NOCTURAL INVESTIGATION OF PLANKTONIC OSTRACODS IN THE SOUTH ADRIATIC SEA

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Abstract
Night-time distribution of planktonic ostracods was investigated down to 300 m depth in the open South Adriatic Sea in spring 2009. Among twelve recorded species, *Porroecia spinirostris* dominated in the upper epipelagic layer, *Archiconchoecia striata* in the lower epipelagic and *Proceroecia macroprocera* in the upper mesopelagic zone. The highest ostracod average abundance of 519.1 ±251.84 ind. 100 m^{-3} was found in the lower epipelagic layer. With the exception of *P. spinirostris*, recorded species showed higher nocturnal abundances below 100 m depths, with no evidence of near-surface upward migrations during night.

Keywords: Adriatic Sea, Crustacea, Zooplankton , Pelagic

Ostracods are a sub-class of small crustaceans which occur in many aquatic habitats. Although they ussualy inhabit the benthic zone, family Halocyprididae is mostly plantonic. As several planktonic ostracod species are known to perform notable diel vertical migrations [1], we aimed to determine whether there were any particulars in ostracod nocturnal distribution in the upper layers of deep South Adriatic Sea. Sampling was performed down to 300 m in three distinct layers representing the upper epipelagic (A; 0-50 m), lower epipelagic (B; 100-200) and upper mesopelagic zone (C; 200-300 m). Samples were collected with an opening-closing Nansen net (mesh size 200 µm) above the 1000 m isobath (S-1000; 42°19'N, 17°26'E), from May 19 to May 25 2009, during five night-time samplings (6:20 pm to 0:05 am). Counting and determination were performed on stereomicroscope (at 4-25 x magnifications), following the descriptions by Angel [2].
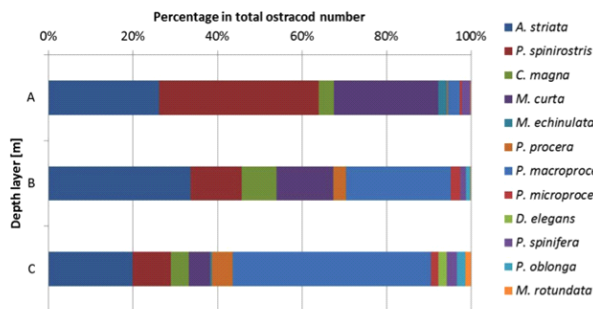

Fig. 1. Average contribution of twelve ostracod species in three sampling layers: A: upper epipelagic, B: lower epipelagic and C: upper mesopelagic.

A total of twelve halocyprid species were identified. *Porroecia spinirostris* was the most abundant in the upper epipelagic zone (A), *Archiconchoecia striata* in the lower epipelagic (B) and *Proceroecia macroprocera* in the upper mesopelagic (C), constituting on average 37.8%, 33.6% and 46.9% of total abundances, respectively (Fig. 1). *Paraconchoecia oblonga* and *Discoconchoecia elegans* were absent in layer A, *Mikroconchoecia echinata* in layer B, while layer C contained all recorded species. Overall, the lowest total average ostracods abundance was found in layer A (182.9 ±136.49 ind. 100 m^{-3}) while the highest was found in layer B (519.1 ±251.84 ind. 100 m^{-3}). The differences between layer A and layers B-C were statistically significant (Kruskal-Wallis test; K=10.168, P=0.006). Principal component analysis extracted four factors, describing 75.98% of total ostracod variability (Fig. 2). The first group (32.31%) contained six species characterized with higher vertical variations in abundances and notably reduced values in layer A (*Conchoecia magna*, *Proceroecia procera*, *P. microprocera*, *P. macroprocera*, *Discoconchoecia elegans* and *Metaconchoecia rotundata*). The second group (21.33%) consisted of four species distributed through A-C layers, with relatively small vertical changes in abundances (*Archiconchoecia striata*, *Porroecia spinirostris*, *Mikroconchoecia curta* and *Paraconchoecia oblonga*). *Paraconchoecia spinifera* (13.48%) and *Mikroconchoecia echinulata* (8.851%) were extracted as separate groups. Both species occurred in very low abundances which varied little in vertical direction. High proportion of juveniles

M. curta (up to 92.5%) in the layer B confirmed spring as the period of its intense propagation [3]. During the night hours, the majority of recorded species preferred lower epipelagic and upper mesopelagic layers. However, *P. spinirostris* showed a slight increase in abundance in layer A at night, in accordance with the observed tendency of this species to concentrate in the upper 50 m [4]. Conversely, *C. magna* and *P. macroprocera* concentrated below 100 m depth, indicating the absence of near-surface upward migrations during night-time.
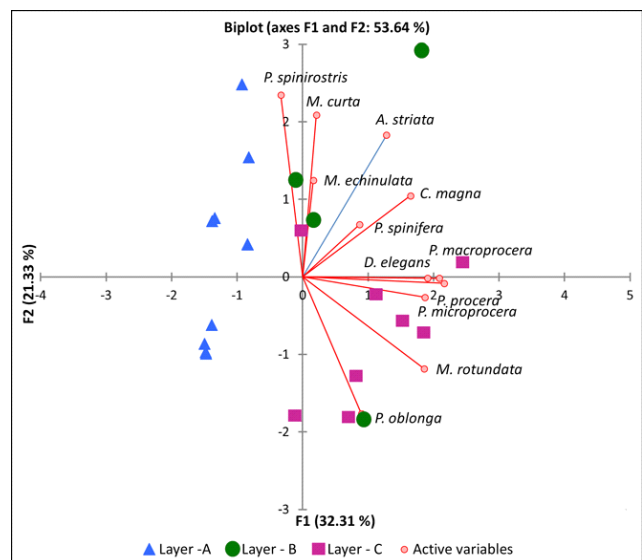

Fig. 2. Ordering of twelve ostracod species obtained by Principal Component Analysis (PCA). Sampling layers are superimposed as qualitative supplementary variables and plotted as triangles (Layer-A, 0-50 m; Layer-B, 100-200 m and Layer-C, 200-300m depth).

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