HUBUNGAN ANTARA STRUKTUR MANGROVE HASIL REHABILITASI DENGAN KARAKTERISTIK HABITAT DI DESA SILO BARU, SUMATERA UTARA

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INTISARI

Degradasi hutan mangrove di Desa Silo Baru disebabkan karena pembukaan kawasan untuk tambak. Hal tersebut mengakibatkan banyaknya pembuatan kanal air sehingga memudahkan akses air laut mencapai daratan. Oleh karena itu, langkah rehabilitasi dilakukan guna mencegah kerusakan dan degradasi kawasan yang lebih parah. Tujuan penelitian ini adalah untuk mengkaji komposisi dan struktur berupa kerapatan, keanekaragaman, dan dominansi; mengkaji karakteristik habitat mangrove, dan menganalisis hubungan antara struktur berupa kerapatan vegetasi mangrove hasil rehabilitasi dengan karakteristik habitat di Desa Silo Baru, Sumatera Utara.

Penelitian dilakukan di mangrove hasil rehabilitasi seluas 35,99 Ha pada 5 tahun tanam yaitu 2016, 2013, 2011, 2005, dan 1992 dengan intensitas sampling yang digunakan sebesar 1%. Pengambilan data vegetasi dan karakteristik habitat menggunakan metode *transect line plot* dengan jarak 55 m dan metode *nested sampling* menggunakan petak ukur 10 x 10 m untuk pohon, 5 x 5 m untuk pancang, dan 2 x 2 m untuk semai. Analisis data struktur vegetasi dihitung dengan menggunakan perhitungan nilai kerapatan, indeks keanekaragaman, dan indeks dominansi. Data karakteristik habitat disajikan dalam bentuk grafik hubungan antara masing-masing lokasi pengamatan sebagai sumbu (x) dan karakteristik habitat sebagai sumbu (y). Uji beda nilai kerapatan dan karakteristik habitat dianalisis dengan *One Way ANOVA* dan *Kruskal-Wallis Test* menggunakan perangkat lunak SPSS 16.0. Hubungan antara struktur mangrove hasil rehabilitasi dengan karakteristik habitat dianalisis dengan *Canonical Correspondence Analysis* (CCA) menggunakan perangkat lunak *Rstudio* dengan paket *vegan*.

Hasil analisis menujukkan bahwa ditemukan 12 jenis mangrove di lokasi rehabilitasi. Kerapatan, keanekaragaman, dan dominansi vegetasi mangrove hasil rehabilitasi di Desa Silo Baru menunjukkan tren perubahan yang berbeda-beda seiring dengan bertambahnya umur rehabilitasi. Tren tersebut menunjukkan bahwa lokasi rehabilitasi masih berada dalam proses suksesi. Karakteristik habitat juga menunjukkan karaketristik yang berbeda-beda di setiap lokasi rehabilitasi. Parameter salinitas, suhu, DO, pH, ketebalan lumpur, N, dan K menunjukkan perbedaan yang signifikan antar tahun tanam, sementara parameter P tidak menunjukkan perbedaan yang signifikan. Hasil CCA menunjukkan bahwa tiga aksis pertama menjelaskan 65,13% dari total varians dengan nilai koefisien korelasi antara spesies dengan habitat menunjukkan nilai yang tinggi yaitu 0,9166. Hal ini mengindikasikan bahwa karakteristik habitat cukup kuat digunakan untuk menjelaskan ragam kerapatan vegetasi pada tiga fase pertumbuhan dan kerapatan vegetasi mangrove pada ketiga fase pertumbuhan berhubungan kuat dengan karakteristik habitat.

Kata kunci: mangrove, struktur, karakteristik habitat, rehabilitasi, CCA

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CORRELATION BETWEEN STRUCTURE OF MANGROVE REHABILITATION AND HABITAT CHARACTERISTICS IN SILO BARU VILLAGE, NORTH SUMATERA

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ABSTRACT

Degradation of the mangrove forest in Silo Baru Village was caused by the clearing area for the pond. This resulted in many manufacturing of water channels so as to facilitate the seawater access to land. Therefore, the rehabilitation was done to prevent damage and degradation of the area more severely. This study aimed to determine the composition and structure consisting of density; diversity; and dominance, determined the characteristics of mangrove habitat, and analyzed the correlation between the structure of mangrove rehabilitation and habitat characteristics in Silo Baru Village, Sumatera Utara.

The study was conducted in the rehabilitated mangrove area about 35,99 ha of 5 planting years, i.e 2016, 2013, 2011, 2005, and 1992 with sampling intensity was 1%. Data of vegetation and characteristics of habitat were collected by transect line plot method with 55 m distance and nested sampling method used 10 x 10 m measuring plots for trees, 5 x 5 m for saplings, and 2 x 2 m for seedlings. Analysis data of vegetation structure was calculated using density value, diversity index, and dominance index. Habitat characteristics data were presented in graphs of the relationship between each observation site as axis (x) and habitat characteristics as axis (y). The difference tests of density value and habitat characteristics were analyzed with One Way ANOVA and Kruskal-Wallis Test using SPSS 16.0 software. The correlation between the structure of mangrove rehabilitation and habitat characteristics were analyzed by Canonical Correspondence Analysis (CCA) using Rstudio software with a vegan package.

The results showed that 12 species of mangroves were found in the rehabilitation site. The density, diversity, and dominance of the rehabilitated mangrove vegetation in Silo Baru Village showed varies trend of change as increasing age of rehabilitation. This trend showed that rehabilitation sites were still in the process of succession. Habitat characteristics also showed different characteristics in each rehabilitation site. The parameters of salinity, temperature, DO, pH, mud thickness, N, and K showed significant differences between years of planting, while the P parameter did not show a significant difference. The result of CCA showed that the first three axes explained 65.13% of the total variance with the correlation coefficient value between species and habitat showed a high value of 0.9166. This indicated that habitat characteristics were sufficiently strong to be used to explain the variety of vegetation densities in the three phases of growth and density of mangrove species in the three growth phases strongly associated with habitat characteristics.

Keywords: mangrove, structure, habitat characteristics, rehabilitation, CCA

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