

ZOOPLANKTON SEASONAL VARIATIONS DURING A YEAR STUDY IN THE MAJORCAN SHELF BALEARES, SPAIN (39° 28'59 N; 2° 25'63 E)

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Between April 1993 and April 1994 physical, chemical and planktonic samples were collected every 10 days, from a station 75 m depth, located in open area 5 miles off the south Majorca Island. The hydrographic and phytoplankton samples were taken by 3L Niskin bottles at 0, 15, 25, 50 and 75 m depth and the zooplankton samples by Bongo plankton nets, oblique hauls, with a 250 μ m and 100 μ m mesh, into which a flowmeter General Oceanic 2030 was placed. The main goal of this paper was to describe the seasonal variation of the zooplankton communities, mesozooplankton (250 μ m) and microzooplankton (>100 μ m), nevertheless other oceanographic parameters were studied and related, as temperature, salinity, nutrients, chlorophyll "a" pigment and phytoplankton cells.

During the year studied, the surface temperature varied from 26.7°C in August to 13.5°C in February, with a strong thermocline, between 20 to 40 m depth, from May to November. Salinity values ranged from 36.5‰ in September to 38‰ in February, the lower values during the summer indicating the presence of waters from Atlantic origin. Excepting the bottom layer where we found higher values of nitrates all year around, it was during spring and autumn that higher concentrations appeared in the water column, in relation to higher numbers of phytoplankton cells. In average, very low concentrations were found (<20 cells/ml) with higher values always close to the bottom (50 cells/ml). Diatoms were the most abundant (80%); beside them, dinoflagellates were also important. Although, a single maximum of chlorophyll "a" was seen in January with 1.11 mg/m³, other lower peaks were observed related to the microzooplankton community studied. Copepods nauplii (19% of numbers) and small copepods as well as copepodites (70%) mostly contributed to the microzooplankton biomass (3.18 mg D.W/m³) with 3884 ind/m³, which appeared to control the phytoplankton biomass that, except in December and January, was smaller than 20 μ m. The mesozooplankton was also important (7.19 mg D.W/m³) with 1842 ind/m³. The copepods contributed with 62% to the total numbers (*Paracalanus parvus*, *Clausocalanus* spp., *Acartia clausi*, *Oithona* spp., *Temora stylifera* and *Centropages typicus* mainly), showing a maximum in early summer, and related to the highest value of biomass (Fig.1). Nevertheless, other smaller biomassic peaks were irregularly observed and not related to the abundance of copepods, indicating that some other zooplanktonic groups (cladocera, appendicularia, etc) were more important in the area. Although, the summer maximum is not very common in open areas, it has been observed some times, in other zones of the Mediterranean (GAUDY, 1970; MARGALEF, 1989; RAZOULS and KOUWENBERG, 1993). The microzooplankton (abundance and biomass) temporal variation can be observed in Fig. 2.

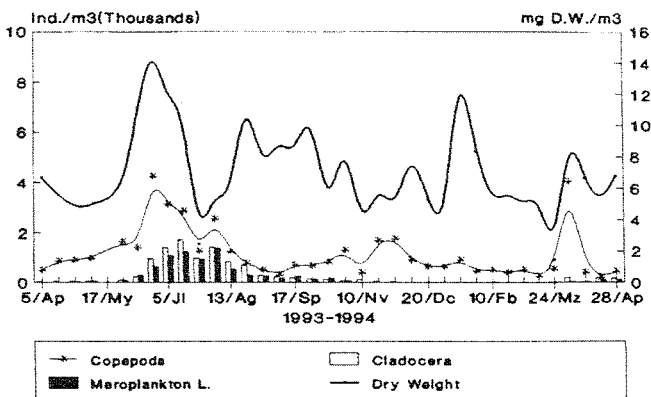


Fig. 1 : Seasonal variation of the mesozooplankton (Ap.1993 - Ap. 1994)

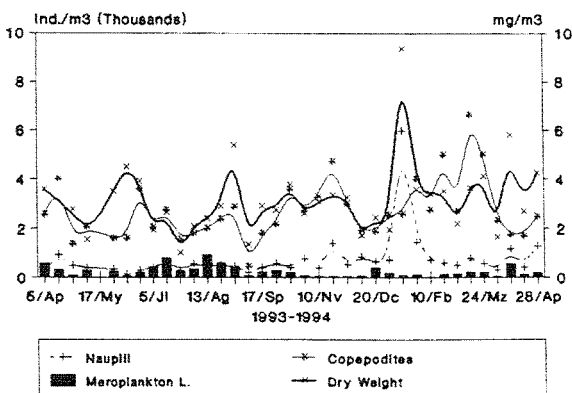


Fig.2 : Seasonal variation of the microzooplankton (Ap.1993 - Ap. 1994)

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