REPORT

BASELINE COMMUNITY FOREST
WEST KOTAWARINGIN REGENCY
CENTRAL KALIMANTAN PROVINCE - INDONESIA

2025

COVER PAGE

Report Date	:	30 June 2025
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Organizations Requesting Baseline Study	:	HKm Meniti Fajar
ABKT Identification Location	:	Raja Seberang Village, South Arut District, West Kotawaringin Regency, Central Kalimantan Province.
ABKT Assessment Date	:	11 – 18 February 2025
Area of Identification	:	1,909 Hectares
Current Land Use	:	Community Forest (HKm)
Certification Scheme	:	PHPL, FSC, IFCC

PREFACE

Praise be to the presence of God Almighty because with all His blessings we were able to prepare a Baseline Assessment Report for HKm Meniti Fajar to obtain a forest area management permit from the Ministry of Environment and Forestry in accordance with Minister of Environment and Forestry Regulation SK.2820/MENLHK-PSKL/PKPS/PSL.0/3/2022 concerning Granting Community Forest Management Approval to the Meniti Fajar Forest Farmer Group Covering an Area of 1,909 (One Thousand and Nine Hundred and Nine) Hectares in a Convertible Production Forest Area of 1,909 Hectares in Raja Seberang Village, South Arut District, West Kotawaringin Regency, Central Kalimantan Province.

The HKm Meniti Fajar Baseline assessment document is an activity that must be fulfilled. As a reference for preparing work plans and programs, as well as exploring the potential for Biodiversity Credit, BGA and HKm Meniti Fajar have agreed to carry out an assessment of biodiversity, potential for timber and non-timber forest products, potential for environmental, social, cultural and economic services as baseline data.

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The format of this report follows the Guidelines "Technical Instructions for Determining High Conservation Value Areas Outside Nature Reserve Areas, Nature Conservation Areas and Hunting Parks "PERDIRJEN Conservation of Natural Resources and Ecosystems, Number: P.5/KSDAE/SET/KUM.I/9/2017, January 2017. This report contains seven chapters; Chapter 1 is about Introduction, Chapter 2 is about Initial Baseline Description, Chapter 3 is about Area Description, Chapter 4 is about Physical and Environmental characteristics, Chapter 5 is about Biological and ecological characteristics, Chapter 6 is about Socio-Economic and Cultural Conditions, Chapter 7 is about Spatial Conditions and landscape, and Chapter 8 about Threats Identification and Management Recommendations.

Finally, I hope that the HKm Baseline Assessment Report Meniti Fajar This is accepted by all parties. Suggestions and input are highly welcome to improve this report.

Bogor, June 30, 2025

Best regards,

PT Sarana Foresta Indonesia

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LIST OF LIST OF ACRONYMS AND TERMS

APL	:	Lands for other Purposes.
Appendix I	:	CITES classification which lists all species of wild plants and animals that are threatened by all forms of international commercial trade.
Appendix II	:	CITES classification which lists species of wild plants and animals that are not threatened with extinction but may become endangered if trade continues without regulation.
High Conservation Value Area – KBKT	:	an area that has one or more HCVs. In this guide, KBKT is a translation of HCVA (High Conservation Value Area).
BKSDA	:	Natural Resources Conservation Center.
Culture	:	a term that refers to a collective result of a human group or local community, including values, ideas, beliefs, behavior, events or rituals, language, knowledge and material objects.
CA	:	Nature preserve
CITES	:	Convention on International Trade in Endangered Species of Wild Fauna and Flora- CITES or the Convention on International Trade in Endangered Species of Wild Plants and Animals.
CR	:	Critically Endangered The status of wild animals that are at risk of extinction in the near future are listed in the Red Book (Red List Data Book) IUCN.
CSR	:	Corporate Social Responsibility
DAS	:	A river basin is a hydrological unit bounded by topographic boundaries with the highest peak of a river basin, where rainwater that falls in that region flows into small rivers to large rivers, to the main river which then flows into lakes or the sea. Depending on the topography of the area, a watershed can be divided into several tens or hundreds of sub-watersheds and sub-sub-watersheds, etc.
DLH	:	Environmental Service
EBA	:	Endemic Bird Area
Ecosystem	:	is an ecological system formed by a reciprocal relationship between organisms (living things) or biotic elements and their environment or abiotic elements. An ecosystem can be considered as a community of all plants and animals including their physical environment, which together function as one inseparable unit or are interdependent on each other.
EN	:	Endangered (threatened/critical) is the IUCN conservation status given to species that are facing a high risk of extinction in the wild in the future.

FGD	:	Focus Group Discussion
River Boundary Line	:	is the outer boundary line for protecting the river.
Habitat	:	is a part of an ecosystem or area that has certain environmental conditions and characteristics where a type of living creature reproduces naturally and which supports the continuation of its life.
HCV	:	High Conservation Value
HL	:	Protected forest
HP	:	Permanent Production Forest
HPK	:	Convertible Production Forest
HKm	:	Community Forestry
IBA	:	Important Bird Area
IUCN	:	International Union for the Conservation of Nature and Natural Resources – IUCN is a United Nations (UN) organization which aims to conserve natural resources, consisting of countries, government agencies, non-governmental organizations, experts and scientists from all over the world.
Environmental Services	:	biophysical services produced by an ecosystem directly or indirectly that support the lives of living creatures, including humans.
Conservation Area	:	an area designated as a natural reserve area, nature conservation area, hunting park or protected forest (see definition of Protected Area).
Protected area	:	the area that functions to provide protection for the area below consists of local protection areas (including coastal borders, river borders, areas around lakes/reservoirs and areas around springs) as well as nature reserves and cultural reserves (including nature reserves, marine nature reserves and their waters, mangrove coastal areas, national parks, rainforest parks and nature tourism parks, and cultural and scientific reserves), which include protected forest areas, peatlands and water seepage areas (Presidential Decision) 32/1990).
Basic needs	:	types of goods or services that humans need to fulfill their basic needs, including food, water, clothing, materials for housing and equipment, firewood, medicine, education and animal feed.
KLHK	:	Ministry of Environment and Forestry
Local Community	:	a term that refers to a group of people who live in an area and are interconnected with each other and have common interests and values. In practical terms, a local community in the context of high conservation value is a group of people who live in or around a forest area or other natural ecosystem who have a communication network, have common interests with the forest or other natural ecosystem and have certain local symbols related to the area.
Conservation of Biological	:	management of biological natural resources whose use is carried out wisely to ensure the continuity of their supply while

Natural Resources		maintaining and improving the quality of their diversity and value.
KPHP	:	Production Forest Concession Unit
Landscape	:	a geographic mosaic of interacting ecosystems, whose spatial arrangement and types of interactions reflect the impacts of climate, geology, topography, hydrology, soils, biota, and human activities.
LSM	:	Non-governmental organization
HCV	:	High Conservation Value – something that has high conservation value at the local, regional or global level which includes ecological, environmental services, social and cultural values. These values and the procedures for their identification are specified in the Indonesian HCV Guide. HCV is a translation of HCV (High Conservation Value)
PBPH	:	Forest Utilization Business Licensing.
Spatial Planning	:	a process system for spatial planning, space utilization and control of space utilization as determined in Law no. 26 of 2007.
Population	:	all members of a single species found/inhabiting a certain area.
PP	:	Government regulations
PT BGA	:	PT Bumitama Gunajaya Agro
RTE	:	Rare Threatened Endangered
SDA	:	Natural Resources
River Border	:	land on both sides along the riverbed calculated from the edge to the foot of the inner embankment.
GIS	:	Geographic Information Systems
SOP	:	Standard Operating Procedure
Biological Natural Resources	:	are biological elements in nature consisting of Plant natural resources and animal natural resources which together with the surrounding non-biological elements as a whole form an ecosystem.
River	:	places and containers and water flow network starting from the spring to the estuary with limits on the right and left and along the flow by the boundary line.
National Park	:	a nature conservation area that has a native ecosystem, managed using a zoning system that is used for research, science, education, supporting cultivation, tourism and recreation purposes
Spatial planning	:	is a form of spatial structure and spatial pattern. Spatial structure is the arrangement of residential centers and a network system of infrastructure and facilities that function to support socio-economic activities of the community which hierarchically have functional relationships. Spatial pattern is the distribution of land use in an area which includes allotment of space for protection functions and allotment of space for cultivation functions (UU No. 26 of 2007, Article 1)
Vu	:	(vulnerable) IUCN conservation status given to species that are at risk of extinction in the wild in the future.

River Area : a unified water management area as a result of the development of one or more river drainage areas.

INTRODUCTION

Background

Objective

Location

Assessment team

Timeline and Methodology

Background

Bumitama Gunajaya Agro (BGA) together with the Meniti Fajar Forest Farmers Group (KTH), entered into a co-management cooperation agreement in November 2024 for the management and sustainable utilization of the Meniti Fajar Community Forest (HKm) area covering 1,909 hectares. This initiative aims to improve the quality of natural resources and enhance the welfare of the surrounding communities.

KTH Meniti Fajar obtained community forest management rights from the Ministry of Environment and Forestry through the Ministerial Decree No. SK.2820/MENLHK-PSKL/PKPS/PSL.0/3/2022, which grants community forest management rights to the Meniti Fajar Forest Farmers Group for an area of 1,909 hectares located in the Convertible Production Forest (HPK) in Raja Seberang Village, South Arut District, West Kotawaringin Regency, Central Kalimantan Province.

As a reference for the preparation of work plans and activity programs in the HKm area, and to explore the potential for Biodiversity Credits in the work area. BGA and KTH Meniti Fajar agreed to conduct a baseline assessment. This includes an evaluation of physical and environmental characteristics, biodiversity, the potential for timber and non-timber forest products, and environmental, social, economic, and cultural services - all of which will serve as foundational data (*Baseline Assessment*).

Objective

Baseline assessment aims to provide data on physical and environmental characteristics, biodiversity, the potential of timber and non-timber forest products, environmental service potential, as well as social, economic and cultural conditions, and potential threats at the start of the activities. These data are used to help identify key potentials and issues, and to provide insights before the program is implemented. The baseline results also serve as a foundation for setting activity priorities and as benchmark information to measure the success of the program. The assessment must clearly generate information that will be used to guide and direct the implementation of activities.

Location

The target and location of this activity is the working area of the Meniti Fajar Community Forest (HKm), in accordance with the Decree of the Minister of Environment and Forestry No.SK.2820/MENLHK PSKL/PKPS/PSL.0/3/2022, covering an area of 1,909 hectares. Administratively, it is located in Raja Seberang Village, South Arut District, West Kotawaringin Regency, Central Kalimantan Province. This area is approximately 15 km from the city of Pangkalan Bun or around 16 km east of the nearest office of PT BGA Kotawaringin Region (PT BGB).
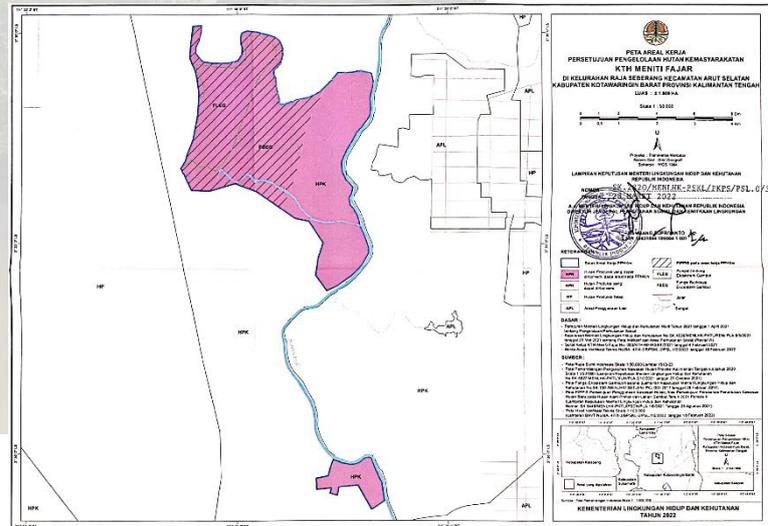
Figure 1. Working Area of KTH Meniti Fajar

Assessment Team

The activity of Identifying Baseline Assessment of HKm Meniti Fajar, as a reference in preparing work plans and programs, as well as exploring the potential of Biodiversity Credit, BGA and HKm Meniti Fajar was carried out by PT Sarana Foresta Indonesia. Information on the implementation of activities in the Meniti Fajar HKm area is as follows:

Company Name	:	PT Sarana Foresta Indonesia
Address	:	Sinbad Green Residence, Blok C1 No. 37,
		Bubulak Village, West Bogor,
		Bogor City – West Java
Email	:	saforindo@gmail.com
Technical Person in Charge	:	R. Sigit Pamungkas

The number of the Assessment Team for the Meniti Fajar HKm Area in the Context of Empowering Social Forestry Groups and Environmental Partnerships of PT Sarana Foresta Indonesia is 8 people, consisting of various fields of expertise, namely Biodiversity Experts, Environmental Services Experts, Socio-Cultural Economic Experts, as well as Mapping and GIS Experts, Photography, Video and Website as presented in Table 1.

Table 1. List of KTH Meniti Fajar Area Assessment Team

Name	Position	Keahlian
M. Syarif Hidayat	Team Leader and Socio-Economic Culture	Environmental Services, Hydrology, Forest Planning
Bagus Karyo Widhiasto	Biodiversity	Biodiversity, Botany, Forest ecology
Eryan Hidayat	Biodiversity	Biodiversity, Fauna, Forest ecology, Natural Resource Conservation
Tulus Widodo	Socio-Economic Culture	Forestry Social Science Society
Adji Sartono	Mapping	Geographic Information System (GIS)
Nurul Iman	Documentation Video	Videografer
Cahyo Sulistyo	Documentation Video	Fotografer
Ariyanto	Web Developer dan *Web Designer*	Information and Technology (IT)

Timeline

The HKm KTH Meniti Fajar Area Assessment activity in the Framework of Empowering Social Forestry Groups and Environmental Partnerships of PT Sarana Foresta Indonesia (here in after in this Chapter abbreviated as the Meniti Fajar Community Forest Area) was carried out for 5 months between February–July 2025. The activity was divided into a pre-Identification phase (February 8, 2025) and an Identification phase (February 10–19, 2025). Details of the activity timeline are presented in Table 2 below.

Table 2. Assessment Timeline in the KTH Meniti Fajar Work Area

Date	Activity and Location	Parties involved
February 11, 2025 Tuesday	Travel from Bogor to Soekarno Hatta Airport and Pangkalan Bun	PT Saforindo team
	Travel from Pangkalan Bun to KTH Meniti Fajar office	PT Saforindo team and KTH Meniti Fajar member
	Opening Meeting: • Work Plan Presentation • Coordination of detailed field activities. • Location Survey: Flora, Fauna, Sosek	PT Saforindo team and KTH Meniti Fajar member
	Survey in the KTH Meniti Fajar at KM 11 location : • Flora Identification • Fauna Identification • Non-timber forest product & environment services Identification • Land Cover Identification	PT Saforindo team and KTH Meniti Fajar member
February 12, 2025 Wednesday	a. Survey in the KTH Meniti Fajar at Sepingit Forest (Forest in Sepingit and Selangkun River): • Flora Identification • Fauna Identification • Non-timber forest product & environment services Identification • Land Cover Identification b. Survey of related agencies and socio-cultural • KPHP West Kotawaringin regency • Raja Seberang Village	PT Saforindo team and KTH Meniti Fajar member
13 February 2025 Thursday	a. Survey in the KTH Meniti Fajar at Sepingit Forest (Forest in Sepingit and Selangkun River): • Flora Identification • Fauna Identification • Non-timber forest product & environment services Identification • Land Cover Identification b. Socio-cultural survey • Raja Seberang Village • Around the KTH Meniti Fajar	PT Saforindo team and KTH Meniti Fajar member

Date	Activity and Location	Parties involved
14 February 2025 Friday	a. Survey in the KTH Meniti Fajar at Sepingit Forest (Forest in Sepingit and Selangkun River): • Flora Identification • Fauna Identification • Non-timber forest product & environment services Identification • Land Cover Identification b. *Socio*-cultural survey • Internal Meeting with KTH Meniti Fajar Team c. Data Processing and Analysis d. *Closing* Meeting: • Presentation of Results, and – • Discussion	PT Saforindo team and KTH Meniti Fajar member
February 15, 2025 Saturday	Trip back to Jakarta.	PT Saforindo team

Methodology

The methods used in this activity are surveys, vegetation analysis and social interviews, which include:

1. Physical components of the area/landscape ecology, including a study of the landscape of the study area based on the physical characteristics of the landscape aimed at identifying local protected areas and specific landscapes that need to be protected.

2. Biological components of plants and animals, including a study of the identification of plants and animals and their protection status and habitat conditions; and Ecosystem Services.

3. Economic, social and cultural components of the community, including a study of the identification of forms of interaction between traditional communities and forest resources whose sustainability needs to be protected.

The basic data used in the Biodiversity Assessment, potential for timber and non-timber forest products, potential for environmental services, social, economic and

environmental conditions at the beginning of the project. Includes 3 important main components, including:

1. Biodiversity and Landscape Components.

2. Ecosystem Services Components.

3. Socio-Economic and Cultural Components.

Table 3. Stages for identifying biodiversity, potential for timber and non-timber forest products, potential for environmental, social, cultural and economic services.

Stage	Objective	Activity
PRE-IDENTIFICATION STAGE		
• Desk study • Inspection Study • KTH Assessment Team • Field Schedule Plan • Planning Checklist • Survey Design • Basemap • Stakeholder Plan	• Identification of potential and indications of the existence of attributes or elements of Biodiversity, NTFPs and Socio-Economic Culture. • Identification of areas of Biodiversity, NTFPs and Socio-Economic Culture • Landscape context • Conservation issues and potential threats to the work area of KTH. • Determining methods, survey designs, assessment teams, locations of surrounding villages that have relationships and field activity schedules.	• Collecting initial data and information from KTH about the land and its management. • Collecting initial data and information from secondary data sources (reports, journals, books, statistical data, basic maps) and sources • Data analysis and spatial analysis.
IDENTIFICATION STAGE		
Opening Meeting	• Purpose & objectives of the activity. • Obtain additional data and information regarding the management status of the work area • Clarify potential areas of Biodiversity, HHBK, Socio-economic and Culture from pre-Identification • Collect additional information data the existence of Biodiversity, HHBK, Socio-economic and Culture.	• KTH member dan Saforindo Team
Participatory Mapping	• Clarify potential areas of Biodiveristy, NTFPs, Socio-economic and Cultural funds from pre-identification. • -Collect additional information data on the existence of Biodiveristy, NTFPs, Socio-Economics and Culture.Collect additional information data the	• KTH member dan Saforindo Team

	existence of Biodiversity, HHBK, Socio-economic and Culture.	
Field Survey	• Field verification • Identifying and mapping indicative boundaries of Biodiversity, NTFPs, Social, Economic and Cultural • Identifying threats and potential threats to KTH Meniti Fajar.	• Field checking of land cover • Field data collection • Interviews with stakeholders
Closing Meeting	• Presenting the interim results of the identification to KTH Meniti Fajar.	• Presentation and discussion • Submission of interim results
Analysis and Reporting	• Presenting the results of the study in a written form with a format and systematics that fulfill scientific principles but are coherent and simple so that they are easy to understand by the main users of the report.	• Data analysis • Spatial analysis • Report preparation

Pre-Identification Phase

The pre-Identification phase of biodiversity aims to answer key questions, such as: the existence of conservation areas or protected areas based on the Forest and Water Area Designation Map, and the Spatial Planning Map, rare or endangered wildlife species (animals and plants), endemic wildlife species (animals and plants) (including species with limited distribution), the existence of areas that have the potential to be used temporally by wildlife (migration sites, migration routes, corridors, refugia areas), parts of a wider ecological landscape, and parts of rare or endangered ecosystems.

The pre-Identification phase of the ecosystem services section is aimed at answering key questions, such as: presence of critical catchments, presence of critical areas for erosion and sedimentation control, and natural firebreaks to prevent the spread of land fires, analysis of surface hydrology (slope, watershed boundaries, stream networks), land systems, land and ecosystem physiography, and presence of peat areas.

The pre-social cultural identification phase is aimed at answering key questions, such as: accessibility of the KTH Meniti Fajar Area, subsistence of the lives of the people around the Area to obtain staple food sources, wood for housing and household

equipment and work tools), patterns of traditional wisdom that are still maintained by the surrounding community (both those related to the use of natural resources, land use, customs and traditions, and religious-spiritual).

Identification Phase

The identification phase begins with an opening meeting. In this activity, the background, intent and purpose, location, implementing team, timetable and methodology are explained. In this phase, information is sought to obtain additional data and information regarding location accessibility and the status of work area management.

Participatory Mapping activities are carried out to clarify potential areas of biodiversity (Biodiversity), NTFPs, Socio-Economic (Sosek) and Culture, as well as obtain additional information on the existence of Biodiversity, NTFPs, Socio-Economic and Culture. Then a Field Survey is carried out as an activity for field verification, identifying (flora, fauna, NTFPs and Environmental Services/Jasling, Sosek and Culture) and mapping the indicative boundaries of Biodiversity, NTFPs, Socio-Economic and Culture as well as identifying threats and potential threats to KTH Meniti Fajar. The results of this field survey are then processed using methods from each section.
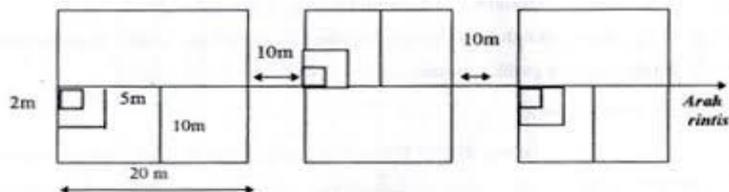
Figure 2. Plot of Measurement

Figure 1. Vegetation Analysis Formula

Flora analysis was conducted by biodiversity analysis using the transect plot system method. The plot size used for each vegetation level was 20x20 m (tree), 10x10 m (pole), 5x5 m (sapling) and 2x2 m (seedling) as presented in Figure 2. Then calculations were carried out to determine the Density (K), Relative Density (KR), Frequency (F), Relative Frequency (FR), Dominance (D), Relative Dominance (DR), and Important Value Index (IVI) of each vegetation strata/level with the formula as can be seen in Figure 3.
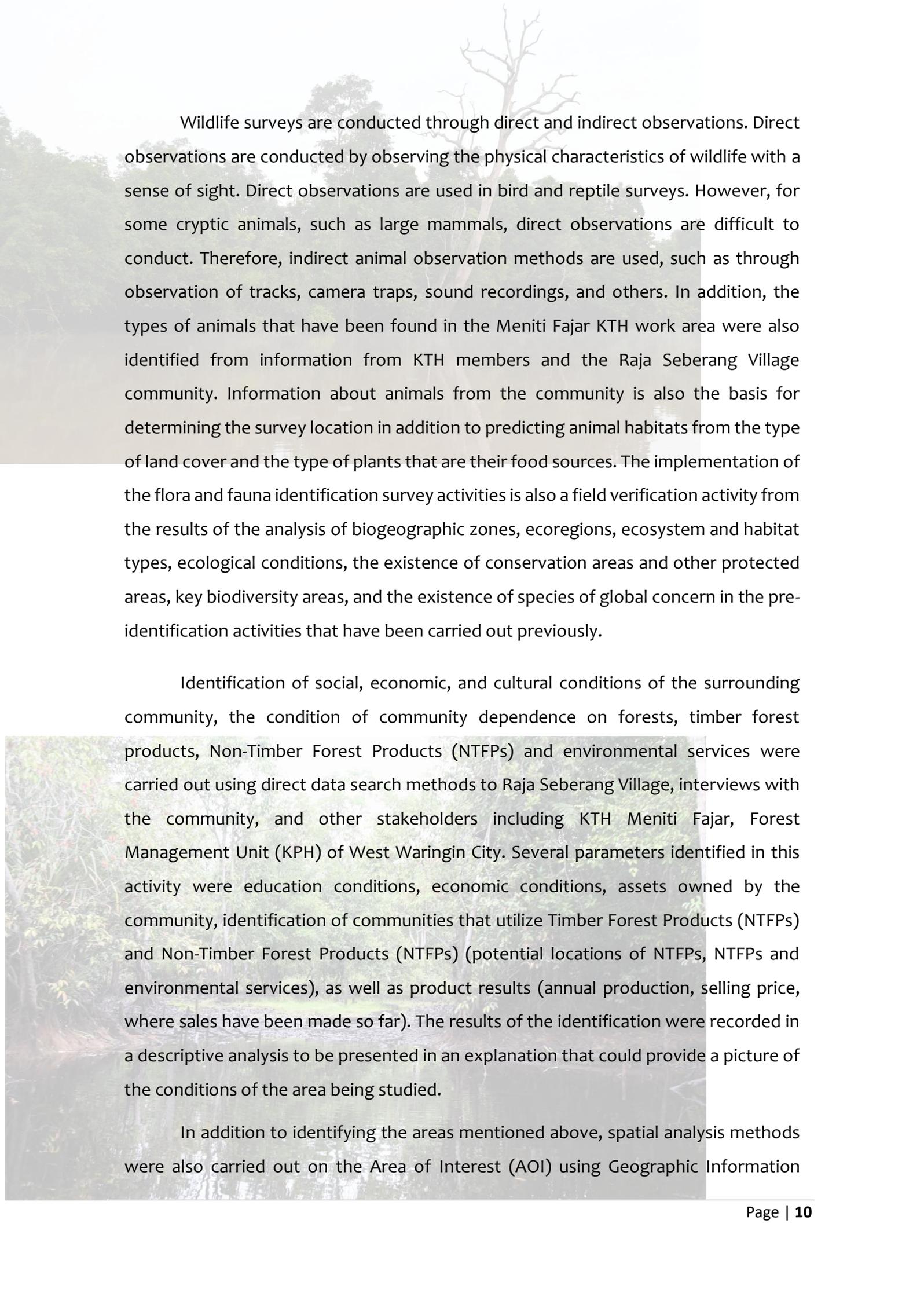
Wildlife surveys are conducted through direct and indirect observations. Direct observations are conducted by observing the physical characteristics of wildlife with a sense of sight. Direct observations are used in bird and reptile surveys. However, for some cryptic animals, such as large mammals, direct observations are difficult to conduct. Therefore, indirect animal observation methods are used, such as through observation of tracks, camera traps, sound recordings, and others. In addition, the types of animals that have been found in the Meniti Fajar KTH work area were also identified from information from KTH members and the Raja Seberang Village community. Information about animals from the community is also the basis for determining the survey location in addition to predicting animal habitats from the type of land cover and the type of plants that are their food sources. The implementation of the flora and fauna identification survey activities is also a field verification activity from the results of the analysis of biogeographic zones, ecoregions, ecosystem and habitat types, ecological conditions, the existence of conservation areas and other protected areas, key biodiversity areas, and the existence of species of global concern in the pre-identification activities that have been carried out previously.
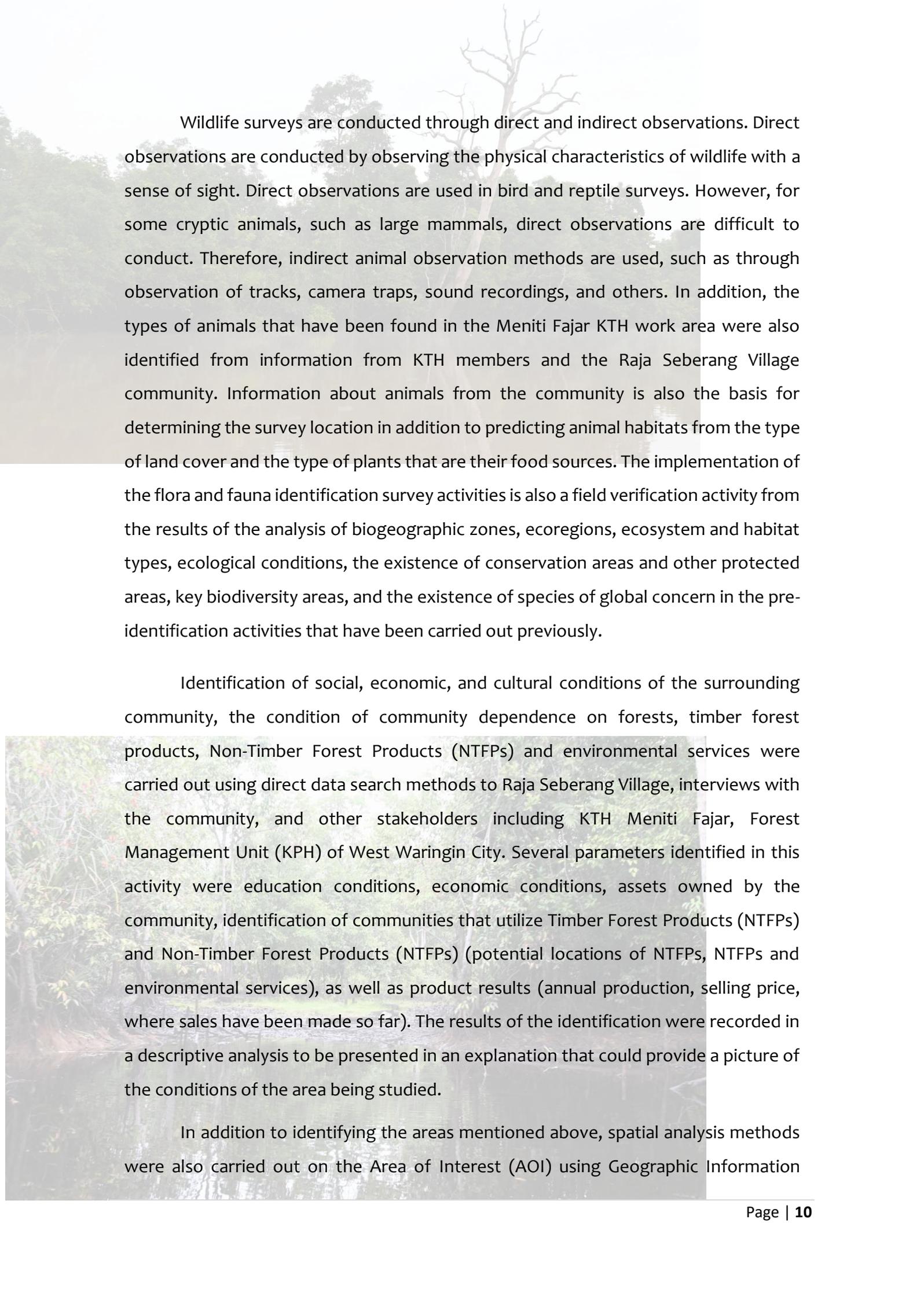
Identification of social, economic, and cultural conditions of the surrounding community, the condition of community dependence on forests, timber forest products, Non-Timber Forest Products (NTFPs) and environmental services were carried out using direct data search methods to Raja Seberang Village, interviews with the community, and other stakeholders including KTH Meniti Fajar, Forest Management Unit (KPH) of West Waringin City. Several parameters identified in this activity were education conditions, economic conditions, assets owned by the community, identification of communities that utilize Timber Forest Products (NTFPs) and Non-Timber Forest Products (NTFPs) (potential locations of NTFPs, NTFPs and environmental services), as well as product results (annual production, selling price, where sales have been made so far). The results of the identification were recorded in a descriptive analysis to be presented in an explanation that could provide a picture of the conditions of the area being studied.

In addition to identifying the areas mentioned above, spatial analysis methods were also carried out on the Area of Interest (AOI) using Geographic Information

System (GIS) supporting software (Spatial Analysis Diagram is presented in Figure 4). This method was carried out to obtain data and analysis results of several components such as: administrative boundaries, biogeographic zones, ecoregions, ecosystem and habitat types, changes in land cover in the last 10 years, distribution of hotspots in the last 10 years, threats, history of forest and land fires, history of illegal logging, history of shifting cultivation, and expansion of oil palm plantations that have occurred in AOI. The results of the spatial analysis are presented in the form of maps and tabular data as data that will be described descriptively.

An overview of the process flow for the Baseline Preparation method for the Forest Resources study for HKm Meniti Fajar can be seen in Figure 4.
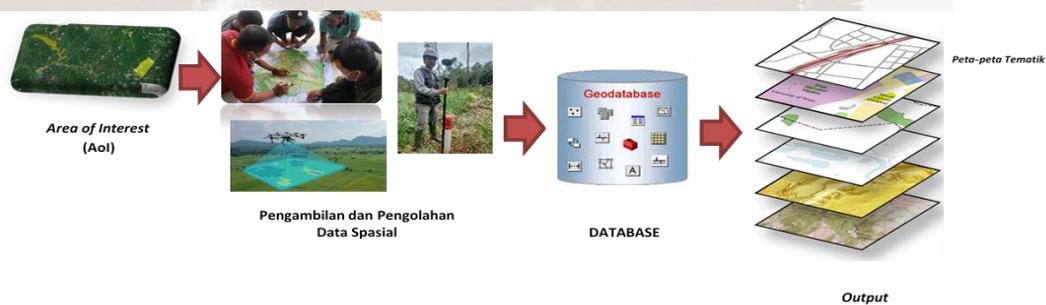
Figure 4. Spatial Analysis Flowchart
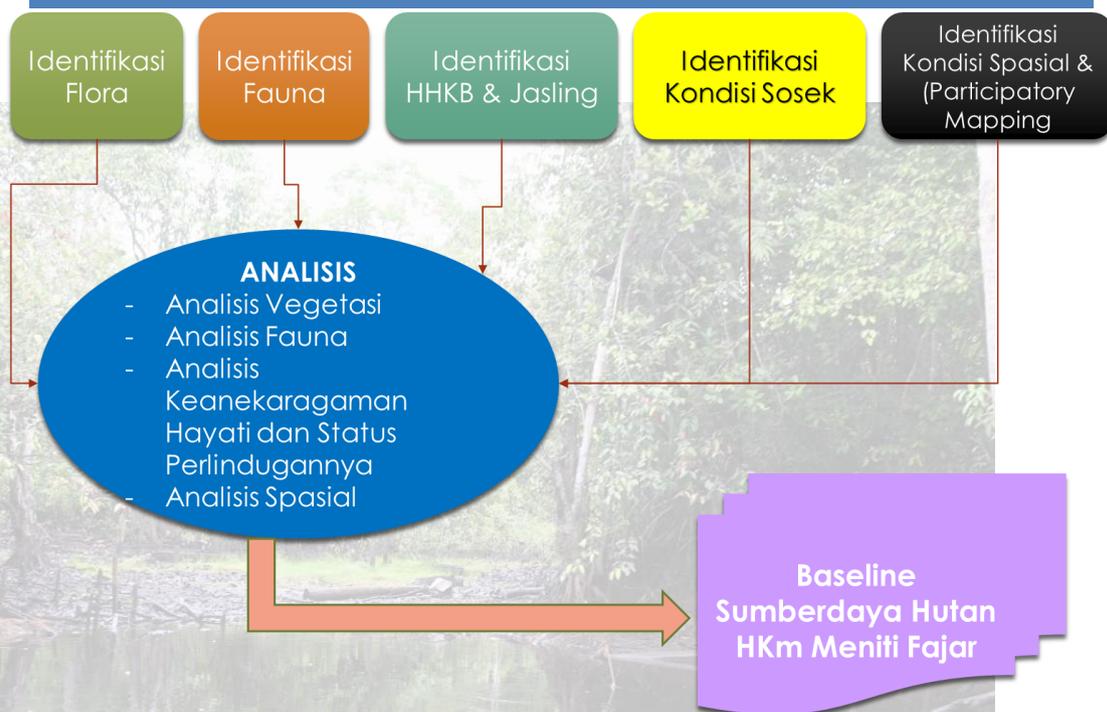
Figure 5. Flowchart of Baseline Study Process for HKm Meniti Fajar Forest Resources

PROFILE OF KTH MENITI FAJAR

History of KTH

Vision and mission

Organizational structure

History of KTH

The Meniti Fajar Forest Farmers Group (KTH) began as a Farmers Group (Kelompok Tani Hutan or KTH) originated as a farmers' group established around 2011, initially focused on agriculture and livestock activities. At the time of its founding, the group did not yet possess legal status, and membership was voluntary, with organizational activities resembling those of typical farmers' groups. The group officially gained legal status under the name Meniti Fajar Forest Farmers *Group* through Notarial Deed No. 255, dated November 17, 2021

KTH Meniti Fajar received a forest area management permit from the Ministry of Environment and Forestry through Decree No. SK.2820/MENLHK-PSKL/PKPS/PSL.0/3/2022 dated March 28, 2022. This decree granted approval for the management of a Community Forest covering an area of 1,909 hectares located within Convertible Production Forest areas in Raja Seberang Village, South Arut District, West Kotawaringin Regency, Central Kalimantan Province.

Vision and mission

The vision of KTH Meniti Fajar is:

✓ To manage sustainable natural resources as a real-life example and source of livelihood, without harming the environment.

Its missions are:

✓ To protect and preserve the working area in order to maintain a balanced ecosystem and sustainable forest functions.

✓ To develop the area into a conservation-based tourism forest, aiming to improve the economy of its members and the surrounding community.

✓ To manage the area in accordance with cultural values, local wisdom, modern developments, and environmental sustainability principles ensuring that it can be passed down to future generations

Organizational Structure

K TH Meniti Fajar is organized under the leadership of a Chairman, who is supported by a Secretary, Treasurer, various divisions, and several Social Forestry Business Groups (Kelompok Usaha Perhutanan Sosial or KUPS). KTH Meniti Fajar also receives guidance and supervision from, The Head of the West Kotawaringin Production Forest Management Unit (KPHP), The Head of South Arut Subdistrict, The Head of Raja Seberang Village, and Forestry Extension Officers.

Struktur Organisasi

```
                          KETUA
                         SARWANI

    SEKRETARIS                              PEMBINA
    M.WARDIMAN                      •  KEPALA KPHP
                                       KOTAWARINGIN BARAT
                                    •  CAMAT ARUT SELATAN
    BENDAHARA                       •  LURAH RAJA SEBERANG
    ARBIANSYAH                      •  PENYULUH KEHUTANAN

  SEKSI KEMITRAAN/    SEKSI PENINGKATAN    SEKSI PERENCANAAN/
     KELOLA           KAPASITAS SDM/           KELOLA
      USAHA          KELOLA KELEMBAGAAN        KAWASAN
  HATMAN ALAMSYAH      MUHAMAD AINI          SUGIARTO

KUPS PALAS KARMA    KUPS MANTUKA MENAUN   KUPS DANAU SEPINGIT   KUPS SEPINGIT MAHIJAU
M. IKHSAN SAEFULLAH  HATMAN ALAMSAYH       MUHAMAD AINI            SABRAN
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Figure 6. Organizational Structure of KTH Meniti Fajar
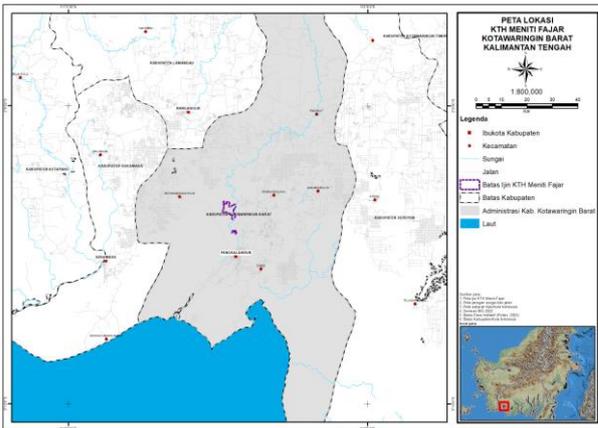
REGIONAL DESCRIPTION

Geographical Location

Administrative Location

Area Status and Function

Sepingit Forest of KTH Meniti Fajar Working Area

Geographical location

T he location of HKm Meniti Fajar is geographically situated between 111° 33' 0" - 111° 40' 0" East Longitude and 02° 30' 0" - 02° 37' 0'' South Latitude, at an elevation of 0 – 35 meters above sea level.
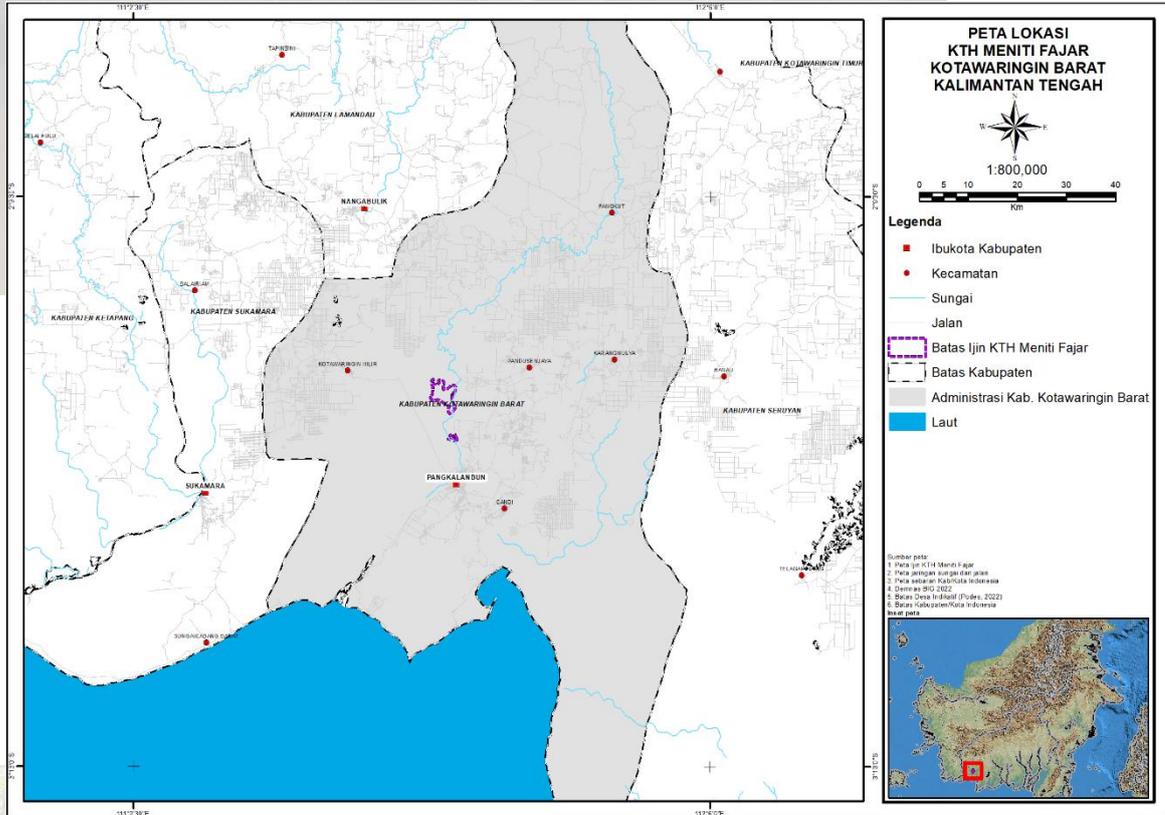
Administrative Location

A dministratively, the KTH Meniti Fajar working area is located in Raja Seberang Village, Arut Selatan District, West Kotawaringin Regency, Central Kalimantan Province.

Area Status and Function

The KTH Meniti Fajar working area, based on the Forest Land Use Consensus Map (TGHK) established on September 25, 2012, is designated as Convertible Production Forest. This designation is based on the Decree of the Minister of Forestry Number: SK.529/Menhut-II/2012 concerning Amendments to the Decree of the Minister of Agriculture Number 759/KPTS/UM/10/1982 on the Designation of Forest Areas in the Province of Central Kalimantan (Level I Region) covering approximately 15,300,000 hectares as Forest Area (Figure 7).
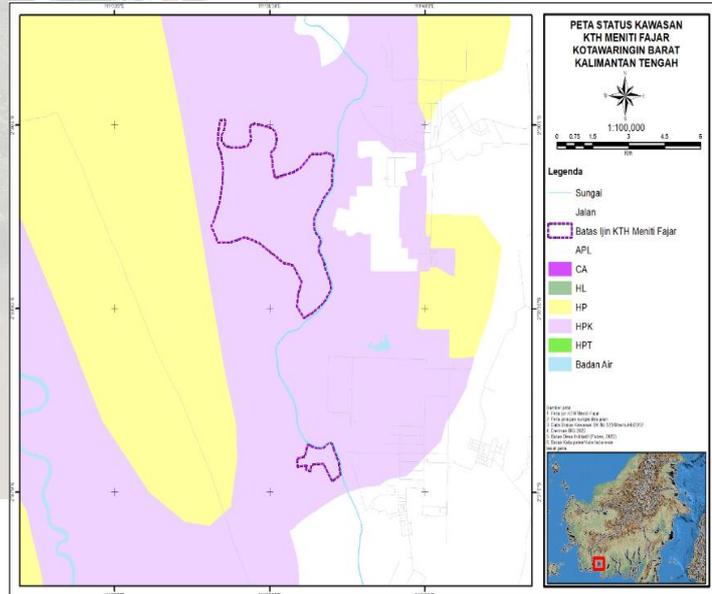
Figure 8. Status and Function of the KTH Working Area

Referring to the 2022 Indicative Map of the Suspension of New License Issuance (national moratorium map), the KTH area is classified as peatland covering 1,032.37 hectares (Figure 8). Based on the Peat Hydrological Unit (KHG) map, part of the KTH Meniti Fajar working area falls within the Lamandau River – Arut River Peat Hydrological Area, consisting of 390.74 hectares designated as Protected Peat Ecosystem Function and 1,510.54 hectares as Cultivation Peat Ecosystem Function (Figure 9).

Figure 9. PIPPIB 2022 Status of the KTH Meniti Fajar Working Area

Meanwhile, according to the District Spatial Pattern Plan Map outlined in the Regional Spatial Plan (RTRW) of West Kotawaringin Regency for 2015–2035, the KTH Meniti Fajar area is in an area designated as an Other Use Area.

The KTH Meniti Fajar Working Area is classified as a Convertible Production Forest Area, for which new permits
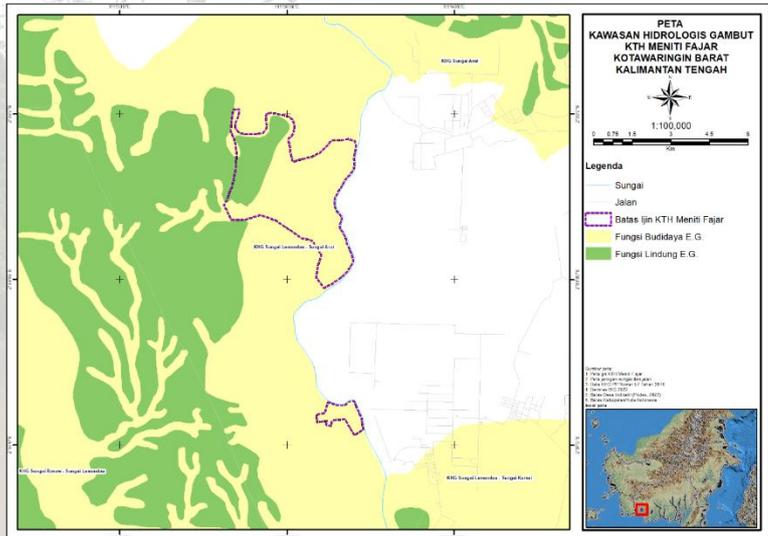
Figure 10. Peat Hydrological Area of the KTH Meniti Fajar Working Area

cannot be issued. It includes forest with a peat hydrological ecosystem of the Lamandau River – Arut River, featuring both Cultivation and Protected Peat Ecosystem functions. Although part of the area has a Protected Peat Ecosystem function, the KTH Meniti Fajar Working Area is not currently allocated as a national or regional biodiversity conservation area.

Sepingit Forest of KTH Meniti Fajar Working Area

S epingit Forest is a lowland forest in Kalimantan that is home to a diverse range of flora and fauna. Plant species such as *Rempiang*, *Pitcher Plant*, Pansulan, Pepasiran, Rengas, Bejiing, Ramin, Klanasian, Blangiran, Ulin, Laman, and various others thrive in Sepingit Forest. With its land still largely covered, it serves as a habitat where many wildlife species live, grow, and reproduce.

Among the fauna found in this forest are: Long-tailed Monkeys, Proboscis Monkeys, Orangutans, Lesser Treeshrew, Kinabalu Serpent Eagles, Black Eagles, Oriental Honey Buzzards, Crested Serpent Eagles, Changeable Hawk-Eagles, Brahminy Kites, Stork-billed Kingfisher, Red Crab, Black-crowned Night Herons, Great-billed Herons, Little Egrets, Coral egret, White-bellied Hornbills, Black Hornbills, Rhino Hornbills, Cinnamon-headed Green-pigeon, Forest Crows, Large lathe, Black-and-red Broadbill, Oriental Darter, Great Cormorant, Blue-crowned Hanging Parrots, Red-eyed Bulbuls, Yellow-vented Bulbuls, Temminck's Kedidi, Velvet-fronted Nuthatch, Climbing Perch, Giant Snakehead, Snakehead Murrel, Forest Snakehead, *Kerandang*, Kissing Gourami, Giant Gourami, Half-smooth Golden Pufferfish, Crocodiles, and many more.

The name *Sepingit* is derived from the word *"Singit"*, which means haunted. The surrounding communities believe Sepingit Forest to be sacred and haunted. Some locals claim to have seen the *Elok Paku* boat an ancient boat bearing dragon motifs piloted by a figure dressed entirely in yellow, resembling royal attire.

There are several taboos or prohibitions observed when entering Sepingit Forest, including: not bathing carelessly in the Sepingit River at dusk especially not while naked; not bringing local chicken eggs; not bringing black chickens; not bringing *Nasi Kulut* (yellow rice); and before cooking or eating, a portion of the food or ingredients should be offered to the spirits or inhabitants of Sepingit Forest.

Sepingit Forest is flanked by the Sepingit River to the south and the Selangkun River to the north, with the deep Palas Lake and Selangkun Lake also located within the area. These rivers are believed to be heavily populated by crocodiles, especially at the mouth of the Sepingit River, based on local beliefs that these waters were once "guarded" or "kept" by people.

One local tale tells of an elder (referred to as *Datuk*) who once tended the Sepingit River. While fishing with his cousin at night from a boat, Datuk was at the front spearing fish while his cousin was at the back steering the boat and holding the torch. Unbeknownst to Datuk, the boat drifted toward the center of the river as if it were moving on its own. When he turned around, his cousin had vanished. It is believed that his cousin was taken by a crocodile.

PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

Climate

Geology

Soil Type

Land System

Topography

Hydrology

Climate

The working area Of KTH Meniti Fajar, which is administratively located in West Kotawaringin Regency, has a climate influenced by the Intertropical Convergence Zone (ITCZ), particularly affecting the rainfall distribution pattern. The temporal distribution of rainfall follows an equatorial pattern, which typically has two peak rainy periods. In 2023, these peaks occurred in March–April and November–December–January (see Figure 11).
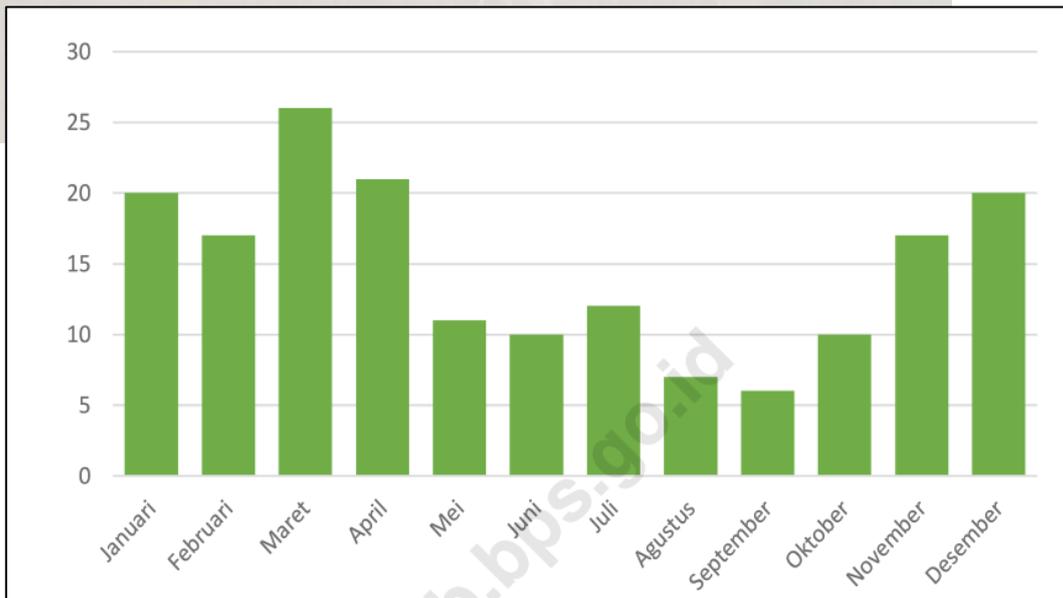
Source : Meteorology, Climatology, and Geophysics Agency, adapted from West Kotawaringin Regency in Figures 2024

Figure 11. Number of Rainy Days in West Kotawaringin Regency in 2023

Based on satellite observations from CHIRPS (Rainfall Estimates from Rain Gauge and Satellite Observations) and ERA5, which provide daily and monthly land and sea climate data (ERA5 covers global data with a resolution of 30 km), the average annual rainfall in the area is 1,816.15 mm for the period 2015–2024 (see Table 4).

Table 4. Annual Rainfall in the KTH Meniti Fajar Working

No	Tahun	Curah Hujan (mm)
1	2015	1.624,43
2	2016	1.690,78
3	2017	1.766,15
4	2018	1.904,72
5	2019	1.968,23
6	2020	1.926,93
7	2021	1.825,18
8	2022	1.822,75
9	2023	1.816,15
10	2024	1.816,15
Rata-rata		1.816,15

Source: CHIRPS and ERA5 data for 2025, processed.

Geology

The geological formation in the working area of KTH Meniti Fajar is Talus Deposits (Qs), consisting of materials accumulated at the base of steep slopes, comprising sandstone and conglomerates of Quaternary age. The geological formation map of KTH Meniti Fajar is shown in Figure 12.
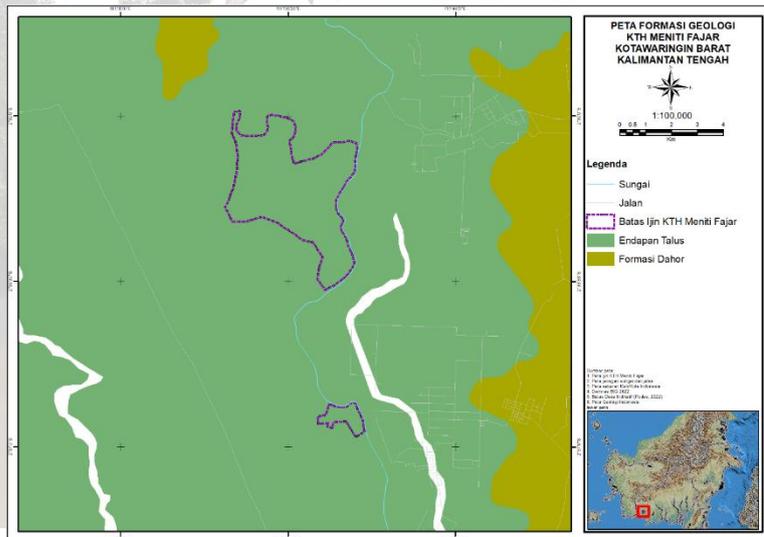
Figure 12. Geological Formations in KTH Meniti Fajar the Working Area

Soil Type

Soil types in the KTH Meniti Fajar work area based on the RePPProT land system map (*Regional Physical Planning Programme for Transmigration*), Department of Transmigration (1990), found 5 types of soil, namely dominated by Fluvaquents soil; Tropaquepts; Tropohemists covering an area of 1,022.38 Ha (53.75 %) and Tropohemists; Tropofibrists covering an area of 864.09 Ha (45.43%). The composition of soil types at KTH Meniti Fajar is presented in table 2 and the distribution can be seen in the soil type distribution map of the KTH Meniti Fajar working area in Figure 12.

Table 5. Types of Soil in the Work Area of KTH

No	Jenis Tanah	Luas	
		Ha	%
1	Fluvaquents; Tropaquepts; Tropohemists	1,022.38	53.75
2	Tropaquepts; Fluvaquents; Sulvaquents	13.30	0.70
3	Tropohemists; Tropofibrists	864.09	45.43
4	Tropohemists; Troposaprists; Tropaquepts	0.29	0.02
5	Tropudults, Dystropepts; Placaquods	1.98	0.10
	Total	**1,902.04**	**100**

Source: Data Regional Physical Planning Programme for Transmigration (RePPProT), Department of Transmigration (1990) Processed.
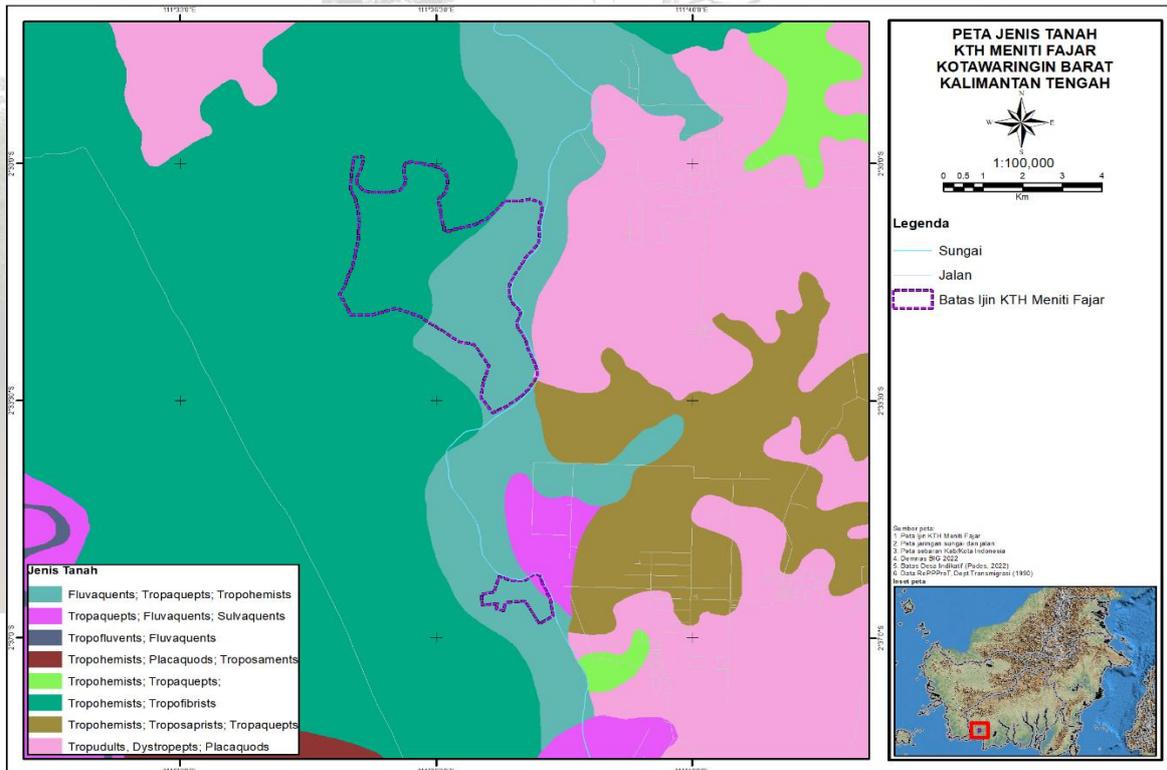
Figure 13. Distribution of Soil Types in the KTH Meniti Fajar Working Area

Land system

Figure 14. Distribution of Land Systems in the KTH Meniti Fajar Work Area

Based on the RePPProT land system map, Department of Transmigration (1990), there are 5 types of land systems in the KTH Meniti Fajar work area. These land systems are Bawin, Beliti, Gambut, Kahayan, and Mendawai. The land systems that dominate are Beliti covering an area of 1,022.38 Ha (53.75 %) and Peat 864.09 Ha (45.43 %). The distribution of land systems is

presented in figure 10 and the detailed composition of land systems in the KTH Meniti Fajar work area is presented in table 14.

Table 6. Land System of KTH Meniti Fajar Work Area

No	Sistem Lahan	Area	
		Ha	%
1	Bawin	1.98	0.10
2	Beliti	1,022.38	53.75
3	Gambut	864.09	45.43
4	Kahayan	13.30	0.70
5	Mendawai	0.29	0.02
	Total	**1,902.04**	**100**

Source : Data Regional Physical Planning Programme for Transmigration (RePPProT), Department of Transmigration (1990), Processed.

Topography

The altitude in the KTH Meniti Fajar work area (Figure 11) ranges from 0 – 35 meters above sea level (m above sea level). The land surface morphology is dominated by a flat landform with a slope of 0-8% covering an area of 1,491.08 Ha or 78.39% of the working area of KTH Meniti Fajar (Figure 12). KTH Meniti Fajar slope classes are presented in Table 4.
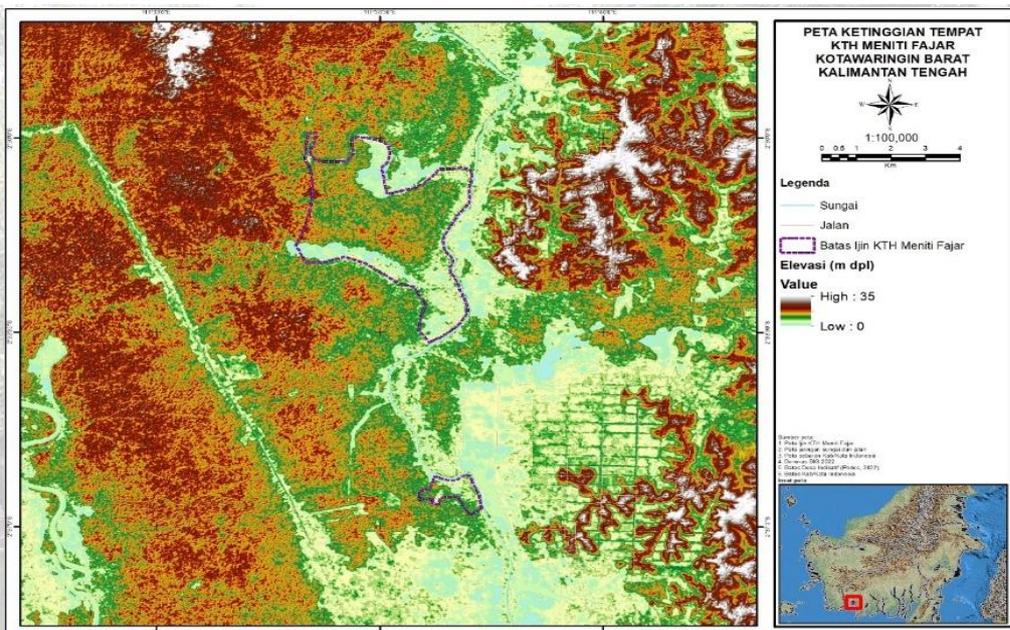
Figure 15. Altitude distribution of the KTH Meniti Fajar work area

Table 7. Slope Class of KTH Meniti Fajar Work Area

No	Slope	Klasifikasi	Area	
			Ha	%
1	0 - 8 %	Datar	1,491.08	78.39
2	8 - 15 %	Landai	373.70	19.65
3	15 - 25 %	Agak Curam	36.93	1.94
4	25 - 40 %	Curam	0.33	0.02
Total			**1,902.04**	**100**

Source: National Digital Elevation Model, Geospatial Information Agency (2022), Processed.
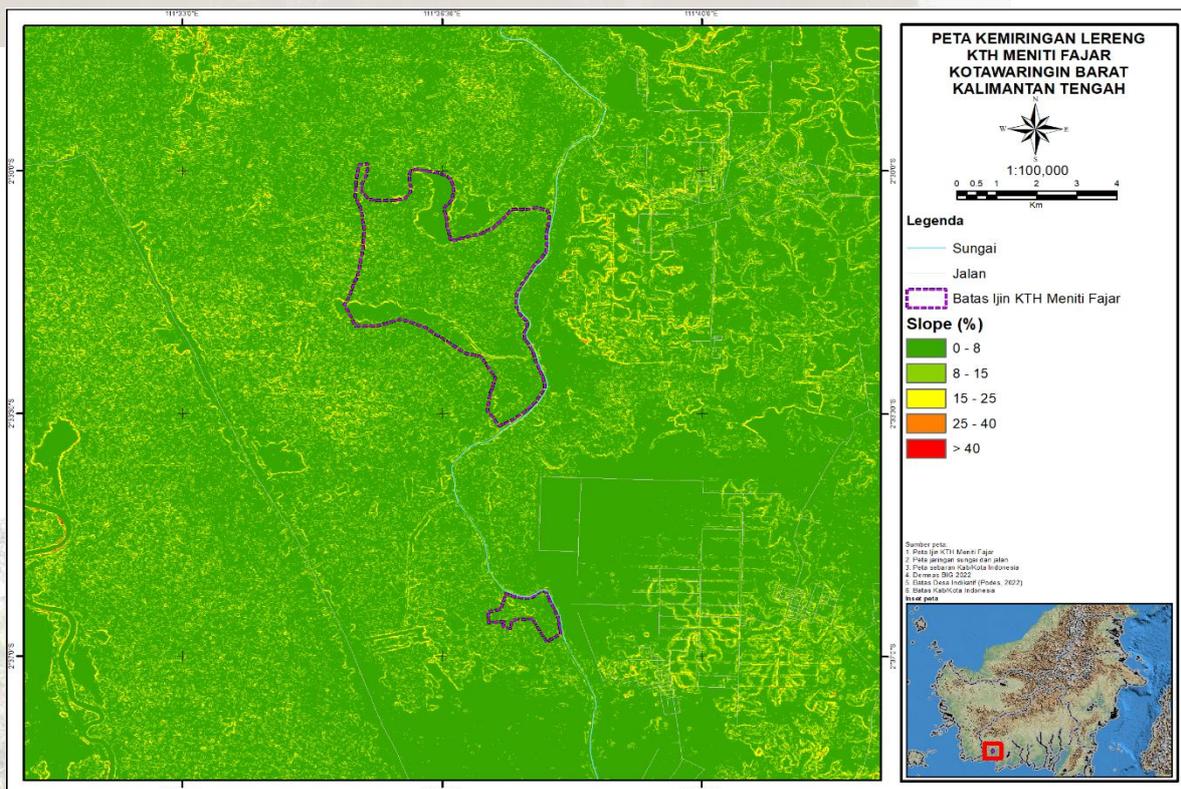
Figure 16. Distribution of Slope Classes in the KTH Meniti Fajar Working Area

Hydrology

I n The KTH Meniti Fajar Work Area flows through 2 rivers, namely the Selangkun River to the north and the Sepingit River to the south. Both rivers flow into a larger river, namely the Arut River, which is a tributary of the Lamandau River. The upstream of the Arut River is in North Arut District, while

the downstream is in South Arut District, West Kotawaringin Regency, Central Kalimantan Province. The Arut River is a river that flows for 250 km with an average width of 100 meters and an average depth of 4 meters. This fairly large river can be used as a transportation route for 190 km (*Source: https://dishut.kalteng.go.id/page/90/hidrologi*). In accordance with the physiographic conditions of the region, during the rainy season, the river's water often overflows into the plains it crosses.
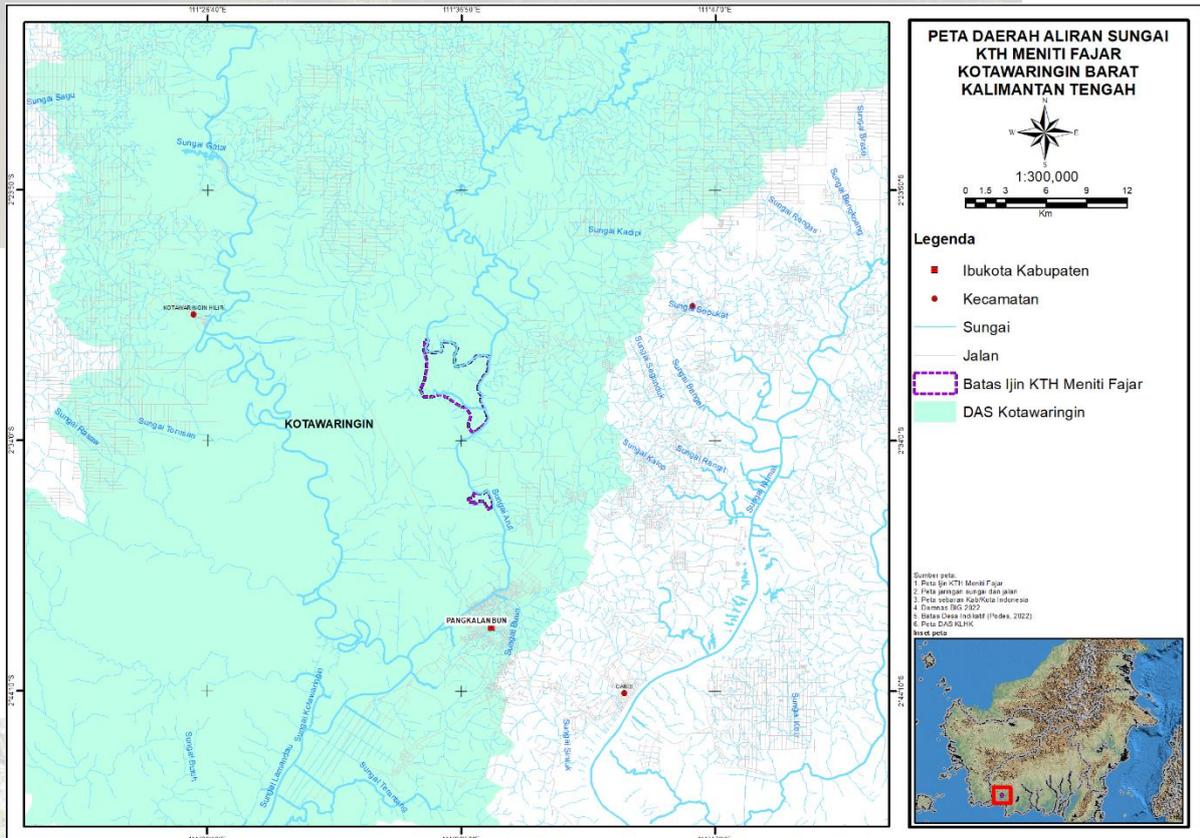
Figure 17. River watershed in the KTH Meniti Fajar work area

BIOLOGICAL AND ECOLOGICAL CHARACTERISTICS

Biogeographic Zone

Ecoregion and Ecosystem and Habitat Types

Ecological Conditions

Presence of Conservation Areas and Other Protected Zones

Key Biodiversity Areas

Globally Significant Species

Identification of Flora and Fauna

Key Species in the KTH Meniti Fajar Working Area

Biogeographic Zone

The working area of KTH Meniti Fajar is located on the island of Kalimantan, which biogeographically falls within the Oriental Asia Biogeographic Zone. Biodiversity on the island is considered high, primarily due to the vast expanse of tropical rainforest ecosystems. For instance, Kalimantan is home to around 14,500 plant species, of which 4,000 are endemic (Roos et al., 2004). In the Dipterocarpaceae plant group alone, 291 of the world's 386 known species are found here, with 156 being endemic (Soepadmo & Wong, 1995). Among mammals, there are 225 terrestrial species, 44 of which are endemic (Payne et al., 2000). Other groups also show high species richness, including 639 bird species (MacKinnon et al., 2000), 166 snake species (Stuebing & Inger, 1999), and approximately 140–150 amphibian species (Inger & Stuebing, 1997).

Ecoregion and Ecosystem & Habitat Types

According to the ecoregion map published by the World Wide Fund for Nature (WWF), there are seven types of ecoregions on the island of Kalimantan: Borneo Lowland Rain Forests, Borneo Montane Rain Forests, Borneo Peat Swamp Forests, Kinabalu Montane Alpine Meadows, Southwest Borneo Freshwater Swamp Forests, Sundaland Heath Forests, and Sunda Shelf Mangroves. Based on this ecoregion map, the
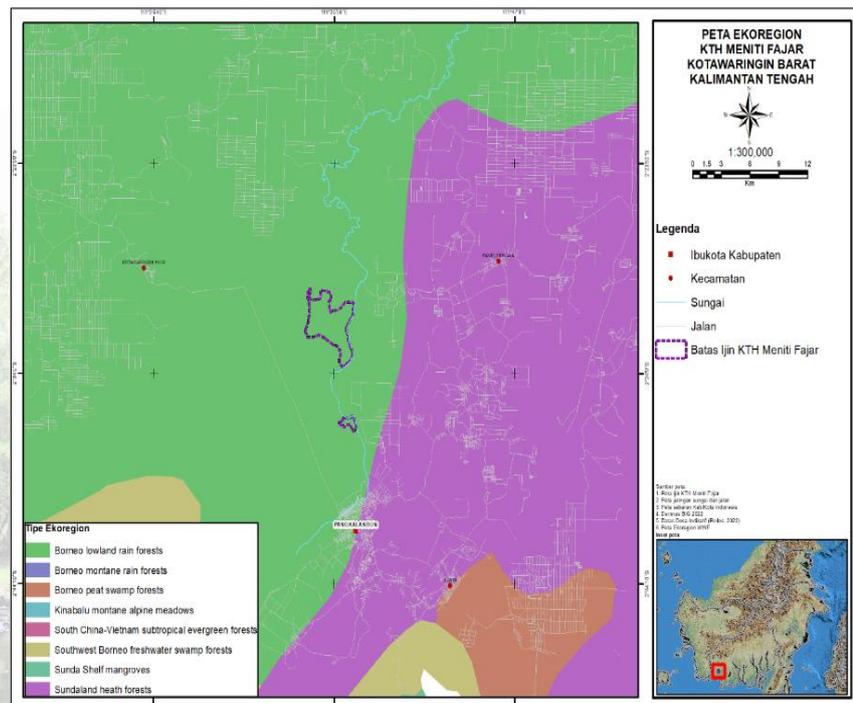
Figure 18. Ecoregion of the KTH Meniti Fajar Working Area

working area of KTH Meniti Fajar is located within the Borneo Lowland Rain Forests. The

land system and soil types indicate the ecosystem types present in the area. Referring to the land system map of Central Kalimantan Province (RePPProT, 1990), the ecosystems indicated within the study area include lowland forest ecosystems on flat terrain and peat swamp forests. The ecoregion type map of the KTH Meniti Fajar working area is presented in Figure 18 above.

Conservation Areas and Other Protected Area

Key biodiversity areas may consist of conservation zones designated by the government as well as areas identified by non-governmental organizations or international conventions based on specific criteria. Government-designated conservation areas may include Nature Reserves Area (KSA) and Nature Conservation Areas (KPA). Other key biodiversity areas include Key Biodiversity Areas (designated by WWF), Ramsar Sites (by Wetlands International), Important Bird Areas, and Endemic Bird Areas (by BirdLife International). The presence of conservation areas and key biodiversity areas in proximity to the KTH Meniti Fajar working area, especially those directly connected to it, can serve as an indicator of the biodiversity richness or scarcity in the KTH Meniti Fajar area. The location of the KTH Meniti Fajar working area in relation to conservation areas and important biodiversity areas is as follows:
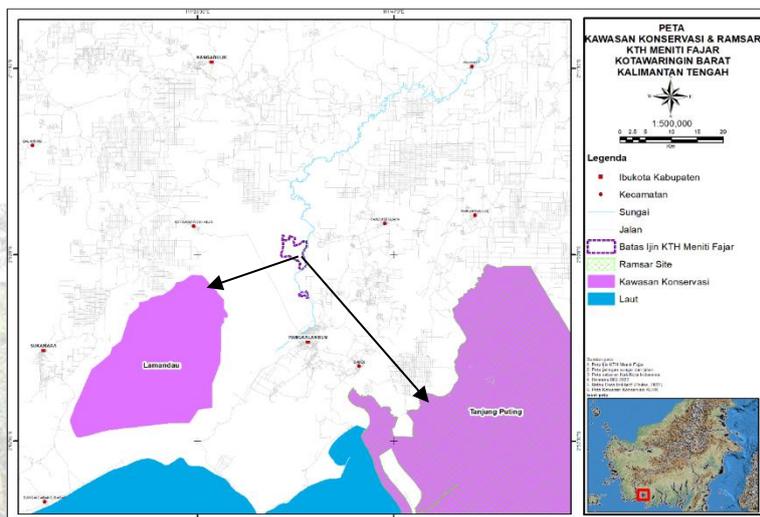
Figure 19. Location of the KTH Meniti Fajar Work Area in Relation to the Conservation Area and Ramsar Site.

❖ Conservation Areas:

KTH Meniti Fajar is located approximately 31 km northwest of Tanjung Puting National Park and about 15 km northeast of the Lamandau Wildlife Reserve. The nearest Ramsar Site is also Tanjung Puting National Park, located approximately 31 km to the northwest.
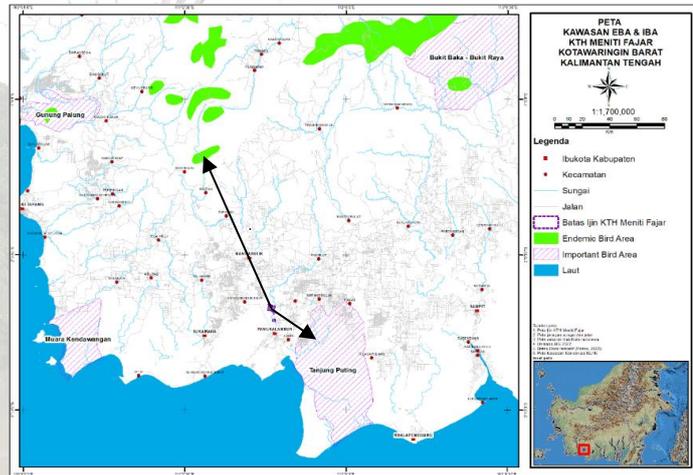
Figure 20. The Location of the KTH Working Area Leads to the Dawn of the EBA Area and IBA

❖ *Important Bird and Biodiversity Areas (IBAs):*

The nearest important area for bird species to the KTH Meniti Fajar area is Tanjung Puting National Park, which lies about 31 km to the northwest.

❖ *Endemic Bird Areas (EBAs):*
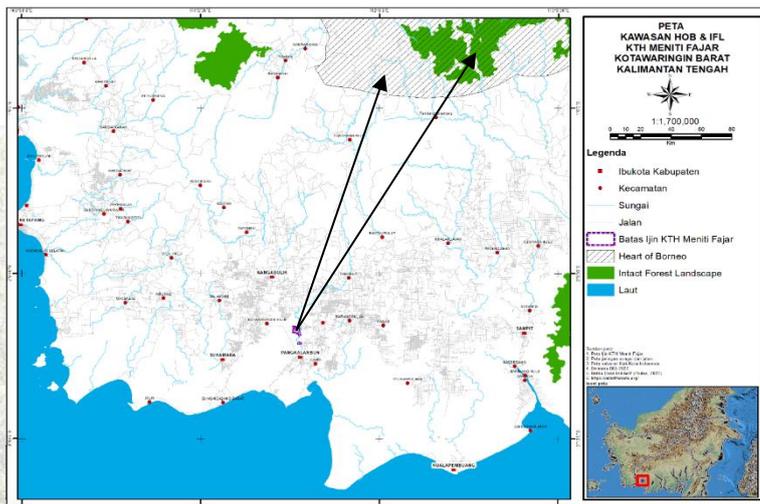
Figure 21. The Location of the KTH Work Area Meniti Fajar to the HOB and IFL Areas

The Kalimantan Mountains or "Bornean Mountains" are classified as EBA No. 157. This EBA covers the mountainous interior of Kalimantan and is the largest EBA within the Greater Sunda Islands region. It is located approximately 124 km southeast of EBA_E10_05_95. These mountains span the territories of three countries: Indonesia, Malaysia, and Brunei Darussalam.

❖ *Heart of Borneo (HoB) and Intact Forest Landscape (IFL):*

The KTH Meniti Fajar working area is located approximately 185 km southwest of the Heart of Borneo (HoB) and about 207 km southwest of the Intact Forest Landscape (IFL).

Species of Global Concern

A ccording to the IUCN Red List database, several species with RTE (Rare, Threatened, and Endangered) status have been identified as potentially present in and around the KTH Meniti Fajar area. These include species classified as: 1. Critically Endangered (CR): Straw-headed Bulbul (*Pycnonotus zeylanicus*), Javan Blue-banded Kingfisher (*Alcedo euryzona*), Sunda Pangolin (*Manis javanica*), and Bornean Orangutan (*Pongo pygmaeus ssp. wurmbii*); 2. Endangered (EN): Bornean White-bearded Gibbon (*Hylobates albibarbis*), Pig-tailed Macaque (*Macaca nemestrina*), Long-tailed Macaque (*Macaca fascicularis*), Proboscis Monkey (*Nasalis larvatus*), Greater Green Leafbird (*Chloropsis sonnerati*), Javan Leafbird (*Chloropsis cochinchinensis*), False Gharial (*Tomistoma schlegelii*), Southeast Asian Box Turtle (*Cuora amboinensis*), and Spiny Turtle (*Heosemys spinosa*); 3. Vulnerable (VU): Long-tailed Parakeet (*Psittacula longicauda*), Black Hornbill (*Anthracoceros malayanus*), Javan Myna (*Acridotheres javanicus*), Great Argus (*Argusianus argus*), Cinnamon-headed Green-pigeon (*Treron fulvicollis*), Rhinoceros Hornbill (*Buceros rhinoceros*), Bornean Crested Fireback (*Lophura ignita*), Bearded Pig (*Sus barbatus*), Smooth-coated Otter (*Lutrogale perspicillata*), Sun Bear (*Helarctos malayanus*), Horsfield's Tarsier (*Tarsius bancanus*), Slow Loris (*Nycticebus menagensis*), Hose's Langur (*Presbytis hosei*), White-fronted Langur (*Presbytis frontata*), Red Langur (*Presbytis rubicunda*), Sambar Deer (*Rusa unicolor*), Asian Small-clawed Otter (*Aonyx cinerea*), Timor Deer (*Rusa timorensis*), and King Cobra (*Heosemys spinosa*).

Species of global conservation concern include the Bornean Orangutan (*Pongo pygmaeus*) and the White-bearded Gibbon/Kelampiau (*Hylobates albibarbis*). Compared to the distribution of *P. pygmaeus ssp. morio* and *P. pygmaeus ssp. pygmaeus*, *P. pygmaeus ssp. wurmbii* has a broader range, covering areas south of the Kapuas River in West Kalimantan to west of the Barito River in Central Kalimantan. Orangutans typically inhabit dipterocarp forests, freshwater swamp forests, peat swamp forests, and hilly forests up to 1,500

meters above sea level. The main population concentrations of Orangutans in Central Kalimantan are found in Tanjung Puting National Park and Sebangau National Park.

The White-bearded Gibbon (*Hylobates albibarbis*), previously considered a subspecies of *Hylobates agilis* from Sumatra, was reclassified by Groves (2001) as a distinct and separate species. Members of the family *Hylobatidae* are arboreal (Bartlett, 2007), using the high forest canopy for movement and activity (Gittins, 1983). The presence of dense canopy cover strongly indicates the existence of this group. Therefore, logging, land clearing, and road construction activities pose serious threats to the *Hylobatidae*.

The Bornean Orangutan (*Pongo pygmaeus*), part of the Hominidae family, is distributed across Kalimantan (Indonesia), Sabah, and Sarawak (Malaysia). It is one of 44 endemic animal species in Kalimantan, Indonesia (Santosa, 2008). This species is divided into three subspecies based on morphological and genetic variation: *Pongo pygmaeus pygmaeus* (northwest Kalimantan and Sabah), *Pongo pygmaeus wurmbii* (southwest Kalimantan) and *Pongo pygmaeus morio* (northeast Kalimantan and Sabah) (Warren et al., 2001).

Flora Diversity in the KTH Meniti Fajar Work Area

The KTH Meniti Fajar working area, which is partially designated as a Protected Peat Swamp area, represents an ecosystem with significant ecological, social, and economic importance. A total of 158 plant species have been recorded, indicating high biodiversity and providing habitat for various species with different conservation statuses. The identification and observation of vegetation across various growth stages from seedlings, saplings, poles, to trees offer a comprehensive view of ecosystem dynamics and its natural regeneration potential.

The results of vegetation identification and observation in the KTH Meniti Fajar working area show that at the seedling level, the dominant species is *Rempiang* (*Pandanus* sp.), among 20 species found, with an Important Value Index (IVI) of 31.75%. At the sapling stage, the most dominant species is Pansulan (*Pternandra caerulescens*) with the highest IVI of 16.94% among 41 species. At the pole stage, Pepasiran (*Ilex cymosa*) dominates among 37 species with an IVI of 25.02%. At the tree stage, among 45 species recorded, the dominant one is Rengas (*Gluta renghas*) with an IVI of 22.00%.

The IVI values at each growth stage indicate that although certain species dominate in their respective strata, no single species overwhelmingly dominates overall. The relatively even IVI distribution across many species is an indicator of the good growth potential of each species and reflects the increasing biodiversity of the ecosystem in the KTH Meniti Fajar working area. Detailed IVI data for each flora species can be found in Table 8 and the appendix 4.

Table 8. Flora Species with the Highest IVI

Level Growth	Species of Flora With the Highest IVI	IVI
Seedling	Rempiang (*Pandanus* sp.)	31,75%
Sapling	Pansulan (*Pternandra caerulescens*)	16,94%
Pole	Pepasiran (*Ilex cymosa*)	25,02%
Tree	Rengas (*Gluta renghas*)	22,00%

Source: Results of Survey and Vegetation Analysis of the KTH Meniti Fajar Work Area, 2025.

At the seedling stage, one protected species was identified Pitcher Plant (*Nepenthes ampullaria*) which is listed under CITES Appendix II, indicating that this ecosystem serves as an important habitat for species vulnerable to exploitation. At the sapling stage, several species with more vulnerable conservation statuses were found, such as Bejiing (*Dillenia borneensis*), categorized as Vulnerable (VU), suggesting that the ecosystem continues to face degradation threats from environmental pressure and

Figure 22. Pitcher Plant (*Nepenthes ampullaria*) in KTH Meniti Fajar Working Area

habitat change. In addition, a Critically Endangered (CR) species according to the IUCN, Ramin (*Gonystylus bancanus*), was also found.

Figure 23. Ramin (*Gonystylus bancanus*) in the KTH Meniti Fajar Work Area

At the pole stage, more species with conservation status were identified, including Klanasian (*Syzygium zeylanicum*), categorized as Endangered (EN), and Blangiran (*Shorea balangeran*), categorized as Vulnerable (VU), indicating that their populations are declining in the wild. Vegetation at the pole stage also begins to show the presence of young trees that will eventually form the forest canopy, signifying that ecological succession is progressing well within this ecosystem.

At the tree stage, more species with conservation status were observed, such as Ramin (*Gonystylus bancanus*), Ulin (*Eusideroxylon zwageri*), and Lanan (*Shorea leprosula*), all of which are at high risk due to exploitation and habitat change. The presence of species classified as Vulnerable, such as *Shorea balangeran* and *Vatica pauciflora*, indicates that the area still maintains a healthy forest. The existence of large trees at this stage demonstrates that the lowland forest ecosystem of Kalimantan in the KTH Meniti Fajar working area still has a well-maintained structure.

In general, the results of identification and observation show that ecosystem regeneration in the KTH Meniti Fajar working area is progressing well. Species that dominate at the seedling level are also frequently found at the tree level, indicating a well-functioning natural succession process. The diversity of plant families from seedlings to mature trees reflects the ecosystem's resilience to environmental changes. The presence of trees at the uppermost growth stage confirms that the peat swamp forest ecosystem still retains a solid structure; however, stronger protection of specific species with conservation status according to the IUCN Red List 2024-2 and CITES 7/2/2025 is necessary to prevent further population decline.

Fauna Diversity in the KTH Meniti Fajar Work Area

Mammal species directly encountered in the KTH Meniti Fajar working area were observed along the Sepingit, Selangkun, and Arut Rivers. A total of four species from three families were identified through direct sightings. These four species include: Long-tailed Macaque (*Macaca fascicularis*), with 69

Figure 24. Orangutan (*Pongo pygmaeus wurmbii*) In the KTH Meniti Fajar Work Area

individuals observed, Proboscis Monkey (*Nasalis larvatus*), with 50 individuals, Bornean Orangutan (*Pongo pygmaeus wurmbii*), with 5 individuals, Lesser Treeshrew (*Tupaia minor*), with 2 individuals among these four species, two species—the Proboscis Monkey and the Orangutan are classified as protected species according to the Minister of Environment and Forestry Regulation No. P.106/MENLHK/SETJEN/KUM.1/12/2018, an amendment to Regulation No. P.20/MENLHK/SETJEN/KUM.1/6/2018 concerning Protected Plant and Animal Species. Based on IUCN global status: 1 species is classified as Least Concern (LC): *Tupaia minor* 1 species as Vulnerable (VU): *Macaca fascicularis* 1 species as Endangered (EN): *Nasalis larvatus* 1 species as Critically Endangered (CR): *Pongo pygmaeus wurmbii*, According to CITES protection status: 2 species are listed under Appendix II: Long-tailed Macaque and Proboscis Monkey 1 species is listed under Appendix I: Orangutan. (Refer to Table 9 for details.)

Table 9. Species of Mammals Encountered Directly in the KTH Meniti Fajar Work Area

No	Family	No		Protection Status			Meeting Location
		Scientific	Local	P.106	CITES	IUCN	
1.	Cercopithecidae	*Macaca fascicularis*	Kera Ekor Panjang / Long-tailed Monkey	TD	II	VU	River 1,2,3
2.	Cercopithecidae	*Larvatus nasalis*	Bekantan/ Proboscis Monkey	D	II	EN	River 1,2,3
3.	Hominidae	*Pongo pygmaeus wurmbii*	Orangutan / Bornean Orangutan	D	I	CR	River 1,2
4.	Tupaiidae	*Minor squirrel*	Tupai / Lesser Treeshrew	TD	N/A	LC	River 1

Source: Survey Results for February, 2025

Information:
River 1 = Sepingit River,

River 2 = Selangkun River and
River 3 = Arut River

In addition to direct encounters with the aforementioned fauna, exploratory information gathered from members of KTH Meniti Fajar and the local community recorded 23 other mammal species from 15 families. Based on their protection status, 15 species are classified as protected and 7 species as unprotected, according to the Minister of Environment and Forestry Regulation No. P.106/MENLHK/SETJEN/KUM.1/12/2018. Also discovered were tracks of deer, wild boar and Orangutans, as well as signs of Orangutan feeding activity. A complete list of the mammal species identified in the KTH Meniti Fajar working area is presented in Appendix 1.

Figure 25. Rhinoceros Hornbill (*Buceros rhinoceros*) in the KTH Meniti Fajar Work Area

Species of birds / *birdlife* that were identified from the encountered directly recorded 27 species from 12 families with the following amounts: : Kinabalu Serpent Eagle, Black Eagle 1 individual, Oriental Honey-buzzard 1 individual, Elang Ular Bido / Crested Serpent-eagle 2 individuals, Changeable Hawk-eagle 2 individuals, Brahminy Kite 1 individual, Stork-billed Kingfisher 6 individuals, Red Crab 7 individuals, Black-crowned Night Heron 1 individual, Great-billed Heron 3 individuals, Little Egret 1 individual, White-bellied crab 11 individuals, Black Hornbill 2 individuals, Rhinoceros Hornbill 1 individual, Cinnamon-headed Green-pigeon 6 individuals, Forest Crow 1 individual, Large lathe 2 individuals, Black-and-red Broadbill 1 individual, Oriental Darter 1 individual, Great Cormorant 1 individual, Blue-crowned Hanging-parrot 1 individual, Red eyes Bulbul 1 individual, Yellow-vented Bulbul 1 individual, Kedidi Temminck 1 individual, Velvet-fronted Nuthatch 1 individual. Based on the Regulation of the Minister of Environment and Forestry P.106/MENLHK/SETJEN/ KUM.1/12/2018 there are 8 species including protected categories. Based on the status listed in CITES consists of 1 species of Appendix I, 10 species of Appendix II and based on the global status of IUCN consists of 20 species *Least Concern*, 1

species of Near *Threatened*, 3 species *Vulnerable* and 3 species have no IUCN data. The species of birds that are meeting directly in the KTH Meniti Fajar area are presented in Table 10.

Table 10. Species of birds encountered directly in the KTH Meniti Fajar Work Area

No	Family	No		Protection Status			information
		Scientific	Local	P106	CITES	IUCN	
1	Accipitridae	*Spilornis kinabaluensis*	Elang Ular Kinabalu / Kinabalu Serpent Eagle	D	II	NT	River 1
2	Accipitridae	*Ictinaetus malayensis*	Elang Hitam / Black Eagle	D	II	LC	River 2,3
3	Accipitridae	*Pernis ptilorhynchus*	Sikep Madu Asia / Oriental Honey-buzzard	D	II	LC	River 2
4	Accipitridae	*Spilornis cheela*	Elang Ular Bido / Crested Serpent-Eagle	D	II	LC	River 2,3
5	Accipitridae	*Nisaetus cirrhatus*	Elang Brontok / Changeable Hawk-Eagle	D	II	LC	river 3
6	Accipitridae	*Haliastur indus*	Elang Bondol / Brahminy Kites	D	II	LC	River 1
7	Accipitridae	*Nisaetus nanus*	Elang wallace / Wallace's Hawk-eagle				
8	Alcedinidae	*Pelargopsis capensis*	Pekaka Emas / Stork-billed Kingfisher	TD	N/A	LC	River 1,2,3
9	Ardeidae	*Ardea purpurea*	Cangak Merah / Red Crab	TD	N/A	-	River 1
10	Ardeidae	*Nycticorax nycticorax*	Kowak Malam Kelabu / Black-crowned Night Heron	TD	N/A	LC	River 1
11	Ardeidae	*Butorides striata*	Kokokan Laut / Green-backed Heron	TD	N/A	-	River 2
12	Ardeidae	*Ardea sumatrana*	Cangak laut / Great-billed Heron	D	N/A	LC	River 1
13	Ardeidae	*Egretta garzetta*	Kuntul kecil / Little egret	TD	N/A	LC	River 3
14	Ardeidae	*Egretta sacra*	Kuntul karang / Coral egret	TD	N/A	LC	River 3
15	Bucerotidae	*Anthracoceros albirostris*	Kangkareng Perut Putih / White-bellied crab	D	II	LC	River 1,3
16	Bucerotidae	*Anthracoceros malayanus*	Kangkareng Hitam / Black Hornbill	D	II	VU	River 1

No	Family	No		Protection Status			information
		Scientific	Local	P106	CITES	IUCN	
17	Bucerotidae	*Buceros rhinoceros*	Rangkong Badak / Rhino hornbill	D	I	VU	River 1
18	Columbidae	*Treron fulvicollis*	Punai Bakau / Cinnamon-headed Green-pigeon	TD	N/A	VU	River 2
19	Corvidae	*Corvus enca*	Gagak Hutan / **Slender-billed Crow**	TD	N/A	LC	River 1
20	Cuculidae	*Centropus sinensis*	Bubut besar / Large lathe	TD	N/A	LC	River 2
21	Eurylamidae	*Chimbirhynchos macrorhynchos*	Sempur hujan sungai / Black-and-red Broadbill	TD	N/A	-	River 2
22	Phalacrocoracidae	*Anhinga melanogaster*	Pecuk Ular Asia / Oriental Darter	D	II	LC	River 1
23	Phalacrocoracidae	*Phalacrocorax carbo*	Pecuk padi besar / Great Cormorant	TD	N/A	LC	River 3
24	Psittacidae	*Loriculus galgulus*	Serindit Malaya / Blue-crowned Hanging-parrot	D	II	LC	River 3
25	Pycnonotidae	*Pycnonotus brunneus*	Merbah Mata merah / Red eyes Bulbul	TD	N/A	LC	River 2
26	Pycnonotidae	*Pycnonotus goiavier*	Merbah cerukcuk / Yellow-vented Bulbul	TD	N/A	LC	River 2
27	Scolopacidae	*Calidris temminckii*	Kedidi Temminck / Temminck Kedidi	TD	N/A	LC	River 1
29	Sittidae	*Sitta frontalis*	Munguk Beledu / Velvet-fronted Nuthatch	TD	N/A	LC	River 2

Source: Survey Results for February, 2025

Information:
River 1 = Sepingit River,
River 2 = Selangkun River and
River 3 = Arut River

Species of Birds and Fish Identified Based on information gathered from members of the Forest Farmer Group (KTH) *Meniti Fajar* and the local community, 24 bird species from 17 families were recorded. Of these bird species, 5 are *protected* and 18 are *not protected* according to the Regulation of the Minister of Environment and Forestry No. P.106/MENLHK/SETJEN/KUM.1/12/2018. According to CITES, 2 species are listed in Appendix II. Based on the global IUCN status, the list includes 1 *Endangered* species, 19 *Least Concern* species, 2 *Vulnerable* species, and 2 species with *no IUCN data* (see Appendix 1).

The same fish species observed in the field were found to be distributed evenly in the Sepingit River, Selangkun River, and several were also found in the Arut River. A total

of 19 fish species from 12 families were recorded in the field. According to the global IUCN status, the list includes 15 *Least Concern* species, 2 *Near Threatened* species, 1 *Data Deficient* species, and 1 *Fully Recovered* species. The fish species found directly within the working area of KTH *Meniti Fajar* are shown in Table11 below

Table 11. Species of Fish Found Directly in the KTH Meniti Fajar Work Area

No	Family	Scientific Name	Species Name/Locale	Protection Status			Information
				P.106	CITES	IUCN	
1	Anabantidae	*Anabas the tortoise*	Pepuyu / Climbing Perch	TD	N/A	LC	River 3
2	Channidae	*Channa micropeltes*	Ikan Toman / Giant Snakehead	TD	N/A	LC	River 1
3	Channidae	*Channa striata*	Ikan Gabus / Snakehead Murrel	TD	N/A	LC	River 2,3
4	Channidae	*Channa lucius*	Ikan runtuk / Forest Snakehead	TD	N/A	LC	River 2
5	Channidae	*Channa pleurophthalma*	Kerandang	TD	N/A	NT	River 2,3
6	Cichlidae	*Oreochromis niloticus*	Ikan Nila	TD	N/A	LC	River 1,2,3
7	Clariidae	*Clarias nieuhofii*	Ikan lele / Slender Walking Catfish	TD	N/A	LC	river 3
8	Cyprinidae	*Desmopuntius rhomboocellatus*	Teboreng loreng	TD	N/A	LC	River 1
9	Cyprinidae	*Nematabramis borneensis*	Seluang	TD	N/A	LC	River 1,3
10	Cyprinidae	*Gray osteochilus*	Kelabau	TD	N/A	DD	River 3
11	Eleotriidae	*Oxyeleotris marmorata*	Bakut / Marbled Goby	TD	N/A	LC	River 2
12	Helostomatidae	*Helostoma temminckii*	Biawan Tembakang / Kissing Gourami	TD	N/A	LC	River 2
13	Notopteridae	*Chitala chitala*	Belida	TD	N/A	NT	River 1
14	Osphronemidae	*Osphronemus goramy*	Kalui / Giant Gourami	TD	N/A	LC	River 1
15	Osphronemidae	*Luciocephalus pulcher*	Junjuk	TD	N/A	LC	River 1
16	Palaemonidae	*Macrobrachium rosenbergii*	Udang Galah / Giant River Prawn	TD	N/A	FR	River 2
17	Pristolepididae	*Pristolepis grooti*	Sepatung	TD	N/A	LC	River 3
18	Siluridae	*Phalacronotus apogon*	Lais Tapah	TD	N/A	LC	River 2
19	Tetraodontidae	*Tetraodon sp.*	Buntal Sungai / Half-smooth Golden Pufferfish	TD	N/A	LC	River 3

Source: Survey Results for February, 2025

Information:
River 1   = Sepingit River,
River 2   = Sungai Selangkun River
River 3   = Arut River

Apart from the fish found directly in the KTH Meniti Fajar Work Area, information from KTH Meniti Fajar members and the local community was also explored, 16 additional speciec were recorded, of which 1 species was included in the protected category according to Minister of Environment and Forestry Regulation P.106/ MENLHK/SETJEN/KUM.1/12/2018,

Source: Photo of February 2025 Survey Results

Figure 26. Snakehead Fish (Channa micropeltes) In the KTH Meniti Fajar Work

namely Siluk/Kalingkasa/Silver Arawana (*Scleropages formosus*). These species of fish are identified as listed in CITES, 1 species of Appendix I and based on IUCN global status consisting of 10 species including *Least Concern*, 1 species incl *Near Threatened*, 2 species of Data Deficien, and 3 species have no IUCN data. In detail the species of fish found directly, and the species explored in the KTH Meniti Fajar Work Area can be seen in Appendix 1. In general, an overview of the distribution of fauna found or found directly in the KTH Meniti Fajar Work Area can be seen in Figure 26.

Key Species in the KTH Working Area, Meniti Fajar

The KTH Meniti Fajar Work Area is a Kalimantan Lowland Forest Peat Ecosystem. Based on the survey there are Key Species (*Keystone species*). This species has a very important role in maintaining the balance and function of the ecosystem. Term *Keystone species* was first introduced in 1969 by Prof. Robert T. Paine, who is a zoologist. *Keystone species* are described as *stone* (stone) at the top of a sculpture that supports other stones and keeps the whole sculpture from falling apart. If a *keystone species* lost or destroyed from a system, the species that depend on it will also disappear. *Keystone species* can come from *top carnivores* (top carnivores) who are guardians of the existence of the prey; large herbivores that form a system with other species; or certain plants that support the life of certain insects that prey on birds, bats that spread plant seeds and many other organisms.
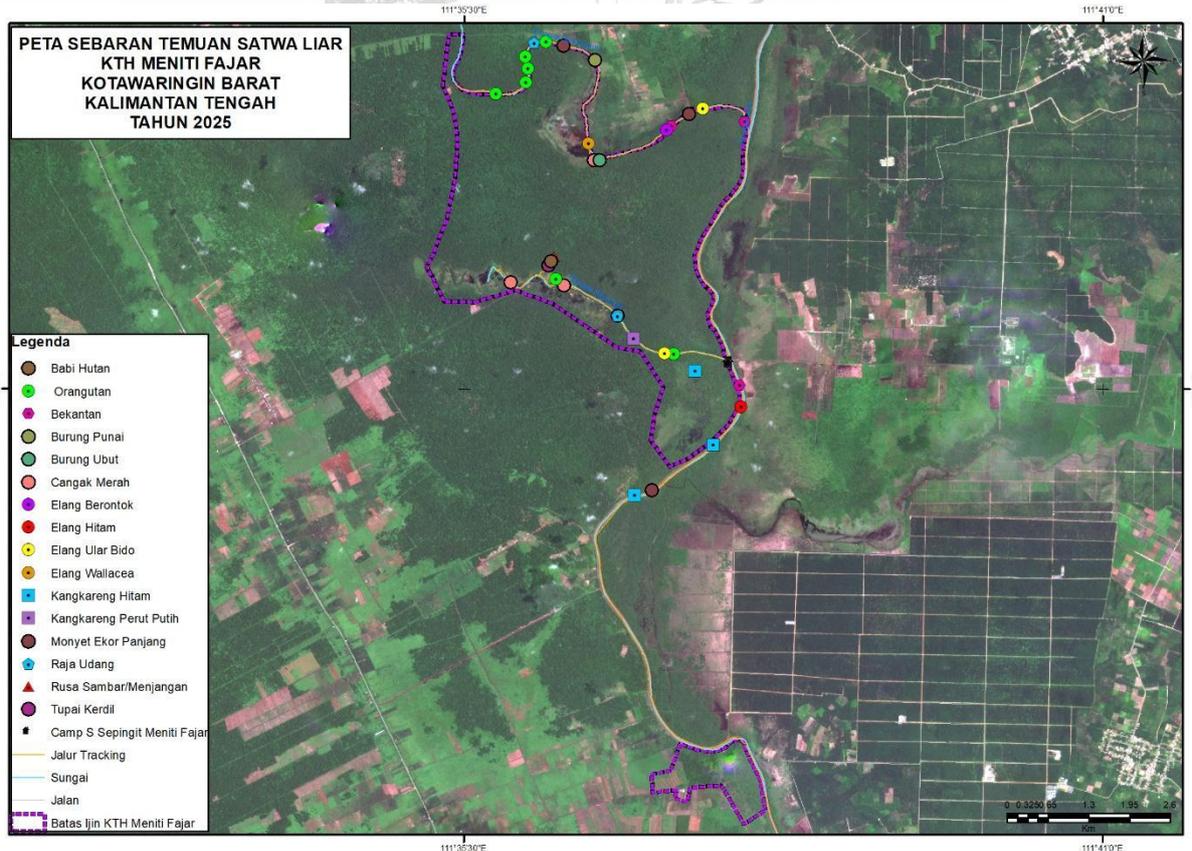
Figure 27. Location of the Distribution of Wild Fauna Encountere / Found in the KTH Meniti Fajar Work Area

Keystone species have some special aspects that make them more meaningful in an ecosystem. For example, plants with large amounts of biomass (lush canopies) are important, but not necessarily essential *Keystone species.* As with sea stars in sub-tidal ecosystems, extinction or large-scale harvesting of sea stars can cause other predators to develop rapidly and wipe out various species of algae that live in that ecosystem. Thus starfish are *Keystone species.* It is not easy to predict or determine what a particular species is *keystone species*, requires a long series of analysis. Usually, *Keystone species* will only be realized after the species becomes extinct or taken from the ecosystem and the impact is seen. This shows that in the wild there are many systems that have *Keystone species* but not many people realize and know about it. Draft *Keystone species* can be applied to groups of species as well as individual individuals of a species.

Ecologists have instilled an understanding that living communities of plants and animals have close interdependence with one another. Plants provide essential nutrients and energy for herbivorous animals that eat shoots or chew leaves, while herbivores

become prey (food) for carnivores. When plants and animals die, fungi, microbes and other organisms mine nutrients from the dead tissue and return the chemicals to the soil. From this series of processes new enrichment occurs, the soil becomes ready to support another generation of plants and animals.

Plants and animals are interrelated on many levels and in almost infinite ways. Not a few plant species in this world depend on the pollination process on insects, bats, and/or other animals - to carry pollen and fertilize seeds; on the other hand, several animal species use plants as *shelter*– branches for placing nests or tall plants to avoid predators or ambushing prey. Likewise, plant roots are able to resist soil erosion to prevent sedimentation (sludge) into water bodies, thus providing benefits for the life of fish and other aquatic biota. In this dependency pattern there are species that play a role in maintaining the balance of the system, these species are then called "*Keystone species*".

Paine (1969) explains several characteristics indicated by a *Keystone species*, among others:

✔ Gives effect *top-down* (such as predation) on the trophic below,

✔ Protect monopolization of critical resources (such as competition for space) at lower trophic levels, and

✔ Stabilize community diversity.

Based on the criteria above as well as the results of surveys and identification of flora and fauna, then The Key Species in the KTH Meniti Fajar Work Area is the Orangutan (*Pongo pygmaeus wurmbii*).

Orangutans play an important role in the health of their habitat's ecosystem, as well as in the Sepingit Forest of the KTH Meniti Fajar Work Area. They disperse seeds while consuming a variety of fruit, are able to digest larger seeds than other frugivorous

animals, and travel incredible distances while throwing out seeds. Research data from researchers at the Cabang Panti Research Station, Gunung Palung states that Orangutans eat at least 300 species of plants in the forest, consisting of 60% fruit, 20% flowers, 10% young leaves and bark and 10% insects (such as termites). The dominant plant whose fruit is consumed by Orangutans is from the family *Sapindaceae / Sapindales* (rambutan, kedondong, matoa and langsat), *Lauraceae* (avocado, and medang), *Fabaceae* (petai and including of nuts), *Myrtaceae/Myrtales* (guava) and *Moraceae* (ficus/fig wood, cempedak and jackfruit), *Anacardiaceae* (Mango, kweni, sengkuang, kandaria, cashew nut) (Kanisiu, 2018). Then, the Orangutan's home range can reach 100 km during its lifetime. It is from their roaming power that the Orangutans carry out the conservation process by scattering / throwing seeds from their leftover food so that the forest can continue to grow. In other words, Orangutan in this case play a role in stabilizing diversity in the forest ecosystem. Then the Orangutan is a primate / animal that is more than 30 years old. In other words, the Orangutan lives longer than other primates and by protecting the Orangutan in its natural habitat, hundreds of species of flora and fauna are also protected. Maintaining these forest ecosystems is as important for humans as it is for biodiversity itself.

The Bornean Orangutan has darker fur colour and a larger body compared to the Sumatran Orangutan. The behavior of Bornean Orangutans in the wild moves more slowly and often involves descending from trees and stepping on the ground. The Bornean Orangutan is part of the large ape family and is the largest arboreal mammal. The pillow-like temples of adult male Bornean Orangutan make this animal's face look bigger. However, not all adult male Bornean Orangutans have pillow-like temples. Males have an Adam's apple that can be inflated to produce a loud sound, which is used to call and announce his existence. Distribution and Conservation Status Orangutans are the only great apes that live in Asia, other great apes, gorillas, chimpanzees and bonodos are found in the African region (Suhud and Saleh, 2007). 90% of the total population is in Indonesia, which can only be found in Kalimantan and North Sumatra.

Bornean Orangutans are more commonly found in lowland forests (below 500 m above sea level). Forests and peatlands are the center of the Orangutan's home range, because they produce more large fruit trees than forests *Dipterocarpaceae* which is dry and has many tall woody trees, such as keruing. The Bornean Orangutan is very vulnerable

to disturbances in its habitat, although P.p. *morio* shows relatively unexpected tolerance to habitat degradation in northern Kalimantan. This species is classified by CITES into the Appendix I category (a species prohibited for commercial trade because it is highly vulnerable to extinction).
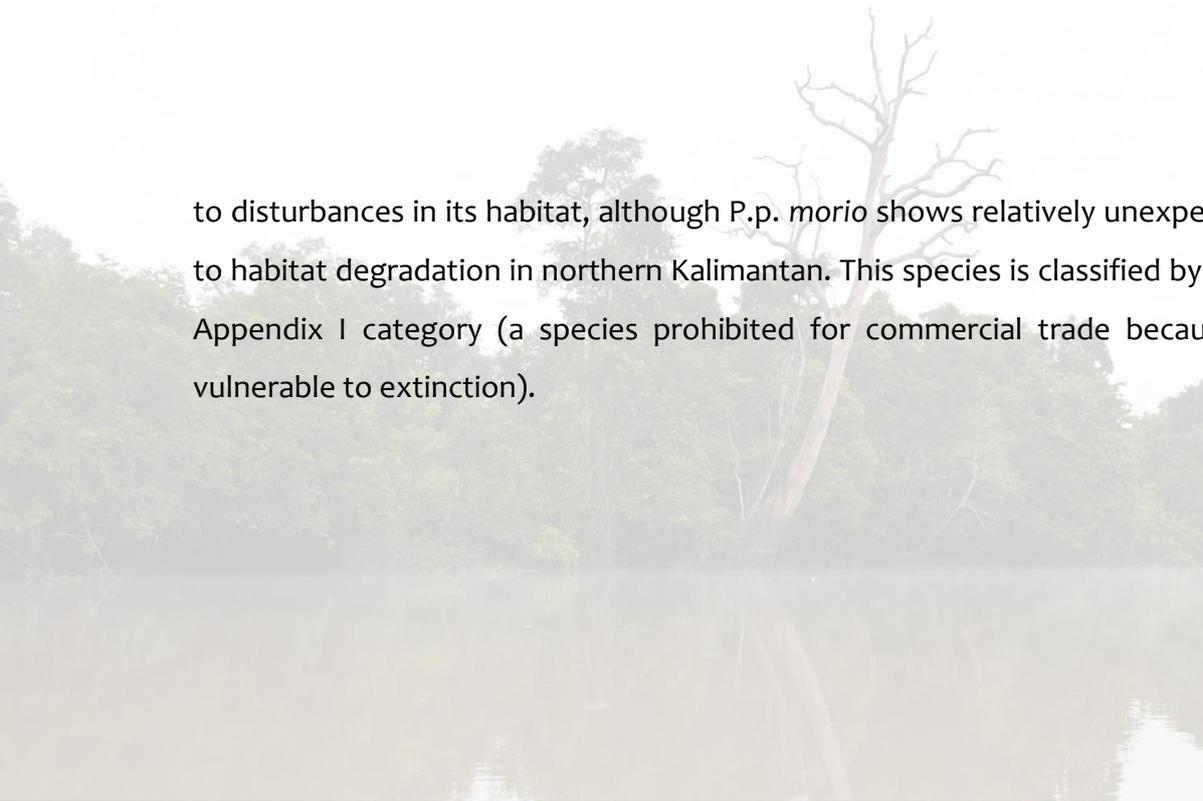
SOCIO-ECONOMIC AND CULTURAL CONDITIONS

Population Conditions

Education and Health Conditions

Economic Conditions

Ethnicity, Culture and Religion

Utilization of Forest Products

Population Conditions

KTH Meniti Fajar operational area is in the administrative area of Raja Seberang village. Raja Seberang village is part of the South Arut Sub-district, West Kotawaringin Regency, Central Kalimantan Province. It is located along the Arut River, with residential areas mainly constructed of wood, including roads, although some are paved and asphalted.

Administrative Borders of Raja Seberang Village are:

North : Rangda Village

West : Medang Sari Village, Natai Baru, Baru Village

South : Mendawai Seberang Village

East : Mendawai Seberang Village, Waringin Hulu City Village

The area covers 115 km², comprising 7 neighborhood units (RT) with a population of 2,321 people and 619 households (based on Village Development Data, February 2025). The majority of the population is Muslim, with a minority practicing Christianity.

Figure 28. Raja Seberang village Office

Table 12. Population of Raja Seberang Village

No	Total Population	Population Density Per Km²	Population Gender Ratio
1	2.321	22	113

Source: Data on the Development Level of Raja Seberang Village, February 2025.

The population distribution in Raja Seberang village is uneven, with residents clustering along the banks of the Arut River, particularly in areas closest to Pangkalan Bun City. The HKm Meniti Fajar site is located approximately 15 kilometers from the main residential area, with only a few individuals residing near the site. Access to HKm Meniti Fajar is via the Arut River, using kelotok boats (motorized riverboats), with an upstream travel time of about one hour.

The Arut River plays a vital role in the lives of Raja Seberang's village, as they depend heavily on it for their daily needs. The river serves as an essential resource for activities such as bathing, washing, sanitation (MCK) for some residents, fishing, and as a means of water transportation to reach other areas. To meet their need for clean water, residents currently utilize river water, bore wells, and the local water utility (PDAM).

The HKm Meniti Fajar working area is geographically surrounded by rivers that play a critical role in maintaining the ecosystem and natural balance of the region. The Sepingit River and the Sepinggan River are two rivers that have a significant ecological impact, especially due to the presence of well-preserved forests in the area. This makes the region particularly attractive for its pristine nature and the abundance of wildlife, especially bird and mammal species. The community relies on these rivers for fishing, particularly those whose livelihoods depend on capture fishing

Education and Health Conditions

The education level of the community in Raja Seberang village for graduates holding a D1 diploma up to a bachelor's degree remains relatively low, accounting for only 5–10%. Graduates of junior and senior high school make up around 30%, while the majority are only elementary school graduates (see Table 9). However, almost all residents are literate, with virtually no illiteracy in the area.

Educational facilities in the village include early childhood education (PAUD),
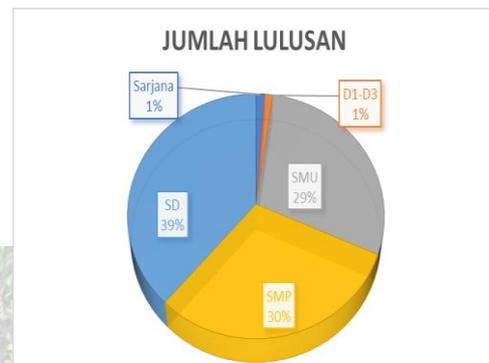
Figure 29. Percentage of Community Education Graduates in Raja Seberang Village

Table 13. Number of Education Graduates in Raja Sebrang Village

No	Tingkat Pendidikan	Jumlah Lulusan
1	Sarjana	9
2	D1-D3	8
3	SMU	213
4	SMP	218
5	SD	281
Total		729

Source: Data on the Level of Development of Raja Seberang Village, February 2025.

Figure 30. Educational facilities at SDN 1 Raja Seberang

kindergarten (TK) and elementary school (SD), all of which are in good and proper condition. In terms of quality, education in the area must continue to improve so that more residents can pursue higher levels of education, resulting in a greater number of university graduates. The community's residential area is easily accessible from Pangkalan Bun City, separated only by the Arut River, which poses no significant obstacle for those wishing to pursue further education. Education plays a vital role in changing mindsets and enhancing knowledge, enabling people to become more creative in developing the potential of their region. This, in turn, can increase the market value of the area and positively impact on the economic level of the local population. One important potential to be developed in relation to KTH Meniti Fajar is human resources (HR) particularly through new innovations so that the group can compete with other regions in managing their operational area.

Economic Conditions

The economy is one of the most important indicators for measuring a region's success in managing and utilizing its potential—whether in terms of human resources or natural resources. Visibly, the economic success of a region can be seen through income levels, standard of living, facilities, and purchasing power among the community. In Raja Seberang village, the economic condition of the community remains relatively low. This can be seen from the primary income sources, which come mainly from the plantation and agriculture sectors, with the majority of people working as daily wage farm laborers. Only a small portion of residents earn higher incomes, typically those who own and manage larger plots of land, used for oil palm, rubber, or horticultural farming. Entrepreneurial activities such as grocery traders, repair shops, and food stalls are very limited. Other livelihoods among the population include company employees, fishermen, entrepreneurs, boat craftsmen, and water transportation service providers.

Table 14 presents the average income of the community based on their occupation, as obtained from interviews:

Table 14. Average Community Income in Raja Sebrang Village

No	Livelihoods	Average Price/Kg (Rp)	Commodity Type	Average Daily Income (Rp)	Average Monthly Income (Rp)
1	Farm workers	-	-	150,000	4,500,000
2	Palm Oil Farmers	3,300	Fresh Fruit Bunch (TBS)	229,100	6,875,000
3	Vegetable farmer	20,000	Beans	67,000	2,000.000
		20,000	seems	53,000	1,600.000
		7,000	Summer squash	117,000	
		100,000-160,000	Fits	67,000 – 107,000	2,000,000 – 3,200,000
		8,000-10,000	Long beans	60,000	1,800,000
		5,000-8,000	Honey Pineapple	133,000	4,000,000
		4,000	Banana Kepok	40,0000	1,200,000
4	Employee	-		-	3,047,533
5	Businessman	-	Complete grocery stall	1,000,000 – 3,000,000	30,000,000 – 90,000,000
			Small shop	500,000 – 1,000,000	15,000,000 – 30,000,000
6	Fisherman Catch	15,000	Mixed Fish	105,000	3,150,000
7	Water transportation services	-		100,000	3,000,000

Source: Results of Interview Survey with the Community of Raja Seberang Village in February 2025

Stall Business

Motorcycle Workshop and Airbrush

Cage Fishermen

Boat Building Craftsmen

Figure 31. Several Community Business Activities in Raja Seberang Village

For vegetable farmers and capture fishermen, the selling prices of their commodities are significantly lower than market prices. This occurs because they sell their products to middlemen or collectors. These farmers and fishermen often rely on these middlemen for financing their operational needs, which in turn binds them to sell their products exclusively to these collectors. Additionally, limited marketing networks further force them to sell at lower prices, creating a major obstacle especially for vegetable farmers and capture fishermen and ultimately affecting the overall economic condition of the Raja Seberang community.

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Potential development in the existing Raja Seberang Village area needs to be further developed in terms of productivity, advanced processing and quality, this aims to have a higher selling value. Currently, forest farming communities and groups only depend on palm oil, vegetables and fish for their survival. The people in Raja Seberang Village who are farmers depend heavily on the agricultural sector for their livelihood, especially horticultural farmers. However, this is not easy considering the structure of their soil type, which is predominantly peat and an uncertain climate with high rainfall and frequent floods which also affect the productivity of these farmers. Currently, Palm Oil is becoming *trend* farmers to increase their income and have low risk but have a good selling price at the moment. However, on the one hand, if the existence of oil palm land clearing by the community is not limited by carrying out awareness/counseling and land use strategies. It will become a threat to the existence of forest areas and the surrounding nature, including the existence of animals that are currently still in that location. HKm Meniti Fajar has anticipated this by making a spatial plan for utilization and carrying out activities in the designated location. Land management in various sectors, including horticultural agriculture, fruit farming, animal husbandry and fishery, has been carried out at designated locations. Identification of product results based on land use is very important to reduce existing impacts and risks, so that production results can be more optimal.

Table 15. Value of Commodities Cultivated by the Community and Meniti Fajar KTH Group Members

No	Type	Selling price (Rp)	Average value per year (Rp)	Marketing Objectives
1	Palm	3,300/Kg	82,500,000	Collector
2	Rubber	10,000 – 12,000 /Kg	37,610,000	Collector
3	Horticulture	20,000 – 100,000 /Kg	172,000,000	Pangkalan Bun and Sampit
4	Fruits	5,000 – 25,000 /Kg	45,000,000	Pangkalan Bun
5	Cattle farm	17,000,000 – 25,000,000 /head	277,500,000	Pangkalan Bun
6	Honey	450,000/liter	243,000,000	Pangkalan Bun
7	Fishery	15,000 – 50,000/Kg	37,800,000	Banjar

Source: Results of interviews and FGDs with the Raja Seberang Village Community in February 2025
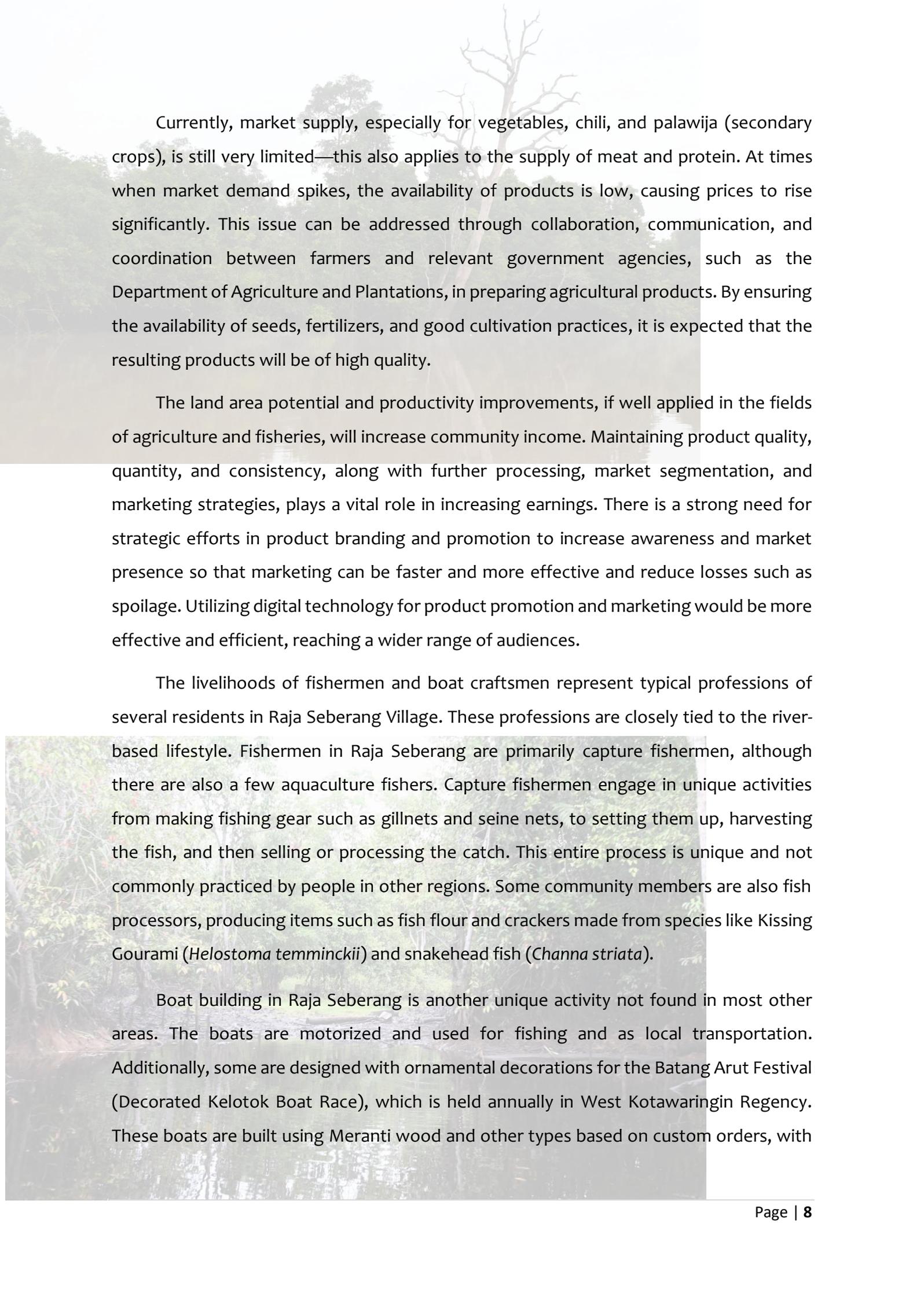
Currently, market supply, especially for vegetables, chili, and palawija (secondary crops), is still very limited—this also applies to the supply of meat and protein. At times when market demand spikes, the availability of products is low, causing prices to rise significantly. This issue can be addressed through collaboration, communication, and coordination between farmers and relevant government agencies, such as the Department of Agriculture and Plantations, in preparing agricultural products. By ensuring the availability of seeds, fertilizers, and good cultivation practices, it is expected that the resulting products will be of high quality.

The land area potential and productivity improvements, if well applied in the fields of agriculture and fisheries, will increase community income. Maintaining product quality, quantity, and consistency, along with further processing, market segmentation, and marketing strategies, plays a vital role in increasing earnings. There is a strong need for strategic efforts in product branding and promotion to increase awareness and market presence so that marketing can be faster and more effective and reduce losses such as spoilage. Utilizing digital technology for product promotion and marketing would be more effective and efficient, reaching a wider range of audiences.

The livelihoods of fishermen and boat craftsmen represent typical professions of several residents in Raja Seberang Village. These professions are closely tied to the river-based lifestyle. Fishermen in Raja Seberang are primarily capture fishermen, although there are also a few aquaculture fishers. Capture fishermen engage in unique activities from making fishing gear such as gillnets and seine nets, to setting them up, harvesting the fish, and then selling or processing the catch. This entire process is unique and not commonly practiced by people in other regions. Some community members are also fish processors, producing items such as fish flour and crackers made from species like Kissing Gourami (*Helostoma temminckii*) and snakehead fish (*Channa striata*).

Boat building in Raja Seberang is another unique activity not found in most other areas. The boats are motorized and used for fishing and as local transportation. Additionally, some are designed with ornamental decorations for the Batang Arut Festival (Decorated Kelotok Boat Race), which is held annually in West Kotawaringin Regency. These boats are built using Meranti wood and other types based on custom orders, with

each unit taking approximately 1 to 2 months to complete, depending on size. Building these boats requires a high level of craftsmanship, which not everyone possesses.

These economic activities capture fishing, fish processing, and boat building are unique and culturally distinctive livelihoods of the Raja Seberang community, especially those living along the Arut River. In the future, these could potentially be developed into tourism attractions. They may become part of a tourism package, such as the Arut River Cruise – Sepingit – Selangkun – Sepingit Forest, which could be managed by KTH Meniti Fajar. Through such development, these activities could serve as additional sources of income for the fishermen, fish processors, boat builders, and other community members in Raja Seberang especially those affiliated with KTH Meniti Fajar.

Ethnicity, Culture and Religion

According to local community stories, Raja Seberang Village was originally designated as a residential area for the Chinese ethnic group (currently located in RT 01) in Pangkalan Bun, separated only by the large Arut River. At that time, the area was already inhabited by the Malay and Dayak Arut ethnic groups. At present, Raja Seberang Subdistrict is inhabited predominantly by the Dayak Malay ethnic group (80%), followed by Local Dayak (5%), Chinese (5%), Javanese (2%), Bugis (3%), and Banjar (5%).

The majority religion practiced by the community in Raja Seberang is Islam (90%), while the remaining 10% of the population adheres to Christianity and Catholicism. One traditional ritual that is still practiced by the community is Bahalarat/Malaharut Kampung, a ceremony held for the safety and protection of villagers, usually performed during the month of Sha'ban according to the Hijri calendar. The Chinese community also typically holds an annual Cap Go Meh celebration, which marks the 15th night of the first lunar month and serves as the culmination and closing of the Chinese New Year festivities—although this celebration is generally conducted in a simple and modest manner. Other ethnic groups do not hold traditional rituals like those of the Dayak Malay or Chinese communities.

Utilization of Forest Products

The use of natural resources in a planned, structured and good management and sustainability is a programming step that is being developed by the HKM Meniti Fajar. This forest resource management concept has been adopted and implemented due to a shared vision and mission among group members to sustainably manage and utilize natural potentials. It represents their gratitude to God by ensuring that management is carried out responsibly without damaging the forest and surrounding environment. The goal is to generate economic value and benefits, particularly for KTH Meniti Fajar and generally for the residents of Raja Seberang Village and its surroundings. Forest management and the use of natural potentials are conducted in compliance with applicable laws and regulations to ensure environmental sustainability.

Based on interview results, the utilization of timber forest products is no longer the main focus for the community. Wood needs, whether Meranti or mixed hardwood, are now mostly met through private garden trees or purchased from lumber stores. However, wood demand still remains a consideration for KTH Meniti Fajar. In the HKm Meniti Fajar working area at KM 11, Gelam trees (*Melaleuca cajuputi*) are planned to be planted as one of the forest's production functions. Gelam, from the Melaleuca genus and Myrtaceae family, naturally grows on Kalimantan's peatlands and other regions. It is classified as strength class II and durability class III timber. Gelam wood has various uses, especially for construction materials and fuelwood. It is also used for charcoal production, and its bark fragments are used for insulation or pillow stuffing. Moreover, its leaves have potential as an ingredient in candy production. The estimated price of Gelam wood per cubic meter ranges from IDR 3 million to IDR 7 million or more, depending on quality, size, geographic location, and may fluctuate over time.

The Agrosilvopastoral system has already been implemented and developed by KTH Meniti Fajar in the KM 11 area with various commodities. Non-Timber Forest Products (NTFPs) cultivated and harvested there include cattle, stingless bee honey, sweet oranges, lemons, honey pineapples, and caged fish (Nila tilapia and catfish). Cattle are raised through grazing or extensive grazing over ±30 hectares of forest pasture. Currently, there are around 54 heads of cattle with an estimated selling price between IDR 17 million – 25

million per head. With an average of 15 heads sold annually, this yields approximately IDR 277,500,000 per year.

KTH Meniti Fajar also manages 50 stingless bee hives (stup). Stingless bees, from the Meliponini tribe, lack functional stingers but can produce honey, propolis, and bee pollen. The annual average harvest from 50 stup is 50 liters of honey, sold at IDR 400,000 per liter, generating about IDR 20,000,000 per year. Caged fish farming in the KM 11 area involves Pangasius catfish and Nile tilapia. These fish can be harvested twice a year, yielding about 2,000 kg annually. At IDR 40,000 per kg, the average income is IDR 80,000,000 per year.

In addition to livestock and aquaculture, plantation crops are cultivated at KM 11: sweet oranges (*Citrus nobilis var. Microcarpa*), lemons (*Citrus limon*), and honey pineapples (*Ananas comosus*). Sweet oranges and lemons are each planted over 1 hectare, and pineapples over 0.5 hectare. Annually, the average yields are 250 kg of sweet oranges, 150 kg of lemons, and 500 pineapples. With a selling price of IDR 30,000/kg, sweet oranges generate IDR 7,500,000/year. Lemons, at IDR 50,000/kg, also yield IDR 7,500,000/year. Pineapples, sold at IDR 5,000 each, contribute IDR 2,500,000/year. These NTFPs are primarily marketed in Raja Seberang Village and Pangkalan Bun City.

In the future, KTH Meniti Fajar will focus more on Silvopasture in the KM 11 area, prioritizing Gelam tree planting, cattle farming, and caged fish farming (tilapia and catfish). This strategy considers the peatland condition and proximity to the Arut River, which poses a flood risk—an event that occurred in 2023—potentially damaging plantation crops and causing financial losses.

Beyond the aforementioned commodities, KTH Meniti Fajar has also previously utilized rattan (*Calamus sp.*) from Sepingit Forest. The historical price was IDR 5,000/kg with average harvests reaching 1,000 kg. However, due to low prices, limited demand, and restrictive government regulations, rattan harvesting has ceased among group members and the local community.

Other NTFPs, including fish and shrimp, are pursued by KTH members in the Sepingit and Sepinggan rivers. These waters host various freshwater species such as pepuyu/betok, toman, gabus, runtuk, kerandang, catfish, striped teboreng, seluang, kelabau, bakut, biawan/tebakang, belida, junjuk, udang galah, sepatung, lais tapah, and ikan buntal.

Average daily catches range from 7–10 kg, with selling prices between IDR 15,000 and 50,000 per kg. Capture fishers earn around IDR 37,800,000 annually. With its considerable market demand and community resources, this fishery potential warrants further development, always mindful of preserving fish stock and ecosystems.

Other forest products that may be developed in the KTH Meniti Fajar working area include environmental services (ecosystem services). These refer to the benefits people receive from ecosystems, both directly and indirectly—ranging from natural resource provision, regulation of natural systems, and preservation of cultural values. Sepingit River, Sepinggan River, and Sepingit Forest hold environmental service potential for future development, such as carbon sequestration and storage, biodiversity protection, watershed protection, and scenic landscape values. The area's landscape beauty and rich birdlife along both rivers present opportunities for river-based ecotourism. Sepingit Forest, with its rich biodiversity, may also be developed into a site for ecotourism and conservation education.

The data on NTFPs and environmental service potential in the KTH Meniti Fajar working area are presented in Table 16 and Figure 32 below.

Table 16. Forest Products in the KTH Meniti Fajar Work Area

No	Location	Timber Forest Products (HHK) Non-Timber Forest Products (NTFPs)			Environmental Services Forest	
		HHK	NTFPs	Information	environmental service	Information
1	Km 11 (Work Area Location)	Gelam	-	Future plans to be developed	-	-
			Cow	Still being cultivated and will be developed. Average income is IDR 300,000,000/year	-	-
			Honey Kelulut	Still being cultivated and will be developed. Average income of 243,000,000/year	-	-
			Sweet Orange, Lemons	Still cultivated	-	-
			Honey Pineapple	Under cultivation	-	-
			Cage Fish	Currently it is no longer carried out, but in future	-	-

No	Location	Timber Forest Products (HHK) Non-Timber Forest Products (NTFPs)			Environmental Services Forest	
		HHK	NTFPs	Information	environmental service	Information
				plans it will be cultivated again		
2	Sepingit River	-	Fish and Shrimp	Managed using capture methods and will be developed	Nature Tourism along the River	Future plans to be developed
3	Sepinggan River	-	Fish and Shrimp	Managed using capture methods and will be developed	Nature Tourism along the River	Future plans to be developed
4	Narrow Forest	-	Rattan	Never managed	- Biodiversity - Conservation Education - Nature Tourism	Future plans to be developed

Kelulut Honey

Fruit Orange

Pineapple fruit

Cattle

Figure 32. Several Forest Products in KM 11 of the KTH Meniti Fajar Work Area

SPATIAL AND LANDSCAPE CONDITIONS OF THE LAND

Land Cover

Landscape

T he Convertible Production Forest Area (HPK) within the working area of the Meniti Fajar Community Forest Farmer Group (KTH Meniti Fajar), based on land cover analysis from 2015 to 2024, is generally dominated by secondary forest (80.89%). This Secondary Forest is primarily located in the Sepingit Forest. However, there was a recorded decrease in the area of secondary forest in 2018 and 2023, amounting to 6.77 hectares and 0.17 hectares respectively. Analysis results indicate an increase of 6.61 hectares in the secondary forest area in Sepingit Forest in 2024.

In addition to secondary forest, land cover within the KTH Meniti Fajar working area also includes water bodies, old shrubs, open land, swamps, bushes, bush thickets, oil palm plantations, and agricultural land. Detailed changes in the area of each land cover type in the KTH Meniti Fajar working area from 2015 to 2024 are presented in Table 17 and the trend of these changes is illustrated in Figure 33.

Table 17 Land Cover in the KTH Meniti Fajar Work Area for the 2015 – 2024 Period.

Cover Type Land	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Water Body	18,50	18,50	18,50	18,50	18,50	18,50	18,50	18,50	18,50	18,50
Old shrub	94,02	94,02	94,02	92,54	92,11	92,11	92,01	92,01	79,10	73,17
Secondary forest	1.539,09	1.539,09	1.539,06	1.532,26	1.532,29	1.532,29	1.532,29	1.532,29	1.532,12	1.538,73
Palm oil	-	-	-	-	-	-	-	-	-	0,53
Agricultural land	-	-	-	-	-	-	-	-	-	11,94
Open land	6,21	6,21	9,90	41,56	42,43	42,43	44,59	44,59	61,21	9,59
Swamp	59,89	59,89	59,89	59,89	59,89	59,89	59,89	59,89	59,89	59,89
Brush	143,52	143,52	139,92	117,11	116,77	116,77	114,79	114,79	111,23	132,81
Shrub	40,94	40,94	40,88	40,28	40,17	40,17	40,11	40,11	40,11	57,01
Total	1.902,17	1.902,17	1.902,17	1.902,17	1.902,17	1.902,17	1.902,17	1.902,17	1.902,17	1.902,17

Source: Planet Aqc Satellite Image Interpretation Results 2015 – 2024

The natural succession process in the Sepingit Forest from old scrub to secondary forest is very possible, so that the area of secondary forest will increase in 2024. This succession is supported by biodiversity and the presence of plants at the seedling, sapling and pole levels which are abundant and grow well in the Sepingit Forest habitat. Open land in the KTH Meniti Fajar work area has decreased from 61.21 Ha in 2023 to 51.62 Ha to 9.59 Ha in 2024.
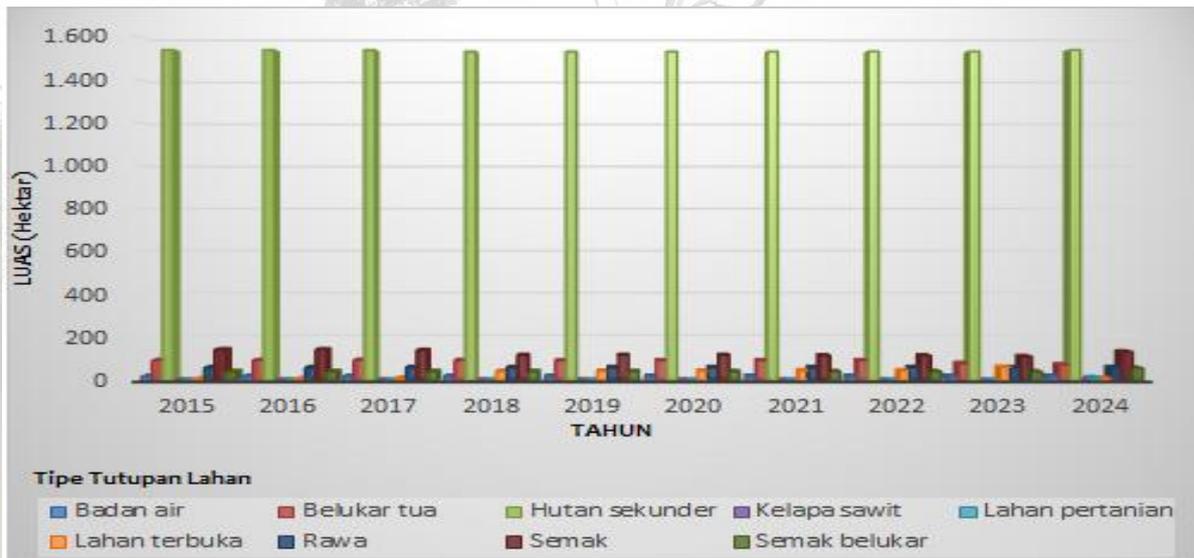
Figure 33. Land Cover Graph in the KTH Meniti Fajar Work Area for the Period 2015 to 2024.

In 2024, open land was identified to have changed from its 2023 condition in the Sepingit Forest, transitioning into bush and secondary forest. Meanwhile, in the KM 11 area, open land was converted into bush, shrub, agricultural land, and oil palm plantations. These changes align with KTH Meniti Fajar's land management efforts to implement an agroforestry system within its working area.

Land cover types that have not experienced any changes in area or location from 2015 to 2024 are water bodies and swamps in the Sepingit Forest, which remain at 18.50 hectares and 59.89 hectares, respectively. This indicates an absence of both natural disturbances and human interventions. An overview of land cover changes can be seen in the Land Cover Map Appendix for the years 2015 to 2024.

Landscape

The working area of KTH Meniti Fajar features a distinctive landscape and rich biodiversity characteristic of the lowland rainforests of Kalimantan. The predominant land systems consist of beliti and peat soils, with elevations ranging between 0 to 35 meters above sea level. The landform is predominantly flat, with slopes ranging from 0–8%, creating ideal habitats for the growth and development of Kalimantan's endemic flora and fauna. The Selangkun River to the north and the Sepingit River to the south both of which flow into the larger Arut River serve as important habitats for aquatic biota.

The forest area at KM 11, within the KTH Meniti Fajar working zone, is peatland within the lowland rainforest ecosystem of Kalimantan. This area consists of land cover types such as old shrubs, shrubland, bushes, and agricultural land, with agriculture and open land dominating the landscape. Its low elevation and flat topography, along with the presence of the Arut River to the east, make the area susceptible to year-round waterlogging and potential flooding. The open forest landscape at KM 11, characterized by grass and shrub vegetation, offers scenic beauty and high suitability for the implementation of a sylvopasture system. The grassy and shrubby areas are appropriate for raising livestock such as cattle, goats, and sheep, while areas with flowing or stagnant water are suitable for fish farming in floating net cages. In portions of the old shrubland, enrichment planting of endemic peatland species could be undertaken to restore the area into forest.

The Sepingit Forest is a peatland lowland rainforest ecosystem dominated by secondary forest. To its north flows the Selangkun River, which borders areas of peat swamp, bush, and shrubland. The shrubland here is densely populated with Purun grass (*Lepironia articulata*) and Rempiang (*Pandanus sp.*), creating a uniquely distinctive landscape. Deeper into Sepingit Forest lies a richly biodiverse lowland rainforest ecosystem, home to various peatland flora and typical Kalimantan fauna. The forest features multiple growth stages, including seedlings, saplings, poles, and mature trees offering a comprehensive picture of the ecosystem's dynamics and its natural

Figure 34. Land Landscape in KM 11 KTH Working Area Enters Fajar.

regeneration potential. At the seedling level, the dominant species is Rempiang (*Pandanus sp.*) among 20 identified species. At the sapling level, the dominant species is Pansulan (*Pternandra caerulescens*), while at the pole stage, of the 37 identified species, Pepasiran (*Ilex cymosa*) is most prevalent. At the tree level, among 45 identified species, Rengas (*Gluta renghas*) is dominant.

The presence of such flora creates a habitat for diverse fauna. A total of 51 bird species from 27 families and 27 mammal species from 17 families have been identified. Additionally,

the Sepingit Forest is flanked by two rivers—Selangkun and Sepingit—both serving as habitats for various fish species. A total of 27 fish species from 13 families have been identified in these rivers.

Figure 35. Landscape in the Sepingit Forest, KTH Meniti Fajar Work Area.

The Sepingit Forest holds a strategically important position within the network of global flora and fauna conservation areas. It is located approximately 31 km northwest of the Tanjung Puting National Park, a designated Conservation Area, Ramsar Site, and an Important Bird and Biodiversity Area (IBA). Additionally, it lies about 15 km northeast of the Lamandau Wildlife Reserve. The Sepingit Forest is also part of the Bornean Mountains Endemic Bird Area (EBA No. 157) and is situated approximately 185 km southwest of the

Heart of Borneo (HoB) region and around 207 km southwest of an Intact Forest Landscape (IFL). In other words, the Sepingit Forest forms part of a broader corridor of global forest conservation areas.
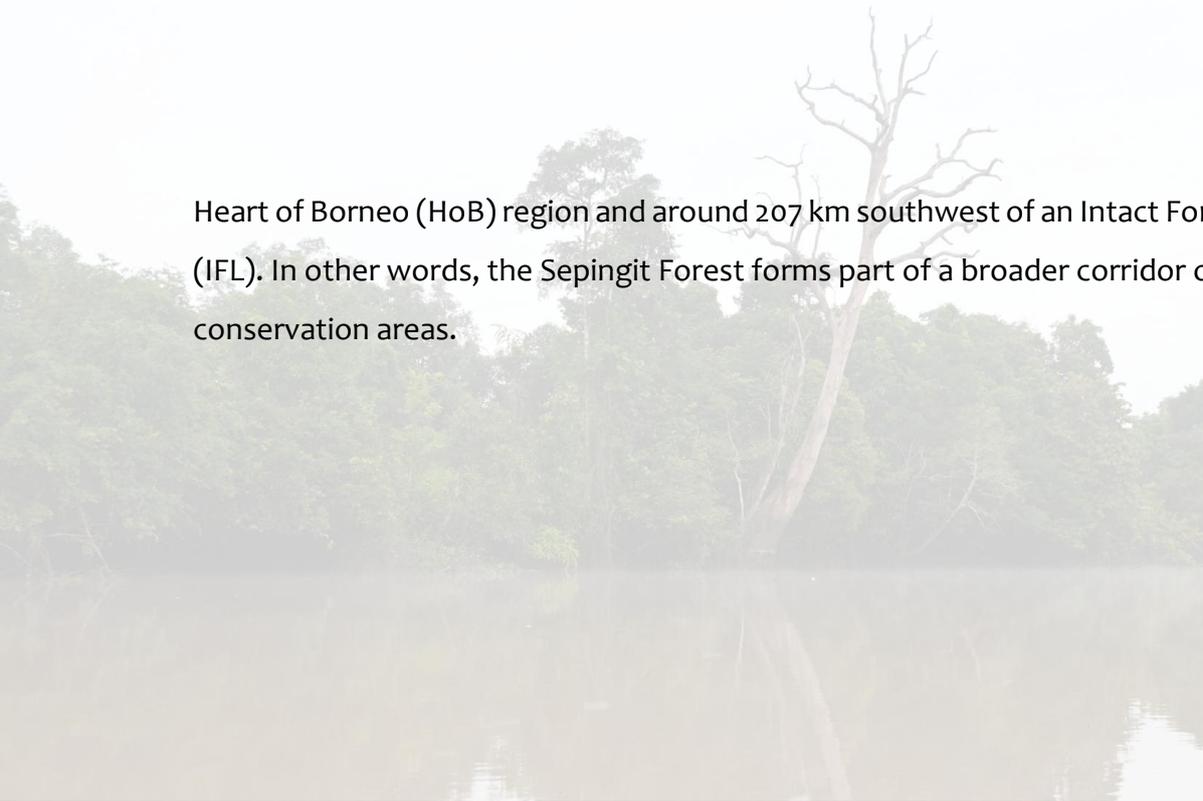
THREAT IDENTIFICATION AND MANAGEMENT RECOMMENDATIONS

Identified Threats

Threat Assessment

Management and Monitoring Recommendations

Identified Threats

Threats are all human activities and natural conditions that can disrupt the sustainability of the ecosystem in the KTH Meniti Fajar Work Area, which consists of peatland within a lowland rainforest ecosystem. The following outlines the identified threats based on field surveys and interviews with members of KTH Meniti Fajar :

A. Forest and Land Fires

Hotspots of forest and peatland fires refer to fire points detected by satellites or other sensors, indicating fire activity in a specific area. These hotspots serve as clear indicators of potential forest and land fires and are commonly used to identify areas at risk. Based on hotspot monitoring in the KTH Meniti Fajar work area from 2014 to 2024, a total of 11 hotspots were detected: 4 in 2014, 1 in 2018, 3 in 2019, and 3 in 2023 (see Table 18).

Table 18. *Hotspots in the KTH Meniti Fajar Work Area for the 2015–2024 Period*

No	Location	Time Series Hot Spot											Total
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
1	Areal Kerja KTH Meniti Fajar	4	-	-	-	1	3	-	-	-	3	-	11

Source: Analysis of Hotspot Data from 2015–2024 (https://firms.modaps.eosdis.nasa.gov/)

The distribution of hotspots in the KTH Meniti Fajar work area is concentrated around the Sepingit Forest near the Selangkun River, with a total of 6 hotspots. Around the Sepingit River, there are 3 hotspots; near the Arut River, 1 hotspot; and at KM11 within the KTH Meniti Fajar work area, 1 hotspot. Field monitoring confirmed burn marks in locations identified as hotspots.
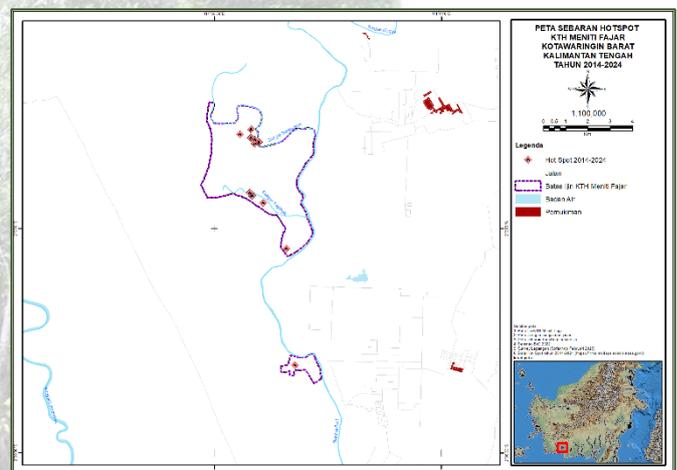
Figure 36. Hotspot Distribution in the KTH Meniti Fajar Work Area.

Survey results confirmed that the detected hotspots were actual fires. The distribution pattern indicates that the area around the Selangkun River is more prone to fire compared to other parts of the KTH Meniti Fajar work area. This peat forest is highly flammable due to its porous structure, low density, and high oxygen content in the peat composition (up to 40%), which allows combustion to continue even in low-oxygen conditions (Solovyov, 2006). The hotspot distribution in the KTH Meniti Fajar work area from 2014 to 2024 is shown in Figure 35.

B. Illegal logging

Illegal logging in the KTH Meniti Fajar work area remains a major threat to the integrity and biodiversity of the Sepingit Forest. This activity still occurs in the Sepingit Forest, as evidenced by the discovery of sawn timber near the Selangkun River during the survey. It is clear that the wood came from trees within the Sepingit Forest (see Figure 36). KTH Meniti Fajar has no plans to harvest timber from the work area, including the Sepingit Forest. This indicates that an external party is responsible for the illegal logging activity.

Illegal logging has numerous negative impacts, including environmental, social, and economic consequences. Environmental effects include habitat loss, climate change, flooding, landslides, erosion, and reduced water quality. Social impacts can involve diminished water resources, lower quality of life, and social disruption.

Figure 37. Illegal Logging in the Sepingit Forest, KTH Meniti Fajar Work Area

Habitat loss in the Meniti Fajar work area is particularly dangerous, as the Sepingit Forest—surrounded by open land—serves as one of the last remaining habitats for orangutans in the area.

In addition, the economic impacts can include state losses, loss of revenue, and a decline in foreign exchange earnings. These consequences must be prevented, especially in the Sepingit Forest within the KTH Meniti Fajar work area.

C. Expansion of Oil Palm Plantations

The future prospects of the palm oil industry remain highly promising, both globally and in Indonesia. Global demand for palm oil is expected to keep rising in line with population growth and changing consumption patterns. The industry also holds great potential for developing derivative products, technological innovations, and adopting sustainable practices.

However, this growing demand also drives stakeholders in the palm oil sector to expand plantation areas to increase the yield of fresh fruit bunches used as raw material for palm-based products. Such expansion often targets forested land, including areas with high biodiversity like the forests within the KTH Meniti Fajar work area posing a serious threat to these ecosystems.

In 2024, land cover analysis using Planet Aqc Satellite Imagery from 2015 to 2024 revealed the presence of oil palm plantations covering 0.53 hectares. This plantation is specifically located at KM 11 within the KTH Meniti Fajar work area.

Figure 38. Palm Oil Plantation in KTH Meniti Fajar Working Area

Another factor that may contribute to the expansion of oil palm plantations is the presence of open land scattered around KM 11 and the Sepingit Forest. These open areas are highly susceptible to conversion into oil palm plantations due to their accessibility and ease of cultivation.

D. Natural Disasters

The landscape of the KTH Meniti Fajar work area, particularly at KM 11, consists of peatland within a lowland rainforest ecosystem in Kalimantan. Its low elevation, flat terrain, and the presence of the Arut River to the east make this area prone to year-round water accumulation and potential natural disasters such as flooding.

A flood occurred in this area in 2023, submerging nearly the entire KM 11 region. The flood severely affected the agroforestry block, causing many horticultural crops to die and resulting in crop failure for several plants that had begun to bear fruit.

Natural disasters like the flooding described above are unpredictable and can occur at any time, especially during the rainy season. Therefore, land management strategies and the selection of crops to be cultivated must take into account the potential threat of flooding, as previously experienced at KM 11 in the KTH Meniti Fajar work area.

Threat Assessment

The threat assessment for the KTH Meniti Fajar Community Forest ecosystem uses a qualitative approach. This method involves measuring the relative impact of certain events and focuses more on strategic and political aspects to prevent or reduce the negative effects of potential risks.

The threat levels are categorized into five levels: very low, low, moderate, high, and very high. The assessment of threats to the KTH Meniti Fajar Community Forest ecosystem is carried out using four methods:

(1) Literature review, (2) Interviews, (3) Focus Group Discussions (FGD), and (4) Field observations. The threat assessment for the KTH Meniti Fajar Community Forest ecosystem focuses on two sources—internal and external—and considers two types of threats: current and potential. The identified threats to the KTH Meniti Fajar Community Forest ecosystem are presented in Table 19.

Table 19. Assessment of Major Threats to the Forest Ecosystem in the KTH Meniti Fajar Work Area

No	The Existence of the Ecosystem in the KTH Meniti Fajar Work Area	Main Threat	Level Threat
1	Species Diversity	Current	
	The HKm (Community Forest) area of KTH Meniti Fajar, several protected species have been identified, as listed under the Ministry of Environment and Forestry Regulation No. P.106 of 2018. These species also include those classified as Threatened EN, VU, CR	Hunting of Protected, Endemic, and Rare Wildlife	**Very High**
		River Water Pollution from Chemical Use (Fertilizers and Pesticides) by Companies and Community Farms/Gardens	**Very High**

No	The Existence of the Ecosystem in the KTH Meniti Fajar Work Area	Main Threat	Level Threat
	according to IUCN status, and those listed in CITES Appendices I and II.	Loss of habitat due to land conversion from natural cover (Conservation Areas) by Communities into oil palm plantations	**High**
		Potential	
		Loss of habitat due to land conversion from natural cover (Conservation Areas and Riverbanks) by communities into farms/gardens	**Very High**
		Habitat fragmentation caused by illegal logging in riverbank areas	**High**
		Decline in river water quality due to land clearing, fertilizer & pesticide runoff, or other pollution entering rivers	**Very High**
		Household / domestic waste pollution	**High**
2	Ecosystem, Landscape-Level Mosaic, and Intact Forest Landscape The HKm area of KTH Meniti Fajar is home to a population of Bornean orangutans, specifically from the subspecies *Pongo pygmaeus wurmbii*.	The orangutan population is concentrated along the riverbanks, which have been designated as protected areas by HKm KTH Meniti Fajar. Threats to the orangutan population are indirect, such as the hunting of birds and wild boars within orangutan habitats, and logging of production trees near their habitat.	**Moderate**
3	Ecosystem and Habitat	Current	
	In the HKm KTH Meniti Fajar area, forest cover has been identified—specifically secondary dryland forest—which is classified as a threatened ecosystem within the national conservation system.	Wildlife Hunting by Local Communities	**Very High**
		Potential	
		Conversion of Secondary Dryland Forest by Local Communities into Farms/Gardens	**High**
		Illegal logging in areas covered by secondary dryland forest	**High**

No	The Existence of the Ecosystem in the KTH Meniti Fajar Work Area	Main Threat	Level Threat
4	Ecosystem Services	Current	
	Rivers and riverbanks serve as water sources and flood control systems. Springs and their surrounding areas provide water supply. Riverbanks act as habitats for pollinating animals. Rivers serve as fish spawning grounds. Large rivers (over 30 meters wide) and their banks function as firebreak areas. Carbon sequestration and storage. Biodiversity protection. *Watershed protection.* *Landscape beauty.*	River water pollution caused by the use of chemicals (fertilizers and pesticides)	**Very High**
		Community activities leading to river sedimentation, increased water volume during the rainy season, decreased flow during the dry season, and increased soil erosion	**Very High**
		The installation of fishing traps that are not routinely controlled and tend to be left unattended, disrupting the movement of fish to spawn.	**Moderate**
		Potential	
		Forest cover degradation due to illegal logging in forested areas.	**High**
		Forest and land fires	**High**
		Penurunan kualitas dan kuantitas persedian air yang dibutuhkan oleh masyarakat di bagian hilir.	**Very High**
		Use of destructive fishing methods such as poisons	**Moderate**
5	Community Needs		
	From the results of FGDs and interviews with people who interact with the Working Area (KTH Meniti Fajar), it was found that:		
	A. Peat and Arut River		
	The working area of Meniti Fajar Forest Group in KM 11, which is currently and has been cultivated and has produced results, including: cattle, kelulut honey, honey oranges, lemon oranges, honey pineapple and fish cages (Tilapia and Patin).	The threat of flooding is great, and unpredictable, due to the condition of the area which is peat land, close to the Arut River	**Very High**

No	The Existence of the Ecosystem in the KTH Meniti Fajar Work Area	Main Threat	Level Threat
	KM 11 is also still cultivated several types of plantation crops, namely: honey orange (*Citrus nobilis var. Microcarpa*), lemon (*Citrus limon*), honey pineapple (*Ananas comosus*).	The threat of flooding is great, and unpredictable, due to the condition of the area which is peat land, close to the Arut River	**Very High**
	In the future, the focus will be on Sylvopastura, where the commodities to be developed are gelam trees, cattle farming and catfish and tilapia cage fish farming.	The threat of flooding is great, and unpredictable, due to the condition of the area which is peat land, close to the Arut River	**Very High**
	B. River and river bank		
	Inside the HKM KTH Meniti Fajar Area	The narrowing of the river's path because the Daffodils and Pandanus plants that grow along the river are not maintained and controlled, resulting in the obstruction of the river as a transportation route.	**High**
	Arut river And Selangkun river	Current • River water pollution from the use of fertilizer chemicals. • Turbid river water possibly due to erosion in upstream and riparian areas. • Open land on riverbanks • Disruption of public health due to lack of sanitary facilities.	**Very High**

Management and Monitoring Recommendations

The management objectives of the Meniti Fajar Forest Forest Management Unit are to protect protected elements and areas from damage, maintain and enhance their value or function. The results of the threat assessment have provided options for actions that need to be taken to minimize or reduce threats. Next, managers need to develop a written plan that is documented and integrated into the operational management plan. The Management Plan and Monitoring Plan for protected areas are also carried out by considering: (a) Species protection aspects,

including managing animal-human conflicts and habitat enrichment, (b) Strengthening communication with surrounding communities to develop management plans and protection action plans KTH Meniti Fajar.

In line with the management of KTH Meniti Fajar, it is necessary to train staff or recruit staff with the necessary qualifications to ensure HCV management objectives are achieved. Strengthening staff capacity in management identification, monitoring and evaluation includes: (a) Monitoring training, such as the basics of animal and plant identification, fire-fighting techniques, stakeholder engagement and application of existing procedures and policies.

Management and monitoring recommendations for consideration in preparing the complete Protected Area Management and Monitoring Plan document in the HKM Meniti Fajar area are presented in Table 20.

Table 20. Recommendations for Management and Monitoring of the Meniti Fajar Working Area

Area	Potential Threats	Management Recommendations	Monitoring Recommendations
Biodiversity	Hunting of protected, endemic, rare wildlife	- Securing the area with routine patrols - Survey of the presence of endemic, protected, rare plant and wildlife species in the Meniti Fajar HKm area - Coordination with BKSDA regarding the presence of protected plant and wildlife species - Orangutan population survey - Camera Trap Installation - Detailed identification of each wildlife taxa	- Regular monitoring patrols related to area security. - Monitoring the possibility of road access opening by irresponsible outsiders. - Reporting of survey results on the presence of protected plant and wildlife species to BKSDA. - Analysis of Orangutan population trends in collaboration with BKSDA and related NGOs to maintain the population.
Soil, Water, Peat	Soil & water pollution and Peat	- Application of environmentally friendly cultivation methods minimizes the release of contaminants - Peat protection techniques with peat monitoring. - Analyzing surface water & groundwater quality and controlling waste from fertilization activities.	- Analyzing water quality through controlling waste from fertilization activities. - Routine monitoring of discharge and water quality at specific periods. - Mapping & monitoring of water catchment areas once a year. - Monitoring groundwater level (TMAT), and peat subsidence.

Area	Potential Threats	Management Recommendations	Monitoring Recommendations
Forest	Land conversion	- Regulatory provisions from HKM KTH Meniti Fajar no land clearing. - Preparation of SOPs for prevention of reduction and restoration of specific forest cover.	- Monitoring of forest quality and extent. - Monitoring of prohibited land clearing cases
Forest	Encroachment and illegal logging	- Work Area Boundary Arrangement - Maintenance of protected area boundaries (conservation areas, river borders, water reservoirs, springs) as well as installation and maintenance of signboards. - Area security activities with routine patrols - Preparation of SOPs for Arrangement, Boundary Marking, and Protection.	- Monitoring of disturbance intensity (encroachment, illegal logging, tree felling, fire) - Monitoring the presence and condition of signboards - Regular monitoring patrols to maintain borders and logging/clearing of forest vegetation
Coridor	Activity disturbance to Orangutan populations	- Rehabilitate designated wildlife corridors using native plant species, including food trees for orangutans.	- Orangutan population monitoring in collaboration with Orangutan NGOs - Monitoring the percentage growth of wildlife corridor rehabilitation plants
River	Flood-prone areas	- Maintenance of rivers / drains / ditches and embankments to regulate water management. - Water management (water level, inlet, and overflow).	- Water level monitoring in rivers/drains.

Area	Potential Threats	Management Recommendations	Monitoring Recommendations
River	River water pollution due to the use of chemicals (fertilizers and pesticides). Decrease in the quality and quantity of water supplies needed by downstream communities. Decrease in water quality and spring conditions	- Develop and implement SOPs for the use of chemicals and SOPs for waste management, as well as SOPs for land clearing, construction and maintenance of roads and other facilities, and planting and maintenance of crops that can minimize erosion and maintain water quality. - Socialization at the village level regarding river and spring water management systems. - Rehabilitation with vegetation of riparian areas. - Arrangement and construction of good tanks for water storage from springs.	- Establish monitoring locations for the physical condition of rivers and springs, as well as the quality and quantity of river and spring water. - Conduct periodic monitoring of the physical condition of rivers and springs, as well as the quality and quantity of river and spring water. - Conduct periodic monitoring of illegal logging and land conversion activities by the community.
River	Fishing using poison and the installation of fishing traps that are not routinely controlled and tend to be left unattended, disrupting the movement of fish to move.	- Maintenance of notification signs around the area. - - Conduct regular prevention and patrol/surveillance activities..	Monitoring the presence of signs/signboards

Area	Potential Threats	Management Recommendations	Monitoring Recommendations
Forest	Forest cover degradation due to illegal logging in forested areas.	Marking the boundaries and maintaining the boundary markings of riparian areas (50m wide), areas around springs and forested areas that have been designated as ABKT.	Preventing, protecting, and overcoming disturbances to the HKM management area (illegal logging and area conversion) through activities: installation and maintenance of protected area signs on strategic access routes, and routine patrols.
Forest	Forest fire	Mapping of fire-prone areas and fire-prone seasons Periodic inspection of forest/land fire fighting facilities and infrastructure Routine training of work units handling forest/land fires	Periodic updates of maps of fire-prone areas and fire-prone seasons Coordination with authorities handling forest/land fire security Periodic evaluation of the readiness of work units handling forest/land fires
Forest	Difficulty in obtaining Ulin wood for house and tool materials and Toyam/Torap wood for traditional clothing.	Seedling nurseries for Ulin and Meranti Timber and Toyam/Torap Timber to be planted in community forests. This activity also serves as a safety green belt (Green Belt) as an effort to protect the area designated as a protected forest.	Monitoring and evaluation of nursery, planting, and maintenance of Ulin and Meranti Timber and Toyam/Torap Timber in community forests
Forest	Difficulty in obtaining ingredients from nature for traditional medicine.	Assistance with seeds of medicinal plants to be planted in community gardens and or forests.	Monitoring and evaluation of seedling distribution, planting, and maintenance Wood seedlings of medicinal plant species planted in gardens and or in community forests.

Area	Potential Threats	Management Recommendations	Monitoring Recommendations
Forest	Cultural and historical sites and traditional houses are abandoned/ forgotten by the community	Maintenance of cultural and historical sites and traditional houses Development and financial support for traditional activities	Conduct periodic monitoring of the condition of cultural and historical sites and traditional houses Conduct monitoring of traditional activities
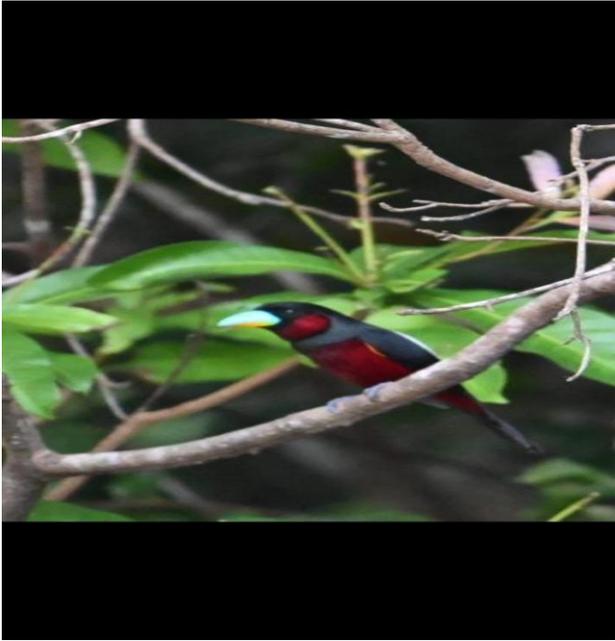
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Appendix

APPENDIX 1. Fauna Identification Results and Protection Status

Table 1. Protection Status of Mammal Class

No	Family	Name		Protection Status			Information
		Scientific	Local	P.106	CITES	IUCN	
1	Cercopithecidae	*Macaca fascicularis*	Kera Ekor Panjang / Long-tailed Monkey	TD	II	VU	River 1,2,3
2	Cercopithecidae	*Nasalis larvatus*	Bekantan / Proboscis Monkey	D	II	EN	River 1,2,3
3	Cercopithecidae	*Presbytis rubicunda*	Lutung merah / Red Langur	D	II	VU	Exploration
4	Cerchopitechidae	*Macaca nemestrina*	Monyet Beruk / Southern Pig-tailed Macaque	TD	II	VU	Exploration
5	Cervidae	*Rusa unicolor*	Rusa sambar / Sambar Deer	D	N/A	VU	Exploration
6	Cervidae	*Tragulus kanchil*	Pelanduk kecil / Lesser Oriental Chevrotain	TD	N/A	LC	Exploration
7	Cervidae	*Muntiacus muntjak*	Kijang muncak / Southern Red Muntjac	D	N/A	LC	Exploration
8	Erinaceidae	*Hylomys suillus*	Cucurut Babi / Short-tailed Gymnure	TD	N/A	LC	Exploration
9	Felidae	*Prionailurus bengalensis*	Kucing Kuwuk / Mainland Leopard Cat Kuwuk	D	II	VU	Exploration
10	Felidae	*Neopolis diardi*	Macan dahan / Bornean Clouded Leopard	D	I	VU	Exploration
11	Hominidae	*Pongo pygmaeus wurmbii*	Orang Utan / Bornean Orangutan	E	II	CR	River 1,2
12	Hylobatidae	*Hylobates agilis albibarbis*	Kalawet/ Bornean White-bearded Gibbon	D	I	EN	Exploration
13	Lorisidae	*Nycticebus menagensis*	Kukang kalimantan / Slow Loris	D	I	VU	Exploration
14	Manidae	*Manis javanica*	Trenggiling / Sunda Pangolin	D	I	CR	Exploration
15	Muridae	*Ratufa tiomanicus*	Tikus Belukar / Malaysian Field Rat	TD	N/A	LC	Exploration
16	Mustelidae	*Aonyx cinereus*	Berang-berang / Asian Small-clawed Otter	TD	N/A	VU	Exploration
17	Mustelidae	*Arctictis binturong*	Binturong / Binturong	TD	III	VU	Exploration
18	Sciuridae	*Callosciurus notatus*	Bajing Kelapa / Plantain Squirrel	TD	N/A	LC	Exploration
19	Sciuridae	*Ratufa affinis*	Jelarang bilarang / Pale Giant Squirrel	D	II	NT	Exploration
20	Sciuridae	*Callosciurus prevostii*	Bajing Tiga-warna / Prevost's Squirrel	TD	N/A	LC	Exploration
21	Suidae	*Sus barbatus*	Babi Berjengot / Bearded Pig	TD	N/A	VU	Exploration

No	Family	Name		Protection Status			Information
		Scientific	Local	P.106	CITES	IUCN	
22	Suidae	*Sus scrofa*	Babi hutan / Wild Boar	TD	N/A	LC	Exploration
23	Tarsiidae	*Tarsius bancanus*	Krabuku ingkat / Bornean Tarsier	D	II	VU	Exploration
24	Tupaiidae	*Tupaia gracilis*	Tupai ramping / Slender Treeshrew	TD	II	LC	Exploration
25	Tupaiidae	*Tupai minor*	Tupai / Lesser Treeshrew	TD	N/A	LC	River 1
26	Ursidae	*Helarctos malayanus*	Beruang madu / Sun Bear	D	I	VU	Exploration
27	Viverridae	*Prionodon linsang*	Musang linsang / Banded Linsang	TD	II	LC	Exploration

Keterangan:
River 1 = Direct encounter on the Sepingit River
River 2 = Direct encounter on the Selangkun River
River 3 = Direct encounter on Arut River

Exploration = Interview Results with KTH Meniti Fajar Members and the Community

Table 2. Protection Status of Bird / Avifauna Classes

No	Family	Name		Protection Status			Information
		Scientific	P.106	P.106	CITES	IUCN	
1	*Accipitridae*	*Spilornis kinabaluensis*	Elang Ular Kinabalu / Kinabalu Serpent Eagle	D	II	NT	River 1
2	*Accipitridae*	*Ictinaetus malayensis*	Elang Hitam / Black Eagle	D	II	LC	River 2,3
3	*Accipitridae*	*Pernis ptilorhynchus*	Sikep Madu Asia / Oriental Honey-buzzard	D	II	LC	River 2
4	*Accipitridae*	*Spilornis cheela*	Elang Ular Bido / Crested Serpent-Eagle	D	II	LC	River 2,3
5	*Accipitridae*	*Nisaetus nanus*	Elang wallace / Wallace's Hawk-eagle	D	II	VU	Exploration
6	*Accipitridae*	*Nisaetus cirrhatus*	Elang Brontok / Changeable Hawk-Eagle	D	II	LC	River 3
7	*Accipitridae*	*Haliastur indus*	Elang Bondol / Brahminy Kites	D	II	LC	River 1
8	*Alcedinidae*	*Pelargopsis capensis*	Stork-billed Kingfisher / Pekaka Emas	TD	N/A	LC	River 1,2,3
9	*Alcedinidae*	*Alcedo meninting*	Raja udang Meninting / Blue-eared Kingfishe	TD	N/A	LC	Exploration
10	*Apodidae*	*Apus nipalensis*	Kapinis Rumah / House Swift	TD	N/A	LC	Exploration
11	Apodidae	*Rhaphidura leucopygialis*	Kapinis jarum Kecil / Silver-rumped Spinetail	TD	N/A	LC	Exploration
12	*Ardeidae*	*Ardea purpurera*	Cangak Merah / Red Crab	TD	N/A	-	River 1
13	*Ardeidae*	*Nycticorax nycticorax*	Kowak Malam Kelabu / Black-crowned Night Heron	TD	N/A	LC	River 1
14	*Ardeidae*	*Butorides striatus*	Kokokan Laut / Green-backed Heron	TD	N/A	-	River 2
15	*Ardeidae*	*Ardea sumatrana*	Cangak laut	D	N/A	LC	River 1
16	*Ardeidae*	*Egretta garzetta*	Kuntul kecil / Little egret	TD	N/A	LC	River 3
17	*Ardeidae*	*Egretta sacra*	Kuntul karang / Coral egret	TD	N/A	LC	River 3
18	*Bucerotidae*	*Anthracoceros albirostris*	Kangkareng Perut Putih / White-bellied crab	D	II	LC	River 1,3
19	*Bucerotidae*	*Anthracoceros malayanus*	Kangkareng Hitam / Black Hornbill	D	II	VU	River 1
20	*Bucerotidae*	*buceros rhinoceros*	Rangkong Badak / Rhino hornbill	D	I	VU	River 1

No	Family	Name		Protection Status			Information
		Scientific	P.106	P.106	CITES	IUCN	
21	*Chloropseidae*	*Chloropsis cochinchinensis*	Cica daun sayap biru / Javan Leafbird	D	N/A	EN	Exploration
22	*Ciconiiformes*	*Leptoptiros javanicus*	Bangau Tongtong / Lesser Adjutant	D	N/A	-	Exploration
23	*Cisticolidae*	*Prinia flaviventris*	Perenjak rawa / Yellow-bellied Prinia	TD	N/A	LC	Exploration
24	*Columbidae*	*Treron fulvicollis*	Punai Bakau / Cinnamon-headed Green-pigeon	TD	N/A	VU	River 2
25	*Columbidae*	*Treron olax*	Punai kecil / Little Green-pigeon	TD	N/A	LC	Exploration
26	*Columbidae*	*Treron curvirostra*	Punai Lengguak / Thick-billed Green-pigeon	TD	N/A	LC	Exploration
27	*Columbidae*	*Treron vernans*	Punai Gading / Pink-necked Green-pigeon	TD	N/A	LC	Exploration
28	*Columbidae*	*Streptopelia chinensis*	Tekukur biasa / Eastern Spotted Dove	TD	N/A	-	Exploration
29	*Corvidae*	*Corvus enca*	Gagak hutan / Slender-billed Crow	TD	N/A	LC	River 1
30	*Cuculidae*	*Centropus sinensis*	Bubut besar / Large lathe	TD	N/A	LC	River 2
31	*Estrildidae*	*Lonchura fuscans*	Bondol Kalimantan / Dusky Munia	TD	N/A	LC	Exploration
32	*Eurylaimidae*	*Chimbirhynchos macrorhynchos*	Sempur hujan sungai / Black-and-red Broadbill	TD	N/A	-	River 2
33	*Laniidae*	*Lanius schach*	Bentet Kelabu	TD	N/A	LC	Exploration
34	*Monarchidae*	*Terpsiphone paradisi*	Sariwang Asia / Indian Paradise-flycatcher	TD	N/A	LC	Exploration
35	*Muscicapidae*	*Monticola solitarius*	Murai-batu arung / Blue Rock-thrush	TD	N/A	LC	Exploration
36	*Muscicapidae*	*Copsychus saularis*	Kacer borneo / Oriental Magpie-robin	TD	N/A	LC	Exploration
37	*Passeridae*	*Passer montanus*	Burung gereja / Eurasian Tree Sparrow	TD	N/A	LC	Exploration
38	*Phalacrocoracidae*	*Anhinga melanogaster*	Pecuk Ular Asia / Oriental Darter	D	II	LC	River 1
39	*Phalacrocoracidae*	*Phalacrocorax carbo*	Dandang Air / Great Cormorant	TD	N/A	LC	River 3
40	*Psittacidae*	*Loriculus galgulus*	Serindit Melayu / Blue-crowned Hanging-parrot	D	II	LC	River 3
41	*Pycnonotidae*	*Pycnonotus brunneus*	Merbah Mata merah / Red eyes Bulbul	TD	N/A	LC	River 2
42	*Pycnonotidae*	*Pycnonotus goiavier*	Merbah cerukcuk / Yellow-vented Bulbul	TD	N/A	LC	River 2
43	*Pycnonotidae*	*Pycnonotus atriceps*	Cucak Kuricang / black-headed bulbul	TD	N/A	LC	Exploration

No	Family	Name		Protection Status			Information
		Scientific	P.106	P.106	CITES	IUCN	
44	*Pycnonotidae*	*Setornis criniger*	Empuloh Paruh-kait / Hook-billed Bulbul	D	II	VU	Exploration
45	*Rallidae*	*Amaurornis phoenicurus*	Kareo Padi / White-breasted Waterhen	TD	N/A	LC	Exploration
46	*Rhipiduridae*	*Rhipidura javanica*	Kipasan Belang / Sunda Pied Fantail	D	N/A	LC	Exploration
47	*Scolopacidae*	*Calidris temminckii*	Kedidi Temminck / Temminck Kedidi	TD	N/A	LC	River 1
48	*Sittidae*	*Sitta frontalis*	Munguk Beledu / Velvet-fronted Nuthatch	TD	N/A	LC	River 2
49	*Strigidae*	*Otus lempiji*	Celepuk Reban / Sunda Scops-owl	TD	N/A	LC	Exploration
50	*Sturnidae*	*Acridotheres cristatellus*	Kerak jambul/ Crested Myna	TD	N/A	LC	Exploration
51	*Timaliidae*	*Malacocincla sepiarium*	Pelanduk semak / Horsfield's babbler	TD	N/A	LC	Exploration

Keterangan:

River 1 = Direct encounter on the Sepingit River

River 2 = Direct encounter on the Selangkun River

River 3 = Direct encounter on Arut River

Exploration = Interview Results with KTH Meniti Fajar Members and the Community

Table 3. Protection Status of Pisces Class

No	Famili	Name		Protection Status			Information
		Sciientific	Local	P106	CITES	IUCN	
1	Anabantidae	Anabas testudineus	Pepuyu / Climbing Perch	TD	N/A	LC	River 3
2	Bagridae	Leiocassis micropogon	Baung Tikus	TD	N/A	LC	Exploration
3	Bagridae	Hemibagrus hoevenii baung	Baung podam	TD	N/A	-	Exploration
4	Bagridae	Hemibagrus nemurus	Baung Kuning / Yellow Catfish	TD	N/A	LC	Exploration
5	Channidae	Channa micropeltes	Toman / Giant Snakehead	TD	N/A	LC	River 1
6	Channidae	Channa striata	Gabus / Snakehead Murrel	TD	N/A	LC	River 2,3
7	Channidae	Channa lucius	Runtuk / Forest Snakehead	TD	N/A	LC	River 2
8	Channidae	Channa Pleurophthalma	Kerandang	TD	N/A	NT	River 2,3
9	Channidae	Channa bankanensis	Mehau	TD	N/A	NT	Exploration
10	Cichlidae	Oreochromis niloticus	Nila	TD	N/A	LC	River 1,2,3
11	Clariidae	Clarias nieuhofii	Lele / Slender Walking Catfish	TD	N/A	LC	River 3
12	Cyprinidae	Desmopuntius rhomboocellatus	Teboreng loreng	TD	N/A	LC	River 1
13	Cyprinidae	Nematabramis borneensis	Seluang / Silver rasbora	TD	N/A	LC	River 1,3
14	Cyprinidae	Osteochilus kelabau	Kelabau	TD	N/A	DD	River 3
15	Cyprinidae	Barbodes banksi	Parau	TD	N/A	LC	Exploration
16	Cyprinidae	Desmopuntius trifasciatus	Kemuringan garis dada	TD	N/A	LC	Exploration
17	Cyprinidae	Osteochilus vittatus	Banta / Hard-lipped Barb	TD	N/A	-	Exploration
18	Cyprinidae	Hampala macrolepidota	Adungan Hampala/ Hampala Barb	TD	N/A	LC	Exploration
19	Eleotrididae	Oxyeleotris marmorata	Bakut	TD	N/A	LC	River 2
20	Helostomatidae	Helostoma temminckii	Biawan / Tebakang / Kissing Gourami	TD	N/A	LC	River 2
21	Mastacembelidae	Mastacembelus erythrotaenia	Tilan / Spiny Eel	TD	N/A	LC	Exploration
22	Notopteridae	Chitala chitala	Belida	TD	N/A	NT	River 1
23	Osphronemidae	Trichogaster trichopterus	Sepat Biasa / Three spot gourami	TD	N/A	-	Exploration
24	Osphronemidae	Belontia hasselti	Ikan kapar / Java Combtail	TD	N/A	LC	Exploration
25	Osphronemidae	Osphronemus goramy	Gurami / Kalui / Giant Gourami	TD	N/A	LC	River 1
26	Osphronemidae	Luciocephalus pulcher	Junjuk	TD	N/A	LC	River 1

No	Famili	Sciientific	Local	P106	CITES	IUCN	Information
		Name		**Protection Status**			
27	*Osphronemidae*	*Betta patoti*	Tempala	TD	N/A	EN	Exploration
28	*Ostoglossidae*	*Scleropagus formosus*	Siluk/Kalingkasa/Arwana silver	D	I	EN	Exploration
29	*Palaemonidae*	*Macrobrachium rosenbergii*	Udang Galah / Giant River Prawn	TD	N/A	FR	River 2
30	*Pangasiidae*	*Pangasius polyuranodon*	Patin/ Lawang	TD	N/A	LC	Exploration
31	*Pristolepididae*	*Pristolepis grooti*	Sepatung	TD	N/A	LC	River 3
32	*Siluridae*	*Kryptopterus lais*	Ikan Lais	TD	N/A	LC	Exploration
33	*Siluridae*	*Phalacronotus apogon*	Lais Tapah	TD	N/A	LC	River 2
34	*Siluridae*	*Ceratoglanis scleronema*	Lais Kaliaki	TD	N/A	LC	Exploration
35	*Tetraodontidae*	*Tetraodon sp.*	Buntal Sungai / Half-smooth Golden Pufferfish	TD	N/A	LC	River 3

Keterangan:

River 1 = Direct encounter on the Sepingit River

River 2 = Direct encounter on the Selangkun River

River 3 = Direct encounter on Arut River

Exploration = Interview Results with KTH Meniti Fajar Members and the Community

Endemic species of Kalimantan found: (1) *Desmopuntius rhomboochellatus*, (2) *Kryptopterus lais*,

APPENDIX 2. Documentation Results and Distribution of Fauna

Table 1. Documentation Results and Distribution of Fauna Mammals

No	Lokal Name	Scientific Name	Family	Photo	Information
1	Kera Ekor Panjang / Long-tailed Monkey	*Macaca fascicularis*	Cercopithecidae		River 1, 2, 3
2	Bekantan / Proboscis Monkey	*Nasalis larvatus*	Cercopithecidae		River 1, 2, 3
3	Orang Utan / Bornean Orangutan	*Pongo pygmaeus wurmbii*	Hominidae		River 1, 2
4	Tupai / Lesser Treeshrew	*Minor squirrel*	Sciuridae		River 1,
5	Lutung merah / Red Langur	*Presbytis rubicunda*	Cercopithecidae	-	Exploration
6	Monyet Beruk / Southern Pig-tailed Macaque	*Macaca nemestrina*	Cercopithecidae	-	Exploration
7	Rusa sambar / Sambar Deer	*Rusa unicolor*	Cervidae	-	Exploration
8	Pelanduk kecil / Lesser Oriental Chevrotain	*Tragulus kanchil*	Cervidae	-	Exploration

No	Lokal Name	Scientific Name	Family	Photo	Information
9	Kijang muncak / Southern Red Muntjac	*Muntiacus muntjak*	Cervidae	-	Exploration
10	Cucurut Babi / Short-tailed Gymnure	*Hylomys suillus*	Erinaceidae	-	Exploration
11	Kucing Kuwuk / Mainland Leopard Cat	*Prionailurus bengalensis*	Felidae	-	Exploration
12	Macan dahan / Bornean Clouded Leopard	*Neofelis diardi ssp. borneensis*	Felidae	-	Exploration
13	Owa owa / Bornean White-bearded Gibbon	*Hylobates agilis albibarbis*	Hylobatidae	-	Exploration
14	Kukang kalimantan / Slow Loris	*Nycticebus menagensis*	Lorisidae	-	Exploration
15	Trenggiling / Sunda Pangolin	*Manis javanica*	Manidae	-	Exploration
16	Tikus Belukar / Malaysian Field Rat	*Rattus tiomanicus*	Muridae	-	Exploration
17	Berang-berang / Asian Small-clawed Otter	*Aonyx cinereus*	Mustelidae	-	Exploration
18	Binturong / Binturong	*Arctictis binturong*	Mustelidae	-	Exploration
19	Bajing Kelapa / Plantain Squirrel	*Callosciurus notatus*	Sciuridae	-	Exploration
20	Jelarang bilarang / Pale Giant Squirrel	*Ratufa affinis*	Sciuridae	-	Exploration
21	Bajing Tiga-warna / Prevost's Squirrel	*Callosciurus prevostii*	Sciuridae	-	Exploration
22	Babi Berjengot / Bearded Pig	*Sus barbatus*	Suidae	-	Exploration
23	Babi hutan / Wild Boar	*Sus scrofa*	Suidae	-	Exploration
24	Krabuku ingkat / Bornean Tarsier	*Cephalopachus bancanus ssp.*	Tarsiidae	-	Exploration
25	Tupai ramping / Slender Treeshrew	*Tupaia gracilis*	Tupaiidae	-	Exploration
26	Beruang madu / Sun Bear	*Helarctos malayanus*	Ursidae	-	Exploration
27	Musang linsang / Banded Linsang	*Prionodon linsang*	Viverridae	-	Exploration

Keterangan:
River 1 = Direct encounter on the Sepingit River
River 2 = Direct encounter on the Selangkun River
River 3 = Direct encounter on Arut River
Exploration = Interview Results with KTH Meniti Fajar Members and the Community

Table 2. Documentation Results and Distribution of Bird

No	Lokal Name	Scientific Name	Family	Photo	Information
1	Elang Ular Kinabalu / Kinabalu Serpent Eagle	*Spilornis kinabaluensis*	Accipitridae		River 1
2	Elang Hitam / Black Eagle	*Ictinaetus malayensis*	Accipitridae		River 2,3
3	Sikep Madu Asia / Oriental Honey-buzzard	*Pernis ptilorhynchus*	Accipitridae		River 2
4	Elang Ular Bido / Crested Serpent Eagle	*Spilornis cheela*	Accipitridae		River 2,3

No	Lokal Name	Scientific Name	Family	Photo	Information
5	Elang Brontok / Changeable Hawk-Eagle	*Nisaetus cirrhatus*	Accipitridae		River 1
6	Elang Bondol / Brahminy Kites	*Haliastur indus*	Accipitridae		River 1
7	Elang wallace / Wallace's Hawk Eagle	*Nisaetus nanus*	Accipitridae		River 1
8	Stork-billed Kingfisher / Pekaka Emas	*Pelargopsis capensis*	Alcedinidae		River 1, 2, 3
9	Cangak Merah / Red Crab	*Ardea purpurera*	Ardeidae		River 1
10	Kowak Malam Kelabu / Black Crowned Night Heron	*Nycticorax nycticorax*	Ardeidae	-	River 1

No	Lokal Name	Scientific Name	Family	Photo	Information
11	Kokokan Laut / Green Backed Heron	*Butorides striatus*	Ardeidae		River 2
12	Pecuk Ular Asia / Oriental Darter	*Anhinga melanogaster*	Phalacrocoracidae		River 1
13	Gagak hutan / Slender-billed Crow	*Corvus enca*	Corvidae		River 1
14	Kuntul kecil / Little Egret	*Egretta garzetta*	Ardeidae		River 3
15	Kuntul karang / Coral Egret	*Egretta sacra*	Ardeidae		River 3

No	Lokal Name	Scientific Name	Family	Photo	Information
16	Kangkareng Perut Putih / White-bellied Crab	*Anthracoceros albirostris*	Bucerotidae		River 1,3
17	Kangkareng Hitam / Black Hornbill	*Anthracoceros malayanus*	Bucerotidae		River 1
18	Rangkong Badak / Rhino Hornbill	*Buceros rhinoceros*	Bucerotidae		River 1
19	Punai Bakau / Cinnamon-headed Green Pigeon	*Treron fulvicollis*	Columbidae		River 2

No	Lokal Name	Scientific Name	Family	Photo	Information
20	Bubut Besar / Large Lathe	*Centropus sinensis*	Cuculidae		River 2
21	Sempur Hujan Sungai / Black and Red Broadbill	*Chimbirhynchos macrorhynchos*	Eurylaimidae		River 2
22	Merbah Mata merah / Red eyes Bulbul	*Pycnonotus brunneus*	Pycnonotidae		River 2
23	Merbah cerukcuk / Yellow-vented Bulbul	*Pycnonotus goiavier*	Pycnonotidae		River 2
24	Munguk Beledu / Velvet-fronted Nuthatch	*Sitta frontalis*	Sittidae		River 2

No	Lokal Name	Scientific Name	Family	Photo	Information
25	Kerak Jambul / Crested Myna	*Acridotheres cristatellus*	Sturnidae		Exploration
26	Burung gereja / Eurasian Tree Sparrow	*Passer montanus*	Passeridae		KM 11
27	Raja udang Meninting / Blue-eared Kingfishe	*Alcedo meninting*	Alcedinidae		Exploration
28	Kapinis Rumah / House Swift	*Apus nipalensis*	Apodidae	-	Exploration
29	Kapinis jarum Kecil / Silver-rumped Spinetail	*Rhaphidura leucopygialis*	Apodidae	-	Exploration
30	Cica Daun Sayap Biru / Javan Leafbird	*Chloropsis cochinchinensis*	Chloropseidae	-	Exploration
31	Bangau Tongtong / Lesser Adjutant	*Leptoptilos javanicus*	Ciconiiformes	-	Exploration
32	Perenjak rawa / Yellow-bellied Prinia	*Prinia flaviventris*	Cisticolidae	-	Exploration
33	Punai Kecil / Little Green-pigeon	*Treron olax*	Columbidae	-	Exploration
34	Punai Lengguak / Thick-billed Green-Pigeon	*Treron curvirostra*	Columbidae	-	Exploration
35	Punai Gading / Pink-necked Green-pigeon	*Treron vernans*	Columbidae	-	Exploration
36	Tekukur biasa / Eastern Spotted Dove	*Streptopelia chinensis*	Columbidae	-	Exploration
37	Bondol Kalimantan / Dusky Munia	*Lonchura fuscans*	Estrildidae	-	Exploration

No	Lokal Name	Scientific Name	Family	Photo	Information
38	Bentet Kelabu / Long-tailed Shrike	*Lanius schach*	Laniidae	-	Exploration
39	Sariwang Asia / Indian Paradise-flycatcher	*Terpsiphone paradisi*	Monarchidae	-	Exploration
40	Murai-batu arung / Blue Rock-thrush	*Monticola solitarius*	Muscicapidae	-	Exploration
41	Kacer borneo / Oriental Magpie-robin	*Copsychus saularis*	Muscicapidae	-	Exploration
42	Dandang Air / Great Cormorant	*Phalacrocorax carbo*	Phalacrocoracidae	-	River 3
43	Serindit Melayu / Blue Crowned Hanging-Parrot	*Loriculus galgulus*	Psittacidae	-	River 3
44	Cucak Kuricang / black-headed bulbul	*Pycnonotus atriceps*	Pycnonotidae	-	Exploration
45	Empuloh paruh-kait / Hook-billed Bulbul	*Setornis criniger*	Pycnonotidae	-	Exploration
46	Kareo Padi / White-breasted Waterhen	*Amaurornis phoenicurus*	Rallidae	-	Exploration
47	Kipasan Belang / Sunda Pied Fantail	*Rhipidura javanica*	Rhipiduridae	-	Exploration
48	Kedidi Temminck / Temminck Kedidi	*Calidris temminckii*	Scolopacidae	-	River 1
49	Munguk beledu / Velvet Fronted Nuthatch	*Sitta frontalis*	Sittidae	-	River 2
50	Celepuk Reban / Sunda Scops-owl	*Otus lempiji*	Strigidae	-	Exploration
51	Pelanduk semak / Horsfield's babbler	*Malacocincla sepiarium*	Timaliidae	-	Exploration

Keterangan:

River 1 = Direct encounter on the Sepingit River

River 2 = Direct encounter on the Selangkun River

River 3 = Direct encounter on Arut River

Exploration = Interview Results with KTH Meniti Fajar Members and the Community

Table 3. Documentation Results and Distribution of Fish

No	Lokal Name	Scientific Name	Family	Photo	Information
1	Pepuyu / Climbing Perch	*Anabas testudineus*	Anabantidae	-	River 3
2	Toman / Giant Snakehead	*Channa micropeltes*	Channidae		River 1
3	Gabus / Snakehead Murrel	*Channa striata*	Channidae		River 2,3
4	Runtuk / Forest Snakehead	*Channa lucius*	Channidae	-	River 2
5	Kerandang	*Channa pleurophthalma*	Channidae		River 2,3
6	Nila	*Oreochromis niloticus*	Cichlidae	-	River 1,2,3
7	Lele / Slender Walking Catfish	*Clarias nieuhofii*	Clariidae	-	River 3
8	Teboreng Loreng	*Desmopuntius rhomboocellatus*	Cyprinidae	-	River 1
9	Seluang / Silver rasbora	*Rasbora argyrotaenia*	Cyprinidae		River 1,3

No	Lokal Name	Scientific Name	Family	Photo	Information
10	Kelabau	*Osteochilus kelabau*	Cyprinidae	-	River 3
11	Bakut / Marbled Goby	*Oxyeleotris marmorata*	Eleotrididae	-	River 2
12	Biawan / tebakang / Kissing Gourami	*Helostoma temminckii*	Helostomatidae		River 2
13	Belida	*Chitala chitala*	Notopteridae	-	River 1
14	Gurami / Kalui / Giant Gourami	*Osphronemus goramy*	Osphronemidae	-	River 1
15	Junjuk	*Luciocephalus pulcher*	Osphronemidae	-	River 1
16	Udang Galah / Giant River Prawn	*Macrobrachium rosenbergii*	Palaemonidae	-	River 2
17	Sepatung	*Pristolepis grooti*	Pristolepididae	-	River 3
18	Lais Tapah	*Phalacronotus apogon*	Siluridae	-	River 2
19	Buntal Sungai / Half-smooth Golden Pufferfish	*Tetraodon sp.*	Tetraodontidae	-	River 3
20	Baung Tikus	*Leiocassis micropogon*	Bagridae	-	Exploration
21	Baung podam	*Hemibagrus hoevenii baung*	Bagridae	-	Exploration
22	Baung Kuning / Yellow Catfish	*Hemibagrus nemurus*	Bagridae	-	Exploration
23	Mehau	*Channa bankanensis*	Channidae	-	Exploration
24	Parau	*Barbodes banksi*	Cyprinidae	-	Exploration
25	Kemuringan garis dada	*Desmopuntius trifasciatus*	Cyprinidae	-	Exploration
26	Banta / Hard-lipped Barb	*Osteochilus vittatus*	Cyprinidae	-	Exploration
27	Adungan Hampala/ Hampala Barb	*Hampala macrolepidota*	Cyprinidae	-	Exploration
28	Tilan / Spiny Eel	*Mastacembelus erythrotaenia*	Mastacembelidae	-	Exploration
29	Sepat Biasa / Three spot gourami	*Trichogaster trichopterus*	Osphronemidae	-	Exploration

No	Lokal Name	Scientific Name	Family	Photo	Information
30	Ikan kapar / Java Combtail	*Belontia hasselti*	Osphronemidae		Exploration
31	Tempala	*Betta patoti*	Osphronemidae	-	Eksplorasi
32	Siluk/Kalingkasa/Arwana silver	*Scleropages formosus*	Ostoglossidae	-	Eksplorasi
33	Patin/ Lawang / Shark Catfishes	*Pangasius polyuranodon*	Pangasiidae	-	Eksplorasi
34	Ikan Lais	*Kryptopterus lais*	Siluridae	-	Eksplorasi
35	Lais Kaliaki	*Ceratoglanis scleronema*	Siluridae	-	Eksplorasi
36	Graminang	*Desmopuntius rhomboocellatus*	Cyprinidae		Sungai 1, 2
37	Buing / beardless barb	*Anematichthys apogon*	Cyprinidae		Sungai 1, 2

Keterangan:
River 1 = Direct encounter on the Sepingit River
River 2 = Direct encounter on the Selangkun River
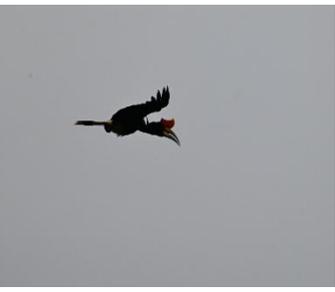River 3 = Direct encounter on Arut River
Exploration = Interview Results with KTH Meniti Fajar Members and the Community

APPENDIX 3. Results of Flora Identification and its Protection Status

Peat swamp protected areas are one of the ecosystems that have very important ecological, social, and economic roles. With a total of 155 species recorded in this study, this area shows high biodiversity and is a habitat for various species with varying conservation status. Vegetation monitoring carried out at various growth stages, from seedlings, saplings, poles, to trees, provides a comprehensive picture of the dynamics of the ecosystem and its natural regeneration potential.

| No | Local Name | Scientific Name | Family | Protection Status | | | Information |
				P.106 2018	IUCN 2024-2	CITES 7/2/2025	
1	Akar Limat	*Willughbeia coriacea*	Apocynaceae	TD	NE	NA	Plot
2	Akar Matondang	*Ficus punctata*	Moraceae	TD	LC	NA	Plot
3	Asam Gandis	*Garcinia xanthochymus*	Clusiaceae	TD	LC	NA	Plot
4	Bakung	*Hanguana malayana*	Hanguanaceae	TD	LC	NA	Plot
5	Bejiing	*Dillenia borneensis*	Dilleniaceae	TD	VU	NA	Plot
6	Bekadok	*Nephelium cuspidatum*	Sapindaceae	TD	LC	NA	Plot
7	Bekunyit	*Diospyros pilosanthera*	Ebenaceae	TD	LC	II	Plot
8	Belanti	*Coccoceras borneense*	Euphorbiaceae	TD	LC	NA	Plot
9	Bengaris	*Koompassia malaccensis*	Fabaceae	TD	LC	NA	Plot
10	Bengkal	*Nauclea orientalis*	Rubiaceae	TD	LC	NA	Plot
11	Bentan	*Parastemon urophyillus*	Chrysobalanaceae	TD	DD	NA	Plot
12	Berosikan	*Dialium platysepalum*	Fabaceae	TD	LC	NA	Plot
13	Betepong	*Xylopia alitissima*	Annonaceae	TD	DD	NA	Plot
14	Betepong Jangkar	*Xylopia fuscas*	Annonaceae	TD	LC	NA	Plot
15	Blangiran	*Shorea balangeran*	Dipterocarpaceae	TD	VU	NA	Plot
16	Cempedak Air	*Artocarpus teysmannii*	Moraceae	TD	LC	NA	Plot
17	Gaharu Laka	*Dalbergia parviflora*	Fabaceae	TD	LC	NA	Plot
18	Gembor	*Nothaphoebe coriacea*	Lauraceae	TD	DD	NA	Plot
19	Irang-Irang	*Diospyros confertiflora*	Ebenaceae	TD	DD	II	Plot
20	Jambu Burung	*Syzygium attenuatum*	Myrtaceae	TD	DD	NA	Plot
21	Jampang	*Melicope lunu-ankenda*	Rutaceae	TD	LC	NA	Plot
22	Jangkang	*Xylopia malayana*	Annonaceae	TD	LC	NA	Plot
23	Kakupuy	*Sarcotheca diversifolia*	Oxalidaceae	TD	LC	NA	Plot
24	Kamasira	*Chaetocarpus castanocarpus*	Peraceae	TD	LC	NA	Plot
25	Kantong Semar	*Nepenthes ampullaria*	Nepenthaceae	TD	LC	II	Plot
26	Kapuak	*Artocarpus anisophyllus*	Moraceae	TD	VU	NA	Plot
27	Kenjelempau	*Archidendron borneense*	Fabaceae	TD	NT	NA	Plot
28	Keranji	*Dialium kunstleri*	Fabaceae	TD	NT	NA	Plot
29	Keraya	*Ficus binnendijki*	Moraceae	TD	LC	NA	Plot
30	Ketiau	*Madhuca motleyana*	Sapotaceae	TD	NT	NA	Plot
31	Klanasian	*Syzygium zeylanicum*	Myrtaceae	TD	EN	NA	Plot
32	Kumpang Merah	*Horsfieldia glabra*	Myristicaceae	TD	LC	NA	Plot
33	Kumpang Putih	*Gymnacranthera farquhariana*	Myristicaceae	TD	LC	NA	Plot
34	Lakau	*Cryptocarya ferrea*	Lauraceae	TD	LC	NA	Plot

No	Local Name	Scientific Name	Family	Protection Status			Information
				P.106 2018	IUCN 2024-2	CITES 7/2/2025	
35	Lanan	*Shorea leprosula*	Dipterocarpaceae	TD	NT	NA	Plot
36	Lebang	*Coccoceras sumatrana*	Euphorbiaceae	TD	LC	NA	Plot
37	Mampai	*Crudia gracilis*	Fabaceae	TD	LC	NA	Plot
38	Medang	*Actinodaphne glomerata*	Lauraceae	TD	LC	NA	Plot
39	Mentangor	*Calophyllum macrocarpum*	Calophyllaceae	TD	LC	NA	Plot
40	Pakis Sayur	*Diplazium esculentum*	Athyriaceae	TD	LC	NA	Plot
41	Paku-Pakuan	*Lydogium sp.*	Lygodiaceae	TD	NE	NA	Plot
42	Pandan Perupuk	*Pandanus aristatus*	Pandanaceae	TD	DD	NA	Plot
43	Pansulan	*Pternandra caerulescens*	Melastomataceae	TD	LC	NA	Plot
44	Panting	*Dyera Polyphylla*	Apocynaceae	TD	VU	NA	Plot
45	Papung	*Sandoricum borneense*	Meliaceae	TD	LC	NA	Plot
46	Parak	*Santiria laevigata*	Burseraceae	TD	LC	NA	Plot
47	Pempukikan	*Nephelium Sp.*	Sapindaceae	TD	DD	NA	Plot
48	Penaga	*Calophyllum lanigerum*	Calophyllaceae	TD	NE	NA	Plot
49	Penjarang Bukit	*Goniothalamus tapis*	Annonaceae	TD	LC	NA	Plot
50	Pepasiran	*Ilex cymosa*	Aquifoliaceae	TD	NE	NA	Plot
51	Perupuk	*Lophopetalum multinervium*	Celastraceae	TD	LC	NA	Plot
52	Piais	*Nephelium lappaceum*	Sapindaceae	TD	LC	NA	Plot
53	Pisang-Pisang	*Maasia sumatrana*	Annonaceae	TD	LC	NA	Plot
54	Pisang-Pisang Hitam	*Mezzettia parviflora*	Annonaceae	TD	LC	NA	Plot
55	Putat	*Barringtonia racemosa*	Lecythidaceae	TD	LC	NA	Plot
56	Ramin	*Gonystylus bancanus*	Thymelaeaceae	TD	CR	II	Plot
57	Randa	*Blumeodendron tokbrai*	Euphorbiaceae	TD	LC	NA	Plot
58	Rasau	*Pandanus helicopus*	Pandanaceae	TD	DD	NA	Plot
59	Rempiang	*Pandanus sp.*	Pandanaceae	TD	DD	NA	Plot
60	Rengas	*Gluta renghas*	Anacardiaceae	TD	NT	NA	Plot
61	Rengas Manuk	*Gluta wallichii*	Anacardiaceae	TD	LC	NA	Plot
62	Resak	*Vatica pauciflora*	Dipterocarpaceae	TD	VU	NA	Plot
63	Rija-Rija	*Scleria sumatrensis*	Cyperaceae	TD	LC	NA	Plot
64	Rotan	*Calamus rotang*	Sparidae	TD	NE	NA	Plot
65	Rotan Bulu	*Daemonorops sabut*	Arecaceae	TD	NE	NA	Plot
66	Rotan Irit	*Calamus trachycoleus*	Sparidae	TD	NE	NA	Plot
67	Rumput Teki	*Cyperus sp*	Cyperaceae	TD	NE	NA	Plot
68	Salak Asam Maram	*Eleiodoxa conferta*	Calameae	TD	NE	NA	Plot
69	Samak	*Glochidion Superbum*	Phyllanthaceae	TD	LC	NA	Plot
70	Sepekauk	*Illicium verum*	Schisandraceae	TD	NE	NA	Plot
71	Trentang	*Campnosperma coriaceum*	Anacardiaceae	TD	LC	NA	Plot
72	Tumbuhan Paku/Lemidi	*Stenochlaena palustris*	Blechnaceae	TD	NE	NA	Plot
73	Ubar Merah	*Syzygium oligomyrum*	Myrtaceae	TD	LC	NA	Plot
74	Ubar Putih	*Syzygium lineatum*	Myrtaceae	TD	LC	NA	Plot
75	Purun Danau	*Lepironia articulata*	Cyperaceae	TD	NE	NA	Exploration
76	Rotan Saga Air	*Calamus axillaris*	Arecaceae	TD	NE	NA	Exploration

No	Local Name	Scientific Name	Family	Protection Status			Information
				P.106 2018	IUCN 2024-2	CITES 7/2/2025	
77	Pakis Kinca	*Nephrolepis radicans*	Nephrolepidaceae	TD	NE	NA	Exploration
78	Balam Sisil	*Syzygium clavimyrtus*	Myrtaceae	TD	LC	NA	Exploration
79	Gembor Merah	*Nothaphoebe umbelliflora*	Lauraceae	TD	LC	NA	Exploration
80	Medang Liut	*Alseodaphne oblanceolata*	Lauraceae	TD	LC	NA	Exploration
81	Akar Bajakah	*Spatholobus littoralis*	Fabaceae	TD	NE	NA	Exploration
82	Nyatoh	*Palaquium ridleyi*	Sapotaceae	TD	LC	NA	Exploration
83	Akar Sawa/Phyton	*Entada phaseoloides*	Fabaceae	TD	NE	NA	Exploration
84	Rumput Teki Sungai	*Scirpus fluviatilis*	Cyperaceae	TD	NE	NA	Exploration
85	Jambu Rawa	*Eugenia sp.*	Myrtaceae	TD	LC	NA	Exploration
86	Akasia Bunga Kuning	*Acacia baileyana*	Fabaceae	TD	NE	NA	Exploration
87	Belimbing	*Averrhoa carambola*	Oxalidaceae	TD	DD	NA	Exploration
88	Beringin	*Ficus benjamina*	Moraceae	TD	LC	NA	Exploration
89	Buah Ajaib	*Synsepalum dulcificum*	Sapotaceae	TD	LC	NA	Exploration
90	Cakar Elang	*Uncaria acida*	Rubiaceae	TD	NE	NA	Exploration
91	Dlingo	*Acorus calamus*	Acoraceae	TD	LC	NA	Exploration
92	Kayu Putih	*Eucalyptus pellita*	Myrtaceae	TD	LC	NA	Exploration
93	Ganggang Kariba	*Salvinia molesta*	Salviniaceae	TD	NE	NA	Exploration
94	Jahe	*Zingiber officinale*	Zingiberaceae	TD	DD	NA	Exploration
95	Jambu Air	*Syzygium aqueum*	Myrtaceae	TD	LC	NA	Exploration
96	Jambu Biji	*Psidium guajava*	Myrtaceae	TD	LC	NA	Exploration
97	Jeruk	*Citrus sinensis*	Rutaceae	TD	NE	NA	Exploration
98	Jeruk Nipis	*Citrus aurantifolia*	Rutaceae	TD	NE	NA	Exploration
99	Kaliandra Merah	*Calliandra calothyrsus*	Fabaceae	TD	LC	NA	Exploration
100	Akasia	*Acacia mangium*	Fabaceae	TD	LC	NA	Exploration
101	Kayu Manis	*Cinnamomum verum*	Lauraceae	TD	VU	NA	Exploration
102	Kayu Putih	*Melaleuca cajuputi*	Myrtaceae	TD	LC	NA	Exploration
103	Kedondong	*Spondias dulcis*	Anacardiaceae	TD	LC	NA	Exploration
104	Keladi	*Colocasia esculenta*	Araceae	TD	LC	NA	Exploration
105	Laban	*Vitex pinnata L.*	Lamiaceae	TD	LC	NA	Exploration
106	Lemon	*Citrus limon*	Rutaceae	TD	NE	NA	Exploration
107	Mahang	*Macaranga hypoleuca*	Euphorbiaceae	TD	LC	II	Exploration
108	Mangga	*Mangifera sp.*	Anacardiaceae	TD	DD	NA	Exploration
109	Kemangi-Kemangian	*Coleus monostachyus*	Lamiaceae	TD	NE	NA	Exploration
110	Nanas	*Ananas comosus*	Bromeliaceae	TD	NE	NA	Exploration
111	Penda Emas	*Xanthostemon chrysanthus*	Myrtaceae	TD	NE	NA	Exploration
112	Pepaya	*Carica papaya*	Caricaceae	TD	DD	NA	Exploration
113	Rumput Bandotan	*Ageratum conyzoides*	Asteraceae	TD	LC	NA	Exploration
114	Rumput Benang Hijau	*Abildgaardia ovata*	Cyperaceae	TD	LC	NA	Exploration
115	Rumput Paitan	*Paspalum conjugatum*	Poaceae	TD	LC	NA	Exploration
116	Sawit	*Elaeis oleifera*	Arecaceae	TD	NE	NA	Exploration

No	Local Name	Scientific Name	Family	Protection Status P.106 2018	IUCN 2024-2	CITES 7/2/2025	Information
117	Sembung Rambat	*Mikania micrantha*	Asteraceae	TD	NE	NA	Exploration
118	Karamunting Perdu	*Melastoma malabathricum*	Melastomataceae	TD	NE	NA	Exploration
119	Sikat Botol	*Melaleuca viminalis*	Myrtaceae	TD	LC	NA	Exploration
120	Kantong Semar Bintik Merah	*Nepenthes boschiana*	Nepenthaceae	D	EN	II	Exploration
121	Idur Beruang	*Pometia pinnata*	Sapindaceae	TD	LC	NA	Exploration
122	Idur	*Nephelium eriopetalum*	Sapindaceae	TD	LC	NA	Exploration
123	Penyeluangan	*Drepananthus ramuliflorus*	Annonaceae	TD	LC	NA	Exploration
124	Umbut Palas	*Licuala valida*	Arecaceae	TD	NE	NA	Exploration
125	Pasak Bumi	*Eurycoma longifolia*	Simaroubaceae	TD	LC	NA	Exploration
126	Ulin Sabah	*Eusideroxylon zwageri x*	Lauraceae	TD	VU	NA	Exploration
127	Ulin	*Eusideroxylon zwageri*	Lauraceae	TD	VU	NA	Exploration
128	Nyatoh Jangkar	*Palaquium walsurifolium*	Sapotaceae	TD	NT	NA	Exploration
129	Nyatoh Babi	*Palaquium pseudorostratum*	Sapotaceae	TD	LC	NA	Exploration
130	Akar Kuning	*Arcangelisia flava*	Menispermaceae	TD	NE	NA	Exploration
131	Perapat	*Combretocarpus rotundatus*	Anisophylleaceae	TD	LC	NA	Exploration
132	Mentibu	*Dactylocladus stenostachys*	Crypteroniaceae	TD	NE	NA	Exploration
133	Bungur	*Lagerstroemia speciosa*	Lythraceae	TD	LC	NA	Exploration
134	Pinang Hutan	*Pinanga subterranea*	Arecaceae	TD	NE	NA	Exploration
135	Galam	*Syzygium curtisii*	Myrtaceae	TD	LC	NA	Exploration
136	Kayu Aru	*Gymnostoma nobile*	Casuarinaceae	TD	NE	NA	Exploration
137	Akar Kalalait	*Uncaria gambir*	Rubiaceae	TD	NE	NA	Exploration
138	Pulai	*Alstonia pneumatophora*	Apocynaceae	TD	LC	NA	Exploration
139	Omang	*Shorea macroptera*	Dipterocarpaceae	TD	LC	NA	Exploration
140	Kayu Idat	*Cratoxylon glaucum*	Hypericaceae	TD	NE	NA	Exploration
141	Kayu Pampaning	*Lithocarpus conocarpus*	Fagaceae	TD	NE	NA	Exploration
142	Mentuka	*Lophopetalum javanicum*	Celastraceae	TD	LC	NA	Exploration
143	Rotan Dahanen	*Korthalsia flagellaris*	Arecaceae	TD	NE	NA	Exploration
144	Kopi Liberica	*Coffea liberica*	Rubiaceae	TD	LC	NA	Exploration
145	Durian	*Durio sp.*	Malvaceae	TD	NE	NA	Exploration
146	Coklat	*Theobroma cacao*	Malvaceae	TD	NE	NA	Exploration
147	Pisang Kepok	*Musa paradisiaca*	Musaceae	TD	NE	NA	Exploration
148	Kelengkeng	*Dimocarpus longan*	Sapindaceae	TD	DD	NA	Exploration
149	Alpukat	*Persea americana*	Lauraceae	TD	LC	NA	Exploration
150	Sirsak	*Annona muricata*	Annonaceae	TD	LC	NA	Exploration
151	Singkong	*Manihot esculenta*	Euphorbiaceae	TD	DD	NA	Exploration
152	Rambutan	*Nephelium lappaceum*	Sapindaceae	TD	LC	NA	Exploration
153	Pompaan	*Quercus bennettii*	Fagaceae	TD	LC	NA	Exploration
154	Terotungan	*Durio oxleyanus*	Malvaceae	TD	NT	NA	Exploration
155	Linang	*Antidesma ghaesembilla*	Phyllanthaceae	TD	LC	NA	Exploration

Description:
Plot = Identification in Sepingit Forest,
Exploration = Results of Interviews with Members of KTH Meniti Fajar and the Community

APPENDIX 4. Important Value Index of Flora at Each Stage

Table 1. Vegetation at the Seedling Level Plot

No	Local Name	Scientific Name	Family	IVI (%)	Protection Status		
					P.106 2018	IUCN 2024-2	CITES 7/2/2025
1	Bakung	*Hanguana malayana*	Hanguanaceae	12,90	TD	LC	NA
2	Bejiing	*Dillenia borneensis*	Dilleniaceae	6,55	TD	VU	NA
3	Berosikan	*Dialium platysepalum*	Fabaceae	6,55	TD	LC	NA
4	Gaharu Laka	*Dalbergia parviflora*	Fabaceae	8,30	TD	LC	NA
5	Kantong Semar	*Nepenthes ampullaria*	Nepenthaceae	4,43	TD	LC	II
6	Keraya	*Ficus binnendijki*	Moraceae	2,89	TD	LC	NA
7	Pakis sayur	*Diplazium esculentum*	Athyriaceae	10,17	TD	LC	NA
8	Paku-pakuan	*Lydogium sp.*	Lygodiaceae	10,77	TD	NE	NA
9	Pandan Perupuk	*Pandanus aristatus*	Pandanaceae	18,64	TD	DD	NA
10	Pepasiran	*Ilex cymosa*	Aquifoliaceae	2,51	TD	NE	NA
11	Putat	*Barringtonia racemosa*	Lecythidaceae	7,70	TD	LC	NA
12	Rasau	*Pandanus helicopus*	Pandanaceae	3,66	TD	DD	NA
13	Rempiang	*Pandanus sp.*	Pandanaceae	31,75	TD	DD	NA
14	Rija-Rija	*Scleria sumatrensis*	Cyperaceae	5,19	TD	LC	NA
15	Rotan	*Calamus rotang*	Sparidae	18,09	TD	NE	NA
16	Rotan bulu	*Daemonorops sabut*	Arecaceae	10,21	TD	NE	NA
17	Rotan irit	*Calamus trachycoleus*	Sparidae	2,89	TD	NE	NA
18	Rumput Teki	*Cyperus sp*	Cyperaceae	20,00	TD	NE	NA
19	Salak asam maram	*Eleiodoxa conferta*	Calameae	12,73	TD	NE	NA
20	Tumbuhan Paku/Lemidi	*Stenochlaena palustris*	Blechnaceae	4,04	TD	NE	NA

Description:
Plot = Identification in Sepingit Forest,
Exploration = Results of Interviews with Members of KTH Meniti Fajar and the Community

At the Seedling level recorded in Table 6, it was found that the dominant species were Rempiang (*Pandanus sp.*) with an INP of 31.75%, Pandan Perupuk (*Pandanus aristatus*) of 18.64%, followed by *Calamus rotang* and Teki Grass (*Cyperus sp.*). The dominance of these species indicates that ecosystem regeneration is going well, with many undergrowth and pioneer plants that play an important role in the ecological cycle. However, the dominance of certain species can also indicate changes in the composition of the plant community due to environmental disturbances, both natural and due to human activities. The existence of species that have protected status such as Kantung Semar (*Nepenthes ampullaria*) in the CITES Appendix II list indicates that this ecosystem is an important habitat for species that are vulnerable to exploitation.

Table 2. Vegetation on Plot for Sapling Stage

No	Local Name	Scientific Name	Family	IVI (%)	Protection Status		
					P.106 2018	IUCN 2024-2	CITES 7/2/2025
1	Akar limat	*Willughbeia coriacea*	Apocynaceae	2,25	TD	NE	NA
2	Akar Matondang	*Ficus punctata*	Moraceae	2,69	TD	LC	NA
3	Asam gandis	*Garcinia xanthochymus*	Clusiaceae	3,12	TD	LC	NA
4	Bejiing	*Dillenia borneensis*	Dilleniaceae	6,25	TD	VU	NA
5	Bekunyit	*Diospyros pilosanthera*	Ebenaceae	1,81	TD	LC	II
6	Bengaris	*Koompassia malaccensis*	Fabaceae	4,06	TD	LC	NA
7	Bengkal	*Nauclea orientalis*	Rubiaceae	2,25	TD	LC	NA
8	Bentan	*Parastemon urophyillus*	Chrysobalanaceae	7,13	TD	DD	NA
9	Berosikan	*Dialium platysepalum*	Fabaceae	2,25	TD	LC	NA
10	Betepong	*Xylopia alitissima*	Annonaceae	2,69	TD	DD	NA
11	Betepong Jangkar	*Xylopia fuscas*	Annonaceae	2,25	TD	LC	NA
12	Cempedak air	*Artocarpus teysmannii*	Moraceae	1,81	TD	LC	NA
13	Gaharu Laka	*Dalbergia parviflora*	Fabaceae	2,25	TD	LC	NA
14	Irang-irang	*Diospyros confertiflora*	Ebenaceae	3,12	TD	DD	II
15	Jambu burung	*Syzygium attenuatum*	Myrtaceae	5,37	TD	DD	NA
16	Jampang	*Melicope lunu-ankenda*	Rutaceae	3,56	TD	LC	NA
17	Jangkang	*Xylopia malayana*	Annonaceae	1,81	TD	LC	NA
18	Kamasira	*Chaetocarpus castanocarpus*	Peraceae	1,81	TD	LC	NA
19	Keranji	*Dialium kunstleri*	Fabaceae	5,37	TD	NT	NA
20	Ketiau	*Madhuca motleyana*	Sapotaceae	9,43	TD	NT	NA
21	Kumpang Putih	*Gymnacranthera farquhariana*	Myristicaceae	2,25	TD	LC	NA
22	Medang	*Actinodaphne glomerata*	Lauraceae	3,56	TD	LC	NA
23	Mentangor	*Calophyllum macrocarpum*	Calophyllaceae	3,12	TD	LC	NA
24	Pansulan	*Pternandra caerulescens*	Melastomataceae	16,94	TD	LC	NA
25	Parak	*Santiria laevigata*	Burseraceae	1,81	TD	LC	NA
26	Penaga	*Calophyllum lanigerum*	Calophyllaceae	4,06	TD	NE	NA
27	penjarang bukit	*Goniothalamus tapis*	Annonaceae	7,18	TD	LC	NA
28	Pepasiran	*Ilex cymosa*	Aquifoliaceae	8,06	TD	NE	NA
29	Perupuk	*Lophopetalum multinervium*	Celastraceae	4,00	TD	LC	NA
30	Piais	*Nephelium lappaceum*	Sapindaceae	2,25	TD	LC	NA

No	Local Name	Scientific Name	Family	IVI (%)	Protection Status		
					P.106 2018	IUCN 2024-2	CITES 7/2/2025
31	Pisang-pisang	*Maasia sumatrana*	Annonaceae	7,62	TD	LC	NA
32	Putat	*Barringtonia racemosa*	Lecythidaceae	12,06	TD	LC	NA
33	Ramin	*Gonystylus bancanus*	Thymelaeaceae	3,56	TD	CR	II
34	Rengas manuk	*Gluta wallichii*	Anacardiaceae	2,25	TD	LC	NA
35	Resak	*Vatica pauciflora*	Dipterocarpaceae	2,69	TD	VU	NA
36	Rotan	*Calamus rotang*	Sparidae	12,06	TD	NE	NA
37	Rotan irit	*Calamus trachycoleus*	Sparidae	6,69	TD	NE	NA
38	Samak	*Glochidion Superbum*	Phyllanthaceae	7,13	TD	LC	NA
39	Trentang	*Campnosperma coriaceum*	Anacardiaceae	3,12	TD	LC	NA
40	Ubar merah	*Syzygium oligomyrum*	Myrtaceae	4,93	TD	LC	NA
41	Ubar putih	*Syzygium lineatum*	Myrtaceae	13,43	TD	LC	NA

Description:
Plot = Identification in Sepingit Forest,
Exploration = Results of Interviews with Members of KTH Meniti Fajar and the Community

At the Sapling level recorded in Table 7, the most dominant species are Pansulan (*Pternandra caerulescens*) with the highest IVI of 16.94%, White Ubar (*Syzygium lineatum*) of 13.43%, followed by *Barringtonia racemosa* and *Calamus rotang*. The presence of these species in large numbers indicates that they have a high ability to survive in the peat swamp ecosystem. However, several species with more vulnerable conservation status, such as Dillenia borneensis, which is included in the Vulnerable (VU) category, indicate that this ecosystem is still facing the threat of degradation due to environmental pressures and habitat changes. In addition, species were found that are included in the Critically Endangered (CR) category according to the IUCN, such as Ramin (*Gonystylus bancanus*), which requires further conservation efforts to prevent extinction.

Table 3. Vegetation on Plots for Pole Stage

No	Local Name	Scientific Name	Family	IVI (%)	P.106 2018	IUCN 2024-2	CITES 7/2/2025
					Protection Status		
1	Bejiing	*Dillenia borneensis*	Dilleniaceae	10,53	TD	VU	NA
2	Belanti	*Coccoceras borneense*	Euphorbiaceae	4,43	TD	LC	NA
3	Bengaris	*Koompassia malaccensis*	Fabaceae	3,31	TD	LC	NA
4	Berosikan	*Dialium platysepalum Baker*	Fabaceae	14,20	TD	LC	NA
5	Betepong	*Xylopia alitissima*	Annonaceae	9,36	TD	DD	NA
6	Blangiran	*Shorea balangeran*	Dipterocarpaceae	9,72	TD	VU	NA
7	Cempedak air	*Artocarpus teysmannii*	Moraceae	7,11	TD	LC	NA
8	Gembor	*Nothaphoebe coriacea*	Lauraceae	3,55	TD	DD	NA
9	Irang-irang	*Diospyros confertiflora*	Ebenaceae	5,92	TD	DD	II
10	Jambu burung	*Syzygium attenuatum*	Myrtaceae	12,03	TD	DD	NA
11	Kamasira	*Chaetocarpus castanocarpus*	Peraceae	3,64	TD	LC	NA
12	Kapuak	*Artocarpus anisophyllus*	Moraceae	10,71	TD	VU	NA
13	Kenjelempau	*Archidendron borneense*	Fabaceae	3,11	TD	NT	NA
14	Keranji	*Dialium kunstleri*	Fabaceae	11,58	TD	NT	NA
15	Keraya	*Ficus binnendijki*	Moraceae	3,24	TD	LC	NA
16	Ketiau	*Madhuca motleyana*	Sapotaceae	14,60	TD	NT	NA
17	Klanasian	*Syzygium zeylanicum*	Myrtaceae	4,83	TD	EN	NA
18	Lanan	*Shorea leprosula*	Dipterocarpaceae	3,60	TD	NT	NA
19	Lebang	*Coccoceras sumatrana*	Euphorbiaceae	8,40	TD	LC	NA
20	Mampai	*Crudia gracilis*	Fabaceae	3,47	TD	LC	NA
21	Medang	*Actinodaphne glomerata*	Lauraceae	3,55	TD	LC	NA
22	Pansulan	*Pternandra caerulescens*	Melastomataceae	23,28	TD	LC	NA
23	Pempukikan	*Nephelium Sp.*	Sapindaceae	3,78	TD	DD	NA
24	Penaga	*Calophyllum lanigerum*	Calophyllaceae	7,37	TD	NE	NA
25	penjarang bukit	*Goniothalamus tapis*	Annonaceae	10,27	TD	LC	NA
26	Pepasiran	*Ilex cymosa*	Aquifoliaceae	25,02	TD	NE	NA
27	Piais	*Nephelium lappaceum*	Sapindaceae	9,37	TD	LC	NA
28	Pisang-pisang hitam	*Mezzettia parviflora*	Annonaceae	6,59	TD	LC	NA
29	Putat	*Barringtonia racemosa*	Lecythidaceae	4,14	TD	LC	NA

No	Local Name	Scientific Name	Family	IVI (%)	P.106 2018	IUCN 2024-2	CITES 7/2/2025
					Protection Status		
30	Randa	*Blumeodendron tokbrai*	Euphorbiaceae	3,60	TD	LC	NA
31	Rengas	*Gluta renghas*	Anacardiaceae	7,93	TD	NT	NA
32	Rengas manuk	*Gluta wallichii*	Anacardiaceae	3,20	TD	LC	NA
33	Resak	*Vatica pauciflora*	Dipterocarpaceae	7,48	TD	VU	NA
34	Samak	*Glochidion Superbum*	Phyllanthaceae	8,08	TD	LC	NA
35	Trentang	*Campnosperma coriaceum*	Anacardiaceae	3,17	TD	LC	NA
36	Ubar merah	*Syzygium oligomyrum*	Myrtaceae	7,38	TD	LC	NA
37	Ubar putih	*Syzygium lineatum*	Myrtaceae	18,43	TD	LC	NA

Keterangan:

Plot = Identifikasi di Hutan Sepingit,

Eksplorasi = Hasil Wawancara dengan Anggota KTH Meniti Fajar dan Masyarakat

The Pole-level vegetation recorded in Table 8 shows the dominance of Pepasiran (*Ilex cymosa*) with an IVI of 25.02%, followed by Pternandra caerulescens with an IVI of 23.28% and Ketiau (*Madhuca motleyana*) of 14.60%. At this level, species with more conservation status are found, including Syzygium zeylanicum, which is categorized as Endangered (EN), Blangiran (*Shorea balangeran*) which is categorized as Vulnerable (VU), which means its population is decreasing in the wild. Pole-level vegetation begins to show the presence of young trees that will form a forest canopy, indicating that the ecological succession process is going well in this ecosystem.

Tabel 4. Vegetation on Plot for Tree Stage

No	Local Name	Scientific Name	Family	IVI (%)	Protection Status		
					P.106 2018	IUCN 2024-2	CITES 7/2/2025
1	Asam gandis	*Garcinia xanthochymus*	Clusiaceae	7,14	TD	LC	NA
2	Bejiing	*Dillenia borneensis*	Dilleniaceae	11,92	TD	VU	NA
3	Bekadok	*Nephelium cuspidatum*	Sapindaceae	2,42	TD	LC	NA
4	Bekunyit	*Diospyros pilosanthera*	Ebenaceae	4,62	TD	LC	II
5	Belanti	*Coccoceras borneense*	Euphorbiaceae	2,22	TD	LC	NA
6	Bengaris	*Koompassia malaccensis*	Fabaceae	6,46	TD	LC	NA
7	Bengkal	*Nauclea orientalis*	Rubiaceae	6,51	TD	LC	NA
8	Bentan	*Parastemon urophyillus*	Chrysobalanaceae	11,01	TD	DD	NA
9	Berosikan	*Dialium platysepalum Baker*	Fabaceae	10,79	TD	LC	NA
10	Betepong Jangkar	*Xylopia fuscas*	Annonaceae	2,25	TD	LC	NA
11	Blangiran	*Shorea balangeran*	Dipterocarpaceae	5,06	TD	VU	NA
12	Cempedak air	*Artocarpus teysmannii*	Moraceae	5,12	TD	LC	NA
13	Irang-irang	*Diospyros confertiflora*	Ebenaceae	2,24	TD	DD	II
14	Jambu burung	*Syzygium attenuatum*	Myrtaceae	2,21	TD	DD	NA
15	Jangkang	*Xylopia malayana*	Annonaceae	2,55	TD	LC	NA
16	Kakupuy	*Sarcotheca diversifolia*	Oxalidaceae	2,23	TD	LC	NA
17	Kapuak	*Artocarpus anisophyllus*	Moraceae	5,35	TD	VU	NA
18	Kenjelempau	*Archidendron borneense*	Fabaceae	2,50	TD	NT	NA
19	Keranji	*Dialium kunstleri*	Fabaceae	11,02	TD	NT	NA
20	Keraya	*Ficus binnendijki*	Moraceae	6,51	TD	LC	NA
21	Ketiau	*Madhuca motleyana*	Sapotaceae	7,22	TD	NT	NA
22	Kumpang merah	*Horsfieldia glabra*	Myristicaceae	5,34	TD	LC	NA
23	Kumpang Putih	*Gymnacranthera farquhariana*	Myristicaceae	2,50	TD	LC	NA
24	Lakau	*Cryptocarya ferrea*	Lauraceae	2,42	TD	LC	NA
25	Lanan	*Shorea leprosula*	Dipterocarpaceae	4,72	TD	NT	NA
26	Mampai	*Crudia gracilis*	Fabaceae	5,93	TD	LC	NA
27	Medang	*Actinodaphne glomerata*	Lauraceae	12,31	TD	LC	NA

No	Local Name	Scientific Name	Family	IVI (%)	Protection Status		
					P.106 2018	IUCN 2024-2	CITES 7/2/2025
28	Pansulan	*Pternandra caerulescens*	Melastomataceae	14,84	TD	LC	NA
29	Papung	*Sandoricum borneense*	Meliaceae	2,64	TD	LC	NA
30	Penaga	*Calophyllum lanigerum*	Calophyllaceae	9,37	TD	NE	NA
31	Pepasiran	*Ilex cymosa*	Aquifoliaceae	6,71	TD	NE	NA
32	Perupuk	*Lophopetalum multinervium*	Celastraceae	4,48	TD	LC	NA
33	Piais	*Nephelium lappaceum*	Sapindaceae	16,22	TD	LC	NA
34	Pisang-pisang	*Maasia sumatrana*	Annonaceae	2,50	TD	LC	NA
35	Pisang-pisang hitam	*Mezzettia parviflora*	Annonaceae	3,63	TD	LC	NA
36	Putat	*Barringtonia racemosa*	Lecythidaceae	2,65	TD	LC	NA
37	Ramin	*Gonystylus bancanus*	Thymelaeaceae	2,62	TD	CR	II
38	Randa	*Blumeodendron tokbrai*	Euphorbiaceae	2,41	TD	LC	NA
39	Rengas	*Gluta renghas*	Anacardiaceae	22,00	TD	NT	NA
40	Rengas manuk	*Gluta wallichii*	Anacardiaceae	9,27	TD	LC	NA
41	Samak	*Glochidion Superbum*	Phyllanthaceae	14,07	TD	LC	NA
42	Sepekauk	*Illicium verum*	Schisandraceae	2,56	TD	NE	NA
43	Trentang	*Campnosperma coriaceum*	Anacardiaceae	5,16	TD	LC	NA
44	Ubar merah	*Syzygium oligomyrum*	Myrtaceae	15,91	TD	LC	NA
45	Ubar putih	*Syzygium lineatum*	Myrtaceae	10,08	TD	LC	NA

At the Tree level recorded in Table 9, it was found that Rengas (*Gluta renghas*) had the highest IVI of 22.00%, followed by *Syzygium oligomyrum* of 15.91% and *Pternandra caerulescens* of 14.84%. Species in the conservation category appeared more at this level, such as Ramin (*Gonystylus bancanus*), Ulin (*Eusideroxylon zwageri*), and Lanan (*Shorea leprosula*), all of which face high risks due to exploitation and habitat change. The presence of species with Vulnerable (VU) status such as Shorea balangeran and Vatica pauciflora shows that although this area still has fairly good primary forest, pressure on the ecosystem remains and needs to be anticipated. The presence of large trees at this level shows that the peat swamp ecosystem still has a good structure, but protection of certain species must be strengthened to prevent further population decline.

APPENDIX 5. Documentation of Flora

No	Local Name	Scientific Name	Family	Photo
1	Akar limat	*Willughbeia coriacea*	Apocynaceae	
2	Akar Matondang	*Ficus punctata*	Moraceae	
3	Asam gandis	*Garcinia xanthochymus*	Clusiaceae	
4	Bakung	*Hanguana malayana*	Hanguanaceae	

No	Local Name	Scientific Name	Family	Photo
5	Bejiing	*Dillenia borneensis*	Dilleniaceae	
6	Bekadok	*Nephelium cuspidatum*	Sapindaceae	
7	Bekunyit	*Diospyros pilosanthera*	Ebenaceae	
8	Belanti	*Coccoceras borneense*	Euphorbiaceae	

No	Local Name	Scientific Name	Family	Photo
9	Bengaris	*Koompassia malaccensis*	Fabaceae	
10	Bengkal	*Nauclea orientalis*	Rubiaceae	
11	Bentan	*Parastemon urophyillus*	Chrysobalanaceae	

No	Local Name	Scientific Name	Family	Photo
12	Berosikan	*Dialium platysepalum*	Fabaceae	
13	Betepong	*Xylopia alitissima*	Annonaceae	
14	Betepong Jangkar	*Xylopia fuscas*	Annonaceae	

No	Local Name	Scientific Name	Family	Photo
15	Blangiran	*Shorea balangeran*	Dipterocarpaceae	
16	Cempedak air	*Artocarpus teysmannii*	Moraceae	
17	Gaharu Laka	*Dalbergia parviflora*	Fabaceae	
18	Gembor	*Nothaphoebe coriacea*	Lauraceae	

No	Local Name	Scientific Name	Family	Photo
19	Irang-irang	*Diospyros confertiflora*	Ebenaceae	
20	Jambu burung	*Syzygium attenuatum*	Myrtaceae	
21	Jampang	*Melicope lunu-ankenda*	Rutaceae	
22	Jangkang	*Xylopia malayana*	Annonaceae	
23	Kakupuy	*Sarcotheca diversifolia*	Oxalidaceae	

No	Local Name	Scientific Name	Family	Photo
24	Kamasira	*Chaetocarpus castanocarpus*	Peraceae	
25	Kantong Semar	*Nepenthes ampullaria*	Nepenthaceae	
26	Kapuak	*Artocarpus anisophyllus*	Moraceae	
27	Kenjelempau	*Archidendron borneense*	Fabaceae	

No	Local Name	Scientific Name	Family	Photo
28	Keranji	*Dialium kunstleri*	Fabaceae	
29	Keraya	*Ficus binnendijki*	Moraceae	
30	Ketiau	*Madhuca motleyana*	Sapotaceae	
31	Klanasian	*Syzygium zeylanicum*	Myrtaceae	

No	Local Name	Scientific Name	Family	Photo
32	Kumpang merah	*Horsfieldia glabra*	Myristicaceae	
33	Kumpang Putih	*Gymnacranthera farquhariana*	Myristicaceae	
34	Lakau	*Cryptocarya ferrea*	Lauraceae	
35	Lanan	*Shorea leprosula*	Dipterocarpaceae	

No	Local Name	Scientific Name	Family	Photo
36	Lebang	*Coccoceras sumatrana*	Euphorbiaceae	
37	Mampai	*Crudia gracilis*	Fabaceae	
38	Medang	*Actinodaphne glomerata*	Lauraceae	

No	Local Name	Scientific Name	Family	Photo
39	Mentangor	*Calophyllum macrocarpum*	Calophyllaceae	
40	Pakis sayur	*Diplazium esculentum*	Athyriaceae	
41	Paku-pakuan	*Lydogium sp.*	Lygodiaceae	
42	Pandan Perupuk	*Pandanus aristatus*	Pandanaceae	

No	Local Name	Scientific Name	Family	Photo
43	Pansulan	*Pternandra caerulescens*	Melastomataceae	
44	Panting	*Dyera Polyphylla*	Apocynaceae	
45	Papung	*Sandoricum borneense*	Meliaceae	
46	Parak	*Santiria laevigata*	Burseraceae	

No	Local Name	Scientific Name	Family	Photo
47	Pempukikan	*Nephelium Sp.*	Sapindaceae	
48	Penaga	*Calophyllum lanigerum*	Calophyllaceae	
49	penjarang bukit	*Goniothalamus tapis*	Annonaceae	
50	Pepasiran	*llex cymosa*	Aquifoliaceae	

No	Local Name	Scientific Name	Family	Photo
51	Perupuk	*Lophopetalum multinervium*	Celastraceae	
52	Piais	*Nephelium lappaceum*	Sapindaceae	
53	Pisang-pisang	*Maasia sumatrana*	Annonaceae	
54	Pisang-pisang hitam	*Mezzettia parviflora*	Annonaceae	

No	Local Name	Scientific Name	Family	Photo
55	Putat	*Barringtonia racemosa*	Lecythidaceae	
56	Ramin	*Gonystylus bancanus*	Thymelaeaceae	
57	Randa	*Blumeodendron tokbrai*	Euphorbiaceae	
58	Rasau	*Pandanus helicopus*	Pandanaceae	

No	Local Name	Scientific Name	Family	Photo
59	Rempiang	*Pandanus sp.*	Pandanaceae	
60	Rengas	*Gluta renghas*	Anacardiaceae	
61	Rengas manuk	*Gluta wallichii*	Anacardiaceae	
62	Resak	*Vatica pauciflora*	Dipterocarpaceae	

No	Local Name	Scientific Name	Family	Photo
63	Rija-Rija	*Scleria sumatrensis*	Cyperaceae	
64	Rotan	*Calamus rotang*	Sparidae	
65	Rotan bulu	*Daemonorops sabut*	Arecaceae	
66	Rotan irit	*Calamus trachycoleus*	Sparidae	

No	Local Name	Scientific Name	Family	Photo
67	Rumput Teki	*Cyperus sp*	Cyperaceae	
68	Salak asam maram	*Eleiodoxa conferta*	Calameae	
69	Samak	*Glochidion Superbum*	Phyllanthaceae	
70	Sepekauk	*Illicium verum*	Schisandraceae	

No	Local Name	Scientific Name	Family	Photo
71	Trentang	*Campnosperma coriaceum*	Anacardiaceae	
72	Tumbuhan Paku/Lemidi	*Stenochlaena palustris*	Blechnaceae	
73	Ubar merah	*Syzygium oligomyrum*	Myrtaceae	
74	Ubar putih	*Syzygium lineatum*	Myrtaceae	
75	Purun Danau	*Lepironia articulata*	Cyperaceae	

No	Local Name	Scientific Name	Family	Photo
76	Rotan Saga air	*Calamus axillaris*	Arecaceae	
77	Pakis Kinca	*Nephrolepis radicans*	Nephrolepidaceae	
78	Balam Sisil	*Syzygium clavimyrtus*	Myrtaceae	
79	Gembor Merah	*Nothaphoebe umbelliflora*	Lauraceae	
80	Medang liut	*Alseodaphne oblanceolata*	Lauraceae	
81	Akar Bajakah	*Spatholobus littoralis*	Fabaceae	

No	Local Name	Scientific Name	Family	Photo
82	Nyatoh	*Palaquium ridleyi*	Sapotaceae	
83	Akar Sawa/phyton	*Entada phaseoloides*	Fabaceae	
84	Rumput teki Sungai	*Scirpus fluviatilis*	Cyperaceae	
85	Jambu rawa	*Eugenia sp.*	Myrtaceae	
86	Akasia bunga kuning	*Acacia baileyana*	Fabaceae	

No	Local Name	Scientific Name	Family	Photo
87	Belimbing	*Averrhoa carambola*	Oxalidaceae	
88	Beringin	*Ficus benjamina*	Moraceae	
89	Buah ajaib	*Synsepalum dulcificum*	Sapotaceae	
90	Cakar Elang	*Uncaria acida*	Rubiaceae	
91	Dlingo	*Acorus calamus*	Acoraceae	

No	Local Name	Scientific Name	Family	Photo
92	Kayu putih	*Eucalyptus pellita*	Myrtaceae	
93	Ganggang Kariba	*Salvinia molesta*	Salviniaceae	
94	Jahe	*Zingiber officinale*	Zingiberaceae	
95	Jambu air	*Syzygium aqueum*	Myrtaceae	
96	Jambu biji	*Psidium guajava*	Myrtaceae	

No	Local Name	Scientific Name	Family	Photo
97	Jeruk	*Citrus sinensis*	Rutaceae	
98	Jeruk nipis	*Citrus aurantifolia*	Rutaceae	
99	Kaliandra merah	*Calliandra calothyrsus*	Fabaceae	
100	Akasia	*Acacia mangium*	Fabaceae	
101	Kayu manis	*Cinnamomum verum*	Lauraceae	
102	Kayu putih	*Melaleuca cajuputi*	Myrtaceae	

No	Local Name	Scientific Name	Family	Photo
103	Kedondong	*Spondias dulcis*	Anacardiaceae	
104	Keladi	*Colocasia esculenta*	Araceae	
105	Laban	*Vitex pinnata L.*	Lamiaceae	
106	Lemon	*Citrus limon*	Rutaceae	
107	Mahang	*Macaranga hypoleuca*	Euphorbiaceae	

No	Local Name	Scientific Name	Family	Photo
108	Mangga	*Mangifera sp.*	Anacardiaceae	
109	Kemangi-kemangian	*Coleus monostachyus*	Lamiaceae	
110	Nanas	*Ananas comosus*	Bromeliaceae	
111	Penda emas	*Xanthostemon chrysanthus*	Myrtaceae	
112	Pepaya	*Carica papaya*	Caricaceae	

No	Local Name	Scientific Name	Family	Photo
113	Rumput bandotan	*Ageratum conyzoides*	Asteraceae	
114	Rumput benang hijau	*Abildgaardia ovata*	Cyperaceae	
115	Rumput paitan	*Paspalum conjugatum*	Poaceae	
116	Sawit	*Elaeis oleifera*	Arecaceae	
117	Sembung rambat	*Mikania micrantha*	Asteraceae	
118	Karamunting Perdu	*Melastoma malabathricum*	Melastomataceae	

No	Local Name	Scientific Name	Family	Photo
119	Sikat botol	*Melaleuca viminalis*	Myrtaceae	
120	Kantong Semar Bintik Merah	*Nepenthes boschiana*	Nepenthaceae	
121	Idur Beruang	*Pometia pinnata*	Sapindaceae	
122	Idur	*Nephelium eriopetalum*	Sapindaceae	
123	Penyeluangan	*Drepananthus ramuliflorus*	Annonaceae	
124	Umbut Palas	*Licuala valida*	Arecaceae	

No	Local Name	Scientific Name	Family	Photo
125	Pasak Bumi	*Eurycoma longifolia*	Simaroubaceae	
126	Ulin sabah	*Eusideroxylon zwageri x*	Lauraceae	
127	Ulin	*Eusideroxylon zwageri*	Lauraceae	
128	Nyatoh jangkar	*Palaquium walsurifolium*	Sapotaceae	
129	nyatoh babi	*Palaquium pseudorostratum*	Sapotaceae	
130	akar kuning	*Arcangelisia flava*	Menispermaceae	

No	Local Name	Scientific Name	Family	Photo
131	Perapat	*Combretocarpus rotundatus*	Anisophylleaceae	
132	Mentibu	*Dactylocladus stenostachys*	Crypteroniaceae	
133	Bungur	*Lagerstroemia speciosa*	Lythraceae	
134	Pinang hutan	*Pinanga subterranea*	Arecaceae	
135	Galam	*Syzygium curtisii*	Myrtaceae	
136	kayu aru	*Gymnostoma nobile*	Casuarinaceae	

No	Local Name	Scientific Name	Family	Photo
137	Akar Kalalait	*Uncaria gambir*	Rubiaceae	
138	Pulai	*Alstonia pneumatophora*	Apocynaceae	
139	Omang	*Shorea macroptera*	Dipterocarpaceae	
140	Kayu idat	*Cratoxylon glaucum*	Hypericaceae	
141	Kayu pampaning	*Lithocarpus conocarpus*	Fagaceae	
142	Mentuka	*Lophopetalum javanicum*	Celastraceae	

No	Local Name	Scientific Name	Family	Photo
143	Rotan dahanen	*Korthalsia flagellaris*	Arecaceae	
144	kopi liberica	*Coffea liberica*	Rubiaceae	
145	Durian	*Durio sp.*	Malvaceae	
146	Coklat	*Theobroma cacao*	Malvaceae	
147	pisang kepok	*Musa paradisiaca*	Musaceae	

No	Local Name	Scientific Name	Family	Photo
148	kelengkeng	*Dimocarpus longan*	Sapindaceae	
149	alpukat	*Persea americana*	Lauraceae	
150	Sirsak	*Annona muricata*	Annonaceae	
151	Singkong	*Manihot esculenta*	Euphorbiaceae	
152	rambutan	*Nephelium lappaceum*	Sapindaceae	

No	Local Name	Scientific Name	Family	Photo
153	Pompaan	*Quercus bennettii*	Fagaceae	
154	terotungan	*Durio oxleyanus*	Malvaceae	
155	Linang	*Antidesma ghaesembilla*	Phyllanthaceae	

Table 11. Flora Analysis Data Plot

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
Plot 1	1	Pepasiran	*Ilex cymosa*	1			
	2	Rempiang	*Pandanus sp.*	4			
	3	Bakung	*Hanguana malayana*	5			
	4	Rumput Teki	*Cyperus sp*	10			
	5	Salak asam maram	*Eleiodoxa conferta*	1			
	6	Ketiau	*Madhuca motleyana*		1		
	7	Pepasiran	*Ilex cymosa*		4		
	8	Penaga	*Calophyllum lanigerum*		2		
	9	penjarang bukit	*Goniothalamus tapis*		2		
	10	Parak	*Santiria laevigata*		1		
	11	Penjarang bukit	*Goniothalamus tapis*			13	
	12	Medang	*Actinodaphne glomerata*			14	
	13	Gembor	*Nothaphoebe coriacea*			14	
	14	Pisang-pisang	*Mezzettia parviflora*			11	
	15	Penaga	*Calophyllum lanigerum*				29
	16	Penaga	*Calophyllum lanigerum*				31
	17	Penaga	*Calophyllum lanigerum*				27
	18	Penaga	*Calophyllum lanigerum*				27
	19	Ubar merah	*Syzygium oligomyrum*				25
	20	Medang	*Actinodaphne glomerata*				35
Plot 2	1	Rumput Teki	*Cyperus sp*	4			
	2	Salak asam maram	*Eleiodoxa conferta*	2			
	3	Rempiang	*Pandanus sp.*	8			
	4	Pandan Perupuk	*Pandanus aristatus*	2			
	5	Pepasiran	*Ilex cymosa*		2		
	6	Kumpang Putih	*Gymnacranthera farquhariana*		2		
	7	Bengaris	*Koompassia malaccensis*		1		
	8	Jangkang	*Xylopia malayana*		1		
	9	Rotan	*Calamus rotang*		2		
	10	Betepong Jangkar	*Xylopia fuscas*		2		
	11	Pempukikan	*Nephelium Sp.*			16	
	12	Ketiau	*Madhuca motleyana*			11	
	13	Penaga	*Calophyllum lanigerum*			13	
	14	Bengaris	*Koompassia malaccensis*			12	
	15	Bengaris	*Koompassia malaccensis*				30
	16	Lanan	*Shorea leprosula*				20
	17	Bengaris	*Koompassia malaccensis*				22
	18	Bekunyit	*Diospyros pilosanthera*				24
	19	Betepong Jangkar	*Xylopia fuscas*				21

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
	20	Jangkang	*Xylopia malayana*				28
Plot 3	1	Rempiang	*Pandanus sp.*	4			
	2	Salak asam maram	*Eleiodoxa conferta*	1			
	3	Tumbuhan Paku/Lemidi	*Stenochlaena palustris*	5			
	4	Penjarang bukit	*Goniothalamus tapis*		2		
	5	Samak	*Glochidion Superbum*		4		
	6	Rotan	*Calamus rotang*		3		
	7	Ketiau	*Madhuca motleyana*		3		
	8	Samak	*Glochidion Superbum*		6		
	9	Trentang	*Campnosperma coriaceum*			11	
	10	Penjarang bukit	*Goniothalamus tapis*			11	
	11	Ketiau	*Madhuca motleyana*			17	
	12	Pisang-pisang hitam	*Mezzettia parviflora*			13	29
	13	Samak	*Glochidion Superbum*				25
	14	Penaga	*Calophyllum lanigerum*				22
	15	Piais	*Nephelium Lappaceun L.*				23
	16	Piais	*Nephelium Lappaceun L*				40
	17	Samak	*Glochidion Superbum*				28
	18	Panting	*Dyera Polyphylla*				
Plot 4	1	Rempiang	*Pandanus sp.*	3			
	2	Salak asam maram	*Eleiodoxa conferta*	7			
	3	Piais	*Nephelium Lappaceun L.*		2		
	4	Penjarang bukit	*Goniothalamus tapis*		3		
	5	Ubar putih	*Syzygium lineatum*		4		
	6	Ketiau	*Madhuca motleyana*		3		
	7	Betepong	*Xylopia alitissima*		3		
	8	Ubar putih	*Syzygium lineatum*			19	
	9	Betepong	*Xylopia alitissima*			18	
	10	Betepong	*Xylopia alitissima*			17	
	11	Betepong	*Xylopia alitissima*			18	
	12	Trentang	*Campnosperma coriaceum*				27
	13	Ketiau	*Madhuca motleyana*				29
	14	Ramin	*Gonystylus bancanus*				30
	15	Ubar putih	*Syzygium lineatum*				27
	16	Ubar putih	*Syzygium lineatum*				28
	17	Kumpang	*Horsfieldia glabra*				27
Plot 5	1	Bakung	*Hanguana malayana*	10			
	2	Rasau	*Pandanus helicopus*	4			
	3	Jambu burung	*Syzygium attenuatum*		4		
	4	Klanasian	*Syzygium zeylanicum*			10	
	5	Klanasian	*Syzygium zeylanicum*			11	

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
	6	Jambu burung	*Syzygium attenuatum*			13	
	7	Keraya	*Ficus binnendijki*				30
	8	Keraya	*Ficus binnendijki*				25
	9	Ubar merah	*Syzygium oligomyrum*				27
	10	Putat	*Barringtonia racemosa*				31
	11	Jambu burung	*Syzygium attenuatum*				20
	12	Trentang	*Campnosperma coriaceum*				31
Plot 6	1	Rempiang	*Pandanus sp.*	8			
	2	Rotan	*Calamus rotang*		5		
	3	Irang-irang	*Diospyros confertiflora*		4		
	4	Asam gandis	*Garcinia xanthochymus*		4		
	5	Perupuk	*Lophopetalum multinervium*		6		
	6	Irang-irang	*Diospyros confertiflora*			18	
	7	Irang-irang	*Diospyros confertiflora*			12	
	8	Blangiran	*Shorea balangeran*			11	
	9	Keranji	*Dialium kunstleri*			19	
	10	Ketiau	*Madhuca motleyana*			18	
	11	Berosikan	*Dialium platysepalum Baker*				25
	12	Blangiran	*Shorea balangeran*				23
	13	Perupuk	*Lophopetalum multinervium*				37
	14	Perupuk	*Lophopetalum multinervium*				28
	15	Keranji	*Dialium kunstleri*				22
	16	Irang-irang	*Diospyros confertiflora*				21
	17	Asam gandis	*Garcinia xanthochymus*				22
	18	Asam gandis	*Garcinia xanthochymus*				23
Plot 7	1	Rempiang	*Pandanus sp.*	12			
	2	Rotan irit	*Calamus trachycoleus*		3		
	3	Putat	*Barringtonia racemosa*		3		
	4	Pansulan	*Pternandra caerulescens*		2		
	5	Bentan	*Parastemon urophyillus*		6		
	6	Rengas manuk	*Gluta wallichii*		2		
	7	Mentangor	*Calophyllum macrocarpum*		4		
	8	Samak	*Glochidion Superbum*			17	
	9	Berosikan	*Dialium platysepalum Baker*			17	
	10	Berosikan	*Dialium platysepalum Baker*			18	
	11	Blangiran	*Shorea balangeran*			19	
	12	Blangiran	*Shorea balangeran*			15	
	13	Samak	*Glochidion Superbum*				24
	14	Samak	*Glochidion Superbum*				23
	15	Blangiran	*Shorea balangeran*				32
	16	Rengas manuk	*Gluta wallichii*				36
	17	Bentan	*Parastemon urophyillus*				54
	18	Rengas manuk	*Gluta wallichii*				61
	19	Kantong Semar	*Nepenthes ampullaria*				

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
Plot 8	1	Gaharu Laka	*Dalbergia parviflora Roxb.*	3			
	2	Rotan bulu	*Daemonorops sabut*	4			
	3	Rempiang	*Pandanus sp.*	5			
	4	Rumput Teki	*Cyperus sp*	6			
	5	Pisang-pisang	*Maasia sumatrana*		3		
	6	Cempedak air	*Artocarpus teysmannii*		1		
	7	Keranji	*Dialium kunstleri*		2		
	8	Berosikan	*Dialium platysepalum Baker*		2		
	9	Pisang-pisang	*Maasia sumatrana*		3		
	10	Resak	*Vatica pauciflora*			13	
	11	Cempedak air	*Artocarpus teysmannii*			14	
	12	Rengas	*Gluta renghas*			14	
	13	Rengas manuk	*Gluta wallichii*			11	
	14	Cempedak air	*Artocarpus teysmannii*				29
	15	Bengkal	*Nauclea orientalis*				27
	16	Rengas manuk	*Gluta wallichii*				27
	17	Lanan	*Shorea leprosula*				27
	18	Ubar merah	*Syzygium oligomyrum*				25
	19	Rengas	*Gluta renghas*				35
	20	Keranji	*Dialium kunstleri*				25
	21	Berosikan	*Dialium platysepalum Baker*				27
Plot 9	1	Paku-pakuan	*Lydogium sp.*	10			
	2	Rija-Rija	*Scleria sumatrensis*	8			
	3	Pansulan	*Pternandra caerulescens*		8		
	4	Rotan irit	*Calamus trachycoleus*		6		
	5	Pisang-pisang	*Maasia sumatrana*		2		
	6	Resak	*Vatica pauciflora*		3		
	7	Bengaris	*Koompassia malaccensis*		2		
	8	Ubar merah	*Syzygium oligomyrum*		2		
	9	Resak	*Vatica pauciflora*			18	
	10	Cempedak air	*Artocarpus teysmannii*			14	
	11	Berosikan	*Dialium platysepalum Baker*			14	
	12	Cempedak air	*Artocarpus teysmannii*				29
	13	Ubar merah	*Syzygium oligomyrum*				25
	14	Berosikan	*Dialium platysepalum Baker*				25
	15	Ubar merah	*Syzygium oligomyrum*				22
	16	Pisang-pisang	*Maasia sumatrana*				27
	17	Pansulan	*Pternandra caerulescens*				34
Plot 10	1	Rotan bulu	*Daemonorops sabut*	4			
	2	Rotan irit	*Calamus trachycoleus*	2			
	3	Rumput Teki	*Cyperus sp*	10			
	4	Paku-pakuan	*Lydogium sp.*	7			
	5	Bakung	*Hanguana malayana*	2			
	6	Trentang	*Campnosperma coriaceum*		4		

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
	7	Jambu burung	*Syzygium attenuatum*		2		
	8	Ubar putih	*Syzygium lineatum*		5		
	9	Lanan	*Shorea leprosula*			14	
	10	Piais	*Nephelium Lappaceun L.*			13	
	11	Rengas	*Gluta renghas*			19	
	12	Kenjelempau				10	
	13	Gaharu Laka	*Dalbergia parviflora Roxb.*				
	14	Rengas	*Gluta renghas*				29
	15	Kenjelempau					27
	16	Bejiing	*Dillenia borneensis*				26
	17	Piais	*Nephelium Lappaceun L.*				30
	18	Pansulan	*Pternandra caerulescens*				27
	19	Piais	*Nephelium Lappaceun L.*				23
	20	Lakau	*Cryptocarya ferrea*				25
Plot 11	1	Pandan Perupuk	*Pandanus aristatus*	15			
	2	Rotan	*Calamus rotang*	4			
	3	Rotan bulu	*Daemonorops sabut*	2			
	4	Ubar putih	*Syzygium lineatum*		4		
	5	Pepasiran	*Ilex cymosa*		3		
	6	Kamasira	*Chaetocarpus cantanocarpus*		1		
	7	Keranji	*Dialium kunstleri*		4		
	8	Penaga	*Calophyllum lanigerum*		1		
	9	Akar Matondang			3		
	10	Mampai	*Crudia gracilis*			13	
	11	Kapuak	*Artocarpus anisophyllus*			13	
	12	Keranji	*Dialium kunstleri*			17	
	13	Pepasiran	*Ilex cymosa*			11	
	14	Pepasiran	*Ilex cymosa*			17	
	15	Keranji	*Dialium kunstleri*				46
	16	Mampai	*Crudia gracilis*				27
	17	Kapuak	*Artocarpus anisophyllus*				21
	18	Keranji	*Dialium kunstleri*				48
	19	Pepasiran	*Ilex cymosa*				20
	20	Ketiau	*Madhuca motleyana*				22
	21	Bekadok					25
Plot 12	1	Putat	*Barringtonia racemosa*	2			
	2	Keraya	*Ficus binnendijki*	2			
	3	Rotan	*Calamus rotang*	3			
	4	Ubar putih	*Syzygium lineatum*		1		
	5	Ketiau	*Madhuca motleyana*		2		
	6	Medang	*Actinodaphne glomerata*		5		
	7	Akar limat			2		
	8	Bekunyit	*Diospyros pilosanthera*		1		
	9	Keranji	*Dialium kunstleri*			12	

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
	10	Ubar merah	*Syzygium oligomyrum*			15	
	11	Pepasiran	*Ilex cymosa*			17	
	12	Kapuak	*Artocarpus anisophyllus*			13	
	13	Pepasiran	*Ilex cymosa*			11	
	14	Pepasiran	*Ilex cymosa*			17	
	15	Medang	*Actinodaphne glomerata*				33
	16	Ubar merah	*Syzygium oligomyrum*				28
	17	Kumpang Putih	*Gymnacranthera farquhariana*				27
	18	Ubar putih	*Syzygium lineatum*				23
	19	Papung	*Sandoricum borneense*				30
	20	Samak	*Glochidion Superbum*				39
	21	Bekunyit	*Diospyros pilosanthera*				21
	22	Bengaris	*Koompassia malaccensis*				30
Plot 13	1	Pandan Perupuk	*Pandanus aristatus*	15			
	2	Rotan	*Calamus rotang*	8			
	3	Ubar merah	*Syzygium oligomyrum*		3		
	4	Ramin	*Gonystylus bancanus*		5		
	5	Bengkel	*Nauclea orientalis*		2		
	6	Bentan	*Parastemon urophyillus*		4		
	7	Randa	*Blumeodendron tokbrai*			14	
	8	Penaga	*Calophyllum lanigerum*			17	
	9	Pepasiran	*Ilex cymosa*			19	
	10	Ubar merah	*Syzygium oligomyrum*			15	
	11	Pepasiran	*Ilex cymosa*			17	
	12	Ketiau	*Madhuca motleyana*			11	
	13	Bentan	*Parastemon urophyillus*				28
	14	Pepasiran	*Ilex cymosa*				20
	15	Ketiau	*Madhuca motleyana*				25
	16	Ubar merah	*Syzygium oligomyrum*				28
	17	Kakupuy	*Sarcotheca diversifolia*				20
	18	Bentan	*Parastemon urophyillus*				33
	19	Piais	*Nephelium Lappaceun L.*				38
Plot 14	1	Pakis sayur	*Diplazium esculentum*	21			
	2	Rotan	*Calamus rotang*	10			
	3	Kantong semar	*Nepenthes ampullaria*	6			
	4	Putat	*Barringtonia racemosa*		4		
	5	Jampang	*Melicope lunu-ankenda*		5		
	6	penjarang bukit	*Goniothalamus tapis*			15	
	7	Pepasiran	*Ilex cymosa*			19	
	8	Piais	*Nephelium Lappaceun L.*			17	
	9	Keraya	*Ficus binnendijki*			11	
	10	Samak	*Glochidion Superbum*			18	
	11	Piais	*Nephelium Lappaceun L.*			14	

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
	12	Pepasiran	*Ilex cymosa*				21
	13	Keraya	*Ficus binnendijki*				27
	14	Piais	*Nephelium Lappaceun L.*				39
	15	Samak	*Glochidion Superbum*				43
	16	Piais	*Nephelium Lappaceun L.*				31
	17	Medang	*Actinodaphne glomerata*				37
Plot 15	1	Putat	*Barringtonia racemosa*	7			
	2	Berosikan	*Dialium platysepalum Baker*	3			
	3	Putat	*Barringtonia racemosa*		3		
	4	Rotan	*Calamus rotang*		5		
	5	Pansulan	*Pternandra caerulescens*		2		
	6	Putat	*Barringtonia racemosa*			18	
	7	Jambu burung	*Syzygium attenuatum*			15	
	8	Berosikan	*Dialium platysepalum Baker*			17	
	9	Jambu burung	*Syzygium attenuatum*			16	
	10	Jambu burung	*Syzygium attenuatum*			18	
	11	Pansulan	*Pternandra caerulescens*			19	
	12	Belanti	*Coccoceras borneense*			19	
	13	Mampai	*Crudia gracilis*				43
	14	Bejiing	*Dillenia borneensis*				27
	15	Sepekauk	*Illicium verum*				29
	16	Bejiing	*Dillenia borneensis*				30
	17	Pansulan	*Pternandra caerulescens*				52
	18	Pansulan	*Pternandra caerulescens*				20
	19	Berosikan	*Dialium platysepalum Baker*				44
	20	Belanti	*Coccoceras borneense*				20
Plot 16	1	Berosikan	*Dialium platysepalum Baker*	3			
	2	Gaharu laka	*Dalbergia parviflora Roxb.*	1			
	3	Bejiing	*Dillenia borneensis*	3			
	4	Gaharu Laka	*Dalbergia parviflora Roxb.*		2		
	5	Putat	*Barringtonia racemosa*		5		
	6	Pansulan	*Pternandra caerulescens*		2		
	7	Bejiing	*Dillenia borneensis*		2		
	8	Pansulan	*Pternandra caerulescens*			15	
	9	Pansulan	*Pternandra caerulescens*			11	
	10	Pansulan	*Pternandra caerulescens*			13	
	11	Pansulan	*Pternandra caerulescens*			13	
	12	Pansulan	*Pternandra caerulescens*			10	
	13	Pansulan	*Pternandra caerulescens*			12	
	14	Bejiing	*Dillenia borneensis*			10	
	15	Lebang	*Coccoceras sumatrana*			18	
	16	Kamasira	*Chaetocarpus cantanocarpus*			15	
	17	Bejiing	*Dillenia borneensis*			15	
	18	Bejiing	*Dillenia borneensis*			14	

Plot	No.	Local Name	Scientific Name	Seedling Amount	Sapling Amount	Pole Diameter	Tree Diameter
	19	Pansulan	*Pternandra caerulescens*			19	
	20	Bentan	*Parastemon urophyillus*				27
	21	Rengas	*Gluta renghas*				134
	22	Pansulan	*Pternandra caerulescens*				21
	23	Bejiing	*Dillenia borneensis*				30
	24	Pansulan	*Pternandra caerulescens*				20
	25	Kumpang merah	*Horsfieldia glabra*				34
	26	Randa	*Blumeodendron tokbrai*				25
Plot 17	1	Gaharu laka	*Dalbergia parviflora Roxb.*	1			
	2	Bejiing	*Dillenia borneensis*	3			
	3	Ubar putih	*Syzygium lineatum*		1		
	4	Pansulan	*Pternandra caerulescens*		9		
	5	Bejiing	*Dillenia borneensis*		6		
	6	Ubar putih	*Syzygium lineatum*			14	
	7	Ubar putih	*Syzygium lineatum*			15	
	8	Ubar putih	*Syzygium lineatum*			12	
	9	Ubar putih	*Syzygium lineatum*			16	
	10	Ubar putih	*Syzygium lineatum*			14	
	11	Ubar putih	*Syzygium lineatum*			16	
	12	Kapuak	*Artocarpus anisophyllus*			17	
	13	Pansulan	*Pternandra caerulescens*			12	
	14	Bejiing	*Dillenia borneensis*			11	
	15	Lebang	*Coccoceras sumatrana*			18	
	16	Asam gandis	*Garcinia xanthochymus*				45
	17	Medang	*Actinodaphne glomerata*				46
	18	Bejiing	*Dillenia borneensis*				32
	19	Ubar putih	*Syzygium lineatum*				23
	20	Ubar putih	*Syzygium lineatum*				27
	21	Bengkal	*Nauclea orientalis*				27
	22	Bengkal	*Nauclea orientalis*				29
	23	Kapuak	*Artocarpus anisophyllus*				38