

DISTRIBUTION AND DIEL VARIATIONS OF MOLLUSK SYNTAXON IN A POSIDONIA OCEANICA (L.) Delile MEADOW

by

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Résumé. On a étudié les variations nycthémerales et la zonation de la communauté à Mollusques dans une herbier de *Posidonia oceanica*. Bien que les migrations nycthémerales y produisent des variations quali-quantitatives, la communauté ne montre que des modifications structurales modestes. Le modèle de zonation en fonction de la profondeur ne montre aucune variation liée au cycle nycthémeral.

According to LEDOYER (1962, 1966, 1969) the vagile fauna associated to *Posidonia oceanica* undergoes important night migrations along the vertical axis of the plant. Mollusks play an important role in this phenomenon, but individual species behave differently and can be classified as follows (LEDOYER, 1962): a) species occurring exclusively at night (e.g. *Clanculus cruciatus* and *Bulla striata*); b) species occurring preferentially at night (e.g. *Gibbula ardens*, *Tricolia pullus*, *Tricolia speciosa*, *Columbella rustica*, *Gibberula philippii* and *Gibberulina clandestina*); c) species occurring preferentially during the day (e.g. *Bittium reticulatum*); d) species without diel migrations (e.g. *Jujubinus striatus* and the Rissoids).

In the framework of a research program on the distribution and the dynamics of the Mollusk syntaxon associated to a *Posidonia oceanica* bed at Lacco Ameno (Island of Ischia), we re-investigated the phenomenon on a quantitative basis. The aim of this study was also to test the possible influence of diel migrations on the vertical zonation of the syntaxon described by IDATO et Al. (in press). Day and night samples were obtained by a hand-towed net, as described by LEDOYER (1962), along a depth transect (1, 3, 10, 15, 25 m). Species were fully identified and enumerated; log-transformed data were analysed by means of Principal Component Analysis (Q-mode); curve smoothing was performed by a least-square method. Fig. 1 a, b, c show the depth-related night and day variation of total abundance, species richness and diversity. During the day, total abundance decreases with the depth, reaching a minimum at 25 m. On the contrary, a significant peak is present at this depth during the night. Both species richness and diversity increase quasi-linearly with

the depth, but higher values are constantly observed at night. It is worth noting that at 25 m there is a strong diel change of all the above parameters. In particular, total abundance is triplicated and species richness is doubled during the night. The ordination model (Fig. 1, d) clearly shows that the zonation pattern of the community is almost identical in both day and night transect. While there are no significant differences in the "saturation" of day and night observations in PC1 (which reflects the general depth-related cenocline), night samples are consistently located in a "lower" portion of PC2. This pattern is easily explained by the higher species richness and diversity occurring in night samples. PC2 therefore reflects the diel quantitative and structural variation of the community. It is interesting to remark the proximity of the 25 m station-points, which indicate that, despite the strong diel changes in the values of population parameters, the structural properties of the community remain unaffected. As far as the behaviour of the individual species is concerned, our results generally agree with those of LEDOYER. Differences exist, however, and the most important one is represented by the Rissoids. The representatives of this family, the highest ranking one in the malacofauna associated to *Posidonia*, were reported by LEDOYER as non-migrant. On the basis of our observations, two groups of Rissoids can be distinguished: a) species with higher diurnal abundance (e.g. *Apicularia guerinii*, *Goniostoma auriscalpium* and *Alvania discors*); b) species with higher night abundance (e.g. *Rissoa ventricosa*, *Rissoa violacea*, *Turboella radiata*).

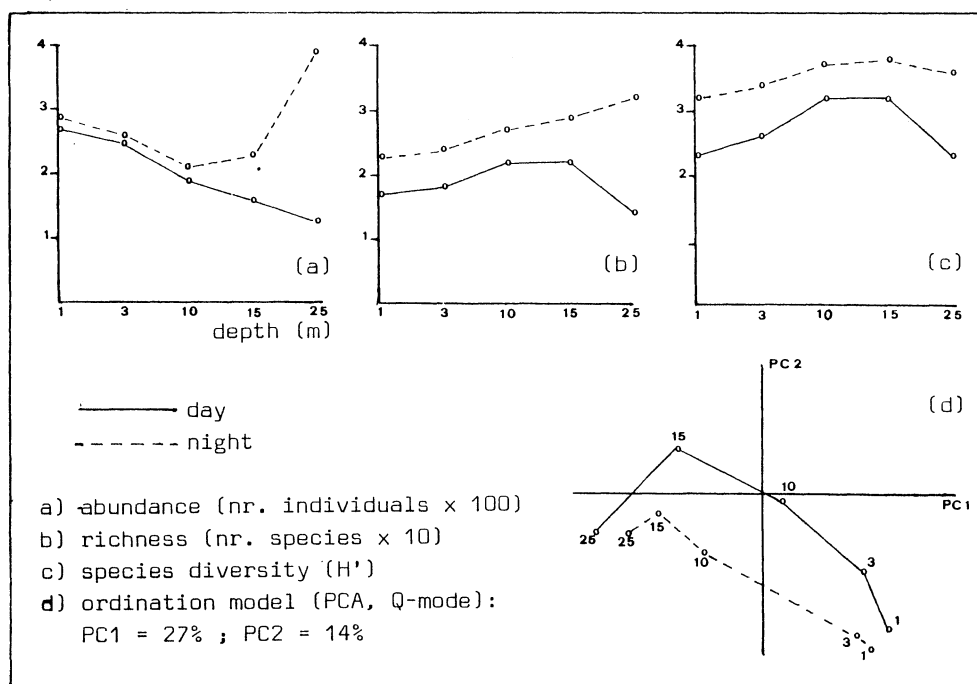


Fig. 1

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