Annual pattern of zooplankton communities and their environmental response in a subtropical maritime channel system in the northern Bay of Bengal, Bangladesh

ABSTRACT

Zooplankton plays an important role in aquatic food webs by fluxing of energy from primary producer to subsequent trophic levels in the food chain. The annual pattern of zooplankton communities and potential environmental drivers were studied in the Kohelia channel, Bangladesh from summer 2014 to spring 2015. Samples were collected using net at a depth of 1 m. A total of 32 species belonged to 18 orders, 27 families and 15 taxonomic groups were identified. Of these species, 22 distributed in all four seasons of which 8 were dominant and highly contributing to the total communities. Species number peaked in summer next to winter and fall in spring while maximum abundance was in summer and minimum in spring. Multivariate analyses showed that there was a clear annual pattern in the zooplankton communities. Species diversity and evenness peaked in spring but fall in autumn while the high value of species richness was found in winter. Biological-environmental best matching (BIO-ENV) analyses conformed that community pattern of zooplankton was mainly driven by transparency salinity, and temperature individually or combined with water nutrients. These results demonstrate that annual pattern of the zooplankton community shaped by channel environmental factors in subtropical channel ecosystems, thus might be used for community-based subtropical coastal water bioassessment.

Keyword: Zooplankton; Trophic levels; Subtropical channel; Community structure; Multivariate approach