NET - ZOOPLANKTON AND NITROGEN REGENERATION IN THE GULF OF TRIESTE

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The results on the structure, biomass, and nitrogen regeneration by net zooplankton in the Gulf of Trieste, are reported.

The zooplankton community under study, similar to the communities of other bays in the Adriatic Sea (Fonda et al. 1984), is typically neritic and species with high ecological tolerance are dominating.
Except in summer the prevailing group are copepods, the important species being Acartia clausi, Paracalanus parvus, Ctenocalanus vanus, Centropages typicus, Temora longicornis, T stylifera, Oithona spp., Oncaea spp. In summer the cladoceran Penilia avirostris become dominant. Larvae of some benthic organisms, especially molluscs and echinoderms, are also numerous seasonally and gelatinous zooplankton like Muggiaea kochi, Doliolum nationalis. Ctenophora, can be very abundant from time to time.

The Gulf of Trieste is one of the richest adriatic regions considering net-zooplankton biomass (Benović et al. 1984). Zooplankton dry weights vary between 1.3 and 177.0 mg . m^{-3} with an average of 18.5 mg . m^{-3}, and ash-free dry weight from 1.2 do 101.0 mg . m^{-3} and average of 13.6 mg . m^{-3}. The quantity of the zooplankton nitrogen range from 0.1 do 4.0 mg . m^{-3}, with most results under 2.0 mg . m^{-3}, and an average of 0.9 mg . m^{-3}.

Zooplankton excrete nitrogen mainly in the form of ammonia. In the Gulf of Trieste daily ammonia excretion rates were calculated to range from 0.02 to 0.16 µM-N . mg DW^{-1} . d^{-1} during winter, from 0.15 to 1.03 µM-N . mg DW^{-1} . d^{-1} during spring, from 0.04 to 0.31 µM-N . mg DW^{-1} . d^{-1} and 0.08 to 0.84 µM-N . mg DW^{-1} . d^{-1} during autumn.

Daily urea excretion rates were calculated to be much lower, being always less than 0.04 µM-N mg DW^{-1} . d^{-1}.

Nitrogen regeneration rates were estimated by combining the zooplankton biomass data with experimental laboratory data on the excretion rates. The estimated daily addition of nitrogen (seasonal average) to the waters of the Gulf of Trieste by net zooplankton is low during the winter: 1.24 μM-N . m^{-3} . d^{-1} and summer: 3.71 μM-N . m^{-3} . d^{-1}, and higher during spring: 17.74 μM-N . m^{-3} . d^{-1} and autumn: 10.67 μM-N . m^{-3} . d^{-1}.

REFERENCES

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