

COPEPOD COMMUNITY OF THE KAŠTELA BAY AS INFLUENCED BY DIFFERENT LEVELS OF POLLUTION

Dubravka REGNER

Institute of Oceanography and Fisheries, Split, Yugoslavia

The influence of pollution on the copepods community of the Kaštela Bay is discussed.

Dans le travail on observe l'effet de la pollution sur la communauté de copepodes planctoniques de la baie de Kaštela.

This report describes the new results of copepod studies from five stations in the Kaštela Bay. Station 1 (10m) is mainly under the strongest impact of agricultural wastes, station 2 (10m) is under direct and particularly strong influence of industrial wastes, station 3 (20m) is under a variety of influences of food processing industry, breaker's yard, shipyard etc, station 4 (40m) is located at the entrance to the bay and station 5 (35m) is located in the middle of the Kaštela Bay (Fig. 1).

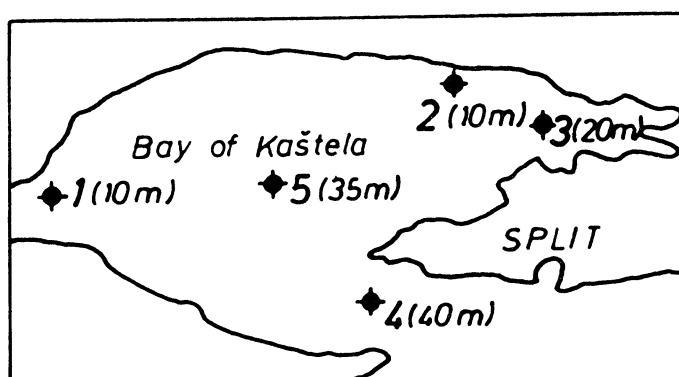


Fig. 1. Area of investigation

Material was collected on a seasonal basis with Hensen plankton net, hauled vertically from bottom to surface from February 1982, to July 1983.

A total of 18 species and one genus were recorded from station 1. With respect to the small depth of this station it is quite normal for similar shallow coastal areas. The highest number of species was recorded in autumn. Acartia clausi was best represented species (15-50%), particularly in spring.

The number of specimens per cubic metre was highest in summer, and lowest in winter (Tab. 1). Taking into account the small depth of the station, this number is rather high all year around, since the copepods have enough

food available in addition to other favourable environmental conditions.

All these data on copepod density and composition are indicative of the strong impact of land inflows on this station.

Tab. 1. The number of specimens/m³ at the investigated area

	II 1982	V 1982	VIII 1982	X 1982	VII 1983
1	487	1073	1188	973	1100
2	713	1453	1588	340	1146
3	930	143	547	374	303
4	378	547	354	90	171
5	623	509	254	320	350

Station 2 - The highest number of species was recorded in 1983 and the lowest in spring 1982. Acartia clausi was also predominant. Its percentage presence varies from 17-93%, that is within a range that has never been recorded from this area. Number of copepods per cubic metre show still greater changes than at the preceding station. Minimum copepod number was recorded in autumn, slight increase in winter, whereas spring and summer values were considerably higher.

The high number of Acartia clausi and changed rhythm of seasonal density of copepods are proof of a disturbed relationship in copepod community (Regner, D. 1979a).

Station 3 - A total of 18 species and one genus were recorded. The highest number of species was recorded in autumn and lowest in spring. Acartia clausi was also predominant with percentage presence of 60%. The number of individuals was much lower than at two preceding stations. With respect to the fact that the depth of this station is twice that at the stations 1 and 2, already mentioned changes are more marked here than they are at these two stations.

Station 4 - Depth of the station and its peculiar position are reflected on the species composition, as well. Thus, 25 copepod species, and one genus were recorded from this station. The highest number of species was recorded in winter-spring what is normal for the middle Adriatic (Regner, D., 1979b). The lowest number of species recorded in summer is in agreement with the results of earlier copepod studies in the Adriatic. The species Temora stylifera, Acartia clausi, Centropages typicus, Paracalanus parvus and Ctenocalanus vanus were predominant whereas other species occurred in far lower numbers.

Copepod density per cubic metre shows annual oscillations with marked spring maximum and rather low values in summer. Copepod composition, number of species, dominant species characteristic for the whole eastern Adriatic coast, and annual density oscillations are in fact the common properties of the coastal sea. Thus this station differs from the preceding stations.

Station 5 - The highest number of species was recorded in winter what is in agreement with earlier investigations. Most numerous species were Acartia clausi, Temora stylifera, Centropages typicus and Paracalanus parvus. Seasonal oscillations of density are similar to those at station 4 with the highest number of specimens recorded at the end of winter, rather high number in spring, density decrease in summer, and slight increase in autumn.

It may thus be concluded that this station is still not strongly affected by the land.

So the results of this new investigations show that most marked changes has occurred at stations 2 and 3 which are affected by industrial wastes (harmful chemical substances, heavy metals, food processing industry wastes, breaker's yard, shipyard, cement industry). Station 1 come next. It is mainly influenced by agricultural wastes, whereas stations 4 and 5 have been only slightly changed - it seems that the number of species has been slightly reduced if compared with some earlier reports. Therefore we believe that permanent control will contribute to our knowledge of the changes in copepod community in the Kaštela Bay.

References

- R e g n e r, D., 1979a. The influence of eutrophication on the copepods in the coastal area of Split (Central Adriatic). Rapp. Comm. int. Mer Médit, 25/26, 8.
- R e g n e r, D., 1979b. Seasonal and multiannual dynamics of copepods in the Middle Adriatic (Disertation), 188 p.

