Species composition and vegetation structure of lowland forest in Rambut Island Wildlife Reserve, Kepulauan Seribu, DKI Jakarta

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Abstract. Lowland forest needs to be studied for its structure and composition because it has high biodiversity. Vegetation analysis aims to determine the species composition and structures of lowland forest vegetation in Rambut Island Wildlife Reserve. Vegetation analysis was carried out by the stripes and plotted lines with an observed area of 20,000 m² with several ten lines of observation with an area of 20x100 m. The vegetation data obtained were processed to obtain the Importance Value Index (IVI), the Plant Species Diversity Index, the Species Dominance Index, the Species Richness Index and the Species Evenness Index. Retrieval of abiotic data such as light intensity, altitude, slope, wet and dry temperature, relative humidity, soil pH, soil cation exchange capacity, and soil texture. There are 15 types of plant species in the research location. Kedoya dominates at the tree level, mengkudu dominates at the pole level, kingkit dominates at the sapling level, and kedoya dominates at the seedling level. The highest density value is found at the seedling growth rate of 900 500 individuals ha⁻¹ resulting in an inverted “J” curve in both vertical and horizontal structures.

1. Introduction

1.1. Background

Forests in Indonesia have three natural ecosystems, namely monsoon forests, mountain forests, and lowland forests. The lowland forest is located at an altitude of 0 – 1000 meters above sea level and is the largest forest covering the largest area in Indonesia. Lowland forests are characterized by many dense tree-climbing plants, large buttressed trees, and many trees with tall, rounded trunks with smooth bark [1]. In the lowland forest, many tree species belong to the family Dipterocarpaceae, in addition, there are families Lauraceae, Myrtaceae, Miristicaceae, and Ebenaceae. Lowland forest can be grouped into two categories: lowland forest Dipterocarpaceae, which is dominated by the genera Shorea, Dipterocarpus, Dryobalanops, Cotylelobium, and Hopea. Meanwhile, non-Dipterocarpaceae lowland forests are dominated by the genera Anisoptera, Hopea, Shorea, and Vatica [2].

The lowland forest is one type of stand that needs to be investigated for its structure and composition because the lowland ecosystem area has rich biodiversity and a high level of endemism. However, in
general, this forest has experienced a lot of degradation due to the proximity of community settlements to be vulnerable to loss of genetic resources. However, in general, this forest has experienced a lot of degradation due to the proximity of community settlements to be vulnerable to losing genetic resources.

One of the lowland forests of Non-Dipterocarpaceae is found on Rambut Island. According to [3] Rambut Island is an uninhabited island located about 25 km from Tanjung Priok or 17 km from Muara Angke, Jakarta or 2.5 km from Tanjung Pasir beach, Tangerang. Rambut Island Wildlife Sanctuary has about 90 hectares consisting of 45 hectares of land and 45 hectares of water. Rambut Island Wildlife Reserve has coastal ecosystems, mangrove forest ecosystems, and lowland forests. The lowland forest ecosystem of Rambut Island is located in the center of the island and covers an area of ± 20 ha. The lowland forest ecosystem in the Rambut Island Wildlife Reserve has reasonably high biodiversity, so proper management is needed. The study was conducted to examine the species composition and stand structure in lowland forests and to use this research as a source of information for sustainable management.

Forest vegetation analysis, among others, aims to determine the composition of species and the structure of a forest. This data helps know the balance condition of forest communities, explaining interactions within and between species and predicting trends in the composition of stands in the future. Therefore, it is necessary to analyze the lowland forest vegetation of the Rambut Island Wildlife Reserve to determine the composition and structure of the vegetation in the area.

1.2. Research Goals
This study examines the structure and composition of lowland forest ecosystem and the correlation to Rambut Island Wildlife Reserve, Kepulauan Seribu, DKI Jakarta.

1.3. Research Benefits
The results of this study are expected to be one of the important considerations in managing the Rambut Island Wildlife Reserve area sustainably.

2. Research Method

2.1. Time and Place
This research was conducted in February-March 2021 in the lowland forest of Rambut Island Wildlife Reserve, Thousand Islands, DKI Jakarta.

2.2. Tools and Materials
The tools used in this study consisted of a tape meter, measuring tape (phiband), Haga hypsometer, rope, mercury thermometer, plastic bottle, soil pH meter, compass, machete, tally sheet, camera, field book, stationery, and a laptop that has the Sexi FS software, Microsoft Word and Microsoft Excel. The main material used is lowland forest stands in the Rambut Island Wildlife Reserve, Kepulauan Seribu, DKI Jakarta.

2.3. Research Procedure

2.3.1. Preparation Phase. The preparatory phase includes several activities, including surveying research sites, obtaining research location permits, preparing tools and materials, and collecting secondary data.

2.3.2. Types of Data Collected. The data collected is primary data and secondary data. Primary data is data that is directly contained in the field using the vegetation analysis method. The vegetation analysis technique aims to determine the composition of the species and the vegetation structure by taking vegetation data at the level of seedlings, saplings, poles, and trees. The data were taken is the species name, number of individuals per type, trunk diameter, total height, branch-free height, and canopy cover.
While the abiotic factor data were taken in light intensity, altitude, slope, wet temperature, dry temperature, relative humidity, soil acidity, soil cation exchange capacity (CEC), and soil texture. The secondary data taken is the condition of the Rambut Island Wildlife Reserve.

2.3.3. Vegetation Analysis. The vegetation analysis method used in this research is a combination method between the path method and the checkered line method, which is placed perpendicular from the back zone of lowland forest to the shoreline. According to field conditions, the number of observation lines is ten lines with a distance between lines of 20 meters. Subplot measuring 2 meters x 2 meters for seedling growth rate, subplot 5 meters x 5 meters for sapling growth rate, subplot 10 meters x 10 meters for pole growth rate, and subplot 20 meters x 20 meters for tree level. The data collection method used for vegetation analysis presented in figure 1.

2.3.4. Canopy Stratification. Observation of canopy stratification was carried out to determine the vertical structure of the observed mixed forest. Required data collection is the name of the tree species, tree position, total tree height, free height of tree branches, trunk diameter, canopy shape, and the projection area of the canopy to the ground surface. Canopy stratification is described in the form of a canopy profile diagram with a pole measuring 60 meters (X-axis) x 20 meters (Y-axis) to determine diameter class and stratum layers. Canopy stratification in tropical rain forests divided into 5 stratum, namely stratum A (the uppermost formed by trees >30 m high), stratum B (formed by trees with a height of 20-30 m), stratum C (formed by trees with a height of 10-20 m), stratum D (formed by plants with a height of 0-1 m) and stratum E (formed by plants with a height of 0-1 m) [4].

2.3.5. Observation of Abiotic Factors. Measurement of light intensity carries out using a lux meter application on the research device, which was carried out at the midpoint of the plot of each lane and measured for 15 minutes. Measurements of altitude and slope carry out using a GPS application on the research device. Measurement of air temperature and humidity was carried out during the day every day with three repetitions. Soil pH measurements carry out in each lane. Three samples were taken at the midpoint of the plot and tested with a pH meter. Soil CEC measurements carried out using the sediment shake test method using three soil samples shaken for 10 minutes and then observing the soil deposition that occurred. Determination of soil texture is taking by using the key of determination.

2.4. Data Analysis

2.4.1. Importance Value Index (IVI). Important value index (IVI) of a species is a value that describes the role or influence of a type of mangrove vegetation in an observed community. IVI is the result of the sum of the values of relative density (Kr), relative dominance (Dr), relative frequency (Fr) [5]. Therefore, the Important Value Index can obtain from data on relative density, relative frequency, and relative dominance. IVI calculation using the formula:
Tree and pole level:
IVI = RDen + RF + RD
Sapling and seedling level:
IVI = RDen + RF

a) Density of a species (Den) (ind/ha)
\[ \text{Den} = \frac{\sum \text{individuals of a species}}{\text{sample plot area}} \]

b) Relative density (R.Den) (%)
\[ R.\text{Den} = \frac{\text{density of a species}}{\text{density of all species}} \times 100\% \]

c) Frequency of a species (F) (ind/ha)
\[ F = \frac{\sum \text{subplot found a type}}{\sum \text{the entire sample subplot}} \]

d) Relative frequency (RF) (%)
\[ RF = \frac{\text{frequency of occurrence of species}}{\text{total frequency of occurrence of species}} \times 100\% \]

e) Dominance of a species (D) (m$^2$/ha) for tree level
\[ D = \frac{\text{basal area of a species}}{\text{sample plot area}} \]
Basal area of a species (m$^2$) for tree level can be found by the formula:
\[ \text{Basal Area} = \pi R^2 = \frac{1}{2} \pi D^2 \]

f) Relative dominance (RD)
\[ RD = \frac{\text{total basal area of a species}}{\text{total basal area of all species}} \times 100\% \]

2.4.2. Species Diversity Index ($H'$). The diversity of plant species is obtained from the formula for the Shannon Index of General Diversity [6] as follows:
\[ H' = -\sum_{i=1}^{n} \left( \frac{n_i}{N} \right) \ln \left( \frac{n_i}{N} \right) \]

Information:
H' = Shannon Species Diversity Index
ni = Species density value of i
N = Total density of all species

The value of $H' < 2$ indicates that the diversity of species is low. If $H' = 2 - 3$ the diversity of species is classified as moderate, whereas if the value of $H' > 3$ indicates that the diversity of species in that location is abundant.

2.4.3. Species Dominance Index (C). The species dominance index is calculated by the formula [7] as follows:
\[ C = \left( \sum_{i=1}^{n} \left( \frac{n_i}{N} \right) \right)^2 \]

Information:
C = Species dominance index
ni = Species density value of i
N = Total density of all species
The value of the dominance index for species ranges from $0 \leq C \leq 1$. If the value is $0.75 \leq C \leq 1$, the dominance is classified as high. If the value is $0.5 \leq C \leq 0.75$, the dominance is classified as moderate. If the value is $0 \leq C \leq 0.5$, the dominance is low.

2.4.4. *Species Richness Index* ($R$). Species richness index is obtained from the formula of Margallef [8] as follows:

$$R = \frac{S-1}{\ln(N)}$$

Information:
- $R$ = Species richness index
- $S$ = Total of species found
- $N$ = Total of individual

Species Richness Index is divided into three categories, low if $R<3.5$, medium if $3.5<R<5.0$ and high if $R>5.0$.

2.4.5. *Species Evenness Index* ($E$). Species evenness index is obtained by the formula as follows:

$$E = \frac{H'}{\ln(S)}$$

Information:
- $E$ = Species Evenness Index
- $S$ = Total of species found
- $H'$ = Species Diversity Index

Value of species evenness index $E <0.3$ indicates low species evenness, $E$ values range from $0.3-0.6$, indicating moderate species evenness, and $E> 0.6$ indicates high species evenness.

2.4.6. *Vegetation Structure*. Vegetation structure is divided into horizontal stand structure and vertical stand structure. The horizontal structure was obtained by quantitative descriptive analysis of the relationship between tree density and diameter class.

3. Result and Discussion

3.1. *Species Composition*

Based on the study results, there were 15 types of woody plants found in the lowland forest of the Rambut Island Wildlife Reserve. The components that make up the lowland forest of the Rambut Island Wildlife Reserve are present in Table 1.

Not all of the biodiversity found in the lowland forest of the Rambut Island Wildlife Reserve is native to the area. Of the 15 species of plants found in the research plot, two species are classified as exotic plants. These plants are *Melia azedarach* and *Leucaena leucocephala*. Exotic plant species divide into invasive exotic plants and non-invasive exotic plants [9]. When viewed from the number and condition of exotic species found in the research area, these plants are considered non-invasive exotic species. It is because they are few and do not cause significant disturbance or threat to native species found in the lowland forest of the Rambut Island Wildlife Reserve. The lowland forest of Rambut Island Wildlife Refuge holds important role as a habitat for various kinds of birds. According to [10] said that Rambut Island is a bird habitat that consists of primary mangrove forest, secondary mangrove forest and mixed lowlands. Lowland forest is a habitat that serves as a resting place for seed-eating birds and insects, such as turtledove, kucica and kepodang. Predominantly lowland forest by *Dysoxylum gaudichaudianum* and adjacent *Sterculia foetida* with the mangrove forest is a habitat that serves as a nesting and raising young and resting places [11]. According to [12], the *Egretta garzetta* bird makes *Sterculia foetida*, *Rizophora mucronata*, *Ficus timorensis* and *Excoecaria agallocha* as a nesting place. [13] *Mycteria cinerea* nests in *Sterculia foetida*, *Manilkara kauki*, and *Xylocarpus granatum* with tree height $> 6$ m and canopy...
closure > 25.9 m². A species in the ecosystem can be seen with the Important Value Index (IVI). IVI has various values in each type and each level of growth (table 2).

Table 1. Plant species in the Rambut Island Wildlife Reserve lowland forest.

| No | Common Name | Scientific Name | Family | Information |
|----|-------------|-----------------|--------|-------------|
| 1  | Kedoya      | *Dysoxylum gaudichaudianum* | Meliaceae | Native |
| 2  | Beringin Kresek | *Ficus superba* | Moraceae | Native |
| 3  | Jati Pasir  | *Guettarda speciosa* | Rubiaceae | Native |
| 4  | Kayu Hitam  | *Diospyros maritima* | Ebenaceae | Native |
| 5  | Mengkudu    | *Morinda citrifolia* | Rubiaceae | Native |
| 6  | Bisoro      | *Pisonia grandis* | Nyctaginaceae | Native |
| 7  | Pang soran  | *Ficus callosa* | Moraceae | Native |
| 8  | Kepuh       | *Sterculia foetida* | Malvaceae | Native |
| 9  | Ketapang    | *Terminalia catappa* | Combretaceae | Native |
| 10 | Jambu-jambu | *Ixora timorensis* | Rubiaceae | Native |
| 11 | Kesambi     | *Schleichera oleosa* | Sapindaceae | Native |
| 12 | Mindi       | *Melia azedarach* | Meliaceae | Exotic |
| 13 | Saga        | *Abrus precatorius* | Fabaceae | Native |
| 14 | Lamtoro     | *Leucaena leucocephala* | Fabaceae | Exotic |
| 15 | Jeruk Kingkit | *Triphasia trifolia* | Rutaceae | Native |

Table 2. IVI growth rates of trees, poles, saplings and seedlings in Rambut Island Wildlife Reserve lowland forest.

| Scientific Name | Density (Ind/ha) | Frequency | Dominance (m²/ha) | IVI (%) |
|-----------------|------------------|-----------|-------------------|--------|
| *Dysoxylum gaudichaudianum* | 97.00 | 0.98 | 0.07 | 104.19 |
| *Ficus superba* | 11.00 | 0.34 | 0.37 | 41.85 |
| *Guettarda speciosa* | 10.00 | 0.30 | 0.04 | 20.08 |
| *Diospyros maritima* | 8.50 | 0.22 | 0.04 | 16.12 |
| *Morinda citrifolia* | 8.50 | 0.26 | 0.02 | 16.51 |
| *Pisonia grandis* | 6.50 | 0.18 | 0.04 | 13.46 |
| *Ficus callosa* | 6.50 | 0.16 | 0.04 | 12.83 |
| *Sterculia foetida* | 2.50 | 0.1 | 0.22 | 18.54 |
| *Terminalia catappa* | 1.00 | 0.04 | 0.22 | 14.81 |
| *Ixora timorensis* | 0.50 | 0.02 | 0.03 | 2.95 |
| *Schleichera oleosa* | 0.50 | 0.02 | 0.48 | 28.98 |
| *Melia azedarach* | 0.50 | 0.02 | 0.05 | 3.89 |
| *Adenanthera pavonina* | 0.50 | 0.02 | 0.08 | 5.79 |

| Pole |
|------|
| *Dysoxylum gaudichaudianum* | 24 | 0.12 | 0.04 | 50.78 |
| *Ficus superba* | 12 | 0.12 | 0.04 | 37.21 |
| *Guettarda speciosa* | 14 | 0.14 | 0.04 | 43.41 |
| *Diospyros maritima* | 10 | 0.10 | 0.04 | 36.01 |
| *Morinda citrifolia* | 44 | 0.32 | 0.04 | 88.51 |
| *Pisonia grandis* | 6 | 0.06 | 0.03 | 24.32 |
| *Ixora timorensis* | 2 | 0.02 | 0.04 | 19.77 |

| Sapling |
Scientific Name | Density (Ind/ha) | Frequency | Dominance (m²/ha) | IVI (%)  
--- | --- | --- | --- | ---  
*Dysoxylum gaudichaudianum* | 200 | 0.24 | - | 18.29  
*Ficus superba* | 72 | 0.12 | - | 8.23  
*Guettarda speciosa* | 72 | 0.16 | - | 10.19  
*Diospyros maritima* | 48 | 0.12 | - | 7.45  
*Morinda citrifolia* | 360 | 0.50 | - | 36.26  
*Pisonia grandis* | 24 | 0.04 | - | 2.74  
*Sterculia foetida* | 16 | 0.04 | - | 2.48  
*Ixora timorensis* | 24 | 0.06 | - | 3.72  
*Adenanthera pavonina* | 8 | 0.02 | - | 1.24  
*Leucaena leucocephala* | 8 | 0.02 | - | 1.24  
*Triphasia trifolia* | 2232 | 0.72 | - | 108.14  

**Seedling**  
*Dysoxylum gaudichaudianum* | 69300 | 0.82 | - | 117.55  
*Guettarda speciosa* | 550 | 0.06 | - | 3.58  
*Diospyros maritima* | 200 | 0.08 | - | 4.18  
*Morinda citrifolia* | 3000 | 0.06 | - | 6.30  
*Pisonia grandis* | 200 | 0.04 | - | 2.20  
*Sterculia foetida* | 800 | 0.18 | - | 9.80  
*Ixora timorensis* | 50 | 0.02 | - | 1.05  
*Schleichera oleosa* | 1450 | 0.02 | - | 2.60  
*Adenanthera pavonina* | 1600 | 0.10 | - | 6.73  
*Triphasia trifolia* | 12900 | 0.64 | - | 46.01  

At the tree level, the dominant plant species was *Dysoxylum gaudichaudianum*, with an INP value of 104.19%. At the pole level, the dominant plant species was *Morinda citrifolia*, with an IVI value of 88.51%. While *Triphasia trifolia* dominates at the pole level at the research site with an INP value of 108.14%, and *Dysoxylum gaudichaudianum* seedlings dominate at the seedling level at the study site with an INP value of 117.55%. If seen from table 2, *Dysoxylum gaudichaudianum* is the main constituent plant that is most commonly found in the lowland forest of the Rambut Island Wildlife Reserve. The IVI value evidences it at the growth rate of trees and seedlings, which have the highest value compared to other types. This plant is a native plant species in the lowland forest of the Rambut Island Wildlife Reserve and has an abundance of it. The large number is thought to be due to the distribution of seeds naturally by strong wind gusts in the area. Another factor that can cause the spread of *Dysoxylum gaudichaudianum* is that the *Dysoxylum gaudichaudianum* tree is one of the trees used as a nesting place for herons. The research of [14] said that the buffalo egret likes several types of trees, including *Dysoxylum gaudichaudianum* for nesting. It is due to the character of the diameter of the canopy owned by the tree. Each growth rate has a different index of diversity, richness, dominance, and evenness of species. The difference in the index values presented in table 3.

Table 3. Species diversity index, species evenness index, species richness index, and species dominance index of constituent plant in Rambut Island Wildlife Reserve lowland forest.

| Growth Level | H’ | R | C | E |
|---|---|---|---|---|
| Seedling | 0.84 | 1.2 | 0.61 | 0.36 |
| Sapling | 1.04 | 1.7 | 0.55 | 0.43 |
| Pole | 1.64 | 1.5 | 0.24 | 0.84 |
| Tree | 1.42 | 2.1 | 0.42 | 0.55 |
The diversity index found in the lowland forest of the Rambut Island Wildlife Reserve is low at each growth stage because it has an index value of <2 [15]. The species richness index found in the lowland forest of Rambut Island Wildlife Reserve is low because it has a value of <3.5 at each growth stage. The species dominance index at the growth rate of seedlings and saplings was classified as moderate because it had a value between 0.5≤C≤0.75, and at the growth rate of poles and trees, it was classified as low because it had a value of 0.5. The value of the species richness index is inversely proportional to the dominance index. The dominance index close to 0 at the pole and tree-level cause the value of species richness to be low [16]. Meanwhile, the species evenness index at the growth rate of seedlings, saplings, and trees was classified as moderate because it had an E value ranging from 0.3 to 0.6, and at the pole growth rate, it was classified as high had an E value > 0.6.

The low value of plant species diversity is due to the abiotic factor of the area following [17], which says that environmental factors such as altitude, humidity, temperature, and light intensity significantly affect vegetation. Every forest in Indonesia has different environmental conditions. These environmental conditions can affect the constituent plants in various forest areas. The ecological conditions of the lowland forest of Rambut Island Wildlife Reserve are present in table 4.

Table 4. Ecological conditions in the lowland forest of Rambut Island Wildlife.

| Abiotic Factor                          | Value     |
|----------------------------------------|-----------|
| Light Intensity (lux)                  | 2215.1    |
| Altitude (m)                           | 0.92      |
| Slope (°)                              | 0         |
| Wet Temperature (°C)                   | 27.7      |
| Dry Temperature (°C)                   | 29.7      |
| Relative Humidity (%)                  | 86        |
| Soil Acidity                           | 5.9       |
| Soil Cation Exchange Capacity (CEC)    | Medium    |
| Soil Texture                           | Sandy Loam|

The ecological conditions were obtained in the lowland forest of the Rambut Island Wildlife Reserve are light intensity, altitude, slope, wet temperature, dry temperature, relative humidity, soil acidity, soil cation exchange capacity (CEC), and soil texture. The light intensity in the research location is 2215.1 lux. The average altitude in the lowland forest of Rambut Island Wildlife Reserve is about 0.92 meters above sea level with a humidity of 0%. The temperature measured at the research site is the wet temperature and the dry temperature. The wet temperature has an average of 27.7 °C and an average dry temperature of 29.7 °C with an average relative humidity of 86%. The soil in the lowland forest of Rambut Island Wildlife Reserve has an average soil pH of 5.9 with a medium Cation Exchange Capacity (CEC) and a sandy loam texture. The lowland forest of Rambut Island Wildlife Reserve has environmental conditions similar to that of lowland forest in general. According to [18], lowland forests have an air temperature of >25 °C and humidity levels ranging from 30-40%. Soils in the lowland forest of Rambut Island Wildlife Reserve are generally the same as the criteria for soils in other lowland forests. The soil conditions of lowland forests usually are crumbly, soft, tend to be loam to sandy loam, and lumpy with low to moderate organic matter content and low productivity levels. The soil at the research site is classified as acidic with an average soil pH of 5.9, classified as optimal soil criteria for plant growth ranging from 5.6 to 6.0. Species diversity will decrease along with the increase in soil pH because the availability of certain acids will decrease [19].

3.2. Vegetation Structure
The vegetation structure represents the number of trees per hectare in various diameter classes. The vegetation structure uses to describe the condition of the stand at a time [20]. The structure is divide into the horizontal structure and the vertical structure.
3.2.1. Horizontal Structure. The horizontal structure determines by combining the individual density with the diameter class. The horizontal structure in the lowland forest of Rambut Island Wildlife Reserve forms an inverted J-curve pattern which indicates that the lowland forest of Rambut Island Wildlife Reserve is in good health and has good regeneration. [21] said that forests of all ages that are normal and healthy have a structure that forms an inverted J. The horizontal structure in the lowland forest of Rambut Island Wildlife Reserve can present in figure 3.

3.2.2. Vertical Structure. The vertical structure identifies by combining tree density with tree height class. The vertical structure of the lowland forest of Rambut Island Wildlife Reserve is present in Figure 4.

Figure 3. Horizontal structure in each growth stage.

Figure 4. Vertical structure in several height class.

The vertical structure shows a decrease in individual density with every increase in tree height class. The highest density was found in the tree height class of 4-20 m with a density value of 174 individuals ha\(^{-1}\), then followed by a tree height class of 20-30 m with a density value of 5.5 individuals ha\(^{-1}\) and tree height class > 30 m with a density value of 2 individuals ha\(^{-1}\). Thus, the canopy stratification formed at the study site was grouped into three strata, namely stratum A (>30 m), B (20-30 m), and C (4-20 m). Trees with a height of 4-20 meters (stratum C) dominate the projection of the canopy at the study site. According to [22], stratum C has a thick canopy layer and has many branches arranged tightly so that the tree canopy becomes dense. Therefore, the dense canopy stratification in the lowland forest of Rambut Island Wildlife Reserve is influenced by low altitude. Following [23], who said that along with increasing altitude and decreasing tree height class, the canopy stratification formed was simpler.

4. Conclusion

Fifteen types of constituent plants dominate the lowland forest of Rambut Island Wildlife Reserve. *Dysoxylum gaudichaudianum* was the dominant plant at the tree level, followed by *Morinda citrifolia* at the pole level. *Triphasia trifolia* dominate at the sapling level and the seedling level *Dysoxylum gaudichaudianum* dominated. The plants that make up the lowland forest of Rambut Island have an essential role as a habitat for seed-eating birds and insects. Species diversity in the lowland forest of Rambut Island Wildlife Reserve is low due to abiotic factors in the area. The highest density value was found in the growth rate of seedlings, followed by saplings, poles, and trees. The density value results in an inverted “J” curve indicating that the lowland forest of the Rambut Island Wildlife Reserve has good natural regeneration so that it is in a normal and healthy condition. Canopy stratification in the lowland forest of Rambut Island Wildlife Reserve dominates by stratum C.
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