Seasonal pattern of zooplankton communities and their environmental response in subtropical maritime channels systems in the Bay of Bengal, Bangladesh

ABSTRACT

Zooplankton are a primary component of aquatic food chain and play an important role in the functioning of aquatic food webs. Seasonal variation in community structures of zooplankton and potential environmental drivers were studied, during a 1-year cycle (summer 2015 – spring 2016) in subtropical maritime channels systems in the Bay of Bengal, coastal waters in Bangladesh. A total of 32 species representing 25 families, 13 orders and 15 taxonomic groups were identified. Of these species, 23 distributed in all four season of which 8 were dominant species with high contributions of the total communities. Species number was peaked in autumn and fell in summer while maximum abundance was in the winter and minimum in summer. Multivariate analyses showed that there was a clear seasonal shift in zooplankton community structures in relation with environmental conditions. Species diversity and evenness peaked in summer while the high value of species richness was found in autumn. Multivariate correlation (RELATE) and BIO-ENV analysis demonstrated that seasonal variation in community patterns was significantly correlated with temporal shift of environmental conditions and that variation mainly driven by water transparency, salinity, DO, TSS and nutrients. Thus, this finding implies that the zooplankton community represented a clear seasonal shift shaped by environmental drivers in subtropical channels systems.

Keyword: Zooplankton; Seasonal shift; Tropical channel; Community structure; Multivariate approach