

P-V1

Phytoplankton and Zooplankton relationships in several coastal areas of Palma Bay (Balears Islands) 1988-1989

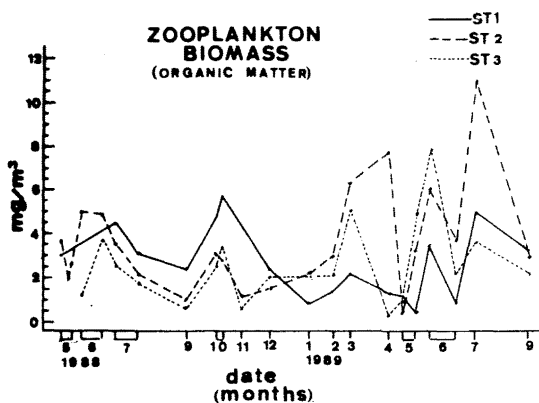
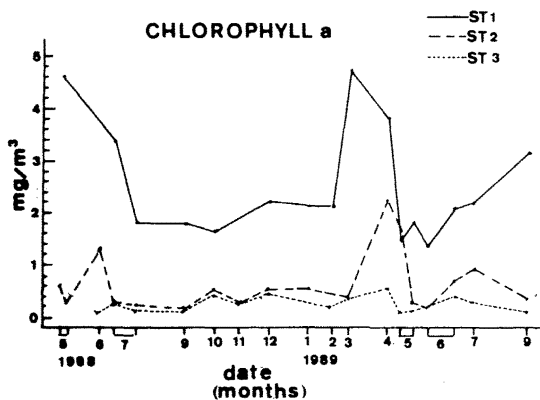
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In order to define the temporal coastal variations of the planktonic communities in relation to the pelagic environments, physical, chemical and biological (phytoplankton and zooplankton) marine samples were collected from May 1988 to September 1989. Three different areas of Palma Bay (Mallorca Island) were sampled, at least monthly: Station 1: Port area, 20 m depth. Station 2: nearby a sewage effluent, 30 m depth and Station 3: a cleaner area in the middle of the bay, 30 m depth.

Zooplankton samples were taken with a 20 ϕ cm Bongo plankton net 250 μ m mesh, equipped with an oceanic 2030 flowmeter, to know the volume of the water filtered in each tow (Steedman, 1974).

Data were analyzed and compared. Annual temperatures varied from 27.7° C in July to 14.4° C in January. The lowest value observed during the studied year was 1° C higher than in previous years (Navarro, 1931; 1932; Lopez-Jurado; 1989). In all areas, a cold homothermy developed in winter, but in summer, a hot homothermy was only observed inshore and a clear thermocline was found offshore.



The euphotic layer, estimated 30 m deep, was close to the bottom at stations 2 and 3, while at station 1, it was only 10 m deep in an average.

All the nutrients values obtained are not considered limiting factors especially inshore, where from July to next February an increase of nitrate and phosphate could be observed (2.5 μ g at N/1 and 0.5 μ g at P/1 in September), with mean values of 0.70 μ g at N/1 and 0.26 μ g at P/1, and offshore values 0.20 μ g at N/1 and 0.18 μ g at P/1.

Chlorophyll "a", as an index of phytoplankton biomass, presented a clear gradient between the three areas: in port area, the mean value (2.7 mg/m³) was 10 times higher than at station 3 (0.29 mg/m³), and at station 2 (0.5 mg/m³) twice higher than at the latter. At the same time the zooplankton biomasses obtained were 4.3, 4.9 and 3.7 mg of dry weight/m³ and 2.9, 3.6 and 2.8 mg organic matter/m³, at stations 1, 2 and 3 respectively.

The similarity of organic matter values at stations 1 and 3 can indicate that the inshore phytoplankton is not utilized by the zooplankton grazers (> 250 μ m), especially in spring, although at offshore stations, that can be finished.

In the middle of the bay (station 3), the nutrients and the chlorophyll were poorly represented, but several zooplankton maxima values were observed, in spring, early summer and autumn, higher than expected in this oligotrophic area (Margalef, 1989). At station 2, similar variation as in the former area was seen, but particularly in summer, greater values of biomass were appreciated.

REFERENCES

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