MEIOFAUNAL INVESTIGATIONS AND ANOXIA IN THE CENTRAL PART OF THE GULF OF TRIESTE (NORTHERN ADRIATIC)

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During 1985 a large meiofaunal sampling program was carried out in the southern and central part of the Gulf of Trieste. A poor, low–biomass macro– and meiobenthic community with low Harpacticoida diversity was found in the deepest (25–26 m) central part of the Gulf, suggesting that this could be in connection with more frequent anoxic events (1974, 1980, 1983) in this area (VRISER, 1991; VRISER & MALACIC, 1992).

Consequently a greater research interest was focused to the meiofauna of this region in the last years where another anoxia occur in September 1990. The taxonomic structure, population density and species diversity of benthic Harpacticoida were studied on 31 stations in the Gulf of Trieste in August 1985. This group was the second most numerous, following the dominant Nematodes. Higher density was detected along the coast, decreasing gradually towards the centre of the Gulf and towards open waters. Taxonomic analysis indicated 71 species and the average number was 25 species. Dominant were *Haloschizopera pontarchis, Typhlamphiascus confusus, Bulbamphiascus inermis* and *Cletodes pusillus*. Three main ecological groups were established:

1.– eurivalent, very abundant species, distributed over the whole area;

2.– stenovalent species, limited to coastal belt;

3.– stenovalent, rare species of the open waters outside of the Gulf. None of the dominant species exceeded 9%, and only 22 species exceeded 1% of total abundance. Species diversity, based on Shanon–Wiener index, increased slightly from the coast (2.6) towards the open sea (2.8) and falls to the lowest values (2.1) in the central part of the Gulf. Trellis analyses indicate three ecological provinces, following from the Gulf muds to the fine – grained sands of the open waters.

We can conclude that the main part of our investigation area is covered by one Harpacticoida community, but with some characteristics of a transition region. This community is impoverished in the central Gulf area, probably due to recurring effects of the seasonal anoxias. On the western rand of the Gulf we have found a more rich sandy bottom community of Harpacticoida, belonging to the northern Adriatic open waters.

A hypoxic bottom–water layer (22°C, salinity 37.8‰, O_2 sat. 30%) was observed in August 1990 in the central area of the Gulf of Trieste, gradually increasing in the next days to severe anoxia with catastrophic consequences for the macrobenthos community. Samples taken on 09–04–1990 on 5 locations showed a drastic decreasing of the total meiofaunal abundance, comparing them with older data from this area. Meiobenthos normalised almost entirely through the next year when we repeat our sampling on 09–17–1991. The total meiofaunal abundance returned to previous values, i.e. increased from 328 to 885 ind./10 cm^2. The density of Harpacticoida, Polychaeta, Gastropoda and Bivalvia during anoxia was nearly halved, while the abundance of Kinorhyncha and Acarina even increased. The remaining groups such as Hydroidea, Ostracoda, Ophiuroidea and Amphipoda almost vanished during anoxia, but they all reestablished again a year later.

We can conclude from this two different approaches that meiobenthos suffered badly during anoxic stress, but regenerated quantitatively quite soon. The consequences are evident probably only on a long–term scale and mostly on the species diversity level.

REFERENCES

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