

THE VAGILE FAUNA OF POSIDONIA OCEANICA (L.) Delile FOLIAR STRATUM: A COMMUNITY APPROACH

M. Beatrice SCIPIONE°, Eugenio FRESI°, Karl J. WITTMANN°°

(°) Laboratorio di Ecologia del Benthos, Stazione Zoologica, Ischia (Napoli)

(°°) Institut für Allgemeine Biologie der Universität, Wien

Resumé. Nous avons étudié la faune vagile associée aux feuilles de *Posidonia oceanica* d'un herbier de l'île d'Ischia (Golfe de Naples). On a examiné 12 stations localisées entre 1 et 30m de profondeur. On a pu reconnaître 4 groupements cénotiques disposés le long du gradient de profondeur, dont la distribution peut être expliquée surtout par la variation quali-quantitative de l'hydrodynamisme.

In the framework of a large investigation on the structure and the evolution of the *Posidonia oceanica* (L.) Delile - Ecosystem, the distribution of the vagile fauna of the foliar stratum, along a bathymetric gradient was studied. Research was carried out in autumn 1979 in a prairie located near Punta Vico, Lacco Ameno (Island of Ischia). The fauna was collected using a diver operated net (40 x 20cm, 400 µm mesh size) according to the technique described by LEDOYER (1962). Twelve stations were established at depths of 1, 2, 3, 4, 6, 8, 10, 12, 15, 19, 25 and 30m; at each depth three samples were collected. At these stations parameters such as the height and density of the prairie, the length of leaves, and the amount of debris and detritus (gdw) retained in the net were measured (fig. 1a).

225 species were identified for a total of 31.125 individuals. The following taxa were recorded (nr. of species and individuals are given in brackets): Turbellaria (1;2), Polychaeta Errantia (40;149), Mollusca (64;5884), Acari (3;1792), Pantopoda (3;8), Leptostraca (1;1), Mysidacea (9;6409), Cumacea (4;42), Anisopoda (4;25), Isopoda (17;218), Amphipoda (50;6573), Decapoda (14;9375), Brachiopoda (1;9), Echinodermata (9;356), Chaetognatha (1;262), Pisces (4;20). Population parameters such as abundance, species richness and diversity (Shannon-Weaver index) were computed. The data were analysed by Principal Component Analysis on a reduced set of species obtained by eliminating those which occurred only in a single sample (70 species). The resulting ordination model is shown in fig. 1b. In the plane generated by the first two components, which represent 27,3% and 24,6% of the total variance respectively, the observation points are arranged in a way which reproduces the location of the stations along the transect. Observations are ordered along a rather regular parabola, which has its top in the negative part of PC2. This parabolic curvature indicates that the zonation of the vagile fauna depends on a single factor, repre-

sented by the first axis (Guttman effect). Observations can be grouped into 4 clusters : cluster A (1m), cluster B (2-4m), cluster C (6-12m), cluster D (15-30m), within which the intra-stational variability is generally low (see the proximity of the sample points). Among the discontinuities which separate the clusters, the most important one appears between clusters A and B and possibly coincides with the "superficial discontinuity" proposed by FRESI & CINELLI (in press). Cluster A represents a superficial community specialized for high environmental energy levels whilst cluster B seems to reflect a transition zone. Cluster C contains the "typical" community of *Posidonia* prairie, possibly in coincidence with the maximum density of the prairie itself. The discontinuity between cluster C and D seems to reflect the sharp decrease in density of the prairie, accompanied by an equally remarkable increase in length of the leaves, and of the amount of debris retained in the net. Cluster D, in which the 30m observations are somewhat² isolated, probably because of the very low prairie density (93 bundles/m²), can be considered as reflecting a deep community with some "contaminations" from surrounding bare soft bottoms. From the above results, it is clear that the vagile fauna associated to the leaf-stratum of *Posidonia* beds, is far from being homogeneous. The evident cenocline seems to be primarily under the control of the environmental energy, the hydrodynamic forces in particular.

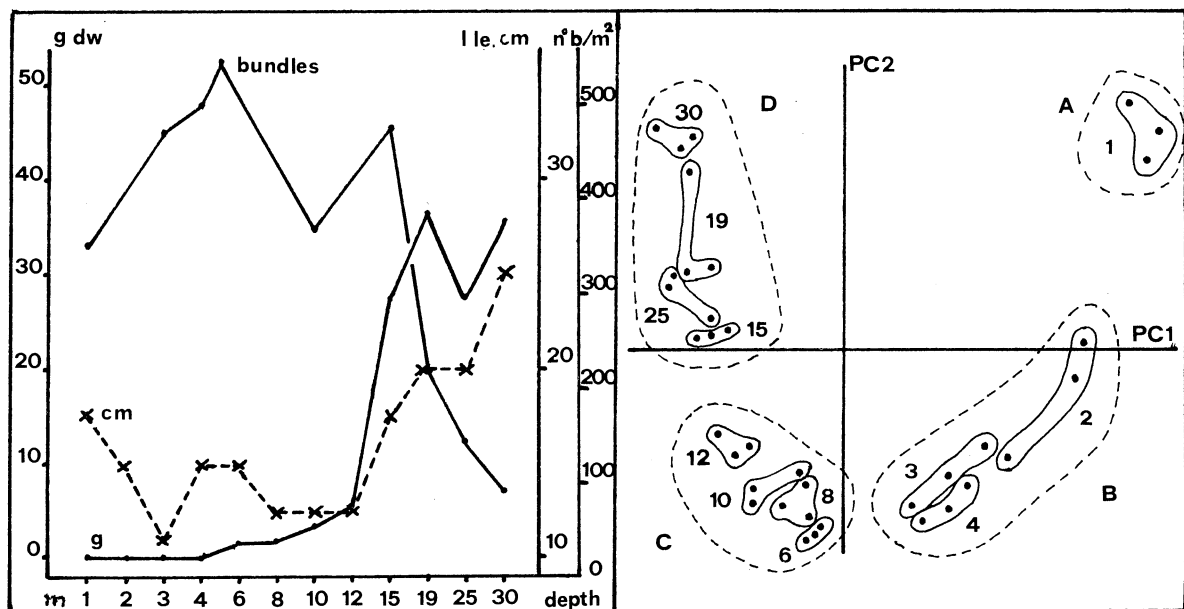


Fig.1a. Distribution of debris(gdw),visual height of the prairie(cm),and number of bundles/m² along the transect.

Fig.1b. Ordination model of PCA.

References

FRESI E. & F.CINELLI, in press. La discontinuità superficiale : appunti per una nuova interpretazione della zonazione del benthos mediterraneo. Atti XIV Congresso S.I.B.M., Sorrento.

LEDOYER M., 1962. Etude de la faune vagile des herbiers superficiels de Zosteraceae et de quelques biotopes d'algues littorales. Rec.Trav.St.Mar.Endoume, 25(39), 117-235.