

FRESHWATER AND MARINE ZOOPLANKTON IN A LAGOON OF THE PO RIVER DELTA
(SACCA DEL CANARIN)

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ABSTRACT: Composition and abundance of the zooplankton in Sacca del Canarin are largely influenced by the water flow from the river and by the tidal currents. The role of predation by planktophagous fish as a factor of lowering zooplankton density is emphasized.

RÉSUMÉ: La composition et l'abondance du zooplancton dans la Sacca del Canarin sont largement influencées par les apports d'eau douce et par les rythmes de marée. Le rôle de la predation des poissons planctophages autant que facteur de baisse de la densité du zooplancton est souligné.

Research on composition and abundance of zooplankton was carried out from 1977 to 1980 in a lagoon of the Po River Delta, Sacca del Canarin. The lagoon covers an area of about 6 Km² between two terminal branches of the river, Po di Pila and Po di Tolle, from which it receives freshwater inputs from the north and the south respectively. To the west the lagoon is completely banked, to the east it is connected to the sea by two large mouths. The zooplankton in the lagoon includes holoplanktonic forms: marine (Copepoda, Cladocera and Tunicata), freshwater (principally Rotatoria) and brackish water (some species of Rotatoria as Brachionus plicatilis and of Copepoda as Calanipeda aquaedulcis); considerable importance is assumed by groups of meroplanktonic organisms: larvae of Polychaeta, Mollusca, Cirripedia and Decapoda.

The analysis of series of zooplankton samples collected monthly in succeeding years showed a high variability in time of the density and composition of the biocoenosis. Particularly low densities are found during winter and, generally, when the river is rising. Samples of zooplankton were also collected in the terminal branches of the river and in the marine environment close to the shore. The most important component of the autochthonous zooplankton in the lagoon is represented by nauplii of Cirripedia: this emerges from the comparison of the biocoenosis composition in the different sampling areas.

Series of samples gathered in the course of some 24-hour cycles in various stations of the lagoon were also examined; the space-time

variability of the zooplankton density was studied in relation to short-term variations of the hydrodynamic factors, especially of the tidal currents (Calvi Parisetti et al., 1980).

Hydrometric data (collected by CRIS-ENEL, Mestre) and zooplankton density data were gathered during a 24-hour sampling cycle on 11th-12th July 1979, at full moon tide and when the river was at low flow; these data were processed in order to evaluate the transporting of the zooplankton by the tidal currents. The results of the processing show that the lagoon exports toward the sea a considerable part of its native zooplankton (larvae of Cirripedia and also of Decapoda). Instead, the lagoon receives from the sea an important contribution of planktonic biomass represented by neritic organisms (Copepoda, Cladocera, Tunicata, larvae of Polychaeta and of Mollusca), which return to the sea only partially with the ebb tide. These organisms evidently assume an important role in the trophic structure of the lagoon; in particular, they become part of the diet of various species of planktophagous fish (Ferrari et al., 1978). The results of a research on the feeding of juvenile stages of Liza saliens (Mugilidae) in the lagoon lay stress on the importance of neritic zooplankton in the diet of the smaller sized fry; these feed mainly on larvae of Cirripedia and of Polychaeta, terrestrial insects, Rotatoria and marine Copepoda and Cladocera.

References

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