SPATIAL VARIABILITY OF ZOOPLANKTON SIZE SPECTRA OVER THE FERNANDO DE NORONHA ARCHIPELAGO WITH EMPHASIS ON DECAPODA

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Abundance, biovolume, and size spectra were obtained for zooplankton of the Tropical Atlantic under the influence of oceanic island systems. Sampling was carried out in July and August 2010, off Fernando de Noronha Archipelago (FN), in six stations distributed in two transects, upstream (UP) and downstream (DOWN) the islands, during daytime and nighttime periods. Oblique tows with a 500- μ m mesh bongo net were performed up to 150 m depth to the surface. Samples were analyzed with the ZooScan system. Hydrological profiles and current vectors were obtained with CTD and ADCP. Chlorophyll a was higher downstream the island, suggesting an island mass effect. Fifty-one zooplankton taxa were recorded. Mean abundance and biovolume were 10.90 ind m^{-3} and 36.23 $mm^3 m^{-3}$, respectively. Zooplankton community structure was significantly different between UP and DOWN, in terms of both abundance and biovolume (MANOVA $p < 0.05$). Mean planktonic decapod abundance and biovolume were 0.33 ind m^{-3} and 6.6 $mm^3 m^{-3}$, respectively. The most abundant group was of Peneaiodea (1.44 and 2.20% of relative abundance, upstream and downstream). Redundancy analysis (RDA) showed two groups for the decapod community ($p < 0.05$); the first was related to the UP region of the island (Sergestidae, Paleomonidae morphotype 1, Brachyura morphotype 1, and Achelata) and the other was related to the DOWN region [Brachyura (others), Alpheidae, Anomura, Stenopodidae and Callinassidae]. Higher NBSS slope, on average, were found upstream the island. Also, there was a higher contribution of zooplankton and decapods with larger sizes. Copepods had the highest contribution to biovolume, with peaks at NBSS around 1.5 mm ESD. Downstream the island, there was a higher contribution of benthic decapod larvae, showing groups associated with the "larval island effect". This fact also shows an important contribution of decapod larvae to the pelagic trophic webs, suggesting a probable influence of the parental populations living in the benthic insular slopes. On the other hand, upstream the island, where the winds and currents are more intense, there was higher contribution of holoplanktonic decapods and phyllosoma advanced stages.

Keywords: Decapoda larvae, larval island effect, tropical oceanic islands, ZooScan.