ABSTRACT

ZULKIFLI, The Dynamics of Interstitial Meiofaunal Community in the Dompak Strait Waters, Riau Archipelago. Under direction of: DE DI SOEDHARMA, YUSLI WARDIATNO, and HARPASIS S SANUSI.

A study on the dynamics of interstitial meiofaunal community in the different ecosystems have been carried out in the Dompak Strait waters (Riau Archipelago). This study were investigated on different four seasons throughout a year, from May 2005 to April 2006. Based on the site assessments, six sampling site (A1, A2, A3, B1, B2 and C) were chosen to represent research sites. In each sampling site, sediment samples were taken from three sampling points. The sediment was extracted by means of PVC cores (Ø = 5 cm), in which six layers were separated (i.e. 0–5 cm, 5–10 cm, 10–15 cm, 15–20 cm, 20–25 cm and 25–30 cm). The meiofaunal were extracted by using swirl-decantation method, elutriation method, and sieving method. Specimen were preserved and stained for observation and identification. The data on interstitial meiofauna were analyzed statistically through calculates of abundance, diversity index, evenness index, t-test, Anova test, Euclidean distance, and cluster analysis. One-way and two-way nested analysis of variance (Anova) test were used to determine the significance of interstitial meiofaunal differences between sites, between strata and between seasons. Regression analysis were used to investigate relationships between interstitial meiofauna with environmental parameters. Anova and regression analysis were run using the software SPSS 11.5.

Five interstitial meiofaunal taxa, i.e., Nematodes, Copepods, Polychaete, Foraminifera and Turbellaria were always found in all sampling sites as long as research, while the order meiofaunal taxa (minor meiofauna) were not consistently present. The seagrass habitat and its environmental conditions more support the exist interstitial meiofauna with the result that number of genus more variety and abundance at its ecosystem than mangrove and bare area ecosystems. At seagrass, mangrove and bare area habitats founded 18 general genus and each habitat type have be different of site specific genus. The high Nematodes/Copepods (N/C) ratio at station A3 (10:1) indicated that organic matter enrichment is present. The dynamics of interstitial meiofaunal community would depend on several conditions such as habitat types, sediment depth levels, seasons, environmental factors and hydrological characteristics. Generally, there are significant differences of interstitial meiofaunal community between various different habitat types and sediment depth levels. Habitat types and sediment depth levels could influence the diversity and abundance of interstitial meiofauna. Seasons also could influence the number of genus and abundance of interstitial meiofauna at research stations. Significant temporal changes of meiofaunal abundance were observed on all sampling sites, with higher densities in East season and lowest abundance in West season. Based on the regression results are showing that the interstitial meiofaunal community directly correlate is clear to the environmental parameters. The vertically, the interstitial meiofaunal community patterns seems to be more affected by the TOC, TOM, pH and Eh, while the horizontally, it seems to be more affected by current velocity, temperature, salinity, water TOM and sediment TOC. There are interstitial meiofaunal community clustering based on community structure similarity level.

Keywords: dynamics of interstitial meiofaunal community, Dompak Strait, environmental parameters, site specific genus, seagrass, mangrove and bare area habitats