STUDIES ON THE EPIPHYTIC DIATOMS OF POSIDONIA OCEANICA (L.) Delile LEAVES

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Resumé: On a étudié le peuplement à Diatomées épiphytes sur les feuilles de *Posidonia oceanica* (L.) Delile d'un herbier de l'île d'Ischia (Golfe de Naples). On a trouvé 93 espèces dont les *Pennatae* représentent le 96,4%. La microflore à Diatomées comprend des espèces qui sont aussi épiphytes sur des autres phanérogames marines, et aussi des espèces du "metaphyton".

A study of the structure and distributional pattern of epiphytic Diatom vegetation on *Posidonia oceanica* (L.) Delile was undertaken considering the following foliage parameters: leaf age, position in the bundle, leaf strata and vitality of leaf portion (green and brown regions). In the present paper only the species composition is considered.
The samples were collected in September 1980, in a shallow (5m) prairie off Lacco Ameno; the phenology and epiphytic community of the plant in this area have also been studied (WITTMANN et al. 1981). Ten bundles were collected, length and width of the leaves were measured, and each leaf was distinguished as to its position in the bundle. Each leaf was divided into three portions: basal, central and apical region. The Diatom flora was identified from one cm^2 sample taken from both sides of the blades for each portion. During the sampling period, a mean of 5 leaves per bundle was observed with the oldest and outermost leaf (n.5) having the maximum length and leaves n.1 and n.2 being very short relative to the others (Fig.1). The maximum number of Diatom species occurred in the intermediary leaves (n.3 and n.4) with a sharp increase from leaf n.2 to n.3 and a slight decrease for the oldest leaf (n.5) (Fig.2).
The species composition consisted of 93 species or varieties belonging to 8 families, representing the following 29 genera:
Coscinodiscus, Hyalodiscus, Biddulphia, Fragilaria, Dimerogramma, Opephora, Cymatosira, Striatella, Synedra, Lichmophora, Podocystis, Grammatophora, Rhabdonema, Achnanthes, Cocconeis, Campyloneis, Navicula, Diploneis, Caloneis, Trachineis, Mastogloia, Pleurosygma, Amphiprora, Auricula, Amphora, Rhopalodia, Bacillaria, Nitzschia, Campylodiscus.
Of the 29 genera found, only 5 had more than 5 species and the majority (96.4%) belonged to the *Pennatae*, many of which are considered obligately epiphytic. Among the genera with many species, *Cocconeis (Cocconeis britannica, C. costata, C. placentula* var. *euglypta, C. pseudomarginata, C. scutellum)* attached to the leaf surface by a valve, formed a crust layer on both side of blade; most of these species, are considered early colonizers of the seagrasses surface and

were present on both the basal and distal portion of all leaves (MAZZELLA et al., in press). Besides *Cocconeis*, other species such as *Fragilaria hyalina*, *F. striatula*, *Grammatophora oceanica*, *Lichmophora gracilis*, *L. abbreviata*, *Synedra investiens*, *S. tabulata* were frequent on all leaves and were attached to the leaf surface by means of a mucilage-stalk. *Navicula*, *Mastogloia*, *Amphora* and *Nitzschia* were genera with many species, some of which were found in low frequencies. Among the most common were tube-forming species like *Navicula ramosissima*, *Nitzschia vidovichii*, others attached to the blade by a mucilage-pad like *Amphora (Amphora angusta*, *A. bigibba*, *A. ostrearia*, *A. leavis*, *A. marina)* associated with a motile or slightly motile species without any obvious mode of attachment. The motile species expecially *Mastogloia (Mastogloia capitata*, *M. ignorata*, *M. lanceolata*, *M. mediterranea*, *M. quinquecostata)* and *Rhopalodia musculus* were more frequent towards the distal portion of the leaves and some of them were entrapped among the other epiphytic algae of *Posidonia oceanica*.

In conclusion, the Diatom microflora on the leaves of *Posidonia oceanica* is composed of many epiphytic species which are also very abundant on other seagrasses like *Zostera marina*, associated with an other fraction considered by some authors as "metaphyton" (ROUND, 1981).

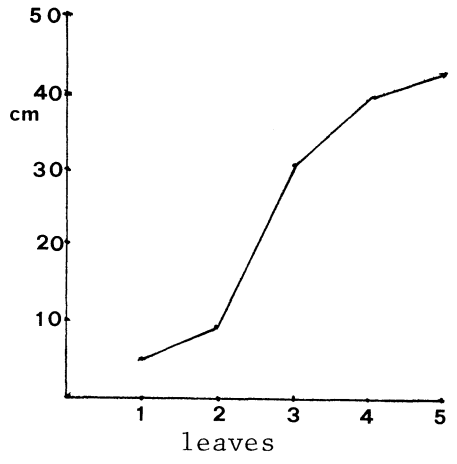

Fig.1 - Mean length of *P. oceanica* leaves

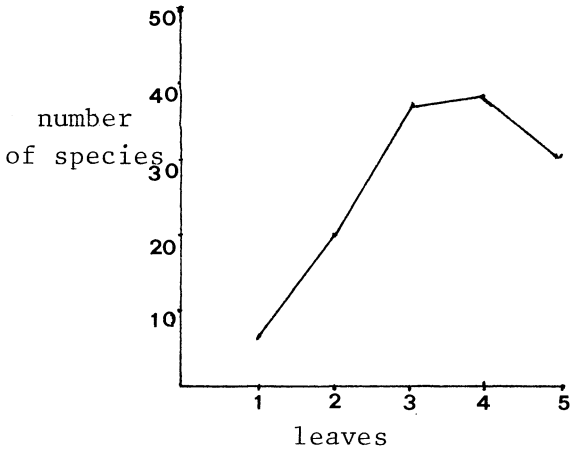

Fig.2 - Distribution of Diatom species on the leaves of *P. oceanica*

References

MAZZELLA L.,K. WITTMANN & E. FRESI, in press. La comunità epifitica e suo ruolo nella dinamica dell'ecosistema Posidonia. Atti Convegno CNR,Nov.1981

ROUND F. E. ,1981. The ecology of the Algae. Cambridge Univ. Press.

WITTMANN K., L. MAZZELLA & E. FRESI,1981. Age specific patterns of leaf growth: their determination and importance for epiphytic colonization in *Posidonia oceanica*(L.) Delile. Rapp.Comm.int. Mer Medit.,27(2),189-191.