

**“REVISITING STRATEGIES FOR  
SUSTAINABLE DEVELOPMENT”**

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**Abstract Proceedings**



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## Hourly variation in abundance and diversity of mesozooplankton in relation to abiotic factors at a macrotidal creek of Thakuran estuary, Indian Sundarbans

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Hourly variation of mesozooplankton and environment of Thakuran estuary, Indian Sundarbans, was studied. Mesozooplankton were sampled from the mouth of the estuary in December 2022, for 12 hours (from 20:00 to 09:00 next day) using a zooplankton net (mesh size 200 $\mu$ , diameter 60cms) mounted with a mechanical flowmeter. Nitrate-nitrogen, phosphate, silicate, chlorophyll-a concentrations, temperature, salinity, pH, total dissolved solids and depth were measured hourly. Copepods dominated the mesozooplankton community constituting 87.50–100%. Calanoid copepods shared the bulk of biomass (25 species of 13 genera), followed by cyclopoids (5 species of 3 genera) and 1 monogeneric harpacticoid. Apart from copepods, chaetognaths, decapod larvae and *Lucifer* contributed significantly to the total mesozooplankton count. Water temperature ( $t=-4.73$ ,  $df=11$ ,  $p < 0.001$ ), salinity ( $t=-2.78$ ,  $df=11$ ,  $p=0.02$ ), pH ( $t=-6.33$ ,  $df =11$ ,  $p < 0.001$ ), TDS ( $t=-3.54$ ,  $df=11$ ,  $p=0.005$ ), depth ( $t=-5.29$ ,  $df=11$ ,  $p=0.003$ ) significantly declined but chlorophyll-a ( $t=4.40$ ,  $df=1$ ,  $p=0.001$ ) concentrations rose during the study. Acartiidae and Pseudodiaptomidae maintained a negative relationship with other families. *Acartiella tortaniformis*, *Oithona brevicornis*, *Paracalanus parvus* and *Bestiolina similis* formed a separate cluster at 70% level of similarity, being the most dominant throughout. Diversity indices such as Shannon ( $3.07\pm 0.06$ ) Simpson ( $0.95\pm 0.01$ ) and Pielou's Evenness ( $0.94\pm 0.01$ ) were observed. Canonical Correspondence Analyses reveal temperature, chlorophyll a and phosphate concentrations as major regulating factors of mesozooplankton distribution. Results reveal minute variations in mesozooplankton community structure despite contrasting environment. Being interconnected with fishes via trophic relationship, behaviour, ecology and its susceptibility to the impacts of climate change, the hourly monitoring of plankton community is recommended.

**Keywords:** Copepod community, diversity and distribution, ecological monitoring.