

SPATIAL DISTRIBUTION OF HOLOPLANKTON ON THE ANATOLIAN COAST, NERITIC ZONE OF BLACK SEA DURING LATE AUTUMN 2005

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Abstract

During the late autumn 2005, holoplanktonic community have been analyzed in Southern waters of the Black Sea. During the sampling period, totally 4 major taxa, which Copepoda, Cladocera Appendicularia and Chaetognatha, were identified. The copepods were the dominant group. Although similarity between the stations were higher than 70 %, three different community structure which fits the Black Sea general current regime were observed during the sampling period.

Keywords: Black Sea, Zooplankton

Introduction

Zooplankton has an important role in aquatic environment in energy transfer to upper trophic level such as fish larvae and other planktivores organisms. Abundance of the zooplanktonic organism is important for efficiency of marine environments. So their abundance and distribution have been widely studied since they first discovered [1]. Zooplankton is divided into 2 main groups as holoplankton and meroplankton. Group spends only a part of their life as a plankton and settling to seabed are called meroplankton. Others, such as copepod and chaetognatha, complete their life cycle as plankton is called holoplankton [2]. They are the permanent members of the pelagic system not only larvae stage but also during the adult stage. In the temporal region like Mediterranean and the Black Sea during the winter period holoplankton are the main components of the zooplankton community. Holoplankton community structure is important component for comparing the regions and the efficiency of secondary production. The aim of the study is to determine the abundance and similarity of the holoplanktonic groups along the Anatolian coast (South Eastern Black sea) neritic zone during the late autumn of 2005.

Materials and Methods

Samples were collected from ten stations located along the South Eastern Black Sea coast during the eight days cruise of R/V DENAR in November 2005 (Fig. 1). Sampling tows were performed at each site using Hensen type closing net with 75 µm mesh size; 70 cm mount diameter, and 220 cm long net. The plankton nets were towed vertically from 50 m depth to surface. The volumes of the sea water filtered were calculated by digital flowmeter (Hydro-bios Kiel, No 439115). The samples were preserved in borate-buffered 4% formaldehyde-sea-water solution until laboratory analysis. Zooplankton samples were removed from the solution and counted under the stereomicroscope [3].

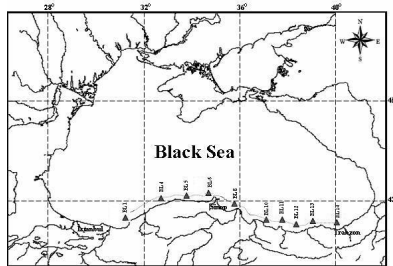


Fig. 1. Sampling location

Result and Discussion

During the sampling period, totally 4 major taxa (Copepoda, Cladocera Appendicularia and Chaetognatha) were identified along the Black sea Anatolian coast. The main and the largest taxa in holoplankton were Copepoda. The most abundance copepod species belonging to the orders of Calanoida and Harpacticoida were *Calanus euxinus*, *Acartia clausii*, *Pseudocalanus elongatus*, *Paracalanus parvus*, cyclopoid copepodlardan *Oithona sp.* and *Tigriopus sp.*, *Laophonte sp.* respectively. Other Crustacea was Cladocera. This taxa includes *Evadne tergestina*, *Evadne spinifera* and *Penilia avirostris* in the sampling area. In addition to above mentioned, *Oikopleura dioica* and *Sagitta setosa* were only representative for Appendicularia and Chaetognatha respectively. After Copepoda, the Appendicularia (*Oikopleura dioica*) was the second highest biomass in the near shore region. The maximum biomass was observed as 12763 organisms m⁻³. Although the similarities between the stations are higher than

70 %, three different regions distinguish in holoplanktonic community at the Anatolian coast of the Black Sea during the sampling period (Figure 2.B). These are west, middle and eastern Black Sea Regions. The distribution of holoplanktonic communities shows similarities with general Black Sea current regime which has two anti-cyclonic gyros located east and west part of the Black sea. in Ordu off (BL11). Appendicularia was also observed as high as 4837 organisms m⁻³ in Inebolu off (BL 4). It was the highest value for Appendicularia. However the maximum biomass of Chaetognatha was found as 1289 organisms m⁻³ in Unye off (BL 10). Although Cladocera were represented by three species in the region, it was the poorest group. The maximum number of the Cladocera was estimated as 139 organisms m⁻³ in the sampling areas (Fig. 2.A).

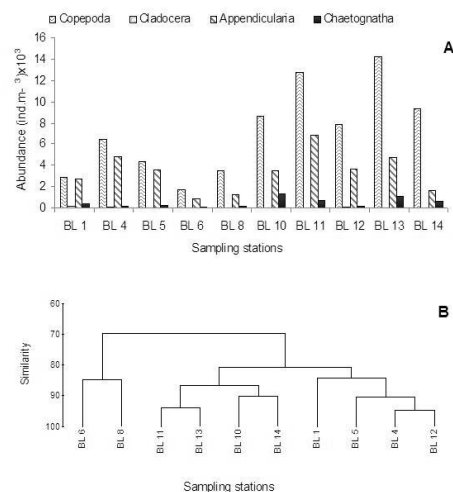


Fig. 2. A. Abundance of holoplanktonic organisms B. Similarity between the stations

Although the similarities between the stations are higher than 70 %, three different regions distinguish in holoplanktonic community at the Anatolian coast of the Black Sea during the sampling period (Fig. 2.B). These are west, middle and eastern Black Sea Regions. The distribution of holoplanktonic communities shows similarities with general Black Sea current regime which has two anti-cyclonic gyros located east and west part of the Black sea.

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