

Zooplankton structure and distribution in the Bulgarian Black Sea coastal eutrophicated zone in summer 1991

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The results of the zooplankton structure and distribution investigations in the Bulgarian Black Sea coastal waters are very important, for explanation of the phenomena related to the eutrophication processes. Most interesting in this aspect are the summer development and distribution of the main constituents as well as that of some species which in the past have been rarely found or were almost absent from the coastal waters (DIMOV, 1960; KONSOULOV, 1986).

The results discussed in the present report concern the zooplankton of the shallow shelf zone in front of the Bulgarian coast with sea water quasihomogeneous structure during the summer of 1991. The samples were collected with a plankton net "Djeddy" (mesh size 100 mikrons) at stations located on 3, 10, 20 and 30 miles eastward from Krapets and cape Emine, at standard horizons for a stratified water basin. Monospecific biomass is calculated according to standard weights by IASHNOV (1934).

In the coastal region up to 3 miles offshore the unicellular euryphage *Noctiluca scintillans* is present with the highest quantitative abundance and biomass (555.52 mg/m³) in the summer zooplankton, followed by *Pleopis polyphemoides* (26.8 mg/m³), *Acartia clausi* (20.82 mg/m³), *Penilia avirostris* (11.32 mg/m³), *Cirripedia nauplii* and *Polychaeta larvae*.

At the same time 10 miles offshore *N. scintillans* participation abruptly drops: its share of the total biomass in this region (70.75 mg/m³) comprising species of Copepoda, Cladocera and benthic larvae, only amounts to 48.32% (34.18 mg/m³). Significantly lower quantitative abundance of Cladocera species is established in this same area and also affects the value of the biomass (Fig. 1).

A. clausi dominates in the quantitative structure of the zooplankton in the 20 miles offshore zone (23.18 mg/m³) followed by *P. polyphemoides* (17.44 mg/m³), *Evadne tergestina* (5.24 mg/m³), *Acartia copepodites*, *A. nauplii*, *Evadne spinifera* and *P. avirostris larvae*. *N. scintillans* is registered here with quantity of 2.5 mg/m³.

Thirty miles east from the coast the zooplankton is represented mainly by *A. clausi*, *P. polyphemoides*, *Pseudocalanus elongatus* and *N. scintillans* with biomasses of 5,09, 7,48, 2,75 and 2.16 mg/m³ respectively.

A more detailed analysis of these results shows that during the summer of 1991 the highest biomass values were due mainly to *N. scintillans* and *Cladocera species*. This fact allows us to consider this zooplankton complex as an indicator of the coastal zone higher eutrophication level in comparison with the open sea area. Moreover, the exclusively high biomass of *N. scintillans* in the coastal region determines to a large extent the changes in the biogenic potential, the intensity of phosphorus recycling and the mechanism of the plankton coenoses reproduction.

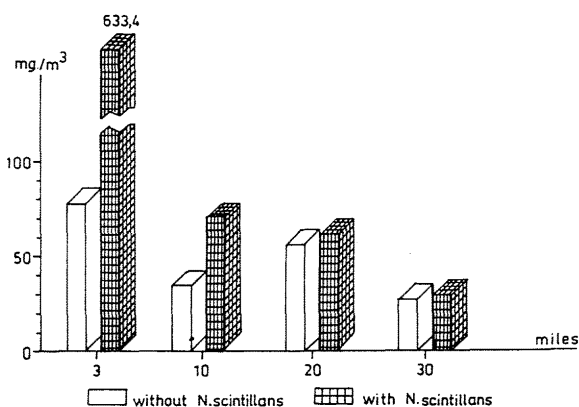


Fig. 1. Zooplankton biomass value (mg/m³)

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