INTERSTITIAL HARPACTICOIDS FROM THE SHALLOW WATERS OF THE ROMANIAN BLACK SEA COAST

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Abstract

The study refers to a period of five years and the results regard a synecologic analyze of harpacticoids populations sampled from 11 sites with mobile substratum at 0 – 1 m depth, on a distance of more than 200 km along the Romanian shore, from Grindul Chituc to Vama Veche. Data about their abundance, density, frequency and ecological significance indices (WD %) are given, in order to emphasis the distribution of the characteristic species and their adaptive mechanisms.

Keywords: Black Sea, Copepoda, Infralittoral, Mediolittoral, Sediments

Introduction

For marine waters of Romania, the data obtained between 1960 -1970, totalize 114 benthic harpacticoids species, associated with different characteristic biocoenosis. A first comprehensive list was done in 1959 [1] and after those three ample papers regarding pontic [2, 3] and Levantine [4] harpacticoids were published in 1960, 1962 and 1964. After more than 25 years, some ecological data of main harpacticoids species living on different kind of substrata were published again [5, 6].

Materials and methods

Quantitative sedimentary samples were taken using a corer with 7, 5 cm intern diameter. 11 sites (with three perpendiculars transects at 0, 0, 5 and 1 m depth) were seasonally investigated, during a period of five years. The samples have been preserved (4% formaldehyde solution or in ethanol 80%: glycerin in equal parts), washed and sieved by 160, 100 and 63 μm mesh diameter. A Nikon SMZ-2T stereomicroscope and a Nikon E200 microscope were used for identification. The results were reported at m².

Results and discussions

The most encountered harpacticoids have the greatest abundances in 20 - 50 cm core horizon of the samples. Below this horizon we met extremely rare in corers, isolated examples of *Arenopontia subterranea* and *Parastenocaris chappuisi*. In two stations of the north sector Grindul Chituc (Lat. 44º N 47, 310; Long. 28º E 81,432) and Vadu (Lat. 44º N 35, 240; Long. 28º E 62,212) where sediments are consisting of fine and quartz sands eudominant species are *Microarthridion littorale* and *Canuella perplexa*, with great similarities regarding their abundances (A = 67 ind.·m^{-2}), frequency of 40 % and W = 11%. *Harpacticus flexus* (A = 51 ind.·m^{-2},F = 40 %, W % = 8, 98) and *Halectinosoma abrau* (A = 43 ind.·m^{-2}, F = 40 %, W = 7, 57) have dominant character in these sediments (the highest share at 0.5 m depth). At Navodari (Lat. 44º N 18, 707; Long. 28º E 37,913) and on Mamaia – Cazino (Lat. 44º N 14,297; Long.28º E 37,548) zones, 10 respectively 15 harpacticoids species were recorded with total abundances of 1306 and 580 ind.·m^{-2}. For both zones *M. littorale* is on the first rank with high values of W = 19, 90% and 30%, frequency of 100%, and abundances of 260 and 174 ind.·m^{-2} comparatively with the other species. *Parathalestris dovi* and *Canuella perplexa* are other dominant species. But for all mentioned species densities do not exceed 39 ind.·m^{-2}. Longipedia minor, Tisbe furcata, Ectinosoma melanicepsTabacariei Lake flows into the sea we found occasionally isolated individuals of Itunella muelleri, *Parastenocaris chappuissi* and *Onychocamptus* mohammed. Total density of harpacticoids population recorded 67 ind.·m^{-2}. Constanta – Plaja Modern site (Lat. 44º N 10,718; Long. 28º E 39,452) represents the ‘’border” between north sector and south sector of the Romanian littoral. The sands from the shallow waters have medium size (174 mm) particle diameter. 8 species were found at Constanta, H. flexus and M. littorale usually being more abundant in spring. D. tisboides with a very large eurytopic properties is considered here as subdominant. The endemic Mesochra pontica appeared in some samples from this area. Most species are quartered at 1 m depth. At Eforie Nord – Belona beach (Lat. 44º N 03,756; Long. 28º E 38,479) and Eforie Sud – Capul Turcului (Lat. 44º N 01,635; Long. 28º E 39,426) 14 species were recorded. Ectinosoma melaniceps take the first rank with a W of 27, 22 % and 29, 30 %, being euconstant and eudominant in both zones. As a typical interstitial form, Halectinosoma herdmani become one of the six constant and dominant species. S. pontica, Paralaophonte brevirostris, M. pontica, C. furcigera, Ameira parvula, Thalestris longimana and Parathalestris dovi are accessories coming, largely from higher infralittoral. Very abundant become at Costinesti (Lat. 43º N 56,896; Long. 28º E 38,292), Nitocra elongata being characteristic for coarse sands of this zone. Heterolaophonte stroemi paraminuta has a 100% frequency with 52 ind.·m^{-2} abundances.A uniform distribution of encountered individuals in different depths it was observed. At Mangalia (Lat. 43º N 49,005; Long. 28º E 35,279) it was found 10 harpacticoids species, many of them with high abundances, very frequent (80 -100%) and with ecological significance indices values up to 24,78 as C. perplexa, H. herdmani, and N. elongata. Their depth preferences are here on 0, 5 m where the dynamic of the water is less felt at sediments level and the oxygen is still in optimum quantities. The situation is maintained in the final site, Vama Veche (Lat. 43ºN 46,880; Long. 28º E 34,798) where middlittoral and infralittoral sands shelter 11 harpacticoids species. The total populations’ abundances reach 809 ind.·m^{-2}, but with low densities, of 122 ind.·m^{-2}. The characteristic species are the same as in the former two northern sites, sharing the first five ranks, as eudominant and dominant, being encountered in all samples. As an accidental species was recorded Klieonychocamptus kliei ponticus, isolated in some samples.

Harpacticus littoralis and *Dactylopodia tisboides*, are accessory and receding species and *Schizopera pontica* is an accidentalone. In the next southern site, at Mamaia – Hotel Parc (Lat. 44º N 13,176; Long. 28º E 38,191), among the 13 recorded species, besides those already mentioned before, we can notice *Nitocra typica* as subdominant, with a uniform distribution in studied transects. In these interstitial spaces where the

Conclusions

- Five taxa - *Canuella perplexa*, *Halectinosoma herdmani*, *Microarthridion littorale*, *Harpacticus flexus* and *Harpacticus littoralis* consistently present in the north sites, are found in southern areas too, although their density in these biotopes varies from 5 - 35 ind.·m^{-2}.
- Some species which are accidentally in the northern sector areas become dominant in many stations of south region (for example *Ectinosoma melaniceps*, which reaches densities between 15 - 37 ind.·m^{-2}).
- Typical endopsammic harpacticoids *Arenopontia subterranea*, *Parastenocaris chappuisiOnychocamptus mohammed are adapted to mesoporal spaces, having filiform bodies and under 0, 5 mm lenght. But they are recorded as isolated, accidental species in Romanian Black sea shallow waters.* and

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