Composition of macro-infauna and their distribution across Northern Benguela upwelling system - Namibia

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Macro-infauna are among the most abundant organisms in marine ecosystems where they play a critical role in nutrient cycling, organic matter turnover, provision of nourishment to the higher organisms in the food web and maintenance of soil physical and biogeochemical structure through bioturbation. Despite their significance in marine reamls, there is inadequate scientific understanding of macro-infauna diversity in Benguela Upwelling Systems (BUS) specifically across Oxygen Minimum Zones (OMZ). Three transects were chosen; Cape Frio (20ºS), Walvis Bay (23ºS) and Luderitz (26ºS) for sampling. Sediments were systematically collected at 20ºS (2nm, 20nm, 40nm), 23ºS (2nm, 20nm, 70nm) and 26ºS (90nm) using multi-corer where macrofauna were sub sampled using plastic corers (diameter=3.5cm; length= 10cm). The samples were preserved using 5% buffered formaldehyde solution, stained with Rose Bengal (to aid in sorting) and observed under a dissecting microscope. Nematodes were the dominated organisms in macrofauna samples whose percentage ranged from 21-84.5% in all sampling stations. 20ºS 40nm had the highest taxa of nematodes (7510000ind-m2) an indicator of their ability to survive in hypoxic environments (0.41ml-l). 23ºS 40nm sampling site was anoxic (0.148ml-l) with no recorded nematodes and annelids indicating failure of macrofauna to adapt in extremely low oxygen. Annelids (polychaetas and oligochaetas) had lower percentage than nematodes in all sampling sites showing limited ability to adapt in extreme environments. The results highlightened the adaptability of nematodes in hypoxic conditions which could have been enhanced by symbiotic relationship with sulphur reducing bacteria, *Theomargarita*. Further analysis is underway to identify nematodes to genus level (macrofauna and meiofauna samples) hence providing baseline data and adaptive mechanisms of nematodes in OMZ.

Keywords: oxygen minimum zones; macrofauna; Benguela upwelling system; nematodes