

Seasonal variations of zooplankton biomass and size-fractionated abundance in relation to environmental changes in a tropical mangrove estuary in the Straits of Malacca

ABSTRACT

Seasonal variations of zooplankton community in terms of biomass and size-fractionated densities were studied in a tropical Sangga Kechil river, Matang, Perak from June 2010 to April 2011. Zooplankton and jellyfish (hydromedusae, siphonophores and ctenophores) samples were collected bimonthly from four sampling stations by horizontal towing of a 140- μ m plankton net and 500 μ m bongo net, respectively. A total of 12 zooplankton groups consisting of six groups each of mesozooplankton (0.2 mm-2.0 mm) and macrozooplankton (2.0 mm-20.0 cm) were recorded. The total zooplankton density (12375 \pm 3339 ind m⁻³) and biomass (35.32 \pm 14.56 mg m⁻³) were highest during the northeast (NE) monsoon and southwest (SW) monsoon, respectively, indicating the presence of bigger individuals in the latter season. Mesozooplankton predominated (94%) over the macrozooplankton (6%) during all the seasons, and copepods contributed 84% of the total mesozooplankton abundance. Macrozooplankton was dominated by appendicularians during most of the seasons (43%-97%), except during the NE monsoon (December) when chaetognaths became the most abundant (89% of the total macrozooplankton). BIO-ENV analysis showed that total zooplankton density was correlated with turbidity, total nitrogen and total phosphorus, which in turn was positively correlated to chlorophyll a. Cluster analysis of the zooplankton community showed no significant temporal difference between the SW and NE monsoon season during the study period (> 90% similarity). The present study revealed that the zooplankton community in the tropical mangrove estuary in the Straits of Malacca was dominated by mesoplankton, especially copepods.

Keyword: Biomass; Distribution; Tropical mangrove; Zooplankton