

STAGE STRUCTURE OF CHAETOGNATHS IN UPPER PELAGIC WATERS OF THE EASTERN MEDITERRANEAN IN AUTUMN 1991 AND SPRING 1992 (POEM - BC CRUISES)

G. KEHAYIAS, N. FRAGOPOULU, J. LYKAKIS

Section of Animal Biology, Depart. of Biology, Univ. of Patras, 26110 Patra, Greece.

Within the framework of the International POEM-BC programme zooplankton, samples were collected by the Greek POEM-BC group in autumn (late October to early November) 1991 and in spring (late March to early April) 1992. Samples were taken with a WP-3 closing net (mouth area 1m², mesh size 200 µm) towed vertically from 300 m to the surface, from fourteen stations in Eastern Mediterranean upper pelagic waters, situated along three transects. A : Cretan Sea, B: Cretan Passage and C: Rhodes Sea (Fig.1). All chaetognath specimens were sorted from the samples and identified to species and stage of development using a modification of GHIRARDELLI's (1961) system (KEHAYIAS *et al.*, 1992). The purpose of this study was to investigate differences in the stage structure, as (%) occurrence of each stage of development, for each species between the two sampling periods. The abundance of the total chaetognaths was almost the same in autumn and spring (103.4 n/100 m³ and 110.6 n/100 m³ respectively). The chaetognath community comprised eight species (KEHAYIAS *et al.*, 1993). In autumn, diurnal vertical migration was not detected in any of the species nor in their developmental stages (KEHAYIAS *et al.*, 1994), while in spring it was only detected in *Sagitta serratodentata atlantica*. No differences in the stage structure of the species were found in the Cretan Sea, Cretan Passage and Rhodes Sea for both sampling periods tested separately (Kruskal-Wallis test, $p > 0.05$), i.e. each species was at the same phase of its reproductive cycle in the overall sampling area. The computations were performed on stage proportions using the counts of each stage within each sample. Differences in the stage structure between the two seasons were observed in all species except *S. minima* and *S. lyra* (one way anova, $p < 0.05$).

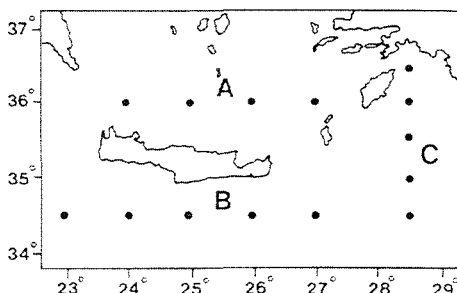


Fig. 1 Zooplankton sampling stations.

The epipelagic species *Sagitta serratodentata atlantica*, *S. bipunctata* and *S. minima* breed in autumn and spring; mature individuals were found in both seasons. For the former two species the same was found in Eastern Mediterranean neritic waters (KEHAYIAS *et al.*, 1992). The mesopelagic species *Krohnitta subtilis* and *S. hexaptera* breed in spring since mature individuals were found only in March-April, while for the remaining mesopelagic species *S. decipiens* and *S. lyra* mature specimens were not observed in our samples, possibly due to their deeper than 300m mode of distribution (KEHAYIAS *et al.*, 1994). Mature specimens were also not observed for the epipelagic *S. enflata* possibly due to its low abundance in our samples. Juvenile specimens (stage I) were observed in both seasons for all different species. This suggests that spawning may occur in autumn and spring while the sampling should be extended monthly since a year round spawning in subtropical waters of Eastern Mediterranean could be evident (ALVARINO, 1965; KEHAYIAS *et al.*, 1992). In general, the population of each species according to its stage structure showed a more mature phase of its reproductive cycle in spring rather than in autumn.

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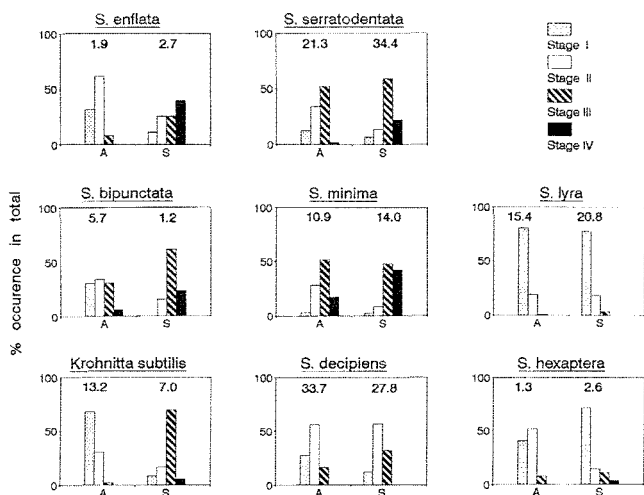


Fig. 2 Stage structure of eight chaetognath species (as % mean occurrence of the different maturity stages of each species in Cretan Sea, Cretan Passage and Rhodes Sea) in autumn 1991 (A) and spring 1992 (S). Mean total abundance values (n/100m³) are given for each species in each sampling period.

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