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Zooplankton Distribution in the Namibian Upwelling Region: A comparison of net catches with ADCP measurements

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Zooplankton samples from the Northern Benguela Upwelling region, off Walvis Bay were studied in September 2010 with a 1 m^2 double Multiple Opening and Closing Net and Environmental Sensing System (MOCNESS) and a 150 kHz broadband vessel mounted Acoustic Doppler Current Profiler (VM-ADCP) to examine the temporal distribution and taxonomic composition of mesozooplankton during an upwelling season. Mesozooplankton displayed a bimodal vertical distribution of biomass and abundance, with concentrations in the surface layer (0-80m) and deeper depths (>200). This mode of distribution was interpreted to be an apparent attempt to avoid the thermocline and the oxygen minimum zone. The net catches and ADCP measurements both showed that the zooplankton community performed diel vertical migration (DVM). DVM was one of the factors attributed to the observed distributional pattern. Mesozooplankton in the size range 0.5-2 mm performed most of the vertical migrations, and composed mainly of calanoid copepods. The acoustic backscatter cross-section (ABSC) as a relative measure for biomass generally did not gave significant correlations to net mesozooplankton biomass. Although more variation in net catches and ADCP measurements could be accounted for, the night-time relationship showed an inverse correlation. This resulted from the mismatch of measurement depths by the instruments, notably in the surface layer. The results from both the net catches and ADCP measurements proved to be a useful combination in providing insight into the distribution patterns of mesozooplankton on a temporal scale, despite the apparent limitations.

Keywords: zooplankton, northern Benguela, diel vertical migration, ADCP backscatter

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