

ABSTRACT

Bayu Dwilaksana Aue, 24020118140136. **Comparison of Macrobenthic Community Structure Based on Anthropogenic Activities in the Utilization Zones of Karimunjawa Archipelago.** Under the supervision of Prof. Drs. Sapto P. Putro, M.Si, Ph.D and Dr. Jafron Wasiq Hidayat, M.Sc.

Macrobenthos are highly responsive to changes in water quality caused by anthropogenic activities, which in turn affect their abundance. This study aims to assess the structure of the macrobenthos community and its relationship with environmental parameters in areas with different human activities around the Karimunjawa Islands. The research was conducted at three locations within the Utilization Zone with varying anthropogenic activities: Monoculture Floating Net Cage (KJA) in Menjangan Besar Island, Shrimp Pond Aquaculture in Alang-Alang Village, and Tourism Activities in Menjangan Kecil Island. Identification of macrobenthos samples yielded a total abundance of 237,708 ind.m⁻², consisting of the classes Gastropoda, Bivalvia, Polychaeta, Malacostraca, and Ophiuroidea. Data analysis was performed using k-dominance curves, NMDS, One-Way ANOVA, PCA, and BIO-ENV. The index calculations and k-dominance curves showed that the Shrimp Pond Aquaculture Zone had the highest diversity and abundance. The NMDS plot indicated clustering of organismal variation among locations. The One-Way ANOVA test showed a significant difference among zones ($t=0,038$, $P<0,05$), followed by the Post-Hoc test which showed a significant difference between the Monoculture KJA Zone and the Shrimp Pond Aquaculture Zone ($t=0,037$; $P<0,05$). PCA analysis indicated that the Monoculture KJA Zone was influenced by DO and Total Nitrogen (N-Total), the Shrimp Pond Aquaculture Zone was influenced by Organic Carbon and coarse substrate, and the Tourism Zone was influenced by fine substrate. BIO-ENV analysis showed that the combination of DO and N-Total was the most influential abiotic factor with a correlation value of 0,559, where high DO levels support oxygen availability for macrobenthos and high N-Total affects the C/N ratio, thereby enhancing the decomposition of organic matter and increasing food availability for macrobenthos.

Keywords: Macrobenthos, Anthropogenic Activities, Karimunjawa.

Dosen Pembimbing I



Prof. Drs. Sapto P. Putro, M.Si., Ph.D
NIP. 196612261994031008

Dosen Pembimbing II



Dr. Jafron Wasiq Hidayat, M.Sc.
NIP. 196403251990031001