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LAND SUITABILITY ANALYSIS FOR MANGROVE CONSERVATION AREA IN LOMBOK BAY ON KUTAI NATIONAL PARK, EAST KALIMANTAN INDONESIA

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RESEARCH HIGHLIGHTS

1. Along with the times and community needs for land, the carrying capacity of mangrove forests as conservation areas must be evaluated regularly.
2. Despite defragmentation and degradation, the Lombok bay mangrove forests in Kutai National Park still have high potential.
3. The suitability of the mangrove forest area of the Gulf of Lombok is still appropriate and worthy of being maintained as a conservation area, even though there are demands for regional development in the area.
4. The importance of environmental education for the surrounding community must be continuously monitored, in order to increase awareness of the role of mangrove ecosystems in supporting people's lives.

Keywords: Conformity, Conservation, Ecosystem, Mangrove

RESEARCH OBJECTIVES

Mangrove forests provide a valuable ecosystem services for coastal communities, but these ecosystems are very sensitive to environmental changes (1). The pressure of Kutai National Park (KNP) mangrove forests has continue to increase because of the human activities for settlement, agriculture, and other activities (2) The existence of mangrove forest areas in KNP is increasingly threatened as the expanded of land use, the issue of enclaves for regional development by the local government. The Lombok bay mangrove area of Kutai National Park in the East Kutai Regency should be evaluated on its carrying capacity periodically. The area needs to be re-zoned in order to reduce the risk of the land clearing threats, especially for ponds and to accommodate local interests, especially the communities around the mangrove area. Based on that reason, data and information are needed. This study is to answer the latest phenomena related to regional development in the area of Lombok bay mangrove forests which continue reduce, and find out whether mangroves in the Lombok bay are worth of being preserved as conservation areas. This study objective was to determine and assess land suitability based on the vegetation condition and the mangrove forest environment carrying capacity.

MATERIALS AND METHODS

This study was carried out in the coastal area of the mangrove forest in the Lombok bay, Kutai National Park in south Sangatta District, East Kutai Regency, East Kalimantan province, Indonesia. This study used an observation method and GPS was used to determine the sampling point coordinates. Sampling location choose based on consideration of characteristics, location access, and the mangroves distribution. The sampling was carried out at 6 stations, each station consisting of 12 sampling points / plots, so there are 72 plots in total. Direct observation was done at each station to collect the data of vegetation condition, salinity, tides, pH, main substrate and current velocity. The mangroves thickness is measured by GIS. The data was analyze using descriptive quantitative method. Land suitability analysis to determine the mangrove conservation area was analyzed based on the mangrove vegetation condition and several environmental parameters quality with four land suitability classes. The formula used to determine the suitability level based on several ecosystem components uses calculations (3) as follows: Regional suitability index / Final value is a sum of Weight of each criterion times by the Value of land suitability level. And than the value of suitability class were descripted.

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RESULTS

The total number of mangrove species found was 12 species from 5 families. The highest tree density was found at station 4 with 127 individual total number and 1,058 trees/ha total density. The mangroves thickness in each location was varies. Mangrove forests that have the highest thickness are found at station 1 (1.44 km) and a low thickness found at station 2 (0.40 km). Although at station 1 has the highest thickness but the number of individuals found is very small , it shows that the forest has a lot of disturbance. The mangrove forests of Lombok bay have experienced an extensive land conversion. This is related to accessibility where the coastal settlements of KNP are generally located close to rivers and creeks i.e., Sangatta estuary, Lombok bay and Sangkima (4). Degradation of mangrove forests is still ongoing in some coastal or coastal areas, and continues to increase due to the surrounding community in fulfilling their daily needs (5). Based on the characteristics of the mangrove environment carrying capacity, it is known that at six stations belong to the class of suitability, which is appropriate (S2) with RSI ranging from 151 to 225.The mangrove trees density needs to be increased.

FINDINGS

12 mangrove species were found with 1.058 trees/ha mangroves density and 1,437 m mangroves thickness. The main substrate is clay, sand and sandy clay. The Tides was 0.90 to 1.55, pH was 9.37 to 10.89, current velocities was 0.25 to 0.56 m/sec, salinity was 2.81 to 4.18 ‰. The Conservation Suitability Index of six stations is classified as appropriate (S1) with the main limiting factor are tree density, pH and salinity. The level of land suitability for mangrove conservation has a possibility to be improved by mangroves planting to increase the mangroves thickness, density, and other environmental conditions.

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