JPPIPA 9(11) (2023)

Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education

http://jppipa.unram.ac.id/index.php/jppipa/index

Study of Composition and Potential of Production Forest Vegetation in the KPHP Dampelas Tinombo Area Pariasanagung Village Dampelas District Donggala District

Andi Sahri Alam[1*], Imran Rachman[1], Erniwati[1], Hendra Pribadi[1]

[1] Faculty of Forestry, Teaching Staff at the Faculty of Forestry, Universitas Tadulako, Palu, Indonesia.

Received: September 22, 2023
Revised: October 9, 2023
Accepted: November 25, 2023
Published: November 30, 2023

Corresponding Author:
Andi Sahri Alam
andisahrialam77@gmail.com

DOI: 10.29303/jppipa.v9i11.5439

Abstract: Forests, as a gift and mandate from Almighty God, which were bestowed upon the Indonesian nation, are a natural wealth that is priceless, therefore we must be grateful for it. This research was carried out for 3 months, from June to September 2021. This research was located in a production forest in the Dampelas Tinombo Model KPHP area, which is included in the Parisian Agung Village area, Dampelas District, Donggala Regency, Central Sulawesi Province. The composition of vegetation types in the production forest of Parisian Agung Village consists of 28 types of vegetation. at the tree level in the plot there were 165 individuals from 25 types of vegetation, while at the pole level vegetation, there were 140 individuals from 25 types of vegetation, at the sapling level there were 145 individuals from 28 types of vegetation and at the seedling level there were 154 individuals from 28 types of vegetation. While the potential volume of trees in the observation plot is 162.53 m^3 from 165 individuals, the bayas type has the largest volume with 13.17 m^3 and the pole level volume in the observation plot is 17.89 m^3 from 140 individuals, the prupuk type has the largest with 1.63 m^3.

Keywords: Parisan Village; Production forest; Vegetation

Introduction

Forests as national development capital have real benefits for the lives and livelihoods of the Indonesian people, both socio-cultural and economic ecological benefits, in a balanced and dynamic manner. For this reason, forests must be managed and managed, protected, and utilized sustainably for the welfare of the Indonesian people, both present and future generations (Chazdon et al., 2016). The production forest located in Parisan Agung Village, Dampelas District, Donggala Regency, Central Sulawesi is part of the Dampelas Tinombo KPHP management area in Donggala Regency which has a total area of 112,634 Ha. And what is included in the Parisan Agung Village production forest area is an area of 410 Ha. Forest natural resources have a very important role in the continuity of development and community life (Dewi et al., 2019). Forests can fulfill some of the many basic human needs, including the need for wood, water, food, medicines, and healthy air (Turner-Skoff & Cavender, 2019). Forests can also be used as tourist attractions, shelters, a place for wild animals to live, and as a place to conduct research (Mäntymaa et al., 2021).

According to Law of the Republic of Indonesia Number 41 of 1999, a forest is an ecosystem unit in the form of an expanse of land containing biological resources dominated by trees in a natural environment, one of which cannot be separated from the other (Fitriah & Amarini, 2021). Based on their function, forests are divided into three groups, namely (Wulandari & Kurniasih, 2019): Production Forests, namely forest areas that have the main function of producing forest products (Nugroho et al., 2023). Protected Forest, namely a forest area that has the main function of being a life support system, preventing flooding, controlling erosion, preventing seawater intrusion, and maintaining soil fertility (Purwanto et al., 2023). Conservation Forest,

How to Cite:
Alam, A. S., Rachman, I., Erniwati, & Pribadi, H. (2023). Study of Composition and Potential of Production Forest Vegetation in the KPHP Dampelas Tinombo Area Pariasanagung Village Dampelas District Donggala District. *Jurnal Penelitian Pendidikan IPA*, *9*(11), 9867–9876. https://doi.org/10.29303/jppipa.v9i11.5439

namely a forest area with certain characteristics has the main function of preserving the diversity of plants and animals and their ecosystem (Cantonati et al., 2020). The Forestry and Plantation Service of West Kalimantan Province (1999) stated that the definition of forest must be differentiated into the meaning of forest wealth, forest potential, and forest resources (Sanders et al., 2019). Definition of forest; Forests are natural wealth if the existence of the forest is not yet known, as its potential, utilization, and utilization technology (Djafar et al., 2023); A forest has a potential if its benefits are known, the technology for its use is available but the basic potential does not yet exist or is unknown (Dwivedi et al., 2023); Forests are resources if the biological and non-biological components and services contained in the forest have known potential, the benefits and technology for their use and the market are available (Nugroho et al., 2022).

Based on the background above, this research aims to determine the composition and potential level of trees in the KPHP Dampelas Tinombo production forest area, to find out the types of trees that dominate the KPHP Dampelas Tinombo production forest area.

Method

This research was carried out for 3 months, from June to August 2023. The location of this research was in the production forest of Parisan Agung village, Dampelas District, Donggala Regency, Central Sulawesi Province. Data collection method with two types of data, namely primary and secondary data.

Primary Data

Primary data is data obtained by observing overall conditions in the field or research location including. The implementation method in the field is carried out by Direct observation in the field to get a general picture of the potential vegetation in the forest (Lechner et al., 2020). Look for more experienced residents and conduct direct interviews, to find out the potential of vegetation in the forest. Make observation plots on the route to determine existing potential.

Secondary Data

Meanwhile, secondary data was obtained from offices related to literature and reports related to this research. Secondary data includes General conditions of the research location such as the location of the area and area of the research location.

Determination of Observation Plots

This research uses a method (line purposive continuous sampling), namely by deliberately determining continuous plots on observation lines measuring 200 m, and the distance between observation plot lines is 100 m; and the number of research plots is 30 dcaW plots, the size of each plot is 20 x 20 m. The shape and size of the observation path and observation plot can be seen in the following image:

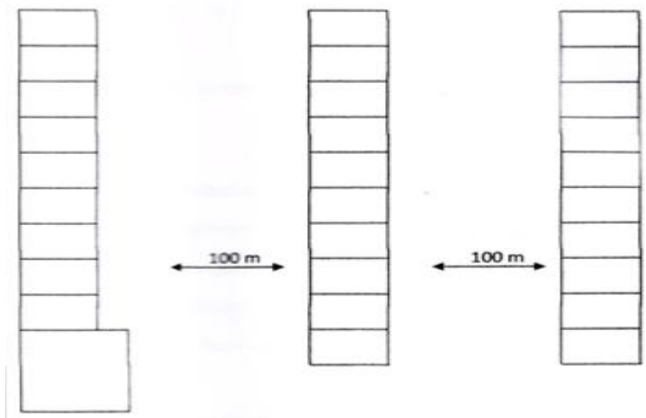

Figure 1. Shape and size of observation paths and observation plots

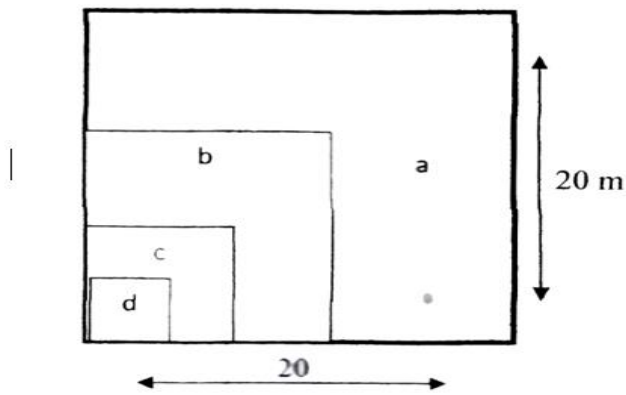

Figure 2. Shape and size of observation sub plots

Observation description: Plot 20 m x 20 m for tree observation (DBH >20 cm), Plot 10 m x 10 m for pole observation (DBH > 10-20 cm), Plot 5 m x 5 m for observation of saplings (DBH < 10 cm height > 1.5 m), Plot 2 m x 2 m for seedling observation (height < 1.5 m)

Data Analysis

Data obtained from observations in the field are then collected and then analyzed to determine the Important Value Index (INP) (Al Idrus et al., 2023). According to Nugraha et al. (2022), the Important Value Index (INP) is obtained by adding up the quantities of relative Density (KR), Relative Dominance (DR), and Relative Frequency (FR), as follows: Density (K), K=(Number of individuals of a type)/(area of sample plot), Relative density (KR), KR =(density of one species)/(density of all species) x 100%, Frequency (F), F=(number of plots found for a type)/(total number of plots), Relative Frequency (FR), FR =(number of plots specified for a type)/(number of all plots) X 100%. Determining the dominance of a species is calculated based on the basal area using the following formula (Susilowati et al., 2021): LBD=¼π (d/100)2, Note: π = 3.14, d = Diameter, Dominance (D), D = (total area of flat area of a type)/(area of sample plot), Relative dominance (DR), DR =(dominance of one type)/(dominance of all types) x 100%, Importance value index (INP) for trees and poles = KR + FR + DR Important value index (INP) mob* saplings and, seedlings = KR + FR

Data analysis to determine vegetation potential is estimated by calculating the volume of trees and poles, the volume formula is as follows:

$$V = \frac{1}{4}\pi . d2 . t . fk \quad (1)$$

Note: v = volume; π= 3.14; d = Diameter; t=tree height; fk = correction factor (0.7)

Result and Discussion

Composition of Vegetation Types

From the results of vegetation identification in production forests in Parisan Agung village, Dampelas District, Donggala Regency, which is located at an altitude of 799 m above sea level. Meanwhile, the location of the first observation plot in this study was at the coordinates N 34000000.000 and E 1060 520 30.0100, the following results were obtained: there were 28 types of vegetation from the 30 observation plots made. The total population is 605 individuals. At the tree level in the observation plot, there were 165 individuals from 25 types of vegetation. At the pole level there were 140 from 25 types of vegetation, at the sapling level there were 146 from 28 types of vegetation, while at the seedling level, there were 154 from 28 types of vegetation (Pratiwi et al., 2021). The results obtained from plot measurements in the production forest in Parisan Agung Village with a total area of 120 m^2 at tree level can be seen in the table below.

Table 1. Composition of Vegetation Types at Tree Level

Local Name	Scientific name	Amount	KR (%)	FR (%)	DR (%)	INP (%)
Mompi	*Santria leavigata*	10	6.20	6.32	8.33	20.85
Malapoga	*Melia sp*	3	1.55	1.91	1.38	4.84
Togalana	*Agathis philipipnensis*	13	7.75	7.66	8.33	23.74
Sugimanai	*Anthochepalus cadamba*	9	5.42	5.47	6.94	18.10
Tombo	*Vatica flavovirens*	5	3.10	3.06	1.38	7.54
Kayu Inggris	*Eucalyptus deglupta*	4	2.32	2.49	1.38	6.19
Perupuk	*Loptopetalum spp*	13	7.75	8.23	6.94	22.92
Maramaku	*Podocarpus rumphii*	5	3.10	3.06	5.55	11.71
Kolaka	*Parinari corymbosae*	8	4.65	3.83	5.55	14.03
Dara-dara	*Myristica gronov*	6	3.87	3.83	5.55	13.25
Mayapo	*Macoranga hibsida*	5	3.10	3.06	4.16	10.32
Bayur	*Pterospemum celebica*	6	3.87	3.83	2.77	10.47
Suri	*Koordersiodendron P*	6	3.87	3.83	4.16	11.86
Bintangor	*Callophylum sp*	9	5.42	5.47	4.16	15.32
Jambu-jambu	*Kjellbergiondendron C*	13	7.75	6.32	8.33	22.40
Nantu	*Palaquium sp*	5	3.10	3.06	1.38	7.54
Maraula	*Diosphioros macrophylla*	8	4.65	4.98	4.16	13.79
Tabang	*Lophocetalum sp*	6	3.87	3.83	2.77	10.47
Silo	*Canarium aspermum*	5	3.10	3.06	1.38	7.54
Lengaru	*Alstonia scholaris*	5	3.10	3.06	2.77	8.93
Bolongita	*Tetrameles nudiflora*	3	1.55	1.91	2.77	6.23
Putemata	*Unidentified*	6	3.87	3.83	1.38	9.08
Simevava	*Unidentified*	2	0.77	1.12	1.38	3.29
Palapi	*Heritiera javanica*	5	3.10	3.06	1.38	7.54
Binuang	*Octomeles sumatrana*	5	3.10	3.06	5.55	11.71
Amount		165	100	100	100	300

Based on Table 1, it can be concluded that the type of vegetation at the tree level that has the highest INP is Togalana (Agathisphilipipnensis) with an INP value of 23.74% followed by the type of rupuk (Lophopetalum sp) with an INP value of 22.92% and the type of guava (*Kjellbergiondendron celebicum*) with an INP value of 22.40%. Meanwhile, the lowest type at the tree level is a special type (Unidentified) with an INP value of 3.29%. The results obtained from plate measurements in production forests in Parisan Agung Village with a total area of 60 m^2 for pole level can be seen in Table 2.

Table 2. Composition of Vegetation Types at Pole Level

Local Name	Scientific name	Amount	KR (%)	FR (%)	DR (%)	INP (%)
Mompi	*Santria leavigata*	7	4.93	4.66	3.70	13.29
Malapoga	*Melia sp*	3	2.24	2.33	3.70	8.27
Togalana	*Agathis philipipnensis*	9	6.72	6.06	3.70	16.48
Sugimanai	*Anthochepalus cadamba*	7	4.93	3.36	3.70	13.99
Tombo	*Vatica flavovirens*	6	4.48	3.72	3.70	11.90
Kayu Inggris	*Eucalyptus deglupta*	4	2.69	3.03	3.70	9.42
Perupuk	*Loptopetalum spp*	10	7.17	6.99	7.40	21.56
Maramaku	*Podocarpus rumphii*	4	2.69	3.03	3.70	9.42
Kolaka	*Parinari corymbosae*	5	3.58	3.72	3.70	11.00
Dara-dara	*Myristica gronov*	4	2.89	3.03	3.70	9.42
Mayapo	*Macoranga hibsida*	5	3.58	3.72	3.70	11.00
Bayur	*Pterospemum celebica*	5	3.58	3.03	3.70	10.31
Suri	*Koordersiodendron P*	8	5.82	4.66	3.70	14.18
Bintangor	*Callophylum sp*	7	4.93	5.36	3.70	13.99
Jambu-jambu	*Kjellbergiondendron C*	11	8.07	7.69	7.40	23.16
Nantu	*Palaquium sp*	3	2.24	2.33	3.70	8.27
Maraula	*Diosphioros macrophylla*	7	4.93	4.66	3.70	13.29
Tabang	*Lophocetalum sp*	6	4.48	4.66	3.70	12.84
Silo	*Canarium aspermum*	5	3.58	3.72	3.70	11.00
Lengaru	*Alstonia scholaris*	4	2.69	3.03	3.70	9.42
Bolongita	*Tetrameles nudiflora*	3	2.24	2.33	3.70	8.27
Putemata	*Unidentified*	5	3.58	3.72	3.70	11.00
Simevava	*Unidentified*	4	2.69	3.03	3.70	9.42
Palapi	*Heritiera javanica*	4	2.69	3.03	3.70	9.42
Binuang	*Octomeles sumatrana*	4	2.69	3.03	3.70	9.42
Amount		140	100	100	100	300

Based on Table 2 above, it can be concluded that the type of vegetation at the pole level that has the highest INP is guava (*Kjellbergiondendron celebicum*) with an INP value of 23.16% followed by the perupuk type (Lophopetalum sp) with an INP value of 21.56% and the Togalana type (*Agathis philipipnensis*) with an INP value of 16.48%. Meanwhile, the lowest types at the pole level were Bolangita (*Tetrameles nudiflora*), Nantu (Palaquium sp), and Malapoga (Melia sp) with a value of 8.27%.

The results obtained from plot measurements in the production forest in Parisan Agung Village with a total area of 30 m² for the sapling level can be seen in Table 3.

Table 3. Composition of Vegetation Types at the Stake Level

Local Name	Scientific name	Amount	KR (%)	FR (%)	INP (%)
Mompi	*Santria leavigata*	8	5.42	5.66	11.08
Malapoga	*Melia sp*	3	2.08	2.17	4.25
Togalana	*Agathis philipipnensis*	7	4.80	4.35	9.15
Sugimanai	*Anthochepalus cadamba*	7	4.80	5.01	9.81
Tombo	*Vatica flavovirens*	4	2.71	2.38	5.54
Kayu inggris	*Eucalyptus deglupta*	4	2.71	2.38	5.54
Perupuk	*Loptopetalum spp*	8	5.42	5.66	11.08
Maramaku	*Podocarpus rumphii*	4	2.71	2.38	5.54
Dara-dara	*Myristica gronov*	5	3.34	2.38	6.17
Kolaka	*Parinari corymbosae*	6	4.17	3.48	7.65
Mayapo	*Macoranga hibsida*	6	4.17	4.35	8.52
Bayur	*Pterospemum celebica*	6	4.17	4.35	8.52
Suri	*Koordersiodendron P*	6	4.17	4.35	8.52
Jambu-jambu	*Kjellbergiondendron C*	9	6.26	6.53	12.79
Bintangor	*Callophylum sp*	8	5.42	5.66	11.08
Nantu	*Palaquium sp*	4	2.71	2.83	5.54
Maraula	*Diosphioros macrophylla*	7	4.80	3.48	8.28
Silo	*Canarium aspermum*	4	2.71	2.83	5.54
Lengaru	*Alstonia scholaris*	6	4.17	4.35	8.52
Bolongita	*Callophylum sp*	3	2.08	2.17	4.25
Putemata	*Unidentified*	3	2.08	2.17	4.25

Local Name	Scientific name	Amount	KR (%)	FR (%)	INP (%)
Simevava	*Unidentified*	3	2.08	2.17	4.25
Palapi	*Heritiera javanica*	4	2.71	2.83	5.54
Binuang	*Octomeles sumatrana*	4	2.71	2.83	5.54
Lambusu	*Unidentified*	4	2.71	2.83	5.54
Kayu aga	*Ficus sycomoroides*	4	2.71	2.83	5.54
Kayu uru	*Elmirrilia ovalis*	4	2.71	2.83	5.54
Mayapo	*Macaranga hibsida*	5	2.71	2.83	6.17
Amount		146	100	100	100

Based on Table 3 above, shows that the sapling level vegetation type that has the highest Importance Value Index is the Bintangor (Callophylum sp) type with an INP value of 12.79% followed by the Nantu (Palaquiron sp), Perupuk (Lophopetalum spp) and Mompi (*Santiria leavigata*) types. with an INP value of 11.08%. Meanwhile, the lowest types at the sapling level are Malapoga (Melia sp), bolangita (*Tetrameles nudiflora*), Putemata (Unidentified), and simevava (Unidentified) with an INP value of 4.25%.

Important Value Index (INP) is an important index that describes the role of a type of vegetation in its ecosystem. If the INP of a type of vegetation has a high value, then the type of vegetation has a high value, than the type. This greatly affects the stability of the ecosystem (Landi et al., 2018). So that the meaning of the important value index can be interpreted, the following criteria are used: the highest important index value is divided by three so that the INP can be grouped into three categories, namely high, medium, and low (Safe'i et al., 2021).

The results obtained from plot measurements in the production forest in Parisan Agung Village with a total area of 13.5 m^2 for the seedling level can be seen in Table 4.

Table 4. Composition of Vegetation Types at Seedling Level

Local Name	Scientific name	Amount	KR (%)	FR (%)	INP (%)
Mompi	*Santria leavigata*	9	5.84	5.06	10.90
Malapoga	*Melia sp*	4	2.56	2.86	5.42
Togalana	*Agathis philipipnensis*	7	4.51	5.06	9.57
Sugimanai	*Anthochepalus cadamba*	7	4.51	5.06	9.57
Tombo	*Vatica flavovirens*	6	3.89	3.52	7.41
Kayu inggris	*Eucalyptus deglupta*	4	2.56	2.86	5.42
Perupuk	*Loptopetalum spp*	6	3.89	3.52	7.41
Maramaku	*Podocarpus rumphii*	5	3.27	3.52	6.79
Dara-dara	*Myristica gronov*	5	3.25	3.52	6.79
Kolaka	*Parinari corymbosae*	4	2.56	2.86	5.42
Mayapo	*Macoranga hibsida*	6	3.89	2.86	6.75
Bayur	*Pterospemum celebica*	7	4.51	4.40	8.91
Suri	*Koordersiodendron P*	7	4.51	5.06	9.57
Jambu-jambu	*Kjellbergiondendron C*	7	2.51	3.52	8.03
Bintangor	*Callophylum sp*	7	4.51	4.40	8.91
Nantu	*Palaquium sp*	5	3.27	3.52	6.79
Maraula	*Diosphioros macrophylla*	5	3.27	3.52	6.79
Silo	*Canarium aspermum*	5	3.27	2.86	6.13
				2.86	
Lengaru	*Alstonia scholaris*	6	3.89	2.86	6.75
Bolongita	*Callophylum sp*	4	2.56	2.86	5.42
Putemata	*Unidentified*	4	2.56	2.86	5.42
Simevava	*Unidentified*	4	2.56	2.86	5.42
Palapi	*Heritiera javanica*	5	3.27	2.86	6.13
Binuang	*Octomeles sumatrana*	5	3.27	3.52	6.79
Lambusu	*Unidentified*	5	3.27	3.52	6.79
Kayu aga	*Ficus sycomoroides*	5	3.27	3.52	6.79
Kayu uru	*Elmirrilia ovalis*	5	3.27	3.52	6.79
Mayapo	*Macaranga hibsida*	5	3.27	3.52	6.79
Amount		146	100	100	200

Table 4 shows that the type of seedling that has the highest INP is Mompi (*Santiria leavigata*) with an INP value of 10.90% followed by the Togalana (*Agathis philipipnensis*) type with an INP value of 9.57% and the sugimanai type (*Anthochepalus cadamba*) with an INP value of 9.57 %. Meanwhile, the lowest types at the seedling level were Malapoga (Melia sp), Putemata (Unidentified), Lengaru (*Alsionia scholaris*), and Bolangita (*Tetrameles nudiflora*) with an INP value of 5.42%. Density is a factor that influences tree growth, if density is high then competition for nutrients and sunlight is greater, and then a frequency value also describes the distribution pattern of a species in a habitat (He et al., 2022). If a type has a high frequency value, then the type will grow spread out and preferably a type will grow in groups and few if the frequency value is low (Todd et al., 2019).

The important value index is useful for determining the dominance of a plant type over other plant types because in a heterogeneous type, the individual vegetation parameter data from frequency, density (Mou et al., 2020), and dominance values cannot describe it completely, so to determine the importance value it is related to the structure of the community. can be known from the importance value index (Roswell et al., 2021).

The species that has the largest importance value index (INP) identifies that the species has a wide distribution and dominates a forest area, according to (Kusmana & Azizah, 2022). The INP of a type shows the dominance of other types in the community. The species with the highest INP has a greater chance of being able to maintain the growth and sustainability of its species. The dominant type is the type that can control the place where it grows and develops itself according to its environmental conditions, which is overall or mostly at the highest level of all types in a vegetation community (Jorgensen et al., 2023). Based on the relative dominance values, it can be concluded that the types of Guava (*Kjellbergiondendron celebicum*), Perupuk (Lophypetalum Sp), and Togalana (*Agathis philipipnensis*) dominate the tree and pole level vegetation in the production forest in Parisan Agung village, while the sapling and seedling level vegetation is Dominating are the types Mompi (*Santria leavigata*), Bintangor (*Callophylum* sp), Perupuk (*Lophopetalum* sp), Nantu (*Palaquium* sp), Togalana (*Agathis philipipnensis*) and Sugimanai (*Anthochepalus cadamba*).

Diameter Distribution

The diameter of the vegetation in this study was measured using the bark at breast height or 1.3 m from the ground for trees without buttresses, while for trees with buttresses, it was measured 20 cm above the vegetation buttresses. The results of the diameter measurements can be seen in Table 5.

Table 5. Diameter Distribution in Parisan Agung Village Production Forest

Diameter	Pole	Tree
10 – 20	140	107
> 20		40
> 30		14
> 40		4
> 50	140	165

Based on Table 5 above, it is known that the vegetation diameter class in the production of Parisan Agung village is <10 cm and has the most individuals, namely 146 individuals, followed by the 10-20 cm diameter class with 140 individuals and the >20 cm diameter class with 107 individuals. The largest diameter was >50 cm in 4 individuals. The following is a diagram regarding the distribution of vegetation diameter in Parisan Agung village.

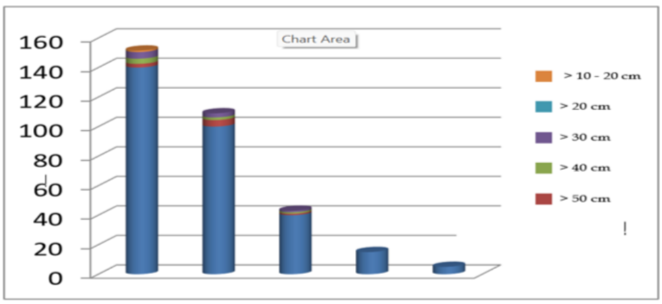

Figure 3. Diameter distribution

Vegetation Potential Based on Volume

The results of calculating the volume of trees in Parisan Agung Village in a plot measuring 20 m x 20 m can be seen in Table 6.

Table 6. Tree Level Volume per Species

Local Name	Scientific name	Amount	Volume (m^3)
Mompi	*Santria leavigata*	10	13.17
Malapoga	*Melia sp*	3	2.38
Togalana	*Agathis philipipnensis*	13	12.20
Sugimanai	*Anthochepalus cadamba*	9	9.83
Tombo	*Vatica flavovirens*	5	3.07
Kayu Inggris	*Eucalyptus deglupta*	4	2.96
Perupuk	*Loptopetalum spp*	13	8.62

Local Name	Scientific name	Amount	Volume (m^3)
Maramaku	*Podocarpus rumphii*	5	10.55
Kolaka	*Parinari corymbosae*	8	9.38
Dara-dara	*Myristica gronov*	6	7.18
Mayapo	*Macoranga hibsida*	5	8.53
Bayur	*Pterospemum celebica*	6	4.66
Suri	*Koordersiodendron P*	6	6.24
Bintangor	*Callophylum sp*	9	5.88
Jambu-jambu	*Kjellbergiondendron C*	13	2.33
Nantu	*Palaquium sp*	5	12.07
Maraula	*Diosphioros macrophylla*	8	3.40
Tabang	*Lophocetalum sp*	6	6.90
Silo	*Canarium aspermum*	5	4.16
Lengaru	*Alstonia scholaris*	5	3.25
Bolongita	*Tetrameles nudiflora*	3	5.53
Putemata	*Unidentified*	6	2.94
Simevava	*Unidentified*	2	1.54
Palapi	*Heritiera javanica*	5	2.30
Binuang	*Octomeles sumatrana*	5	13.14
Amount		165	162.53

Based on Table 6 above, it can be seen that the total volume of trees included in the observation plot in the production forest in Parisan Agung Village is 162.53 m^3. The volume of Mompi type trees is at the top which has the highest volume with a volume of 13.17 m3, this is because the Mompi type dominates in the production forest in Parisan Agung Village. Followed by the Binuang type (*Octomeles sumatrana*) with a volume of 13.40 m^3, and the Togalana type (*Agathis philippinensis)* with a volume of 12.20 m^3. The lowest tree volume is the simevava (Unidentified) type with a volume of 1.54 m3.

The results of calculating the volume of poles in production forests in Parisan Agung Village in plots measuring 10 m x 10 m can be seen in Table 7 below.

Table 7. Volume of Pile Levels per Type

Tabang	Scientific name	Amount	Volume (m^3)
Silo	*Santria leavigata*	6	0.68
Lengaru	*Melia sp*	5	0.58
Bolongita	*Agathis philipipnensis*	4	0.47
Putemata	*Anthochepalus cadamba*	3	0.41
Simevava	*Vatica flavovirens*	5	0.47
Palapi	*Eucalyptus deglupta*	4	0.35
Binuang	*Loptopetalum spp*	4	0.44
Mompi	*Podocarpus rumphii*	4	0.55
Malapoga	*Parinari corymbosae*	7	0.92
Togalana	*Myristica gronov*	3	0.35
Sugimanai	*Macoranga hibsida*	9	1.45
Tombo	*Pterospemum celebica*	7	0.99
Kayu Inggris	*Koordersiodendron P*	4	0.61
Maramaku	*Callophylum sp*	4	0.48
Perupuk	*Kjellbergiondendron C*	10	1.63
Dara-dara	*Palaquium sp*	5	0.59
Mayapo	*Diosphioros macrophylla*	4	0.61
Kolaka	*Lophocetalum sp*	5	0.57
Bayur	*Pterospemum celebica*	5	0.66
Suri	*Koordersiodendron P*	8	0.85
Bintangor	*Callophylum sp*	7	0.90
Jambu-jambu	*Kjellbergiondendron C*	11	1.16
Nantu	*Palaquium sp*	3	0.32
Maraula	*Diosphioros macrophylla*	7	0.94
Bayur	*Pterospemum celebica*	5	0.66
Amount		140	17.89

Based on Table 7 above, it can be seen that the total volume of pole-level vegetation included in the research plot in the production forest in Parisan Agung Village is 17.89 m^3, the volume of Janis perupuk (Lophopetalum spp) poles is at the top which has the highest volume with a volume of 1.63 m^3, followed by the Togalana type (*Agathis philippinensis*) with a volume of 1.45 m^3. And the guava type (*Kjellbergiondendron celebicum*) is 1.16 m^3. The lowest pole volume is the Nantu type (Palaquium sp) with a volume of 0.32 m^3.

Conclusion

Based on observations in the field, it can be concluded: The composition of vegetation types in the production forest of Parisan Agung Village consists of 28 types of vegetation, at the tree level in the plot there are 165 individuals from 25 types of vegetation, while the vegetation at pole level is 140 individuals from 25 types of vegetation, at the sapling level there are 146 individuals from 28 types of vegetation and seedling stage as many as 154 individuals from 28 types of vegetation. The vegetation types that dominate in the production forest are Togalana (*Agathis philippinensis*) at the tree level, Jambu-guava (*Kjellbergiondendron celebicum*) dominate at the pole level, Bintangor (Callophylum sp) dominate at the sapling level and Mompi (Santiria leavigata) dominate at the sapling level. seedlings, this is known based on the highest value index (INP) for that type of vegetation. The potential for vegetation in the production forest in the KPHP Model Dampelas Tinombo area of Parisan Agung Village can be seen based on the volume of trees in the observation plot of 162.53 m^3 from 165 individuals (Rambey et al., 2022), the Mompi (*Santiria leavigata*) type has the largest volume with 13.17 m^3 and the volume The pile level in the observation plot was 17.89 m^3 from 140 individuals, the Prupuk (Lophopetalum Spp) type had the largest volume with 1.63 m^3.

Acknowledgments
Thanks to all parties who have supported the implementation of this research. I hope this research can be useful.

Author Contributions
Conceptualization, A. S. A., I. R., E. E., H. P.; methodology, A. S. A.; validation, I. R. and E. E.; formal analysis, H. P.; investigation, A. S. A., and I. R.; resources, E. E. and H. P.; data curation, A. S. A.: writing—original draft preparation, I. R and E. E.; writing—review and editing, H. P.: visualization A. S. A, and I. R and E. E. All authors have read and agreed to the published version of the manuscript.

Funding
This research was independently funded by researchers.

Conflicts of Interest
The authors declare no conflict of interest.

References

Al Idrus, A., Mertha, I. G., Marhus, M., & Husain, P. (2023). Characteristics of Sentigi (Pemphis acidula) As Environmental Bioindicators of Mangrove Conservation in the Regional Marine Conservation Area Gili Sulat, East Lombok, Indonesia. *Jurnal Penelitian Pendidikan IPA*, *9*(1), 542–549. https://doi.org/10.29303/jppipa.v9i1.2521

Cantonati, Poikane, Pringle, Stevens, Turak, Heino, Richardson, Bolpagni, Borrini, Cid, Čtvrtlíková, Galassi, Hájek, Hawes, Levkov, Naselli-Flores, Saber, Cicco, Fiasca, … & Znachor. (2020). Characteristics, Main Impacts, and Stewardship of Natural and Artificial Freshwater Environments: Consequences for Biodiversity Conservation. *Water*, *12*(1), 260. https://doi.org/10.3390/w12010260

Chazdon, R. L., Brancalion, P. H. S., Laestadius, L., Bennett-Curry, A., Buckingham, K., Kumar, C., Moll-Rocek, J., Vieira, I. C. G., & Wilson, S. J. (2016). When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio*, *45*(5), 538–550. https://doi.org/10.1007/s13280-016-0772-y

Dewi, I. K., Hardin, Abdullah, L. O. D., Zeldi, L. M. R., Andara, D., Ramadhan, F. M., Irwansyah, & Lembang, H. (2019). The role of forestry police in the prevention and eradication of forest destruction. *IOP Conference Series: Earth and Environmental Science*, *343*(1), 012130. https://doi.org/10.1088/1755-1315/343/1/012130

Djafar, E. M., Widayanti, T. F., Saidi, M. D., Muin, A. M., & Ratnawati. (2023). Forest management to Achieve Sustainable Forestry Policy in Indonesia. *IOP Conference Series: Earth and Environmental Science*, *1181*(1), 012021. https://doi.org/10.1088/1755-1315/1181/1/012021

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., … & Wright, R. (2023). Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, *71*, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Fitriah, N., & Amarini, I. (2021). Existence of Protected Forest Function as Protection Area. *Jurnal Dinamika*

Hukum, *21*(2), 331. https://doi.org/10.20884/1.jdh.2021.21.2.3435

He, C., Jia, S., Luo, Y., Hao, Z., & Yin, Q. (2022). Spatial Distribution and Species Association of Dominant Tree Species in Huangguan Plot of Qinling Mountains, China. *Forests*, *13*(6), 866. https://doi.org/10.3390/f13060866

Jorgensen, A. G., Alfaro-Sánchez, R., Cumming, S. G., White, A. L., Degré-Timmons, G. É., Day, N., Turetsky, M., Johnstone, J. F., Walker, X. J., & Baltzer, J. L. (2023). The influence of postfire recovery and environmental conditions on boreal vegetation. *Ecosphere*, *14*(7), e4605. https://doi.org/10.1002/ecs2.4605

Kusmana, C., & Azizah, N. A. (2022). Species composition and Vegetation Structure of Mangrove Forest in Pulau Rambut Wildlife Reserve, Kepulauan Seribu, DKI Jakarta. *IOP Conference Series: Earth and Environmental Science*, *950*(1), 012020. https://doi.org/10.1088/1755-1315/950/1/012020

Landi, P., Minoarivelo, H. O., Brännström, Å., Hui, C., & Dieckmann, U. (2018). Complexity and stability of ecological networks: A review of the theory. *Population Ecology*, *60*(4), 319–345. https://doi.org/10.1007/s10144-018-0628-3

Lechner, A. M., Foody, G. M., & Boyd, D. S. (2020). Applications in Remote Sensing to Forest Ecology and Management. *One Earth*, *2*(5), 405–412. https://doi.org/10.1016/j.oneear.2020.05.001

Mäntymaa, E., Tyrväinen, L., Juutinen, A., & Kurttila, M. (2021). Importance of forest landscape quality for companies operating in nature tourism areas. *Land Use Policy*, *107*, 104095. https://doi.org/10.1016/j.landusepol.2019.104095

Mou, X. M., Yu, Y. W., Li, X. G., & Degen, A. A. (2020). Presence frequency of plant species can predict spatial patterns of the species in small patches on the Qinghai-Tibetan Plateau. *Global Ecology and Conservation*, *21*, e00888. https://doi.org/10.1016/j.gecco.2019.e00888

Nugraha, B. H., & Kusmana, C. (2022). Species composition and vegetation structure of lowland forest in Rambut Island Wildlife Reserve, Kepulauan Seribu, DKI Jakarta. *IOP Conference Series: Earth and Environmental Science*, *950*(1), 012021. https://doi.org/10.1088/1755-1315/950/1/012021

Nugroho, H. Y. S. H., Indrajaya, Y., Astana, S., Murniati, Suharti, S., Basuki, T. M., Yuwati, T. W., Putra, P. B., Narendra, B. H., Abdulah, L., Setyawati, T., Subarudi, Krisnawati, H., Purwanto, Saputra, M. H., Lisnawati, Y., Garsetiasih, R., Sawitri, R., Putri, I. A. S. L. P., … & Rahmila, Y. I. (2023). A Chronicle of Indonesia's Forest Management: A Long Step towards Environmental Sustainability and Community Welfare. *Land*, *12*(6), 1238. https://doi.org/10.3390/land12061238

Nugroho, H. Y. S. H., Nurfatriani, F., Indrajaya, Y., Yuwati, T. W., Ekawati, S., Salminah, M., Gunawan, H., Subarudi, S., Sallata, M. K., Allo, M. K., Muin, N., Isnan, W., Putri, I. A. S. L. P., Prayudyaningsih, R., Ansari, F., Siarudin, M., Setiawan, O., & Baral, H. (2022). Mainstreaming Ecosystem Services from Indonesia's Remaining Forests. *Sustainability*, *14*(19), 12124. https://doi.org/10.3390/su141912124

Pratiwi, Narendra, B. H., Siregar, C. A., Turjaman, M., Hidayat, A., Rachmat, H. H., Mulyanto, B., Suwardi, Iskandar, Maharani, R., Rayadin, Y., Prayudyaningsih, R., Yuwati, T. W., Prematuri, R., & Susilowati, A. (2021). Managing and Reforesting Degraded Post-Mining Landscape in Indonesia: A Review. *Land*, *10*(6), 658. https://doi.org/10.3390/land10060658

Purwanto, Latifah, S., Yonariza, Akhsani, F., Sofiana, E. I., & Ferdiansah, M. R. (2023). Land cover change assessment using random forest and CA markov from remote sensing images in the protected forest of South Malang, Indonesia. *Remote Sensing Applications: Society and Environment*, *32*, 101061. https://doi.org/10.1016/j.rsase.2023.101061

Rambey, R., Lubis, A. S. J., Susilowati, A., Rangkuti, A. B., Onrizal, Wijayanto, N., & Siregar, I. Z. (2022). Plant diversity components of agroforestry in Tanjung Botung, Village, Barumun District, Padang Lawas Regency, North Sumatra. *IOP Conference Series: Earth and Environmental Science*, *959*(1), 012003. https://doi.org/10.1088/1755-1315/959/1/012003

Roswell, M., Dushoff, J., & Winfree, R. (2021). A conceptual guide to measuring species diversity. *Oikos*, *130*(3), 321–338. https://doi.org/10.1111/oik.07202

Safe'i, R., Arwanda, E. R., Doria, C., & Taskirawati, I. (2021). Health assessment of vegetation composition in the reclamation area of PT Natarang Mining, Tanggamus Regency, Lampung Province. *IOP Conference Series: Earth and Environmental Science*, *886*(1), 012076. https://doi.org/10.1088/1755-1315/886/1/012076

Sanders, A. J. P., Ford, R. M., Mulyani, L., Prasti H., R. D., Larson, A. M., Jagau, Y., & Keenan, R. J. (2019). Unrelenting games: Multiple negotiations and landscape transformations in the tropical peatlands of Central Kalimantan, Indonesia. *World Development*, *117*, 196–210. https://doi.org/10.1016/j.worlddev.2019.01.008

Susilowati, A., Elfiati, D., Rachmat, H. H., Rangkuti, A. B., Dwiyanti, F. G., Yulita, K. S., Fambayun, R. A., Ginting, I. M., & Purba, M. F. (2021). Population structure of woody plant in malaka (Phyllanthus emblicata) habitat, Padang bolak, North Sumatra. *IOP Conference Series: Earth and Environmental Science*, *713*(1), 012048. https://doi.org/10.1088/1755-1315/713/1/012048

Todd, S., Pierrehumbert, J. B., & Hay, J. (2019). Word frequency effects in sound change as a consequence of perceptual asymmetries: An exemplar-based model. *Cognition*, *185*, 1–20. https://doi.org/10.1016/j.cognition.2019.01.004

Turner-Skoff, J. B., & Cavender, N. (2019). The benefits of trees for livable and sustainable communities. *PLANTS, PEOPLE, PLANET*, *1*(4), 323–335. https://doi.org/10.1002/ppp3.39

Wulandari, C., & Kurniasih, H. (2019). Community preferences for social forestry facilitation programming in Lampung, Indonesia. *Forest and Society*, *3*(1), 114. https://doi.org/10.24259/fs.v3i1.6026