ABSTRACT

Khairunnisa, 24020118190055. **Comparative Study of Macrobenthic Structure at Integrated Multi-Thropic Aquaculture (IMTA) and Monoculture Areas at Karimunjawa National Park.** Under the supervision of Prof. Drs. Sapto Purnomo Putro, M.Si, Ph.D and Dr. Jafron Wasiq Hidayat, M.Sc.

Anthropogenic activities, such as aquaculture, have undeniably affect the surrounding ecosystem. One of the affected components in ecosystem is macrobenthic organisms. Macrobenthos is a well-known organism to be used as biomonitoring agent and already been used in numerous publications. This study aimed to identify the macrobenthic community structure in different aquaculture sites and links it to environmental parameters in Karimunjawa National Park. Purposive sampling method was used in this research, conducted in three stations: IMTA, Monoculture, and Reference Area, with three replications at each station in November 2021 – December 2021. The data were analyzed using Shannon-Wiener Diversity Index (H'), Simpson's Dominance Index (D), Pielou's Evenness Index (E), k-dominance curve, MDS, One-Way ANOVA, PCA, and BIO-ENV. Based on ecological indices and k-dominance curve, Reference Area has the highest diversity and lowest dominance, indicating a stable ecosystem. MDS ordination plot displays clustered organism variability between each station. The result of One-Way ANOVA analysis shows there is no significant difference of macrobenthic community structure between three stations (Sig= .900; $P<0.05$). Based on PCA result shows clustered stations mainly based on sedimentation properties, both particle grain size and organic matter content. Analysis of BIO-ENV reveals that coarse sand and silt as the most influential abiotic parameters towards macrobenthic community structure ($r=0.370$). It can be concluded that the macrobenthic community structure in each station has no significant difference and the most influential abiotic parameter is the sedimentation.

Keywords: IMTA, monoculture, biomonitoring, macrobenthos, Karimunjawa