Local and regional factors influencing zooplankton communities in the connected Kasseb Reservoir, Tunisia

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Abstract

Associations between zooplankton community structure and abiotic (temperature, dissolved oxygen, turbidity, nutriments) and biotic factors (chlorophyll *a* and phytoplankton community) were examined, in Kasseb Reservoir, northern Tunisia. Samples were taken bimonthly from July to December 2002 at 3 sampling stations (deepest station: Station 1, Brik River: Station 2 and M'Zaz Stama River: Station 3). From our results it is evident that zooplankton exhibit seasonally and spatially heterogeneous distribution. The highest density of zooplankton was recorded in September at a depth of 5 m (10.8×10^3 ind·ℓ^{-1}). At Station 1 cyclopoid copepods (65% of total abundance) were the most abundant group followed by Cladocera (21% of total abundance). At Station 2 (93% of total abundance) and Station 3 (98% of total abundance) cyclopoid copepods were numerically dominant throughout the study period. Canonical correspondence analysis (CCA) was used to estimate the influence of abiotic and biotic factors in structuring the zooplankton assemblage. Zooplankton abundance was negatively correlated with turbidity (r= -0.381, P <0.05). The results also suggest that both local (environmental parameters, competition, and predation) and regional (hydrologic connections and dispersal) factors have a significant effect on both species richness and community structure of zooplankton in Kasseb Reservoir. The presence of zooplankton species considered to be indicators of eutrophic status confirmed the high trophic levels of Kasseb Reservoir.

Keywords*:* Kasseb Reservoir, hydrologic connections, local and regional factors, zooplankton, heterogeneous distribution