

ZOOPLANKTON TEMPORAL VARIATION IN A SPRING-POOL OF THE ALBUFERA NATURAL PARK

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The aquatic ecosystems of the Albufera Natural Park have been subject to intense human impact. They consist mainly in a large lagoon of 23 km², surrounded by 223 km² of rice fields. However, there are still a number of spring-pools, i.e. small and shallow pools fed by subterranean water inflow, which are less polluted and could be regarded as refuge areas for rare species. The succession of zooplanktonic populations has been studied during two annual cycles in the most well kept of these spring-pools: "Baldovina", by means of monthly quantitative water samples taken with a 2.6 l Ruttner bottle and filtering by a 45 µm mesh. Physical and chemical parameters of the spring waters should be rather constant, but they are influenced by rice field water which occasionally drain into the spring-pool in early summer. When this occurs, a rise in temperature and a diminution of conductivity can be observed in the pool (Fig.1C). Rice field influence varies from one year to another; in 1986 the perturbation was restricted to June and the beginning of July, while in 1987 the pool was perturbed during a much longer period. The water from the rice field is loaded with fertilisers and pesticides which impoverishes faunal composition and the effects on the zooplankton community are very apparent. We can easily observe drastic differences between the two years in Fig.1. During the more perturbed year cladocerans were not observed and the number of species of copepods diminished and changed to more opportunist ones (Fig.1B). Moreover, zooplankton succession in 1986 (rotifers and crustaceans) was as expected from the theoretical point of view (Fig.1A), i.e. a biomass peak in spring is followed by a later increase of diversity in summer. However, during the more perturbed year 1987, this cycle was interrupted, so a high development of biomass in summer occurred, which determined a reduction of diversity. Therefore, diversity did not increase until September, at the end of rice culture.

The richness of species in this biotope is very high; beside the crustaceans of Fig.1, we have found 95 species of rotifers. Moreover, a single net tow sample in the littoral zone can yield a Shannon diversity index, for rotifer fauna, as high as 4.6. Previous studies in this and other spring-pools (COLOM and MIRACLE, 1990; ALFONSO and MIRACLE, 1987) also showed that plankton communities are subject to wide fluctuations, however they still keep a very high diversity. The total number of species found, until now, in the plankton in four of these spring-pools is: 107 rotifer species, 6 cladocerans and 13 copepods.

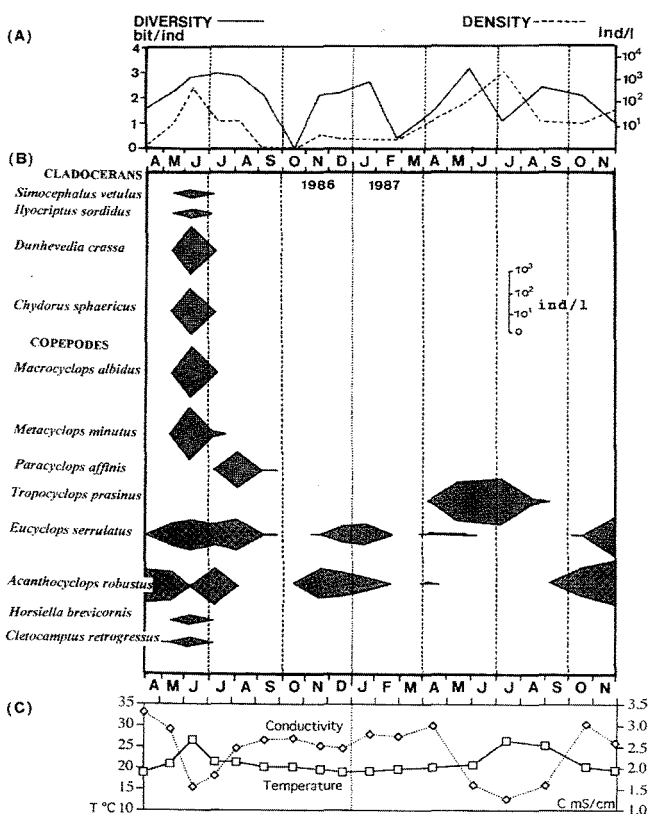


Fig.1. Temporal variation in Baldovina spring-pool of: (A) zooplankton (crustaceans and rotifers) density (ind/l) and diversity, (B) abundance of crustacean species (ind/l) and (C) temperature and conductivity.

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