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Assessment of Environmental Quality of Coastal Fishpond Areas Using Macrobenthic Structure: Multivariate and Graphical Approaches[#]

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Abstract. Environmental degradation that results in decreased quantity of farmed fish production is an issue that often arises in rapid aquaculture industry. This study aims to develop the method of environmental quality assessment of aquaculture using macrobenthic structure to ensure the sustainability of its activity. The research was conducted at three fish farming sites along coastal of Sayung, Demak Regency, Central Java, i.e. milkfish ponds, shrimp ponds, and mixture pond. Determination of the environmental quality of the farms was done by analyzing data and environmental parameters and macrobenthic abundance and biomass using multivariate and the graphical methods. The results of Principle Component Analysis (PCA) projected from an aquatic environment parameters showed no signs of grouping based on three types of ponds, but there are signs of grouping by time sampling, indicating fluctuations in physico-chemical conditions of waters over time. Based on the macrobenthic abundance, study sites were dominated by gastropods (97%), the rest of bivalves (2%) and polychaetes (1%). Results from ordination analysis, ABC curves and k-dominance showed no signs of clustering by types of pond, but between sampling times. This implies that multivariate and graphical methods can sensitively detect any environmental change, particularly changes in macrobenthic community, water quality and sediment over time.

Keywords: *environmental quality, multivariate, graphical method, macrobenthic structure, fish farming.*

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