

Adão, H.; M. Vincx and J.C. Marques (2003). Seasonal dynamics of meiofauna communities in *Zostera noltii* hornem sediments in the Mira estuary (SW, Portugal). 38 European Marine Biology Symposium. Aveiro, Portugal, 8-12 September, pp

Abstract

The current study essentially centres on the study of the meiofauna of the sediments associated with seagrass beds of *Zostera noltii* in the Mira estuary, through the study of temporal variation of the diversity, composition and population densities of the meiofauna communities, focusing on the ecology of the free-living marine nematodes. The study was carried out at two sampling sites.

The higher abundances and composition of meiofauna and Nematoda assemblages observed throughout the study agree with the results of previous observations carried out in the vegetated intertidal muddy sediments of several estuaries, namely in *Zostera noltii* seagrass beds. A total of 17 meiofauna taxa were registered, with Nematoda the dominant taxon (>87%). The higher relative densities of Nematoda taxon structured the temporal variations, and consequently the seasonality of meiofauna assemblages.

The analysis of the temporal variations of meiofauna and Nematoda assemblages, at both sampling stations, indicated an evident seasonality. However, the seasonal patterns were different at both stations. The seasonality for Nematoda at both stations contradicted the seasonality generally observed in other studies, which usually peaks in the warmest months. In this study the densities of the dominant genera *Paracomesoma*, *Terchellingia*, *Odontophora*, *Linhomoeus*, *Paramonoshystera*, *Daptonema*, *Chromodora*, *Ptycholaimellus* and *Camacolaimus* rose in autumn and/or in winter-spring.

The temporal variation of environmental factors considered determinant of the seasonality in temperate regions, such as temperature, salinity, pH, amount of dissolved oxygen (DO) and granulometry were not of fundamental importance for structuring the seasonality and composition of meiofauna and Nematoda assemblages. The range of environmental factors at both sampling sites did not allow any specific factor to be identified. However, it was possible recognize that the combined effect of a given set of factors creates the habitat conditions which are able to explain the seasonal variations.

The temporal variation patterns in trophic structure and the life history of the Nematoda genus assemblages are the most important biotic factors for structuring the seasonality obtained and the differences between sampling sites. The temporal variation patterns of the juveniles were closely associated with the temporal variation patterns of the populations. The juveniles were present throughout the sampling period, and the highest densities were coupled with peak densities of the populations and consequently an increase in reproduction activity. In contrast, the lowest densities of the populations corresponded to a decline in reproduction activity. The other important biological factor that could explain the seasonality obtained at each sampling station was trophic dynamic fluctuations. Indeed, an evident changing of the trophic group dominance was observed, suggesting changes in food availability.

The higher abundances and meiofauna composition observed throughout the study agree with the results of the previous observations carried out in vegetated intertidal muddy sediments of several estuaries. Nematoda taxon (87%) was the dominant, followed by Copepoda (6%), Kinorhyncha, Oligochaeta, Ostracoda, Turbellaria, Bivalvia and Amphipoda. Other taxa were always observed in low numbers: Gastropoda, Ciliophora, Gastrotricha, Halacoiridea, Cnidaria, Insecta and Acari.

Terchellingia, *Paracomesoma*, *Odontophora* and *Linhomoeus* were dominant genera of Nematoda taxon. As expected, sediments were mainly populated by non-selective deposit feeders and epistrate feeders.

The analysis of the temporal variations of the meiofauna assemblages, at both sampling stations, indicated an evident seasonality, however, the densities and seasonal patterns

between sampling stations were different. Abiotic differences between both sites studied seem not to be the main factors affecting the temporal changes of the meiofauna communities.