

The general planktonological characteristics of the North Adriatic during 1965

by

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During the year 1965 we have performed in the frame of the above mentioned Institute 10 expeditions (every month one, except October and November) visiting 18 stations covering homogeneously the whole North Adriatic from the line Premuda — Ancona to the north. The more precise data about the stations, oceanography etc. are evident from the other contributions on this assembly or from the last year's assembly C.I.E.S.M.

A great deal of work on these cruises was consecrated also to the study of the pelagic bioproduction, including the study of phyto-zoo- and ichthyoplankton. Phytoplankton we have collected with the membran filtration and the zooplankton with the vertical hauls by Hensen, the same hauls were used for the ichthyoplankton.

All the biological material was sorted out to the groups which are acceptable for the specialists and determined quantitatively in the frame of the program of the Mediterranean Marine Sorting Center, Salammbô. The details from those analyses will be published in another publication. Out of that material it was already published (by E. GHIRARDELLI and his assistants, by I. HOENIGMAN and J. ŠTIRN). The zooplankton problems shall be contributed on this assembly by prof. E. GHIRARDELLI and his assistants. The author will quote in this contribution some synthetic statements about the basic regime in the plankton of the North Adriatic.

The North Adriatic has on its disposal more or less permanently abundant reserves of the nutrient salts. The source of those is from the influx of the fresh waters and from the reactivation, partly from the detritus out of the north — adriatic born biomass and partly from the detritus out of the, in mass decayed, holoplanktons which are brought from the southern parts of the Adriatic by the constant entry current to the northern areas which are for them ecologically unsuitable.

The nutritive salts are distributed in the North Adriatic basin quite homogeneously and we can not see from that point of view an essential difference between the West — Po and East — istrian waters, which is else oceanologically quite evident (see the contribution about the oceanography of the North Adriatic on this assembly). In spite of that we can see already on the primary stage of the phytoplankton the obvious differences between the two different water masses so in the quantity as in the taxonomic structure. The eastern waters have otherwise quantitatively rich but typically Middle — adriatic phytoplankton but the phytoplankton of the western part is specific marked first of all by the mass development of *Nitzschia* and *Skeletonema* species.

The conditions of the zooplankton generally are forming quite evident connections with the fluctuation of the phytoplankton. In the first half of the year the biomass of the zooplankton increases parallelly with the biomass of the phytoplankton, the summit of the zooplankton falls in with the summer phytoplankton minimum. During the summer are given the best conditions for the development of the zooplankton, first of all because of the thermic and other abiotic factors but on the other hand because of the described conditions the phytoplankton productivity is lagging behind the consumption of the phytoplankton by the zooplankton what is otherwise characteristic for all the seas. The relations between phyto— and zooplankton and environmental factors is showing Fig. 1.

Rapp. Comm. int. Mer Médit., 20, 3, pp. 425-426 1 fig. (1971).

By the structure and by the biomass the zooplankton is following the typology of the water masses in the North Adriatic even more evidently as the phytoplankton.

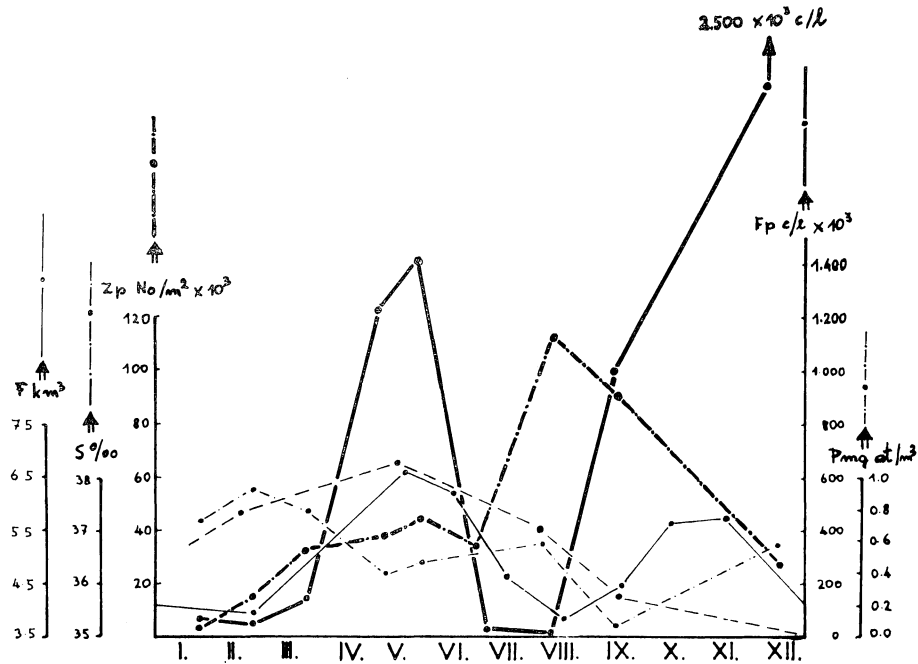


FIG. 1 — Relationship of rivers-inflow, salinity, phosphates phytoplankton and zooplankton during 1965 in North Adriatic.

In the warm season of the year the water masses of the North Adriatic are sharply divided into so-called « Middle — adriatic waters » which are covering the whole area as the bottom layer but in the whole column only a narrow ribbon along the Quarner and Istria, and into « Po-waters »

The plankton of the « Middle—adriatic waters » is poorer by the biomass, various by the species, less neritic and on the whole of the « Copepod-Middle — adriatic » type. From the pelagic fishes this area is inhabited by the pilchards. The waters of this area have relatively high salinity and calm thermic conditions. On the contrary have the «Po-waters» of the western larger part a low salinity and big thermic amplitudes. The plankton is very neritic, rich on the biomass but poor by species and it has a « Phyto — Cladocera » character. These waters are inhabited by the phenomenally rich population of the anchovy and are covering more then 2/3 of the North — adriatic basin. So they are giving the character to the whole North Adriatic of which shortly told pelagic characteristic is the chain « Nitschia-Penilia — Anchovy ».

In the cold season of the year, from December to March, the hydrological scheme in the North Adriatic is showing reversed picture of the summer situation. The Middle-adriatic waters are flowing into the north in a wide front on the surface and the deep cold northern waters are flowing out in a wide front only at the bottom towards south. In that season the pelagic biomass is on the whole the poorest, the most various by species, enriched by numerous forms of the plankton from the open Middle and South-adriatic waters which we can not find in the warm season of the year or very rarely. In that season of the year are quite regular phenomenon otherwise rare elements : Radiolaria, Foraminifera, Ctenophora, Ostracoda and Amphipoda. The presence of the greater quantities of those elements in the North Adriatic could be the indication of the spilling of the Middle-adriatic waters in a wide front towards north.