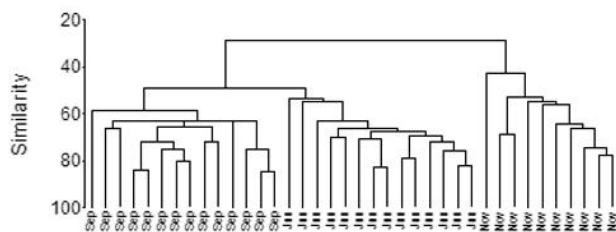

Fig. 1. Dendrogram of similarities (cluster analysis, group-average linkage, fourth root transformation) of the 36 stations sampled in June, September and November in 2004 in Ierissos Gulf.

Discussion

The study showed seasonal changes in fish larval assemblage. The main factors for this differentiation were the predominance of *E. encrasicolus* in June and September, the presence of *S. aurita* in June and *S. pilchardus* in November. *E. encrasicolus* picked in September, in accordance to Koutrakis et al. [1] and had a long-lasting presence of larval stage in the gulf covering almost six months. *C. macrophtalma* percentage contribution in the assemblage increased by months: in June was 7.84% while in September was 17.76% and in November 26.45%, when it achieved the maximum abundance. *S. hepatus* was one of the characteristic species of the assemblage during the warm season, and was completely absent in November, as observed by Koutrakis et al. [1]. Species diversity remained constant although its two components, species richness and evenness showed a shift of their relative importance: June was characterized by a larger species richness and a lower equitability, due to the dominance of *E. encrasicolus*, in contrast to November, when a lower species richness and a more balanced distribution of individuals between all species were found.

References

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