

Determination of luxuriance of rolling *Calcareous thalli*

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The determination of the luxuriance of rolling calcareous algae has been the basis of a study of the Northern Adriatic circalitoral phytozoenoses dynamic (NICHETTO & BRESSAN, in presentation).

This study considered the vegetal forms present on the mobile bottom crossed by currents, offshore Grado, Caorle and Venice.

The species of the area are mostly free forms: *Lithophyllum racemus* (LAMARCK) FOSLIE, *Lithothamnium corallioides* CROUAN, *Phymatolithon calcareum* (PALLAS) ADEY et MC KIBBIN, *Spongites* (*Lithothamnium*) *fruticulosa* KUTZING and *Lithothamnium valens* FOSLIE.

The perennial and carbonatic structure of these algae make their presence possible in the sediment for many years.

Making a distinction between living and dead thalli is therefore indispensable for areal mapping.

Alga vitality or luxuriance can be estimated by the evaluation of:

- photosynthesis (production)
- reproduction
- development (differentiation and growth).

But it is not very easy to determine the reproduction period of maërl species (conceptacles mainly immersed in the thallus) and its growth intensity (the dimensions vary with its age and also with its rolling capability). Therefore it seemed proper to observe the photosynthetic capability, which is easier to analyse.

Two series of analysis were made:

I period (1989-90): observation of:

- a) oxygen production of in-situ incubating, by the Winkler method;
- b) the status of the pigments (spectrophotometric analysis of Chlorophyll a and R-Phycocerythrins);
- c) previous data elaboration.

The application of the methods required a calibration period, which showed that the usage of *Lithophyllum racemus* (more abundant in the different colours) is preferable.

II period (1991): search for proof of the results of the previous period, by means of a different approach which involves:

- a) oxygen production measures, using the Clark electrode (DELIEU T. & D.A. WALKER, 1972; WALKER D.A., 1987);
- b) chlorophyll extraction by N-N-dimethyl-formamide and her subsequent spectrophotometric analysis at 730nm and 665nm;
- c) weighing of the samples;
- d) data elaboration.

This permitted the laboratory re-creation of the natural environment and the usage of the same thallus for the pigment analysis. The latter approach made possible the correlation of the oxygen quantity production with the pigment producer.

The results of the I period (tab.1) showed a different capability of oxygen production by R algae (code scale Seguy: 9, 14, 72, 74, 89, 105, 143, 148 red), from the B ones (code scale Seguy: 193, 199 white) and the G ones (code scale Seguy: 133 grey). Instead the M algae (code scale Seguy: 112, 131, 201 brown) demonstrated intermediate behaviour. The analysis of the pigments confirmed the sharp difference of viability between the R thalli and the others.

The results of the II period follow the same trend as the I set of analysis (tab. 2 & fig.1). The R algae were statistically (test of Student) separated from the M, B and G ones, on each day of analysis, from June to November.

Therefore we can conclude that only the R thalli can be considered alive.

In mapping the areas the proportion between the R and M, B, G ones should be considered to ascertain the greater or lesser luxuriance of an areal.

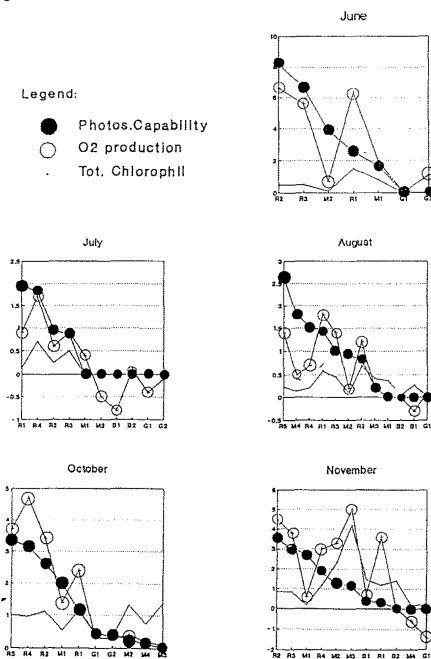


Fig. 1.- Grafic elaboration of data

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