

## TWO YEAR RESEARCH IN THE LAGOON OF MARANO (NORTH ADRIATIC SEA)

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Summary: Two year research on phyto- and zooplankton community of the Lagoon of Marano (North Adriatic Sea) are reported. The phytoplankton community is always characterized by the dominant Diatoms, mostly Pennales, the zooplankton community by a few species with a wide ecological tolerance, mainly *Acartia clausi*.

Resumé: On reporte les résultats de deux années de recherches sur la communauté zoo- et phytoplanctonique de la lagune de Marano (Haute Adriatique). La communauté phytoplanctonique est caractérisée par les Diatomées Pennales, le zooplancton est caractérisé par un nombre peu élevé d'espèces qui ont une large tolérance écologique, en particulier par *Acartia clausi*.

Since a few years a research project on the North Adriatic lagoons has been carried on in order to gain a better knowledge of their ecosystems. The lagoons of Marano and Grado, in particular have been dealt with by Ghirardelli & al., 1979; Fonda Umani & al., 1979a, 1979b, 1982a, 1982b; Specchi & al., 1981 and Tolomio 1976, 1977.

The present paper is a report on the information obtained during two years of planktonological research in the lagoon of Marano. A station, located in the center of the lagoon over a depth of 1.5 m was sampled by monthly from February 1980 to March 1982. Phytoplankton was collected by means of a Niskin bottle and qualitative zooplankton samples by means of a VP 2 (200  $\mu\text{m}$  mesh size) net. Phytoplankton - The community is dominated by Diatoms, mostly Pennales, with variable proportions from year to year. The genera *Sinedra*, *Navicula* and

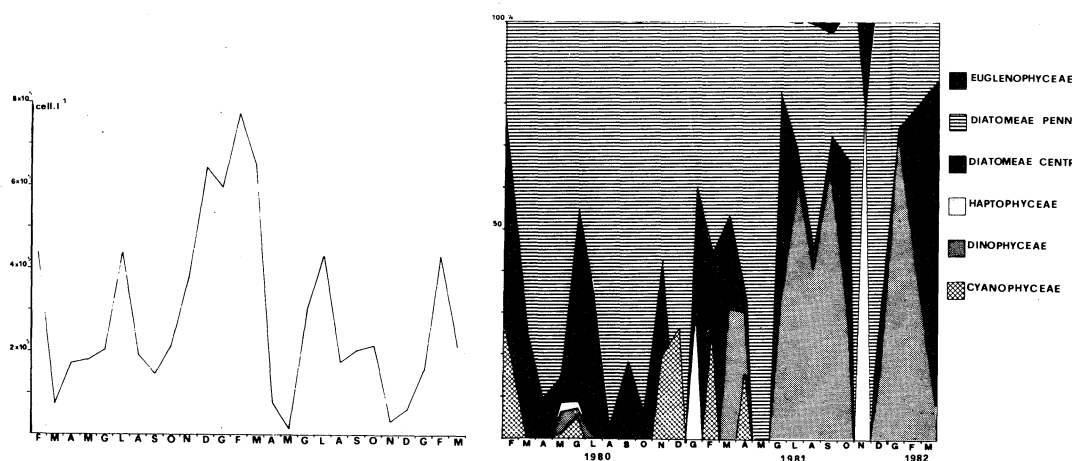


fig.1 Qualitative and quantitative distribution of phytoplankton.

*Rhizosolenia* represent the bulk of the Centrales. During the first year Dinophyceae were particularly scarce, their percentage increasing in summer 1981 and early 1982, due to an increase of *Exuviella*, *Gymnodinium* and *Prorocentrum*. On the contrary Cyanophyceae (Oscillatoriaceae) were more abundant during 1980. The percentage of Haptophyceae was always low. Euglenophyceae appear in the community during the second year, although with a low percentage. From a qualitative point of view, during the second year a quantitative important presence of more typically marine elements was observed. In fact fresh water forms (Oscillatoriaceae) decrease while Dinophyceae increase, shifting the D/P (Diatoms/Peridinaes) ratio toward values close to marine ones. From a quantitative point of view, the phytoplankton standing stock does not show particularly high values. Peak values of about  $8 \times 10^5$  cells/l were observed. These values are definitely lower than those reported from other brackish water environments of the Northern Adriatic (i.e.  $75 \times 10^6$  cells/l in the Sacca del Canarin, by Solazzi & al., 1979) and from the Gulf of Trieste in 1980 ( $14 \times 10^6$  cells/l) by Fonda Umani & al. (in press). The peaks appear regularly in late spring and early autumn. No significant quantitative differences were observed between the two years.

Zooplankton - The community trends in this lagoon have already been described by Specchi & al., 1981 and Fonda Umani & al., 1982, who have pointed out the almost complete dominance of a few species characterized by a wide ecological tolerance, such as *Acartia clausi*, *Oithona* sp.p., *Clausocalanus* sp.p. etc. This dominance is the result of a strong selection on the zooplankton community originating from the Gulf of Trieste which feeds the lagoon. *Acartia clausi* showed the highest dominance, due its adaptation capacity as well as to a decrease of interspecific competition resulting from the exclusion of less tolerant species. The incoming tide accounts for the presence of other species passively shifting into the lagoon but not reproducing there. Difference affect mainly *Penilia avirostris*, *Clausocalanus* sp.p. and *Noctiluca miliaris*. The presence of *N. miliaris* shifted the usual temporal pattern of the zooplankton community of the lagoon by excluding *P. avirostris* in July, a period usually corresponding to the maximum swarming for this species. In 1981, with scarce quantities of *N. miliaris* an increase of *P. avirostris* was observed, although it did not reach the quantitative levels characteristic of the sea.

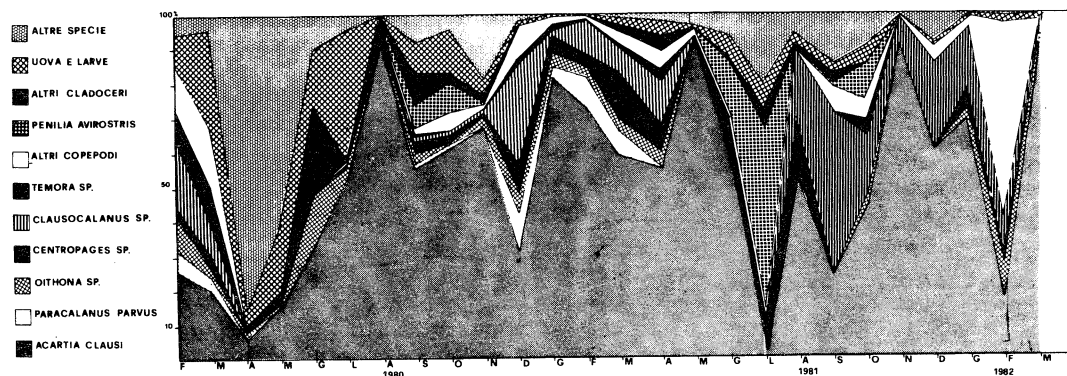


fig.2 Qualitative distribution of zooplankton.

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