Copepod community in Versova mangrove, Mumbai, West coast of India, a baseline study

S. Rosamma¹, V.R. Nair² & K.V. Jayalakshmy³

¹Scientist (Retired), National Institute of Oceanography, “Ajantha” 43/1459 KK Road, Kochi 682017, India. E-mail: rosamma.stephen@gmail.com
²Scientist (Retired), National Institute of Oceanography, HB/50, Vijaya, South Bridge Avenue, Panampilly Nagar, Kochi 682036, India.
³Scientist, National Institute of Oceanography, Salim Ali Road, Kochi 682018, India.

Abstract

This paper evaluates the copepod community and ecological parameters from four stations in Versova mangrove which forms a benchmark study for future ecological assessment. Besides being one of the most productive natural ecosystems of the world the mangroves protect the coast from erosion. Habitat degradation due to anthropogenic interference and industrial effluents is evident in the Mumbai coastal ecosystems. Enrichment of coastal waters takes place when mangroves are present by adding dissolved organic matter as nutrient by decomposition of detritus. Salinity varied from 18.1 to 37.1 psu. Average dissolved oxygen value was 5.7 mg/l but low values ranging from 1.6 to 3.7 mg/l was recorded during July August. Phosphate varied from 1.1 to 44.2µg at/l and nitrate varied from 0.1 to 43µg at/l. Ammonia was high ranging from 0.3 to 77.0µg at/l. The values were very high in monsoon may be due to land drainage. High suspended load was observed which ranged from 8 to 782mg/l during pre-monsoon months. Density of zooplankton (399/m³) and copepods (98/m³) were low during the period of high ammonia and low oxygen concentration. The system is thoroughly flushed out in monsoon. Versova mangrove supported a rich copepod population during pre and post monsoon contributing 20.8 to 29.9% of total zooplankton. Copepod density is nearly 130 times higher than that of the nearby coastal waters and average density fluctuated between 108 to 467964/m³. This is mainly due to the swarming of Oithona spp. and epibenthic copepod Mesochra sp. The species diversity is less only 17 species whereas 47 species were recorded from the nearby creek and 60 species from the coastal waters. Bestiolina similis was the dominant species followed by Acartia and Oithona spp. Species diversity index varied between 0.22 and 1.62. Highest niche breadth was observed for B. similis.

Keywords

ecology, nutrients, copepod