

The Institute of Oceanography and Fisheries has performed the monitoring of physical, chemical and biological properties of the sea water at five stations in front of major Dalmatian towns (Zadar, Sibenik, Split, Ploce and Dubrovnik) ever since 1976.

The present paper presents the results of 14-year research of plankton parameters (phytoplankton density and biomass, zooplankton biomass, and diatom/dinoflagellate ratio), and the most important factors affecting this community (N-salts, P-PO₄, O₂ saturation, transparency). Data used were from Institute's internal publication (Studies and Reviews, 1977-1991).

Sibenik Bay was chosen (station S1) as an area of the highest, IV trophic level of Dalmatian area (VILICIC, 1989). Progressive eutrophication has caused very prominent changes in the plankton community which should be emphasized.

Plankton parameters are an order of magnitude higher here than at other stations. Sibenik Area Station S1 Position : 43°44'0"N; 15°53'5"E; Depth : 32 m Krka River discharges and town effluents are principal sources of eutrophication.

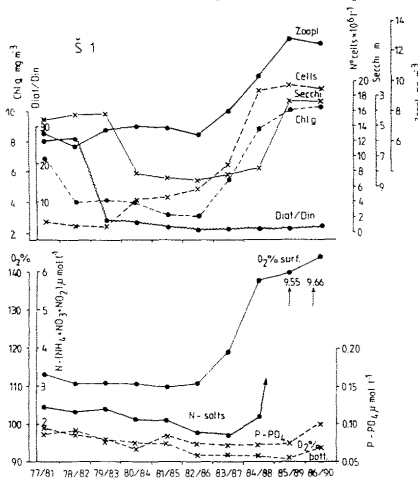


Fig. 1 : Annual trend in biological and chemical parameter in the Sibenik area, expressed as 5-year running averages.

Progressively higher oxygen saturation points are ascribed to increased photosynthetic activity in the surface layer. Although O₂ saturation had never been below 100%, it has recently reached values as high as 140%. However, bottom oxygen saturation tends to decrease as expected, even though the station is rather shallow.

Higher plankton quantities induced a reduction in the sea water transparency. Phytoplankton composition has also changed, so that the diatom to dinoflagellate ratio has been considerably altered in favour of dinoflagellates. *Prorocentrum minimum*, one of the species taking part in summer phytoplankton blooms in this area, has developed ever more intensive summer blooms (MARASOVIC, 1990). A greater proportion of dinoflagellates in the phytoplankton community, as a consequence of environmental enrichment, is well known in other coastal areas of the eastern Adriatic, as well (MARASOVIC and PUCHER-PETKOVIC, in press).

Whereas phosphates remained at the same level throughout the period of our research, the most recent annual series show an enormous increase of N-salts, particularly nitrates.

To conclude, described changes have in fact taken place in a relatively short time. The continuity of these processes are of serious concern, since they are indicative of the fact that natural fluctuations have been overwhelmed by land effects.

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