

EFFECTS OF TIDES ON THE ZOOPLANKTON OF THE GREAT KWA RIVER, CALABAR, NIGERIA

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Abstract

This study investigated the tidal effects on the composition, diversity, abundance and distribution of zooplankton species in the Great Kwa river, Nigeria. Tidal cycles were observed to affect zooplankton density, species diversity indices, composition (species richness) and distribution.

Background

Tidal activity influences the nutrient concentration, salinity, and suspended particulate matter of an estuary or water body (Davies and Ugwumba 2013).

Zooplankton are animal-like, and include many kinds of protozoa, micro-crustaceans and other microinvertebrates that are planktonic in water bodies. They serve as food for carnivorous and omnivorous fish, thus, playing important roles in the transfer of energy from producers to higher trophic levels.

Objective

The objective of this study was to investigate the tidal effects on the composition, diversity, abundance and distribution of zooplankton species in the Great Kwa river, Nigeria.

Method

Water samples were collected at different tidal regimes (low, mid and high tides) using 10 litres plastic container, and filtered through a plankton net of 55µm pore. The filtrate was fixed in formalin and transported to the laboratory for analysis. The filtered plankton was taken to the laboratory for plankton count using Sedge-wick Rafter. Thereafter, the analysed zooplankton was classified taxonomically. Identification was done to the nearest taxon possible.

Ecological Diversity Indices

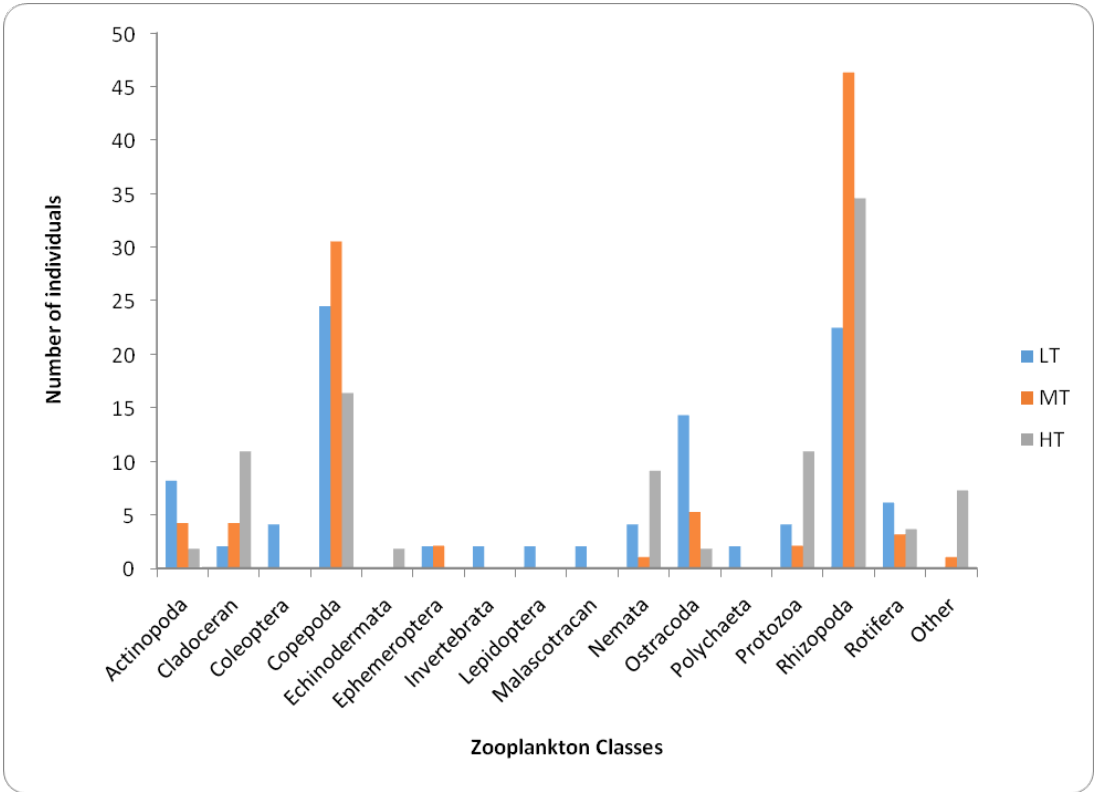
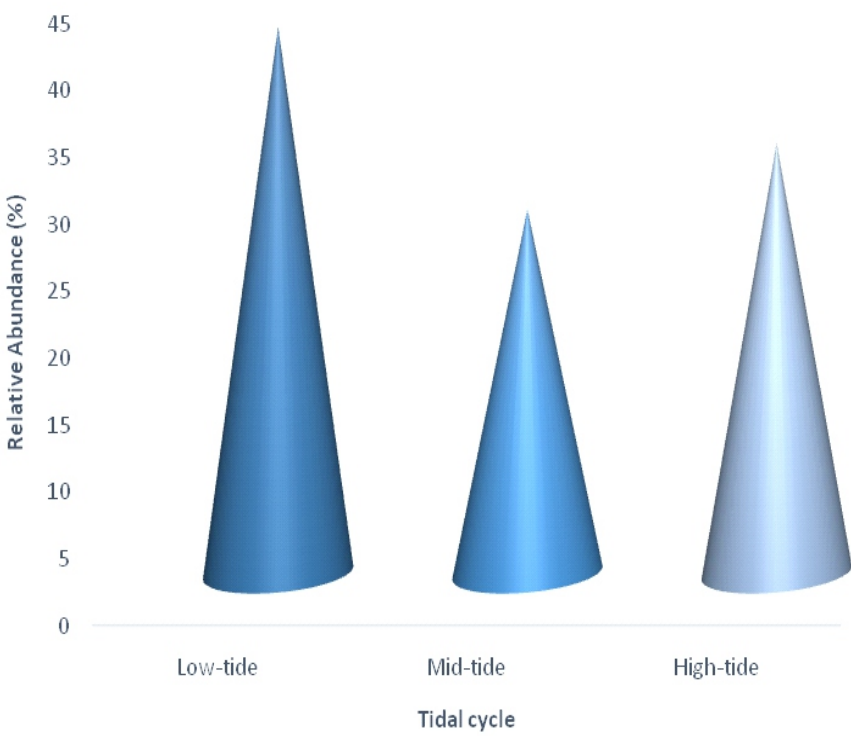
Comparison between the tidal regimes was performed using Shannon Weiner index, Simpson's index of diversity, Margalef's index and Evenness

Results

Number of species was highest at low tide, followed by high tide. The least was recorded at Mid-tide.

Generally, Rhizopoda was most dominant, followed by Copepods while invertebrate, Lepidoptera and Malacostracan rarely occurred. Copepods were dominant at low tide, while Rhizopoda were dominant at mid-tide and high-tide.

Shannon Weiner index was observed to be higher at Low-tide and High-tide than Mid-tide. Evenness values varied at different tidal cycles, suggesting that numerical abundance was unevenly distributed among species.



Conclusion

Tides affect the density, species diversity, composition (species richness) and distribution of zooplankton in the Great Kwa River. Rhizopoda and Copepoda were the most dominant groups of zooplankton observed in the study. Copepods were dominant at Low tide, while Rhizopods were most abundant at mid-tide and high-tide. Some species zooplankton were also observed to be absent during some tidal cycles.

Bibliography:

Davies, O. A. & Ugwumba, O. A. (2013). Tidal influence on nutrients status and phytoplankton population of Okpoka Creek, Upper Bonny Estuary, Nigeria. Journal of Marine Biology, ID 684739, 16 pp

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