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Spatial patterns of microzooplankton diversity and composition along the Namibian coast

Karolina Bohata[1], Saskia A. Otto[1], Rolf Koppelmann[1] and Christian Möllmann[1]
[1] Institute for Hydrobiology and Fisheries Science, Hamburg University

The Benguela Current region is one of the 5 major eastern boundary regions that features strong environmental gradients and spatial heterogeneity at finer scales. The coastal upwelling ecoystem is known for its diversity and for being particularly productive in terms of fisheries resources. However, little is known on how it affects microzooplankton. This group plays an important trophic role within the food web but is often neglected. In this study, we explore whether the spatially structured environment affects the diversity and community composition of microzooplankton and what are the potential drivers. Based on data collected at 24 stations along the Namibian coast during one research cruise in January and February 2011 we compare species richness and total abundance among stations and relate them to spatial and environmental variables using linear regression models. Spatial pattern in the composition of main taxonomic groups as well as tintinnids were identified using multivariate trend surface analysis, in which we extracted spatial structures and related these significant canonical axes to temperature, salinity, bottom depth, and *Chl a*. To quantify the various fractions of variation explained by spatial or environmental sources we applied additionally a variation partitioning. The results show strong spatial patterns at various spatial scales for particularly total abundance and the composition of tintinnids. Temperature explained best the spatial variation although this effect is negligible at a local scale. Our study demonstrates how microzooplankton can be structured at many scales and that environmental conditions are more important at braoder scales.

Keywords: Benguala upwelling system, spatial variability at multiple scales, tintinnids, multivariate trend surface analysis, variance partitioning

Contact author: Saskia A. Otto, Institute for Hydrobiology and Fisheries Science, Hamburg University, Grosse Elbstr. 133, D-22607 Hamburg, Germany, saskia.otto@uni-hamburg.de