

Some seasonal associations of benthic marine algae from the Northern Adriatic

by

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Abstract

Some seasonal associations of benthic marine algae from the surroundings of Rovinj are treated concerning their floristic composition and biomass. During the spring aspect of the vegetation, associations of *Ceramium diaphanum*, of *Scytosiphon lomentaria* and of *Cladophora dalmatica* were prolific in the area, being succeeded by associations of *Padina pavonia*, of *Wrangelia penicillata* and of *Laurencia obtusa* in summer.

Résumé

On traite quelques associations saisonnières des algues benthiques près de Rovinj, concernant leur composition floristique et leur biomasse. Au temps de la végétation printanière, les associations de *Ceramium diaphanum*, de *Scytosiphon lomentaria* et de *Cladophora dalmatica* étaient exubérantes dans cette région, et elles ont été suivies en été par les associations de *Padina pavonia*, de *Wrangelia penicillata* et de *Laurencia obtusa*.

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Investigations of the benthic algal vegetation were carried out in the surroundings of Rovinj between 1967 and 1969. Data of a detailed ecological survey of the algal vegetation of this area revealed the presence of several conspicuous algal associations. The perennial associations of fucoids exhibit a certain seasonal rhythm and assume different aspects in the course of a year [e.g. MUNDA, 1972]. Beside, a seasonal succession of some benthic associations was observed in the same area.

The vegetation units were estimated in the sense of WESTHOFF [1951]. The floristic composition and the biomass within the algal settlements was taken into consideration.

Determinations of biomass were done in the entire area investigated [MUNDA, 1973].

Spring associations

1. A *Ceramium diaphanum* association was found mainly in the period from February to April, occupying moderately sloping rocky surfaces in the lower eulittoral zone and in the upper sublittoral. The most usual position of this association was between belts of *Fucus virsoides* and those of *Cystoseira* species.

The association appeared as two layered, dendritic and crustaceous species being represented in the undergrowth (*Hildenbrandia prototypus*, *Ralfsia* sp., *Lithothamnion lenormandii*, *L. polymorphum*, *Gelidiella lubrica*, *Gelidium melanoideum*, *Sphacelaria olivacea*). As companion species *Ceramium ciliatum*, *Polysiphonia elongata* and *P. furcellata* were found.

The average biomass within this association was 1200 g per square meter, corresponding to a production of 25 g ash and 13 g of protein for the same unit area, calculated on a dry weight basis.

2. A *Scytosiphon lomentaria* association occurred during the same period, but was not belt forming. It occurred sporadically in tide pools and around the eulittoral/sublittoral junction. Within this three layered associations the same crustaceous and dendritic floristic elements were present in the undergrowth. *Ectocarpus siliculosus*, *Polysiphonia elongata*, *P. sertularioides*, *Callithamnion corymbosum*, *Ulva rigida*, *Enteromorpha intestinalis* were represented as companion species. Average biomass values were relatively low (580 g fresh weight per square meter).

3. *Cladophora dalmatica* was forming conspicuous settlements on surf swept platforms during spring, in the level of the upper eulittoral zone and the littoral fringe. Only a few companion species were found within this two layered associations. The average biomass was 1220 g/m², corresponding to a production of 2,7 g of protein per the same surface unit.

4. A one layered association of *Polysiphonia furcellata* was found during spring in the tide pools, with an average biomass of 32 g/m². Like in the case of the above named association, no succeeding summer association was found.

Summer associations

1. A *Padina pavonia* association was outstanding during summer, replacing the *Ceramium diaphanum* and *Scytosiphon lomentaria* associations. The undergrowth, described for the spring aspect, proved to be perennial, whereas *Bryopsis plumosa*, *Ulva rigida*, *Laurencia obtusa*, *Cladophora pellucida* were found as companion species beside many others. An average biomass of 1320 g/m² was found within the settlements, having a production of 7,5 g/m² of protein.

2. A *Laurencia obtusa* association appeared around the eulittoral/sublittoral junction and in eulittoral depressions. In this three layered associations the following companion species were usual : *Wrangelia penicillata*, *Padina pavonia*, *Dictyota dichotoma*, *Alsidium helminthochortos*, *Ulva rigida*. Biomass values of 300 to 500 g fresh weight per square meter were found.

3. A *Wrangelia penicillata* association was common in the sublittoral, with an average biomass of 350 g/m² and *Cystoseira barbata*, *C. adriatica*, *Laurencia obtusa*, *Amphiroa cryptarthrodia*, *Padina pavonia* as companion species.

4. *Acetabularia mediterranea* association was forming in the eulittoral level with average biomass values of 240 g/m².

References

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