

KEANEKARAGAMAN JENIS MAKROBENTHOS PADA BERBAGAI KERAPATAN VEGETASI DI HUTAN MANGROVE MANGUNHARJO, SEMARANG

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INTISARI

Hutan mangrove di Kelurahan Mangunharjo yang seharusnya difungsikan sebagai ruang terbuka hijau untuk menahan erosi hingga kini masih mengalami tekanan akibat pemanfaatan yang kurang memperhatikan aspek kelestarian lingkungan sehingga mengakibatkan tutupan dan kerapatannya terus berkurang. Hal tersebut diduga akan memengaruhi biota asosiasi mangrove, yakni makrobenthos. Penelitian ini bertujuan untuk mengetahui keanekaragaman dan kelimpahan makrobenthos pada berbagai tingkat kerapatan vegetasi serta mengetahui hubungan keanekaragaman dan kelimpahan makrobenthos dengan kondisi lingkungan di hutan mangrove Mangunharjo.

Klasifikasi tutupan vegetasi dengan kerapatan lebat, sedang, jarang diidentifikasi berdasarkan nilai NDVI. Pengambilan data vegetasi dilakukan pada plot 10 m x 10 m, masing-masing 10 plot untuk setiap kelas kerapatan. Pengambilan data makrobenthos dan kualitas perairan dilakukan pada subplot 1 m x 1 m sebanyak tiga plot di dalam plot pengamatan vegetasi. Sampel sedimen dianalisis kandungan bahan organiknya, yang diambil dengan cara komposit dari ketiga subplot. Analisis data parameter lingkungan yang terdiri atas faktor biotik (kerapatan pohon) serta faktor abiotik (bahan organik total, suhu, pH, DO, ketebalan lumpur, salinitas) dianalisis menggunakan metode *Principal Component Analysis* (PCA).

Indeks diversitas (H') Shannon menunjukkan bahwa keanekaragaman makrobenthos di kawasan dengan kerapatan lebat adalah yang paling tinggi (2,525) dibanding dengan kerapatan sedang (2,511) dan jarang (1,95) dengan kelimpahan makrobenthos kawasan mangrove dengan kerapatan lebat, sedang, dan jarang yakni 189 ind/m², 109 ind/m², serta 47 ind/m². Indeks kesamaan komunitas makrobenthos pada kawasan kerapatan lebat-sedang merupakan yang tertinggi (75%) dibanding pada kerapatan lebat-jarang (70%), maupun sedang-jarang (63,16%). Hasil uji Post Hoc Games-Howell menunjukkan adanya perbedaan yang signifikan antara keanekaragaman makrobenthos di kerapatan vegetasi lebat dengan sedang dan di kerapatan sedang dan jarang. Hasil PCA menunjukkan keanekaragaman maupun kelimpahan makrobenthos berkorelasi positif terhadap kerapatan pohon, kandungan bahan organik, ketebalan lumpur, salinitas, pH, maupun suhu perairan, dimana parameter yang paling berpengaruh yakni kerapatan pohon dan bahan organik.

Kata Kunci: Makrobenthos, Ekosistem mangrove, Kerapatan vegetasi

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DIVERSITY OF MACROBENTHIC UNDER DIFFERENT VEGETATION DENSITIES IN MANGROVE FOREST OF MANGUNHARJO, SEMARANG

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ABSTRACT

The mangroves in Mangunharjo village remain under pressure due to neglect of ecologically sustainable uses, resulting in a continued decline in its vegetation cover and density. This situation can affect the biota associated in mangrove forest such the macrobenthos. The aim of this study was to determine macrobenthic diversity and abundance at different vegetation density levels and to understand the relationship between macrobenthic diversity and abundance and environmental conditions in Mangunharjo mangroves.

According to the NDVI value, the vegetation cover density is classified into dense, medium and sparse. Vegetation data were collected in 10 m x 10 m plot with replication of 10 plots for each vegetation category. Macrobenthic and water quality data were collected in a 1 m x 1 m subplot with replication of three subplot within each vegetation plot. Carbon organic matter analysis was performed on sediment samples obtained from three subplot through composting. Data analysis of environmental parameters, including biotic factors (tree density) and abiotic factors (total organic matter, temperature, pH, DO, mud thickness, salinity) was performed using principal component analysis (PCA).

Shannon diversity index (H') showed that areas with dense vegetation had the highest macrobenthic diversity (2,525), followed by areas with medium vegetation density (2,511) and sparse vegetation density (1,95). The abundance of macrobenthic animals in dense, medium and sparse mangrove areas was 189 in/m², 109 in/m² and 47 in/m², respectively. The Sorensen similarity index (IS) for the macrobenthic community in high-medium density is the highest (75%), compared to high-low density (70%), and medium-low density (63,16%). Post Hoc Games-Howell test results showed significant differences in macrobenthic diversity between dense and medium vegetation densities and between medium and sparse vegetation densities. PCA analysis results showed that macrobenthic diversity and abundance were positively correlated with tree density, carbon organic matter content, sediment thickness, salinity, pH, and water temperature, among which tree density and carbon organic matter were the most influential parameters.

Keywords: *Macrobenthos, Mangrove ecosystem, Vegetation density*

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