

Some observations on the specific diversity of benthic macroalgae in the Northern Adriatic Sea

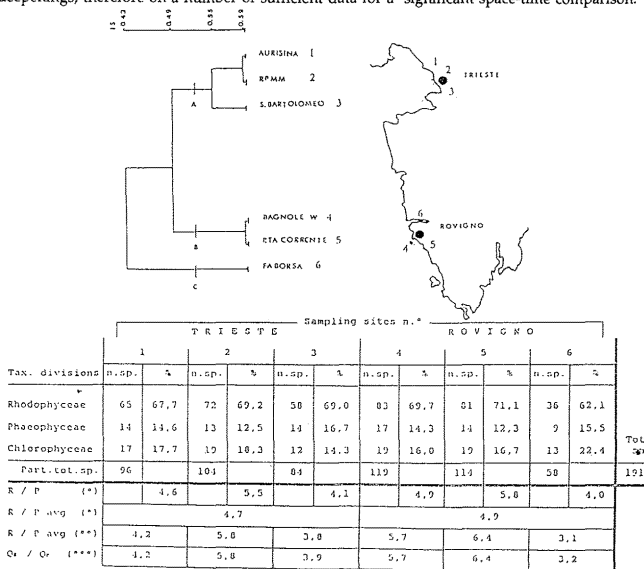
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The study of macrophytobenthos is generally considered to be a useful reference (and even necessary) to the interpretation of space-time transformations of the sea environments. The object of this work is just that to bring into evidence some quali-quantitative modifications of algal flora in the Northern Adriatic Sea in comparison with the latitudinal expansion of the coast, and to understand the meaning of the aforesaid transformations. The sampling sites, chosen to start this kind of research, have been located near: Aurisina (1), Natural Reserve of Miramare (2) and S. Bartolomeo (3) in Trieste (Italy); Bagnole W (4), Punta Corrente (5) and Faborsa (6) in Rovinj (Croatia) (fig.1). The sampling was carried out in the years 1989-1990, at a seasonal cadence, in a bathymetric interval that goes from mesolitoral level to inferior horizon of the infralitoral. The collected data have been arranged in a matrix, to which have been applied the cluster analysis.

On the basis of biotic classification relative to floral spectres (presence-absence of 191 species) in the different sampling sites, allowed the dendrogram (fig. 1) to bring into evidence, a clear-cut separation (IS < 0.55) among the sampling sites of Trieste (cluster A; IS = 0.55) and the ones of Rovinj (cluster B; IS = 0.59). The sampling site of Faborsa (cluster C; IS = 0.43), shows in this dendrogram a different position, due to the fact that in such a locality, owing to a unfavourable meteoric conditions, hasn't been possible to carry out the autumnal sampling with the consequent loss of information. The difference of the floral spectres of the sampling sites, that has been taken into consideration, seems to bring into evidence a biotic distinction, which is characterized by: a) a progressive retreat of some species from the Gulf of Trieste (as, e.g.: *Sargassum hornschurchii* C. AGARDH, *Acetabularia acetabulum* (LINNEO) SILVA, *Sphaerococcus coronopifolius* STACKHOUSE and an isolation in small relict areas of others species, which instead were presented in the past (as, e.g.: *Cystoseira amentacea* BORY var. *spicata* (ERCEGOVIC) GIACCONE and *C. compressa* (ESPER) GERLOFF et NIZAMUDDIN *Hydroclathrus clathratus* (BORY ex C. AGARDH) HOWE, *Cladostephus spongiosus* f. *verticillatus* (LIGHTFOOT) PRUD'HOMME VAN REINE, *Peyssonnelia polymorpha* (ZAN.) SCHMITZ, *Posidonia oceanica* (LINNEO) DELILE); b) the recent appearance of species with wide spectre of ecological valence (*Codium fragile* (SURINGAR) HARIOT) in all the Gulf of Trieste. In fact this gulf, real and quite "cul de sac" inside of the Northern Adriatic Sea, is characterized, in comparison with the istrian coast, by: a lesser water replacement and a larger sedimentary regime, besides by a different geology and geomorphology. These environment conditions are moreover those ones that must have helped the upstart of sciaphilous species from bionomical level below (BRESSAN et al., 1991).

With the help of tab. 1, it was possible to bring into evidence: a) a relatively high value (4,0-5,8) of biogeographical index R/P ($1 \leq R/P \leq 4$) by FELDMANN (1938), due to an increase of the percentage of *Rhodophyceae* and a parallel reduction on percentage of *Phaeophyceae*. Such index, that has been calculated also according to the different formulations of BOUDOURESQUE (1971) and of CORMACI et al. (1985), has turned out to be almost always out of scale (> 4) (tab. 1) and this, not so much why the Northern Adriatic Sea is to be considered biogeographically "tropical", but because the value of such index, also on the basis of specialized scientific literature, seems to suffer the environment alterations, losing the initial property (FELDMANN, 1938) of corological characterization; b) a low number (= 10%) of eutrophic tionitrofile species, which are typical of polluted areas, as e.g. *Enteromorpha intestinalis* (LINNEO) LINK, *E. crinita* (ROTH) J. AGARDH, *Codium vermilara* (OLIVI) DELLE CHIAJE, *C. fragile* (SURINGAR) HARIOT, *Ulva laeteviens* ARESCHOUG, *Pterocladia capillacea* (GELIN) BORNET, etc.; c) a reduction of total number of species in comparison with the work of VATOVA (1928) in Rovinj and of GIACCONE (1967) in Trieste. Beyond the limits of comparison due to the methodological, instrumental and cultural differences, the objectiveness of this last observation will be trustworthy only on the basis of subsequent deepening, therefore on a number of sufficient data for a significant space-time comparison.



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