Sublittoral benthic fauna and flora around a volcanic island, Milos Island, Aegean Sea, Greece

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Four samplings concerning macrozoobenthos and phytobenthos took place at four different points north, east and south of the island of Milos, by the coast at depths ranging from 0 to 16 meters (Fig. 1).

The samples were taken for the purpose of assessing any possible environmental effects from the disposal of brine of an experimental geothermal power station located at the center of the island.

The general project was funded from the Public Power Corporation (PPC).

Zoobenthos samples were taken with a Ponar grab (0.05 sq.m) operated from a fishing vessel 15 meters long. Phytobenthos samples were taken by scuba diving using a frame of an area of 400 sq.cm.

The brine was disposed, irregularly for a short period of time, through an outfall system at the southern coast (stations 3 and 4). The other stations (stations 1 and 2) were considered as reference ones.

The analyses of the samples gave a total of 125 zoobenthos species and 119 phytobenthos species. The substrate at stations 1, 3, 4 was sandy while that of station 2 much coarser (small cobles). This is attributed to the fact that the near abrupt coast is intensivelly mined, providing thus the coarser material which covers the bottom of the nearby coast.

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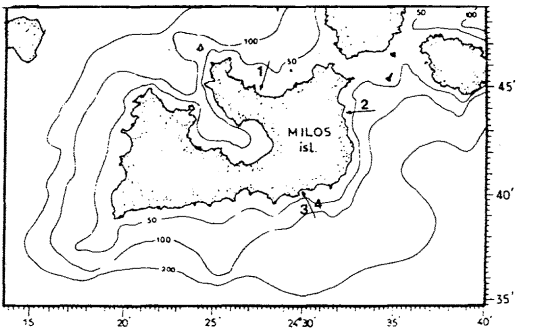
Fig. 1. Map of Milos Island with the sampling stations



From the zoobenthic point of view, station 2 is also characterized by the highest values of diversity and aboundance at all the seasonal samples. The coarse sediment promotes the formation of microhabitats between the wider spaces of the grains allowing thus the easier water circulation deeper in the sediment carrying food and oxygen to the endofauna (SANDERS 1958). On the contrary at the same station phytobenthos has the lowest values of diversity and abundance in relation to the other stations, because of the increased turbidity in the area from the active mining near the coast.

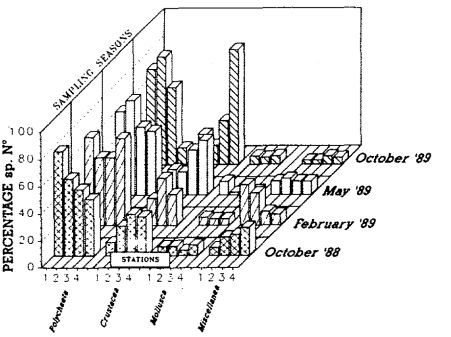


Fig. 2. Seasonal distribution of various zoobenthos taxa per station.

The fauna at the stations 1, 3, 4 is characteristic of the sandy islands between expanded meadows of *Posidonia oceanica*. At station 4, but only in a sample from the first sampling, the zoobenthos community seems degraded. The presence of *Capitella capitata*, an oxygen deficiency indicator (BELLAN & BELLAN-SANTINI, 1972) is characteristic for that sample. The color of the sediment in this sample was dark and the hydrogen sulphide odor was strong but its presence is attributed to the volcanic character of the island and has nothing to do with rotting organic material like in domestic effluent discharges. On the other hand the nearby coast is partly yellow probably from the oxidation of volcanic hydrogen sulphide to pure sulphur flowers. At the same stations the phytobenthos is rich enough in number of species and coverage in comparison with the samples collected at station 2.

The presence of expanded meadows of *Posidonia oceanica* in relation with the normal zoobenthos distribution (Fig. 2) indicates a healthy marine environment, even at the stations 3 and 4 where the brine was disposed.

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