

SEASONAL QUANTITATIVE OBSERVATIONS ON THE ZOOPLANKTON
IN SEVERAL COASTAL ZONES OF THE LIGURIAN, TYRRHENIAN,
IONIAN AND ADRIATIC SEAS

by

ELSA MASSERA BOTTAZZI M. GABRIELLA ANDREOLI

Zoology Institute - University of Parma (Italy)

Summary - Results of the study on zooplankton samples collected in coastal zones facing Termoli and Metaponto are given. A synthesis of the 8 cruises data is reported comparing above all the plankton in the different seasons. The values of the mean settling/m³, percentages and number of individuals/m³ of the most representative zoological groups are analysed; some assumptions on their distribution at different depths are made.

Since 1973 we are carrying on a research programme concerning the study of the Mediterranean zooplankton in zones facing sites in which power plants are built or foreseen. Up to now we considered plankton samples relevant to 17 cruises and 6 different places: Vado Ligure in the Ligurian Sea, Tarquinia, Termini Imerese and Follonica in the Tyrrhenian Sea, Termoli in the Adriatic Sea and Metaponto in the Ionian Sea. For each sample the presences, percentages and number of individuals/m³ with regard to 23 zoological groups, which are the most frequent in the plankton, are determined. Till now only the plankton from Termoli and Metaponto has been studied in the four different seasons, and we intend to give in this paper summarizing results of these.

Termoli (middle Adriatic Sea)

The samples have been collected in January (22 samples), May (22 samples), September (26 samples) and November (25 samples) 1975 in a coastal zone extending between the Trigno River mouth and the Fortore River one. First of all we could remark a certain difference between the samples collected in January, generally all rather monotonous, and those from the other periods in which there are samples either rather monotonous or quite various. The plankton collected in January, as a whole, is rather monotonous, that of May and September is extremely various, whereas that of November is still rather monotonous. As concerns the quantitative data, on the basis of the planktonic organisms/m³ density, we can notice how the November plankton, even if monotonous, is the richest (total number of individuals/m³ = 10831) if compared with that of September and May (5960 ind./m³ and 5557 ind./m³) and above all of January (2368 ind./m³). The biomass data referring to mean values of settling per m³ of filtered sea water, show that November plankton is still the richest (2.95 cc/m³) but unlike the density relevant to the individuals/m³, the plankton of January (2.65 cc/m³) is richer than that of May (1.08 cc/m³) and of September (1.57 cc/m³). It is possible to remark, on the basis of percentages, that in all series the group which is obviously the most abundant is that of the Copepoda with percentages of 69.41% (January), 68.04% (May), 53.68% (September) and 54.32% (November). Quantitatively the highest value of Copepoda is, on the contrary, in November (5573/m³) if compared with May (3897/m³), September (3157/m³) and January (1601/m³). In the

samples of January, after Copepoda, there is a prevalence of Nauplii (15.39% and 382 ind./m³), of Acantharia in those of May (10.37% and 476 ind./m³), of Cladocera in those of September (17.80% and 735 ind./m³) and still of Cladocera in those of November (30.49% and 3848 ind./m³). The larval forms considered (7 in total) are more abundant in January (460 ind./m³ and 17.90%) than in September (364 ind./m³ and 4.28%), in November (317 ind./m³ and 3.05%) and in May (104 ind./m³ and 2.17%). Making comparisons on the basis of the depth, we can say that the mean value/m³ of the settling varies in all periods decreasing gradually from 5 to 50 m. At the same way the Copepoda are more abundant in the superficial layers, except in January when the richest layer is that at 25 m depth. On the contrary the prevalence of Acantharia+Radiolaria is, in all periods, at 25 m depth, while in September they are more abundant at 5 m depth.

Metaponto (Ionian Sea)

The samples have been collected in October 1974 (23 samples), February 1975 (28 samples), August 1975 (28 samples) and December 1975 (27 samples) in a coastal zone extending from the Sinni River mouth to that of the Basento River. In any period considered the plankton is very various, although, if we refer to the single samples, there are differences in the four series; in October the samples are not completely monotonous or various, in February, mainly various, in August monotonous, in December generally various. As concerns quantitative data, we can remark that the richest plankton is that of August with a mean value of 3445 ind./m³, followed by that of December with 2903 ind./m³; remarkably lower values are found in February (885 ind./m³) and in October (781 ind./m³). The values of the settling per m³ are rather low: 0.75 cc/m³ in December, 0.40 cc/m³ in August, 0.27 cc/m³ in February and October. The Copepoda are the most abundant group in all series, but their percentage is very different: in February they represent the 83.09% of the whole plankton, in August the 44.25%, in October the 47.62% and in December the 66.76%. If we consider their density/m³ as number of individuals, they are more abundant in December (1934 ind./m³), decrease in August (1493 ind./m³) and are scarce in February (721 ind./m³) and October (393 ind./m³). After the Copepoda, the Acantharia are the most abundant group, at least in three periods, with a percentage of 42.10% in August and 1433 ind./m³, of 36.44% and 273 ind./m³ in October, and in December they are the 10.35% of the plankton with 316 ind./m³. The larval forms result more abundant in December (10.13% and 250 ind./m³) than in February (7.17% and 69 ind./m³), August (1.76% and 57 ind./m³) and October (0.99% and 10 ind./m³). It is possible to note that the settling/m³ value is higher in the collections from 25 m depth in August, October and December; in February, on the contrary, the highest value corresponds to 50 m depth collections. The Copepoda are more abundant at the 25 m layer in February, October and December, whereas in August they reach the highest value of density at 5 m. The distribution of Acantharia+Radiolaria is more various, that is, in August and October they are more abundant at 25 m, in February at 5 m, and in December at 50 m depth.