

This study is a part of a wider research to investigate the transformations in time and space of the phytoceenoses typical of the Northern Adriatic Sea (and particularly in the Gulf of Trieste).

Attention has been concentrated on the circalitoral zone and specifically on the facies with sea bed currents.

The vegetal sampled forms are: *Lithophyllum racemus* (LAMARCK) FOSLIE, in the biocoenosis of the coarse sands and fine gravels under bottom currents (SGCF); *Lithothamnion corallioides* CROUAN et CROUAN and *Phymatolithon calcareum* (PALLAS) ADEY et MC KIBBIN characteristic species of the maërl, facies of the biocoenosis of the coastal detritic (DC); and *Spongites (Lithothamnium) fruticulosa* KUTZING and *Lithothamnion valens* FOSLIE, facies of DC (PERES, 1967).

These species are very useful as indicators of environmental changes: both from the spatial point of view, as rolling algae because of their dependence on the currents and as calcareous structure because of their dependence on the water variation of pH, salinity and temperature; and from the temporal point of view, because they are perennial species, reflecting the variations of many years.

The mapping of maërl distribution has involved a wide area from Grado to Venice (NICHETTO, 1990) including 15 sampling sites in Italian waters and one reference taken at Rovinj (Croatia).

Five samples have been taken from each sampling site; the algae have been defined, weighed (dry weight), submitted to physiological checking (photosynthetic analyses, to discover the relationship between pigments and functionality) and as well as being submitted to isotopic analysis (in order to show up possible differences among the sampling areas); the data were combined into matrix and thereafter elaborated by multivariate analysis (BRESSAN & NICHETTO, 1992).

A gradual increase in biomass from the samples taken from the area of Grado to that of Venice (fig 1 & 2) has been noted.

This observation has been confirmed by the results of the eco-physiological experiences (analysis of photosynthetic capability of thalli with different pigmentation (NICHETTO & GHIRARDELLI, in presentation), that show that the majority of living samples are found near Venice, and propose again, in functional terms, the gradient of average abundance (fig. 2).

The results are also confirmed by isotopical analyses conducted on calcium carbonate of ground samples of thalli, that show up quite big differences between the sampling areas of Grado, Caorle and Venice (NICHETTO, 1990).

From a temporal point of view we noted a contraction in the areals since the previous situation as described by the "Carta di pesca del Golfo di Trieste (CNR, 1968) and by BRESSAN (1968, personal communication) and OREL, VIO & ZANITTI (1981-82).

In synthesis two gradients of abundance and luxuriance of calcareous species can be seen: the first parallel to the coast line (from the Grado to the Venice one) and the second (in Venice area) perpendicular to the coast, towards the centre of the Adriatic Sea (fig. 3). This first description of the event could be interpreted by environmental means with a better knowledge of: a) variation of sedimentary rhythm (continental waters) of the Northern Adriatic Sea and consequent adaptation of the maërl species in the investigated areas; b) granulometric gradient (inshore/offshore); c) hydrical trophism and therefore eutrophy/oligotrophy gradient (inshore/offshore and surface/bottom).

These first results are also confirmed by observing one particularly rich reference sampling site (S. Giovanni in Pelago - Rovinj - Croatia). The data from this site are very different from those previously referred to.

Therefore the Rovinj site seems to be closer to the climax of maërl facies.

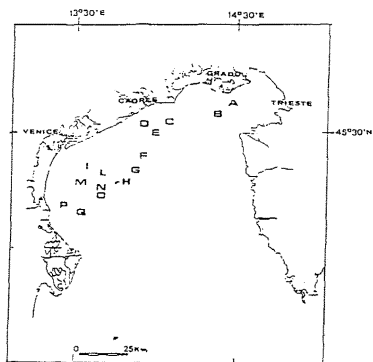
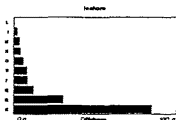


fig.1 - map of the zone



fig.2 - gradient of average abundance
fig.3 - gradient of abundance (tot. of 6 weighing)



REFERENCES

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