

SPECIFIC DIVERSITY OF PHYTOPLANKTON IN A NORTHERN ADRIATIC COASTAL LAGOON

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In the North Adriatic Sea the main brackish areas are located in its Eastern part: the lagoon of Venice and the lagoons of Grado and Marano. The first studies on phytoplankton of the Marano and Grado lagoons are dated 1976 (TOLOMIO, 1976); recently FONDA UMANI and SPECCHI (1983) and CABRINI *et al.* (1993) have integrated researches on these environments, in order to gain a better understanding of the biological community. The trophic availability of this ecosystem, due to the primary production, sustains an intensive aquaculture activity and therefore it is necessary to assess the specific phytoplankton composition and its abundance. The specific diversity and the biomass are influenced by the effects of tide hydrodynamism and the chemical-physical factors, particularly salinity.

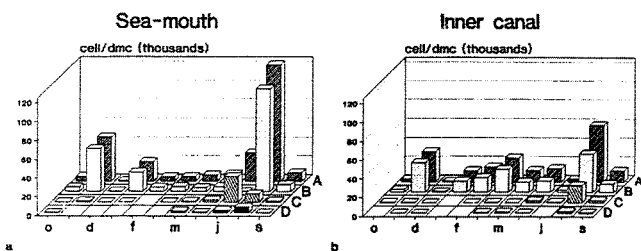
To continue the previous observations, a study on seasonal dynamics of phytoplankton was carried out from October 1990 to September 1991. In two stations in the Marano lagoon, environmental parameters were recorded and samples of surface water were collected to determine the microalgae according to the Utermöhl method. The first station was located near one of the mouths of the lagoon, the second one in its inner part. On phytoplankton matrices we applied three indexes of specific diversity to characterize the richness (Margalef), equitability (Pielou) and diversity (Shannon) of the two stations (GANIS, 1991).

Phytoplankton data do not allow us to pinpoint any typical lagoon community, but show that a few marine species can survive in such a variable environment. The diatoms are dominant in this ecosystem (Fig. 1 a and b); *Cerataulina pelagica* with 89200 cells/l and *Nitzschia gr. Pseudonitzschia* with 45200 cells/l, are the most abundant species. The dinoflagellates are usually scarce; the highest value is reached by *Prorocentrum minimum* with a maximum of only 19920 cells/l. *Cryptophyceae*, *Prymnesiophyceae* and *Euglenophyceae* are also found, but always in low concentrations.

Among the identified species, eleven are present in both stations, another thirteen are present at the sea mouth, while only three are typical of the inner canal. In this station the Pielou index presents elevated values that shows an equidistribution of the species during the year. The specific diversity is always rather low in both stations and the highest values of the Shannon index, with a maximum of 1.737, are reached in the inner part of the lagoon. In this site both the richness and the microalgal biomass are low. The station on the sea-mouth presents lower values of the Shannon index than in the inner canal, but the Margalef index and the cell density are generally higher.

The phytoplankton of the Marano lagoon is not a typical brackish microalgal community and the specific diversity increases from the sea mouth to the inner canal. In summer and autumn the highest biomass is found in the outer part of the lagoon, while in spring it is more abundant in the inner station. However the phytoplankton density is not very high if referred to the sea coastal community. In spite of this the mariculture activities are intensive in this lagoon, sustained probably by small species belonging to picoplankton fraction. The specific composition and the biomass of this component, till now not well known, should be considered in future researches.

Fig. 1 (a and b) : A = Total phytoplankton; B = Diatoms;
C = Dinoflagellates; D = Others.



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