



Tree Communities of a Fragmented Forest in an Oil Palm Plantation

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DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.


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ABSTRACT

Forest fragments in oil palm plantations are remnants of the original forest tract of various sizes and shapes after clearing forested lands for crops and roads. Studies on edge effects are important because the current land-use practices will significantly affect future trends of fragmented forests. This study aimed to determine the forest stand structure, tree species composition, and compare the structure and floristics between the forest edge and forest interior of a fragmented forest in an oil palm plantation. Eight transects from the forest edge to the interior were created, and six plots of 20 x 20 m at 20 m intervals were established on each transect. The first three plots from the edge are the sampling plots for the forest edge, and the following three are the samplings plots for the forest interior. Thus, a total of 24 sampling plots each for forest edge and interior were examined for stand structure and species composition. Tree enumeration and species identification were conducted in all sampling plots to all trees with a diameter at breast height (DBH) of 5 cm and above. A total of 59 families consisting of 274 species and 988 stems were recorded in the forest edge; meanwhile, 52 families consisting of 318 species and 1184 stems were recorded in the forest interior for all trees with $DBH \geq 5$ cm. The aboveground biomass (AGB) with $DBH \geq 5$ cm and $DBH \geq 10$ cm in the forest edge were 260 Mg/ha and 249 Mg/ha, respectively. Meanwhile, the AGB in the forest interior with $DBH \geq 5$ cm and $DBH \geq 10$ cm were 279 Mg/ha and 269 Mg/ha, respectively. Result showed the AGB were lower at the forest edge than at the interior. Species *Elateriospermum tapos*, genus *Shorea*, and family Dipterocarpaceae dominated the forest edge and interior. The tree distribution by diameter class showed the inverted-J or reverse-J curve pattern, indicating good regeneration in both forest types. Species diversity and richness were considered high since the Shannon-Wiener index showed 2.25 (forest edge) and 2.28 (forest interior), the Simpson index represented

0.99 at both forest zones, while the Margalef index showed 39.8 and 45.1 at the forest edge and forest interior, respectively. The dispersion of tree species of the Morisita index was unevenly distributed for both forest edge (1.03) and interior (1.04). Floristically, the similarity index between the two forest types is low at 41%. The finding indicated that the forest structure and species composition in the forest fragments regenerate well and represent good forest health.

Keywords: Forest interior, forest edge, fragmented forest, species composition, stand structure

Komuniti Pokok-pokok dalam Hutan Serpihan di Ladang Kelapa Sawit

ABSTRAK

Serpihan-serpihan hutan di ladang kelapa sawit merupakan sisa-sisa kawasan hutan asal dengan pelbagai saiz dan bentuk selepas penebangan kawasan hutan untuk tanaman dan jalan raya. Kajian-kajian tentang kesan pinggir penting kerana amalan-amalan guna tanah akan menjejaskan tren masa depan hutan serpihan. Kajian ini bertujuan untuk menentukan struktur dirian hutan, komposisi spesies pokok dan membuat perbandingan struktur dirian dan floristik di antara pinggir hutan dan teras hutan dalam hutan serpihan di ladang kelapa sawit. Lapan transek dari pinggir ke teras hutan telah dibina dan enam plot bersaiz 20 x 20 m dan setiapnya berselang 20 m ditubuh di atas setiap transek. Dengan ini sejumlah 24 plot pensampelan bagi setiap kawasan hutan pinggir dan teras dikaji dari segi struktur dirian dan komposisi spesies. Pengukuran pokok dan pengecaman spesies telah dilakukan di semua plot pensampelan kepada semua pokok dengan diameter pada ketinggian paras dada (DBH) 5 cm dan ke atas. Sebanyak 59 keluarga terdiri daripada 274 spesies dan 988 individu pokok direkodkan di pinggir hutan, manakala 52 famili terdiri daripada 318 spesies dan 1184 individu pokok direkodkan dalam teras hutan. Biojisim atas tanah (AGB) bagi dirian dengan $DBH \geq 5$ cm dan $DBH \geq 10$ cm di pinggir hutan masing-masingnya 260 Mg/ha dan 249 Mg/ha. Sementara itu, AGB di teras hutan dengan $DBH \geq 5$ cm dan $DBH \geq 10$ cm masing-masingnya 279 Mg/ha dan 269 Mg/ha. Spesies Elateriospermum tapos, genus *Shorea*, dan keluarga *Dipterocarpaceae* mendominasi pinggir dan teras hutan. Taburan pokok mengikut kelas diameter menunjukkan pola J-terbalik atau J-songsang, menunjukkan regenerasi yang baik di kedua-dua jenis hutan. Kepelbagaian dan kekayaan spesies dianggap tinggi kerana indeks Shannon-Wiener menunjukkan 2.25 (tepi hutan) dan 2.28

(dalam hutan), indeks Simpson mewakili 0.99 di kedua zon hutan, sementara indeks Margalef menunjukkan 39.8 dan 45.1 di pinggir hutan dan teras hutan. Penyebaran spesies pokok indeks Morisita adalah secara tidak rata untuk kedua pinggir hutan (1.03) dan teras (1.04). Dari segi floristik, indeks keserupaan di antara kedua-dua jenis hutan adalah rendah iaitu 41%. Penemuan menunjukkan bahawa struktur hutan dan komposisi spesies di serpihan hutan mewakili kesihatan hutan yang baik.

Kata kunci: *Teras hutan, pinggir hutan, hutan serpihan, komposisi spesies, struktur dirian*

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LIST OF ABBREVIATIONS

AGB	Aboveground biomass
BA	Basal Area
°C	Celsius
cm	Centimetre
CD	Conservation Dependant
CR	Critically Endangered
DD	Data Deficient
D	Diameter
DBH	Diameter at Breast Height
E	East
EN	Endangered
et al.	et alia
exp	Exponential
EX	Extinct
EW	Extinct in the Wild
GFS	Gravity Fed System
FAO	Food and Agriculture Organisation
FIV	Family Importance Value
FSC	Forest Stewardship Council
g	Grams
ha	Hectare
HCVF	High Conservation Value forest
ICRAF	International Council for Research in Agroforestry

IV	Importance Value
IVI	Importance Value Index
IUCN	International Union for Conservation of Nature
Kg	Kilograms
km	Kilometre
ln	Natural logarithm
LC	Least Concern
log	Logarithm
Mg	Megagram
m	Metre
m.a.s.l.	metre above sea level
mm	Millimetre
MSPO	Malaysian Sustainable Palm Oil
NE	Not Evaluated
NT	Near Threatened
N	North
No.	Number
PFZ	Planted Forest Zone
Rba	Relative basal area
Rbdo	Relative dominance
Rd	Relative density
Rde	Relative density
Rdi	Relative diversity
Rf	Relative frequency
RSPO	Roundtable on Sustainable Palm Oil

Sp.	Species
UNIMAS	Universiti Malaysia Sarawak
VU	Vulnerable

CHAPTER 1

INTRODUCTION

1.1 Study Background

Forest fragmentation is considered a significant threat to biodiversity (Haywood, 1995). In oil palm plantations, forest fragmentation occurs and begins during the development of plantation operations. When the original habitat is a primary forest, the process usually starts with timber harvesting, usually in selective logging, followed by clearing logged forest areas for oil palm plantation and infrastructure (Bakewell & Donysius, 2014). Examples of infrastructure are roads and transportation, leading to fragmented forests composed of a various plant communities and the creation of edges and interior habitats.

According to Beyene et al. (2016), fragmentation is a transition of the forest from being the whole separating into two or more distinct pieces. As a result of the ongoing world deforestation, which causes the fragmented forest to occur within a landscape with different land uses, the number of forests' edge habitats is increasing (Wade et al., 2003). Species distribution fragmentation is caused by land use and ecosystem changes in and near edges (Murcia, 1995).

The demand for expanding land for oil palm plantations causes deforestation (Vijay et al., 2016), and the expansion of oil palm plantations causes the forest communities to experience edge effects. Plant and tree communities on the edge of the forest are affected due to the activity carried out, such as building roads for access to the oil palm plantation. This situation favours the pioneer species and other fast-growing species colonising the area. These light-demanding species grow abundantly on the forest edge but will get lesser

towards the forest interior. The growth of tropical pioneer species is vital for forest rehabilitation in the forest recovery process (Hooper et al., 2005).

Fast-growing species are early successional and inhabit large gaps in the forest or forest edges; in contrast, for those species that are shade tolerant, their seedlings often persist in the understory for years as they are the slow-growing species which is the late-successional (Lovelock & Mersits, 1998). Laurance et al. (2006) stated that fast-growing successional species dominate the forest edges compared to slow-growing species.

Fragmentation processes also involve habitat losses and splitting the remaining habitat into pieces of various sizes and degrees of isolation (Laurance, 2008). Previous studies also had been proven that forest fragmentation might cause biodiversity loss (Priatna et al., 2012). The functioning of forest ecosystems, for example, the activities, processes, or properties of forests, such as decomposition of organic matter, soil nutrient cycling, and water retention, may be jeopardised by the loss of forest biodiversity and, consequently, the ability of the forest to provide ecosystem services (Duffy, 2009).

Forest is threatened due to disturbance with the increased proportion of remaining forests located close to the forest edge (Saunders et al., 1991). According to Fahrig (2003), changes in the degree or patterns of fragmentation can affect habitat quality for most mammal, reptile, bird, and amphibian species found in forest habitats. Thus, the reduction of forests causes disturbance of habitat to animals. Trees and shrubs are also facing a similar situation.

It is important to conserve a fragmented forest. A sustainable forest is crucial in balancing the biodiversity in the area (Morrison-métois & Lundgren, 2016). Forest contributes to providing clean air to the surrounding (AbdelGawad, 2021). Besides, balanced

biodiversity helps in mitigating climate change (Mant et al., 2014). Forest ecosystems function as carbon sinks (Kauppi et al., 2022). Trees store carbon and help balance the surrounding temperature (Whitehead, 2019; Doick & Hutchings, 2013). Besides, noise pollution is reduced. Trees absorb sound using their bark, stems, leaves, and branches (Maleki & Hosseini, 2011). Their role in absorbing the sound is important, especially when the forest is the habitat of the animals (Reethof et al., 1976; Janean et al., 1997). Lastly, soil erosion is prevented, especially when the area's topography is mostly hilly (Hairiah et al., 2020). Trees' roots anchor the soil and help in securing the trees during a heavy storm (Hairiah et al., 2020). Thus, landslides are prevented.

1.2 Problem Statement

The large forest fragments contain a relatively uniform core that provides sufficient space for tree communities to sustain themselves. However, as areas of natural habitat are cleared, the impacts on tree species diversity and the sustainability of high conservation value (HCV) forest are unknown. Some of the forest areas are being cleared due to the rapid development of the oil palm industry. The oil palm plantation surrounding the forest fragments restricts the tree species from being widely distributed. Thus, fragmentation isolates sub-populations of species and restricts the gene flow and opportunities for pollination and breeding. The edge effect has an adverse impact on the interior areas, especially when the ratios of edge habitat to interior habitat are as large as in linear-shaped fragments. The species abundance in the area is important in deciding whether the population can still be maintained. The sustainability of fragmented forests depends on the condition, especially the community structure of tree species on the forest edges. However, little is known about the population structure of tree species in fragmented forests within oil palm plantations. This study emphasises the tree's structure and the species composition in the

forest edge and interior of a fragmented forest. Understanding the tree structure and composition of forest fragments is vital in assessing the sustainability of the high conservation value forest as the management of forest ecosystems in oil palm plantations.

1.3 Objectives

This study aimed to distinguish the effect of edge habitat on tree communities within the forest edge and interior. The specific objectives were to:

- (i) determine the forest stand structure of the forest edge and forest interior of a fragmented forest
- (ii) determine the species composition of forest edge and forest interior communities of a fragmented forest, and
- (iii) compare the stand structure and floristics between the forest edge and forest interior

1.4 Chapter Summary

This chapter has provided a general introduction to this research, including the problem statement and objectives. The study background emphasised forest fragmentation and forest edge, and the problem statement explains how the problem occurred as it led to the establishment of this research. Lastly, three specific objectives were stated in the objectives section.

CHAPTER 2

LITERATURE REVIEW

2.1 Forest Fragmentation

Habitat fragmentation is the process of subdividing a continuous habitat type into smaller patches, which results in the loss of the original habitat, reduction in patch size, and increasing isolation of patches (Andrén, 1994). Fahrig (2003) suggested that habitat fragmentation is the changes in habitat form that is affected by the breakdown of the habitat, independent of habitat loss. Forest fragmentation divides a forest into smaller, more isolated fragments (Deon, 2002). The loss of large and old trees in favour of pioneer trees is due to the reduced fragment size and increased proportion of edge habitat, shifting the physical environment (Haddad et al., 2015). Forest fragmentation causes forest cover changes and structure changes (Kozak et al., 2018).

The human disturbances are the negative effect that contributes to changes in the forest structure (Beche et al., 2022). Deforestation for agricultural activity and the construction for building roads are examples of disturbances to the forest (Bodo et al., 2021). On the positive side, the growth of pioneer species enhances forest regeneration (Viani et al., 2015). Pioneer species usually occur as the early successional group during forest regeneration (Franklin, 2003).

Forest fragmentation disrupts the species that contribute to the ecosystem's functioning (Liu et al., 2018). Forest fragmentation and climate change are correlated as they will likely affect biodiversity (Opdam & Wascher, 2003). Changes in microclimatic and environmental conditions in the forest are due to fragmentation (Mcmahon, 2018; Karatas,

2019). In addition, habitat fragmentation is changing the species community in the forest, especially at the forest edge (Zambrano et al., 2020).

The forest edge is the border of the fragmented forest exposed to different environmental conditions compared with the interior forest (Mullu, 2016). Forest edges are the physical vegetation structures forming the transition zone between forest and open land cover in various patterns and distributions between the two land uses. A forest edge often experiences stress or disturbance due to human activities near it. Laurance et al. (2007) stated that the forest edges are less than 100 m from the edge while the forest interior is a distance more than 100 m from the edge.

The structure of a forest edge depends on land use. Two common edge structures are graded forest edge and abrupt forest edge. The graded forest edge is rare, often restricted to low-intensity clearing, and usually manages the edge zone's development (Fry & Sarlöv-Herlin, 1997). The fragmented forest has abrupt edges in many tropical forest clearing and oil palm plantations. Forest edges are part of the forest where it is the most accessible by humans compared to the interior forest. Meanwhile, the forest area accessed by humans, such as logging roads, will create canopy openings (Uhl & Kauffman, 1990). The canopy openings or canopy gaps can also be affected by natural disturbances like the breaking over of the tree branches or the falling over of dead trees (van der Meer & Bongers, 1996).

Meanwhile, the forest interior is the old forest unaffected by edge impacts from the surrounding forests (Öhman et al., 2011). The distance to the forest interior area depends on the patch's perimeter, as the site is influenced by the patch size, shape, and the nature of the immediate environment (Başkent & Jordan, 2011). Both shade-tolerant and light-demanding species are present in the forest interior, thus, enhancing the species richness in the forest

area (Gonzalez et al., 2010). Examples of species can be found in the forest interior, such as *Diospyros* sp. and *Ficus* sp. (Kacholi, 2014).

A large, fragmented forest comprises a uniform forest interior that provides sufficient conditions for tree communities to maintain their structure (Patrício et al., 2019). However, in a small forest fragment (<100 ha) (Fariah et al., 2009), the edge effect could adversely affect the interior areas, especially when the ratio of edge habitat to interior habitat is significant, as in linear-shape fragments. Many species naturally occurring in the interior habitat might not be able to survive on the edges due to unfavourable conditions like light levels, temperature, humidity, and susceptibility to wind disruption (Mullu, 2016). Furthermore, exotic plants can be host to pests and diseases and then transmitted to forest fragments, affecting the survival of native species (Prospero & Cleary, 2017). This may cause a decline in forest species and risk the forest's sustainability. A large edge ratio in small forest fragments drastically reduced the suitable habitat for forest species by more than 50% in a fragmented forest of less than 10 ha (Zuidema et al., 1996).

2.2 Impacts of Forest Fragmentation

2.2.1 Deforestation and edge effects

Deforestation is the activity of clearing forested land, and it can complete or almost complete clearance of tree cover and land changes for other uses (Ghazoul & Evans, 2020). The Food Agricultural Organisation defines deforestation as the conversation of forest to alternative land use (FAO, 2007). Land use examples of agriculture are oil palm, rubber plantations, and subsistence food crops (Nugroho et al., 2018). The contribution of massive deforestation is causing land degradation due to the activities like oil palm plantation, crop plantation and road construction (Wan Shafrina et al., 2020).

The activity of deforestation is leading to ecologically and environmentally imbalances in the surrounding (Ansari, 2018). The impacts of deforestation are climate change, land degradation, and soil erosion (Tariq, 2015). Deforestation causes drought when it disrupts normal weather by creating hotter and drier weather (Sumit et al., 2012). It is because higher concentrations of carbon dioxide and other greenhouse gases are emitted from tree loss leading to the increasing temperature (Singh & Singh, 2017).

The increase of oil palm plantations changes with time as market prices, road networks, and area under plantation due to the infrastructure inconsistency (Shevade & Loboda, 2019). The plantations significantly contribute to habitat loss (Shevade et al., 2017). The activities of cutting down trees carried out in the plantation areas are causing the reduction of the forest areas. Alamgir et al. (2019) stated that the expansion of infrastructure contributes to the forest-edge habitat, thus, creating the forest fragments in the area. Thus, the availability and suitability of adjacent areas for wildlife are decreasing due to habitat fragmentation (Seiler & Folkeson, 2006). As a result of deforestation, some tree species may go extinct forever, impacting the diversity of plant species in a an environment (Alamu & Agbeja, 2011; Ojoyi et al., 2015). Therefore, the tree communities are disturbed. However, it gives space to the other tree species that succeed in thriving in disturbed habitats (Rocha-Santos et al., 2020).

Furthermore, it leads to the edge effect. The edge effect is the interaction of two adjacent ecosystems separated through an abrupt transition (Benítez-Malvido & Arroyo-Rodríguez, 2008). Potts et al. (2016) defined an edge effect as the abundance of the population in a given habitat being different near the edge to within the middle of a large patch of the same habitat type. It is called the edge effect, where the forest edge faces gradual

changes from the border in abiotic and biotic conditions through the modification of organisms and matter (Cadenasso et al., 2003). Ewers and Leite (2013) stated that it is the boundaries between two different habitats.

The environmental conditions, vegetation structure, and composition alterations resulted in the edge effects (Ries & Sisk, 2004; Santos et al., 2008). The size and shape of different landscape patches determine the edge-effect patterns in the same study system (Collinge & Palmer, 2002; Smith et al., 2010). The forest structure is different in forest edges compared to the interior forest due to the changes in microclimatic like the higher temperature and light incidence and also the reduced humidity (Camargo & Kapos, 1995; Oliveira et al., 2008). Edge effects can cause tree mortality and damage in fragmented forests due to microclimatic changes and wind turbulence (Ferreira & Laurance, 1997).

The tree mortality and recruitment rates are easily changed, especially near the edges compared to the interior forest (Laurance et al., 2007). Forest edges are becoming more abundant in many regions around the globe because of the loss of forests arising from human activity, including settlement, agriculture, resource extraction, and timber harvesting (Harper et al., 2005). Didham (2010) stated that there could be very strong feedback effects between these processes, for example, roads or power line corridors initially created only a small amount of habitat loss but resulted in the increasing edge effects that respond to the increasing rates of habitat loss. However, it is also common for the edges to occur due to natural disturbances (Harper et al., 2015).

In terms of vegetation, the forest edge presents higher pioneer species compared to the interior forest as this forest edge is exposed to higher wind speed, temperature, and amount of light penetrating (Mullu, 2016). Tree species and structural composition of the

Kilengwe Forest in Morogoro Region, Tanzania, have significant differences between the forest interior habitat and edge and intermediate (Kacholi, 2014). Forest edges have the potential to exhibit early succession structure and have lower biomass and higher mortality compared to non-edge areas (Dantas et al., 2015).

2.2.2 Population isolation

Habitat fragmentation involves splitting natural habitats and ecosystems into smaller and more isolated patches, and it reduces the availability and the suitability of adjacent areas for wildlife. Forest fragmentation causes isolation in the landscape of the forest (McMahon, 2018). The loss and isolation of natural habitats occur due to fragmentation, resulting in population isolation (Mullu, 2016). The continuous deforestation causes forest fragments to be isolated at varying degrees from one another (Bruna, 2004). This indicates that the population is breaking down into smaller, spatially separated habitats by fragmentation, leading to variations in the genetic architecture within and between the resulting populations (Young et al., 1996). The size and isolation of the local populations are important criteria in determining the genetic effects of habitat fragmentation (Mendez et al., 2014).

The forest patches' isolation affects the population of plants and animals. Patch size and isolation are crucial in determining the plant species density in fragmented forests (Munguia-Rosas & Montiel, 2014). Ojoyi et al., (2015) stated that different species reacted differently to changes in patch size; for example, certain tree species' abundance decreased as patch size increased, while others dropped. Somehow, this affects the tree communities since some tree species are negatively responding to the forest patches. Meanwhile, for the animal population, some species are highly sensitive to forest patches and isolation, like birds and mammals, while most species prefer larger and less isolated patches, such as

amphibians (Prugh et al., 2008). The presence of gene flow among geographically close populations is reduced as distance increases due to the intervention of the neighbouring populations (Vriendt et al., 2017). The population is decreasing due to the decrease in forest areas. The more a patch is isolated, the less habitat is in the landscape; thus, the isolation of patches causes progressive population reduction (Fahrig, 2003). This is because the isolation of the forest into small patches caused a barrier towards dispersal, either physical or behavioural (Kupfer & Franklin, 2009). Population isolation leads to conditions whereby individual animal and plant species and their broader populations become endangered, leading to extinction.

2.2.3 Ecosystem deterioration

Forest fragmentation causes the degradation of forest quality in terms of the density and structure of the trees, providing the ecological services, plants and animals biomass, species, and genetic diversity (Tejaswi, 2007). Fragmentation has influenced the ecosystem processes, although the severity is affected by the involvement of individual species and the environment (Peh et al., 2014). The increase in the sensitivity of the ecosystem to climate change is due to the environmental change factors that are caused by human activity, such as fragmentation and direct habitat degradation (Malhi et al., 2020). Climate change affects biodiversity and the properties and processes that characterise the ecosystem (Weiskopf et al., 2020). This indicates that climate change is a threat that causes ecosystem weakening. The alterations in tree growth, mortality, and reproduction are examples of climate change that strongly affects the forest ecosystem (Gebeyehu & Hirpo, 2020).

Two components of forest degradation are tree loss leading to structural changes and species compositional changes, which involve a shift from shade tolerant to light-demanding

species (Oliveira et al., 2004). Both components can impact forest carbon storage and other ecosystem services. The light-demanding species typically have lower wood density and thus retain less carbon than old-growth species (Tabarelli et al., 2008).

Human disturbances are one of the factors affecting the forest ecosystem (Liu et al., 2021). Severe anthropogenic pressures on the tropical forests are altering the forest habitat and their woody floristic composition (Alohou et al., 2017). Land use and natural habitat conversion changes influence habitat degradation (Foley et al., 2005). However, forest restoration helps mitigate climate change and the forest biodiversity helps them adapt to climate change due to their natural capacity (Thompson et al., 2009).

The forest biodiversity has been significantly reduced due to oil palm plantations. Oil palm monoculture plantations support less biodiversity than the forests they replace (Singh, 2012). Besides damaging the seed banks, land clearance in oil palm plantations exposes the soil to erosion (Henson, 2003). Forest fragmentation alters the microclimate and causes the edges to experience a dry environment, increasing the wind speed and altering the water cycle, which is prone to floods or droughts caused by tree mortality, negatively impacting pollination and plant reproduction and leading to ecosystem deterioration (Ellis-Cockcroft & Cotter, 2014).

Human anthropogenic pressure is one of the main factors that cause forest deforestation (Bogaert et al., 2011). The increasing human activities, including agriculture and timber harvesting, are damaging the forest ecosystems (Harper et al., 2005). Haddad et al. (2015) reported that forest fragmentation reduces biodiversity by 13 to 75% and impairs vital ecosystem functions by decreasing biomass and altering nutrient cycles. In addition, through changing ecosystem processes, the plant composition decreased some ecosystem

services including forage and medicinal plants (Zerga, 2015). Thus, the forest is unable to provide ecosystem services since the tree communities are disturbed.

2.3 The Importance of Sustaining Healthy Fragmented Forest

2.3.1 Biodiversity

It has been discussed that fragmenting natural ecosystems resulted in major consequences for biodiversity. Biodiversity is a wide variety of living organisms and the genes they contain, forming the ecosystem (Rawat & Agarwal, 2015). Biodiversity can be preserved *in situ* as genetic species and an intact ecosystem while being recognised as protected areas (Kotlash, 2002). Species diversity influences the stability of the ecosystem (Griffin et al., 2009). The ecosystem's stability helps mitigate pollution, improve soil quality, reduce climate change, and help recycle nutrients (Patel, 2014). The stability and response of the ecosystems to the disturbance are crucial for conservation management to maintain or restore the early successional communities (Mitchell et al., 2015).

Abundance in biomass and diversity of plant and animal species, ecosystem stability, and variation and diversity of habitats added to species diversity (Baumgardner et al., 2007). A healthy forest allows trees and plants to perform nutrient cycling with the non-living parts of the environment. Nutrient cycling is one of the supportive services crucial for the forest's ecosystem (Mehta & Jain, 2021). Alfaro et al. (2010) stated that a healthy forest could maintain the natural biodiversity of plant and animal life correlated to the ecosystem.

The fragmented forest is causing habitat loss to animals. Animal populations and species will gradually decline when their habitat degrades (Hanski, 2011). Besides, animals may eat according to the requirement or food availability (Collins et al., 1991). Herbivores depend on food availability based on the plant-herbivore interactions, and it was proven that

habitat fragmentation affects food resources (Valladares et al., 2012). Thus, some animals will assemble in the patch habitat to find food resources, while some animals assemble in the shady environment, and some will be able to adapt and stay in the open spaces (Banul et al., 2018).

2.3.2 Mitigate climate change

The occurrence of global warming in a period is causing climate change. The world is getting warmer, and the rising of the sea level is an example of climate change (Adedeji et al., 2014). The disturbances such as logging, fire, herbivory, and windthrow affect the amount of carbon dioxide uptake by forest ecosystems (Yazaki et al., 2016). Carbon dioxide causes an increase in the level of greenhouse gases, resulting in global warming which is due to human activities (Shahzad, 2017). Greenhouse gases that emit from power generation and energy consumption contribute to global warming (Ranveer et al., 2015). Land use and deforestation contribute greenhouse gases (Onoja et al., 2011). Besides, exposure to unburnt residue gases causes harmful pollution and increases the temperature, causing extreme global warming (Bhattacharjee, 2010).

Forest fragments will still be able to store and sequester carbon, thus by protecting forest fragments can help mitigate climate change by reducing carbon dioxide emissions and increasing carbon sinks (Gross, 2020; Kettle & Koh, 2014). It also provides biodiversity and social benefits. Tree growths are influenced by land use and forest management changes, thus helping in the carbon sink (Kauppi et al., 2022). Trees store the sequestered carbon and absorb it in dead biomass and soil (Whitehead, 2019). In exchange, they carry out photosynthesis to release oxygen to the surrounding (Govindjee & Coleman, 1990). Trees

are only one way to reduce atmospheric carbon dioxide and would impact only if their structure is maintained (Rowntree & Nowak, 1991).

Fresh air provided by trees to the surrounding area balances the temperature. It is proven that the microclimate is affected by the air temperature associated with the humidity of the trees (Rashid & Al Junid, 2014). The reduction of trees meant they had less capacity to store carbon. As Luber & Prudent (2009) stated, forest fires significantly threaten air quality in rural areas since climate change affects the hydrologic cycle and causes drier conditions. Another way to prevent climate change is to increase the use of solar and wind besides planting trees (Govindasamy, 2014).

2.3.3 Prevent soil erosion

Soil erosion is a form of land degradation that causes the loss of nutrients (Mishra et al., 2022). Soil degradation refers to the soil's quality that is affected due to land misuse and mismanagement (Lal, 2015). For example, timber harvesting causes soil loss, affecting ecosystems and local communities (Wenger et al., 2018). The anchoring effect of the vegetation roots involves the interaction between the sliding and stable part of the soil (Wang et al., 2020). Human activities, climate change, and other disturbances influence the landscape's shallow landslides (Cohen & Schwarz, 2017). Rainfall and surface runoff cause the soil to be poorly structured, thus, causing soil erosion (Remaury et al., 2019). Soil compaction and soil structure loss caused by heavy farming machinery degrade soil conditions that accelerate soil erosion (Balasubramanian, 2017).

Meanwhile, soil erosion is a process of topsoil shifting from the land surface caused by heavy wind or rain (Balasubramanian, 2017). Mahmoudzadeh (2007) states that climatological conditions, mainly rainfall and temperature, are fundamental and influential

for soil erosion trends. Water causes soil erosion during heavy rain with continuous rainfall as it removes the topsoil (Saroja & College, 2017). Tree's roots anchoring the soil help to stabilise it from soil movement (Hairiah et al., 2020). Roots' strength and diameter are important factors influencing the stability of the soil (Hairiah et al., 2020). Planting trees on lower slopes also helps slope stability, reducing erosion (Wang et al., 2020). Therefore, vegetation cover secures the soil surface and controls erosion (Adhikary, 2020).

Less vegetation cover causes soil erosion in an area, and the soil can slope down the higher ground with no vegetation cover to support it. Oorthuis et al. (2021) stated that vegetation increases soil strength through roots. Thus, the forest in the oil palm plantation can reduce soil erosion. The plant covers are proven efficient in restoring the degraded environment (Durán Zuazo et al., 2008). Dislich et al. (2015) reported that native vegetation should be maximised to improve the habitat functions of the oil palm plantation. Therefore, fragmented forests should be protected in the plantations, and forest clearing should be prevented to preserve forested areas.

2.4 Stand Structure in the Forest Edge

2.4.1 Species biodiversity in forest edge

Habitat fragmentation has consequences for both plants and animals, leading the animal species and vegetation to become endangered and extinct (Mullu, 2016). Some animal species inhabit the larger, less isolated patches, and some are highly sensitive to patch areas (Prugh et al., 2008). The corridor affects plant-animal interactions as the seed dispersion in the forest patches facilitates the movement of animals (Tewksbury et al., 2002). The interaction shows that some vegetation and animals survive in the isolated forest.

Herbaceous species, invasive plants, and species-specific insect pathogens tend to interact with the drawback of forest restoration of the slow canopy closure (Ruzicka et al., 2017). Herbs, shrubs, and tree seedlings are distributed at the forest edges (Matlack, 2018). For example, ferns like *Blechnum orientale* and herbs named *Lithospermum latifolium* can be found at the forest edge (Enoki et al., 2014; Chapman et al., 2015). Invasive species perform better in forest succession as they have rapid growth responses (Dillon et al., 2018). However, they are a threat to biodiversity and always occur in forest patches (Yates et al., 2004).

The differences in microclimates in the forest edges are important for small animals, for example, insects (Magura et al., 2001). The edge effect associated with forest fragmentation affects the flying insects as they have a higher abundance in the forest edge, and some of the individual species remain in the interior forest (Fowler et al., 1993). Besides the microclimate alterations, the size and shapes of patches and boundaries affect the movement of the insects in the forest (Collinge & Palmer, 2002).

Small mammals, arboreal animals, prefer to stay in a forest farther than the edges (Rosa et al., 2018). Birds are not influenced by the edge effect as long as they can access the resource distribution in the forest edge and interior (Bereczki et al., 2015). Meanwhile, some wide-ranging animal species prefer moving along the forest edges and through corridors, although it is unsuitable for permanent habitat (Lidicker, 1999).

2.4.2 Plant species composition in forest edge

Plant species in the forest edge usually consist of saplings and young trees. Seedlings establishment was found at the forest edges due to the light factor (Khanna, 1998). The term sapling is used to describe young trees, with seedlings being the smaller trees that are not

yet established (Kerr & Mackintosh, 2012). Helms (1998) defined a sapling as a small tree larger than a seedling but smaller than a pole. According to Marquis (1994), sapling is a young tree between 1.3 and 15 cm in diameter at 1.3 m above ground level. However, Kerr et al. (2002) sapling is a small tree with DBH less than 7 cm. A recent definition of a sapling is a small tree with DBH between 5 and 10 cm, while the DBH of a pole or young tree is between 12 and 18 cm (Megalos et al., 2018). Saplings are recognised as small trees with well-defined branches and stems. They are also less affected by grass competition and less vulnerable to herbivores than seedlings (Flory & Clay, 2010).

The survival of certain seedlings from the edge effect shows that it influences forest regeneration (Benítez-Malvido et al., 2018). Besides, pioneer species are commonly distributed within the forest edge. Native pioneer species increase rapidly along the forest edges (Santos et al., 2012). The light-demanding pioneer species are in the dominant positions at the forest edges (Wiström & Nielsen, 2014). *Elateriospermum tapos* is a pioneer species found at the forest edge (Yansen & Deseline, 2020), as well as *Macaranga* spp. (Koter et al., 2019) and *Pternandra* spp. (Ngo et al., 2017). Pioneer species are fast-growing trees in order to enhance the canopy closure (Charles, 2020). Besides, they can live in the forest gap and endure the open spaces (Goodale, 2014). In addition, pioneer species can adapt to high temperatures (Gbètoho et al., 2017). The growth of the pioneer species contributes to the forest community's regeneration (Vieira et al., 2021).

Meanwhile, *Shorea* spp. of the dipterocarps can be found occurring at the forest edge (Khaniya & Shrestha, 2020). Besides, the distribution of *Vatica* spp. in dipterocarp forests is common, for example, *Vatica nitens* is found in hill dipterocarp forests, *Vatica sarawakensis* is found in upper dipterocarp forests, and some other *Vatica* spp. are found at

the lowland dipterocarp forest (El-Taguri & Latiff, 2020). The survival of dipterocarps is crucial as they affect the forest's structure and function (Brearley et al., 2017).

2.4.3 Plant differences between forest edge and forest interior

Shrubs and ferns occurred at the forest edge (Eldegard et al., 2015). Ferns easily adapt to disturbances and store toxins in the environment (Mehltreter et al., 2010). Invasive plants can occur at the forest edge and interior but are denser at the edge (Yates et al., 2004). Plants in the forest edge and interior do not differ much, but they are different in terms of the number of stems distributed in the forest. Forest interior has high tree density but does not differ much compared to forest edge due to the factor of edge effect (Kacholi, 2014). Plant composition in the fragmented forest, which affects the forest edge and forest interior, depends on the fragments' shape and the microclimate affecting the forest (Hill & Curran, 2003).

Dipterocarpaceae is widely distributed in Malaysia and is Malaysia's most dominant tree species in the lowland forest (Saw & Sam, 2000). Meanwhile, Euphorbiaceae is among the most diverse families in the lowland dipterocarp forest, where *Elateriospermum tapos* is the most common species to be found in the forest (Kochummen et al., 1990; Norazlinda et al., 2021). The highest species number of Dipterocarpaceae and Euphorbiaceae shows the variations of the species distribution and their abundance in the forest (Rahmad et al., 2020).

Elateriospermum tapos is a monotypic species in the family Euphorbiaceae known as Kelampai or Buah perah and commonly found in Borneo, Peninsular Malaysia, Thailand, and Sumatra tropical rainforest (Van Sam & Van Welzen, 2004). This species distributes from the forest edge to the forest interior (Razali et al., 2014; Yansen & Deseline, 2020). In addition, *Pternandra* sp. is found occurring at the forest edge as it was affected due to human

disturbances (Asyraf et al., 2012). *Macaranga* sp. and *Palaquium* sp. are the pioneer species that occur in the edge-interior forest (Asanok et al., 2012; Astiani et al., 2018). It shows *Macaranga* sp. and *Palaquium* sp. can be found at the forest edge and interior.

The species composition and the abundance or dominance of a specific type of species may indicate the performance of the forest edge in terms of growth and advancement towards a mature stage. A high abundance of trees that show advanced regeneration, such as *Lithocarpus*, *Palaquim*, *Canarium* and *Dipterocarpus* in light canopy, warm and high light intensity stands indicating a steady growth performance as it gradually resembles the species composition of mature stands (Norden et al., 2009; Mancera et al., 2013). In contrast, if pioneer species, especially grasses, dominate the stand, even after decades of abandonment, this may indicate retarded forest regeneration, possibly due to intense clearing in the past (de Jong et al., 2001; Mancera et al., 2013).

2.5 Definition of Methods Used

There were eleven formulas of the methods used in this study. Firstly, the vegetation structure was determined by tree density, basal area (BA), tree distribution by diameter class, and aboveground biomass (AGB). Besides, Family Importance Value (FIV) and Importance Value Index (IVI) were used to determine the species composition of this study. Lastly, the species diversity indices used in this study were the Shannor-Wiener index, species evenness, species richness, Simpson Diversity index, Morisita index, and Jaccard's Similarity Coefficient.

2.5.1 Vegetation structure

Tree density, BA, diameter class distribution and AGB were defined to show their functions in this study. Tree density or frequency of trees is generally reported as the number

of trees found per hectare (Fatehi et al., 2017). Next, the BA of a tree is the average amount of an area occupied by tree stems (Hédli et al., 2009). For the diameter class distribution of forest edge and forest interior, the approach developed by De Cáceres et al. (2013) enables flexible definition and calculation of the dissimilarity between forest stands. Lastly, AGB was defined as biomass, the dry mass of live or dead components of woody plants like trees, expressed as AGB per hectare (Duncanson et al., 2021).

2.5.2 Species composition

As for species composition, Family Importance Value (FIV) was defined as a summation of relative dominance (Rbdo), relative diversity (Rdi), and relative density (Rde) (Mori et al., 1983). The value of FIV ranges from 0 to 300. Relative dominance (Rbdo) is used to calculate the overall BA of each family in the area. Relative diversity (Rdi) measures the species value of all families in the area. Relative density (Rde) is important to identify the number of stems for each family in the forest measured. The Rbdo, Rdi, and Rde values in the FIV formula were expressed in percentage. The larger the FIV, the more dominant the family.

Meanwhile, the ecological importance of each tree species is expressed as the Importance Value Index (IVI). The value of IVI ranges from 0 to 300. It is to determine the dominance of each species as well as their abundance. The larger the importance value (IV), the more dominant a species. The IVI of a taxon is defined by Curtis and McIntosh (1950) as the sum of relative density (Rf), relative dominance (Rd), and relative frequency (Rf). Relative density (Rf) is used to show the density of the tree species in the plot area. However, high relative density does not usually have a higher number in the relative dominance, and the species with the least number is possible to obtain a higher relative density. Relative

dominance (R_d) is important for determining the most tree species in the area. Lastly, relative frequency (R_f) determines the total number of each species shown in percentage. These variables are crucial in deciding the IV.

2.5.3 Species diversity indices

Firstly, the Shannor-Wiener index measures species diversity. It was calculated with a few species and the total number of all species (Omayio & Mzungu, 2019). The index values are between 0 – 5.0. The values above 3.0 indicate that the habitat structure is stable and balanced, whereas the values under 1.0 indicate the degradation of the habitat structure.

Next, species evenness is a measure of biodiversity which quantifies how equal the community is. It is calculated by the Pielou index (1966). Pielou index measures the species diversity and richness as they depend on each other (Jost, 2010). The value of the Shannon index is divided by the natural logarithm ($\ln$)(S). The value (S) is represented as the total number of species. The constraint on E is 0 – 1; zero indicates no evenness when most trees belong to a few species, while 1 indicates complete evenness when most species are equally abundant (Smith & Wilson, 1996). Meanwhile, species richness is the number of species per unit area (Brown et al., 2007). It was determined based on the Margalef index. It has no limit value and showed a variation depending upon the total number of species. It can be used to compare sites (Brower et al., 1998).

Simpson index measures the degree of concentration when individuals are classified into types. The Simpson diversity index was determined using the total number of species and the total number of organisms of all species. It is often used to quantify the biodiversity of a habitat. It is considered the number of species presented and the abundance of each species. Shannon-Wiener index measures random species within the study site to assess the

species richness and fair amount of distribution of the species, meanwhile, the Simpson index emphasises the number of species within the study site (Azanza et al., 2005).

The Morisita index is used to measure the dispersion of plants. It is a method to identify the spatial distribution pattern of vegetation (Hayes & Castillo, 2017). If the dispersion was random, the Morisita Index was approximately 1.0; if perfectly uniform, the Morisita Index approximates 0; and if maximally aggregated, the Morisita Index equals the number of quadrats sampled.

Lastly, Jaccard's similarity coefficient is a statistical tool used to compare the similarity and diversity of the data collected. Jaccard's index measured the similarity between finite sample sets (Real & Vargas, 1996). The coefficient ranges from 0 to 1, and the closer to 1, the more similar the two data sets. The index Jaccard's similarity coefficient was used to identify the similarities of tree species between forest edge and forest interior.

2.6 High Conservation Value Forest (HCVF)

The forest with small patches must be preserved and conserved by the oil palm companies and estates to recognise them as having HCV forest status (Edwards et al., 2012). As the oil palm plantation surrounds the forest, it is important to recognise the forest as HCV as an approach to managing it. Thus, the oil palm companies and estates should prioritise the Roundtable on Sustainable Palm Oil (RSPO) and Malaysian Sustainable Palm Oil (MSPO) certifications as they contribute to conservation efforts and sustainability management (Nasir et al., 2020). Besides, one of the indicators mentioned is practising regeneration and restoration to avoid soil erosion (RSPO, 2007). Moreover, to improve the accessibility towards the sustainability of the environment, the MSPO certification scheme functions as an important instrument, especially for smallholders (Yap et al., 2021).

The concept of High Conservation Value Forest (HCVF) was initially developed by Forest Stewardship Council (FSC) for the purpose of forest management certification (Brown & Senior, 2014). The forest managers must identify any High Conservation Values (HCVs) within their forest management units and manage them to maintain or enhance the identified values under FSC certification (Jennings & Jarvie, 2003). Table 2.1 shows the list of each HCV definition by HCV Malaysia Toolkit (2018) and examples for each HCV.

Table 2.1: List of HCV definitions and examples

HCV	Definitions
1	<u>Biological diversity</u> Forest areas containing significant concentrations of biological diversity (endemic species, and rare, threatened or endangered (RTE) species) at global, regional, or national levels. Example: Hyper-endemic species named <i>Hopea subalata</i> (merawan kanching) from Kanching Forest Reserve in Selangor (Chua et al., 2004).
2	<u>Landscape-level ecosystem and mosaics</u> Forest areas containing globally, regionally, or nationally significant large landscape-level ecosystems and ecosystem mosaics and containing viable populations of most naturally occurring species in natural patterns of distribution and abundance. Example: Tropical rainforest ecosystem of Heart of Borneo (Brunei Darussalam, the Malaysian states of Sabah and Sarawak, and five Indonesian provinces in Kalimantan) where HCV is assessed for forest management certification (HCV Malaysia Toolkit, 2018).
3	<u>Ecosystems and habitats</u> Forest areas containing rare, threatened or endangered ecosystems, habitats or refugia. Example: Peat swamp forest is listed as a vulnerable ecosystem (under wetland) in National Policy on Biological Diversity (2016-2025).
4	<u>Ecosystem services</u> Forest areas containing basic ecosystem services in critical situations including protection of water catchments and erosion control of vulnerable soils and slopes. Example: Providing water supply for rural communities in hilly, forested landscapes using Gravity Fed System (GFS) located in the headwaters, on steep slopes with forest cover (HCV Malaysia Toolkit, 2018).
5	<u>Community needs</u> Forest areas with fundamental sites and resources for local communities or indigenous people basic necessities. Example: Water supply for agricultural use such as rice cultivation (HCV Malaysia Toolkit, 2018).
6	<u>Cultural values</u> Forest areas with significant sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred according to the local communities or indigenous peoples' traditional cultures. Example: Traditional practice of Sabah indigenous people where fish stock is conserved in the rivers at various degrees (Foo & Noor, 2012).

In summary, the purpose of the HCVF is where the forest area is required to maintain or enhance a High Conservation Value (Jennings & Jarvie, 2003). The forest area in this study was gazetted as HCV 4, thus, the forest area emphasises the basic ecosystem services.

2.7 IUCN Red List Categories

The International Union for Conservation of Nature's Red List of Threatened Species (The IUCN Red List) is the critical health indicator of the world's biodiversity where it provides sources on the conservation status of animal, fungi, and plant species (IUCN, 2022). The species conservation status categories in the IUCN Red List comprise Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) and Least Concern (LC). Some species can be assigned as Data Deficient (DD) and Not Evaluated (NE). The IUCN Red List categories were referred and elaborated according to the Standards and Petitions Working Group (2006) in Table 2.2.

Table 2.2: IUCN Red List categories

Red List Categories
<u>Extinct (EX)</u> A taxon is considered Extinct, if there is no reasonable question that the last individual of a taxon has died. • A taxon is presumed Extinct if no individual can be found after thorough searches in known and/or anticipated habitat at suitable times (seasonal, annual), throughout its historical range.
<u>Extinct in the Wild (EW)</u> A taxon is Extinct in the Wild when it has only been observed to persist in cultivation, captivity, or as a naturalised population (or populations) located far outside of its former range. • It is also presumed to be Extinct in the Wild if no individual can be found after thorough searches.
<u>Critically Endangered (CR)</u> A taxon is considered to be facing an extremely high risk of extinction in the wild when the evidence shows that it meets any of the criteria A to E for Critically Endangered.
<u>Endangered (EN)</u> A taxon is considered to be facing a very high risk of extinction in the wild as the evidence shows that it meets any of the criteria A to E for Endangered.
<u>Vulnerable (VU)</u> A taxon is Vulnerable when it is considered to be facing a high risk of extinction in the wild as the evidence shows that it meets any of the criteria A to E for Vulnerable.
<u>Near Threatened (NT)</u> A taxon is Near Threatened when it is close to qualifying for or is likely to qualify for a threatened category in the near future as it has been assessed against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable.
<u>Least Concern (LC)</u> A taxon is Least Concern when it has been evaluated as widespread and abundant taxa and does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened.
<u>Data Deficient (DD)</u> A taxon is Data Deficient when there is lack of information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status. However, it is not considered as a threat category.
<u>Not Evaluated (NE)</u> A taxon is Not Evaluated when it is not yet been assessed.

Meanwhile, some species are considered Conservation Dependent (CD) or lower-risk species (IUCN, 2022). A species is a Conservation Dependent if the conservation-management measures outlined in the species' recovery plan address challenges that need constant management since they cannot be removed (Scott et al., 2010). In addition, the Green Score of the species is anticipated to change over the next ten years, based on the conservation impact metre, which gauges the effects of ongoing conservation efforts (IUCN, 2021).

Meanwhile, some species are endemic to certain areas. Endemism describes a species' unique presence in a certain geographic region (Fattorini, 2017). For example, *Eusyderoxylon zwageri* (Borneo ironwood) is known to be endemic to Asian forests such as Malaysia, Indonesia, Brunei, and the Philippines (Md-Isa et al., 2021). Besides, *Gluta curtisii* is an endemic species found in Peninsular Malaysia (Khairil, 2011). Endemic species have a constrained geographic range, thus, poorly dispersing species are likely to be the ones to become extinct first (Anderson, 1994; Burlakova, 2011). Therefore, the endemic species must be conserved to prevent extinction (Kraus et al., 2023).

2.8 Chapter Summary

This chapter explains the definition of the fragmented forest and how it is formed. The impacts of fragmentation, namely edge effect, population isolation, and ecosystem deterioration, were also discussed, including species composition in the forest edge. It is important to keep fragmented, healthy, conserved biodiversity, mitigate climate change, and prevent soil erosion. Besides, the formulas used in this study were defined and explained. The establishment and purpose of HCVF have been elaborated on in this chapter. Lastly, the IUCN Red List categorised were listed, including data deficient and not evaluated species.

CHAPTER 3

METHODOLOGY

3.1 Study Area

This study was carried out in an oil palm plantation located at 18 km off kilometre 115, Bintulu-Miri road, Suai, Miri, Sarawak, run by Saremas 1 Estate, a wholly owned subsidiary of Wilmar PPB Oil Palms Berhad. The study site is a fragmented forest located at N3°34'00.76", E113°46'12.72" with an area of approximately 116.28 ha and surrounded by oil palm plantations (Figure 3.1). The forest type is a lowland mixed dipterocarp forest that had been selectively logged, and no logging has been carried out since 1994. Currently, the fragmented forest has been gazetted as a HCV 4 area by the plantation company (Figure 3.2). Under HCV 4, it is a forest area that provides basic ecosystem services in critical situations, including protection of water catchments and control of erosion (HCV Malaysia Toolkit, 2018). The terrain is undulating, ranging from 45 to 75 m a.s.l, receiving 2,890 - 3000 mm of rainfall throughout the year with a daily temperature range of 24-31°C (Jana & Jusoh, 2021).

3.2 Field Sampling

Eight transect lines, 220 m in length, were established from the forest edge zone into the interior of the fragmented forest. Field sampling was conducted in selected areas within the designated HCV forest, where the transects were enumerated in accessible locations only. Some of the areas were not accessible due to rugged terrain. Plot sampling was conducted using 20 x 20 m plots, and six plots were established in each transect (Figure 3.3). The first three 20 x 20 m sampling plots within the first 100 m transect line were identified

as forest edge zone, followed by another three plots representing the forest interior (Laurance et al., 2007). A total of eight transects were established, which follows that 24 plots (0.96 ha) in each forest edge and interior were enumerated (Figure 3.3).

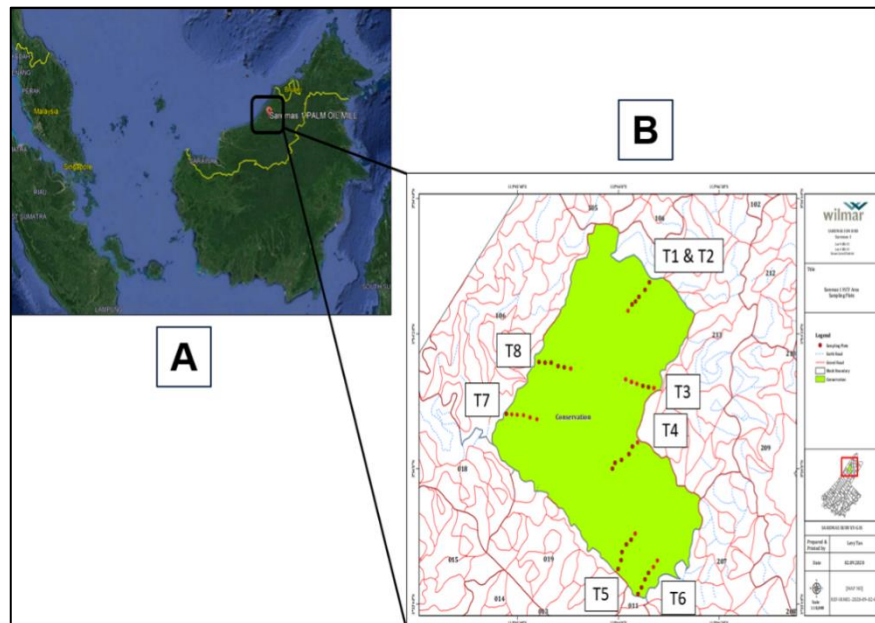


Figure 3.1: Location of the study site. (A) Google map of Malaysia; (B) Survey transects (T1 to T8) within the forest edge and forest interior



Figure 3.2: Signages showing the study site is a HCV 4 area



Figure 3.3: The abrupt forest edge of the study area

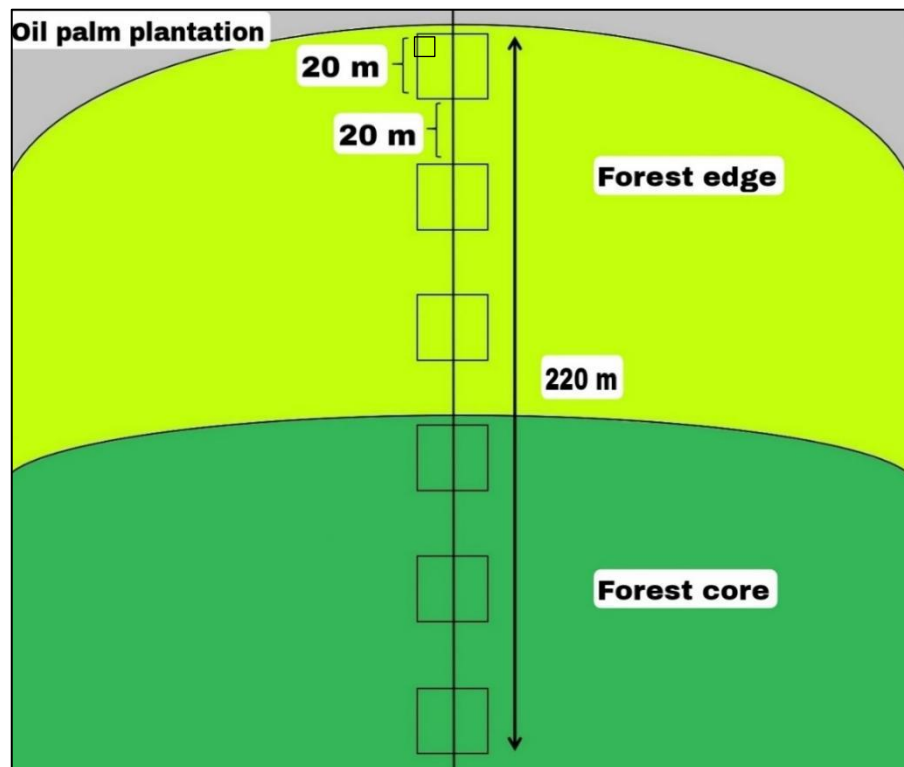


Figure 3.4: Sampling design. Placement of the 20 x 20 m along a transect within the forest edge and mature forest stand at the study site

All plots were marked and numbered, and red-coloured ribbon was used as a border marker placed in the corners of each plot. Slope corrections were made for horizontal distances. All standing trees with $DBH \geq 5$ cm were enumerated in each plot of 20 x 20 m. A diameter tape was used to measure tree DBH (i.e., 1.30 m above ground level) over bark to the nearest cm. Total tree height was estimated using trigonometry principles. Suunto Clinometer was used to determine the slope or gradient in percent (%) above and below the eye level of an observer. A range finder was used to measure the horizontal distance of the tree to the observer. The tree height was calculated as the combined percent (%) of above and below the eye multiplied by the horizontal distance.

All enumerated trees were identified based on observing the trees' bark, slash, and leaf characteristics with the help of UNIMAS staff. The limitation in identifying the species was due to the lack of sources used to identify the species during the field sampling. Unidentified tree species were named up to the genus level. Detailed identification of tree species name were further carried out in UNIMAS, such as the species common and scientific name as well as their authors. For example, some of the identification of species names were searched from book source like "A Checklist of the Trees of Sarawak" by Anderson (1980) and online sources such as Malaysia Biodiversity Information System (myBIS).

3.3 Vegetation Structure

3.3.1 Determination of tree density

The total tree frequency depends on the area sampled. Thus, the total number of trees per hectare and the total number of the area sampled is important in measuring tree density. The tree density was assessed separately according to $DBH \geq 5$ cm and $DBH \geq 10$ cm in

the forest edge and interior. It can be calculated using Equation 3.1 based on the data collected from the study site:

$$\text{Trees frequency ha}^{-1} = \frac{\Sigma \text{Tree} \times 10000}{\text{Total area sampled}} \quad \text{Equation 3.1}$$

3.3.2 Determination of basal area

According to the given formula at methodology, BA measures the BA of total species per hectare within the total area sampled. It is also the total cross-sectional area of all stems in a stand measured at breast height. The BA of the individuals was analysed with DBH ≥ 5 cm and DBH ≥ 10 cm in the forest edge and forest interior. The BA was calculated using the following Equation 3.2, Equation 3.3, and Equation 3.4:

$$\text{BA} = 0.00007854 D^2 (\text{m}^2) \quad \text{Equation 3.2}$$

Where,

BA = basal area (m^2)

D = diameter at breast height (cm)

Calculation of basal area per ha (m^2/ha) for each tree was calculated as follows;

$$\text{Basal area (BA) per hectare (m}^2/\text{ha)} = \frac{\Sigma \text{BA} \times 10,000}{\text{Total area sampled}} \quad \text{Equation 3.3}$$

$$\text{Relative BA} = \frac{\text{Basal area}}{\text{Total basal of all species}} \quad \text{Equation 3.4}$$

3.3.3 Determination of tree distribution by diameter class

The classification of tree diameter into classes presents individual size distribution (De Cáceres et al., 2013). Trees enumerated in the 20 x 20 m plots with DBH ≥ 5 cm were classified into diameter classes. The measured DBH sizes of trees were allocated into 19 diameter classes (in cm) and arranged in 5 cm intervals, 5.0–9.9, 10.0–14.9, 15.0–19.9, 20.0–24.9, 25.0–29.9, 30.0–34.9, 35.0–39.9, 40.0–44.9, 45.0–49.9, 50.0–54.9, 55.0–59.9, 60.4–6–.9, 65.0–69.9, 70.0–74.9, 75.0–79.9, 80.0–84.9, 85.0–89.9, 90.0–94.9, and 95.0–99.9. The categorization into diameter class was created separately for the forest edge and forest interior. Kinjanjui et al. (2013) stated that tree size-class distribution aims to ascertain regeneration.

3.3.4 Determination of aboveground biomass (AGB)

The AGB of each tree was determined using the moist forest AGB equation (Chave et al. 2005). The AGB was calculated according to the equation as shown in Equation 3.5 below:

$$AGB = \rho \times \exp (-1.499 + 2.148 \ln(D) + 0.207 (\ln(D))^2 - 0.0281 (\ln(D))^3) \quad \text{Equation 3.5}$$

AGB = Dry weight aboveground biomass (kg/tree)

ρ = Basic wood density (in g/cm³)

D = Diameter at breast height (cm)

Wood densities of all species were taken from the wood density database on the website of the International Council for Research in Agroforestry (ICRAF). All air-dry wood

density (10 – 18% moisture content) was converted to basic wood density by multiplying wood densities by a value of 0.861 (Vieilledent et al. 2018).

3.4 Species Composition

3.4.1 Determination of Family Importance Value (FIV)

The FIV was determined by the summation of the percentages of the calculation from Equation 3.6, Equation 3.7, Equation 3.8, and Equation 3.9 below:

$$\text{FIV} = \text{Rbdo} + \text{Rdi} + \text{Rde} \quad \text{Equation 3.6}$$

Where,

$$\text{Relative dominance (Rbdo)} = \frac{\text{Total basal area of a family}}{\text{Total basal area of all families}} \times 100 \quad \text{Equation 3.7}$$

$$\text{Relative diversity (Rdi)} = \frac{\text{No. of species of family}}{\text{Total no. of species of all families}} \times 100 \quad \text{Equation 3.8}$$

$$\text{Relative density (Rde)} = \frac{\text{No. of individuals of family}}{\text{Total no. of individuals of all families}} \times 100 \quad \text{Equation 3.9}$$

3.4.2 Determination of Importance Value Index (IVI)

The IVI was calculated by the summation of the percentages of relative density, relative dominance, and relative frequency from the Equation 3.10, Equation 3.11, Equation 3.12, and Equation 3.13 below:

$$\text{IVI} = \text{Re} + \text{Rd} + \text{Rba} \quad \text{Equation 3.10}$$

Where,

$$\text{Relative frequency (Rf)} = \frac{\text{Frequency of species}}{\text{Sum of frequency values for all species}} \times 100 \quad \text{Equation 3.11}$$

$$\text{Relative density (Rd)} = \frac{\text{No. of individuals of species}}{\text{Total no. of individuals of all species}} \times 100 \quad \text{Equation 3.12}$$

$$\text{Relative coverage (Rba)} = \frac{\text{Total basal area of a species}}{\text{Total basal area of all species}} \times 100 \quad \text{Equation 3.13}$$

3.5 Species Diversity Indices

3.5.1 Determination of Shannon-Wiener index (H')

The species diversity was determined using Shannon-Wiener index. The number of species represents as N_i , meanwhile, the total number of all species represents N . Shannon & Wiener (1997) came up with a formula from Equation 3.14:

$$H' = -\sum p_i \log p_i \quad \text{Equation 3.14}$$

Where,

H' = Shannon index

N_i = importance value of a species

N = total of importance values for all species

P_i = importance of probability for each species $\left(\frac{N_i}{N}\right)$

3.5.2 Determination of Species Evenness

Pielou species evenness was calculated using the formula from Equation 3.15 below:

$$E = \frac{H'}{H_{\max}} = \frac{H'}{\ln(S)} \quad \text{Equation 3.15}$$

Where,

H' = Shannon index

S = total number of species

$\ln$ = Natural logarithm

3.5.3 Determination of Species Richness

Species richness was determined based on the Margalef Index using the formula in Equation 3.16. The total number of species (S) and total individuals (N) recorded was used to determine the index.

$$D_{Mg} = \frac{S - 1}{\ln(N)} \quad \text{Equation 3.16}$$

Where,

DMg = Margalef diversity index

S = Number of species recorded

N = total number of individuals recorded

3.5.4 Determination of Simpson Diversity Index (E')

The constraint of the Simpson diversity index is 0 – 1; zero indicates low diversity, whereas 1 is high diversity. The calculation of Simpson (1949) used the Equation 3.17 below:

$$D = 1 - \frac{\sum n(n - 1)}{N(N - 1)} \quad \text{Equation 3.17}$$

Where,

D = Simpson diversity index

n = the total number of organisms of a particular species

N = the total number of organisms of all species

3.5.5 Determination of Morisita Index (Id)

The total number of individuals counted in all quadrats (N) and the number of quadrats (n) are important factors in determining Morisita's Index. The calculation of the Morisita index was based on Equation 3.18 below:

$$I_d = n \left[\frac{\sum x^2 - N}{N(N - 1)} \right] \quad \text{Equation 3.18}$$

Where,

Id = Morisita index of dispersion

N = Total number of individuals counted in all quadrats

n = Number of quadrats

$\sum x^2$ = Sum of squares of the numbers of individuals per quadrat

3.5.6 Determination of Jaccard's Similarity Coefficient (Cj)

Jaccard's similarity coefficient was determined according to Equation 3.19:

$$C_j = \frac{a}{a + b + c} \quad \text{Equation 3.19}$$

Where,

Cj = Jaccard's similarity coefficient

a = number of species in both diameter class X and Y

b = number of species in diameter class X

c = number of species in diameter class Y

3.6 Statistical Analysis

T-test was the statistical analysis used in this study. It is a statistical test comparing the means of two groups (Dutilleul et al., 1993). This study used it to compare the mean values of the tree density, BA, AGB, and diversity indices between the forest edge and forest interior. This statistical test was performed to check the validation of our results.

The analyses were performed using Microsoft Excel, where the type of T-test used was equal variances between the data sets (Millar, 2001). The P values from the T-test larger than 0.05 ($P > 0.05$) show no significant difference between the means; however if the values show a smaller number where $P < 0.05$, they show significant differences between means (Verhagen et al., 2004).

3.7 Species Conservation Status

Each individual in the forest edge and interior with DBH ≥ 5 cm was assessed for their conservation status. The data for the species conservation status in HCV forest were searched and recorded according to the IUCN Red List. In addition, dipterocarp species conservation status was referred to the Red List of Bornean Endemic Dipterocarps by Bartholomew et al. (2021) and Sarawak Plant Red List by Julia et al. (2014). Meanwhile, non-dipterocarp species endemic to Borneo were listed based on previous research. Only the critically endangered, endangered, vulnerable, and near-threatened species were emphasised in this study.

3.8 Chapter Summary

This chapter explains the methodology of the study. The study area and field sampling techniques were described, and the location map and the distribution of transects and plots were illustrated. The determination of vegetation structure, family and species dominance, and species diversity indices were shown based on their formulas.

CHAPTER 4

RESULTS

4.1 Forest Stand Structure

The stand structure of the forest edge and the interior is described based on the number of trees or tree density, BA, tree distribution by diameter class, family and species composition, and AGB. The complete species list enumerated in all sampling plots is presented in Appendix A and Appendix B. The T-test analysis results are summarised in Appendix C.

4.1.1 Tree density

The structural characteristics of the forest edge and interior in the 24 plots (0.96 ha) are summarised in Table 4.1. A total of 988 and 1184 individual stems with $DBH \geq 5$ cm were recorded from the forest edge and interior, respectively. The forest interior shows a significantly higher number of trees with $DBH \geq 5$ cm. Meanwhile, fewer trees were found with $DBH \geq 10$ cm in both forest zones, with 609 and 651 individual stems in the forest edge and interior, respectively. The results showed that tree density in the forest interior was higher than in the forest edge. The number of species in the forest edge was significantly lower (274) than in the interior (318). Statistically, the forest edge and the interior did not show significant differences in the number of families and genera.

Table 4.1: Structural characteristics of forest edge and interior of a fragmented forest

Variable	Value	
	Forest edge	Forest interior
Number of trees/ha (DBH $\geq$ 5 cm)	988 ^{a*}	1184 ^b
Number of trees/ha (DBH $\geq$ 10 cm)	609 ^a	651 ^a
Basal area (m ² /ha) (DBH $\geq$ 5 cm)	28.1 ^a	29.3 ^a
Basal area (m ² /ha) (DBH $\geq$ 10 cm)	26.3 ^a	26.9 ^a
Number of species	274 ^a	318 ^b
Number of genera	137 ^a	126 ^a
Number of families	59 ^a	52 ^a

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

4.1.2 Basal area

The BA of trees in the forest edge was low compared to the forest interior (Table 4.1). Further analysis of the tree BA according to the family shows that the Dipterocarpaceae family recorded the highest BA for trees with DBH $\geq$ 5 cm (Table 4.2). Although Dipterocarpaceae BA in the forest interior is greater than the edge, the Euphorbiaceae BA is significantly higher in the forest edge. For trees with DBH $\geq$ 10 cm, the BA of Dipterocarpaceae is similar in both forest edge and interior (Table 4.3). Statistically, the BAs of Burseraceae and Lauraceae in the forest edge and the interior are similar except for Euphorbiaceae.

Table 4.2: Top five families with the greatest total BA of trees with DBH ≥ 5 cm

Family	Forest edge (m ² /ha)	Forest interior (m ² /ha)
Dipterocarpaceae	6.1 ^a	6.5 ^a
Euphorbiaceae	3.4	2.8
Lauraceae	2.0 ^a	1.9 ^a
Fabaceae	-	1.8
Burseraceae	1.7	-
Anacardiaceae	1.5 ^a	1.5 ^a

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

Table 4.3: Top five families with the greatest total BA of trees with DBH ≥ 10 cm

Family	Forest edge (m ² /ha)	Forest interior (m ² /ha)
Dipterocarpaceae	5.9 ^a	6.0 ^a
Euphorbiaceae	3.4 ^b	2.8 ^a
Burseraceae	1.6	-
Lauraceae	1.9 ^a	1.8 ^a
Annonaceae	1.1	-
Anacardiaceae	-	1.4
Sapotaceae	-	1.1

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

In terms of genera, the BAs for *Shorea* and *Macaranga* was greater in the forest edge than the interior for trees with DBH ≥ 5 cm (Table 4.4) and DBH ≥ 10 cm (Table 4.5). The BA of *Litsea*, *Elateriospermum*, and *Santiria* were also higher in the forest edge than in the interior. Although the BA values of the genera were higher in the forest edge, there was no significant difference ($P > 0.05$) between the forest zones.

Table 4.4: Top five genera with the greatest total BA of trees with DBH ≥ 5 cm

Genera	Forest edge (m ² /ha)	Forest interior (m ² /ha)
<i>Shorea</i>	5.5 ^a	4.9 ^a
<i>Macaranga</i>	1.6 ^a	1.2 ^a
<i>Litsea</i>	1.6 ^a	1.3 ^a
<i>Elateriospermum</i>	1.4 ^a	1.3 ^a
<i>Santiria</i>	1.3	-

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

Table 4.5: Top five genera with the greatest total BA of trees with DBH ≥ 10 cm

Genera	Forest edge (m ² /ha)	Forest interior (m ² /ha)
<i>Shorea</i>	5.3 ^a	4.6 ^a
<i>Macaranga</i>	1.5 ^a	1.1 ^a
<i>Elateriospermum</i>	1.4 ^a	1.2 ^a
<i>Santiria</i>	1.3	-
<i>Pternandra</i>	0.7	-
<i>Litsea</i>	-	1.2
<i>Adinandra</i>	-	1.1

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

The BA for species shows that *Elateriospermum tapos* recorded the highest BA in the forest edge and interior for both DBH ranges (Tables 4.6 & 4.7). *Shorea ovata* and *Shorea macroptera* BA were greater in the forest edge than in the interior for trees with DBH ≥ 5 cm. The BAs represented by *Macaranga triloba*, *Palaquium dasyphyllum*, and *Koompassia malaccensis* were only recorded in the forest interior for trees with DBH ≥ 5 cm. For trees with DBH ≥ 10 cm, *Santiria tomentosa* and *Pternandra multiflora* BAs are also dominant in the forest edge. After *Elateriospermum tapos*, *Adinandra acuminata* and *Macaranga triloba* BAs predominate in the forest interior. However, statistically, there is no

significant difference between the forest edge and forest interior in terms of the BA of tree species with $DBH \geq 5$ cm and $DBH \geq 10$ cm.

Table 4.6: Top five species with the greatest total BA of trees with $DBH \geq 5$ cm

Species	Forest edge (m ² /ha)	Forest interior (m ² /ha)
<i>Elateriospermum tapos</i> Blume	1.4 ^a	1.3 ^a
<i>Shorea ovata</i> Dyer ex Brandis	1.0	-
<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	-	0.7
<i>Palaquium dasyphyllum</i> Pierre ex Dubard	-	0.8
<i>Koompassia malaccensis</i> Benth.	-	0.8
<i>Shorea parvifolia</i> Dyer	-	0.6
<i>Shorea macroptera</i> Dyer	0.8 ^a	0.5 ^a
<i>Santiria tomentosa</i> Blume	0.7	-
<i>Pternandra multiflora</i> Cogn.	0.7	-

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

Table 4.7: Top five species with the greatest total BA of trees with $DBH \geq 10$ cm

Species	Forest edge (m ² /ha)	Forest interior (m ² /ha)
<i>Elateriospermum tapos</i> Blume	1.4 ^a	1.2 ^a
<i>Santiria tomentosa</i> Blume	0.6	-
<i>Pternandra multiflora</i> Cogn.	0.6	-
<i>Adinandra acuminata</i> Korth.	0.4	0.6
<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	-	0.8
<i>Palaquium dasyphyllum</i> Pierre ex Dubard	-	0.7

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

Figure 4.1 shows the bark of *Elateriospermum tapos*, meanwhile, Figure 4.2 shows the mature *Elateriospermum tapos* fruit with seeds. Both figures were captured during the field sampling.



Figure 4.1: *Elateriospermum tapos* tree locally known as Kelampai. It produces bluish-white latex when the bark is cut



Figure 4.2: The mature *Elateriospermum tapos* fruit with seeds

Figure 4.3 shows an individual of *Shorea ovata*, the largest tree among all the Shoreas found in the fragmented forest. It was found at the forest edge among the trees with $\text{DBH} \geq 5 \text{ cm}$.



Figure 4.3: *Shorea ovata* was the largest tree among all Shoreas recorded in the fragmented forest

4.1.3 Tree distribution by diameter class

The results of tree distribution by diameter class are shown in Figure 4.1. The number of individual stems decreased with the increasing diameter of trees. This distribution pattern is called the inverted-J or reverse-J curve (Meyer, 1952). Diameter class 5.0–9.9 cm had the greatest number of stems. This range of diameter is considered saplings, and pole size or

small trees are in the diameter class of 10.0-19.9 cm (Megalos et al., 2018). Both diameter classes, 5.0–9.9 cm and 10.0-19.9 cm illustrate that the tree saplings and small tree count are high. Subsequently, the distribution of trees shows a declining trend from the medium size trees and above. This is a usual trend in tropical forests indicating forest regeneration is good.

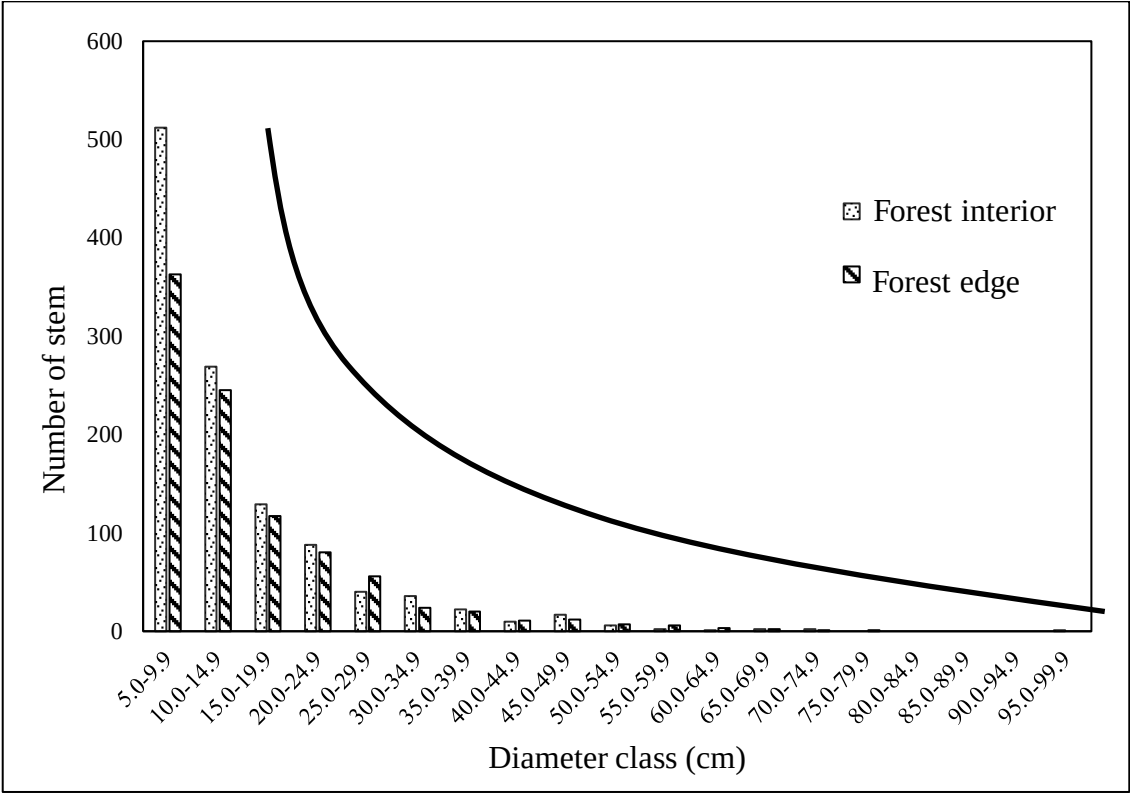


Figure 4.4: Diameter distribution of trees in the forest edge and interior

4.1.4 Floristics composition

4.1.4.1 Family, genera, and species composition

The top ten family composition of tree species in forest edge and interior with DBH ≥ 5 cm is shown in Table 4.8. Family Dipterocarpaceae recorded the highest number of trees (151 trees) in the forest edge, or 15.9% of the total tree enumerated. Euphorbiaceae and Lauraceae follow it with 117 trees (12.3%) and 64 trees (6.8%), respectively. Meanwhile,

Myrtaceae recorded 26 trees (2.7%) and was the least number of trees among the top ten families recorded.

In terms of species, Dipterocarpaceae is represented by seven genera and 34 species (12.4%). Euphorbiaceae and Lauraceae are represented by 10 genera, each with 21 (7.7%) and 22 (8.0%) species, respectively. The lowest number of species among the top ten families recorded were Sapotaceae and Melastomataceae, with only six trees (2.2%). Sapotaceae, Melastomataceae, and Myrtaceae are represented by two genera (1.5%).

Table 4.8: Top 10 dominant families in the forest edge and interior with DBH $\geq$ 5 cm

No.	Family	Genus		No. of species		No. of individuals	
		No.	%	No.	%	No.	%
Forest edge							
1.	Dipterocarpaceae	7	5.1	34	12.4	151	15.9
2.	Euphorbiaceae	10	7.3	21	7.7	117	12.3
3.	Lauraceae	10	7.3	22	8.0	64	6.8
4.	Burseraceae	3	2.2	9	3.3	61	6.4
5.	Myristicaceae	3	2.2	13	4.7	41	4.3
6.	Moraceae	3	2.2	12	4.4	40	4.2
7.	Sapotaceae	2	1.5	6	2.2	39	4.1
8.	Melastomataceae	2	1.5	6	2.2	36	3.8
9.	Annonaceae	6	4.4	15	5.5	35	3.7
10.	Myrtaceae	2	1.5	7	2.6	26	2.7
Forest interior							
1.	Dipterocarpaceae	6	4.8	45	14.2	243	21.4
2.	Euphorbiaceae	10	7.9	20	6.3	116	10.2
3.	Sapotaceae	4	3.2	15	4.7	77	6.8
4.	Lauraceae	12	9.5	22	6.9	69	6.1
5.	Anacardiaceae	7	5.6	12	3.8	58	5.1
6.	Burseraceae	3	2.4	10	3.1	42	3.7
7.	Fabaceae	5	4.0	7	2.2	41	3.6
8.	Myrtaceae	2	1.6	18	5.7	40	3.5
9.	Melastomataceae	2	1.6	6	1.9	39	3.4
10.	Phyllanthaceae	4	3.2	14	4.4	33	2.9

Results on the vegetation analysis in the forest interior also show Dipterocarpaceae recorded the highest number of stems in the forest interior for $DBH \geq 5$ cm with 243 stems (21.4%), followed by Euphorbiaceae with 116 stems (10.2%) and Sapotaceae with 77 stems (6.8%). The least number of stems recorded in Table 4.8 was Phyllanthaceae, with only 33 stems (2.9%). Euphorbiaceae and Lauraceae recorded the highest number of genera compared to Dipterocarpaceae in forest edge and interior. The least number of genera recorded in the forest interior were Myrtaceae and Melastomataceae, with only two genera (1.6%).

In terms of the number of species, Dipterocarpaceae recorded 45 species (14.2%) which is more than the forest edge, followed by Lauraceae with 22 species (6.9%). Lauraceae recorded a higher number of species but with a lower number of stems compared to Euphorbiaceae and Sapotaceae. Euphorbiaceae was third with 20 species (6.3%), higher than Sapotaceae, which only recorded 15 species (4.7%). Meanwhile, the least number of species recorded was Melastomataceae (6 species) with 1.9%.

The top 10 dominant families in the forest edge with $DBH \geq 10$ cm are shown in Table 4.9. Dipterocarpaceae recorded the highest number of trees (108 stems) with 18.5% of the total tree enumerated, followed by Euphorbiaceae (78 stems) and Burseraceae (41 stems) with 13.3% and 7.0%, respectively. Anacardiaceae had the least number of individuals (20 stems) at 3.4%.

Table 4.9: Top 10 dominant families in the forest edge and interior with DBH $\geq$ 10 cm

No.	Family	Genus		No. of species		No. of individuals	
		No.	%	No.	%	No.	%
Forest edge							
1.	Dipterocarpaceae	7	6.4	32	14.5	108	18.5
2.	Euphorbiaceae	8	7.3	18	8.1	78	13.3
3.	Burseraceae	3	2.8	9	4.1	41	7.0
4.	Lauraceae	8	7.3	17	7.7	35	6.0
5.	Annonaceae	5	4.6	13	5.9	27	4.6
6.	Moraceae	3	2.8	11	5.0	24	4.1
7.	Sapotaceae	2	1.8	6	2.7	22	3.8
8.	Theaceae	1	0.9	2	0.9	22	3.8
9.	Melastomataceae	1	0.9	3	1.4	21	3.6
10.	Anacardiaceae	7	6.4	8	3.6	20	3.4
Forest interior							
1.	Dipterocarpaceae	5	4.9	38	16.8	135	21.6
2.	Euphorbiaceae	8	7.8	15	6.6	68	10.9
3.	Lauraceae	9	8.8	17	7.5	41	6.6
4.	Sapotaceae	2	2.0	8	3.5	41	6.6
5.	Anacardiaceae	6	5.9	8	3.5	33	5.3
6.	Theaceae	1	1.0	3	1.3	24	3.8
7.	Polygalaceae	1	1.0	5	2.2	23	3.7
8.	Myristicaceae	4	4.0	12	5.3	22	3.5
9.	Burseraceae	3	2.9	9	4.0	19	3.0
10.	Moraceae	3	2.9	12	5.3	19	3.0

In terms of species, Dipterocarpaceae was represented by 32 species (14.5%) and the highest among the top 10 dominant families. Subsequently, Euphorbiaceae recorded the

second highest number of species (18 species) at 8.1%, followed by Lauraceae with 17 species (7.7%). Although Burseraceae recorded a higher number of stems, it has only three genera with nine species (4.1%). Theaceae recorded the least number of species (two species) at 0.9%.

For trees in the forest interior with $DBH \geq 10$ cm shows, Dipterocarpaceae is the dominant family with 135 stems (21.6%), more than what was recorded in the forest edge. This follows Euphorbiaceae with 68 stems (10.9%), Lauraceae and Sapotaceae with 41 stems (6.6%). The lowest number of trees recorded was 19 trees (3%) from the families Burseraceae, Moraceae, and Rubiaceae.

In terms of genera, Lauraceae recorded the highest number, with nine genera (8.8%). Although Dipterocarpaceae has the highest number of stems, it was only represented by five genera (4.9%). Another dominant genus was Euphorbiaceae with eight genera (7.8%) followed by Rubiaceae seven genera (6.9%). Family Theaceae and Polygalaceae were recorded as the lowest number of genera with only one genus (1%).

The highest number of species recorded was from the family Dipterocarpaceae, with 38 species (16.8%), a little bit more than the forest edge, followed by Lauraceae and Euphorbiaceae with 17 species (7.5%) and 15 species (6.6%), respectively. Myristicaceae and Moraceae show a high number of species however, they have low number of stems at 3.5% and 3.0%. Theaceae had the lowest number of species among the top ten families with only three species (1.3%).

4.1.4.2 Genera composition

Shorea was the most dominant genus in the forest edge with 108 trees (11.4%) for trees with $\text{DBH} \geq 5$ cm, followed by *Macaranga* and *Palaquium* with 45 trees (4.7%) and 37 trees (3.9%), respectively (Table 4.10). The lowest number of genera recorded among the top ten genera was *Polyalthia*, with 10 trees (1.1%). *Shorea* was recorded with the highest number of species, with 26 species (9.5%). The next highest number of species was from *Macaranga*, with nine species (3.3%), followed closely by *Litsea* and *Artocarpus*, where both genera recorded eight species (3%). Genera *Palaquium*, *Xanthophyllum*, *Knema*, *Myristica*, and *Polyalthia* were represented with five species (1.8%).

In the forest interior of trees with $\text{DBH} \geq 5$ cm, *Shorea* recorded the highest number of individuals with 155 trees (13.6%), followed by *Palaquium* and *Macaranga* with 71 trees (6.2%) and 48 trees (4.2%), respectively. *Adinandra* and *Syzygium* were the least number of trees among the top 10 genera, with 25 trees (2.2%). There are 30 species of *Shorea* in the forest interior. Other notable genera with high count were *Syzygium*, *Litsea*, and *Palaquium*, with 12 species (3.8%), 10 species (3.1%), and 11 species (3.5%), respectively.

A similar trend was observed for trees with $\text{DBH} \geq 10$ cm where *Shorea* recorded the highest number of individuals (Table 4.11), comprising 76 stems (13%). *Macaranga* and *Elateriospermum* follow it with 33 trees (5.6%) and 26 trees (2.4%), respectively. The genus *Dacryodes* was the lowest number, with 14 trees (1.8%). *Shorea* was represented by 24 species (10.9%), followed by *Macaranga* and *Litsea*, with eight species (3.6%) each. Although one species represents *Elateriospermum*, it has 26 trees in total.

Table 4.10: Top 10 dominant genera in the forest edge and interior with DBH $\geq$ 5 cm

No.	Genus	No. of species		No. of individuals	
		No.	%	No.	%
Forest edge					
1.	<i>Shorea</i>	26	9.5	108	11.4
2.	<i>Macaranga</i>	9	3.3	45	4.7
3.	<i>Palaquium</i>	5	1.8	37	3.9
4.	<i>Litsea</i>	8	3.0	34	3.6
5.	<i>Syzygium</i>	6	2.2	25	2.6
6.	<i>Artocarpus</i>	8	3.0	23	2.4
7.	<i>Diospyros</i>	6	2.2	22	2.3
8.	<i>Xanthophyllum</i>	5	1.8	18	1.9
9.	<i>Knema</i>	5	1.8	16	1.7
10.	<i>Myristica</i>	5	1.8	16	1.7
Forest interior					
1.	<i>Shorea</i>	30	9.4	155	13.6
2.	<i>Palaquium</i>	11	3.5	71	6.2
3.	<i>Macaranga</i>	8	2.5	48	4.2
4.	<i>Hopea</i>	5	1.6	44	3.9
5.	<i>Litsea</i>	10	3.1	43	3.8
6.	<i>Elateriospermum</i>	1	0.3	41	3.6
7.	<i>Pternandra</i>	3	0.9	35	3.1
8.	<i>Xanthophyllum</i>	6	1.9	31	2.7
9.	<i>Adinandra</i>	3	0.9	25	2.2
10.	<i>Syzygium</i>	12	3.8	25	2.2

The top 10 genera composition of trees with DBH $\geq$ 10 cm in the forest interior is shown in Table 4.11. *Shorea* recorded 15.4% of the total count with 96 stems, followed by

Palaquium as the second highest number of individuals, recording 6.2% (39 stems). *Litsea* and *Macaranga* consist of 29 stems (4.6%). *Artocarpus* was recorded with only 2.2% (14 stems), and it was the least number of individuals among the top ten genera. There are 27 species (11.9%) of *Shorea*, the highest count among the genera. *Litsea* recorded a higher number of species than *Palaquium* but had lesser stems. Only one species (0.4%) was recorded for *Elateriospermum* but was in the top seven in terms of the number of stems.

Table 4.11: Top 10 dominant genera in the forest edge and interior with DBH $\geq$ 10 cm

No.	Genus	No. of species		No. of individuals	
		No.	%	No.	%
Forest edge					
1.	<i>Shorea</i>	24	10.9	76	13.0
2.	<i>Macaranga</i>	8	3.6	33	5.6
3.	<i>Elateriospermum</i>	1	0.5	26	4.4
4.	<i>Santiria</i>	4	1.8	23	3.9
5.	<i>Adinandra</i>	2	0.9	22	3.8
6.	<i>Palaquium</i>	5	2.3	21	3.6
7.	<i>Pternandra</i>	3	1.4	21	3.6
8.	<i>Litsea</i>	8	3.6	20	3.4
9.	<i>Artocarpus</i>	7	3.2	18	3.1
10.	<i>Dacryodes</i>	4	1.8	14	2.4
Forest interior					
1.	<i>Shorea</i>	27	11.9	96	15.4
2.	<i>Palaquium</i>	7	3.1	39	6.2
3.	<i>Litsea</i>	9	4.0	29	4.6
4.	<i>Macaranga</i>	5	2.2	29	4.6
5.	<i>Adinandra</i>	3	1.3	24	3.8
6.	<i>Xanthophyllum</i>	5	2.2	23	3.7
7.	<i>Elateriospermum</i>	1	0.4	21	3.4
8.	<i>Hopea</i>	4	1.8	17	2.7
9.	<i>Pternandra</i>	3	1.3	15	2.4
10.	<i>Artocarpus</i>	7	3.1	14	2.2

4.1.4.3 Species frequency

The dominant species in frequency with DBH $\geq$ 5 cm is shown in Table 4.12. *Elateriospermum tapos* was the dominant species in the forest edge and interior, with 39 stems (4.1%) in the forest edge and 41 stems (3.6%), respectively. This species has more

stems in the forest interior compared to the forest edge. *Palaquium dasyphyllum*, *Hopea latifolia*, *Macaranga triloba*, and *Shorea acuminatissima* were only recorded in the forest interior in a high number. On the other hand, *Pternandra multiflora*, *Santiria tomentosa*, *Dryobalanops lanceolata*, *Adinandra acuminata*, *Gardenia tubifera*, *Litsea castanea*, *Parashorea parvifolia*, and *Vatica nitens* were only recorded in the forest edge.

Table 4.12: Top 10 dominant species in the forest edge and interior with DBH ≥ 5 cm

Rank	Species	Forest edge		Forest interior	
		Frequency	%	Frequency	%
1.	<i>Elateriospermum tapos</i> Blume	39	4.1	41	3.6
2.	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	-	-	33	2.9
3.	<i>Hopea latifolia</i> Symington	-	-	28	2.5
4.	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	-	-	26	2.3
5.	<i>Shorea acuminatissima</i> Sym.	-	-	26	2.3
6.	<i>Pternandra multiflora</i> Cogn.	24	2.5	-	-
7.	<i>Santiria tomentosa</i> Blume	23	2.4	-	-
8.	<i>Palaquium ridleyi</i> King & Gamble	19	2.0	19	1.7
9.	<i>Fordia coriacea</i> Dunn	-	-	19	1.7
10.	<i>Dryobalanops lanceolata</i> Burck	14	1.5	-	-
11.	<i>Adinandra acuminata</i> Korth.	13	1.4	-	-
12.	<i>Shorea macroptera</i> Dyer	13	1.4	19	1.7
13.	<i>Ficus gecharis</i> Corner	11	1.2	-	-
14.	<i>Gardenia tubifera</i> Wall. ex Roxb.	11	1.2	-	-
15.	<i>Litsea castanea</i> Hook. f.	11	1.2	-	-
16.	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	11	1.2	-	-
17.	<i>Vatica nitens</i> King	11	1.2	-	-

Similarly, *Elateriospermum tapos* was also the dominant species in the forest edge and interior for trees with DBH ≥ 10 cm (Table 4.13). The frequency of *Elateriospermum tapos* in the forest edge was higher than in the forest interior. Other species recorded in both

forests were *Adinandra acuminata* and *Gardenia tubifera*. *Macaranga triloba* and *Palaquium dasyphyllum* were only recorded in forest interior in high numbers. Other notable species only found in the forest interiors were *Hopea latifolia*, *Shorea fallax*, and *Xanthophyllum affine*.

Table 4.13: Top 10 dominant species in the forest edge and interior with DBH $\geq$ 10 cm

Rank	Species	Forest edge		Forest interior	
		Frequency	%	Frequency	%
1.	<i>Elateriospermum tapos</i> Blume	26	4.4	21	3.4
2.	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	-	-	21	3.4
3.	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	-	-	20	3.2
4.	<i>Pternandra multiflora</i> Cogn.	19	3.3	-	-
5.	<i>Palaquium ridleyi</i> King & Gamble	14	2.4	-	-
6.	<i>Santiria tomentosa</i> Blume	13	2.2	-	-
7.	<i>Adinandra acuminata</i> Korth.	12	2.1	16	2.6
8.	<i>Shorea macroptera</i> Dyer	-	-	11	1.8
9.	<i>Adinandra balukar</i>	10	1.7		
10.	<i>Gardenia tubifera</i> Wall. ex Roxb.	10	1.7	12	1.9
11.	<i>Vatica nitens</i> King	10	1.7	-	-
12.	<i>Hopea latifolia</i> Symington	-	-	10	1.6
13.	<i>Shorea fallax</i> Meijer	-	-	10	1.6
14.	<i>Xanthophyllum affine</i> Korth. ex Miq.	-	-	10	1.6

4.2 Aboveground Biomass (AGB)

The results of the analyses of forest edge and interior AGB are summarised in Table 4.14. The AGB of trees diameter DBH $\geq$ 5 cm and $\geq$ 10 cm of the forest edge was 260 Mg/ha

and 249 Mg/ha, respectively. Whilst the AGB in the forest interior was 279 Mg/ha (DBH $\geq$ 5 cm) and 269 Mg/ha (DBH $\geq$ 10 cm). The results indicate that the forest interior recorded significantly higher AGB for both (DBH $\geq$ 5 cm) and (DBH $\geq$ 10 cm). The number of trees affects the AGB value, which explains the higher value of AGB in the forest interior. This shows that the higher the tree density, the higher the AGB in a given unit area.

Table 4.14: Aboveground biomass of forest edge and interior of a fragmented forest with DBH $\geq$ 5 cm and DBH $\geq$ 10 cm

Variable	Forest type	
	Edge (Mg/ha)	Interior (Mg/ha)
Mean aboveground biomass (DBH $\geq$ 5 cm)	260 ^a	279 ^b
Mean aboveground biomass (DBH $\geq$ 10 cm)	249 ^a	269 ^b

Note: Mg = Megagram [One Megagram (Mg) = 1000 kg];

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

The The AGB increased with the diameter class, culminating in the diameter class of 25.0 – 29.9 cm for trees in the forest edge (Figure 4.2). However, in the forest interior, the total AGB was maximum in the diameter class of 35.0 – 39.9 cm. The AGB decreases as the diameter gets larger than 30 cm and 40 cm in the forest edge and interior, respectively. The cumulative AGB increased with diameter size in the forest edge and interior are comparable up to DBH 35 cm. Subsequently, the increase in the cumulative AGB in the forest interior was larger than the edge beyond DBH 35 cm, which shows that diameter affects tree AGB.

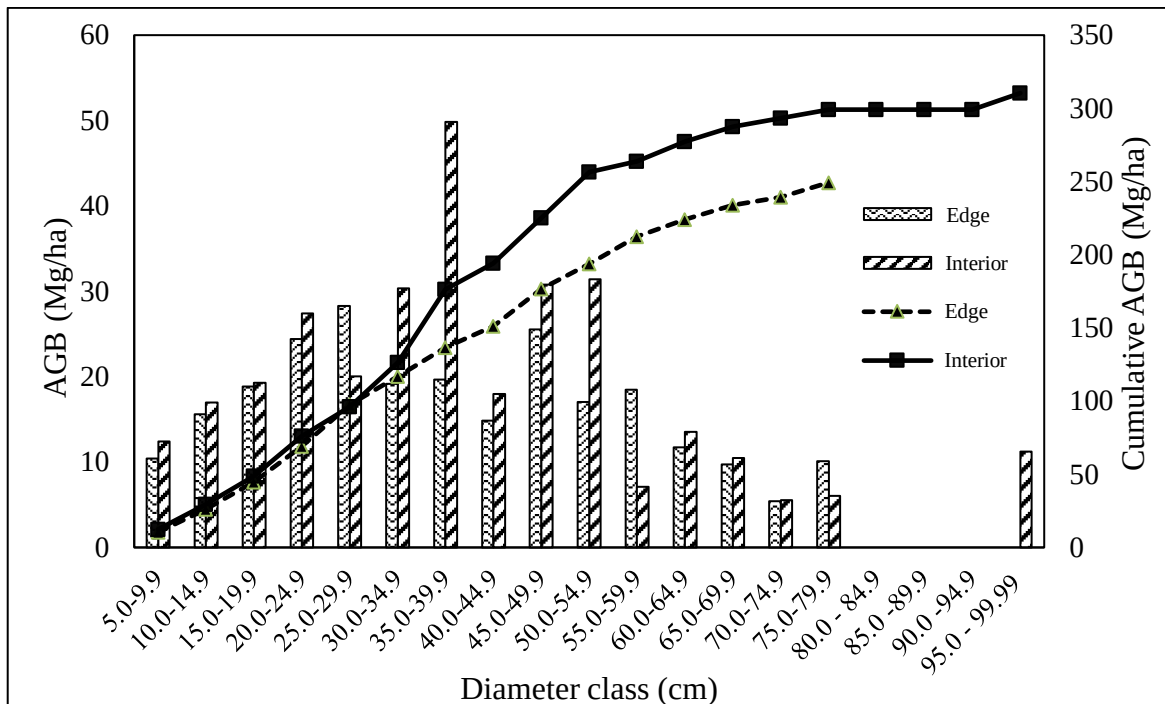


Figure 4.5: Aboveground biomass distribution (bars) among diameter class (cm) with cumulative aboveground biomass on the second axis (line) for all trees species in the forest edge and interior

4.3 Family and Species Dominance

4.3.1 Family Frequency and Importance Value Index

The top 10 dominant families in forest edge and interior in terms of the Family Importance Index (FIV) index are summarised in Table 4.15. The top three most abundant families are similar. The most abundant family in the forest edge and interior is Dipterocarpaceae, indicating that it is distributed widely in both forests. Based on the FIV value, the forest interior (57.7) has more Dipterocarpaceae trees than the edge (50.2). The second and third most abundant families are Euphorbiaceae and Lauraceae, and the stems of these two families are more abundant in the forest edge with FIV 32.6 and 22.7, respectively. In the forest interior, the FIV for Euphorbiaceae is 26.6 and Lauraceae 19.5. The results

indicate that these families cover most of the forest edge and interior compared to the other families recorded.

About 21.4% (Rde) of the enumerated trees in the forest interior were Dipterocarpaceae and 15.9% in the forest edge. The Rde of Euphorbiaceae and Lauraceae is greater in the forest edge with 12.3% and 6.8%, respectively. In the forest interior, Euphorbiaceae was 10.2% and Lauraceae 6.1%. This suggests that species from Dipterocarpaceae are the most abundant, followed by Euphorbiaceae and Lauraceae recorded in the forest edge and interior. The least Rde among the top 10 dominant families in forest interior was Anacardiaceae (3.3%) and Moraceae (2.8%), respectively.

Family Dipterocarpaceae also recorded higher species diversity in the forest interior (RDi: 14.2%) than in the edge (12.4%). However, RDi of Euphorbiaceae and Lauraceae in the forest edge was greater than the interior at 7.7% and 8%, respectively. The RDi values for Euphorbiaceae and Lauraceae in the forest interior were 6.3% and 6.9%, respectively. Fabaceae recorded the lowest number of species (RDi: 2.2%) among forest interior's top 10 dominant families. Melastomataceae and Sapotaceae recorded the least species in the forest edge, with 2.2% each.

The relative dominance (Rbdo) values for Dipterocarpaceae were greater in the forest interior (22.2%) compared to the edge (21.8%). This shows that the total BA from Dipterocarpaceae trees was larger in the forest interior. However, the total BA of Euphorbiaceae and Lauraceae were greater in the forest edge than in the interior at 12.6% and 7.9%, respectively. The Rbdo values are 10.1% for Euphorbiaceae and 6.5% for Lauraceae in the forest interior. Among the top 10 dominant families, Myrtaceae was recorded the least Rbdo in the forest interior with 1.5% and Sapotaceae (2.2%) in the edge.

Table 4.15: Top ten most dominant families in terms of Family Importance Value (FIV) at the forest edge and interior with DBH $\geq$ 5 cm

No.	Family	Edge				Interior			
		RDe (%)	RDi (%)	Rbdo (%)	FIV	RDe (%)	RDi (%)	Rbdo (%)	FIV
1.	Dipterocarpaceae	15.9	12.4	21.8	50.2	21.4	14.2	22.2	57.7
2.	Euphorbiaceae	12.3	7.7	12.6	32.6	10.2	6.3	10.1	26.6
3.	Lauraceae	6.8	8.0	7.9	22.7	6.1	6.9	6.5	19.5
4.	Burseraceae	6.4	3.3	6.0	15.7	-	-	-	-
5.	Moraceae	4.2	4.4	5.3	13.9	2.8	4.7	5.3	12.8
6.	Annonaceae	3.7	5.5	4.1	13.2	-	-	-	-
7.	Anacardiaceae	3.3	3.7	5.5	12.4	5.1	3.8	5.2	14.0
8.	Fabaceae	-	-	-	-	3.6	2.2	6.0	11.8
9.	Myrtaceae	-	-	-	-	3.5	5.7	1.5	10.7
10.	Myristicaceae	4.3	4.7	2.5	11.6	3.2	4.7	1.9	9.8
11.	Melastomataceae	3.8	2.2	2.6	8.6	-	-	-	-
12.	Sapotaceae	4.1	2.2	2.2	8.5	6.8	4.7	4.2	15.7
13.	Phyllanthaceae	-	-	-	-	2.9	4.4	2.3	9.6

4.3.2 Species Frequency and Importance Value Index

The results of the species dominance analysis are summarised in Table 4.16. The result showed that *Elateriospermum tapos* have the highest IVI values in the forest edge (80.0) and interior (74.7). This indicates that the species is the most abundant among the top ten dominant species in both forest types. The high IVI values of *Elateriospermum tapos* in both forest types were attributed to the high species frequency, BA, and tree density. This

suggests that *Elateriospermum tapos* is the sole species with the highest species distribution, density, and BA in the fragmented forest.

The second, third and subsequent species were not the same. For instance, *Santiria tomentosa* was recorded as the second most abundant species (IVI:67.3), followed by *Shorea macroptera* with an IVI value of 45.7 in the forest edge. The second and third most abundant species in the forest interior were *Palaquium dasyphyllum* and *Shorea macroptera* IVI values of 59.8 and 53.4, respectively. *Pternandra multiflora* was recorded with the lowest IVI value (31.4) at the forest interior and *Artocarpus anisophyllus* (30.3) at the edge among the top ten dominant species.

There are three other species apart from *Elateriospermum tapos* in the top 10 dominant species found in forest edge and interior: *Shorea macroptera*, *Palaquium ridleyi*, and *Macaranga triloba*, moreover these species recorded higher IVI values in the forest interior than in the edge. This indicates that these species distribution, density and BA are greater in the forest interior compared to the edge.

Other notable dominant species in the edge were *Dryobalanops lanceolata* and *Litsea castanea*, with IVI at 39.6 and 39.2, respectively. *Monocarpia marginalis* (35.1) and *Ficus gecharis* (34.7) were also among the top 10 dominant species. In the forest interior, high IVI values were recorded by *Palaquium dasyphyllum* (59.8) and *Fordia coriacea* (47.8). High IVI values were also presented by *Xanthophyllum affine* (35.9) and *Shorea fallax* (35.6).

Table 4.16: Top ten of most dominant species in terms of Importance Value Index (IVI) at the forest edge and interior with DBH ≥ 5 cm

No.	Species	Edge				Interior			
		Rba	Rf	Rd	IVI	Rba	Rf	Rd	IVI
1.	<i>Elateriospermum</i> <i>tapos</i> Blume	5.1	70.8	4.1	80.0	4.4	66.7	3.6	74.7
2.	<i>Santiria</i> <i>tomentosa</i> Blume	2.4	62.5	2.4	67.3	-	-	-	-
3.	<i>Palaquium</i> <i>dasyphyllum</i> Pierre ex Dubard	-	-	-	-	2.7	54.2	2.9	59.8
4.	<i>Fordia coriacea</i> Dunn	-	-	-	-	0.3	45.8	1.7	47.8
5.	<i>Shorea</i> <i>macroptera</i> Dyer	2.7	41.7	1.4	45.7	1.8	50.0	1.7	53.4
6.	<i>Xanthophyllum</i> <i>affine</i> Korth. ex Miq.	-	-	-	-	1.5	33.3	1.1	35.9
7.	<i>Dryobalanops</i> <i>lanceolata</i> Burck	0.7	37.5	1.5	39.6	-	-	-	-
8.	<i>Litsea castanea</i> Hook. f.	0.5	37.5	1.2	39.2	-	-	-	-
9.	<i>Monocarpia</i> <i>marginalis</i> (Scheff.) J.Sinclair	0.8	33.3	0.9	35.1	-	-	-	-
10.	<i>Ficus geocharis</i> Corner	0.2	33.3	1.2	34.7	-	-	-	-
11.	<i>Shorea fallax</i> Meijer	-	-	-	-	1.0	33.3	1.3	35.6
12.	<i>Palaquium ridleyi</i> King & Gamble	1.2	29.2	2.0	32.4	0.6	33.3	1.7	35.6
13.	<i>Macaranga</i> <i>triloba</i> (Thunb.) Müll.Arg.	1.2	29.2	0.9	31.3	2.8	33.3	2.3	38.4
14.	<i>Anisophyllea</i> <i>beccariana</i> Baill.	-	-	-	-	0.6	33.3	1.0	34.9
15.	<i>Pternandra</i> <i>multiflora</i> Cogn.	-	-	-	-	0.6	29.2	1.6	31.4
16.	<i>Artocarpus</i> <i>anisophyllus</i> Miq.	0.4	29.2	0.7	30.3	-	-	-	-

4.4 Diversity Indices

The tree diversity indices in forest edge and forest interior are presented in Table 4.17. Shannon-Wiener index of the forest edge was 2.25 and 2.28 in the interior. The values show that the forest interior species are slightly more diverse than in the forest edge. Pielou index of forest edge and forest interior was similar at 0.40. The Pielou index with a value near zero suggests that the number of trees of each species is not distributed evenly. This indicates that species distribution in forest edge and interior are not evenly distributed.

The Margalef index measures species richness. However, the species richness value depends on the number of sampling plots. However, the comparison is valid if the number of sampling plots is identical. The value recorded for the Margalef index in the forest edge and forest interior were 39.8 and 45.1, respectively, and this shows that the forest interior was significantly richer in tree species than the edge.

The Simpson index in the forest edge and interior calculated was 0.99. This shows that the species present are very diverse, indicating that the species diversity of the fragmented forest is very high. The Morisita index shows the pattern of species dispersion in a forest, and the forest edge and interior recorded 1.03 and 1.04, respectively. Thus, the value of the index shows that the species dispersion is random.

The Jaccard similarity index is used to measure the similarity of species between two forest types. It is also used to compare the diversity in the forest. Results show that the Jaccard similarity index is 0.41 (Table 4.17), indicating that the community similarity between forest edge and forest interior is 41%, considered low.

The T-test showed no significant differences ($P > 0.05$) between forest edge and interior diversity indices except for the Margalef index.

Table 4.17: Diversity indices of the forest edge and interior with DBH ≥ 5 cm

Indices	Forest edge	Forest interior
Shannon-Wiener index (H')	2.25 ^a	2.28 ^a
Pielou index (J')	0.4 ^a	0.4 ^a
Margalef index (Dmg)	39.8 ^a	45.1 ^a
Simpson index (E')	0.99 ^a	0.99 ^a
Morisita index (Id)	1.03 ^a	1.04 ^a
Jaccard Index (S)	0.41 (41%)	

*Mean values in the same row followed by different letters indicate significant differences at $P < 0.05$ using T-test.

4.5 Species Conservation Status

Species conservation status in Table 4.18 showed eight categories of IUCN Red List were recorded for forest edge and interior: critically endangered, endangered, vulnerable, conservation dependent, near threatened, least concern, data deficient, and not evaluated.

Besides, two species in the forest edge and five species in the forest interior were found to be critically endangered. In addition, eight species and nine species were found to be endangered in the forest edge and forest interior, respectively. As for the vulnerable category, 17 species in the forest edge and 14 species in the forest interior were found to be vulnerable. Meanwhile, eight species in the forest edge and 18 species in the forest interior were the near threatened species. Most of the species in the HCV area were classified as 'not evaluated' (Table 4.18). Meanwhile, one species in the forest edge and two in the interior were conservation-dependent species. One species in the forest edge and three in the interior were data deficient. No extinct species were found in both of the forests.

Table 4.18: Forest edge and forest interior species with IUCN Red List Categories

IUCN Red List Categories	No. of species	
	Forest edge	Forest interior
Critically Endangered	2	5
Endangered	8	9
Vulnerable	17	14
Conservation Dependent	1	2
Near Threatened	8	18
Least Concern	88	89
Data Deficient	1	3
Not Evaluated	148	145

Table 4.19 19 shows critically endangered species for forest edge and forest interior. All critically endangered species in the forest edge and interior were from the family Dipterocarpaceae. Two species were recorded for the forest edge: *Shorea iliasii* and *Shorea leptoclados*. Meanwhile, the critically endangered species in the forest interior were *Hopea kerangasensis*, *Hopea micrantha*, *Shorea leptoclados*, *Shorea macrantha*, and *Vatica havilandii*.

Table 4.19: Critically Endangered (CE) species in the forest edge and forest interior

No.	Family	Species
Forest edge		
1.	Dipterocarpaceae	<i>Shorea iliasii</i> P.S.Ashton*
2.	Dipterocarpaceae	<i>Shorea leptoclados</i> Symington
Forest interior		
1.	Dipterocarpaceae	<i>Hopea kerangasensis</i> P.S.Ashton
2.	Dipterocarpaceae	<i>Hopea micrantha</i> Hook. f.*
3.	Dipterocarpaceae	<i>Shorea leptoclados</i> Symington
4.	Dipterocarpaceae	<i>Shorea macrantha</i> Brandis
5.	Dipterocarpaceae	<i>Vatica havilandii</i> Brandis

Note: Species with * indicate Bornean endemic species

Most endangered species in the forest edge and interior were also from the family Dipterocarpaceae (Table 4.20). *Allantospermum borneense* from family Ixonanthaceae at

the forest edge and *Diospyros havilandii* from family Ebenaceae at the forest interior were recorded in the endangered species category.

Table 4.20: Endangered (E) species in the forest edge and forest interior

No.	Family	Species
Forest edge		
1.	Dipterocarpaceae	<i>Dipterocarpus tempehes</i> Slooten*
2.	Dipterocarpaceae	<i>Dryobalanops beccarii</i> Dyer
3.	Dipterocarpaceae	<i>Shorea faguetiana</i> Heim
4.	Dipterocarpaceae	<i>Shorea ovata</i> Dyer ex Brandis
5.	Dipterocarpaceae	<i>Shorea pachyphylla</i> Ridl. ex Symington*
6.	Dipterocarpaceae	<i>Shorea pauciflora</i> King
7.	Dipterocarpaceae	<i>Vatica nitens</i> King
8.	Ixonanthaceae	<i>Allantospermum borneense</i> Forman
Forest interior		
1.	Dipterocarpaceae	<i>Dipterocarpus sublamellatus</i> Foxw.
2.	Dipterocarpaceae	<i>Shorea dasyphylla</i> Foxw.
3.	Dipterocarpaceae	<i>Shorea domatiosa</i> P.S.Ashton*
4.	Dipterocarpaceae	<i>Shorea faguetiana</i> Heim
5.	Dipterocarpaceae	<i>Shorea flava</i> Meijer
6.	Dipterocarpaceae	<i>Shorea ovata</i> Dyer ex Brandis
7.	Dipterocarpaceae	<i>Shorea pauciflora</i> King
8.	Dipterocarpaceae	<i>Vatica nitens</i> King
9.	Ebenaceae	<i>Diospyros havilandii</i> Bakh.

Note: Species with * indicate Bornean endemic species

Vulnerable species in the forest edge and interior are shown in Table 4.21. Most of the species recorded in the vulnerable species category at the forest edge were from families Burseraceae, Ctenolophonaceae, Elaeocarpaceae, Lauraceae, Moraceae, Myristicaceae, Sapotaceae, and Thymelaeaceae. Only seven species of the Dipterocarpaceae family were recorded as vulnerable species for forest edge, such as *Hopea beccariana*, *Shorea acuminatissima*, *Shorea collaris*, *Shorea ferruginea*, *Shorea glaucescens*, *Shorea macrobalanos*, and *Shorea superba*.

Besides, the family Dipterocarpaceae consists of seven species recorded as vulnerable species in the forest interior such as *Hopea beccariana*, *Shorea acuminatissima*,

Shorea collaris, *Shorea ferruginea*, *Shorea foxworthyi*, *Shorea glaucescens*, and *Vatica sarawakensis*. The other species recorded were from the families Burseraceae, Lauraceae, Moraceae, Sapotaceae, and Myristicaceae.

Table 4.21: Vulnerable (VU) species in the forest edge and forest interior

No.	Family	Species
Forest edge		
1.	Burseraceae	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam*
2.	Ctenolophonaceae	<i>Ctenolophon parvifolius</i> Oliv.
3.	Dipterocarpaceae	<i>Hopea beccariana</i> Burck
4.	Dipterocarpaceae	<i>Shorea acuminatissima</i> Sym*.
5.	Dipterocarpaceae	<i>Shorea collaris</i> Slooten*
6.	Dipterocarpaceae	<i>Shorea ferruginea</i> Dyer ex Brandis*
7.	Dipterocarpaceae	<i>Shorea glaucescens</i> Meijer
8.	Dipterocarpaceae	<i>Shorea macrobalanos</i> P.S.Ashton*
9.	Dipterocarpaceae	<i>Shorea superba</i> Symington*
10.	Elaeocarpaceae	<i>Elaeocarpus beccarii</i> DC.
11.	Lauraceae	<i>Endiandra clavigera</i> Kosterm. & Kosterm.
12.	Lauraceae	<i>Eusideroxylon zwageri</i> Teijsm. & Binn.
13.	Moraceae	<i>Artocarpus anisophyllus</i> Miq.
14.	Myristicaceae	<i>Knema ashtonii</i> J.Sinclair
15.	Myristicaceae	<i>Knema rufa</i> Warb.*
16.	Sapotaceae	<i>Payena obscura</i> Burck
17.	Thymelaeaceae	<i>Gonystylus affinis</i> Radlk.
Forest interior		
1.	Burseraceae	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam*
2.	Dipterocarpaceae	<i>Hopea beccariana</i> Burck
3.	Dipterocarpaceae	<i>Shorea acuminatissima</i> Sym.*
4.	Dipterocarpaceae	<i>Shorea collaris</i> Slooten*
5.	Dipterocarpaceae	<i>Shorea ferruginea</i> Dyer ex Brandis*
6.	Dipterocarpaceae	<i>Shorea foxworthyi</i> Symington
7.	Dipterocarpaceae	<i>Shorea glaucescens</i> Meijer
8.	Dipterocarpaceae	<i>Vatica sarawakensis</i> Heim*
9.	Lauraceae	<i>Cryptocarya tawaensis</i> Merr.
10.	Lauraceae	<i>Eusideroxylon zwageri</i> Teijsm. & Binn.
11.	Moraceae	<i>Artocarpus anisophyllus</i> Miq.
12.	Myristicaceae	<i>Knema ashtonii</i> J.Sinclair
13.	Myristicaceae	<i>Knema rufa</i> Warb.*
14.	Sapotaceae	<i>Madhuca ridleii</i> H.J.Lam

Note: Species with * indicate endemic Bornean species

Table 4.22 shows eight species in the forest edge and 18 in the forest interior in the near threatened species category. The near threatened species at the forest edge were the non-dipterocarp species, such as *Semecarpus heterophylla*, *Myristica lowiana*, *Palaquium gutta*, and *Gonystylus forbesii*. Meanwhile, dipterocarp species recorded as near threatened were *Shorea amplexicaulis*, *Shorea myrionerva*, *Shorea scabrida*, and *Shorea stenoptera*.

Families Sapotaceae, Anacardiaceae, Myristicaceae, Lauraceae, Meliaceae, and Thymelaeaceae were recorded in the near threatened category in the forest interior (Table 4.22). Dipterocarp species such as *Dipterocarpus lowii*, *Dipterocarpus sarawakensis*, *Shorea amplexicaulis*, *Shorea faguetioides*, *Shorea myrionerva*, *Shorea sagittata*, *Shorea scabrida*, and *Shorea stenoptera* were listed as the near threatened species.

Table 4.22: Near Threatened (NT) species in the forest edge and forest interior

No.	Family	Species
Forest edge		
1.	Anacardiaceae	<i>Semecarpus heterophylla</i> Blume
2.	Dipterocarpaceae	<i>Shorea amplexicaulis</i> P.S.Ashton*
3.	Dipterocarpaceae	<i>Shorea myrionerva</i> Symington ex P.S.Ashton*
4.	Dipterocarpaceae	<i>Shorea scabrida</i> Symington
5.	Dipterocarpaceae	<i>Shorea stenoptera</i> Burck*
6.	Myristicaceae	<i>Myristica lowiana</i> King
7.	Sapotaceae	<i>Palaquium gutta</i> (Hook.) Burck
8.	Thymelaeaceae	<i>Gonystylus forbesii</i> Gilg
Forest interior		
1.	Anacardiaceae	<i>Parishia paucijuga</i> Engl.
2.	Anacardiaceae	<i>Semecarpus heterophylla</i> Blume
3.	Dipterocarpaceae	<i>Dipterocarpus lowii</i> Hook. f.
4.	Dipterocarpaceae	<i>Dipterocarpus sarawakensis</i> Slooten*
5.	Dipterocarpaceae	<i>Shorea amplexicaulis</i> P.S.Ashton*
6.	Dipterocarpaceae	<i>Shorea faguetioides</i> P.S.Ashton*
7.	Dipterocarpaceae	<i>Shorea myrionerva</i> Symington ex P.S.Ashton*
8.	Dipterocarpaceae	<i>Shorea sagittata</i> P.S.Ashton*
9.	Dipterocarpaceae	<i>Shorea scabrida</i> Symington
10.	Dipterocarpaceae	<i>Shorea stenoptera</i> Burck*
11.	Lauraceae	<i>Litsea coriacea</i> Hook. f.
12.	Meliaceae	<i>Aglaia borneensis</i> Merr.
13.	Myristicaceae	<i>Horsfieldia reticulata</i> Warb.*
14.	Myristicaceae	<i>Myristica lowiana</i> King
15.	Sapotaceae	<i>Madhuca kingiana</i> (Brace ex King & Gamble) H.J.Lam
16.	Sapotaceae	<i>Palaquium gutta</i> (Hook.) Burck
17.	Thymelaeaceae	<i>Gonystylus forbesii</i> Gilg

Note: Species with * indicate Bornean endemic species

4.6 Chapter Summary

This chapter presented the data of the forest stand structure consisting of the number of trees or tree density, BA, and AGB that were analysed using the T-test, besides the tree distribution by diameter class and family and species composition. The families and species dominance between forest edge and forest interior was also shown in this chapter. Dipterocarpaceae and Euphorbiaceae were the most dominant families, and *Elateriospermum tapos* dominated the forest edge and interior community. Lastly, the diversity indices were analysed using the T-test, which was tabulated and compared. The species conservation status was listed in this chapter.

CHAPTER 5

DISCUSSION

5.1 Stand Structure

The tree density with $DBH \geq 5$ cm and $DBH \geq 10$ cm, including the number of species, was significantly greater in the forest interior than in the edge. The number of families and genera was greater in the forest edge however, statistically, the number of families and genera showed no significant differences between the forest zones.

A study at Mount Papandayan, West Java, Indonesia, by Sulistyawati and Tihurua (2019) reported that the tree density with $DBH \geq 10$ cm of the forest interior was higher than the forest edge, with a value of 717 stems/ha and 463 stems/ha, respectively. Kacholi (2014) reported that the forest interior of Kilangwe Forest Reserve, Tanzania had a higher number of trees than the forest edge. A finding at Atlantic Forest fragments by Magnago et al. (2015) also reported that the forest edge had fewer trees than the forest core, and according to them, this is due to the microclimatic variable, such as wind. Fischer et al. (2021) stated that the altered microclimate notably harms the large trees that depend on a strong water supply since the edge is exposed to direct sunlight, where it is more exposed to the wind, and where the humidity is reduced, unlike the forest interior. This factor could be why fewer trees in the forest edge were recorded in the current study since it is more susceptible to harm, which adversely affects tree growth due to high stress compared to the forest interior.

The forest edge has high disturbance, especially from human activities (Konje, 2021). For example, the forest edge in this study area is easier to be accessed compared to the forest interior, thus, the activity of cutting down trees may have been carried out. This

resulted in fewer individuals in the forest edge than in the interior. However, we could only assume the possibility as we had no proof of the activity being carried out in the forest area.

Tree density of 651 stems/ha with DBH $\geq$ 10 cm recorded in this study was much lower compared to 813 stems/ha recorded by Diway et al. (2009), 710 stems/ha (Ling & Julia, 2012) and 718 stems/ha (Vilma et al., 2012). All these three studies were conducted in the forest interior of the National Park and Conservation Areas in Sarawak; thus, higher tree densities are expected. A comparison of tree density and BA from studies done in Sarawak, Sabah and Peninsular Malaysia is presented in Table 5.1. Direct comparisons between the data are not possible due to the different ecosystems and sampling area sizes. The forest area in the current study is considered under land-use inventory since it is located in the oil palm plantation (Dislich et al., 2017), meanwhile, the previous studies mentioned in Table 5.1 were nature reserves, national parks, and forest reserves. As for the sampling area size, the previous studies assessed larger sampling area sizes compared to the current study.

However, general observations can be made based on the per hectare basis. The stem density values vary; some are comparable, while others are lower and higher than the values obtained from this study. Lower tree density of 118 and 406 stem/ha with DBH $\geq$ 10 cm in the forest edge and forest interior, respectively, was recorded by Oliveira et al. (2008) at Usina Serra Grande, northeastern Brazil.

Table 5.1: Tree density and BA of the tree with DBH ≥ 10 cm in lowland tropical forest in Sarawak, Sabah, and Peninsular Malaysia

Site	Area (ha)	Tree density (Stem/ha)	Basal area (m ² /ha)	Reference
<i>Sarawak</i>				
Saremas, forest edge	0.96	609	26.3	Current study
Saremas, forest interior	0.96	651	26.9	Current study
Semenggoh	4.0	710	43.0	Ling and Julia (2012)
Gunung Mulu	1.0	431	42.8	Proctor <i>et al.</i> (1983)
<i>Sabah</i>				
Tangkulap Forest Reserve	3.0	474	38.4	Gobilik (2008)
Gunung Rara Forest Reserve	11.1	400	28.4	Cedergren <i>et al.</i> (2002)
Danum valley	8.0	434	26.3	Newbery <i>et al.</i> (1992)
<i>Peninsular Malaysia</i>				
Kuala Keniam forest, Pahang National Park	1	448	26.9	Suratman (2012)
Sungai Pinang, Pulau Pangkor	1	659	28.2	Ghollasimood <i>et al.</i> (2011)
Sungai Menyala, Negeri Sembilan	1.62	488	32.9	Wyatt-Smith (1966)

The tree density decreases with the increases of the diameter class showing the inverse-J-shaped pattern. Trees in the smaller diameter class have the highest number of individuals compared to those in the larger class. The reverse-J curve illustrates that tree saplings are large in number, and the number of trees declines as the diameter increases. This trend indicates that regeneration is good and a typical structure in tropical forests (Richards, 1996), and natural regeneration will be successful (Poorter *et al.*, 1996). The distribution pattern of a decrease in the number of trees with the increase in tree diameter class concurs

with other reports (Hayat et al., 2010; Ling & Julia, 2012; Jusoh, 2017; Dar et al., 2019). A study conducted from forest edge to interior in a fragmented forest in Mountain Pine Ridge Savanna in Belize showed the J-shaped pattern of trees' distribution (Kellman et al., 1998). The low stand density of large-diameter trees causes higher stand density of the smaller trees due to the open canopy, thus, giving space for saplings and small trees to grow (Manokaran & Lafrankie, 1990).

The BAs of trees in the forest edge with DBH ≥ 10 cm were slightly low compared to the forest interior (Table 5.1). However, no significant difference between the forest zones. The results of this study for BA in the forest edge and interior are 26.3 m²/ha and 26.9 m²/ha, comparable with a number of studies (Table 5.1). Cedergren et al. (2002) recorded 28.4 m²/ha for Gunung Rara Forest Reserve and Newbery et al. (1992) reported 26.3 m²/ha for Danum Valley. From Peninsular Malaysia, Suratman (2012) and Ghollasimood et al. (2011) recorded 26.9 m²/ha and 28.2 m²/ha, respectively. However, there are also considerable BA values larger than these. Swaine et al. (1987) stated that the BA lowland tropical forests with DBH ≥ 10 cm are generally 28 to 52 m²/ha. These value differences are due to intrinsic differences such as topography, altitude, soil type, microclimate in sampling plots, and stem density.

Dipterocarpaceae dominated the fragmented forest in terms of the BA. Cedergren et al. (2002) reported that dipterocarps covered most of Gunung Rara Forest Reserve, Sabah and the remaining 56% of the BA was represented by the non-dipterocarp species. Diameter is an important factor in contributing to the size of BA of the trees (Lutz et al., 2013). Large tree diameter and higher tree density determine the BA size (Clark et al., 2019). However, according to Sharma (2004), BA was unaffected by the number of trees but by tree diameter.

The domination of Dipterocarpaceae BA in the forest interior for trees $\text{DBH} \geq 5$ cm is expected because there are more trees with $\text{DBH} \geq 30$ in the interior that contributed to the high BA.

The genus *Shorea* recorded the highest BA in the fragmented forest and was higher in the forest edge than in the interior. This was attributed to more large trees with $\text{DBH} \geq 30$ and $\text{DBH} \geq 40$ on the forest edge than in the interior. The forest edge showed higher mean value of *Shorea* compared to the forest interior, however, no significant difference between the forest zones. The largest *Shorea* tree was *Shorea ovata*, with DBH 67.2 cm recorded in the forest edge (Figure 5.2). Higher BA was also reported in the forest edge of a fragmented forest at Bangi Forest Reserve, Selangor, Malaysia (Fitri et al., 2015). *Shorea* is the most important genus with a BA across a plot of 52-ha in mixed dipterocarp forest at Lambir Hills National Park, Sarawak, Malaysia (Lee et al., 2002). Ganivet et al. (2021) also reported that the *Shorea* genus had the highest BA in a fragmented mixed dipterocarp forest remnant located at Planted Forest Zone, Bintulu, Sarawak. Results for AGB in the forest interior were higher than in the edge.

The AGB for trees $\text{DBH} \geq 5$ cm was 279 Mg/ha and 260 Mg/ha in the forest interior and the edge, respectively. Slightly lower values were obtained for $\text{DBH} \geq 10$ at 269 Mg/ha (interior) and 249 Mg/ha (edge). Significant differences existed between the forest edge and interior with $\text{DBH} \geq 5$ cm and $\text{DBH} \geq 10$ cm. Higher AGB values in the forest interior were also reported by Tanaka et al. (2021), where the AGB values at the forest edge and forest interior of a fragmented secondary forest were 63.2 Mg/ha and 71.2 Mg/ha. Razafindratsima et al. (2018) reported that the total AGB in the forest edge communities is lower than in the interior, with 188 Mg/ha and 242 Mg/ha, respectively. In addition, a study by Shapiro et al.

(2016) also showed that the forest interior has greater AGB than the forest edge. The AGB stated here is low because, according to Slik et al. (2013), the AGB of tropical forests they estimated was 418 ± 112.9 Mg/ha (mean $\pm$ standard deviation) based on studies done in 120 sites in Southeast Asia, Africa, and South America. The fragmented forest of the study area had fewer large trees than the primary forest due to the selective logging during plantation establishment, and this resulted in the low AGB. Due to anthropogenic disturbance, the fragmented forests had fewer large trees than the primary forest (Bulafu et al., 2013). A previous study showed that the AGB of forest edges in the Amazon forests decreased by about 33% after being fragmented (Oliveira et al., 2008).

The higher AGB in the smaller diameter class trees than the larger class and the cumulative increase in AGB (Figure 4.2) is typical for the tropical forest (Feldpausch et al., 2012). Fewer trees and small-diameter trees result in low AGB value in the forest edge, showing that large trees positively affect the AGB. The steady increase in the cumulative AGB large showed that although large-diameter trees are low in number, large-diameter trees contribute to the increase in the accumulation of AGB. The breast height and wood density diameter are significant factors in estimating the AGB of trees (Loh et al., 2020; Liu et al., 2020).

5.2 Species Composition and Diversity

The most dominant family was Dipterocarpaceae, followed by Euphorbiaceae and Lauraceae. This observation concurs with Rahmad et al. (2020), who also reported that Dipterocarpaceae and Euphorbiaceae were the richest families in three old secondary forests and two primary forests of Penang, Malaysia. Similarly, Dipterocarpaceae and Euphorbiaceae were the dominant families in Jengka Forest Reserve, Malaysia (Ho et al.

1987). Demies et al. (2019) found that in a logged-over forest at Anap Muput, Bintulu, Sarawak, the highest FIV was Dipterocarpaceae, followed by Euphorbiaceae. In a study at Imbak Canyon Forest Reserve, Sabah, Malaysia, Dipterocarpaceae, Euphorbiaceae, and Lauraceae are the top three dominant families (Pesiu et al., 2019). Slik et al. (2003) concluded that the Dipterocarpaceae and Euphorbiaceae were the most dominant tree families in the lowland dipterocarp forests of Borneo. The high relative dominance, relative diversity, and relative density values of Dipterocarpaceae, Euphorbiaceae, and Lauraceae were high compared to other families, which explains their high FIV in this study. High density and basal coverage contribute to species' dominance, leading to high FIV (Gautam & Mandal, 2017).

It is a well-established fact that the lowland tropical forest is dominated by the family Dipterocarpaceae. In terms of stem density, it is common to have Dipterocarpaceae make up more than 20% of the total tree inventoried. An extensive study by Slik et al. (2005) found that the commonest family in the lowland dipterocarp forest of Borneo was Dipterocarpaceae, which make up 21.9% of the total tree enumerated. This study showed that Dipterocarpaceae is the main family in the forest edge and interior, represented by 15.9% and 21.4% of the total tree enumerated, respectively. In a primary lowland forest in Berau, East Kalimantan 25% of the trees inventoried were from the Dipterocarpaceae family (Sist & Saridan, 1999). The domination of Dipterocarpaceae at Barito Ulu, Central Kalimantan primary forest, was lower at 20.2% (Brearley, 2004).

A lower number of Dipterocarpaceae was recorded in the forest edge. Dipterocarps are generally shade-tolerant, but some species are light demanding (Ashton, 1995). There was a marked contrast between Dipterocarpaceae and the rest of the families in tree density,

species richness and BA coverage, suggesting that species of dipterocarps can thrive in forest edges. Research has demonstrated that dipterocarps seedlings require more sunlight than the forest floor of a closed canopy forest floor for growth development (Mori, 1980; Sasaki & Mori, 1981; Ashton & de Zoysa 1989). For these reasons, forest edges can support dipterocarps regeneration and growth as long as there are seeds dispersed from mother trees within the forested areas. Dipterocarpaceae is widely distributed in Borneo and Peninsular Malaysia (Sasaki, 2006) and initially grows under shade (Widiyatno et al., 2014). However, it depends on their species because some trees are light-demanding, and some are shade-tolerant species (Hidayati et al., 2020).

Euphorbiaceae dominated both in the forest edge and interior. Euphorbiaceae is a rich species family where they are commonly found in a lowland dipterocarp forest (Zani et al., 2013). Euphorbiaceae species compete for sunlight (Zakaria et al., 2008) thus, forest gaps enhance the growth of Euphorbiaceae species. Results of this study showing higher dominance of Euphorbiaceae in the forest edge concurs with Oyun et al. (2009) that higher FIV was observed in the forest edge compared to the interior. Higher tree density and frequency contribute to the higher FIV. The abundance of *Elateriospermum tapos* and *Macaranga triloba* contribute to the high FIV of Euphorbiaceae.

Elateriospermum tapos was the most dominant species in both the forest edge and interior. Generally, it occurs in tropical forests up to 600 m altitude. It is a small to medium size tree up to 30 m tall and 60 cm in diameter. The locals call it Kelampai or Dungku and in Peninsular Malaysia is known as Perah or Perah ikan. The trunk is an irregular shape, twisted and fluted, with a small buttress. When slashed or cut, the bark, leaves and fruits produce sticky bluish-white latex (Figure 5.3). This latex can be used to heal ruptures on feet

soles (Chai et al., 1989, Lim, 2012). The seeds (Figure 5.4) extracts reportedly can be used to treat hypertension, diabetes, and obesity (Arshad & Gan, 2019).

Elateriospermum tapos were more dominant in the forest edge than in the interior. This species was found in 70.8% and 66.7% of the total plots enumerated in the forest edge and interior, respectively. This species is light-demanding and fast-growing (Yansen & Deselina, 2020). This species can reproduce and enhance its growth in the forest gap. The canopy's opening enhances the seedlings' establishment and early growth of *Elateriospermum tapos* (Simbolon et al., 2000). The availability of light intensity is one of the significant factors in determining the trees' growth rates (King et al., 2005). *Elateriospermum tapos* are commonly found distributed along the forest edges and logging roads (Hoang & Van Welzen, 2004). It is the most dominant species with a higher density in the logging skid trails compared to the adjacent forest (Razali et al., 2014). This species was widely distributed in the lowland rainforest of Kuala Keniam, Pahang National Park, Malaysia; as it had the highest BA (25.2 m²/ha) compared to the other species communities (Suratman et al., 2010). It also dominated Hutan Lipur Jeram Linang, Kelantan survey plots, contributing to a higher number of stems in diameter class distribution and IV. *Elateriospermum tapos* was reported to be occurring in 10-30 m and 140-150 m from the forest edge in the Boven Lais Kemumu, North Bengkulu, Bengkulu Province protected forest, Indonesia (Yansen et al., 2020).

Santiria tomentosa (Burseraceae) was the second most dominant species in the forest edge. This species was recorded in 15 out of 24 plots or 62.5% of the total plots enumerated. This contributed to the high IVI. The majority, or 83%, of its trees, were in the range of 5 to 20 cm in DBH. This species was recorded only in three out of 24 plots in the forest interior.

For this reason, this species is not considered dominant in the forest interior. This species is found throughout the tropical forest and usually in secondary forests as a pre-disturbance remnant tree. In Sarawak, this species regenerates very well in the logged-over forest and typically dominates post-logged areas in five years with some pioneer species features (Kochummen et al., 1989).

Palaquium dasyphyllum (Sapotaceae) was the second dominant species in the forest interior. Thirteen plots, or 54.2% of the plots in the forest interior, recorded this species, and only six plots in the forest edge contain this species. Similar to *Santiria tomentosa*, this species can be found throughout the tropical forest and usually as a pre-disturbance remnant tree in secondary forests. *Palaquium* spp. are also commonly found in disturbed forest areas (Pitopang, 1970). Besides, *Palaquium ellipticum* was a pioneer species due to the forest gap with high light intensity (Ramachandran et al., 2019).

The dominance of *Shorea macroptera* (Dipterocarpaceae) in the forest edge and the interior was attributed to its high frequency, with DBH mostly 63% (edge) and 72% (interior) less than 20 cm. Out of the total plot enumerated, 41.7% and 50.0% were recorded in the forest edge and interior, respectively. This species occurs in mixed dipterocarp forests, especially on well-drained clay soils, undulating land and hillsides up to 900 m altitude. This is why *Shorea macroptera* is widespread in both forest edge and interior. At maturity, it is a large and emergent tree reaching up to 50 m high and 150 cm DBH (Soepadmo et al., 2002).

Although the Shannon-Wiener index was slightly higher in the forest edge, the index value differences were very small. Thus, species diversity between the forest edge and interior is comparable. A study by Owusu-Prempeh et al. (2018) showed that tree species were more diverse in the buffer zone ($H' = 4.55$) compared to the interior zone ($H' = 4.32$),

indicates that the higher value in the open canopy diversity was due to the sunlight exposure. The presence of sunlight is one of the factors affecting the Shannon-Wiener index value (Soetaert & Heip, 1990).

The values of the Shannon-Wiener index usually range between 1.5 and 3.5 but rarely reach 4.5 (Magurran, 2004). This study had a lower H' value than the study reported by Takeuchi et al. (2017) in Lambir Hills National Park lowland mixed dipterocarp forest, as its H' values were 4.1 to 4.3. In a lowland forest of Kuala Keniam, Pahang Suratman *et al.* (2010) recorded H' values ranging from 3.42 to 3.97. Besides, the H' values recorded were 4.84 and 3.38, respectively, in the lowland dipterocarp and riparian forests of Taman Negara Pahang (Zani et al., 2013). However, another study with a high H' value was reported by Lajuni and Latiff (2013), who stated the H' value was 6.99, indicating it is a good species diversity as a twice-logged lowland dipterocarp forest.

Simpson's diversity index (D) accounted for the species in the study area. Not all species are crucial to be identified as each other can recognise them. The tree species in our study are considered abundant in forest edge and interior. The index value ranges from 0 to 1 (Thomas A, 2014). Shannon and Simpson diversity indices correlate with species evenness increasing or decreasing (Adam, 2001). The study reported by Khaine et al. (2017) stated that rainfall is one of the factors affecting these indices values.

The value of Simpson's index of 0.98 was reported by Kueh et al. (2013) in the naturally regenerating secondary forest at Bukit Nyabau. Good tree species regeneration gives forest restoration potential (Nelson & Noweg, 2021). Besides, the logged forest at Tan Phu forest, Vietnam, also recorded 0.98 of Simpson's index, indicating the abundance of dipterocarps species in the study area (Millet & Truong, 2011). The fragmented forest of

planted forest zone (PFZ), Bintulu and Semenggoh Forest Reserve, Kuching was compared in a study by Ganivet et al. (2020), where the Simpson's index gave values of 0.97 and 0.98, showing the abundance of Dipterocarpaceae and Euphorbiaceae; similar to the abundance of families in this study.

The Pielou evenness index of tree species from this study was 0.4. Every species present in a community with equal proportions is even if a species dominates the abundance distribution (Daly et al., 2018). The value recorded near zero has no evenness, indicating few species dominate a particular site. Pielou evenness index of 0.4 suggests that tree species in this study are more or less uneven distribution. A finding reported by Ruziman et al. (2022) in Keniam Forest, Taman Negara, Pahang, showed a low evenness index with a value of 0.14, indicating the uneven distribution of tree species in the plots. In comparison with another study by Zani et al. (2013), species evenness in the lowland dipterocarp forest value ranges from 0.89 to 1.00 while riparian forest ranges from 0.55 to 0.96, showing the even representation of tree species in their study area. In addition, a finding reported by Isango (2007) shows the stability of vegetation in the Miombo woodlands of community-based forest management in the Iringa district with high species evenness in three sites; Nyangoro, Kitonga, and Udekwa, with Pielou evenness index values of 0.91, 0.76, and 0.72, respectively.

The species richness was computed using the Margalef index. The index value of the Shannon-Wiener diversity index and Simpson's diversity index shows the fragmented forest is rich in species. The species richness values were 39.8 and 45.1 for forest edge and interior, respectively, indicating high species richness. The number of species and trees was a factor in determining the value of Margalef's index. Therefore, it must be cautious because it is

highly sensitive to sample size (Magurran, 2004). The total area sample should be as close as possible (Gamito, 2010). Species richness helps in carbon sequestration and promotes higher stand productivity (Liu et al., 2018). The differences in species richness are determined by the age of trees, climatic conditions, and human disturbance (Mishra & Das, 2019). Species richness also depends on the forest types and human activities (Kessler et al., 2005).

Morisita index determines the spatial distribution pattern of plants, whether or not the population is clustered, random, or dispersedly distributed (Hayes & Castillo, 2017). A value of close to 1.0 indicates random dispersion, 0 for uniform and a large number for aggregate distribution. The calculated Morisita index was 1.0 (Table 4.17), indicating that the dispersion of tree species in the forest edge and the interior was randomly distributed. Species that show random patterns are good for successful establishment and maturation and tend to have broad physiological adaptations (Hubbell & Foster, 1983). An area's topography affects tree species' distribution (Lan et al., 2012). The distribution of tree species also depends on seed availability. Species-specific seed dispersers are important in determining the consistency of tree species distribution (Kakishima et al., 2015). The wind is one of the factors affecting seed dispersion depending on the trees' height and wind speed (Fu, 2019). Seeds dispersion is affected by gravity and assisted by animals (Chen et al., 2014).

The Jaccard similarity index determines unshared species in the two communities as a proportion of the total species number recorded (Hao et al., 2019). The calculated Jaccard similarity index was 0.41 or 41%. Only 174 species are found in both forests out of 418 total tree species combined. A similarity index value of less than 50% indicates differences in floristic composition between two forests (Ifo et al., 2016). Low species diversity may result

in low species similarity between sites (Uddin et al., 2021). The low similarity index between the two forest areas indicates that tree communities between the forest edge and interior differ in species composition. It also suggests that species distribution in forest edge and interior is independent of each other. Conversely, a similarity index of more than 50% of any two plant communities is considered as high (Barbour et al., 1987). The higher the similarity index, the higher the association level between two plant communities.

5.3 Stand Structure and Species Composition in Fragmented Forest

Forest fragmentation is common in oil palm plantations, and it occurs during the plantation establishment phase with different sizes and shapes, where it causes biodiversity loss (Haywood, 1995; Shevade & Loboda, 2019). Many oil palm plantation companies have gazetted the forest fragments as HCV forests to support the conservation initiatives. Fragmentation consequentially causes the creation of edge habitats (Porensky & Young, 2013). A fragmented forest with open vegetation at the forest edge results in distinct microclimate differences compared with the interior forest (Zuidema et al., 1996; Kremsater & Bunnell, 1999).

Vegetation associated with forest edges shows several features in response to edge conditions (Echeverría et al., 2007). Some plants are commonly found outside the forest like ferns and shrubs. Altered microclimatic conditions may benefit invasive, pioneer, and agricultural species (Laurance, 1991). Pioneer species grow well at the forest edge and interior, where there are canopy disturbances (Cayuela et al., 2009). In addition, the pioneer species are responding to the forest gaps (Popma et al., 1988). The pioneer species, including *Macaranga* sp. and *Palaquium* spp, grow in the forest edge.

By comparison, there are more open canopies in the edge forests than in the interior forests (Mccallister, 2021). Forest gaps allow light exposure to the forest floor to enhance the growth of tree seedlings (Lawal et al., 2021). The forest core is the interior of a forest, which is located away from the forest edges at a certain distance according to the size of the forest fragmentation (Mandal & Chatterjee, 2019). Large forest fragments contain a relatively uniform core that provides sufficient conditions for tree communities to sustain themselves. Compared to the non-interior zone, the interior forest zone is categorised as a stable forest stand within a large forest fragment (Zhou et al., 2017). The forest interior has a greater canopy crown cover than the forest edge (Oosterhoorn & Kappelle, 2000).

This study shows that the forest edge and the forest interior differ structurally and in species composition. The tree density in the forest interior was higher than in the forest edge. The forest edge had a high chance of facing disturbance as it was near the open area compared to the forest interior. However, the disturbance in the forest increases the species richness, especially the saplings and seedlings (Pavel et al., 2016). Large canopy gaps from low tree density enhanced the light exposure to the vegetation in the forest edge. Pioneer species tend to grow in the forest edge, while the forest interior is likely to be inhabited by dipterocarps. However, some *Shorea* species are shade intolerant. For instance, *Shorea macrophylla* and *Shorea leprosula* are dipterocarp species that require abundant light intensity during their seedlings stage (Afifah Hussein, 2015). According to Yeong et al. (2016), 60% of dipterocarp seedlings grew in the forest fragments due to the light factor. More shade-intolerant species were growing in the forest edge due to the exposure to high light intensity. Meanwhile, shade-tolerant species were likely to grow in the forest interior. The shade-tolerant species survive well in the forest interior and increase in number in the interior forest with the size of the forest fragments (Echeverría et al., 2007).

5.4 High Conservation Value

The is said to have high conservation value if there is the presence of endangered and endemic species (Jennings et al., 2003). Some dipterocarp species were found in this study are endemic to Borneo, such as *Hopea micrantha*, *Dipterocarpus tempehes*, *Dipterocarpus sarawakensis*, *Shorea iliasii*, *Shorea pachyphylla*, *Shorea domatiosa*, *Shorea acuminatissima*, *Shorea collaris*, *Shorea ferruginea*, *Shorea macrobalanos*, *Shorea superba*, *Shorea amplexicaulis*, *Shorea myrionerva*, *Shorea stenoptera*, *Shorea faguetioides*, *Shorea sagittata*, *Shorea stenoptera*, and *Vatica sarawakensis*. These species were listed in the Red List of Bornean Endemic Dipterocarps (Bartholomew et al., 2021). They were categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), and Near Threatened (NT), as shown in Table 4.19 to Table 4.22.

Besides, some highlighted non-dipterocarp species from this study are the Bornean species, such as *Dacryodes expansa*, *Knema rufa*, and *Horsfieldia reticulata*. *Dacryodes expansa* is an uncommon species and is found in Brunei (Soepadmo & Wong, 1995). *Knema rufa* is a rare species and can be found distributed in Brunei and Borneo (Sinclair, 1961). Lastly, *Horsfieldia reticulata* is distributed on a hillside of primary and secondary forests (Kessler & Sidiyasa, 1999). *Dacryodes expansa* and *Knema rufa* were assigned as Vulnerable (VU), meanwhile, *Horsfieldia reticulata* was in the category of Near Threatened (NT) in IUCN Red List.

With the presence of endangered and endemic species, the conservation status of fragmented forests is increasingly crucial. Forest edges are vulnerable, considering they are affected by invasive plants and human disturbance. Protecting and preserving the forest edge is important to avoid deterioration and alteration to the forest interior habitat. The forest edge

provides physical protection from wind and light, extreme weather, and other edge-related changes in microclimate.

5.5 Chapter Summary

This chapter discussed the tree density, BA, tree distribution in diameter class, species richness, AGB, IVI, FIV, and diversity indices in a fragmented forest's forest edge and interior. References were also made between the results of this study and the previous studies. The stand structure and species composition of the forest edge and interior were also discussed and compared. Tree diameter distribution that resulted in the reverse-J curve was explained to reveal the factors affecting the curve. The values of AGB in the forest edge and interior were discussed and compared. The importance and relevance of forest edge and interior in a fragmented forest were explained. Lastly, this chapter elaborated on high conservation value forests and species of conservation concern.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

This study has provided information on the structural characteristics and species composition of forest edge and interior within a fragmented forest. It also demonstrated the differences between the two forest types. The results from this study concluded that the stand structure and species composition showed major differences. Tree density, BA, large-diameter trees, and AGB were lower in the forest edge than in the interior. Although the family Dipterocarpaceae dominates the forest edge and interior communities, the dominant species is *Elateriospermum tapos*, a species from the Euphorbiaceae family. Significant floristic differences exist between the two forest types having only a 41% similarity.

A lower number of Dipterocarpaceae trees was recorded in the forest edge however, the number of Euphorbiaceae trees was comparable between the two forest types. The indices of the Shannon-Wiener, Simpson and Pielou index are equivalent between the two forest types conversely, the species richness (Margalef index) is higher in the interior. The floristics pattern from the forest edge towards the interior indicates that the species dispersion is random and unevenly distributed. Nevertheless, the tree communities are rich and diverse in the forest edge and interior. The number of species and stems increases from the edge towards the forest interior. The tree distribution showed the typical reverse-J pattern, indicating that the fragmented forest community structure is regenerating healthily. It also demonstrates that the forest edge communities regenerate well and thrive in the forest edge environment.

This study showed that the forest comprises plant species that have high conservation value. Many non-dipterocarp and dipterocarp species are found in the forest edge as well as the forest interior. Thus, the fragmented forest structure and species composition must be constantly monitored since it has a high conservation value. Practical approaches such as forest restorations and adopting best forest management practices must be taken to protect and sustain the biodiversity in fragmented forest areas.

6.2 Recommendations

This study was conducted in a fragmented forest, and future research should look into more fragmented forests to obtain more conclusive results. This is essential in order to build comparative datasets. Establishing permanent plots on the forest edge or edge and interior is also recommended to acquire temporal datasets and long-term evaluation. This is important in obtaining a clear understanding of the impacts of forest fragmentation on the status of forest health. Research on the forest stand structure and species composition of forest edges in relation to different land use is valuable. This information will provide a better understanding of the influences of land-use history on the present pattern of stand structure and species composition.

REFERENCES

- AbdelGawad, A. F. (2021, April). *Role of Urban Trees and Forests in Solving the Problem of Air Pollution*. Proceedings of ICFD14: Fourteenth International Conference of Fluid Dynamics 2-3 April 2021, Fairmont Nile City Hotel, Cairo, Egypt. https://www.researchgate.net/profile/Ahmed-Abdel-Gawad-3/publication/350820090_Role_of_Urban_Trees_and_Forests_in_Solving_the_Problem_of_Air_Pollution/links/60746caea6fdccb8195958ca/Role-of-Urban-Trees-and-Forests-in-Solving-the-Problem-of-Air-Pollution.pdf
- Adam, J. H. (2001). Changes in Forest Community Structures of Tropical Montane Rain Forest on the Slope of Mt. Trus Madi in Sabah, Malaysia. *Journal of Tropical Forest Science*, 13(1), 76–92.
- Adedeji, O., Reuben, O., & Olatoye, O. (2014). Global Climate Change. *Journal of Geoscience and Environment Protection*, 2(2), 114–122. doi: 10.4236/gep.2014.22016
- Adhikary, R. (2020). Causes and Effect of Soil Erosion and Its Preventive Measures. In S. Maitra & B. Pramanick (Eds.), *Advanced Agriculture* (pp. 376–387). doi: 10.30954/NDP-advagr.2020.19
- Afifah Hussein. (2015). *Growth of Shorea Macrophylla (de Vriese) Ashton under Line Planting at Gunung Apeng Forest Reserve Sarawak*. [Bachelor's dissertation, Universiti Malaysia Sarawak]. Universiti Malaysia Sarawak Repository. <https://ir.unimas.my/id/eprint/23537/1/Growth%20of%20Shorea%20macrophylla%2024pgs.pdf>
- Alamgir, M., Campbell, M. J., Sloan, S., Suhardiman, A., Supriatna, J., & Laurance, W. F. (2019). High-risk Infrastructure Projects Pose Imminent Threats to Forests in

- Indonesian Borneo. *Scientific Reports*, 9(1), 140. doi: 10.1038/s41598-018-36594-8
- Alamu, L. O., & Agbeja, B. O. (2011). Deforestation and Endangered Indigenous Tree Species in South-West Nigeria. *International Journal of Biodiversity and Conservation*, 3(7), 291-297.
- Alfaro, R. I., Battisti, A., Carroll, A., & Fleming, R. (2010). Forest Health in a Changing Environment. In G. Mery, P. Katila, R. Alfaro, M. Kanninen, M. Lobovikob, & J. Varjo (Eds.), *Forests and Society - Responding to Global Drivers of Change* (p. 509). Vienna: IUFRO World Series Volume 25.
- Alohou, E. C., Gbemavo, D. S. J. C., Mensah, S., & Ouinsavi, C. (2017). Fragmentation of Forest Ecosystems and Connectivity Between Sacred Groves and Forest Reserves in Southeastern Benin, West Africa. *Tropical Conservation Science*, 10(6), 1–11. doi: 10.1177/1940082917731730
- Amaral, M. K., Péllico Netto, S., Lingnau, C., & Figueiredo Filho, A. (2015). Evaluation of the Morisita Index for Determination of the Spatial Distribution of Species in a Fragment of Araucaria Forest. *Applied Ecology and Environmental Research*, 13(2), 361–372. doi: 10.15666/aeer/1302_361372
- Anderson, J. A. R. (1980). A Checklist of the Trees of Sarawak. Forest Department Sarawak. Kuching. [Malaysia]
- Anderson, S. (1994). Area and Endemism. *The Quarterly Review of Biology*, 69(4), 451-471.

- Andrén, H. (1994). Effects of Habitat Fragmentation on Birds and Mammals in Landscapes with Different Proportions of Suitable Habitat: A Review. *Oikos*, 71(3), 355-366. doi: 10.2307/3545823
- Ansari, A. (2018). Deforestation: Facts, Causes & Effects. *Journal of Emerging Technologies and Innovative Research*, 5(2), 367–375.
- Aragón, G., Abuja, L., Belinchón R., & Martínez S. (2015). Edge Type Determines the Intensity of Forest Edge Effect on Epiphytic Communities. *European Journal of Forest Research*, 134(3), 443–451. doi: 10.1007/s10342-015-0863-5.
- Arshad, N., & Gan, C.Y. (2019). *Elateriospermum tapos* Seed Protein as a New Potential Therapeutic for Diabetes, Obesity, and Hypertension: Extraction and Characterisation of Protein. *Pertanika Journal of Tropical Agriculture Science*, 42(1), 27 – 43.
- Asanok, L., Marod, D., Pattanavibool, A., & Nakashizuka, T. (2012). Colonization of Tree Species along an Interior-Exterior Gradient Across the Forest Edge in a Tropical Montane Forest, Northwest Thailand. *Tropics*, 21(3), 67–80. doi: 10.3759/tropics.21.67
- Ashton, M. S. (1995). Seedling Growth of Co-Occurring Shorea Species in the Simulated Light Environments of a Rain Forest. *Forest Ecology and Management*, 72(1), 1–12. doi: 10.1016/0378-1127(94)03452-3
- Ashton, P. M. S. & de Zoysa, N. D. (1989). Performance of *Shorea trapezifolia* Seedlings Growing in Different Light Regimes. *Journal of Tropical Forest Science*, 1(4), 356-364.
- Astiani, D., Curran, L. M., Mujiman, Ratnasari, D., Salim, R., & Lisnawaty, N. (2018). Edge Effects on Biomass, Growth, and Tree Diversity of a Degraded Peatland in West

- Kalimantan, Indonesia. *Biodiversitas*, 19(1), 272–278. doi:10.13057/biodiv/d190137
- Asyraf, M., Zakaria, R., Mansor, M., Musman, M., & Harun, A. H. (2012). The Flora Composition of Sabang Island, Aceh, Indonesia. *Check List*, 8(4), 600–609. doi: 10.15560/8.4.600
- Azanza, R. V., Fukuyo, Y., Yap, L. G., & Takayama, H. (2005). *Prorocentrum Minimum Bloom and Its Possible Link to a Massive Fish Kill in Bolinao, Pangasinan, Northern Philippines*. *Harmful Algae*, 4(3), 519–524. doi: 10.1016/j.hal.2004.08.006
- Bakewell, D., & Donysius, M. (2014). Forest Fragmentation in Oil Palm Plantations: Impacts on Biodiversity and Options for Mitigation. *Journal of Oil Palm, Environment & Health*, 5, 55–62. doi: 10.5366/jope.2014.07
- Balasubramanian, A. (2017). *Soil Erosion- Causes and Effects Soil Erosion – Causes and Effects by Prof. A. Balasubramanian Centre for Advanced Studies in Earth Science, University of Mysore, Mysore*. doi: 10.13140/RG.2.2.26247.39841
- Banul, R., Kosewsk, A., & Borkowski, J. (2018). Animal Occurrence in Fragmented Forest Habitats – Important Factors at the Patch and Landscape Scale. *Forest Research Paper*, 79(1), 89–100. doi: 10.2478/frp-2018-0010
- Barbour, M.G., Burk, J.H., and Pitts, W.D. (1987). *Terrestrial Plant Ecology*. 2nd edition. Reading, Maine: The Benjamin/Cummings Publishing Company, Inc.
- Bartholomew, D., Barstow, M., Randi, A., Bodos, V., Cicuzza, D., Hoo, P., Juiling, S., Khoo, E., Kusumadewi, Y., Majapun, R., Andi, A.M., Maycock, C., Nilus, R., Pereira, J., Sang, J., Robiansyah, I., Sugau, J., Tanggaraju, S., Tsen, S., & Yining, L.C. (2021). The Red List of Bornean Endemic Dipterocarps. *BGCI: Richmond, UK*.

- Baskent, E. Z., & Jordan, G. A. (1995). Characterizing Spatial Structure of Forest Landscapes. *Canadian Journal of Forest Research*, 25(11), 1830-1849.
- Baumgardner, M. C. (2007). *Forest Fragmentation and Its Effects on Arthropod Populations in Small Vs. Large Forests in Northwest Ohio* [Doctoral dissertation, Bowling Green State University].
- Beche, D., Tack, A., Nemomissa, S., Warkineh, B., Lemessa, D., Rodrigues, P., Joern, F., & Hylander, K. (2022). Spatial Variation in Human Disturbances and Their Effects on Forest Structure and Biodiversity across an Afromontane Forest. *Landscape Ecology*, 4(January), 1–19. doi: 10.1007/s10980-021-01395-4
- Benítez-Malvido, J., & Arroyo-Rodríguez, V. (2008). Habitat Fragmentation, Edge Effects and Biological Corridors in Tropical Ecosystems. *Encyclopedia of Life Support Systems (EOLSS)*, V(August), 1–11.
- Benítez-Malvido, J., Lázaro, A., & Ferraz, I. D. K. (2018). Effect of Distance to Edge and Edge Interaction on Seedling Regeneration and Biotic Damage in Tropical Rainforest Fragments: A Long-Term Experiment. *Journal of Ecology*, 106(6), 2204–2217. doi: 10.1111/1365-2745.13003
- Berezki, K., Hajdu, K., & Báldi, A. (2015). Effects of Forest Edge on Pest Control Service Provided by Birds in Fragmented Temperate Forests. *Acta Zoologica Academiae Scientiarum Hungaricae*, 61(3), 289–304. doi: 10.17109/AZH.61.3.7.2015
- Beyene, B., Beyene, B., Unasho, A., & Derbe, H. (2016). Processes of Forest Fragmentation and Its Impacts. *Journal of Resources Development and Management*, 23, 37–46.
- Bhattacharjee, P. K. (2010). Global Warming Impact on the Earth. *International Journal of*

Environmental Science and Development, 1(3), 219–220.

- Bodo, T., Gbidum, B., Kemetonye, G., & Seomoni, J. (2021). Deforestation : Human Causes, Consequences and Possible Solutions. *Journal of Geographical Research*, 4(2), 22–30.
- Bogaert, J., Barima, Y. S. S., Mongo, W., Bamba, I., Mama, A., Toyi, M., & Laforteza, R. (2011). Forest Fragmentation: Causes, Ecological Impacts, and Implications for Landscape Management. In Li, C., Laforteza, R., Chen, J. (eds), *Landscape Ecology in Forest Management and Conservation* (pp. 274–296). Springer, Berlin, Heidelberg: Higher Education Press, Beijing.
- Brearley, F.Q., Prajadinata, S., Kidd, P.S., Proctor, J., & Suriantata (2004). Structure and Floristics of an Old Secondary Rain Forest in Central Kalimantan, Indonesia, and a Comparison with Adjacent Primary Forest. *Forest Ecology and Management*, 195(3), 385-397.
- Brearley, F. Q., Banin, L. F., & Saner, P. (2017). The Ecology of the Asian Dipterocarps. *Plant Ecology & Diversity*, 9(5–6), 429–436. doi: 10.1080/17550874.2017.1285363
- Brown, R. L., Jacobs, L. A., & Peet, R. K. (2007). Species Richness: Small Scale. *ELS*, 1–8. doi: 10.1002/9780470015902.a0020488
- Brown, E., & Senior, M. J. M. (2014). Common Guidance for the Management and Monitoring of High Conservation Values. *HCV Resource Network*. Retrieved from https://fsc.org/sites/default/files/2020-08/HCV_Mgmt_Monitoring_final_english.pdf
- Brower, J., Zar, J., & Ende, C. N. von. (1998). *Field and Laboratory Method for General Ecology*. (4th Edition). McGraw-Hill.

- Bruna, E. M. (2004). Biological Impacts of Deforestation and Fragmentation. In *Ecology* (pp. 85–90). University of Florida, Gainesville, FL, USA: Elsevier Ltd.
- Bulafu, C., Barang, D., Eycott, A. E., Mucunguzi, P., Telford, R. J., & Vandvik, V. (2013). Structural Changes are More Important than Compositional Changes in Driving Biomass Loss in Ugandan Forest Fragments. *Journal of Tropical Forestry and Environment*, 3(2), 23-38. doi: 10.31357/jtfe.v3i2.1840
- Burlakova, L. E., Karatayev, A. Y., Karatayev, V. A., May, M. E., Bennett, D. L., & Cook, M. J. (2011). Endemic Species: Contribution to Community Uniqueness, Effect of Habitat Alteration, and Conservation Priorities. *Biological Conservation*, 144(1), 155-165.
- Cadenasso, M. L., Pickett, S. T. A., Weathers, K. C., & Jones, C. G. (2003). A Framework for a Theory of Ecological Boundaries. *BioScience*, 53(8), 750–758.
- Camargo, J. L. C., & Kapos, V. (1995). Complex Edge Effects on Soil-Moisture and Microclimate in Central Amazonian. *Journal of Tropical Ecology*, 11(2), 205–221. doi: 10.1017/S026646740000866X
- Cayuela, L., Murcia, C., Hawk, A. A., Fernández-Vega, J., & Oviedo-Brenes, F. (2009). Tree Responses to Edge Effects and Canopy Openness in a Tropical Montane Forest Fragment in Southern Costa Rica. *Tropical Conservation Science*, 2(4), 425–436. doi: 10.1177/194008290900200404
- Cedergren, J., Falck, J., Garcia, A., Goh, F., & Hagner, M. (2002). Structure, Composition, and Commercial Characteristics of a Primary Dipterocarp Forest in Sabah, Malaysia. *Journal of Tropical Forest Science*, 14(3), 304–321.
- Chai, P.P.K., Lee, S.S.H., & Othman, I. (1989). *Native Medicinal Plants of Sarawak*.

Kuching: Forest Department of Sarawak.

- Chapman, J. I., Burky, A. J., & Mcewan, R. W. (2015). Edge Effects, Invasion, and the Spatial Pattern of Herb-Layer Biodiversity in an Old-Growth Deciduous Forest Fragment. *Natural Areas Journal*, 35(3), 439–451. doi: 10.3375/043.035.0307
- Charles, L. S. (2020). Plant Functional Traits and Species Selection in Tropical Forest Restoration. *Tropical Conservation Science*, 11(1), 1–4. doi: 10.1177/1940082918784157
- Chave, J., Andalo, C., Brown, S., Cairns, M. A., Chambers, J. Q., Eamus, D., Folster, H., Fromard, F., Higuchi, N., Kira, T., Lescure, J. P., Nelson, B. W., Ogawa, H., Puig, H., Riera, B., & Yamakura, T. (2005). Tree Allometry and Improved Estimation of Carbon Stocks and Balance in Tropical Forests. *Oecologia*, 145(1), 87–99. doi: 10.1007/s00442-005-0100-x
- Chen, L., Wang, L., Baiketuerhan, Y., Zhang, C., Zhao, X., & Von Gadow, K. (2014). Seed Dispersal and Seedling Recruitment of Trees at Different Successional Stages in a Temperate Forest in northeastern China. *Journal of Plant Ecology*, 7(4), 337–346. doi: 10.1093/jpe/rtt024
- Chua, L. S. L., H. Nurulhuda, M. Hamidah., & L.G. Saw. (2004). Conservation Status of *Hopea subulata* (Dipterocarpaceae) in Peninsular Malaysia. *Journal of Tropical Forest Science*, 16(3), 271-282.
- Clark, D. B., Ferraz, A., Clark, D. A., Kellner, J. R., Letcher, S. G., & Saatchi, S. (2019). Diversity, Distribution, and Dynamics of Large Trees Across an Old-Growth Lowland Tropical Rain Forest Landscape. *PLoS ONE*, 14(11), 1–23. doi: 10.1371/journal.pone.0224896

- Cohen, D., & Schwarz, M. (2017). Tree-Roots Control of Shallow Landslides. *Earth Surface Dynamics Discussions*, 5(3), 451–477. doi: 10.5194/esurf-2017-10
- Collinge, S. K., & Palmer, T. M. (2002). The Influences of Patch Shape and Boundary Contrast on Insect Response to Fragmentation in California Grasslands. *Landscape Ecology*, 17(7), 647–656. doi: org/10.1023/A
- Collins, N. M., Sayer, J. A., & Whitmore, T. C. (1991). Forest Wildlife. In *The Conservation Atlas of Tropical Forests Asia and the Pacific* (pp. 13-24). Palgrave Macmillan, London.
- Curtis, J. T., & McIntosh, R. P. (1950). The Interrelations of Certain Analytic and Synthetic Phytosociological Characters. *Ecology*, 31(3), 434-455.
- da Rosa, C. A., Secco, H., Carvalho, N., Maia, A. C., & Bager, A. (2018). Edge Effects on Small Mammals: Differences between Arboreal and Ground-dwelling Species Living near Roads in Brazilian Fragmented Landscapes. *Austral Ecology*, 43(1), 117-126. doi: 10.1111/aec.12549
- Daly, A. J., Baetens, J. M., & De Baets, B. (2018). Ecological Diversity: Measuring the Unmeasurable. *Mathematics*, 6(7), 1–28. doi: 10.3390/math6070119
- Dantas de Paula, M., Groeneveld, J., & Huth, A. (2015). Tropical Forest Degradation and Recovery in Fragmented Landscapes — Simulating Changes in Tree Community, Forest Hydrology and Carbon Balance. *Global Ecology and Conservation*, 3(2015), 664–677. doi: 10.1016/j.gecco.2015.03.004.
- Dar, J. A., Subashree, K., Raha, D., Kumar, A., Khare, K. P., & Khan, L. M. (2019). Tree Diversity, Biomass, and Carbon Storage in Sacred Groves of Central India.

Environmental Science and Pollution Research, 26(36), 37212-37227. doi: 10.1007/s11356-019-06854-9

Demies, M., Samejima, H., Sayok, A. K., & Noweg, G. T. (2019). Tree Diversity, Forest Structure, and Species Composition in a Logged-Over Mixed Dipterocarp Forest, Bintulu, Sarawak, Malaysia. *Transactions on Science and Technology*, 6(2), 102–110.

Deon, R. (2002). Forest Fragmentation and Forest Management: A Plea for Empirical Data. *Forestry Chronicle*, 78(5), 686-689.

De Cáceres, M., Legendre, P., & He, F. (2013). Dissimilarity Measurements and the Size Structure of Ecological Communities. *Methods in Ecology and Evolution*, 4(12), 1167-1177.

De Cáceres, M., Martín-Alcón, S., González-Olabarria, J. R., & Coll, L. (2019). A General Method for the Classification of Forest Stands Using Species Composition and Vertical and Horizontal Structure. *Annals of Forest Science*, 76(2), 40. doi: 10.1007/s13595-019-0824-0

De Jong, W., Chokkalingam, U., & Smith, J. (2001). Tropical Secondary Forests in Asia: Introduction and Synthesis. *Journal of Tropical Forest Science*, 13(4), 563-576.

Didham, R. K. (2010). The Ecological Consequences of Habitat Fragmentation. *Encyclopedia of Life Sciences.*, 61(0), 1–39.

Dillon, W. W., Lieurance, D., Clay, K., & Flory, S. L. (2018). Native and Invasive Woody Species Differentially Respond to Forest Edges and Forest Successional Age. *Forest*, 9(7), 381. doi: 10.3390/f9070381

Dislich, C., Keyel, A. C., Salecker, J., Kisel, Y., Meyer, K. M., Corre, M. D., Faust, H., Hess,

- B., Knohl, A., Kreft, H., Meijide, A., Nurdiansyah, F., Otten, F., Pe'er, G., Steinebach, S., Tarigan, S., Tschardt, K., Tölle, M., & Kerstin, W. (2015). *Ecosystem Functions of Oil Palm Plantations - A Review GOEDOC - Dokumenten- und Publikationsserver der Georg-August-Universität Göttingen a review.*
- Dislich, C., Keyel, A. C., Salecker, J., Kisel, Y., Meyer, K. M., Auliya, M., Barnes, A. D., Corre, M. D., Darras, K., Faust, H., Hess, B., Klasen, S., Knohl, A., Kreft, H., Meijide, A., Nurdiansyah, F., Otten, F., Pe'er, G., Steinebach, S., Tarigan, S., Tölle, M. H., Tschardt, T., & Wiegand, K. (2017). A Review of the Ecosystem Functions in Oil Palm Plantations, using Forests as a Reference System. *Biological Reviews*, 92(3), 1539-1569.
- Diway, B.M., Chai, P.K. & Blum, M. (2009). A Study on the Vegetation of Batang Ai National Park, Sarawak, Malaysia (Part 2). In: ITTO Project PD 288/04 Rev. 2 (F) Development of Lanjak Entimau Wildlife Sanctuary as a totally protected area, Phase IV (Final Phase), 47 p. International Tropical Timber Organisation, Forest Department Sarawak & Sarawak Forestry Corporation.
- Doick, K., & Hutchings, T. (2013). *Air Temperature Regulation by Urban Trees and Green Infrastructure* (No. 012). Forestry Commission.
- Duffy, J. E. (2009). Why Biodiversity is Important to the Functioning of Real-World Ecosystems. *Frontiers in Ecology and the Environment*, 7(8), 437–444. doi: 10.1890/070195
- Duncanson, L., Disney, M., Armston, J., Nickeson, J., & Minor, D. (2021). Committee on Earth Observation Satellites Working Group on Calibration and Validation Land Product Validation Subgroup Aboveground Woody Biomass Product Validation Good

- Practices Protocol. In *Good Practices for Satellite Derived Land Product Validation*. doi: 10.5067/doc/ceoswgcw/lpv/agb.001
- Dutilleul, P., Clifford, P., Richardson, S., & Hemon, D. (1993). Modifying the t test for Assessing the Correlation between Two Spatial Processes. *Biometrics*, 49(1), 305-314.
- Echeverría, C., Newton, A. C., Lara, A., Benayas, J. M. R., & Coomes, D. A. (2007). Impacts of Forest Fragmentation on Species Composition and Forest Structure in the Temperate Landscape of Southern Chile. *Global Ecology and Biogeography*, 16(4), 426–439. doi: 10.1111/j.1466-8238.2007.00311.x
- Ellis-Cockcroft, I., & Cotter, J. (2014). Tropical Forest Fragmentation: Implication for Ecosystem Function. *Greenpeace Research Laboratories Technical Report (Review)*, 2, 1-15.
- Edwards, D. P., Fisher, B., & Wilcove, D. S. (2012). High Conservation Value or High Confusion Value? Sustainable Agriculture and Biodiversity Conservation in the Tropics. *Conservation Letters*, 5(1), 20–27. doi: 10.1111/j.1755-263X.2011.00209.x
- El-Taguri, H. M. A., & Latiff, A. (2020). Ecology and Distribution of *Vatica* L. (Dipterocarpaceae) in Peninsular Malaysia. *Malayan Nature Journal*, 68(3), 5–11. doi: 10.13140/RG.2.2.18664.70400
- Eldegard, K., Totland, Ø., & Moe, S. R. (2015). Edge Effects on Plant Communities Along Power Line Clearings. *Journal of Applied Ecology*, 52(4), 871–880. doi: 10.1111/1365-2664.12460
- Enoki, T., Kusumoto, B., & Tsuji, K. (2014). Stand Structure and Plant Species Occurrence in Forest Edge Habitat Along Different Aged Roads on Okinawa Island, Southwestern

- Japan. *Journal of Forest Research*, 19(1), 1–8. doi: 10.1007/s10310-012-0383-9
- Ewers, R. M., & Leite, C. (2013). Fragmentation Impairs the Microclimate Buffering Effect of Tropical Forests. *PLoS ONE*, 8(3), 1–7. doi: 10.1371/journal.pone.0058093
- Fahrig, L. (2003). Effects of Habitat Fragmentation on Biodiversity. *Annual Review of Ecology, Evolution, and Systematics*, 34(1), 487–515. doi: 10.1146/annurev.ecolsys.34.011802.132419
- Fariah, D., Mariano-Neto, E., Martini, A. M. Z., Ortiz, J. V., Montingelli, R., Rosso, S., Paciencia, M. L. B., & Baumgarten, J. (2009). Forest Structure in a Mosaic of Rainforest Sites: The Effect of Fragmentation and Recovery after Clear Cut. *Forest Ecology and Management*, 257(11), 2226–2234.
- Fatehi, P., Damm, A., Leiterer, R., Bavaghar, M. P., Schaepman, M. E., & Kneubühler, M. (2017). Tree Density and Forest Productivity in a Heterogeneous Alpine Environment: Insights from Airborne Laser Scanning and Imaging Spectroscopy. *Forests*, 8(6), 212. doi: 10.3390/f8060212
- Fattorini, S. (2017). Endemism in Historical Biogeography and Conservation Biology: Concepts and Implications. *Biogeographia—The Journal of Integrative Biogeography*, 32(1), 47-75.
- Feldpausch, T. R., Lloyd, J., Lewis, S. L., Brien, R. J. W. M., Gloor, A., Mendoza, A. M., Lopez-Gonzalez, G., Banin, L., Abu Salim, K., Affum Baffoe, K., Alexiades, M., Almeida, S., Amaral, I., Andrade, A., Aragao, L. E. O. C., Murakami, A. A., Arets, E. J. M. M., Arroyo, L., Aymard, C. G. A., Baker, T. R., Banki, O. S., Berry, N. J., Cardozo, N., Chave, J., Comiskey, J. A. E., Alvarez, E., & Phillips, O. L. (2012). Tree Height Integrated into Pantropical Forest Biomass Estimates. *Biogeosciences*, 9(8),

3381–3403. doi: 10.5194/bg-9-3381-2012

- Ferreira, L.V. & Laurance W.F. (1997). Effects of Forest Fragmentation on Mortality and Damage of Selected Trees in Central Amazonia. *Conservation Biology*, 11(3), 797–801.
- Fischer, R., Taubert, F., Müller, M. S., Groeneveld, J., Lehmann, S., Wiegand, T., & Huth, A. (2021). Accelerated Forest Fragmentation Leads to Critical Increase in Tropical Forest Edge Area. *Science Advances*, 7(37), eabg7012.
- Flory, S. L., & Clay, K. (2010). Non-Native Grass Invasion Suppresses Forest Succession. *Oecologia*, 164(4), 1029-1038.
- Foley, J. A., Defries, R., Asner, G. P., Barford, C., Bonan, G., Carpenter, S. R., Chapin, F. S., Coe, M. T., Daily, G. C., Gibbs, H. K., Helkowski, J. H., Holloway, T., Howard, E. A., Kucharik, C. J., Monfreda, C., Patz, J. A., Prentice, I. C., Ramankutty, N., & Snyder, P. K. (2005). Global Consequences of Land Use. *Science*, 309(5734), 570–575. doi: 10.1126/science.1111772
- Foo, J., & Noor, H. M. (2012). Respon Masyarakat Tempatan terhadap Pelaksanaan Sistem Tagal. *Malaysia Journal of Society and Space*, 8(2), 30-37.
- Fowler, H. G., Silva, C. A., & Venticinqu, E. (1993). Size, Taxonomic, and Biomass Distributions of Flying Insects in Central Amazonia: Forest Edge vs. Understory. *Revista de Biologia Tropical*, 41(3), 755–760. doi: 10.15517/RBT.V41I3
- Franklin, J. (2003). Regeneration and Growth of Pioneer and Shade - Tolerant Rain Forest Trees in Tonga. *New Zealand Journal of Botany*, 41(4), 669–684. doi: 10.1080/0028825X.2003.9512877
- Fry, G., & Sarlöv-Herlin, I. (1997). The Ecological and Amenity Functions of Woodland

- Edges in the Agricultural Landscape, a Basis for Design and Management. *Landscape and Urban Planning*, 37(1-2), 45-55.
- Fu, L. T. (2019). Potential Differences in Seed Dispersals of Low-Height Vegetation between Single Element and Windbreak-Like Clumps. *Ecology and Evolution*, 9(22), 12639–12648. doi: 10.1002/ece3.5727
- Gamito, S. (2010). Caution is Needed When Applying Margalef Diversity Index. *Ecological Indicators*, 10(2), 550–551. doi: 10.1016/j.ecolind.2009.07.006
- Ganivet, E., Unggang, J., Bodos, V., Demies, M., Ling, C. Y., Sang, J., & Bloomberg, M. (2020). Assessing Tree Species Diversity and Structure of Mixed Dipterocarp Forest Remnants in a Fragmented Landscape Of North-Western Borneo, Sarawak, Malaysia. *Ecological Indicators*, 112(August 2018), 106117. doi: 10.1016/j.ecolind.2020.106117
- Gautam, T. P., & Mandal, T. N. (2017). Composition and Importance Value of Tree-Families in Undisturbed and Disturbed Moist Tropical Forest Of Eastern Nepal. *Nepalese Journal of Biosciences*, 7(1), 41–46. doi:10.3126/njbs.v7i1.41763
- Gebeyehu, M. N., & Hirpo, F. H. (2020). Review on Effect of Climate Change on Forest Ecosystem. *International Journal of Environmental Science and Natural Resources*, 17(4), 126–129. doi: 10.19080/IJESNR.2019.17.555968
- Gbètoho, A. J., Aoudji, A. K. N., Roxburgh, L., & Ganglo, J. C. (2017). Assessing the Suitability of Pioneer Species for Secondary Forest Restoration in Benin in the Context of Global Climate Change. *Ecological Niche Models in Benin*, 332(2), 43–55. doi: 10.19182/bft2017.332.a31332
- Ghazoul, J., & Evans, J. (2020). Deforestation and Land Clearing. In Levin S. A (Ed.),

Encyclopedia of Biodiversity (2nd ed.). doi: 10.1016/B978-0-12-384719-5.00281-1

- Ghollasimood, S., Faridah Hanum, I., Nazre, M., & Abd Kudus, K. (2011). Tree Species Composition and Structure of a Coastal Hill Forest in Pulau Pangkor, Malaysia. *Journal of Agricultural Science*, 3(4), 172–187. doi: 10.5539/jas.v3n4p172
- Gobilik, J. (2008). Stand Structure and Tree Composition of Timbah Virgin Jungle Reserve, Sabah, Malaysia. *Journal of Tropical Biology & Conservation (JTBC)*, 4(1), 55–66.
- Gonzalez, M., Ladet, S., Deconchat, M., Cabanettes, A., Alard, D., & Balent, G. (2010). Relative Contribution of Edge and Interior Zones to Patch Size Effect on Species Richness: An Example for Woody Plants. *Forest Ecology and Management*, 259(3), 266-274.
- Goodale, U. M. (2014). *The Ecophysiology of Pioneer Tree Species in Relation to Their Disturbance Ecology in a Wet Lowland Rainforest , Sri Lanka*.
- Govindasamy, B. (2014). Can Planting New Trees Help to Reduce Global Warming? *Current Science*, 106(12), 1623–1624.
- Govindjee, G., & Coleman, W. J. (1990). How Plants Make Oxygen. *Scientific American*, 262(2), 50–58. doi: 10.1038/scientificamerican0290-50
- Griffin, J., Grif, J. N., Gorman, E. J. O., Emmerson, M. C., Jenkins, R., Klein, A., Loreau, M., & Symstad, A. (2009). Biodiversity and the Stability of Ecosystem Functioning. In S. Naeem, D. E. Bunker, A. Hector, L. Michel, & C. Perrings (Eds.), *Biodiversity, Ecosystem Functioning and Human Wellbeing: An Ecological and Economic*. doi: 10.1093/acprof:oso/9780199547951.001.0001
- Gross, M. (2020). Forests in a Warming World. *Current Biology*, 30(12), R677-R679.

- Haddad, N. M., Brudvig, L. A., Clobert, J., Davies, K. F., Gonzalez, A., Holt, R. D., Lovejoy, T. E., Sexton, J. O., Austin, M. P., Collins, C. D., Cook, W. M., Damschen, E. I., Ewers, R. M., Foster, B. L., Jenkins, C. N., King, A. J., Laurance, W. F., Levey, D. J., Margules, C. R., Melbourne, B. A., Nicholls, A. O., Orrock, J. L., Song, D. X., & Townshend, J. R. (2015). Habitat Fragmentation and Its Lasting Impact on Earth's Ecosystems. *Science Advances*, 1(2), 1–10. doi: 10.1126/sciadv.1500052
- Hairiah, K., Widiyanto, W., Suprayogo, D., & van Noordwijk, M. (2020). Tree Roots Anchoring and Binding Soil: Reducing Landslide Risk in Indonesian Agroforestry. *Land*, 9(8), 256. doi: 10.3390/land9080256
- Hanski, I. (2011). Habitat Loss, the Dynamics of Biodiversity, and a Perspective on Conservation. *Ambio*, 40(3), 248–255. doi: 10.1007/s13280-011-0147-3
- Hanum, I. F. (1999). Plant diversity and conservation value of Ayer Hitam forest, Selangor, Peninsular Malaysia. *Pertanika J Trop Agric Sci*, 22(2), 73–83.
- Hao, M., Corral-Rivas, J. J., González-Elizondo, M. S., Ganeshaiah, K. N., Nava-Miranda, M. G., Zhang, C., Zhao, X., & Gadow, K. von. (2019). Assessing Biological Dissimilarities between Five Forest Communities. *Forest Ecosystems*, 6(1), 1–8. doi: 10.1186/s40663-019-0188-9
- Harper, K. A., Ellen Macdonald, S., Burton, P. J., Chen, J., Brosfokske, K. D., Saunders, S. C., & Euskirchen, E. S. (2005). Edge Influence on Forest Structure and Composition in Fragmented Landscapes. *Conservation Biology*, 19(3), 768–782. doi: 10.1111/j.1523-1739.2005.00045.x
- Harper, K. A., Macdonald, S. E., Mayerhofer, M. S., Biswas, S. R., Esseen, P., Hylander,

- K., Stewart, K. J., Mallik, A. U., Drapaeu, P., Jonsson, B., Lesieur, D., Kouki, J., & Bergeron, Y. (2015). Edge Influence on Vegetation at Natural and Anthropogenic Edges of Boreal Forests in Canada and Fennoscandia. *Journal of Ecology*, 103(3), 550–562. doi: 10.1111/1365-2745.12398
- Harris, A. H., Fernandes-Taylor, S., & Giori, N. (2012). “Not Statistically Different” does not Necessarily Mean “the Same”: The Important but Underappreciated Distinction between Difference and Equivalence Studies. *JBJS*, 94(5), e29.
- Hayat, A. M. S., Kudus, K. A., Faridah Hanum, I., Awang Noor, A. G., & Nazre, M. (2010). Assessment of Plant Species Diversity at Pasir Tengkorak Forest Reserve, Langkawi Island, Malaysia. *Journal of Agriculture Science*, 2(1), 31- 38. doi: 10.5539/jas.v2n1p31
- Hayes, J. J., & Castillo, O. (2017). A New Approach for Interpreting the Morisita Index of Aggregation Through Quadrat Size. *ISPRS International Journal of Geo-Information*, 6(10), 296. doi: 10.3390/ijgi6100296
- Haywood, V. H. (1995). *Global Biodiversity Assessment*. Cambridge University Press: Cambridgeshire.
- HCV Malaysia Toolkit Steering Committee. (2018). *Malaysian National Interpretation for the Identification of High Conservation Values*. Kuala Lumpur, Malaysia.
- Hédl, R., Svátek, M., Dančák, M., Rodzay, A. W., Salleh, M., & Kamariah, A. S. (2009). A New Technique for Inventory of Permanent Plots in Tropical Forests: A Case Study from Lowland Dipterocarp Forest in Kuala Belalong, Brunei Darussalam. *Blumea*:

- Journal of Plant Taxonomy and Plant Geography*, 54(1–3), 124–130. doi: 10.3767/000651909X475482
- Helms, J. (1998). *The Dictionary of Forestry*. CAB International.
- Henson, I. E. (2003). The Malaysian National Average Oil Palm: Concept and Evaluation. *Oil Palm Bulletin*, 46(May), 15–27.
- Hidayati, F., Hardiwinoto, S., Indrioko, S., Tani, N., & Naiem, M. (2020). Selection of Dipterocarp Species for Enrichment Planting in a Secondary Tropical Rainforest. *Forest Science and Technology*, 16(4), 206–215. doi: 10.1080/21580103.2020.1831620
- Hill, J. L., & Curran, P. J. (2003). Area, Shape and Isolation of Tropical Forest Fragments: Effects on Tree Species Diversity and Implications for Conservation. *Journal of Biogeography*, 30(9), 1391–1403. doi: 10.1046/j.1365-2699.2003.00930.x
- Ho, C. C., Newbery, D. M., & Poore, M. (1987). Forest Composition and Inferred Dynamics in Jengka Forest Reserve, Malaysia. *Journal of Tropical Ecology*, 3(1), 25–56.
- Hoang, V. S., & Van Welzen, P. C. (2004). Revision of *Annesijoa*, *Elateriospermum* and the Introduced Species of *Hevea* in Malesia (Euphorbiaceae). *Blumea: Journal of Plant Taxonomy and Plant Geography*, 49(2–3), 425–440. doi: 10.3767/000651904x484351
- Hooper, E., Legendre, P., & Condit, R. (2005). Barriers to Forest Regeneration of Deforested and Abandoned Land in Panama. *Journal of Applied Ecology*, 42(6), 1165–1174. doi: 10.1111/j.1365-2664.2005.01106.x
- Hubbell, S.P & Foster, R.B. (1983). Diversity of Canopy Trees in a Neotropical Forest and Implications for Conservation. In: *Tropical Rain Forest: Ecology and Management* (eds. S.L. Sutton, T.C. Whitmore and A.C. Chadwick), Oxford: Blackwell Scientific

Publications. pp. 25–41.

Ifo, S. A., Moutsambote, J. M., Koubouana, F., Yoka, J., Ndzai, S. F., Bouetou-Kadilamio, L. N. O., Mampouya, H., Jourdain, C., Bocko, Y., Mantota, A. B., Mbemba, M., Mouanga-Sokath, D., Odende, R., Mondzali, L. R., Wenina, Y. E. M., Ouissika, B. C., & Joel, L. J. (2016). Tree Species Diversity, Richness, and Similarity in Intact and Degraded Forest in the Tropical Rainforest of the Congo Basin: Case of the Forest of Likouala in the Republic of Congo. *International Journal of Forestry Research*, 2016(2), 1–12. doi: 10.1155/2016/7593681

Isango, J. A. (2007). Stand Structure and Tree Species Composition of Tanzania Miombo Woodlands : A Case Study from Miombo Woodlands of Community Based Forest Management in Iringa District. *MITMIOMBO – Management of Indigenous Tree Species for Ecosystem Restoration and Wood Production in Semi-Arid Miombo Woodlands in Eastern Africa. Proceedings of the First MITMIOMBO Project Work-Shop*, 50(February), 43–56.

IUCN. (2021). IUCN Green Status of Species: A Global Standard for Measuring Species Recovery and Assessing Conservation Impact. Retrieved from <https://portals.iucn.org/library/sites/library/files/documents/2021-022-En.pdf>

IUCN. (2022). *The IUCN Red List of Threatened Species*. Retrieved from <https://www.iucnredlist.org>

Jana, C. L., & Jusoh, I. (2021). Structure and Tree Species Composition of Forest Fringe of a Forest Fragment in an Oil Palm Plantation at Suai, Sarawak, Malaysian Borneo. *Biodiversitas*, 22(7), 3013-3019. DOI: 10.13057/biodiv/d220755

Janean, H., Creighton, M. S., David, M., & Baumgartner, D. M. (1997). Wildlife Ecology

and Forest Habitat. *Washington State University, Washington.*

Jaya, I. N. S., Kusmana, C., & Murti Laksono, K. (2014). *Analysis of Tropical Forest Landscape Fragmentation in Batang Toru Watershed, North Sumatra.* XX(August), 77–85. doi: 10.7226/jtfm.20.2.77

Jennings, S., & Jarvie, J. (2003). A Sourcebook for Landscape Analysis of High Conservation Value Forests. *Work Funded by the World Wildlife Found Organization.*

Jennings, S., Nussbaum, R., Judd, N., Evans, T., Iacobelli, T., Jarvie, J., Azevedo, T., Brown, N., Colchester, M., Lindhe, A., Synnott, T., Vallejos, C., Yaroshenko, A., & Chunquan, Z. (2003). The High Conservation Value Forest Toolkit. *Edition I, ProForest, Oxford OX, 12, 1-62.*

Jost, L. (2010). The Relation between Evenness and Diversity. *Diversity*, 2(2), 207–232. doi: 10.3390/d2020207

Julia, S., Chong, L., Vilma, B., & Esther, S. (2014). Sarawak Plant Red List: Dipterocarpaceae Series I: Dipterocarpus, Dryobalanops and Shorea. *Sarawak Forestry Coroportation.*

Jusoh I. (2017). Wood: Its Benefits and Versatility. Universiti Malaysia Sarawak. Kota Samarahan. [Malaysia]

Kacholi, D. S. (2014). Analysis of Structure and Diversity of the Kilengwe Forest in the Morogoro Region, Tanzania. *International Journal of Biodiversity*, Article ID 516840. doi: 10.1155/2014/516840

Kacholi, D. S. (2014). Edge-Interior Disparities in Tree Species and Structural Composition of the Kilengwe Forest in Morogoro Region, Tanzania. *ISRN Biodiversity*, 2014(2), 1–8. doi: 10.1155/2014/873174

- Kakishima, S., Morita, S., Yoshida, K., Ishida, A., Hayashi, S., Asami, T., Ito, H., Miller III, D. G., Uehara, T., Mori, S., Hasegawa, E., Matsuura, K., Kasuya, E., & Yoshimura, J. (2015). The Contribution of Seed Dispersers to Tree Species Diversity in Tropical Rainforests. *Royal Society Open Science*, 2(10), 150330. doi: 10.1098/rsos.150330
- Karatas, A. (2019). *Measurement of Changes in Forest Fragmentation Caused by Road Construction Between 2000 and 2014 Using GIS in St. Johns Country, Florida*.
- Kauppi, P. E., Stål, G., Arnesson-ceder, L., Hallberg, I., Fredrik, H., Svensson, A., Wernick, I. K., Högberg, P., Lundmark, T., & Nordin, A. (2022). Managing Existing Forests Can Mitigate Climate Change. *Forest Ecology and Management*, 513(5–6), 1–9. doi: 10.1016/j.foreco.2022.120186
- Kettle, C. J., & Koh, L. P. (Eds.). (2014). *Global Forest Fragmentation*. CABI.
- Kellman, M., Tackaberry, R., & Rigg, L. (1998). Structure and Function in Two Tropical Gallery Forest Communities: Implications for Forest Conservation in Fragmented Systems. *Journal of Applied Ecology*, 35(2), 195–206. doi: 10.1046/j.1365-2664.1998.00300.x
- Kerr, G., Mason, B., Boswell, R., and Pommerening, A. (2002). *Monitoring the Transformation of Even-Aged Stands to Continuous Cover Management*. Great Britain, Forestry Commission.
- Kerr, G., & Mackintosh, H. (2012). Long-Term Survival of Saplings during the Transformation to Continuous Cover. *Forests*, 3(4), 787–798. doi: 10.3390/f3030787
- Kessler, P. J., & Sidiyasa, K. (1999). *Trees of the Balikpapan-Samarinda area, East Kalimantan, Indonesia: A Manual to 280 Selected Species*.

- Kessler, M., Keßler, P. J. A., Gradstein, S. R., Bach, K., Schnull, M., & Pitopang, R. (2005). Tree Diversity in Primary Forest and Different Land Use Systems in Central Sulawesi, Indonesia. *Biodiversity and Conservation*, 14(3), 547–560. doi: 10.1007/s10531-004-3914-7
- Khaine, I., Woo, S. Y., Kang, H., Kwak, M. J., Je, S. M., You, H., Lee, T., Jang, J., Lee, H. K., Lee, E., Yang, L., Kim, H., Lee, J. K., & Kim, J. (2017). Species Diversity, Stand Structure, and Species Distribution Across a Precipitation Gradient in Tropical Forests in Myanmar. *Forests*, 8(8), 1–15. doi: 10.3390/f8080282
- Khairil, M., Juliana, W. W., Nizam, M. S., & Faszly, R. (2011). Community Structure and Biomass of Tree Species at Chini Watershed Forest, Pekan, Pahang. *Sains Malaysiana*, 40(11), 1209-1221.
- Khanna, M. (1998). Edge Effects on Exterior and Interior Forest Composition. *Field Ecology*, 371, 1–15. https://wp.stolaf.edu/naturallands/files/2015/08/Khanna_1998.pdf
- Khaniya, L., & Shrestha, B. B. (2020). Forest Regrowth Reduces Richness and Abundance of Invasive Alien Plant Species in Community Managed *Shorea robusta* Forests of Central Nepal. *Journal of Ecology and Environment*, 44(2), 90-97. doi: 10.1186/s41610-020-00158-7
- King, D. A., Davies, S. J., Nur Supardi, M. N., & Tan, S. (2005). Tree Growth is Related to Light Interception and Wood Density in Two Mixed Dipterocarp Forests of Malaysia. *Functional Ecology*, 19(3), 445–453. doi: 10.1111/j.1365-2435.2005.00982.x
- Kinjanjui, J. M., Karachi, M., & Ondimu, K. N. (2013). Natural Regeneration and Ecological Recovery in Mau Forest Complex, Kenya. *Open Journal of Ecology*, 3(6), 417.

- Kochummen, K.M., LaFrankie, J.V. and Manokaran, N. (1990). Floristic Composition of Pasoh Forest Reserve, a Lowland Rain Forest in Peninsular Malaysia. *Journal of Tropical Forest Science*, 3(1), 1-13.
- Kochummen, K. M. (1989). Lauraceae. Tree Flora of Malaya. Volume 4. Longman, Malaysia.
- Konje, M. (2021). Impact of Anthropogenic Activities on Tree Species Density and Stem Size Distribution in Kisere Fragment of the Kakamega Forest , Kenya. *Journal of Forestry*, 8(July), 1–17.
- Koter, R., Hamzah, M. Z., Shukor, N. A. A., Hamid, H. A., Rasidah, W., Mansor, P., & Isa, M. Z. (2019). The Distribution of *Macaranga tanarius* (L.) Mull. Arg. in Peninsular Malaysia. *Borneo Journal of Sciences and Technology*, 1(2), 45–50. doi: 10.35370/bjost.2019.1.2-07
- Kotlash, A. (2002). The Importance of Biodiversity. *Water*, 29(8), 38–39.
- Kozak, J., Ziółkowska, E., Vogt, P., Dobosz, M., Kaim, D., Kolečka, N., & Ostafin, K. (2018). Forest-Cover Increase Does Not Trigger Forest-Fragmentation Decrease: Case Study from the Polish Carpathians. *Sustainability*, 10(5), 1472. doi:10.3390/su10051472
- Kraus, D., Enns, A., Hebb, A., Murphy, S., Drake, D. A. R., & Bennett, B. (2023). Prioritizing Nationally Endemic Species for Conservation. *Conservation Science and Practice*, 5(1), e12845.
- Kremsater, L. L., & Bunnell, F. L. (1999). Edge Effects: Theory, Evidence, and Implications to Management of Western North American Forests. In *Forest fragmentation: Wildlife*

and Management Implications (pp. 117–153).

- Kueh, R. J. H., Nik Muhamad, A. M., Gandaseca, S., Haruna Ahmed, O., Jemat, S., & Ku, M. K. K. (2013). Assessment of Floristic Composition in a Rehabilitated Forest, Sarawak, Malaysia. *Borneo Journal of Resource Science and Technology*, 2(2), 60–66.
- Kupfer, J. A., & Franklin, S. B. (2009). Linking Spatial Pattern and Ecological Responses in Human-Modified Landscapes: The Effects of Deforestation and Forest Fragmentation on Biodiversity. *Geography Compass*, 3(4), 1331–1355. doi:10.1111/j.1749-8198.2009.00245.x.
- Lajuni, J. J., & Latiff, A. (2013). Biomass and Floristic Composition of Bangi Permanent Forest Reserve, a Twice-Logged Lowland Dipterocarp Forest in Peninsular Malaysia. *Sains Malaysiana*, 42(10), 1517–1521.
- Lal, R. (2015). Restoring Soil Quality to Mitigate Soil Degradation. *Sustainability*, 7(5), 5875–5895. doi: 10.3390/su7055875
- Lan, G., Getzin, S., Wiegand, T., Hu, Y., Xie, G., Zhu, H., & Cao, M. (2012). Spatial Distribution and Interspecific Associations of Tree Species in a Tropical Seasonal Rain Forest of China. *PLoS One*, 7(9), 1–9. doi: 10.1371/journal.pone.0046074
- Laurance, W. F., Nascimento, H. E. M., Laurance, S. G., Andrade, A. C., Fearnside, P. M., Ribeiro, J. E. L., & Capretz, R. L. (2006). Rain Forest Fragmentation and the Proliferation of Successional Trees. *Ecology*, 87(2), 469–482. doi: 10.1890/05-0064
- Laurance, W. F., Laurance, S. G. W., Carolina, A., Andrade, D. A., & Harms, K. E. (2007). Habitat Fragmentation, Variable Edge Effects, and the Landscape-Divergence Hypothesis. *PLoS ONE*, 2(10), 1–8. doi: 10.1371/journal.pone.0001017
- Laurance, W. F. (2008). Theory Meets Reality: How Habitat Fragmentation Research Has

- Transcended Island Biogeographic Theory. *Biological Conservation*, 141(7), 1731–1744. doi: 10.1016/j.biocon.2008.05.011
- Lawal, A., Ariyo, O., & Akinbi, O. (2021). Edge-Interior Disparities in Tree Species Composition and Soil Physicochemical Properties in SNR, Akure Forest Reserve, Ondo State, Nigeria. *Songklanakarin Journal of Science and Technology*, 38(August), 253–262.
- Lee, H. S., Tan, S., Yamakura, T., & Itoh, A. (2002). Floristic and Structural Diversity of Mixed Dipterocarp Forest in Lambir Hills National. *Journal of Tropical Forest Science*, 14(3), 379–400.
- Lidicker, W. Z. (1999). Responses of Mammals to Habitat Edges: An Overview. *Landscape Ecology*, 14(4), 333–343. doi: 10.1023/A
- Lim T.K. (2012). *Elateriospermum tapos*. In: Edible Medicinal And Non-Medicinal Plants. Dordrecht: Springer. 472-475 https://doi.org/10.1007/978-94-007-1764-0_62
- Ling, C. Y., & Sang, J. (2012). Diversity of the Tree Flora in Semenggoh Arboretum, Sarawak, Borneo. *Gardens' Bulletin Singapore*, 64(1), 139–169.
- Liu, X., Trogisch, S., He, J. S., Niklaus, P. A., Bruehlheide, H., Tang, Z., Erfmeier, A., Scherer-Lorenzen, M., Pietsch, K. A., Yang, Bo., Kühn, P., Scholten, T., Huang, Y., Wang, C., Staab, M., Leppert, K. N., Wirth, C., Schmid, B., & Ma, K. (2018). Tree Species Richness Increases Ecosystem Carbon Storage in Subtropical Forests. *Proceedings of the Royal Society B: Biological Sciences*, 285(1885), 1–10. doi: 10.1098/rspb.2018.1240
- Liu, J., Wilson, M., & Hu, G. (2018). How Does Habitat Fragmentation Affect the

- Biodiversity and Ecosystem Functioning Relationship? *Landscape Ecology*, 33(3), 341–352. doi: 10.1007/s10980-018-0620-5
- Liu, L., Zeng, F., Song, T., Wang, K., & Du, H. (2020). Stand Structure and Abiotic Factors Modulate Karst Forest Biomass in Southwest China. *Forests*, 11(4), 1–11. doi: 10.3390/F11040443
- Liu, H., Xiong, K., Yu, Y., Li, T., Qing, Y., Wang, Z., & Zhang, S. (2021). A Review of Forest Ecosystem Vulnerability and Resilience: Implications for the Rocky Desertification Control. *Sustainability*, 13(21), 11849. doi: 10.3390/su132111849
- Loh, H. Y., James, D., Fei Liew, J. J., Ioki, K., & Phua, M. H. (2020). Evaluation of Allometries for Estimating Above-Ground Biomass using Airborne LiDAR Data in Tropical Montane Forest of Northern Borneo. *IOP Conference Series: Earth and Environmental Science*, 540(1), 1–8. doi: 10.1088/1755-1315/540/1/012039
- Lovelock, C. E., Winter, K., Mersits, R., & Popp, M. (1998). Responses of Communities of Tropical Tree species to Elevated CO₂ in a Forest Clearing. *Oecologia*, 116(1–2), 207–218. doi: 10.1007/s004420050581
- Luber, G., & Prudent, N. (2009). Climate Change and Human Health. *Transactions of the American Clinical and Climatological Association*, 120, 113–117. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2744549/pdf/tacca120000113.pdf>
- Lutz, J. A., Larson, A. J., Freund, J. A., Swanson, M. E., & Bible, K. J. (2013). The Importance of Large-Diameter Trees to Forest Structural Heterogeneity. *PLoS ONE*, 8(12), 1–13. doi: 10.1371/journal.pone.0082784
- Magnago, L. F. S., Rocha, M. F., Meyer, L., Martins, S. V., & Meira-Neto, J. A. A. (2015). Microclimatic Conditions at Forest Edges have Significant Impacts on Vegetation

- Structure in Large Atlantic Forest Fragments. *Biodiversity and Conservation*, 24(9), 2305–2318. doi: 10.1007/s10531-015-0961-1
- Magura, T., Tóthmérész, B., & Molnár, T. (2001). Forest Edge and Diversity: Carabids Along Forest-Grassland Transects. *Biodiversity and Conservation*, 10(2), 287–300. doi: 10.1023/A:1008967230493
- Magurran, A. (2004). Measuring Biological Diversity. *Blackwell Publishing*, p. 256.
- Mandal, M., & Chatterjee, N. Das. (2019). Forest Core Demarcation Using Geo-Spatial Techniques: A Habitat Management Approach in Panchet Forest Division, Bankura, West Bengal, India. *Asian Journal of Geographical Research*, 2(2), 1–8. doi: 10.9734/ajgr/2019/v2i230080
- Mahmoudzadeh, A. (2007). Vegetation Cover Plays the Most Important Role in Soil Erosion Control. *Pakistan Journal of Biological Sciences*, 10(3), 388–392. doi: 10.3923/pjbs.2007.388.392
- Malaysia, W. W. F. (2009). High Conservation Value Forest (HCVF) Toolkit for Malaysia: A National Guide for Identifying, Managing and Monitoring High Conservation Value Forest.
- Maleki, K., & Hosseini, S. (2011). Investigation of the Effect of Leaves, Branches, and Canopies of Trees on Noise Pollution Reduction. *Annals of Environmental Science*, 5(May), 13–21. Retrieved from <http://iris.lib.neu.edu/aes/vol5/iss1/3/>
- Malhi, Y., Franklin, J., Seddon, N., Solan, M., Turner, M., Field, C. B., & Knowlton, N. (2020). Climate Change and Ecosystems: Threats, Opportunities and Solutions. *Philosophical Transactions of the Royal Society B*, 375(1794), 20190104. doi:

10.1098/rstb.2019.0104

- Mancera, J. P., Ragragio, E. M., Su, G. L. S., & Rubite, R. R. (2013). Plant Community Structure of a Secondary Forest Barangay Camias, Porac, Pampanga, The Philippines. *Philippine Journal of Science*, 142(3), 135-143.
- Manokaran, N., & Lafrankie, J. V. (1990). Stand Structure of Pasoh Forest Reserve, a Lowland Rain Forest in Peninsular Malaysia. *Journal of Tropical Forest Science*, 3(1), 14–24.
- Mant, R., Perry, E., Heath, M., Munroe, R., Väänänen, E., Großheim, C., & Kümper-Schlake, L. (2014). Addressing Climate Change—Why Biodiversity Matters. *UNEP-WCMC: Cambridge, UK*.
- Mark A. Megalos, MA, Kea, J.B and Bardon, R.E. (2018). *Understanding Forestry Terms: A Glossary for Private Landowners*. North Carolina State University, p.10
- Marquis, D. A. (1994). Quantitative Silviculture for Hardwood Forests of the Alleghenies. Gen. Tech. Rep. NE-183. Radnor, PA: U. S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. p.376.
- Matlack, G. R. (2018). Vegetation Dynamics of the Forest Edge - Trends in Space and Successional Time. *Journal of Ecology*, 82(1), 113–123. doi: 10.2307/2261391
- Maycock, C. R. (2013). Dipterocarp endemism in the Heart Of Borneo. *Proceedings of the International Conference on Heart of Borneo's Natural Capital: Unleashing Their Potential for Sustainable Growth in Sabah, Sabah, February, 1-14*. doi: 10.13140/RG.2.1.3811.2165
- McCallister, B. Z. (2021). *Life on the Edge: Structural Analysis of Forest Edges to Aid Urban Management* [Doctoral dissertation, Purdue University Graduate School].

- Mcmahon, J. (2018). The Environmental Consequences of Forest Fragmentation in the Western Maine Mountains. Occasional Paper. Phillips: Maine Mountain Collaborative. <https://www.wildlandsandwoodlands.org/sites/default/files/2019-01-Environmental-Consequences-ForestFragmentation.pdf>
- Md-Isa, S. F., Yong, C. S. Y., Saleh, M. N., & Go, R. (2021). An Assessment of Genetic Variation in Vulnerable Borneo Ironwood *Eusideroxylon zwageri* Teijsm. & Binn. in Sarawak using SSR Markers. *Journal of Threatened Taxa*, 13(6), 18588-18597.
- Mehlreter, K., Walker, L. R., & Sharpe, J. M. (2010). Ecological Importance of Ferns. In K. Mehlreter, L. R. Walker, & J. M. Sharpe (Eds.), *Fern Ecology* (pp. 1–10). doi: 10.1017/CBO9780511844898.002
- Mehta, N., & Jain, A. (2021). Role of Nutrient Cycling in Forest Ecosystems. *Tropical Forest Research Institute*, 8(1), 24–29.
- Mendez, M., Vogeli, M., Tella, J. L., & Godoy, J. A. (2014). Joint Effects of Population Size and Isolation on Genetic Erosion in Fragmented Populations: Finding Fragmentation Thresholds for Management. *Evolutionary Applications*, 7(4), 506–518. doi: 10.1111/eva.12154
- Meyer, H. A. (1952). Structure, Growth, and Drain in Balanced Uneven-Aged Forests. *Forestry*, 50(2), 85-92.
- Millar, N. (2001). Biology Statistics Made Simple using Excel. *School Science Review*, 83(303), 23-34.
- Millet, J., & Truong, L. H. (2011). Assessment of the Diversity and Distribution of the Threatened Tree Species in a Logged Forest in Vietnam. *Tropical Conservation Science*, 4(1), 82–96. doi: 10.1177/194008291100400108

- Ministry of Natural Resources and Environment (NRE). (2016). National Policy on Biological Diversity 2016-2025. Ministry of Natural Resources and Environment (NRE). Malaysia.
- Mishra, G., & Das, P. K. (2019). Comparative Study on Tree Diversity and Population Structure in Two Forest Types of Nagaland, India. *Proceedings of the National Academy of Sciences India Section B - Biological Sciences*, 89(4), 1305–1310. doi: 10.1007/s40011-018-1051-4
- Mishra, P. K., Rai, A., Abdelrahman, K., Rai, S. C., & Tiwari, A. (2022). Land Degradation, Overland Flow, Soil Erosion, and Nutrient Loss in the Eastern Himalayas, India. *Land*, 11(179), 1–16. doi: 10.3390/land11020179
- Mitchell, R. J., Auld, M. H. D., Duc, M. G. Le, & Marrs, R. H. (2015). Ecosystem Stability and Resilience: A Review of Their Relevance for The Conservation Management of Lowland Heaths. *Perspectives in Plant Ecology Evolution and Systematics*, 3(2), 142–160. doi: 10.1078/1433-8319-00009
- Mori S. A., Boom B. A., Carvalino A. M., & dos Santos T. S. (1983). The Ecological Importance of Myrtaceae in an Eastern Brazilian Wet Forest. *Biotropica*, 15(1), 68–70.
- Morrison-métois, S., & Lundgren, H. (2016). *Forests and Sustainable Forest Management*. [Working paper]
- Mullu, D. (2016). A Review on the Effect of Habitat Fragmentation on Ecosystem. *Journal of Natural Sciences Research*, 6(15), 1-15.
- Munguia-Rosas, M. A., & Montiel, S. (2014). Patch Size and Isolation Predict Plant Species Density in a Naturally Fragmented Forest. *PLoS ONE*, 9(10), e111742. doi: 10.1371/journal.pone.0111742

- Murcia, C. (1995). Edge Effects in Fragmented Forests - Implications for Conservation. *Trends in Ecology & Evolution*, 10(2), 58–62.
- MyBIS. (2023). Malaysia Biodiversity Information System. Retrieved from <https://www.mybis.gov.my/>
- Nasir, D. M., Murdi, A. A., Kadir, I. F., Husen, A. N., Goulip, S. M., & Jalil, R. A. (2020). Biodiversity Assessment in a Forest in an Oil Palm Plantation at Lahad Datu, Sabah. *Oil Palm Bulletin*, 80(May), 15–25.
- Nelson, J., & Noweg, T. (2021). Assessment of Forest Regeneration Following a Series of Disturbances in Two Types of Primary Forest at Bungo Range, Bau, Sarawak. *Journal of Tropical Forest Science*, 33(2), 126–136. doi: 10.26525/jtfs2021.33.2.126
- Newbery, D. M., Campbell, E. J. F., Lee, Y. F., Ridsdale, C. E., & Still, M. J. (1992). Primary Lowland Dipterocarp Forest at Danum Valley, Sabah, Malaysia: Structure, Relative Abundance, and Family Composition. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 335(1275), 341-356.
- Ngo, K. M., Davies, S., Hassan, N. F. N., & Lum, S. (2017). Plant Ecology & Diversity Resilience of A Forest Fragment Exposed to Long-Term Isolation in Singapore. *Plant Ecology and Diversity*, 9(4), 1–12. doi: 10.1080/17550874.2016.1262924
- Norazlinda, M., Latiff, A., Nizam, M. S., Ahmad Fitri, Z., & Sani, M. (2021). Species Composition, Community Structure and Biomass Estimation of Euphorbiaceae in Bukit Panchor Recreational Forest, Pulau Pinang. *Malayan Nature Journal*, 68(3), 13–21.
- Norden, N., Chazdon, R. L., Chao, A., Jiang, Y., & Alvarado, B. V. (2009). Resilience of Tropical Rain Forests: Tree Community Reassembly in Secondary Forests. *Ecology*

Letters, 12(5), 385-394. doi: 10.1111/j.1461-0248.2009.01292.x

- Nugroho, H. Y. S. H., van der Veen, A., Skidmore, A. K., & Hussin, Y. A. (2018). Expansion of Traditional Land-Use and Deforestation: A Case Study of an Adat Forest in the Kandilo Subwatershed, East Kalimantan, Indonesia. *Journal of Forestry Research*, 29(2), 495–513. doi: 10.1007/s11676-017-0449-9
- Nurun Nadhirah Md Isa, Ismail Said, & Mohd Nadzri Md. Reba. (2015). Community Structure, Diversity and Total Aboveground Biomass of Four Pioneer Species at Universiti Teknologi Malaysia Secondary Forest. *American Journal of Environmental Engineering*, 5(3A), 26–32.
- Öhman, K. (2001). *Forest Planning with Consideration to Spatial Relationships* (Vol. 198, No. 198). [Doctoral dissertation, Swedish University of Agricultural Sciences]
- Ojoyi, M., Mutanga, O., Odindi, J., Aynekulu, E., & Abdel-Rahman, E. (2015). The Effect of Forest Fragmentation on Tree Species Abundance and Diversity in the Eastern Arc Mountains of Tanzania. *Applied Ecology and Environmental Research*, 13(2), 307-324.
- Oliveira, M. A., Grillo, A.S., and Tabarelli, M. (2004). Forest Edge in the Brazilian Atlantic Forest: Drastic Changes in Tree Species Assemblages. *Oryx*, 38(4), 389–394.
- Oliveira, M. A., Santos, A. M. M., Tabarelli, M., (2008). Profound Impoverishment of the Large Tree Stands in a Hyper-Fragmented Landscape of the Atlantic Forest. *Forest Ecology and Management*, 256(11), 1910–1917.
- Omayio, D. O., & Mzungu, E. (2019). Modification of Shannon-Wiener Diversity Index towards Quantitative Estimation of Environmental Wellness and Biodiversity Levels under a Non-comparative Scenario. *Journal of Environment and Earth Science*, 9(9),

46–57. doi: 10.7176/jees/9-9-06

- Onoja, U. S., Dibua, U. M. E., & Enete, A. A. (2011). Climate Change: Causes, Effects and Mitigation Measures-A Review. *Global Journal of Pure and Applied Sciences*, 17(4), 469–479.
- Oosterhoorn, M., & Kappelle, M. (2000). Vegetation Structure and Composition Along an Interior-Edge-Exterior Gradient in a Costa Rican Montane Cloud Forest. *Forest Ecology and Management*, 126(3), 291–307. doi: 10.1016/S0378-1127(99)00101-2
- Opdam, P., & Wascher, D. (2003). Climate Change Meets Habitat Fragmentation: Linking Landscape and Biogeographical Scale Levels in Research and Conservation. *Biological Conservation*, 117(2004), 285–297. doi: 10.1016/j.biocon.2003.12.008
- Oorthuis, R., Vaunat, J., Hürlimann, M., Lloret, A., Moya, J., Puig-polo, C., & Fraccica, A. (2021). Slope Orientation and Vegetation Effects on Soil Thermo-Hydraulic Behavior. An Experimental Study. *Sustainability*, 13(1), 14. doi: 10.3390/su 13010014
- Owusu-Prempeh, N., Antobre, O. O., & Agyei, T. (2018). Floral Diversity and Carbon Stocks and of Protected Forest Ecosystem: A Case of UENR's Bat Sanctuary, Sunyani, Ghana. *Open Journal of Forestry*, 8(1), 29–41. doi:10.4236/ojf.2018.81003
- Oyun, M. B., Bada, S. O., & Anjah, G. M. (2009). Comparative Analysis of the Flora Composition at the Edge and Interior of Agulli Forest Reserve Cameroon. *Journal of Biological Sciences*, 9(5), 431–437.
- Pavel, M.A., Mukul, S.A., Uddin, M.B., Harada, K., & Arfin Khan, M.A. (2016). Effects of Stand Characteristics on Tree Species Richness in and Around a Conservation Area of Northeast Bangladesh. *Journal of Mountain Science*, 13(6), 1085-1095. doi: 10.1007/s11629-015-3501-2

- Pesiu, E., Nilus, R., Sugau, J., Mohd. Aminur, F. S., Butin, P., Miun, P., Tingkoi, L., Miun, J., Gubilil, M., Mangkawasa, H., Majapun, R., & Abdullah, M. T. (2019). Taxanomic Composition and Conservation Status of Plants in Imbak Canyon, Sabah, Malaysia. *Journal of Tropical Biology and Conservation*, 16(August), 79–100.
- Patel, D. K. (2014). Biodiversity and Its Importance. *Journal of Biodiversity & Endangered Species*, 2(4), 1000. doi: 10.4172/2332-2543.1000e117
- Patrício MB, Ferreira JHD, do Couto EV. (2019). The Context of the Size and Distance of Atlantic Forest ragments in a Small City in Southern Brazil. *Acta Scientiarum Biological Sciences*, 41(1), e46936. doi: 10.4025/actascibiolsci.v41i1.46936
- Peck, R., Olsen, C., & Devore, J. (2012). *Introduction to Statistics & Data Analysis*. 4th Ed. Cengage Learning. USA. pp.639-640.
- Peh, K. S. H., Lin, Y., Luke, S. H., Foster, W., & Turner, E. C. (2014). Forest Fragmentation and Ecosystem Function Abstract: In C. Kettle & L. Koh (Eds.), *Global Forest Fragmentation* (pp. 96–114). doi: 10.1079/9781780642031.0096
- Pielou, E. C. (1966). Species-Diversity and Pattern-Diversity in the Study of Ecological Succession. *Journal of Theoretical Biology*, 10(2), 370–383.
- Pitopang, R. (1970). Impact of Forest Disturbance on the Structure and Composition of Vegetation in Tropical Rainforest of Central Sulawesi, Indonesia. *Biodiversitas Journal of Biological Diversity*, 13(4), 178–189. doi: 10.13057/biodiv/d130403
- Poorter, L., Bongers, F., van Rompaey, R. S. A. R., & de Klerk, M. (1996). Regeneration of Canopy Tree Species at Five Sites in West African Moist Forest. *Forest Ecology Management*, 84(1-3), 61–69.

- Popma, J., Bongers, F., Martínez-Ramos, M., & Veneklaas, E. (1988). Pioneer Species Distribution in Treefall Gaps in Neotropical Rain Forest; a Gap Definition and Its Consequences. *Journal of Tropical Ecology*, 4(1), 77-88.
- Porensky, L. M., & Young, T. P. (2013). Edge-Effect Interactions in Fragmented and Patchy Landscapes. *Conservation Biology*, 27(3), 509–519. doi:10.1111/cobi.12042
- Potts, J. R., Hillen, T., & Lewis, M. A. (2016). The “Edge Effect” Phenomenon : Deriving Population Abundance Patterns from Individual Animal Movement Decisions. *Theoretical Ecology*, 9(2), 233–247. doi: 10.1007/s12080-015-0283-7
- Priatna, D., Santosa, Y., Prasetyo, L. B., & Kartono, A. P. (2012). Habitat Selection and Activity Pattern of GPS Collared Sumateran Tigers. *Jurnal Manajemen Hutan Tropika*, 18(3), 155-163.
- Proctor, J., J.M. Anderson, P. Chai & H.W. Vallack. (1983). Ecological Studies in Four Contrasting Lowland Rain Forests in Gunung Mulu National Park, Sarawak: I. Forest Environment, Structure, and Floristics. *Journal of Ecology*, 71(1), 237–260.
- Prospero S, and Cleary M. (2017). Effects of Host Variability on the Spread of Invasive Forest Diseases. *Forests*, 8(3), 80. doi: 10.3390/f8030080
- Prugh, L. R., Hodges, K. E., Sinclair, A. R. E., & Brashares, J. S. (2008). Effect of Habitat Area and Isolation on Fragmented Animal Populations. *Proceedings of the National Academy of Sciences*, 105(52), 20770–20775. doi: 10.1073/pnas.0806080105
- Rahmad, Z., Akomolafe, G. F., & Asyraf, M. (2020). Trees and Lianas Diversity in Some Primary and Secondary Forests in Penang, Malaysia. *Malaysian Journal of Science*, 39(3), 132–158. doi: 10.22452/mjs.vol39no3.11
- Ramachandran, V. S., Mohandass, D., Campbell, M. J., Mammides, C., & Shao, S. (2019).

- Selective Logging Intensity Alters the Population Stand Structure of *Cullenia*-*Mesua-Palaquium* Dominated Tropical Wet Evergreen Forest of the Western Ghats, South India. *Applied Ecology and Environmental Research*, 17(4), 9591–9607. doi: 10.15666/aeer/1704_95919607
- Ranveer, A. C., Latake, P., & Pawar, P. (2015). The Greenhouse Effect and Its Impacts on Environment. *International Journal of Innovative Research and Creative Technology*, 1(3), 333–337.
- Rashid, Z. A., & Al Junid, S. (2014). Trees' Cooling Effect on Surrounding Air Temperature Monitoring System: Implementation and Observation. *International Journal of Simulation: Systems, Science & Technology*, 15(2), 70–77. doi: 10.5013/IJSSST.a.15.02.10
- Rawat, U. S., & Agarwal, N. K. (2015). Biodiversity: Concept, Threats, and Conservation. *Environment Conservation Journal*, 16(3), 19–28. doi: 10.36953/ecj.2015.16303
- Razafindratsima, O. H., Brown, K. A., Carvalho, F., Johnson, S. E., Wright, P. C., & Dunham, A. E. (2018). Edge Effects on Components of Diversity and Above-Ground Biomass in a Tropical Rainforest. *Journal of Applied Ecology*, 55(2), 977–985. doi: 10.1111/1365-2664.12985
- Razali, N., Ismail, M. H., Kamarudin, N., & Zaki, P. H. (2014). Short Communication: Effect of Skid Trails on the Regeneration of Commercial Tree Species at Balah Forest Reserve, Kelantan, Malaysia. *Biodiversitas*, 15(2), 240–244. doi: 10.13057/biodiv/d150218
- Real, R., & Vargas, J. M. (1996). The Probabilistic Basis of Jaccard's Index of Similarity.

- Systematic Biology*, 45(3), 380–385. doi: 10.1093/sysbio/45.3.380
- Reethof, G., Frank, L. D., & McDaniel, O. H. (1976). *Absorption of sound by tree bark* (Vol. 341). US Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.
- Remaury, A., Guittonny, M., & Rickson, J. (2019). The Effect of Tree Planting Density on the Relative Development of Weeds and Hybrid Poplars on Revegetated Mine Slopes Vulnerable to Erosion. *New Forest*, 50(4), 555–572. doi: 10.1007/s11056-018-9678-9
- Richards, P. W. (1996). *The Tropical Rain Forest*. 2nd edition. Cambridge University Press. Cambridge. 575 pp.
- Ries, L., & Sisk, T.D. (2004). A Predictive Model of Edge Effects. *Ecology*, 85(11), 2917–2926. doi: 10.1890/03-8021
- Rocha-Santos, L., Mayfield, M. M., Lopes, A. V., Pessoa, M. S., Talora, D. C., Faria, D., & Cazetta, E. (2020). The Loss of Functional Diversity: A Detrimental Influence of Landscape-Scale Deforestation on Tree Reproductive Traits. *Journal of Ecology*, 108(1), 212-223.
- Rowntree, R. A., & Nowak, D. J. (1991). Quantifying the Role of Urban Forests in Removing Atmospheric Carbon Dioxide. *Journal of Arboriculture*, 17(10), 269-275.
- Roundtable on Sustainable Palm Oil. (2007). *RSPO Principles and Criteria for Sustainable Palm Oil Production*.
- Ruzicka, K. J., Groninger, J. W., & Zaczek, J. J. (2017). Deer Browsing, Forest Edge Effects, and Vegetation Dynamics Following Bottomland Forest Restoration. *Restoration Ecology*, 18(5), 702–710. doi: 10.1111/j.1526-100X.2008.00503.x

- Ruziman, H. H., Ismail, A., Radzun, K. A., Ishak, N. S., Zohari, A. F., Kusin, M., & Pardi, F. (2022). Tree Species Diversity and Conservation Status of Keniam Forest, Taman Negara, Pahang. *IOP Conference Series: Earth and Environmental Science*, 1019(1), 1–13. doi: 10.1088/1755-1315/1019/1/012014
- Santos, B.A., Peres, C.A., Oliveira, M.A., Grillo, A., Alves-Costa, C.P. & Tabarelli, M. (2008). Drastic Erosion in Functional Attributes of Tree Assemblages in Atlantic Forest Fragments of Northeastern Brazil. *Biological Conservation*, 141(1), 249–260. doi: 10.1016/j.biocon.2007.09.018
- Santos, G. G. A., Santos, B. A., Nascimento, H. E. M., & Tabarelli, M. (2012). Contrasting Demographic Structure of Short- and Long-lived Pioneer Tree Species on. *Biotropica*, 44(6), 771–778. doi: 10.1111/j.1744-7429.2012.00882.x
- Saroja, J. (2017). Soil Erosion: Causes, Extent, and Management in India. *International Journal of Creative Research Thoughts*, 5(4), 1321-1330.
- Sasaki, S. (2006). Ecology and Physiology of Dipterocarpaceae. In *Plantation Technology in Tropical Forest Science* (pp. 3-22). Springer, Tokyo. doi: 10.1007/4-431-28054-5_1
- Saunders, D. A., Hobbs, R. J., & Margules, C. R. (1991). Biological Consequences of Ecosystem Fragmentation: A Review. *Conservation Biology*, 5(1), 18-32.
- Saw, L. G., & Sam, Y. Y. (2000). Conservation of Dipterocarpaceae in Peninsular Malaysia. *Journal of Tropical Forest Science*, 12(3), 593–615.
- Scott, J. M., Goble, D. D., Haines, A. M., Wiens, J. A., & Neel, M. C. (2010). Conservation-reliant Species and the Future of Conservation. *Conservation Letters*, 3(2), 91-97.
- Shahzad, U. (2017). Global Warming: Causes, Effects and Solutions Global Warming:

- Causes, Effects and Solutions. *Durreesamin Journal*, 1(4), 1–7.
- Shannon, C. E., & Wiener, N. (1997). *Biological Diversity: Frontiers in Measurement and Assessment*. (Magurran, A. E., & McGill, B. J., Eds.). Oxford University Press.
- Shapiro, A. C., Aguilar-Amuchastegui, N., Hostert, P., & Bastin, J. F. (2016). Using Fragmentation to Assess Degradation of Forest Edges in Democratic Republic of Congo. *Carbon Balance and Management*, 11(1), 1–15. doi: 10.1186/s13021-016-0054-9
- Sharma, P. D. (2004). *Plant Ecology and Environment Biology*. New Delhi: Rastogi Publications.
- Shevade, V. S., Potapov, P. V, Harris, N. L., & Loboda, T. V. (2017). Expansion of Industrial Plantations Continues to Threaten Malayan Tiger Habitat. *Remote Sensing*, 9(7), 747. doi: 10.3390/rs9070747
- Shevade, V. S., & Loboda, T. V. (2019). Oil Palm Plantations in Peninsular Malaysia : Determinants and Constraints on Expansion. *PLoS One*, 14(2), 1–22. doi: 10.5061/dryad.nf6b29v
- Seiler, A., & Folkeson, L. (2006). *Habitat Fragmentation Due to Transportation Infrastructure. COST 341 National State-of-the-Art Report Sweden*.
- Simbolon, H., Yamada, T., & Suzuki, E. (2000). *Elateriospermum tapos* Blume (Euphorbiaceae) in West Kalimantan : Spatial Distribution, Survival and Growth in a Mixed Dipterocarp Forest. *Tropics*, 9(2), 91–102.
- Simpson, E. H. (1949). Measurement of Diversity. *Nature*, 163(4148), 688. doi: 10.1038/163688a0

- Sinclair, J. (1961). *The Genus Knema (Myristacaceae) in Malaysia and outside Malaysia*.
US Government Printing Office.
- Singh, G., & Singh, B. (2017). Deforestation and Its Impact on Environment. *Deforestation and Its Impact on Environment*, 6(3), 262–268.
- Sist, P., & Saridan, A. (1999). Stand Structure and Floristic Composition of a Primary Lowland Dipterocarp Forest in East Kalimantan. *Journal of Tropical Forest Science*, 11(4), 1-11.
- Slik, J. F., Keßler, P. J., & van Welzen, P. C. (2003). *Macaranga* and *Mallotus* Species (Euphorbiaceae) as Indicators for Disturbance in the Mixed Lowland Dipterocarp Forest of East Kalimantan (Indonesia). *Ecological Indicators*, 2(4), 311-324.
- Slik, J. W. F., Poulsen, A. D., Ashton, P. S., Cannon, C. H., Eichhorn, K. A. O., Kartawinata, K., Lanniari, I., Nagamasu, H., Nakagawa, M., van Nieuwstadt, M. G. L., Payne, J., Purwaningsih., Saridan, A., Sidiyasa, K., Verburg, R. W., Webb, R. W., & Wilkie, P. (2003). A Floristic Analysis of the Lowland Dipterocarp Forests of Borneo. *Journal of Biogeography*, 30(10), 1517–1531.
- Smith, B., & Wilson, J. B. (1996). A Consumer's Guide to Evenness Indices. *Oikos*, 76(1), 70-82. doi: 10.2307/3545749
- Smith, T. M., Hindell, J. S., Jenkins, G. P., & Connolly, R. M. (2010). Seagrass Patch Size Affects Fish Responses to Edges. *Journal of Animal Ecology*, 79(1), 275–281. doi: 10.1111/j.1365-2656.2009.01605.x
- Soepadmo, E., Saw, L. G., and Chung, R. C. K. (2002). Tree Flora of Sabah and Sarawak Vol 1 – 6. Forest Research Institute Malaysia. Kuala Lumpur.

- Soepadmo, E., & Wong, K. M. (1995). Tree Flora of Sabah and Sarawak: Volume 1. *Tree flora of Sabah and Sarawak: Volume 1*.
- Soetaert, K., & Heip, C. (1990). Sample-Size Dependence of Diversity Indices and the Determination of Sufficient Sample Size in a High-Diversity Deep-Sea Environment. *Marine Ecology Progress Series*, 59(October), 305–307. doi: 10.3354/meps059305
- Standards and Petitions Working Group. (2006). Guidelines for using the IUCN red list categories and criteria. *International Union for Conservation of Nature, Gland, Switzerland*. Retrieved from <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=6e319242fb27a59d53ec82a12a4b3e735f4c769a>
- Sulistyawati, E. N., & Tihurua, E. F. (2019). Analysis of the Condition of Forest Interior and Edge in Mount Papandayan, West java, Indonesia Based on Floristic Composition and Structural Characteristics of Tree Community. *Biodiversitas*, 20(3), 900–906. doi: 10.13057/biodiv/d200339
- Sumit Chakravarty, S. K., Ghosh, C. P., Suresh, A. N., Dey, & Shukla, G. (2012). Deforestation: Causes, Effects and Control Strategies. In C. A. Okia (Ed.), *Global Perspectives on Sustainable Forest Management* (pp. 1-28). INTECH Open Access Publisher. doi: 10.5772/33342
- Suratman, M. N., Kusin, M., Zakaria, S. A. K. Y., Saleh, K., Ahmad, M., & Bahari, S. A. (2010). Stand Structure and Species Diversity of Keniam forest, Pahang National Park. *CSSR 2010 - 2010 International Conference on Science and Social Research*, (April 2020), 766–771. doi: 10.1109/CSSR.2010.5773887
- Suratman, M. N. (2012). Tree Species Diversity and Forest Stand Structure of Pahang

- National Park, Malaysia. *Biodiversity Enrichment in a Diverse World*, (April), 474–492. doi: 10.5772/50339
- Suratman, M. N., Said, M., Kusin, M., & Yamani Zakaria, S. A. K. (2012). Community Structure and Tree Species Diversity in Jengka Forest Reserve, Pahang. *International Conference on Science Technology and Social Sciences (STSS 2012)*, (April 2020), 24–29.
- Swaine, M. D., Lieberman, D., & Putz, F. E. (1987). The Dynamics of Tree Populations in Tropical Forest. A review. *Journal of Tropical Ecology*, 3(4), 359-366. doi: 10.1017/S0266467400002339
- Tabarelli, M., Lopes, A. V., & Peres, C. A. (2008). Edge-Effects Drive Tropical Forest Fragments Towards an Early-Successional System. *Biotropica*, 40(6), 657–661.
- Takeuchi, Y., Soda, R., Diway, B., Kuda, T. A., Nakagawa, M., Nagamasu, H., & Nakashizuka, T. (2017). Biodiversity Conservation Values of fragmented Communally Reserved Forests, Managed by Indigenous People, in a Human-Modified Landscape in Borneo. *PLoS ONE*, 12 (11), 1-14. doi: 10.1371/journal.pone.0187273
- Tanaka, K., Morikawa, Y., Nagai, Y., Satriadi, T., Fauzi, H., Aryadi, M., & Hiratsuka, M. (2021). Biomass and Tree Diversity in a Fragmented Secondary Forest in Tanah Laut Regency, South Kalimantan Province, Indonesia. *Tropics*, 30(3), 31–39. doi: 10.3759/TROPICS.MS21-01
- Tariq, M. (2015). An Overview of Deforestation Causes and Its Environmental Hazards in Khyber Pukhtunkhwa. *Journal of Natural Sciences Research*, 5(1), 52–58.
- Tejaswi, G. (2007). Manual on Deforestation, Degradation, and Fragmentation using Remote Sensing and GIS. <https://www.fao.org/3/ap163e/ap163e.pdf>

- Tewksbury, J. J., Levey, D. J., Haddad, N. M., Sargent, S., Orrock, J. L., Weldon, A., Daneilson, B. J., Brinkerhoff, J., Damschen, E. I., & Townsend, P. (2002). Corridors Affect Plants, Animals, and Their Interactions in Fragmented Landscapes. *Proceedings of the National Academy of Sciences*, 99(20), 12923–12926. doi: 10.1073/pnas.202242699
- Thomas A, A. G. (2014). Estimation of Tree Species Diversity in Four Campuses of Roever Institutions using Simpsons Diversity Index. *Journal of Biodiversity & Endangered Species*, 2(4), 4–6. doi: 10.4172/2332-2543.1000135
- Thompson, I., Mackey, B., McNulty, S., & Mosseler, A. (2009). A Synthesis of the Biodiversity/Resilience/Stability Relationship in Forest Ecosystems. In *Forest Resilience, Biodiversity, and Climate Change* (p. 67). Montreal, Canada: Secretariat on the Convention on Biological Diversity.
- Uddin, M. S., Najmus, M. P. S., & Feroz, S. M. (2021). Floristic Composition and Woody Species Diversity in National Park of Madhupur Tract Under Tangail North Forest Division, Bangladesh. *Journal of Forests*, 8(1), 99–108. doi: 10.18488/journal.101.2021.81.99.108
- Uhl, C., & Kauffman, J. B. (1990). Deforestation , Fire Susceptibility , and Potential Tree Responses to Fire in the Eastern Amazon. *Ecology*, 71(2), 437–449. doi: 10.2307/1940299
- Valladares, G., Cagnolo, L., & Salvo, A. (2012). Forest Fragmentation Leads to Food Web Contraction. *Oikos*, 121(2), 299–305. doi: 10.2307/41409047
- van der Meer, P. J., & Bongers, F. (1996). Formation and Closure of Canopy Gaps in the Rain Forest at Nouragues, French Guiana. *Vegetatio*, 126(2), 167–179.

- Verhagen, A. P., Ostelo, R. W., & Rademaker, A. (2004). Is the p value Really so Significant?. *Australian Journal of Physiotherapy*, 50(4), 261-262.
- Viani, R. A. G., Vidas, B. N., Pardi, M. M., Castro, D. C. V., Gusson, E., & Brancalion, P. H. S. (2015). Natureza & Conservação Animal-Dispersed Pioneer Trees Enhance the Early Regeneration in Atlantic Forest Restoration Plantations. *Natureza & Conservação*, 13(1), 41–46. doi: 10.1016/j.ncon.2015.03.005
- Vieilledent, G., Fischer, F. J., Chave, J., Guibal, D., Langbour, P., & Gérard, J. (2018). New Formula and Conversion Factor to Compute Basic Wood Density of Tree Species using a Global Wood Technology Database. *American Journal of Botany*, 105(10), 1653-1661.
- Vieira, D. L. M., Rodrigues, S. B., Jakovac, C. C., Paiva, G., Reis, F., & Borges, A. (2021). Active Restoration Initiates High Quality Forest Succession in a Deforested Landscape in Amazonia. *Forests*, 12(8), 1022. doi: 10.3390/f12081022
- Vijay, V., Pimm, S. L., Jenkins, C. N., & Smith, S. J. (2016). The Impacts of Oil Palm on Recent Deforestation and Biodiversity Loss. *PLoS ONE*, 11(7), 1–19. doi: 10.1371/journal.pone.0159668
- Vilma, B., Demies, M., Julia, S., & Unggang, J. (2012). Tree Diversity in Mina Wildlife Corridor, Bintulu, Sarawak, Malaysia. International Symposium of Forestry & Forest Products. 5-7 October 2010, Kuala Lumpur, Malaysia.
- Vriendt, L. De, Lemay, M.-A., Jean, M., Renaut, S., Pellerin, S., Joly, S., Belzile, F., & Poulin, M. (2017). Population Isolation Shapes Plant Genetics, Phenotype and Germination in Naturally Patchy Ecosystems. *Journal of Plant Ecology*, 10(4), 649–659. doi: 10.1093/jpe/rtw071

- Wade, T. G., Riitters, K. H., Wickham, J. D., & Jones, K. B. (2003). Distribution and Causes of Global Forest Fragmentation. *Conservation Ecology*, 7(2), 1-17.
- Wan Shafrina, W. M. J., Khairul Nizam, M., Aisyah Marliza, M. K., Raihan, A., Syarina, M. S., Azizah, A., Siti Nor Maizah, S., Ahmad Tarmizi, M. A., Nur Khairun Ayumi, J. S., & Khan, W. R. (2020). The Influence of Deforestation on Land Surface Temperature - A Case Study of Perak and Kedah, Malaysia. *Forest*, 11(6), 670. doi: 10.3390/f11060670
- Wang, S., Zhao, M., Meng, X., Chen, G., Zeng, R., Yang, Q., Liu, Y., & Wang, B. (2020). Evaluation of the Effects of Forest on Slope Stability and Its Implications for Forest Management: A Case Study of Bailong River Basin, China. *Sustainability (Switzerland)*, 12(16), 6655. doi: 10.3390/su12166655
- Weiskopf, S. R., Rubenstein, M. A., Crozier, L. G., Gaichas, S., Griffis, R., Halofsky, J. E., Hyde, K., Morelli, T. L., Morissette, J. T., Muñoz, R. C., Pershing, A. J., Peterson, D. L., Poudel, R., Staudinger, M. D., Sutton-Grier A. E., Thompson, L., Vose, J., Weltzin, J. F., & Whyte, K. P. (2020). Climate Change Effects on Biodiversity, Ecosystems, Ecosystem Services, and Natural Resource Management in the United States. *Science of the Total Environment*, 733(2020), 137782. doi: 10.1016/j.scitotenv.2020.137782.
- Wenger, A. S., Atkinson, S., Santini, T., Falinski, K., Hutley, N., Albert, S., Horning, N., Watson, J. E. M., Mumby, P. J., & Jupiter, S. D. (2018). Predicting the Impact of Logging Activities on Soil Erosion and Water Quality in Steep, Forested Tropical Islands. *Environmental Research Letters*, 13(4), 1–12. doi: 10.1088/1748-9326/aab9eb

- Widiyatno, Soekotjo, Naiem, M., Purnomo, S., & Setiyanto, P. E. (2014). Early Performance of 23 Dipterocarp Species Planted in Logged-Over Rainforest. *Journal of Tropical Forest Science*, 26(2), 259–266.
- Whitehead, D. (2019). Forests as Carbon Sinks - Benefits and Consequences. *Tree Physiology*, 31(9), 893–902. doi: 10.1093/treephys/tpr063
- Wiström, B., & Nielsen, A. B. (2014). Effects of Planting Design on Planted Seedlings and Spontaneous Vegetation 16 years after Establishment of Forest Edges. *New Forests*, 45(1), 97–117. doi: 10.1007/s11056-013-9394-4
- Wyatt-Smith, J. (1966). Ecological studies on Malayan forest I. Composition of and Dynamic Studies in Lowland Evergreen Rain Forest in the 5-Acre Plots in Bukit Lagong and Sungai Menyala Forest Reserve, and in Two and a Half-Acre Plots in Sungai Menyala Forest Reserve, 1947-1959. *Research Pamphlet No. 52*. Forest Research Institute, Kepong, Malaysia.
- Yansen, & Deselina. (2020). Leaf Vein Density of Tree Saplings Composing Lower Canopy in Tropical Forest Reflects Their Ecophysiological Characteristics. *Journal of Tropical Biodiversity and Biotechnology*, 5(3), 211–217. doi: 10.22146/jtbb.57306
- Yap, P., Rosdin, R., Abdul-Rahman, A. A. A., Omar, A. T., Mohamed, A. T., & Rahami, M. S. (2021). Malaysian Sustainable Palm Oil (MSPO) Certification Progress for Independent Smallholders in Malaysia. *IOP Conference Series: Earth and Environmental Science*, 736(1), 1–5. doi: 10.1088/1755-1315/736/1/012071
- Yates, E. D., Levia, D. F., & Williams, C. L. (2004). Recruitment of Three Non-Native Invasive Plants into a Fragmented Forest in Southern Illinois. *Forest Ecology and Management*, 190(2–3), 119–130. doi: 10.1016/j.foreco.2003.11.008

- Yazaki, T., Hirano, T., & Sano, T. (2016). Biomass Accumulation and Net Primary Production during the Early Stage of Secondary Succession after a Severe Forest Disturbance in Northern Japan. *Forests*, 7(11), 287. doi: 10.3390/f7110287
- Yeong, K. L., Reynolds, G., & Hill, J. K. (2016). Enrichment Planting to Improve Habitat Quality and Conservation Value of Tropical Rainforest Fragments. *Biodiversity and Conservation*, 25(5), 957–973. doi: 10.1007/s10531-016-1100-3
- Young, A., Boyle, T., & Brown T. (1996). The Population Genetic Consequences of Habitat Fragmentation For Plants. *Trends Ecol Evol*, 11(10), 413–418. doi: 10.1016/0169-5347(96)10045-8
- Zakaria, R., Fadzly, N., Rosely, N., Mansor, M., & Zakaria, M. Y. (2008). The Distribution of Macaranga, Genus (Family Euphorbiaceae) in Penang Island, Peninsular Malaysia. *Journal of Bioscience*, 19(2), 91–99.
- Zambrano, J., Cordeiro, N. J., Garzon-lopez, C., Yeager, L., Fortune, C., Ndangalasi, H. J., & Beckman, N. G. (2020). Investigating the Direct and Indirect Effects of Forest Fragmentation on Plant Functional Diversity. *PLoS One*, 15(7), 1–16. doi: 10.1371/journal.pone.0235210
- Zani, N. F., Suratman, M. N., & Khalid, F. (2013). Floristic Composition and Diversity in Lowland Dipterocarp and Riparian Forests of Taman Negara Pahang. The 2013 IEEE Symposium on Humanities, Science and Engineering Research (SHUSER 2013). 23-26 June 2013, Penang, Malaysia.
- Zerga, B. (2015). Rangeland Degradation and Restoration: A Global Perspective. *Point Journal of Agriculture and Biotechnology Research*, 1(2), 37-54.

- Zhou, C., Zhao, Y., Connelly, J. W., Li, J., & Xu, J. (2017). Current Nature Reserve Management in China and Effective Conservation of Threatened Pheasant Species. *Wildlife Biology*, 2017(1), 1–9. doi: 10.2981/wlb.00258
- Zuazo, V. H. D., & Pleguezuelo, C. R. R. (2008). Soil-erosion, and Runoff Prevention by Plant Covers: A Review. *Agronomy for Sustainable Development*, 28(1), 65–86. doi: 10.1051/agro:2007062
- Zuidema, P. A., Sayer, J. A., & Jane, K. H. (1996). Forest Fragmentation and Biodiversity: The Case for Intermediate-Sized Conservation Areas. *Environmental Conservation*, 23(4), 290-297.

APPENDICES

Appendix A: List of individual trees in forest edge with their conservation status

Plot No.	Species	Common Name	Family	DBH (cm)	IUCN Conservation Status
T1P1	<i>Alangium javanicum</i> Koord.	Jadam	Alangiaceae	8.2	Least Concern
T1P1	<i>Antidesma bunius</i> (L.) Spreng.	Berenai	Phyllanthaceae	10.0	Least Concern
T1P1	<i>Artocarpus kemando</i> Miq.	Pudau	Moraceae	11.9	Not Evaluated
T1P1	<i>Artocarpus kemando</i> Miq.	Pudau	Moraceae	14.0	Not Evaluated
T1P1	<i>Atuna excelsa</i> (Jack) Kosterm.	Merbatu	Chrysobalanaceae	8.2	Not Evaluated
T1P1	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	40.0	Not Evaluated
T1P1	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	31.4	Least Concern
T1P1	<i>Canarium apertum</i> H.J.Lam	Seladah	Burseraceae	15.5	Not Evaluated
T1P1	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	13.0	Least Concern
T1P1	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	7.4	Least Concern
T1P1	<i>Dehaasia firma</i> Blume	Medang	Lauraceae	33.0	Least Concern
T1P1	<i>Dialium indum</i> L. var. <i>indum</i>	Keranji burung	Fabaceae	29.3	Not Evaluated
T1P1	<i>Dialium indum</i> L. var. <i>indum</i>	Keranji burung	Fabaceae	13.3	Not Evaluated
T1P1	<i>Diospyros evena</i> Bakh.	Merpinang paya mit	Ebenaceae	10.4	Not Evaluated
T1P1	<i>Diospyros evena</i> Bakh.	Merpinang paya mit	Ebenaceae	18.1	Not Evaluated

T1P1	<i>Elaeocarpus clementis</i> Merr.	Sengkurat	Elaeocarpaceae	19.2	Least Concern
T1P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	12.6	Not Evaluated
T1P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	76.8	Not Evaluated
T1P1	<i>Garcinia parvifolia</i> (Miq.) Hort. ex Boerl. & Miq.	Kandis	Clusiaceae	7.8	Not Evaluated
T1P1	<i>Gluta laxiflora</i> Ridl.	Rengas	Anacardiaceae	12.4	Not Evaluated
T1P1	<i>Kokoona reflexa</i> (M.A.Lawson) Ding Hou	Mata Ulat	Celastraceae	25.3	Not Evaluated
T1P1	<i>Koompassia malaccensis</i> Benth.	Menggris	Fabaceae	26.8	Conservation Dependent
T1P1	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg.	Benuah merkubong	Euphorbiaceae	28.0	Not Evaluated
T1P1	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg.	Benuah merkubong	Euphorbiaceae	25.1	Not Evaluated
T1P1	<i>Macaranga heynei</i> I.M.Johnst.	Mahang merah	Euphorbiaceae	35.1	Not Evaluated
T1P1	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	28.8	Not Evaluated
T1P1	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	7.8	Not Evaluated
T1P1	<i>Moultonianthus leembruggianus</i> (Boerl. & Koord.) Steenis	Ulas bukit	Euphorbiaceae	25.3	Not Evaluated
T1P1	<i>Neoscortechinia kingii</i> (Hook. f., Pax & K.Hoffm.)	Bantas	Euphorbiaceae	12.6	Not Evaluated
T1P1	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	12.1	Least Concern
T1P1	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	20.3	Least Concern
T1P1	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	14.0	Least Concern

T1P1	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	7.2	Least Concern
T1P1	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	19.1	Least Concern
T1P1	<i>Popowia pisocarpa</i> K.Schum.	Semukau mit	Annonaceae	9.4	Not Evaluated
T1P1	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	29.5	Not Evaluated
T1P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	16.2	Least Concern
T1P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	12.8	Least Concern
T1P1	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	22.8	Not Evaluated
T1P1	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	17.5	Least Concern
T1P1	<i>Shorea pachyphylla</i> Ridl. ex Symington	Selangan merah bukit	Dipterocarpaceae	19.8	Endangered
T1P1	<i>Shorea pachyphylla</i> Ridl. ex Symington	Selangan merah bukit	Dipterocarpaceae	19.8	Endangered
T1P1	<i>Xanthophyllum beccarianum</i> Chodat	Minyak berok	Polygalaceae	10.7	Not Evaluated
T1P1	<i>Xanthophyllum beccarianum</i> Chodat	Minyak berok	Polygalaceae	25.1	Not Evaluated
T1P2	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	15.1	Not Evaluated
T1P2	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	13.2	Not Evaluated
T1P2	<i>Arthropphyllum diversifolium</i> Blume	Tumbuh kelapa	Araliaceae	7.8	Least Concern
T1P2	<i>Artocarpus kemando</i> Miq.	Pudau	Moraceae	11.0	Not Evaluated
T1P2	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	21.5	Least Concern
T1P2	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	16.2	Least Concern
T1P2	<i>Castanopsis fulva</i> Gamble	Berangan tembaga	Fagaceae	14.7	Not Evaluated

T1P2	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	8.2	Least Concern
T1P2	<i>Dyera costulata</i> (Miq.) Hook. f.	Jelutong bukit	Apocynaceae	13.8	Least Concern
T1P2	<i>Dyera costulata</i> (Miq.) Hook. f.	Jelutong bukit	Apocynaceae	39.1	Least Concern
T1P2	<i>Dysoxylum havilandii</i> Ridl.	Segera	Meliaceae	11.8	Not Evaluated
T1P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	23.0	Not Evaluated
T1P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	14.6	Not Evaluated
T1P2	<i>Gonocaryum minus</i> Sleumer	Midang	Icacinaceae	6.9	Not Evaluated
T1P2	<i>Horsfieldia grandis</i> Warb.	Pendarahan	Myristicaceae	26.2	Least Concern
T1P2	<i>Koompassia malaccensis</i> Benth.	Menggris	Fabaceae	17.3	Conservation Dependent
T1P2	<i>Linociera laxiflora</i> Knobl.	Buntut manok	Oleaceae	18.8	Not Evaluated
T1P2	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empili	Fagaceae	20.6	Not Evaluated
T1P2	<i>Litsea castanea</i> Hook. f.	Medang	Lauraceae	6.3	Least Concern
T1P2	<i>Litsea caulocarpa</i> Merr.	Medang	Lauraceae	28.7	Least Concern
T1P2	<i>Litsea caulocarpa</i> Merr.	Medang	Lauraceae	14.6	Least Concern
T1P2	<i>Macaranga lowii</i> King ex Hook.f.	Benuah entak-empulu	Euphorbiaceae	5.0	Least Concern
T1P2	<i>Palaquium gutta</i> (Hook.) Burck	Nyatoh rian	Sapotaceae	7.8	Near Threatened
T1P2	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	24.6	Least Concern
T1P2	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	12.3	Least Concern
T1P2	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	6.7	Least Concern

T1P2	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	23.1	Least Concern
T1P2	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	11.1	Least Concern
T1P2	<i>Polyalthia hookeriana</i> King	Semukau	Annonaceae	12.0	Not Evaluated
T1P2	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	48.6	Not Evaluated
T1P2	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	13.3	Not Evaluated
T1P2	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	9.5	Least Concern
T1P2	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	18.2	Not Evaluated
T1P2	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok	Malvaceae	6.4	Least Concern
T1P2	<i>Shorea faguetiana</i> Heim	Lun siput	Dipterocarpaceae	38.0	Endangered
T1P2	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	10.0	Least Concern
T1P2	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	19.0	Least Concern
T1P2	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	12.9	Least Concern
T1P2	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	9.3	Least Concern
T1P2	<i>Strombosia lucida</i> Teijsm. & Binn.	Belian landak	Olacaceae	17.3	Not Evaluated
T1P3	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	8.9	Not Evaluated
T1P3	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	11.8	Not Evaluated
T1P3	<i>Artocarpus elasticus</i> Reinw. ex Bl.	Terap	Moraceae	25.5	Least Concern
T1P3	<i>Baccaurea racemosa</i> (Reinw. ex Blume) Müll.Arg.	Engkuni	Phyllanthaceae	8.0	Not Evaluated

T1P3	<i>Dialium indum</i> L. var. <i>indum</i>	KerANJI burung	Fabaceae	16.2	Not Evaluated
T1P3	<i>Dillenia reticulata</i> King	Simpoh gajah	Dilleniaceae	12.5	Least Concern
T1P3	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	24.1	Not Evaluated
T1P3	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	24.1	Least Concern
T1P3	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	18.7	Least Concern
T1P3	<i>Dryobalanops beccarii</i> Dyer	Kapur	Dipterocarpaceae	14.5	Endangered
T1P3	<i>Dryobalanops lanceolata</i> Burck	Pajik	Dipterocarpaceae	10.5	Least Concern
T1P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.4	Not Evaluated
T1P3	<i>Euodia alba</i> Hook. f.	Jampang	Rutaceae	15.4	Not Evaluated
T1P3	<i>Gonocaryum minus</i> Sleumer	Nyalin	Icacinaceae	13.7	Not Evaluated
T1P3	<i>Gonystylus affinis</i> Radlk.	Ramin	Thymelaeaceae	6.6	Vulnerable
T1P3	<i>Lasianthus maingayi</i> Hook. f.	Sabar bubu	Rubiaceae	6.5	Not Evaluated
T1P3	<i>Litsea castanea</i> Hook. f.	Medang	Lauraceae	9.8	Least Concern
T1P3	<i>Litsea elliptica</i> Blume	Medang	Lauraceae	39.9	Least Concern
T1P3	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	13.5	Not Evaluated
T1P3	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	10.8	Not Evaluated
T1P3	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	24.0	Not Evaluated
T1P3	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	10.3	Not Evaluated
T1P3	<i>Melanochyla elmeri</i> Merr.	Rengas	Anacardiaceae	18.5	Not Evaluated

T1P3	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	17.1	Not Evaluated
T1P3	<i>Mezzettia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	33.3	Not Evaluated
T1P3	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	24.0	Not Evaluated
T1P3	<i>Myristica lowiana</i> King	Kumpang Pendarahan	Myristicaceae	10.2	Near Threatened
T1P3	<i>Myristica lowiana</i> King	Kumpang Pendarahan	Myristicaceae	9.2	Near Threatened
T1P3	<i>Myristica lowiana</i> King	Kumpang Pendarahan	Myristicaceae	23.5	Near Threatened
T1P3	<i>Nephelium maingayi</i> Hiern	Serait	Sapindaceae	9.4	Least Concern
T1P3	<i>Palaquium ridleyi</i> King & Gamble	Nyatoth terong	Sapotaceae	12.2	Least Concern
T1P3	<i>Palaquium ridleyi</i> King & Gamble	Nyatoth terong	Sapotaceae	9.3	Least Concern
T1P3	<i>Pentace corneri</i> Kosterm.	Baru bukit	Tiliaceae	52.8	Not Evaluated
T1P3	<i>Polyalthia hookeriana</i> King	Semukau	Annonaceae	12.2	Not Evaluated
T1P3	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	36.8	Not Evaluated
T1P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	36.8	Least Concern
T1P3	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti kawang pinang licin	Dipterocarpaceae	24.6	Near Threatened
T1P3	<i>Shorea ferruginea</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	18.3	Vulnerable
T1P3	<i>Shorea ferruginea</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	7.9	Vulnerable
T1P3	<i>Shorea iliasii</i> P.S.Ashton	Meranti	Dipterocarpaceae	9.0	Critically Endangered
T1P3	<i>Shorea iliasii</i> P.S.Ashton	Meranti	Dipterocarpaceae	19.8	Critically Endangered
T1P3	<i>Shorea pinanga</i> Scheff.	Meranti	Dipterocarpaceae	11.2	Least Concern

T1P3	<i>Shorea pinanga</i> Scheff.	Meranti	Dipterocarpaceae	9.5	Least Concern
T1P3	<i>Syzygium lundense</i> (Merr.) Merr. & L.M.Perry	Ubah daun besar	Myrtaceae	6.3	Not Evaluated
T1P3	<i>Syzygium nemestrinum</i> (M.R.Hend.) I.M.Turner	Ubah	Myrtaceae	27.7	Not Evaluated
T1P3	<i>Timonius flavescens</i> (Jacq.) Baker	Rentap	Rubiaceae	8.0	Least Concern
T1P3	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	23.4	Endangered
T1P3	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	10.3	Endangered
T2P1	<i>Alangium ridleyi</i> King	Mentulang	Alangiaceae	17.6	Not Evaluated
T2P1	<i>Alstonia angustifolia</i> Wall. var. <i>angustifolia</i>	Pelai tikus	Apocynaceae	11.2	Least Concern
T2P1	<i>Artocarpus integer</i> (Thunb.) Merr.	Cempedak	Moraceae	46.5	Not Evaluated
T2P1	<i>Azadirachta excelsa</i> (Jack) Jacobs	Sentang	Meliaceae	13.0	Least Concern
T2P1	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	15.8	Vulnerable
T2P1	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	10.5	Vulnerable
T2P1	<i>Dehaasia firma</i> Blume	Medang	Lauraceae	21.6	Least Concern
T2P1	<i>Dillenia excelsa</i> (Jack) Martelli ex Gilg.	Simpoh	Dilleniaceae	60.0	Not Evaluated
T2P1	<i>Diospyros siamang</i> Bakh.	Kayu malam bali	Ebenaceae	11.8	Not Evaluated
T2P1	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	9.1	Least Concern
T2P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	15.6	Not Evaluated
T2P1	<i>Endiandra clavigera</i> Kosterm. & Kosterm.	Bejubai	Lauraceae	22.6	Vulnerable

T2P1	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	9.0	Not Evaluated
T2P1	<i>Knema ashtonii</i> J.Sinclair	Pendarahan	Myristicaceae	7.9	Vulnerable
T2P1	<i>Knema ashtonii</i> J.Sinclair	Pendarahan	Myristicaceae	10.0	Vulnerable
T2P1	<i>Litsea accedens</i> Boerl.	Medang	Lauraceae	53.0	Least Concern
T2P1	<i>Litsea nidularis</i> Gamble	Medang miang	Lauraceae	12.3	Not Evaluated
T2P1	<i>Mammea acuminata</i> (Kosterm.) Kosterm.	Kayu putih doroh	Guttiferae	17.6	Least Concern
T2P1	<i>Mastixia rostrata</i> Blume	Patoli entelit	Cornaceae	8.0	Not Evaluated
T2P1	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	60.0	Not Evaluated
T2P1	<i>Mezzettia parviflora</i> Becc.	Kepayang babi	Annonaceae	29.8	Not Evaluated
T2P1	<i>Monocarpia acuminissima</i>	Karai	Annonaceae	12.5	-
T2P1	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	12.5	Not Evaluated
T2P1	<i>Neesia glabra</i> Becc.	Bengang	Malvaceae	6.6	Not Evaluated
T2P1	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	11.0	Least Concern
T2P1	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	11.4	Least Concern
T2P1	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	9.0	Not Evaluated
T2P1	<i>Platea excelsa</i> Blume var. <i>riedeliana</i>	Jejangkang	Icacinaceae	27.8	Least Concern
T2P1	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	20.2	Not Evaluated
T2P1	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	12.1	Not Evaluated
T2P1	<i>Santiria griffithii</i> Engl.	Seladah	Burseraceae	36.0	Least Concern

T2P1	<i>Scaphium borneensis</i> (Merr.) Kosterm	Kembang semangkok kecil	Malvaceae	19.7	Not Evaluated
T2P1	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	8.0	Least Concern
T2P1	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	37.0	Least Concern
T2P1	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	16.7	Least Concern
T2P1	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	45.0	Least Concern
T2P1	<i>Shorea scabrida</i> Symington	Meranti lop	Dipterocarpaceae	11.6	Near Threatened
T2P1	<i>Sterculia stipulata</i> Korth.	Biris	Sterculiaceae	10.0	Not Evaluated
T2P1	<i>Syzygium havilandii</i> (Merr.) Merr. & L.M. Perry	Ubah	Myrtaceae	9.7	Not Evaluated
T2P1	<i>Syzygium tenuicaudatum</i> (Merr. & Perry) Anderson	Ubah putih	Myrtaceae	8.4	Not Evaluated
T2P1	<i>Xanthophyllum griffithii</i> Hook. f. ex A.W. Benn.	Minyak berok	Polygalaceae	8.6	Not Evaluated
T2P2	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	20.0	Not Evaluated
T2P2	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	18.8	Not Evaluated
T2P2	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	11.5	Not Evaluated
T2P2	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	18.0	Vulnerable
T2P2	<i>Artocarpus kemando</i> Miq.	Pudau	Moraceae	11.8	Not Evaluated
T2P2	<i>Baccaurea minor</i> Hook. f.	Tampoi	Phyllanthaceae	7.3	Not Evaluated
T2P2	<i>Beilschmiedia kunstleri</i> Gamble	Nyatoh	Lauraceae	14.0	Least Concern

T2P2	<i>Cinnamomum bintuluinsis/bintulense</i> Kosterm.	Medang	Lauraceae	7.0	Not Evaluated
T2P2	<i>Cleistanthus baramicus</i> Jabl.	Pala beriak	Phyllanthaceae	7.6	Not Evaluated
T2P2	<i>Dehaasia firma</i> Blume	Medang	Lauraceae	16.0	Least Concern
T2P2	<i>Hydnocarpus anomala</i> (Merr.) Sleum.	Senumpul	Achariaceae	23.3	Not Evaluated
T2P2	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	10.0	Least Concern
T2P2	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Benuah padang	Euphorbiaceae	12.4	Not Evaluated
T2P2	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	16.2	Not Evaluated
T2P2	<i>Macaranga winkleri</i> Pax & K. Hoffm.	Mahang	Euphorbiaceae	15.0	Least Concern
T2P2	<i>Macaranga winkleri</i> Pax & K. Hoffm.	Mahang	Euphorbiaceae	9.2	Least Concern
T2P2	<i>Macaranga winkleri</i> Pax & K. Hoffm.	Mahang	Euphorbiaceae	16.6	Least Concern
T2P2	<i>Macaranga winkleri</i> Pax & K. Hoffm.	Mahang	Euphorbiaceae	22.6	Least Concern
T2P2	<i>Macaranga winkleri</i> Pax & K. Hoffm.	Mahang	Euphorbiaceae	15.3	Least Concern
T2P2	<i>Ochanostachys amentacea</i> Mast.	Sentikal	Olacaceae	26.5	Data Deficient
T2P2	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	11.3	Least Concern
T2P2	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	18.8	Least Concern
T2P2	<i>Parinari elmeri</i> Merr.	Merbatu	Chrysobalanaceae	21.2	Not Evaluated
T2P2	<i>Pometia pinnata</i> Forst.	Kasai	Sapindaceae	7.4	Least Concern
T2P2	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	7.5	Least Concern
T2P2	<i>Shorea havilandii</i> Brandis	Selangan batu pinang	Dipterocarpaceae	21.0	Least Concern

T2P2	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	10.3	Least Concern
T2P2	<i>Sterculia stipulata</i> Korth.	Biris	Sterculiaceae	14.0	Not Evaluated
T2P3	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	11.1	Least Concern
T2P3	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam	Phyllanthaceae	6.6	Not Evaluated
T2P3	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	19.8	Not Evaluated
T2P3	<i>Artocarpus kemando</i> Miq.	Pudau	Moraceae	21.6	Not Evaluated
T2P3	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	8.2	Least Concern
T2P3	<i>Buchanania insignis</i> Bl.	Otak udang	Anacardiaceae	8.2	Least Concern
T2P3	<i>Cyathocalyx havilandii</i> Boerl.	Selemo	Annonaceae	16.5	Not Evaluated
T2P3	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	10.6	Least Concern
T2P3	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	6.2	Least Concern
T2P3	<i>Elaeocarpus stipularis</i> Blume	Sengkurat	Elaeocarpaceae	14.3	Not Evaluated
T2P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	29.5	Not Evaluated
T2P3	<i>Ficus geocharis</i> Corner	Entimau	Moraceae	9.1	Not Evaluated
T2P3	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	6.9	Least Concern
T2P3	<i>Horsfieldia grandis</i> Warb.	Kumpang beludu	Myristicaceae	6.4	Least Concern
T2P3	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empili	Fagaceae	8.1	Not Evaluated
T2P3	<i>Litsea accedens</i> Boerl.	Medang	Lauraceae	42.2	Least Concern
T2P3	<i>Litsea accedens</i> Boerl.	Medang	Lauraceae	23.0	Least Concern

T2P3	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	20.8	Not Evaluated
T2P3	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	11.9	Not Evaluated
T2P3	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Benuah padang	Euphorbiaceae	17.1	Not Evaluated
T2P3	<i>Mesua hexapetala</i> (Hook. f.) P.S.Ashton	Mergasing daun besar	Calophyllaceae	12.4	Not Evaluated
T2P3	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	11.3	Not Evaluated
T2P3	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	10.3	Least Concern
T2P3	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	13.9	Least Concern
T2P3	<i>Prunus arborea</i> (Blume) Kalkman	Enteli	Rosaceae	9.0	Least Concern
T2P3	<i>Pternandra echinata</i> Jack	Puloh	Melastomataceae	8.9	Not Evaluated
T2P3	<i>Pternandra echinata</i> Jack	Puloh	Melastomataceae	8.8	Not Evaluated
T2P3	<i>Santiria griffithii</i> Engl.	Seladah	Burseraceae	16.5	Least Concern
T2P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	11.6	Least Concern
T2P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	33.1	Least Concern
T2P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	16.3	Least Concern
T2P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	5.8	Least Concern
T2P3	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti kawang pinang licin	Dipterocarpaceae	12.8	Near Threatened
T2P3	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti kawang pinang licin	Dipterocarpaceae	7.9	Near Threatened
T2P3	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	23.4	Least Concern
T2P3	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	49.8	Least Concern

T2P3	<i>Shorea pauciflora</i> King	Nemesu	Dipterocarpaceae	9.1	Endangered
T2P3	<i>Xerospermum laevigatum</i> Radlk.	Rambutan pacat daun kecil	Sapindaceae	6.2	Not Evaluated
T3P1	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	24.0	Not Evaluated
T3P1	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	33.5	Not Evaluated
T3P1	<i>Alseodaphne bancana</i> Miq.	Medang	Lauraceae	15.7	Least Concern
T3P1	<i>Artocarpus sericicarpus</i> Jarrett	Terap	Moraceae	71.7	Least Concern
T3P1	<i>Baccaurea sumatrana</i> (Miq.) Müll.Arg.	Tampoi	Phyllanthaceae	14.5	Not Evaluated
T3P1	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	14.1	Not Evaluated
T3P1	<i>Dacryodes laxa</i> (A.W.Benn.) H.J.Lam	Kedondong	Burseraceae	7.4	Least Concern
T3P1	<i>Dacryodes laxa</i> (A.W.Benn.) H.J.Lam	Kedondong	Burseraceae	12.7	Least Concern
T3P1	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	21.4	Least Concern
T3P1	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	9.5	Least Concern
T3P1	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	10.3	Least Concern
T3P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	30.8	Not Evaluated
T3P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	9.9	Not Evaluated
T3P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	33.4	Not Evaluated
T3P1	<i>Ficus gecharis</i> Corner	Entimau badak	Moraceae	9.6	Not Evaluated
T3P1	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	9.7	Least Concern
T3P1	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	10.5	Not Evaluated

T3P1	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	12.4	Not Evaluated
T3P1	<i>Hopea bracteata</i> Burck	Luis/Chengal	Dipterocarpaceae	10.2	Least Concern
T3P1	<i>Horsfieldia wallichii</i> Warb.	Kumpang	Myristicaceae	28.1	Least Concern
T3P1	<i>Knema cinerea</i> Warb.	Kumpang	Myristicaceae	9.7	Not Evaluated
T3P1	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg.	Merkubong	Euphorbiaceae	36.4	Not Evaluated
T3P1	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	11.8	Not Evaluated
T3P1	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	21.2	Not Evaluated
T3P1	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Benuah padang	Euphorbiaceae	11.2	Not Evaluated
T3P1	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Benuah padang	Euphorbiaceae	11.5	Not Evaluated
T3P1	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Benuah padang	Euphorbiaceae	9.0	Not Evaluated
T3P1	<i>Myristica maxima</i> Warb.	Kumpang	Myristicaceae	17.2	Least Concern
T3P1	<i>Nauclea parva</i> (Havil.) Merr.	Empitap	Rubiaceae	23.1	Not Evaluated
T3P1	<i>Nephelium maingayi</i> Hiern	Serait	Sapindaceae	7.5	Least Concern
T3P1	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	7.3	Least Concern
T3P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	6.5	Least Concern
T3P1	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok besar	Malvaceae	22.2	Least Concern
T3P1	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	16.9	Near Threatened
T3P1	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	10.0	Near Threatened

T3P1	<i>Shorea argentifolia</i> Symington	Meranti binatoh	Dipterocarpaceae	15.1	Least Concern
T3P1	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	58.0	Least Concern
T3P1	<i>Shorea superba</i> Symington	Selangan batu tulang ikan	Dipterocarpaceae	8.7	Vulnerable
T3P1	<i>Xanthophyllum griffithii</i> Hook. f. ex A.W. Benn.	Minyak berok	Polygalaceae	6.8	Not Evaluated
T3P2	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	26.1	Not Evaluated
T3P2	<i>Antidesma stipulare</i> Blume	Berenai	Phyllanthaceae	8.3	Least Concern
T3P2	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam	Phyllanthaceae	10.5	Not Evaluated
T3P2	<i>Aquilaria macrocarpa</i> Baill.	Gaharu	Thymelaeaceae	20.0	Not Evaluated
T3P2	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	14.6	Vulnerable
T3P2	<i>Cinnamomum bintulense</i> Kosterm.	Medang tija	Lauraceae	8.5	Not Evaluated
T3P2	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	14.5	Vulnerable
T3P2	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	8.7	Vulnerable
T3P2	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	10.2	Least Concern
T3P2	<i>Dillenia excelsa</i> (Jack) Martelli ex Gilg.	Simpoh	Dilleniaceae	6.6	Not Evaluated
T3P2	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	10.4	Least Concern
T3P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.1	Not Evaluated
T3P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	6.2	Not Evaluated
T3P2	<i>Eusideroxylon zwageri</i> Teijsm. & Binn.	Belian	Lauraceae	9.4	Vulnerable
T3P2	<i>Gironniera nervosa</i> Planch.	Medang kasap	Ulmaceae	7.0	Not Evaluated

T3P2	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	42.1	Not Evaluated
T3P2	<i>Litsea fulva</i> Fern.-Vill.	Medang	Lauraceae	7.3	Least Concern
T3P2	<i>Litsea fulva</i> Fern.-Vill.	Medang	Lauraceae	38.3	Least Concern
T3P2	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	29.7	Not Evaluated
T3P2	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	19.6	Not Evaluated
T3P2	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	7.7	Least Concern
T3P2	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	7.6	Least Concern
T3P2	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	9.0	Least Concern
T3P2	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	10.0	Not Evaluated
T3P2	<i>Polyalthia sumatrana</i> King	Mempisang	Annonaceae	6.5	Least Concern
T3P2	<i>Pometia pinnata</i> Forst.	Kasai	Sapindaceae	10.3	Least Concern
T3P2	<i>Santiria expansa</i>	Seladah	Burseraceae	14.3	-
T3P2	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	18.5	Least Concern
T3P2	<i>Sarcotheca glauca</i> (Hook. f.) Hallier f.	Piang paya	Oxalidaceae	7.0	Not Evaluated
T3P2	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	7.6	Near Threatened
T3P2	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	9.0	Near Threatened
T3P2	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	7.4	Near Threatened
T3P2	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	8.5	Near Threatened
T3P2	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	10.1	Near Threatened

T3P2	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	17.1	Near Threatened
T3P2	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	35.8	Vulnerable
T3P2	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	7.3	Vulnerable
T3P2	<i>Shorea collaris</i> Slooten	Merkunyt	Dipterocarpaceae	12.2	Vulnerable
T3P2	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	45.3	Least Concern
T3P3	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	25.0	Not Evaluated
T3P3	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	20.2	Not Evaluated
T3P3	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	22.3	Not Evaluated
T3P3	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	22.1	Not Evaluated
T3P3	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	25.5	Not Evaluated
T3P3	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	18.4	Not Evaluated
T3P3	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	11.7	Vulnerable
T3P3	<i>Baccaurea sumatrana</i> (Miq.) Müll.Arg.	Tampoi	Phyllanthaceae	9.9	Not Evaluated
T3P3	<i>Baccaurea sumatrana</i> (Miq.) Müll.Arg.	Tampoi	Phyllanthaceae	17.3	Not Evaluated
T3P3	<i>Dacryodes costata</i> (A.W. Benn.) H.J.Lam	Seladah	Burseraceae	19.8	Least Concern
T3P3	<i>Dehaasia firma</i> Blume	Medang sapi	Lauraceae	9.6	Least Concern
T3P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	12.2	Not Evaluated
T3P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	25.0	Not Evaluated
T3P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.5	Not Evaluated

T3P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	26.4	Not Evaluated
T3P3	<i>Ficus benjamina</i> L.	Ara	Moraceae	7.4	Least Concern
T3P3	<i>Ficus gecharis</i> Corner	Entimau badak	Moraceae	14.3	Not Evaluated
T3P3	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	9.3	Not Evaluated
T3P3	<i>Glochidion arborescens</i> Blume	Ubah-ubah	Phyllanthaceae	29.1	Not Evaluated
T3P3	<i>Glochidion arborescens</i> Blume	Ubah-ubah	Phyllanthaceae	7.2	Not Evaluated
T3P3	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	7.4	Not Evaluated
T3P3	<i>Horsfieldia wallichii</i> Warb.	Kumpang	Myristicaceae	6.4	Least Concern
T3P3	<i>Leucosyke capitellata</i> Wedd.	Kerak idong	Urticaceae	6.4	Least Concern
T3P3	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	16.0	Not Evaluated
T3P3	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Benuah padang	Euphorbiaceae	59.0	Not Evaluated
T3P3	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Benuah padang	Euphorbiaceae	7.3	Not Evaluated
T3P3	<i>Pternandra azurea</i> (Blume) Burkill	Puloh	Melastomataceae	10.3	Not Evaluated
T3P3	<i>Pternandra azurea</i> (Blume) Burkill	Puloh	Melastomataceae	7.9	Not Evaluated
T3P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	6.9	Least Concern
T3P3	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	8.8	Not Evaluated
T3P3	<i>Shorea collaris</i> Slooten	Merkunyt	Dipterocarpaceae	6.4	Vulnerable
T3P3	<i>Sterculia bicolor</i> Mast.	Kari/Kalumpang	Sterculiaceae	5.8	Not Evaluated
T3P3	<i>Sterculia stipulata</i> Korth.	Biris	Sterculiaceae	8.8	Not Evaluated

T3P3	<i>Sterculia stipulata</i> Korth.	Biris	Sterculiaceae	7.9	Not Evaluated
T3P3	<i>Sterculia stipulata</i> Korth.	Biris	Sterculiaceae	7.8	Not Evaluated
T3P3	<i>Turpinia borneensis</i> (Merr. & L.M.Perry) B.L.Linden	Geretak/Ubah semut	Staphyleaceae	11.1	Not Evaluated
T3P3	<i>Vernonia arborea</i> Welw. ex O.Hoffm. & Buch.-Ham.	Medang gambong	Asteraceae	29.2	Least Concern
T4P1	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam	Phyllanthaceae	10.8	Not Evaluated
T4P1	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam	Phyllanthaceae	6.0	Not Evaluated
T4P1	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam	Phyllanthaceae	6.8	Not Evaluated
T4P1	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	7.2	Vulnerable
T4P1	<i>Beilschmiedia madang</i> Blume	Medang	Lauraceae	23.8	Least Concern
T4P1	<i>Brownlowia peltata</i> Benth.	Baru	Malvaceae	10.9	Not Evaluated
T4P1	<i>Brownlowia peltata</i> Benth.	Baru	Malvaceae	15.0	Not Evaluated
T4P1	<i>Brownlowia peltata</i> Benth.	Baru	Malvaceae	6.8	Not Evaluated
T4P1	<i>Brownlowia peltata</i> Benth.	Baru	Malvaceae	6.8	Not Evaluated
T4P1	<i>Dehaasia resinosa</i>	Medang	Lauraceae	8.8	Not Evaluated
T4P1	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	12.6	Not Evaluated
T4P1	<i>Dracontomelon dao</i> (Blanco) Merr. & Rolfe	Sengkuang	Anacardiaceae	5.5	Least Concern
T4P1	<i>Endiandra clavigera</i> Kosterm. & Kosterm.	Bejubai	Lauraceae	8.5	Vulnerable
T4P1	<i>Eusideroxylon zwageri</i> Teijsm. & Binn.	Belian	Lauraceae	18.0	Vulnerable

T4P1	<i>Ficus gecharis</i> Corner	Entimau	Moraceae	8.5	Not Evaluated
T4P1	<i>Ficus gecharis</i> Corner	Entimau badak	Moraceae	6.8	Not Evaluated
T4P1	<i>Ficus gecharis</i> Corner	Entimau	Moraceae	9.0	Not Evaluated
T4P1	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	12.7	Not Evaluated
T4P1	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	14.2	Not Evaluated
T4P1	<i>Grewia elmeri</i> (Merr.) P.S.Ashton	Bunsi	Malvaceae	15.1	Not Evaluated
T4P1	<i>Knema ashtonii</i> J.Sinclair	Pendarahan	Myristicaceae	9.4	Vulnerable
T4P1	<i>Lasianthus maingayi</i> Hook. f.	Sabar bubu	Rubiaceae	9.3	Not Evaluated
T4P1	<i>Litsea castanea</i> Hook. f.	Medang	Lauraceae	6.6	Least Concern
T4P1	<i>Litsea castanea</i> Hook. f.	Medang	Lauraceae	14.8	Least Concern
T4P1	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg.	Marakubong	Euphorbiaceae	26.7	Not Evaluated
T4P1	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	12.2	Not Evaluated
T4P1	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	9.6	Not Evaluated
T4P1	<i>Pometia pinnata</i> Forst.	Kasai	Sapindaceae	8.6	Least Concern
T4P1	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	7.1	Not Evaluated
T4P1	<i>Shorea argentifolia</i> Symington	Meranti	Dipterocarpaceae	26.1	Least Concern
T4P1	<i>Shorea macrophylla</i> (de Vriese) P.S. Ashton	Engkabang	Dipterocarpaceae	12.2	Least Concern
T4P1	<i>Shorea superba</i> Symington	Meranti tulang ikan	Dipterocarpaceae	49.4	Vulnerable

T4P1	<i>Syzygium arcuatinervum</i> (Merr.) Craven & Briffin	Ubah merah	Myrtaceae	6.5	Not Evaluated
T4P1	<i>Tabernaemontana macrocarpa</i> Jack	Kerimpa patong	Apocynaceae	10.3	Least Concern
T4P1	<i>Xanthophyllum amoenum</i> Chodat	Nyalin	Polygalaceae	13.6	Not Evaluated
T4P2	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	8.1	Not Evaluated
T4P2	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	12.7	Not Evaluated
T4P2	<i>Alseodaphne bancana</i> Miq.	Medang payung	Lauraceae	12.3	Least Concern
T4P2	<i>Alstonia scholaris</i> (L.) R. Br.	Pelai lilin	Apocynaceae	50.0	Least Concern
T4P2	<i>Alstonia scholaris</i> (L.) R. Br.	Pelai lilin	Apocynaceae	8.2	Least Concern
T4P2	<i>Alstonia scholaris</i> (L.) R. Br.	Pelai lilin	Apocynaceae	34.0	Least Concern
T4P2	<i>Alstonia scholaris</i> (L.) R. Br.	Pelai lilin	Apocynaceae	15.3	Least Concern
T4P2	<i>Alstonia scholaris</i> (L.) R. Br.	Pelai lilin	Apocynaceae	26.5	Least Concern
T4P2	<i>Artocarpus kemando</i> Miq.	Keledang	Moraceae	7.8	Not Evaluated
T4P2	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	8.7	Least Concern
T4P2	<i>Brownlowia peltata</i> Benth.	Baru	Malvaceae	6.0	Not Evaluated
T4P2	<i>Brownlowia peltata</i> Benth.	Baru	Malvaceae	7.0	Not Evaluated
T4P2	<i>Cyathocalyx carinatus</i> (Ridl.) J. Sinclair	Pendok jugam	Annonaceae	23.2	Not Evaluated
T4P2	<i>Dillenia beccariana</i> Martelli	Simpur buan	Dilleniaceae	8.6	Not Evaluated
T4P2	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	8.0	Least Concern
T4P2	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	5.0	Least Concern

T4P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	10.7	Not Evaluated
T4P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	23.3	Not Evaluated
T4P2	<i>Ficus geocharis</i> Corner	Entimau	Moraceae	6.5	Not Evaluated
T4P2	<i>Garcinia parvifolia</i> (Miq.) Hort. ex Boerl. & Miq.	Asam Kandis	Clusiaceae	8.0	Not Evaluated
T4P2	<i>Garcinia parvifolia</i> (Miq.) Hort. ex Boerl. & Miq.	Asam Kandis	Clusiaceae	7.0	Not Evaluated
T4P2	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	16.5	Not Evaluated
T4P2	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	22.3	Not Evaluated
T4P2	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	13.4	Not Evaluated
T4P2	<i>Knema ashtonii</i> J.Sinclair	Pendarahan	Myristicaceae	16.2	Vulnerable
T4P2	<i>Koompassia malaccensis</i> Benth.	Kempas	Fabaceae	12.4	Conservation Dependent
T4P2	<i>Litsea cordata</i> Hook. f.	Medang	Lauraceae	18.2	Least Concern
T4P2	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	43.5	Not Evaluated
T4P2	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	15.3	Least Concern
T4P2	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	6.7	Least Concern
T4P2	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	11.3	Least Concern
T4P2	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	6.7	Least Concern
T4P2	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	16.5	Least Concern
T4P2	<i>Mezzettia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	26.0	Not Evaluated

T4P2	<i>Palaquium decurrens</i> H.J.Lam	Nyatoh	Sapotaceae	11.7	Least Concern
T4P2	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	13.0	Least Concern
T4P2	<i>Shorea beccariana</i> Burck	Meranti landai	Dipterocarpaceae	54.6	Least Concern
T4P2	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	10.5	Critically Endangered
T4P2	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	34.3	Critically Endangered
T4P2	<i>Shorea myrionerva</i> Symington ex P.S.Ashton	Meranti sepit udang	Dipterocarpaceae	9.5	Near Threatened
T4P2	<i>Shorea stenoptera</i> Burck	Engkabang rusa	Dipterocarpaceae	14.7	Near Threatened
T4P2	<i>Sterculia rubiginosa</i> Vent.	Melebu	Sterculiaceae	23.6	Not Evaluated
T4P2	<i>Syzygium tenuicaudatum</i> (Merr. & Perry) Anderson	Ubah putih	Myrtaceae	9.2	Not Evaluated
T4P3	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	19.0	Not Evaluated
T4P3	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	11.0	Not Evaluated
T4P3	<i>Alangium nobile</i> Harms ex King	Midong besai bulat	Alangiaceae	14.4	Least Concern
T4P3	<i>Alstonia angustiloba</i> Miq.	Pelai tikus	Apocynaceae	35.0	Least Concern
T4P3	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam	Phyllanthaceae	7.2	Not Evaluated
T4P3	<i>Baccaurea racemosa</i> (Reinw. ex Blume) Müll.Arg.	Tampoi	Phyllanthaceae	25.4	Not Evaluated
T4P3	<i>Cyathocalyx biovulatus</i> Boerl.	Selemo paya	Annonaceae	12.5	Not Evaluated
T4P3	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	7.0	Least Concern
T4P3	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	11.1	Least Concern

T4P3	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	12.3	Least Concern
T4P3	<i>Dialium platysepalum</i> Baker	KerANJI	Fabaceae	14.3	Not Evaluated
T4P3	<i>Diospyros malayana</i> Bakh.	Kayu malam	Ebenaceae	7.1	Not Evaluated
T4P3	<i>Diospyros siamang</i> Bakh.	Kayu malam balih	Ebenaceae	8.4	Not Evaluated
T4P3	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	11.3	Least Concern
T4P3	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	21.7	Least Concern
T4P3	<i>Gonystylus affinis</i> Radlk.	Ramin	Thymelaeaceae	12.2	Vulnerable
T4P3	<i>Hydnocarpus crassifolia</i> Sleumer	Senumpul	Achariaceae	18.8	Not Evaluated
T4P3	<i>Litsea castanea</i> Hook. f.	Medang	Lauraceae	10.5	Least Concern
T4P3	<i>Luvunga motleyi</i> Oliv.	Jari manok	Rutaceae	8.0	Not Evaluated
T4P3	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	19.2	Least Concern
T4P3	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	9.9	Least Concern
T4P3	<i>Mangifera havilandii</i> Ridl.	Asam	Anacardiaceae	29.1	Not Evaluated
T4P3	<i>Memecylon durum</i> Cogn.	Nipis kulit	Melastomataceae	8.0	Not Evaluated
T4P3	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	10.0	Not Evaluated
T4P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	55.0	Least Concern
T4P3	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	8.4	Not Evaluated
T4P3	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	31.0	Not Evaluated
T4P3	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	10.0	Not Evaluated

T4P3	<i>Scorodocarpus borneensis</i> Becc.	Bawang putih	Olacaceae	19.0	Not Evaluated
T4P3	<i>Shorea beccariana</i> Burck	Meranti langgai	Dipterocarpaceae	36.3	Least Concern
T4P3	<i>Shorea macrobalanos</i> P.S.Ashton	Meranti kuning	Dipterocarpaceae	22.3	Vulnerable
T4P3	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	9.0	Least Concern
T4P3	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	10.0	Least Concern
T4P3	<i>Shorea ovata</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	8.5	Endangered
T4P3	<i>Shorea scabrida</i> Symington	Meranti lop	Dipterocarpaceae	25.0	Near Threatened
T4P3	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	17.8	Not Evaluated
T4P3	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	6.2	Not Evaluated
T4P3	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	6.5	Not Evaluated
T5P1	<i>Beilschmiedia madang</i> Blume	Medang	Lauraceae	8.2	Least Concern
T5P1	<i>Beilschmiedia madang</i> Blume	Medang	Lauraceae	11.7	Least Concern
T5P1	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	11.7	Vulnerable
T5P1	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	13.0	Least Concern
T5P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	6.0	Not Evaluated
T5P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.4	Not Evaluated
T5P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	29.7	Not Evaluated
T5P1	<i>Ficus aurata</i> (Miq.) Miq.	Kumpan	Moraceae	9.5	Not Evaluated
T5P1	<i>Ficus gecharis</i> Corner	Entimau	Moraceae	10.5	Not Evaluated

T5P1	<i>Garcinia parvifolia</i> (Miq.) Hort. ex Boerl. & Miq.	Kandis	Clusiaceae	6.7	Not Evaluated
T5P1	<i>Knema latifolia</i> Warb.	Pendarahan	Myristicaceae	7.2	Least Concern
T5P1	<i>Lindera pipericarpa</i> Boerl.	Medang sisit	Lauraceae	9.4	Not Evaluated
T5P1	<i>Lithocarpus gracilis</i> (Korth.) Soepadmo	Empili	Fagaceae	9.0	Least Concern
T5P1	<i>Litsea resinosa</i> Koord.	Medang kalak	Lauraceae	34.8	Least Concern
T5P1	<i>Litsea resinosa</i> Koord.	Medang kalak	Lauraceae	6.6	Least Concern
T5P1	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg.	Marakubong	Euphorbiaceae	20.6	Not Evaluated
T5P1	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg.	Marakubong	Euphorbiaceae	40.3	Not Evaluated
T5P1	<i>Macaranga lowii</i> King ex Hook.f.	Mahang	Euphorbiaceae	6.5	Least Concern
T5P1	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Mahang	Euphorbiaceae	7.7	Not Evaluated
T5P1	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Mahang	Euphorbiaceae	8.0	Not Evaluated
T5P1	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	7.0	Least Concern
T5P1	<i>Nauclea parva</i> (Havil.) Merr.	Jengkai	Rubiaceae	21.4	Not Evaluated
T5P1	<i>Palaquium gutta</i> (Hook.) Burck	Nyatoh rian	Sapotaceae	8.2	Near Threatened
T5P1	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	18.0	Least Concern
T5P1	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	6.2	Least Concern
T5P1	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	14.6	Not Evaluated

T5P1	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Dileh paya	Annonaceae	31.9	Not Evaluated
T5P1	<i>Prunus arborea</i> (Blume) Kalkman	Enteli	Rosaceae	8.0	Least Concern
T5P1	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	8.8	Not Evaluated
T5P1	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	15.3	Not Evaluated
T5P1	<i>Shorea fallax</i> Meijer	Engkabang pinang	Dipterocarpaceae	6.5	Least Concern
T5P1	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	38.7	Critically Endangered
T5P1	<i>Shorea scabrida</i> Symington	Meranti lop	Dipterocarpaceae	22.7	Near Threatened
T5P1	<i>Shorea scabrida</i> Symington	Meranti lop	Dipterocarpaceae	11.5	Near Threatened
T5P1	<i>Shorea scabrida</i> Symington	Meranti Lop	Dipterocarpaceae	14.0	Near Threatened
T5P1	<i>Sterculia rubiginosa</i> Vent.	Melebu bulu	Sterculiaceae	7.5	Not Evaluated
T5P1	<i>Symplocos odoratissima</i> Choisy ex Zoll.	Jirak ai	Symplocaceae	39.0	Not Evaluated
T5P1	<i>Syzygium nemestrinum</i> (M.R.Hend.) I.M.Turner	Ubah	Myrtaceae	23.5	Not Evaluated
T5P2	<i>Adinandra balukar</i>	Legai	Theaceae	33.8	Not Evaluated
T5P2	<i>Adinandra balukar</i>	Legai	Theaceae	27.0	Not Evaluated
T5P2	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	18.0	Not Evaluated
T5P2	<i>Allantospermum borneense</i> Forman	Nyalin	Ixonanthaceae	8.0	Endangered
T5P2	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	34.4	Not Evaluated
T5P2	<i>Artocarpus elasticus</i> Reinw. ex Bl.	Terap	Moraceae	9.0	Least Concern
T5P2	<i>Chisocheton laxiflorus</i> King	Segera	Meliaceae	11.6	Not Evaluated

T5P2	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	19.0	Least Concern
T5P2	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	9.4	Not Evaluated
T5P2	<i>Dipterocarpus tempehes</i> Slooten	Keruing	Dipterocarpaceae	13.3	Endangered
T5P2	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	14.7	Least Concern
T5P2	<i>Endiandra coriacea</i> Merr.	Bejubai	Lauraceae	21.7	Not Evaluated
T5P2	<i>Eugenia arcuatinervia</i> Merr.	Ubah lesu	Myrtaceae	8.1	Not Evaluated
T5P2	<i>Ficus geocharis</i> Corner	Entimau	Moraceae	7.0	Not Evaluated
T5P2	<i>Horsfieldia wallichii</i> Warb.	Kumpang	Myristicaceae	11.3	Least Concern
T5P2	<i>Hydnocarpus crassifolia</i> Sleumer	Senumpul	Achariaceae	8.7	Not Evaluated
T5P2	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empili	Fagaceae	58.5	Not Evaluated
T5P2	<i>Litsea elliptica</i> Blume	Medang	Lauraceae	7.0	Least Concern
T5P2	<i>Macaranga lowii</i> King ex Hook.f.	Mahang	Euphorbiaceae	6.6	Least Concern
T5P2	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	40.3	Not Evaluated
T5P2	<i>Meliosma sumatrana</i> (Jack) Walp.	Bulu manok	Sabiaceae	12.0	Least Concern
T5P2	<i>Myristica latifolia</i> Warb.	Kumpang	Myristicaceae	8.3	Not Evaluated
T5P2	<i>Myristica latifolia</i> Warb.	Kumpang	Myristicaceae	9.0	Not Evaluated
T5P2	<i>Myristica latifolia</i> Warb.	Kumpang	Myristicaceae	7.4	Not Evaluated
T5P2	<i>Myristica latifolia</i> Warb.	Kumpang	Myristicaceae	7.3	Not Evaluated
T5P2	<i>Myristica lowiana</i> King	Daun besar	Myristicaceae	5.0	Near Threatened

T5P2	<i>Neoscortechinia sumatrensis</i> S.Moore	Bantas	Euphorbiaceae	12.6	Not Evaluated
T5P2	<i>Nephelium cuspidatum</i> Blume	Lotong	Sapindaceae	7.6	Least Concern
T5P2	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	9.9	Least Concern
T5P2	<i>Palaquium decurrens</i> H.J.Lam	Nyato	Sapotaceae	25.0	Least Concern
T5P2	<i>Payena obscura</i> Burck	Nyato	Sapotaceae	14.7	Vulnerable
T5P2	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	7.0	Not Evaluated
T5P2	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	9.3	Not Evaluated
T5P2	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	14.5	Not Evaluated
T5P2	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	16.8	Not Evaluated
T5P2	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	9.1	Not Evaluated
T5P2	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	15.5	Not Evaluated
T5P2	<i>Shorea macroptera</i> Dyer	Melantai	Dipterocarpaceae	9.5	Least Concern
T5P2	<i>Shorea ovata</i> Dyer ex Brandis	Meranti sarang punao bukit	Dipterocarpaceae	66.5	Endangered
T5P2	<i>Syzygium havilandii</i> (Merr.) Merr. & L.M.Perry	Ubah	Myrtaceae	12.4	Not Evaluated
T5P3	<i>Adinandra balukar</i>	Legai	Theaceae	13.1	Not Evaluated
T5P3	<i>Adinandra balukar</i>	Legai	Theaceae	16.5	Not Evaluated
T5P3	<i>Adinandra balukar</i>	Legai	Theaceae	34.5	Not Evaluated
T5P3	<i>Aglaia macrophylla</i> Teijsm. & Binn.	Segera	Meliaceae	9.9	Not Evaluated
T5P3	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	8.2	Vulnerable

T5P3	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	12.4	Least Concern
T5P3	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	11.3	Least Concern
T5P3	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	15.4	Vulnerable
T5P3	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	7.0	Vulnerable
T5P3	<i>Elaeocarpus griffithii</i> A.Gray	Mendong	Elaeocarpaceae	7.0	Not Evaluated
T5P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	12.0	Not Evaluated
T5P3	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	25.6	Not Evaluated
T5P3	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	10.4	Not Evaluated
T5P3	<i>Gironniera nervosa</i> Planch.	Kasap	Ulmaceae	28.2	Not Evaluated
T5P3	<i>Horsfieldia wallichii</i> Warb.	Kumpang	Myristicaceae	6.2	Least Concern
T5P3	<i>Horsfieldia wallichii</i> Warb.	Kumpang	Myristicaceae	7.8	Least Concern
T5P3	<i>Knema latifolia</i> Warb.	Pendarahan	Myristicaceae	6.8	Least Concern
T5P3	<i>Koompassia malaccensis</i> Benth.	Menggris	Fabaceae	13.6	Conservation Dependent
T5P3	<i>Litsea castanea</i> Hook. f.	Medang	Lauraceae	9.7	Least Concern
T5P3	<i>Litsea elliptica</i> Blume	Medang	Lauraceae	17.7	Least Concern
T5P3	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	5.8	Least Concern
T5P3	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	9.8	Least Concern
T5P3	<i>Parinari villamillii</i> Merr.	Merbatu	Chrysobalanaceae	11.3	Not Evaluated
T5P3	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Dileh paya	Annonaceae	16.6	Not Evaluated

T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	11.2	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	10.2	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	13.2	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	11.5	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	7.9	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	14.1	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	25.2	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	22.0	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	19.6	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	10.8	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	15.5	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	23.2	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	25.7	Not Evaluated
T5P3	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	9.8	Not Evaluated
T5P3	<i>Sarcotheca glauca</i> (Hook. f.) Hallier f.	Piang paya	Oxalidaceae	6.0	Not Evaluated
T5P3	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	33.5	Not Evaluated
T5P3	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	23.8	Critically Endangered
T5P3	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	18.2	Critically Endangered
T5P3	<i>Shorea ovata</i> Dyer ex Brandis	Meranti sarang punai bukit	Dipterocarpaceae	45.1	Endangered

T5P3	<i>Shorea ovata</i> Dyer ex Brandis	Meranti sarang punai bukit	Dipterocarpaceae	20.7	Endangered
T5P3	<i>Shorea scabrida</i> Symington	Meranti Lop	Dipterocarpaceae	13.5	Near Threatened
T6P1	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	15.6	Vulnerable
T6P1	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	22.8	Not Evaluated
T6P1	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	22.5	Not Evaluated
T6P1	<i>Chisocheton laxiflorus</i> King	Segera	Meliaceae	9.7	Not Evaluated
T6P1	<i>Cratoxylum arborescens</i> Blume	Gerongga	Hypericaceae	11.2	Least Concern
T6P1	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	8.0	Not Evaluated
T6P1	<i>Elaeocarpus beccarii</i> DC.	Sengkurat	Elaeocarpaceae	9.6	Vulnerable
T6P1	<i>Elaeocarpus stipularis</i> Blume	Sengkurat	Elaeocarpaceae	19.6	Not Evaluated
T6P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	11.9	Not Evaluated
T6P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	12.8	Not Evaluated
T6P1	<i>Gonystylus affinis</i> Radlk.	Ramin	Thymelaeaceae	7.7	Vulnerable
T6P1	<i>Horsfieldia grandis</i> Warb.	Kumpang	Myristicaceae	11.5	Least Concern
T6P1	<i>Knema latifolia</i> Warb.	Pendarahan	Myristicaceae	21.8	Least Concern
T6P1	<i>Koompassia malaccensis</i> Benth.	Menggris	Fabaceae	26.6	Conservation Dependent
T6P1	<i>Lithocarpus gracilis</i> (Korth.) Soepadmo	Empili ai	Fagaceae	46.4	Least Concern
T6P1	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	51.5	Least Concern

T6P1	<i>Mallotus wrayi</i> King ex Hook.f.	Ensarai	Euphorbiaceae	11.7	Least Concern
T6P1	<i>Mallotus wrayi</i> King ex Hook.f.	Ensarai	Euphorbiaceae	9.0	Least Concern
T6P1	<i>Mezzettia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	28.2	Not Evaluated
T6P1	<i>Mezzettia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	11.7	Not Evaluated
T6P1	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	8.1	Not Evaluated
T6P1	<i>Neoscortechinia kingii</i> (Hook. f., Pax & K.Hoffm.)	Bantas	Euphorbiaceae	6.9	Not Evaluated
T6P1	<i>Ptychopyxis arborea</i> (Merr.) Airy Shaw	Bantas	Euphorbiaceae	6.9	Not Evaluated
T6P1	<i>Ptychopyxis arborea</i> (Merr.) Airy Shaw	Bantas	Euphorbiaceae	11.9	Not Evaluated
T6P1	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	12.0	Not Evaluated
T6P1	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	54.5	Not Evaluated
T6P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	7.7	Least Concern
T6P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	7.1	Least Concern
T6P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	10.4	Least Concern
T6P1	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok besar	Malvaceae	8.7	Least Concern
T6P1	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok besar	Malvaceae	7.8	Least Concern
T6P1	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	16.5	Vulnerable
T6P1	<i>Shorea beccariana</i> Burck	Meranti langgai	Dipterocarpaceae	59.2	Least Concern
T6P1	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	8.1	Least Concern

T6P1	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	17.3	Least Concern
T6P1	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	7.6	Not Evaluated
T6P1	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	8.1	Not Evaluated
T6P1	<i>Syzygium nemestrinum</i> (M.R.Hend.) I.M.Turner	Ubah	Myrtaceae	21.8	Not Evaluated
T6P1	<i>Xylopia ferruginea</i> Hook. f. & Thomson	Ako bulu	Annonaceae	43.5	Not Evaluated
T6P2	<i>Alangium javanicum</i> Koord.	Jadam	Alangiaceae	11.1	Least Concern
T6P2	<i>Arthrophyllum ovalifolium</i> Jungh. & de Vriese	Tumboh kelapa	Araliaceae	8.4	Not Evaluated
T6P2	<i>Artocarpus nitidus</i> Trécul subsp. <i>griffithii</i>	Selangking	Moraceae	10.0	Not Evaluated
T6P2	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	8.5	Not Evaluated
T6P2	<i>Camptosperma auriculatum</i> (Blume) Hook. f.	Terentang	Anacardiaceae	45.2	Least Concern
T6P2	<i>Canarium apertum</i> H.J.Lam	Seladah	Burseraceae	16.6	Not Evaluated
T6P2	<i>Dillenia excelsa</i> (Jack) Martelli ex Gilg.	Simpoh	Dilleniaceae	21.0	Not Evaluated
T6P2	<i>Dillenia pulchella</i> (Jack) Gilg	Beringin paya	Dilleniaceae	49.9	Not Evaluated
T6P2	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	8.5	Least Concern
T6P2	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	15.9	Least Concern
T6P2	<i>Diospyros evena</i> Bakh.	Merpinang paya mit	Ebenaceae	17.3	Not Evaluated
T6P2	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	6.1	Least Concern
T6P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.9	Not Evaluated

T6P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	8.3	Not Evaluated
T6P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	6.2	Not Evaluated
T6P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	15.7	Not Evaluated
T6P2	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	19.4	Not Evaluated
T6P2	<i>Knema ashtonii</i> J.Sinclair	Pendarahan	Myristicaceae	5.8	Vulnerable
T6P2	<i>Knema ashtonii</i> J.Sinclair	Pendarahan	Myristicaceae	7.0	Vulnerable
T6P2	<i>Lindera pipericarpa</i> Boerl.	Medang sisit	Lauraceae	7.4	Not Evaluated
T6P2	<i>Lithocarpus gracilis</i> (Korth.) Soepadmo	Empili ai	Fagaceae	20.4	Least Concern
T6P2	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	29.8	Least Concern
T6P2	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	11.2	Least Concern
T6P2	<i>Macaranga hullettii</i> King ex Hook. f.	Benuah	Euphorbiaceae	12.2	Not Evaluated
T6P2	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	23.8	Not Evaluated
T6P2	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	29.9	Least Concern
T6P2	<i>Neoscortechinia kingii</i> (Hook. f., Pax & K.Hoffm.)	Bantas	Euphorbiaceae	12.5	Not Evaluated
T6P2	<i>Pometia pinnata</i> Forst.	Kasai	Sapindaceae	16.1	Least Concern
T6P2	<i>Prunus arborea</i> (Blume) Kalkman	Enteli	Rosaceae	17.1	Least Concern
T6P2	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	7.2	Not Evaluated
T6P2	<i>Ptychopyxis arborea</i> (Merr.) Airy Shaw	Bantas	Euphorbiaceae	10.1	Not Evaluated

T6P2	<i>Ptychopyxis arborea</i> (Merr.) Airy Shaw	Bantas	Euphorbiaceae	6.6	Not Evaluated
T6P2	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	17.5	Not Evaluated
T6P2	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	6.0	Least Concern
T6P2	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti kawang pinang licin	Dipterocarpaceae	7.9	Near Threatened
T6P2	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	18.0	Least Concern
T6P2	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	12.0	Least Concern
T6P2	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	6.2	Not Evaluated
T6P2	<i>Xanthophyllum amoenum</i> Chodat	Nyalin	Polygalaceae	11.3	Not Evaluated
T6P3	<i>Adinandra balukar</i>	Legai	Theaceae	30.1	Not Evaluated
T6P3	<i>Adinandra balukar</i>	Legai	Theaceae	16.8	Not Evaluated
T6P3	<i>Adinandra balukar</i>	Legai	Theaceae	25.8	Not Evaluated
T6P3	<i>Artocarpus dadah</i> Miq.	Merubi	Moraceae	8.1	Not Evaluated
T6P3	<i>Baccaurea kunstleri</i> King ex Gage	Tampoi	Phyllanthaceae	12.8	Not Evaluated
T6P3	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	11.8	Not Evaluated
T6P3	<i>Bhesa paniculata</i> Arn.	Simun	Centroplacaceae	8.9	Least Concern
T6P3	<i>Dillenia excelsa</i> (Jack) Martelli ex Gilg.	Simpoh	Dilleniaceae	10.2	Not Evaluated
T6P3	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	13.5	Not Evaluated
T6P3	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	8.0	Least Concern

T6P3	<i>Diplospora beccariana</i> King & Gamble	Kopi hutan	Rubiaceae	5.9	Not Evaluated
T6P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	16.8	Not Evaluated
T6P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.8	Not Evaluated
T6P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	35.0	Not Evaluated
T6P3	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.0	Not Evaluated
T6P3	<i>Gironniera parvifolia</i> Planch.	Medang kasap	Ulmaceae	35.5	Not Evaluated
T6P3	<i>Gonystylus affinis</i> Radlk.	Ramin	Thymelaeaceae	6.5	Vulnerable
T6P3	<i>Grewia gracilis</i> (Staph. ex Ridl) P.S. Ashton	Bunsi	Malvaceae	15.8	Not Evaluated
T6P3	<i>Knema ashtonii</i> J.Sinclair	Pendarahan	Myristicaceae	9.1	Vulnerable
T6P3	<i>Litsea accedens</i> Boerl.	Medang	Lauraceae	10.2	Least Concern
T6P3	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	11.0	Not Evaluated
T6P3	<i>Mallotus wrayi</i> King ex Hook.f.	Ensarai	Euphorbiaceae	10.5	Least Concern
T6P3	<i>Payena obscura</i> Burck	Nyatoh	Sapotaceae	7.0	Vulnerable
T6P3	<i>Pometia pinnata</i> Forst.	Kasai	Sapindaceae	6.5	Least Concern
T6P3	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	5.5	Not Evaluated
T6P3	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	14.8	Not Evaluated
T6P3	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	11.0	Not Evaluated
T6P3	<i>Shorea faguetiana</i> Heim	Damar hitam siput	Dipterocarpaceae	23.4	Endangered
T6P3	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	27.9	Least Concern

T6P3	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	17.2	Least Concern
T6P3	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	11.1	Not Evaluated
T6P3	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	9.6	Not Evaluated
T6P3	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	7.2	Not Evaluated
T7P1	<i>Antidesma stipulare</i> Blume	Bernai	Phyllanthaceae	7.1	Least Concern
T7P1	<i>Artocarpus anisophyllus</i> Miq.	Keledang babi	Moraceae	13.6	Vulnerable
T7P1	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	5.5	Vulnerable
T7P1	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	8.2	Vulnerable
T7P1	<i>Dehaasia acceden</i>	Medang cabi	Lauraceae	6.2	Not Evaluated
T7P1	<i>Dehaasia incrassata</i> (Jack) Kosterm.	Medang keladi	Lauraceae	9.0	Least Concern
T7P1	<i>Diospyros ashtonii</i>	Kayu malam	Ebenaceae	9.1	Not Evaluated
T7P1	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	19.4	Not Evaluated
T7P1	<i>Diospyros siamang</i> Bakh.	Kayu malam balih	Ebenaceae	5.3	Not Evaluated
T7P1	<i>Dryobalanops lanceolata</i> Burck	Kapur paji	Dipterocarpaceae	11.8	Least Concern
T7P1	<i>Ficus aurata</i> (Miq.) Miq.	Kumpan (Ib)	Moraceae	24.6	Not Evaluated
T7P1	<i>Girronniera nervosa</i> Planch.	Medang kasap	Ulmaceae	5.7	Not Evaluated
T7P1	<i>Gonystylus forbesii</i> Gilg	Ramin batu	Thymelaeaceae	21.5	Near Threatened
T7P1	<i>Hopea beccariana</i> Burck	Merawan batu	Dipterocarpaceae	20.3	Vulnerable
T7P1	<i>Knema woodii</i> J.Sinclair	Pendarahan/Kumpang	Myristicaceae	15.2	Not Evaluated

T7P1	<i>Knema woodii</i> J.Sinclair	Pendarahan/Kumpang	Myristicaceae	9.7	Not Evaluated
T7P1	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	7.1	Not Evaluated
T7P1	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	6.7	Not Evaluated
T7P1	<i>Pentace laxiflora</i> Merr.	Melunak	Tiliaceae	5.4	Least Concern
T7P1	<i>Pithecellobium ellipticum</i> (Blanco) Hassk.	Sengkaong	Fabaceae	15.5	Least Concern
T7P1	<i>Polyalthia carinatus</i>	Karai	Annonaceae	14.7	Not Evaluated
T7P1	<i>Popowia pisocarpa</i> K.Schum.	Karai	Annonaceae	7.8	Not Evaluated
T7P1	<i>Popowia pisocarpa</i> K.Schum.	Karai	Annonaceae	7.9	Not Evaluated
T7P1	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	8.8	Not Evaluated
T7P1	<i>Ryparosa javanica</i> (Blume) Kurz ex Koord. & Valetton	Senumpol angoh	Flacourtiaceae	9.1	Least Concern
T7P1	<i>Santiria tomentosa</i> Blume	Kedondong kerantai bulu	Burseraceae	10.5	Least Concern
T7P1	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	7.4	Least Concern
T7P1	<i>Shorea faguetiana</i> Heim	Damar hitam siput	Dipterocarpaceae	28.3	Endangered
T7P1	<i>Shorea faguetiana</i> Heim	Damar hitam siput	Dipterocarpaceae	12.9	Endangered
T7P1	<i>Shorea ovata</i> Dyer ex Brandis	Meranti sarang punai bukit	Dipterocarpaceae	67.2	Endangered
T7P1	<i>Syzygium arcuatinervum</i> (Merr.) Craven & Briffin	Ubah	Myrtaceae	6.5	Not Evaluated
T7P1	<i>Syzygium arcuatinervum</i> (Merr.) Craven & Briffin	Ubah	Myrtaceae	13.9	Not Evaluated
T7P1	<i>Syzygium arcuatinervum</i> (Merr.) Craven & Briffin	Ubah	Myrtaceae	6.3	Not Evaluated

T7P1	<i>Xanthophyllum beccarianum</i> Chodat	Nyalin	Polygalaceae	12.4	Not Evaluated
T7P1	<i>Xanthophyllum beccarianum</i> Chodat	Nyalin	Polygalaceae	8.1	Not Evaluated
T7P2	<i>Anisophyllea beccariana</i> Baill.	Delek	Anisophylleaceae	9.9	Least Concern
T7P2	<i>Ctenolophon parvifolius</i> Oliv.	Litoh	Ctenolophonaceae	6.5	Vulnerable
T7P2	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	11.3	Vulnerable
T7P2	<i>Dialium platysepalum</i> Baker	KerANJI	Fabaceae	8.4	Not Evaluated
T7P2	<i>Dialium platysepalum</i> Baker	KerANJI bulu	Fabaceae	33.1	Not Evaluated
T7P2	<i>Dillenia excelsa</i> (Jack) Martelli ex Gilg.	Simpur beringin	Dilleniaceae	7.1	Not Evaluated
T7P2	<i>Dryobalanops lanceolata</i> Burck	Kapur paji	Dipterocarpaceae	10.9	Least Concern
T7P2	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	7.8	Least Concern
T7P2	<i>Elaeocarpus griffithii</i> A.Gray	Mendong	Elaeocarpaceae	20.0	Not Evaluated
T7P2	<i>Elaeocarpus griffithii</i> A.Gray	Mendong	Elaeocarpaceae	10.5	Not Evaluated
T7P2	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	21.5	Not Evaluated
T7P2	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	16.2	Not Evaluated
T7P2	<i>Endiandra coriacea</i> Merr.	Bejubai	Lauraceae	16.8	Not Evaluated
T7P2	<i>Ficus benjamina</i> L.	Kayu ara	Moraceae	19.5	Least Concern
T7P2	<i>Garcinia parvifolia</i> (Miq.) Hort. ex Boerl. & Miq.	Kandis	Clusiaceae	5.6	Not Evaluated
T7P2	<i>Garcinia parvifolia</i> (Miq.) Hort. ex Boerl. & Miq.	Kandis	Clusiaceae	9.0	Not Evaluated

T7P2	<i>Garcinia parvifolia</i> (Miq.) Hort. ex Boerl. & Miq.	Kandis	Clusiaceae	9.0	Not Evaluated
T7P2	<i>Gardenia tubifera</i> Wall. ex Roxb.	Chempaka hutan	Rubiaceae	10.0	Not Evaluated
T7P2	<i>Horsfieldia castanea</i>	Kumpang	Myristicaceae	44.9	-
T7P2	<i>Ixonanthes beccarii</i> Hallier f.	Inggi burung	Ixonanthaceae	12.1	Not Evaluated
T7P2	<i>Knema latifolia</i> Warb.	Pendarahan/Kumpang	Myristicaceae	13.9	Least Concern
T7P2	<i>Knema rufa</i> Warb.	Pendarahan/Kumpang	Myristicaceae	11.5	Vulnerable
T7P2	<i>Koompassia malaccensis</i> Benth.	Kempas	Fabaceae	18.0	Conservation Dependent
T7P2	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	9.2	Least Concern
T7P2	<i>Macaranga lowii</i> King ex Hook.f.	Mahang	Euphorbiaceae	6.1	Least Concern
T7P2	<i>Macaranga lowii</i> King ex Hook.f.	Mahang	Euphorbiaceae	7.0	Least Concern
T7P2	<i>Mangifera havilandii</i> Ridl.	Raba	Anacardiaceae	15.4	Not Evaluated
T7P2	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	11.2	Not Evaluated
T7P2	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	46.2	Not Evaluated
T7P2	<i>Mezzettia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	10.0	Not Evaluated
T7P2	<i>Myristica intermedia</i> Blume	Kumpang	Myristicaceae	8.2	Not Evaluated
T7P2	<i>Neoscortechinia kingii</i> (Hook. f., Pax & K.Hoffm.)	Bantas	Euphorbiaceae	9.6	Not Evaluated
T7P2	<i>Neoscortechinia kingii</i> (Hook. f., Pax & K.Hoffm.)	Bantas	Euphorbiaceae	6.7	Not Evaluated

T7P2	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata bukit/gerutu	Dipterocarpaceae	10.8	Least Concern
T7P2	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata bukit/gerutu	Dipterocarpaceae	5.4	Least Concern
T7P2	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata bukit/gerutu	Dipterocarpaceae	10.2	Least Concern
T7P2	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata	Dipterocarpaceae	10.9	Least Concern
T7P2	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata	Dipterocarpaceae	8.0	Least Concern
T7P2	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata	Dipterocarpaceae	15.3	Least Concern
T7P2	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata bukit/gerutu	Dipterocarpaceae	14.4	Least Concern
T7P2	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	7.5	Not Evaluated
T7P2	<i>Shorea amplexicaulis</i> P.S.Ashton	Kawang buukit	Dipterocarpaceae	7.8	Near Threatened
T7P2	<i>Shorea amplexicaulis</i> P.S.Ashton	Melantai	Dipterocarpaceae	12.5	Near Threatened
T7P2	<i>Shorea collaris</i> Slooten	Merakunyit	Dipterocarpaceae	7.6	Vulnerable
T7P2	<i>Shorea collaris</i> Slooten	Merakunyit	Dipterocarpaceae	9.8	Vulnerable
T7P2	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	9.3	Vulnerable
T7P2	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	44.5	Vulnerable
T7P2	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	14.4	Vulnerable

T7P2	<i>Shorea macrophylla</i> (de Vriese) P.S. Ashton	Engkabang	Dipterocarpaceae	8.1	Least Concern
T7P2	<i>Syzygium havilandii</i> (Merr.) Merr. & L.M.Perry	Ubah	Myrtaceae	7.2	Not Evaluated
T7P2	<i>Syzygium havilandii</i> (Merr.) Merr. & L.M.Perry	Ubah	Myrtaceae	8.4	Not Evaluated
T7P2	<i>Syzygium havilandii</i> (Merr.) Merr. & L.M.Perry	Ubah	Myrtaceae	8.6	Not Evaluated
T7P2	<i>Syzygium havilandii</i> (Merr.) Merr. & L.M.Perry	Ubah	Myrtaceae	6.8	Not Evaluated
T7P2	<i>Vatica nitens</i> King	Resak daun panjang	Dipterocarpaceae	6.7	Endangered
T7P2	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	11.0	Endangered
T7P2	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	23.3	Endangered
T7P2	<i>Xanthophyllum amoenum</i> Chodat	Miyak berok	Polygalaceae	32.1	Not Evaluated
T7P2	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	6.9	Not Evaluated
T7P2	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	7.6	Not Evaluated
T7P2	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	10.0	Not Evaluated
T7P3	<i>Allantospermum borneense</i> Forman	Tulang	Ixonanthaceae	17.2	Endangered
T7P3	<i>Allantospermum borneense</i> Forman	Tulang	Ixonanthaceae	11.9	Endangered
T7P3	<i>Baccaurea kunstleri</i> King ex Gage	Tampoi	Phyllanthaceae	11.2	Not Evaluated
T7P3	<i>Carallia borneensis</i> Oliv.	Rabong	Rhizophoraceae	7.1	Not Evaluated
T7P3	<i>Cephalomappa malloticarpa</i> J.J.Sm.	Arau	Euphorbiaceae	6.5	Not Evaluated
T7P3	<i>Diospyros evena</i> Bakh.	Merpinang paya mit	Ebenaceae	7.3	Not Evaluated

T7P3	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	7.8	Least Concern
T7P3	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	8.8	Least Concern
T7P3	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	17.8	Least Concern
T7P3	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	17.6	Least Concern
T7P3	<i>Gluta aptera</i> (King) Ding Hou	Rengas	Anacardiaceae	7.9	Not Evaluated
T7P3	<i>Hopea beccariana</i> Burck	Cengal pasir	Dipterocarpaceae	6.5	Vulnerable
T7P3	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empili	Fagaceae	21.3	Not Evaluated
T7P3	<i>Litsea caulocarpa</i> Merr.	Medang	Lauraceae	7.0	Least Concern
T7P3	<i>Litsea caulocarpa</i> Merr.	Medang	Lauraceae	6.4	Least Concern
T7P3	<i>Litsea resinosa</i> Koord.	Medang engkala	Lauraceae	41.0	Least Concern
T7P3	<i>Litsea resinosa</i> Koord.	Medang engkala	Lauraceae	31.3	Least Concern
T7P3	<i>Macaranga conifera</i> (Rchb.f. & Zoll.) Müll.Arg.	Engkalumai	Euphorbiaceae	20.7	Not Evaluated
T7P3	<i>Macaranga hullettii</i> King ex Hook. f.	Benuah	Euphorbiaceae	7.8	Not Evaluated
T7P3	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	8.8	Least Concern
T7P3	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terung	Sapotaceae	22.8	Least Concern
T7P3	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata	Dipterocarpaceae	10.8	Least Concern
T7P3	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata	Dipterocarpaceae	9.1	Least Concern

T7P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	22.6	Least Concern
T7P3	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	8.0	Least Concern
T7P3	<i>Shorea argentifolia</i> Symington	Meranti	Dipterocarpaceae	23.2	Least Concern
T7P3	<i>Shorea cristata</i> Brandis	Meranti	Dipterocarpaceae	14.5	Not Evaluated
T7P3	<i>Shorea cristata</i> Brandis	Meranti	Dipterocarpaceae	25.4	Not Evaluated
T7P3	<i>Shorea cristata</i> Brandis	Meranti	Dipterocarpaceae	9.4	Not Evaluated
T7P3	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	31.4	Vulnerable
T7P3	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	12.5	Endangered
T7P3	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	11.4	Endangered
T7P3	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	11.0	Endangered
T7P3	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	16.5	Endangered
T8P1	<i>Adenanthera pavonina</i> L.	Saga	Fabaceae	8.1	Least Concern
T8P1	<i>Alangium javanicum</i> Koord.	Midong	Alangiaceae	6.7	Least Concern
T8P1	<i>Antidesma stipulare</i> Blume	Berenai	Phyllanthaceae	9.8	Least Concern
T8P1	<i>Artocarpus nitidus</i> Trécul subsp. griffithii	Selangking	Moraceae	18.8	Not Evaluated
T8P1	<i>Bhesa paniculata</i> Arn.	Simun	Centroplacaceae	12.1	Least Concern
T8P1	<i>Blumeodendron calophyllum</i> Airy Shaw	Entawah Besai	Euphorbiaceae	24.4	Not Evaluated
T8P1	<i>Canarium apertum</i> H.J.Lam	Seladah	Burseraceae	14.0	Not Evaluated
T8P1	<i>Chisocheton laxiflorus</i> King	Segera	Meliaceae	10.9	Not Evaluated

T8P1	<i>Cyathocalyx carinatus</i> (Ridl.) J. Sinclair	Selemo	Annonaceae	32.3	Not Evaluated
T8P1	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	6.2	Least Concern
T8P1	<i>Dehaasia acceden</i>	Medang cabi	Lauraceae	8.0	Not Evaluated
T8P1	<i>Dillenia excelsa</i> (Jack) Martelli ex Gilg.	Simpur beringin	Dilleniaceae	7.5	Not Evaluated
T8P1	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	14.0	Least Concern
T8P1	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	25.3	Least Concern
T8P1	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	7.5	Least Concern
T8P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	10.3	Not Evaluated
T8P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.2	Not Evaluated
T8P1	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	10.3	Not Evaluated
T8P1	<i>Ficus benjamina</i> L.	Kayu ara	Moraceae	10.2	Least Concern
T8P1	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	5.9	Least Concern
T8P1	<i>Gironniera nervosa</i> Planch.	Medang kasap	Ulmaceae	17.5	Not Evaluated
T8P1	<i>Gluta aptera</i> (King) Ding Hou	Rengas susu	Anacardiaceae	28.7	Not Evaluated
T8P1	<i>Gonystylus affinis</i> Radlk.	Ramin	Thymelaeaceae	12.2	Vulnerable
T8P1	<i>Hopea beccariana</i> Burck	Luis/Chengal	Dipterocarpaceae	6.0	Vulnerable
T8P1	<i>Knema latifolia</i> Warb.	Pendarahan/Kumpang	Myristicaceae	6.7	Least Concern
T8P1	<i>Koilodepas longifolium</i> Hook.f.	Puti	Euphorbiaceae	23.5	Not Evaluated
T8P1	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	21.7	Not Evaluated

T8P1	<i>Memecylon laurinum</i> Blume	Nipis kulit/mutik	Melastomataceae	5.9	Not Evaluated
T8P1	<i>Neoscortechinia sumatrensis</i> S.Moore	Bantas	Euphorbiaceae	7.4	Not Evaluated
T8P1	<i>Nephelium cuspidatum</i> Blume	Sibau larat	Sapindaceae	16.4	Least Concern
T8P1	<i>Ochanostachys amentacea</i> Mast.	Sentikal	Olacaceae	32.7	Data Deficient
T8P1	<i>Palaquium gutta</i> (Hook.) Burck	Nyatoh rian	Sapotaceae	9.7	Near Threatened
T8P1	<i>Palaquium gutta</i> (Hook.) Burck	Nyatoh rian	Sapotaceae	10.8	Near Threatened
T8P1	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terung	Sapotaceae	8.6	Least Concern
T8P1	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terung	Sapotaceae	13.3	Least Concern
T8P1	<i>Palaquium rostratum</i> (Miq.) Burck	Nyatoh	Sapotaceae	6.0	Least Concern
T8P1	<i>Palaquium rostratum</i> (Miq.) Burck	Nyatoh	Sapotaceae	26.8	Least Concern
T8P1	<i>Palaquium rostratum</i> (Miq.) Burck	Nyatoh	Sapotaceae	9.0	Least Concern
T8P1	<i>Palaquium rostratum</i> (Miq.) Burck	Nyatoh	Sapotaceae	6.5	Least Concern
T8P1	<i>Parartocarpus venenosus</i> (Zoll. & Moore) Becc.	Minggi	Moraceae	56.0	Least Concern
T8P1	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata	Dipterocarpaceae	14.0	Least Concern
T8P1	<i>Parashorea parvifolia</i> Wyatt-Sm. ex P.S.Ashton	Urat mata	Dipterocarpaceae	10.4	Least Concern
T8P1	<i>Pentace corneri</i> Kosterm.	Baru bukit	Tiliaceae	12.4	Not Evaluated
T8P1	<i>Potoxylon melagangai</i> (Symington) Kosterm	Belian malagangai	Lauraceae	47.3	Least Concern

T8P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	9.0	Least Concern
T8P1	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	10.7	Least Concern
T8P1	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	9.4	Least Concern
T8P1	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	22.8	Least Concern
T8P1	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	9.7	Least Concern
T8P1	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	10.6	Least Concern
T8P1	<i>Shorea faguetiana</i> Heim	Meranti	Dipterocarpaceae	35.1	Endangered
T8P1	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	29.0	Least Concern
T8P1	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	8.9	Least Concern
T8P1	<i>Shorea ovata</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	12.4	Endangered
T8P1	<i>Shorea ovata</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	14.0	Endangered
T8P1	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	7.3	Least Concern
T8P1	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	27.7	Least Concern
T8P1	<i>Shorea scabrida</i> Symington	Meranti	Dipterocarpaceae	7.5	Near Threatened
T8P1	<i>Shorea scabrida</i> Symington	Meranti	Dipterocarpaceae	39.6	Near Threatened
T8P1	<i>Swintonia glauca</i> Engl.	Pitoh paya	Anacardiaceae	11.0	Not Evaluated
T8P1	<i>Syzygium arcuatinervum</i> (Merr.) Craven & Briffin	Ubah	Myrtaceae	12.2	Not Evaluated
T8P1	<i>Syzygium arcuatinervum</i> (Merr.) Craven & Briffin	Ubah	Myrtaceae	15.5	Not Evaluated
T8P1	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	16.3	Endangered

T8P1	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	22.0	Endangered
T8P1	<i>Xanthophyllum beccarianum</i> Chodat	Nyalin	Polygalaceae	26.0	Not Evaluated
T8P2	<i>Adinandra balukar</i>	Legai	Theaceae	23.1	Not Evaluated
T8P2	<i>Adinandra balukar</i>	Legai	Theaceae	20.8	Not Evaluated
T8P2	<i>Ficus geocharis</i> Corner	Buah abung	Moraceae	6.5	Not Evaluated
T8P2	<i>Ficus geocharis</i> Corner	Buah abung	Moraceae	5.6	Not Evaluated
T8P2	<i>Gluta aptera</i> (King) Ding Hou	Rengas kerbau jalang	Anacardiaceae	13.7	Not Evaluated
T8P2	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empili pipit	Fagaceae	9.4	Not Evaluated
T8P2	<i>Lithocarpus gracilis</i> (Korth.) Soepadmo	Mempening	Fagaceae	8.0	Least Concern
T8P2	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	9.3	Least Concern
T8P2	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	7.5	Least Concern
T8P2	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	7.5	Least Concern
T8P2	<i>Macaranga hullettii</i> King ex Hook. f.	Benuah	Euphorbiaceae	9.0	Not Evaluated
T8P2	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Kelempayan	Rubiaceae	20.5	Not Evaluated
T8P2	<i>Nephelium cuspidatum</i> Blume	Lotong	Sapindaceae	5.4	Least Concern
T8P2	<i>Polyalthia cauliflora</i> Hook. f. & Thomson	Mempisang	Annonaceae	7.2	Not Evaluated
T8P2	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Mempisang	Annonaceae	30.5	Not Evaluated
T8P2	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	6.3	Not Evaluated
T8P2	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	6.0	Vulnerable

T8P2	<i>Shorea amplexicaulis</i> P.S.Ashton	Melantai	Dipterocarpaceae	8.0	Near Threatened
T8P2	<i>Stenomonurus secundiflorus</i> Blume	Sampul keris	Stemonuraceae	7.0	Not Evaluated
T8P2	<i>Syzygium nemestrinum</i> (M.R.Hend.) I.M.Turner	Ubah	Myrtaceae	26.3	Not Evaluated
T8P2	<i>Tarenna winkleri</i> Valetton	Nyarum hutan	Rubiaceae	22.7	Not Evaluated
T8P2	<i>Xanthophyllum beccarianum</i> Chodat	Nyalin	Polygalaceae	24.0	Not Evaluated
T8P3	<i>Anisoptera parvifolia</i> Warb.	Mersawa	Dipterocarpaceae	10.3	Not Evaluated
T8P3	<i>Atuna excelsa</i> (Jack) Kosterm.	Merbatu	Chrysobalanaceae	7.0	Not Evaluated
T8P3	<i>Canarium apertum</i> H.J.Lam	Kedondong kemansul	Burseraceae	13.4	Not Evaluated
T8P3	<i>Canarium apertum</i> H.J.Lam	Kedondong kemansul	Burseraceae	9.2	Not Evaluated
T8P3	<i>Cyatocalyx carinatus</i> (Ridl.) J. Sinclair	Selemo	Annonaceae	10.3	Not Evaluated
T8P3	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	6.7	Least Concern
T8P3	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	14.0	Not Evaluated
T8P3	<i>Gluta aptera</i> (King) Ding Hou	Rengas kerbau jalang	Anacardiaceae	9.0	Not Evaluated
T8P3	<i>Grewia elmeri</i> (Merr.) P.S.Ashton	Bunsi	Malvaceae	17.1	Not Evaluated
T8P3	<i>Hydnocarpus anomala</i> (Merr.) Sleum.	Senumpul	Achariaceae	6.8	Not Evaluated
T8P3	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	7.0	Least Concern
T8P3	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah	Euphorbiaceae	10.4	Not Evaluated
T8P3	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	60.0	Not Evaluated
T8P3	<i>Nephelium cuspidatum</i> Blume	Lotong	Sapindaceae	13.2	Least Concern

T8P3	<i>Nephelium cuspidatum</i> Blume	Lotong	Sapindaceae	50.0	Least Concern
T8P3	<i>Nephelium maingayi</i> Hiern	Rambutan hutan	Sapindaceae	11.4	Least Concern
T8P3	<i>Pimelodendron griffithianum</i> (Müll.Arg.) Benth. ex Hook. f.	Perah ikan	Euphorbiaceae	6.3	Not Evaluated
T8P3	<i>Polyalthia cauliflora</i> Hook. f. & Thomson	Mempisang	Annonaceae	6.7	Not Evaluated
T8P3	<i>Polyalthia cauliflora</i> Hook. f. & Thomson	Mempisang	Annonaceae	10.3	Not Evaluated
T8P3	<i>Scorodocarpus borneensis</i> Becc.	Bawang hutan	Olacaceae	8.6	Not Evaluated
T8P3	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	7.3	Near Threatened
T8P3	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	25.9	Near Threatened
T8P3	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	15.8	Vulnerable
T8P3	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	7.0	Vulnerable
T8P3	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	10.0	Vulnerable
T8P3	<i>Shorea pinanga</i> Scheff.	Melantai	Dipterocarpaceae	36.4	Least Concern
T8P3	<i>Shorea pinanga</i> Scheff.	Melantai	Dipterocarpaceae	43.7	Least Concern
T8P3	<i>Xanthophyllum beccarianum</i> Chodat	Nyalin	Polygalaceae	15.1	Not Evaluated

Appendix B: List of individual trees in forest interior with their conservation status

Plot No.	Species	Common Name	Family	DBH (cm)	IUCN Conservation Status
T1P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	10.1	Not Evaluated
T1P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	14.8	Not Evaluated
T1P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	21.1	Not Evaluated
T1P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	22.0	Not Evaluated
T1P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	24.5	Not Evaluated
T1P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	24.8	Not Evaluated
T1P4	<i>Aglaia havilandii</i> Ridl.	Segera	Meliaceae	8.1	Least Concern
T1P4	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	19.1	Least Concern
T1P4	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	17.8	Not Evaluated
T1P4	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	24.2	Not Evaluated
T1P4	<i>Artocarpus elasticus</i> Reinw. ex Bl.	Terap	Moraceae	8.4	Least Concern
T1P4	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	11.3	Least Concern
T1P4	<i>Blumeodendron tokbrai</i> (Blume) Kurz	Merbulan	Euphorbiaceae	12.0	Least Concern
T1P4	<i>Canarium apertum</i> H.J.Lam	Seladah	Burseraceae	8.8	Not Evaluated
T1P4	<i>Dacryodes costata</i> (A.W. Benn.) H.J.Lam	Seladah	Burseraceae	9.0	Least Concern

T1P4	<i>Dacryodes costata</i> (A.W. Benn.) H.J.Lam	Seladah	Burseraceae	9.5	Least Concern
T1P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	10.0	Not Evaluated
T1P4	<i>Endiandra coriacea</i> Merr.	Bejubai	Lauraceae	14.2	Not Evaluated
T1P4	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	46.6	Least Concern
T1P4	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	19.3	Not Evaluated
T1P4	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	32.2	Not Evaluated
T1P4	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	39.3	Not Evaluated
T1P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	20.4	Least Concern
T1P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	21.8	Least Concern
T1P4	<i>Pternandra coerulescens</i> Jack	Pulu paya	Melastomataceae	11.8	Not Evaluated
T1P4	<i>Pternandra coerulescens</i> Jack	Pulu paya	Melastomataceae	17.1	Not Evaluated
T1P4	<i>Pternandra coerulescens</i> Jack	Pulu paya	Melastomataceae	65.6	Not Evaluated
T1P4	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	11.8	Least Concern
T1P4	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	10.3	Not Evaluated
T1P4	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	11.0	Least Concern
T1P4	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	12.5	Least Concern
T1P4	<i>Shorea havilandii</i> Brandis	Selangan batu pinang	Dipterocarpaceae	6.3	Least Concern
T1P4	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	22.2	Least Concern

T1P4	<i>Shorea pinanga</i> Scheff.	Meranti kawang pinang	Dipterocarpaceae	10.8	Least Concern
T1P4	<i>Shorea pinanga</i> Scheff.	Meranti kawang pinang	Dipterocarpaceae	12.0	Least Concern
T1P4	<i>Stemonurus scorpioides</i> Becc.	Semburok daun besar	Icacinaceae	6.1	Not Evaluated
T1P4	<i>Strombosia lucida</i> Teijsm. & Binn.	Belian landak	Olacaceae	34.5	Not Evaluated
T1P4	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	9.7	Not Evaluated
T1P4	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	12.8	Not Evaluated
T1P4	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	13.5	Endangered
T1P5	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	9.8	Not Evaluated
T1P5	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	10.6	Not Evaluated
T1P5	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	12.8	Not Evaluated
T1P5	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	13.9	Not Evaluated
T1P5	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	19.5	Not Evaluated
T1P5	<i>Aglaia beccarii</i> C.DC.	Segera	Meliaceae	12.3	Not Evaluated
T1P5	<i>Artocarpus dadah</i> Miq.	Merubi	Moraceae	10.0	Not Evaluated
T1P5	<i>Dacryodes costata</i> (A.W. Benn.) H.J.Lam	Seladah	Burseraceae	8.2	Least Concern
T1P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.6	Not Evaluated
T1P5	<i>Garcinia bancana</i> Miq.	Manggis hutan	Clusiaceae	17.5	Least Concern
T1P5	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	25.0	Not Evaluated

T1P5	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	36.1	Least Concern
T1P5	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	33.4	Not Evaluated
T1P5	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	11.8	Not Evaluated
T1P5	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	12.2	Least Concern
T1P5	<i>Nephelium cuspidatum</i> Blume	Rambutan hutan	Sapindaceae	19.8	Least Concern
T1P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	7.9	Least Concern
T1P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	11.1	Least Concern
T1P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	12.0	Least Concern
T1P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	15.9	Least Concern
T1P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	50.3	Least Concern
T1P5	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Selaut batu	Annonaceae	17.8	Not Evaluated
T1P5	<i>Pternandra echinata</i> Jack	Sial Menahun	Melastomataceae	16.5	Not Evaluated
T1P5	<i>Pternandra echinata</i> Jack	Sial Menahun	Melastomataceae	23.1	Not Evaluated
T1P5	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	21.4	Not Evaluated
T1P5	<i>Santiria rubiginosa</i> Blume	Seladah paya	Burseraceae	11.2	Not Evaluated
T1P5	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok besar	Malvaceae	29.4	Least Concern
T1P5	<i>Shorea flava</i> Meijer	Meranti	Dipterocarpaceae	13.1	Endangered

T1P5	<i>Shorea flava</i> Meijer	Meranti	Dipterocarpaceae	13.3	Endangered
T1P5	<i>Shorea flava</i> Meijer	Meranti	Dipterocarpaceae	35.0	Endangered
T1P5	<i>Shorea havilandii</i> Brandis	Selangan batu pinang	Dipterocarpaceae	40.7	Least Concern
T1P5	<i>Shorea sagittata</i> P.S.Ashton	Meranti	Dipterocarpaceae	6.9	Near Threatened
T1P5	<i>Shorea sagittata</i> P.S.Ashton	Meranti	Dipterocarpaceae	8.7	Near Threatened
T1P5	<i>Vatica micrantha</i> Slooten	Resak hijau	Dipterocarpaceae	25.0	Least Concern
T1P5	<i>Xylopia elliptica</i> Maingay ex Hook. f. & Thomson	Ako	Annonaceae	9.3	Least Concern
T1P6	<i>Aglaia affinis</i> Merr.	Segera	Meliaceae	51.6	Least Concern
T1P6	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	6.7	Not Evaluated
T1P6	<i>Dehaasia firma</i> Blume	Medang cabi	Lauraceae	39.0	Least Concern
T1P6	<i>Dialium platysepalum</i> Baker	Keranji	Fabaceae	6.6	Not Evaluated
T1P6	<i>Dillenia excelsa</i> (Jack) Martelli ex Gilg.	Simpoh	Dilleniaceae	20.3	Not Evaluated
T1P6	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	17.0	Not Evaluated
T1P6	<i>Dipterocarpus sarawakensis</i> Slooten	Keruing	Dipterocarpaceae	20.2	Near Threatened
T1P6	<i>Eugenia havilandii</i> Merr.	Ubah	Myrtaceae	15.1	Not Evaluated
T1P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	10.3	Least Concern
T1P6	<i>Hopea beccariana</i> Burck	Selangan	Dipterocarpaceae	18.5	Vulnerable

T1P6	<i>Horsfieldia reticulata</i> Warb.	Kumpang	Myristicaceae	12.9	Near Threatened
T1P6	<i>Koilodepas longifolium</i> Hook.f.	Puti, buti	Euphorbiaceae	8.1	Not Evaluated
T1P6	<i>Koompassia excelsa</i> (Becc.) Taub.	Tapang	Fabaceae	15.9	Conservation Dependent
T1P6	<i>Palaquium decurrens</i> H.J.Lam	Nyatoh	Sapotaceae	15.4	Least Concern
T1P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	9.8	Least Concern
T1P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	17.3	Least Concern
T1P6	<i>Shorea faguetiana</i> Heim	Meranti	Dipterocarpaceae	8.6	Endangered
T1P6	<i>Shorea faguetiana</i> Heim	Meranti	Dipterocarpaceae	8.8	Endangered
T1P6	<i>Shorea faguetiana</i> Heim	Lun	Dipterocarpaceae	17.4	Endangered
T1P6	<i>Shorea faguetiana</i> Heim	Lun	Dipterocarpaceae	33.0	Endangered
T1P6	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	9.2	Least Concern
T1P6	<i>Shorea multiflora</i> (Burck) Symington	Lun jantan	Dipterocarpaceae	5.5	Least Concern
T1P6	<i>Shorea multiflora</i> (Burck) Symington	Lun jantan	Dipterocarpaceae	7.1	Least Concern
T1P6	<i>Shorea multiflora</i> (Burck) Symington	Lun jantan	Dipterocarpaceae	10.6	Least Concern
T1P6	<i>Shorea multiflora</i> (Burck) Symington	Lun jantan	Dipterocarpaceae	11.0	Least Concern
T1P6	<i>Shorea multiflora</i> (Burck) Symington	Lun jantan	Dipterocarpaceae	15.6	Least Concern
T1P6	<i>Shorea multiflora</i> (Burck) Symington	Lun jantan	Dipterocarpaceae	18.6	Least Concern
T1P6	<i>Sterculia rubiginosa</i> Vent.	Biris	Sterculiaceae	6.5	Not Evaluated

T1P6	<i>Tabernaemontana macrocarpa</i> Jack	Badak	Apocynaceae	16.5	Least Concern
T1P6	<i>Vatica havilandii</i> Brandis	Resak	Dipterocarpaceae	10.2	Critically Endangered
T1P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	7.7	Not Evaluated
T1P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	24.7	Not Evaluated
T1P6	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	8.5	Not Evaluated
T1P6	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	18.9	Not Evaluated
T2P4	<i>Alseodaphne bancana</i> Miq.	Medang payung	Lauraceae	5.7	Least Concern
T2P4	<i>Alseodaphne bancana</i> Miq.	Medang payung	Lauraceae	13.8	Least Concern
T2P4	<i>Alstonia angustifolia</i> Wall. var. <i>angustifolia</i>	Pelai tikus	Apocynaceae	8.0	Least Concern
T2P4	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	7.3	Not Evaluated
T2P4	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	46.2	Not Evaluated
T2P4	<i>Artocarpus kemando</i> Miq.	Pudau	Moraceae	8.4	Not Evaluated
T2P4	<i>Canarium apertum</i> H.J.Lam	Seladah	Burseraceae	6.2	Not Evaluated
T2P4	<i>Cryptocarya tawaensis</i> Merr.	Medang	Lauraceae	24.0	Vulnerable
T2P4	<i>Dialium indum</i> L. var. <i>indum</i>	KerANJI burong	Fabaceae	7.8	Not Evaluated
T2P4	<i>Dialium indum</i> L. var. <i>indum</i>	KerANJI burong	Fabaceae	8.6	Not Evaluated
T2P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.2	Not Evaluated
T2P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	9.5	Not Evaluated

T2P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	13.7	Not Evaluated
T2P4	<i>Garcinia dulcis</i> (Roxb.) Kurz	Kandis bunau	Clusiaceae	5.4	Least Concern
T2P4	<i>Gardenia tubifera</i> Wall. ex Roxb.	Chempaka utan/Delima hutan	Rubiaceae	7.0	Not Evaluated
T2P4	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	7.0	Not Evaluated
T2P4	<i>Linociera parvifolia</i> Ridl.	Sapah	Oleaceae	8.9	Not Evaluated
T2P4	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	5.7	Least Concern
T2P4	<i>Litsea coriacea</i> Hook. f.	Medang	Lauraceae	34.1	Near Threatened
T2P4	<i>Litsea resinosa</i> Koord.	Medang engkala	Lauraceae	34.3	Least Concern
T2P4	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	17.8	Not Evaluated
T2P4	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	15.3	Not Evaluated
T2P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	12.5	Least Concern
T2P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyato	Sapotaceae	14.1	Least Concern
T2P4	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	6.7	Least Concern
T2P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	11.7	Not Evaluated
T2P4	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	22.1	Least Concern
T2P4	<i>Shorea pauciflora</i> King	Nemesu	Dipterocarpaceae	20.3	Endangered
T2P4	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	11.1	Least Concern
T2P4	<i>Swintonia acuta</i> Engl.	Merpauh	Anacardiaceae	5.8	Not Evaluated

T2P4	<i>Tabernaemontana macrocarpa</i> Jack	Kerimpa patong	Apocynaceae	15.0	Least Concern
T2P5	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam besai sayap	Phyllanthaceae	9.9	Not Evaluated
T2P5	<i>Artocarpus kemando</i> Miq.	Pudau	Moraceae	35.4	Not Evaluated
T2P5	<i>Baccaurea minor</i> Hook. f.	Tampoi	Phyllanthaceae	9.3	Not Evaluated
T2P5	<i>Canthium glabrum</i> Blume	Kayu malam	Rubiaceae	7.0	Not Evaluated
T2P5	<i>Carallia borneensis</i> Oliv.	Kemuning hutan	Rhizophoraceae	8.4	Not Evaluated
T2P5	<i>Cinnamomum bintulense</i> Kosterm.	Medang tija	Lauraceae	5.9	Not Evaluated
T2P5	<i>Cinnamomum bintulense</i> Kosterm.	Medang tija	Lauraceae	15.3	Not Evaluated
T2P5	<i>Dehaasia firma</i> Blume	Medang	Lauraceae	23.3	Least Concern
T2P5	<i>Dialium indum</i> L. var. <i>indum</i>	KerANJI burong	Fabaceae	15.5	Not Evaluated
T2P5	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	7.0	Least Concern
T2P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.5	Not Evaluated
T2P5	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	8.1	Least Concern
T2P5	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	9.5	Least Concern
T2P5	<i>Garcinia bancana</i> Miq.	Manggis hutan	Clusiaceae	6.2	Least Concern
T2P5	<i>Gonystylus forbesii</i> Gilg	Ramin batu	Thymelaeaceae	7.9	Near Threatened
T2P5	<i>Knema</i> sp. 1	Pendarahan (daun besar)	Myristicaceae	7.4	-
T2P5	<i>Litsea nidularis</i> Gamble	Medang miang	Lauraceae	16.6	Not Evaluated

T2P5	<i>Luvunga motleyi</i> Oliv.	Jari manok	Rutaceae	6.1	Not Evaluated
T2P5	<i>Macaranga lowii</i> King ex Hook.f.	Benuah entak-empulu	Euphorbiaceae	5.1	Least Concern
T2P5	<i>Mallotus wrayi</i> King ex Hook.f.	Ensarai	Euphorbiaceae	10.2	Least Concern
T2P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	23.3	Not Evaluated
T2P5	<i>Nephelium maingayi</i> Hiern	Serait	Sapindaceae	16.8	Least Concern
T2P5	<i>Palaquium beccarianum</i> (Pierre) P.Royen	Nyatoh bulu	Sapotaceae	6.8	Least Concern
T2P5	<i>Palaquium beccarianum</i> (Pierre) P.Royen	Nyatoh bulu	Sapotaceae	8.8	Least Concern
T2P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	9.2	Least Concern
T2P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	9.5	Least Concern
T2P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	11.2	Least Concern
T2P5	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	6.2	Least Concern
T2P5	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	6.5	Least Concern
T2P5	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	7.1	Least Concern
T2P5	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	7.4	Least Concern
T2P5	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	8.1	Least Concern
T2P5	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	8.2	Least Concern
T2P5	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	10.9	Least Concern
T2P5	<i>Pentace elmeri</i>	Baru bukit	Tiliaceae	12.7	-

T2P5	<i>Ptychopyxis arborea</i> (Merr.) Airy Shaw	Bantas	Euphorbiaceae	6.6	Not Evaluated
T2P5	<i>Santiria tomentosa</i> Blume	Seladah bulu	Burseraceae	6.3	Least Concern
T2P5	<i>Shorea domatiosa</i> P.S.Ashton	Selangan batu mata-mata	Dipterocarpaceae	14.1	Endangered
T2P5	<i>Shorea domatiosa</i> P.S.Ashton	Selangan batu mata-mata	Dipterocarpaceae	14.4	Endangered
T2P5	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	19.2	Least Concern
T2P5	<i>Shorea havilandii</i> Brandis	Selangan batu pinang	Dipterocarpaceae	7.2	Least Concern
T2P5	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	5.8	Least Concern
T2P5	<i>Shorea scabrida</i> Symington	Meranti lop	Dipterocarpaceae	10.9	Near Threatened
T2P5	<i>Strombosia lucida</i> Teijsm. & Binn.	Belian landak	Olacaceae	24.9	Not Evaluated
T2P5	<i>Swintonia acuta</i> Engl.	Merpauh	Anacardiaceae	5.8	Not Evaluated
T2P5	<i>Syzygium acuminatissimum</i> (Blume) DC.	Ubah samak	Myrtaceae	7.8	Least Concern
T2P5	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	7.5	Not Evaluated
T2P5	<i>Syzygium tenuicaudatum</i> (Merr. & Perry) Anderson	Ubah putih	Myrtaceae	8.9	Not Evaluated
T2P5	<i>Syzygium tenuicaudatum</i> (Merr. & Perry) Anderson	Ubah putih	Myrtaceae	29.6	Not Evaluated
T2P5	<i>Xanthophyllum amoenum</i> Chodat	Nyalin	Polygalaceae	14.1	Not Evaluated
T2P6	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	16.5	Least Concern
T2P6	<i>Antidesma stipulare</i> Blume	Bernai	Phyllanthaceae	10.2	Least Concern

T2P6	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	10.8	Not Evaluated
T2P6	<i>Dialium indum</i> L. var. <i>indum</i>	KerANJI	Fabaceae	28.3	Not Evaluated
T2P6	<i>Dialium platysepalum</i> Baker	KerANJI	Fabaceae	10.7	Not Evaluated
T2P6	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	70.8	Endangered
T2P6	<i>Dyera costulata</i> (Miq.) Hook. f.	Jelutong	Apocynaceae	32.8	Least Concern
T2P6	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	9.8	Not Evaluated
T2P6	<i>Eugenia castanea</i> Merr.	Ubah	Myrtaceae	9.0	Not Evaluated
T2P6	<i>Eugenia castanea</i> Merr.	Ubah	Myrtaceae	15.4	Not Evaluated
T2P6	<i>Eugenia havilandii</i> Merr.	Ubah	Myrtaceae	5.9	Not Evaluated
T2P6	<i>Eugenia havilandii</i> Merr.	Ubah	Myrtaceae	8.8	Not Evaluated
T2P6	<i>Eugenia havilandii</i> Merr.	Ubah	Myrtaceae	12.8	Not Evaluated
T2P6	<i>Eugenia</i> sp. 1	Ubah	Myrtaceae	10.7	-
T2P6	<i>Eugenia</i> sp. 2	Ubah	Myrtaceae	8.1	-
T2P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	6.6	Least Concern
T2P6	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	10.2	Not Evaluated
T2P6	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	12.4	Not Evaluated
T2P6	<i>Glochidion</i> sp. 1	Menyam	Phyllanthaceae	7.9	-
T2P6	<i>Kokoona reflexa</i> (M.A.Lawson) Ding Hou	Mata ulat	Celastraceae	32.0	Not Evaluated

T2P6	<i>Lindera malaccensis</i> Hook. f.	Medang sisit	Lauraceae	6.5	Not Evaluated
T2P6	<i>Litsea cordata</i> Hook. f.	Medang	Lauraceae	9.0	Least Concern
T2P6	<i>Litsea cordata</i> Hook. f.	Medang	Lauraceae	34.2	Least Concern
T2P6	<i>Magnolia maingayi</i> King	Medang limo	Magnoliaceae	8.3	Not Evaluated
T2P6	<i>Mallotus wrayi</i> King ex Hook.f.	Ensarai	Euphorbiaceae	10.4	Least Concern
T2P6	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	27.8	Not Evaluated
T2P6	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	42.0	Not Evaluated
T2P6	<i>Mesua hexapetala</i> (Hook. f.) P.S.Ashton		Calophyllaceae	10.1	Not Evaluated
T2P6	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Karai; Mempisang	Annonaceae	15.8	Not Evaluated
T2P6	<i>Nephelium cuspidatum</i> Blume	Rambutan	Sapindaceae	6.2	Least Concern
T2P6	<i>Palaquium pseudorostratum</i> H.J.Lam	Nyatoh babi besai	Sapotaceae	6.5	Least Concern
T2P6	<i>Palaquium pseudorostratum</i> H.J.Lam	Nyatoh babi	Sapotaceae	12.4	Least Concern
T2P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	10.2	Least Concern
T2P6	<i>Palaquium</i> sp. 1	Nyatoh	Sapotaceae	14.5	-
T2P6	<i>Pentace corneri</i> Kosterm.	Baru bukit kuning	Tiliaceae	11.8	Not Evaluated
T2P6	<i>Pentace corneri</i> Kosterm.	Baru bukit kuning	Tiliaceae	13.3	Not Evaluated
T2P6	<i>Pentace corneri</i> Kosterm.	Baru bukit kuning	Tiliaceae	6.8	Not Evaluated
T2P6	<i>Pentace corneri</i> Kosterm.	Baru bukit kuning	Tiliaceae	9.1	Not Evaluated

T2P6	<i>Saurauia cordata</i> Quisumb.	Mata ikan	Actinidiaceae	24.0	Not Evaluated
T2P6	<i>Scorodocarpus borneensis</i> Becc.	Bawang hutan	Olacaceae	6.9	Not Evaluated
T2P6	<i>Scorodocarpus borneensis</i> Becc.	Bawang hutan	Olacaceae	16.6	Not Evaluated
T2P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	9.0	Near Threatened
T2P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	10.7	Near Threatened
T2P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	15.7	Near Threatened
T2P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	37.1	Near Threatened
T2P6	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti	Dipterocarpaceae	15.7	Near Threatened
T2P6	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti	Dipterocarpaceae	26.8	Near Threatened
T2P6	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti	Dipterocarpaceae	28.8	Near Threatened
T2P6	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti	Dipterocarpaceae	30.1	Near Threatened
T2P6	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	33.4	Least Concern
T2P6	<i>Shorea pinanga</i> Scheff.	Meranti	Dipterocarpaceae	10.6	Least Concern
T2P6	<i>Tabernaemontana pauciflora</i> Blume	Lada-lada	Apocynaceae	20.0	Not Evaluated
T2P6	<i>Teijsmanniodendron sarawakanum</i> (H.Pearson) Kosterm.	Entabuluh	Verbenaceae	10.1	Least Concern
T2P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	7.2	Not Evaluated
T2P6	<i>Xanthophyllum ellipticum</i> Korth. ex Miq.	Nyalin tikus	Polygalaceae	11.0	Not Evaluated
T2P6	<i>Xanthophyllum ellipticum</i> Korth. ex Miq.	Nyalin tikus	Polygalaceae	31.2	Not Evaluated

T2P6	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	8.6	Not Evaluated
T2P6	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	12.5	Not Evaluated
T3P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	11.0	Not Evaluated
T3P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	13.7	Not Evaluated
T3P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	14.5	Not Evaluated
T3P4	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	24.4	Not Evaluated
T3P4	<i>Alangium nobile</i> Harms ex King	Midong besai bulat	Alangiaceae	47.3	Least Concern
T3P4	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	7.1	Vulnerable
T3P4	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	13.3	Vulnerable
T3P4	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	5.7	Least Concern
T3P4	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	9.5	Least Concern
T3P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	8.3	Not Evaluated
T3P4	<i>Eusideroxylon zwageri</i> Teijsm. & Binn.	Belian	Lauraceae	7.8	Vulnerable
T3P4	<i>Ficus delosyce</i> Corner	Ara	Moraceae	10.6	Least Concern
T3P4	<i>Glochidion arborescens</i> Blume	Ubah-ubah	Phyllanthaceae	7.5	Not Evaluated
T3P4	<i>Glochidion arborescens</i> Blume	Ubah-ubah	Phyllanthaceae	30.8	Not Evaluated
T3P4	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	37.2	Least Concern
T3P4	<i>Litsea oppositifolia</i> (Bl.) Vill.	Medang	Lauraceae	6.5	Not Evaluated

T3P4	<i>Litsea oppositifolia</i> (Bl.) Vill.	Medang	Lauraceae	17.0	Not Evaluated
T3P4	<i>Lophopetalum glabrum</i> Ding Hou	Perupok licin	Celastraceae	12.8	Not Evaluated
T3P4	<i>Macaranga caladiifolia</i> Becc.	Benuah paya	Euphorbiaceae	7.1	Not Evaluated
T3P4	<i>Macaranga caladiifolia</i> Becc.	Benuah paya	Euphorbiaceae	8.9	Not Evaluated
T3P4	<i>Macaranga caladiifolia</i> Becc.	Benuah paya	Euphorbiaceae	9.0	Not Evaluated
T3P4	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	6.4	Not Evaluated
T3P4	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	6.8	Not Evaluated
T3P4	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	8.0	Not Evaluated
T3P4	<i>Neonauclea parva</i>	Jengkai	Rubiaceae	10.7	Not Evaluated
T3P4	<i>Shorea collaris</i> Slooten	Merkunyt	Dipterocarpaceae	17.2	Vulnerable
T3P4	<i>Vernonia arborea</i> Welw. ex O.Hoffm. & Buch.-Ham.	Medang gambong	Asteraceae	9.3	Least Concern
T3P5	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	35.2	Not Evaluated
T3P5	<i>Alstonia angustifolia</i> Wall. var. <i>angustifolia</i>	Pelai tikus	Apocynaceae	36.2	Least Concern
T3P5	<i>Baccaurea sumatrana</i> (Miq.) Müll.Arg.	Tampoi	Phyllanthaceae	17.8	Not Evaluated
T3P5	<i>Beilschmiedia madang</i> Blume	Medang	Lauraceae	6.3	Least Concern
T3P5	<i>Blumeodendron calophyllum</i> Airy Shaw	Entawah Besai	Euphorbiaceae	11.9	Not Evaluated
T3P5	<i>Cratoxylum arborescens</i> Blume	Gerongga	Hypericaceae	8.6	Least Concern
T3P5	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	13.6	Least Concern

T3P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	5.9	Endangered
T3P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	7.0	Endangered
T3P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	7.4	Endangered
T3P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	9.0	Endangered
T3P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	9.4	Endangered
T3P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	12.1	Endangered
T3P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	14.1	Endangered
T3P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.5	Not Evaluated
T3P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	6.0	Not Evaluated
T3P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	6.3	Not Evaluated
T3P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	8.2	Not Evaluated
T3P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	11.8	Not Evaluated
T3P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	31.8	Not Evaluated
T3P5	<i>Gynacanthus forbesii</i> (King) Warb.	Pendarahan	Myristicaceae	10.7	Not Evaluated
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	6.5	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	6.5	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	6.7	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	7.2	Data Deficient

T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	8.2	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	8.8	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	9.0	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	9.3	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	9.8	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	10.1	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	10.3	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	11.4	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	13.9	Data Deficient
T3P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	14.7	Data Deficient
T3P5	<i>Knema ashtonii</i> J.Sinclair	Kumpang semah	Myristicaceae	6.3	Vulnerable
T3P5	<i>Knema ashtonii</i> J.Sinclair	Kumpang semah	Myristicaceae	7.8	Vulnerable
T3P5	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	11.4	Least Concern
T3P5	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	19.0	Least Concern
T3P5	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	19.7	Not Evaluated
T3P5	<i>Melanochyla oba</i>	Rengas	Anacardiaceae	7.2	-
T3P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	9.9	Least Concern
T3P5	<i>Parishia insignis</i> Hook. f.	Upi bung	Anacardiaceae	11.2	Least Concern

T3P5	<i>Pternandra echinata</i> Jack	Puloh	Melastomataceae	17.4	Not Evaluated
T3P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	5.6	Vulnerable
T3P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	7.5	Vulnerable
T3P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	18.3	Vulnerable
T3P5	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	8.2	Least Concern
T3P5	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	15.6	Least Concern
T3P5	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	22.0	Least Concern
T3P5	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	31.1	Vulnerable
T3P5	<i>Shorea havilandii</i> Brandis	Selangan batu	Dipterocarpaceae	17.5	Least Concern
T3P5	<i>Syzygium acuminatissimum</i> (Blume) DC.	Ubah samak	Myrtaceae	15.7	Least Concern
T3P5	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	12.5	Not Evaluated
T3P6	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	24.4	Least Concern
T3P6	<i>Antidesma stipulare</i> Blume	Bernai	Phyllanthaceae	5.0	Least Concern
T3P6	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam	Phyllanthaceae	8.5	Not Evaluated
T3P6	<i>Canarium caudatum</i> King	Seladah	Burseraceae	5.5	Not Evaluated
T3P6	<i>Canarium caudatum</i> King	Seladah	Burseraceae	13.2	Not Evaluated
T3P6	<i>Cephalomappa beccariana</i> Baill.		Euphorbiaceae	11.7	Not Evaluated

T3P6	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	6.3	Not Evaluated
T3P6	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	9.1	Not Evaluated
T3P6	<i>Diospyros siamang</i> Bakh.		Ebenaceae	11.4	Not Evaluated
T3P6	<i>Drypetes longifolia</i> (Blume) Pax & K.Hoffm.	Melingkat	Putranjivaceae	5.4	Least Concern
T3P6	<i>Drypetes longifolia</i> (Blume) Pax & K.Hoffm.	Melingkat	Putranjivaceae	8.8	Least Concern
T3P6	<i>Eugenia nemestrina</i> M.R.Hend.		Myrtaceae	11.8	Least Concern
T3P6	<i>Eugenia nemestrina</i> M.R.Hend.		Myrtaceae	21.2	Least Concern
T3P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	6.3	Least Concern
T3P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	7.6	Least Concern
T3P6	<i>Ganua kingiana</i> Brace ex King & Gamble	Nyatoh	Sapotaceae	10.4	Near Threatened
T3P6	<i>Garcinia bancana</i> Miq.	Manggis hutan	Clusiaceae	8.4	Least Concern
T3P6	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	10.8	Not Evaluated
T3P6	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	10.9	Not Evaluated
T3P6	<i>Hopea dryobalanoides</i> Miq.	Selangau	Dipterocarpaceae	6.0	Least Concern
T3P6	<i>Hopea dryobalanoides</i> Miq.	Selangau	Dipterocarpaceae	6.3	Least Concern
T3P6	<i>Hopea dryobalanoides</i> Miq.	Selangau	Dipterocarpaceae	21.4	Least Concern
T3P6	<i>Litsea fulva</i> Fern.-Vill.	Medang	Lauraceae	9.0	Least Concern

T3P6	<i>Litsea fulva</i> Fern.-Vill.	Medang	Lauraceae	11.8	Least Concern
T3P6	<i>Litsea fulva</i> Fern.-Vill.	Medang	Lauraceae	20.8	Least Concern
T3P6	<i>Litsea fulva</i> Fern.-Vill.	Medang	Lauraceae	21.2	Least Concern
T3P6	<i>Litsea oppositifolia</i> (Bl.) Vill.	Medang	Lauraceae	15.2	Not Evaluated
T3P6	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	32.7	Not Evaluated
T3P6	<i>Mezzetia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	11.3	Not Evaluated
T3P6	<i>Myristica maxima</i> Warb.	Pandarahan	Myristicaceae	32.3	Least Concern
T3P6	<i>Nephelium maingayi</i> Hiern	Serai	Sapindaceae	13.9	Least Concern
T3P6	<i>Palaquium pseudorostratum</i> H.J.Lam	Nyato	Sapotaceae	12.4	Least Concern
T3P6	<i>Palaquium decurrens</i> H.J.Lam	Nyato	Sapotaceae	25.7	Least Concern
T3P6	<i>Palaquium ridleyi</i> King & Gamble	Nyato terong	Sapotaceae	7.4	Least Concern
T3P6	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Selaut batu	Annonaceae	5.4	Not Evaluated
T3P6	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Semukau	Annonaceae	7.6	Not Evaluated
T3P6	<i>Quassia borneensis</i> Noot.	Manunggal	Simaroubaceae	48.2	Not Evaluated
T3P6	<i>Santiria megaphylla</i>		Burseraceae	13.6	-
T3P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	6.0	Near Threatened
T3P6	<i>Shorea crassa</i> P.S.Ashton	Selangan batu	Dipterocarpaceae	12.1	Least Concern

T3P6	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	9.2	Critically Endangered
T3P6	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	9.5	Critically Endangered
T3P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	9.7	Least Concern
T3P6	<i>Shorea ovata</i> Dyer ex Brandis	Meranti sarang punai bukit	Dipterocarpaceae	46.8	Endangered
T3P6	<i>Stemonurus secundiflorus</i> Blume	Semburok	Icacinaceae	7.8	Not Evaluated
T3P6	<i>Vatica micrantha</i> Slooten	Resak hijau	Dipterocarpaceae	6.9	Least Concern
T3P6	<i>Xanthophyllum</i> sp. 1	Nyalin	Polygalaceae	8.5	-
T4P4	<i>Baccaurea racemosa</i> (Reinw. ex Blume) Müll.Arg.	Tampoi	Phyllanthaceae	9.0	Not Evaluated
T4P4	<i>Baccaurea sumatrana</i> (Miq.) Müll.Arg.	Tampoi	Phyllanthaceae	7.6	Not Evaluated
T4P4	<i>Caryodaphnopsis tonkinensis</i> (Lecomte) Airy Shaw	Medang sirih	Lauraceae	5.3	Least Concern
T4P4	<i>Dehaasia resinosa</i>		Lauraceae	5.8	-
T4P4	<i>Dillenia beccariana</i> Martelli	Simpuh laki	Dilleniaceae	6.6	Not Evaluated
T4P4	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	7.0	Not Evaluated
T4P4	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	12.6	Not Evaluated
T4P4	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	9.1	Least Concern
T4P4	<i>Elaeocarpus stipularis</i> Blume	Emperdu	Elaeocarpaceae	5.8	Not Evaluated

T4P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	7.9	Not Evaluated
T4P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	21.8	Not Evaluated
T4P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	45.2	Not Evaluated
T4P4	<i>Garcinia</i> sp. 1	Kandis	Clusiaceae	8.3	-
T4P4	<i>Horsfieldia grandis</i> Warb.	Kumpang	Myristicaceae	29.4	Least Concern
T4P4	<i>Knema latifolia</i> Warb.	Kumpang	Myristicaceae	18.2	Least Concern
T4P4	<i>Macaranga lowii</i> King ex Hook.f.	Mahang	Euphorbiaceae	9.6	Least Concern
T4P4	<i>Mallotus leucodermis</i> Hook. f.	Balik angin	Euphorbiaceae	11.0	Least Concern
T4P4	<i>Myristica iners</i> Blume	Kumpang	Myristicaceae	7.5	Least Concern
T4P4	<i>Neoscortechinia sumatrensis</i> S.Moore	Bantas	Euphorbiaceae	8.9	Not Evaluated
T4P4	<i>Nephelium havilandii</i> Leenh.	Sibau kera	Sapindaceae	9.4	Not Evaluated
T4P4	<i>Pentace elmeri</i>	Baru bukit	Tiliaceae	24.9	-
T4P4	<i>Pentace elmeri</i>	Baru bukit	Tiliaceae	37.2	-
T4P4	<i>Pentace elmeri</i>	Baru bukit	Tiliaceae	43.0	-
T4P4	<i>Polyalthia clavigera</i> King	Semukau	Annonaceae	6.7	Not Evaluated
T4P4	<i>Polyalthia clavigera</i> King	Semukau	Annonaceae	7.0	Not Evaluated
T4P4	<i>Ptychopyxis arborea</i> (Merr.) Airy Shaw	Bantas	Euphorbiaceae	13.3	Not Evaluated
T4P4	<i>Shorea myrionerva</i> Symington ex P.S.Ashton	Meranti sepit udang	Dipterocarpaceae	6.1	Near Threatened

T4P4	<i>Shorea myrionerva</i> Symington ex P.S.Ashton	Meranti sepi udang	Dipterocarpaceae	10.1	Near Threatened
T4P4	<i>Shorea stenoptera</i> Burck	Engkabang Rusa	Dipterocarpaceae	18.5	Near Threatened
T4P4	<i>Xanthophyllum ellipticum</i> Korth. ex Miq.	Nyalin tikus	Polygalaceae	15.9	Not Evaluated
T4P4	<i>Xanthophyllum ellipticum</i> Korth. ex Miq.	Nyalin tikus	Polygalaceae	16.2	Not Evaluated
T4P5	<i>Aglaia beccarii</i> C.DC.	Segera	Meliaceae	9.5	Not Evaluated
T4P5	<i>Aglaia borneensis</i> Merr.	Segera	Meliaceae	6.4	Near Threatened
T4P5	<i>Aglaia havilandii</i> Ridl.	Segera	Meliaceae	27.1	Least Concern
T4P5	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	6.2	Least Concern
T4P5	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	8.0	Least Concern
T4P5	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	7.9	Not Evaluated
T4P5	<i>Baccaurea racemosa</i> (Reinw. ex Blume) Müll.Arg.	Tampoi	Phyllanthaceae	11.8	Not Evaluated
T4P5	<i>Camptosperma auriculatum</i> (Blume) Hook. f.	Terentang	Anacardiaceae	7.1	Least Concern
T4P5	<i>Canarium apertum</i> H.J.Lam	Seladah	Burseraceae	11.1	Not Evaluated
T4P5	<i>Castanopsis borneensis</i> King	Berangan	Fagaceae	42.5	Not Evaluated
T4P5	<i>Cyathocalyx carinatus</i> (Ridl.) J. Sinclair	Pendok jugam	Annonaceae	10.1	Not Evaluated
T4P5	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	10.5	Vulnerable
T4P5	<i>Dillenia reticulata</i> King	Simpoh	Dilleniaceae	11.3	Least Concern

T4P5	<i>Dillenia suffruticosa</i> (Griffith ex Hook. f. & Thomson) Martelli	Simpoh Paya	Dilleniaceae	5.2	Not Evaluated
T4P5	<i>Dillenia suffruticosa</i> (Griffith ex Hook. f. & Thomson) Martelli	Simpoh Paya	Dilleniaceae	8.3	Not Evaluated
T4P5	<i>Dillenia suffruticosa</i> (Griffith ex Hook. f. & Thomson) Martelli	Simpoh Paya	Dilleniaceae	8.3	Not Evaluated
T4P5	<i>Diospyros bantamensis</i> Koord. & Valeton ex Bakh	Kayu malam	Ebenaceae	11.4	Not Evaluated
T4P5	<i>Diospyros bantamensis</i> Koord. & Valeton ex Bakh	Kayu malam	Ebenaceae	14.1	Not Evaluated
T4P5	<i>Diospyros bantamensis</i> Koord. & Valeton ex Bakh	Kayu malam	Ebenaceae	54.4	Not Evaluated
T4P5	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	9.2	Least Concern
T4P5	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	9.5	Least Concern
T4P5	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	9.3	Not Evaluated
T4P5	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	10.1	Not Evaluated
T4P5	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	10.2	Not Evaluated
T4P5	<i>Gonocaryum minus</i> Sleumer	Kerak nasi paya	Icacinaceae	6.1	Not Evaluated
T4P5	<i>Heliciopsis velutina</i> (Prain) Sleumer	Palis	Proteaceae	5.7	Not Evaluated
T4P5	<i>Horsfieldia wallichii</i> Warb.	Kumpang	Myristicaceae	16.5	Least Concern
T4P5	<i>Koilodepas longifolium</i> Hook.f.	Bantas	Euphorbiaceae	6.8	Not Evaluated

T4P5	<i>Koilodepas longifolium</i> Hook.f.	Bantas	Euphorbiaceae	10.1	Not Evaluated
T4P5	<i>Koilodepas longifolium</i> Hook.f.	Bantas	Euphorbiaceae	13.3	Not Evaluated
T4P5	<i>Koompassia malaccensis</i> Benth.	Mengris	Fabaceae	7.2	Conservation Dependent
T4P5	<i>Koompassia malaccensis</i> Benth.	Menggris	Fabaceae	18.2	Conservation Dependent
T4P5	<i>Lithocarpus gracilis</i> (Korth.) Soepadmo	Empili	Fagaceae	17.4	Least Concern
T4P5	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	7.0	Least Concern
T4P5	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	13.7	Least Concern
T4P5	<i>Litsea resinosa</i> Koord.	Medang kalak	Lauraceae	14.0	Least Concern
T4P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	11.5	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	5.9	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	6.2	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	7.5	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	7.8	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	7.9	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	8.4	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	11.8	Not Evaluated
T4P5	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	30.6	Not Evaluated
T4P5	<i>Memecylon durum</i> Cogn.	Nipis kulit	Melastomataceae	6.0	Not Evaluated

T4P5	<i>Prunus arborea</i> (Blume) Kalkman	Enteli	Rosaceae	7.9	Least Concern
T4P5	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	17.3	Not Evaluated
T4P5	<i>Semecarpus bunburyanus</i> Gibbs	Rengas putih gunung	Anacardiaceae	9.4	Not Evaluated
T4P5	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	17.5	Critically Endangered
T4P5	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	57.8	Least Concern
T4P5	<i>Shorea scabrida</i> Symington	Meranti lop	Dipterocarpaceae	19.5	Near Threatened
T4P5	<i>Syzygium</i> sp. 1	Ubah	Myrtaceae	9.8	-
T4P5	<i>Xanthophyllum beccarianum</i> Chodat	Nyalin bulu	Polygalaceae	8.7	Not Evaluated
T4P5	<i>Xanthophyllum beccarianum</i> Chodat	Nyalin bulu	Polygalaceae	20.1	Not Evaluated
T4P6	<i>Aglaia affinis</i> Merr.	Segera	Meliaceae	9.2	Least Concern
T4P6	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	24.4	Least Concern
T4P6	<i>Antidesma stipulare</i> Blume	Bernai	Phyllanthaceae	5.2	Least Concern
T4P6	<i>Barringtonia lanceolata</i> (Ridl.) Payens	Putat	Lecythidaceae	8.1	Not Evaluated
T4P6	<i>Canarium caudatum</i> King	Seladah	Burseraceae	9.2	Not Evaluated
T4P6	<i>Canarium caudatum</i> King		Burseraceae	13.2	Not Evaluated
T4P6	<i>Cephalomappa beccariana</i> Baill.		Euphorbiaceae	11.7	Not Evaluated
T4P6	<i>Diospyros siamang</i> Bakh.	Kayu malam balih	Ebenaceae	11.4	Not Evaluated
T4P6	<i>Diospyros sumatrana</i>	Kayu malam	Ebenaceae	6.7	Not Evaluated

T4P6	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.9	Not Evaluated
T4P6	<i>Eugenia havilandii</i> Merr.	Ubah	Myrtaceae	6.1	Not Evaluated
T4P6	<i>Eugenia havilandii</i> Merr.	Ubah	Myrtaceae	11.8	Not Evaluated
T4P6	<i>Eugenia nemestrina</i> M.R.Hend.		Myrtaceae	21.2	Least Concern
T4P6	<i>Ganua kingiana</i> Brace ex King & Gamble	Nyatoh	Sapotaceae	10.4	Near Threatened
T4P6	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	7.2	Not Evaluated
T4P6	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	10.8	Not Evaluated
T4P6	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	10.9	Not Evaluated
T4P6	<i>Gymnacranthera forbesii</i> (King) Warb.	Kumpang	Myristicaceae	9.6	Not Evaluated
T4P6	<i>Hopea kerangasensis</i> P.S.Ashton	Luis kerangas	Dipterocarpaceae	21.4	Critically Endangered
T4P6	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	9.8	Least Concern
T4P6	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	20.8	Least Concern
T4P6	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	21.2	Least Concern
T4P6	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	5.0	Least Concern
T4P6	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	11.8	Least Concern
T4P6	<i>Litsea oppositifolia</i> (Bl.) Vill.	Medang	Lauraceae	15.2	Not Evaluated
T4P6	<i>Macaranga hosei</i> King ex Hook. F.	Benuah	Euphorbiaceae	7.5	Not Evaluated

T4P6	<i>Macaranga hosei</i> King ex Hook. F.	Benuah	Euphorbiaceae	8.8	Not Evaluated
T4P6	<i>Macaranga hosei</i> King ex Hook. F.	Benuah	Euphorbiaceae	8.9	Not Evaluated
T4P6	<i>Macaranga hullettii</i> King ex Hook. f.	Benuah	Euphorbiaceae	7.1	Not Evaluated
T4P6	<i>Macaranga hullettii</i> King ex Hook. f.	Benuah	Euphorbiaceae	32.7	Not Evaluated
T4P6	<i>Mezzetia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	11.3	Not Evaluated
T4P6	<i>Myristica maxima</i> Warb.		Myristicaceae	32.3	Least Concern
T4P6	<i>Nephelium cuspidatum</i> Blume	Rambutan	Sapindaceae	5.0	Least Concern
T4P6	<i>Nephelium maingayi</i> Hiern	Serait	Sapindaceae	13.9	Least Concern
T4P6	<i>Palaquium pseudorostratum</i> H.J.Lam	Nyatoh babi	Sapotaceae	12.4	Least Concern
T4P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	25.7	Least Concern
T4P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	5.6	Not Evaluated
T4P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	5.9	Not Evaluated
T4P6	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	5.6	Not Evaluated
T4P6	<i>Polyalthia cauliflora</i> Hook. f. & Thomson	Semukau	Annonaceae	9.7	Not Evaluated
T4P6	<i>Quassia borneensis</i> Noot.	Manunggal	Simaroubaceae	48.2	Not Evaluated
T4P6	<i>Santiria megaphylla</i>		Burseraceae	13.6	-
T4P6	<i>Shorea ferruginea</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	9.8	Vulnerable
T4P6	<i>Shorea flava</i> Meijer	Selangan batu	Dipterocarpaceae	12.1	Endangered

T4P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	7.9	Least Concern
T4P6	<i>Shorea ovata</i> Dyer ex Brandis	Meranti sarang punai bukit	Dipterocarpaceae	46.8	Endangered
T4P6	<i>Shorea</i> sp. 1	Meranti	Dipterocarpaceae	7.7	-
T5P4	<i>Adinandra balukar</i>	Legai	Theaceae	29.2	Not Evaluated
T5P4	<i>Adinandra balukar</i>	Legai	Theaceae	36.1	Not Evaluated
T5P4	<i>Adinandra dumosa</i> Jack	Tiup-tiup	Theaceae	11.0	Least Concern
T5P4	<i>Alseodaphne bancana</i> Miq.	Medang lui	Lauraceae	7.3	Least Concern
T5P4	<i>Alseodaphne bancana</i> Miq.	Medang lui	Lauraceae	12.6	Least Concern
T5P4	<i>Alstonia angustifolia</i> Wall. var. <i>angustifolia</i>	Pelai lilin	Apocynaceae	25.0	Least Concern
T5P4	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	5.8	Least Concern
T5P4	<i>Antiaris toxicaria</i> Lesch.	Ako	Moraceae	7.6	Least Concern
T5P4	<i>Antidesma stipulare</i> Blume	Bernai	Phyllanthaceae	10.8	Least Concern
T5P4	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	5.8	Vulnerable
T5P4	<i>Artocarpus borneensis</i> Merr.	Kelapa musoh	Moraceae	11.9	Not Evaluated
T5P4	<i>Barringtonia sarcostachys</i> Miq.	Putat tubai langkong	Lecythidaceae	6.4	Not Evaluated
T5P4	<i>Canthium glabrum</i> Blume	Kayu malam	Rubiaceae	28.5	Not Evaluated
T5P4	<i>Canthium</i> sp. 1	Janang	Rubiaceae	7.8	-

T5P4	<i>Cratoxylum formosum</i> (Jack) Benth., Hook. f. ex Dyer	Derum	Hypericaceae	17.3	Least Concern
T5P4	<i>Dacryodes laxa</i> (A.W.Benn.) H.J.Lam	Kramih/Kembayah	Burseraceae	21.8	Least Concern
T5P4	<i>Dehaasia firma</i> Blume	Medang cabi	Lauraceae	7.9	Least Concern
T5P4	<i>Dialium indum</i> L. var. <i>indum</i>	KerANJI burong	Fabaceae	6.1	Not Evaluated
T5P4	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	9.9	Least Concern
T5P4	<i>Diospyros borneensis</i> Hiern	Kayu malam	Ebenaceae	11.0	Least Concern
T5P4	<i>Dipterocarpus</i> sp. 1	Keruing	Dipterocarpaceae	7.2	-
T5P4	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	10.9	Least Concern
T5P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	33.5	Not Evaluated
T5P4	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	11.7	Least Concern
T5P4	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	18.4	Not Evaluated
T5P4	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	18.5	Not Evaluated
T5P4	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	22.5	Not Evaluated
T5P4	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	24.0	Not Evaluated
T5P4	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	24.6	Not Evaluated
T5P4	<i>Gardenia tubifera</i> Wall. ex Roxb.	Malau merong	Rubiaceae	24.9	Not Evaluated
T5P4	<i>Gonocaryum nobile</i>	Midang	Icacinaceae	23.2	-

T5P4	<i>Koilodepas longifolium</i> Hook.f.	Bantas	Euphorbiaceae	8.0	Not Evaluated
T5P4	<i>Koompassia excelsa</i> (Becc.) Taub.	Tapang	Fabaceae	11.4	Conservation Dependent
T5P4	<i>Litsea elliptica</i> Blume	Medang	Lauraceae	9.0	Least Concern
T5P4	<i>Macaranga lowii</i> King ex Hook.f.	Mahang	Euphorbiaceae	9.6	Least Concern
T5P4	<i>Melanochyla elmeri</i> Merr.	Rengas hitam	Anacardiaceae	15.4	Not Evaluated
T5P4	<i>Memecylon durum</i> Cogn.	Nipis kulit	Melastomataceae	11.8	Not Evaluated
T5P4	<i>Nauclea subdita</i> (Korth.) Steud.	Kedamba	Rubiaceae	13.2	Least Concern
T5P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	6.7	Least Concern
T5P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	7.4	Least Concern
T5P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	9.5	Least Concern
T5P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	18.0	Least Concern
T5P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	18.4	Least Concern
T5P4	<i>Palaquium gutta</i> (Hook.) Burck	Nyatoh rian	Sapotaceae	5.9	Near Threatened
T5P4	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	12.6	Not Evaluated
T5P4	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Dileh paya	Annonaceae	9.1	Not Evaluated
T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	6.5	Not Evaluated
T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	6.8	Not Evaluated
T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	7.0	Not Evaluated

T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	8.7	Not Evaluated
T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	9.8	Not Evaluated
T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	9.9	Not Evaluated
T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	9.9	Not Evaluated
T5P4	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	16.1	Not Evaluated
T5P4	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	12.3	Not Evaluated
T5P4	<i>Shorea acuminatissima</i> Sym.	Lun daun runcing	Dipterocarpaceae	9.0	Vulnerable
T5P4	<i>Shorea collaris</i> Slooten	Merakunyit	Dipterocarpaceae	12.4	Vulnerable
T5P4	<i>Shorea collaris</i> Slooten	Merakunyit	Dipterocarpaceae	22.6	Vulnerable
T5P4	<i>Shorea crassa</i> P.S.Ashton	Selangan batu	Dipterocarpaceae	6.0	Least Concern
T5P4	<i>Shorea crassa</i> P.S.Ashton	Selangan batu	Dipterocarpaceae	7.8	Least Concern
T5P4	<i>Shorea fallax</i> Meijer	Engkabang pinang	Dipterocarpaceae	5.8	Least Concern
T5P4	<i>Shorea leptoclados</i> Symington	Meranti	Dipterocarpaceae	46.6	Critically Endangered
T5P4	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	7.5	Least Concern
T5P4	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	25.1	Least Concern
T5P4	<i>Timonius flavescens</i> (Jacq.) Baker	Rentap paya mit	Rubiaceae	6.1	Least Concern
T5P4	<i>Xylopia ferruginea</i> (Hook. f. & Thomson) Hook. f. & Thomson	Ako bulu	Annonaceae	22.5	Not Evaluated

T5P5	<i>Aglaia havilandii</i> Ridl.	Segera	Meliaceae	6.4	Least Concern
T5P5	<i>Alseodaphne bancana</i> Miq.	Medang lui	Lauraceae	5.8	Least Concern
T5P5	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleaceae	6.7	Least Concern
T5P5	<i>Aporosa benthamiana</i> Hook. f.	Kayu masam besai sayap	Phyllanthaceae	6.9	Not Evaluated
T5P5	<i>Artocarpus dadah</i> Miq.	Keledang tampang bulu	Moraceae	27.0	Not Evaluated
T5P5	<i>Camptosperma auriculatum</i> (Blume) Hook. f.	Terentang telinga gajah	Anacardiaceae	17.1	Least Concern
T5P5	<i>Dacryodes laxa</i> (A.W.Benn.) H.J.Lam	Kramih/Kembayah	Burseraceae	9.8	Least Concern
T5P5	<i>Dialium indum</i> L. var. <i>indum</i>	KerANJI burung	Fabaceae	24.9	Not Evaluated
T5P5	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	23.1	Not Evaluated
T5P5	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	6.2	Least Concern
T5P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	15.1	Not Evaluated
T5P5	<i>Ficus gecharis</i> Corner	Buah abung	Moraceae	8.2	Not Evaluated
T5P5	<i>Horsfieldia grandis</i> Warb.	Kumpang	Myristicaceae	11.2	Least Concern
T5P5	<i>Ixonanthes borneensis</i>	InggI burung	Ixonanthaceae	5.2	Not Evaluated
T5P5	<i>Knema latifolia</i> Warb.	Pendarahan	Myristicaceae	6.2	Least Concern
T5P5	<i>Knema latifolia</i> Warb.	Pendarahan	Myristicaceae	9.5	Least Concern
T5P5	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	17.8	Least Concern

T5P5	<i>Macaranga hypoleuca</i> (Rchb.f. & Zoll.) Müll.Arg.	Mahang puteh	Euphorbiaceae	6.9	Not Evaluated
T5P5	<i>Macaranga lowii</i> King ex Hook.f.	Mahang	Euphorbiaceae	5.8	Least Concern
T5P5	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Mahang	Euphorbiaceae	6.0	Not Evaluated
T5P5	<i>Macaranga pruinosa</i> (Miq.) Müll.Arg.	Mahang	Euphorbiaceae	11.2	Not Evaluated
T5P5	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	10.2	Not Evaluated
T5P5	<i>Nephelium havilandii</i> Leenh.	Sibau kera	Sapindaceae	25.1	Not Evaluated
T5P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	12.0	Least Concern
T5P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	33.3	Least Concern
T5P5	<i>Parinari elmeri</i> Merr.	Merbatu	Chrysobalanaceae	5.9	Not Evaluated
T5P5	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	5.2	Not Evaluated
T5P5	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	5.8	Not Evaluated
T5P5	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	6.4	Not Evaluated
T5P5	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	17.2	Not Evaluated
T5P5	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	17.5	Not Evaluated
T5P5	<i>Scaphium borneensis</i> (Merr.) Kosterm	Kembang semangkok kecil	Malvaceae	9.2	Not Evaluated
T5P5	<i>Shorea fallax</i> Meijer	Engkabang pinang	Dipterocarpaceae	8.1	Least Concern
T5P5	<i>Shorea fallax</i> Meijer	Engkabang pinang	Dipterocarpaceae	17.0	Least Concern

T5P5	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	14.5	Least Concern
T5P5	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	15.5	Least Concern
T5P5	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	36.9	Least Concern
T5P5	<i>Shorea pinanga</i> Scheff.	Melantai	Dipterocarpaceae	46.2	Least Concern
T5P5	<i>Swintonia glauca</i> Engl.	Pitoh paya	Anacardiaceae	6.5	Not Evaluated
T5P5	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	6.0	Not Evaluated
T5P5	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	7.9	Not Evaluated
T5P5	<i>Tabernaemontana macrocarpa</i> Jack	Badak	Apocynaceae	10.0	Least Concern
T5P5	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	8.3	Endangered
T5P5	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	12.0	Not Evaluated
T5P5	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	12.5	Not Evaluated
T5P6	<i>Adinandra dumosa</i> Jack	Legai	Theaceae	24.9	Least Concern
T5P6	<i>Aglaia affinis</i> Merr.	Segera	Meliaceae	27.1	Least Concern
T5P6	<i>Dacryodes costata</i> (A.W. Benn.) H.J.Lam	Kimayau	Burseraceae	10.0	Least Concern
T5P6	<i>Dacryodes costata</i> (A.W. Benn.) H.J.Lam	Kemayau	Burseraceae	10.0	Least Concern
T5P6	<i>Diospyros evena</i> Bakh.	Kayu malam	Ebenaceae	7.2	Not Evaluated
T5P6	<i>Diplospora beccariana</i> King & Gamble	Kopi hutan	Rubiaceae	27.5	Not Evaluated
T5P6	<i>Eusideroxylon zwageri</i> Teijsm. & Binn.	Belian landak	Lauraceae	5.3	Vulnerable

T5P6	<i>Ficus delosyce</i> Corner	Ara	Moraceae	7.0	Least Concern
T5P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	5.5	Least Concern
T5P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	5.6	Least Concern
T5P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	10.1	Least Concern
T5P6	<i>Glochidion lutescens</i> Blume	Menyam	Phyllanthaceae	7.0	Not Evaluated
T5P6	<i>Hopea dryobalanoides</i> Miq.	Selangau	Dipterocarpaceae	5.9	Least Concern
T5P6	<i>Hopea dryobalanoides</i> Miq.	Selangau	Dipterocarpaceae	6.1	Least Concern
T5P6	<i>Hopea dryobalanoides</i> Miq.	Selangau	Dipterocarpaceae	6.8	Least Concern
T5P6	<i>Hopea dryobalanoides</i> Miq.	Selangau	Dipterocarpaceae	9.2	Least Concern
T5P6	<i>Hopea dryobalanoides</i> Miq.	Luis	Dipterocarpaceae	10.6	Least Concern
T5P6	<i>Hopea dryobalanoides</i> Miq.	Luis	Dipterocarpaceae	11.0	Least Concern
T5P6	<i>Hopea dryobalanoides</i> Miq.	Luis	Dipterocarpaceae	14.7	Least Concern
T5P6	<i>Hopea dryobalanoides</i> Miq.	Luis	Dipterocarpaceae	16.6	Least Concern
T5P6	<i>Lithocarpus</i> sp. 1	Empenit	Fagaceae	11.7	-
T5P6	<i>Macaranga hosei</i> King ex Hook. F.	Benuah	Euphorbiaceae	6.4	Not Evaluated
T5P6	<i>Macaranga hosei</i> King ex Hook. F.	Benuah	Euphorbiaceae	12.3	Not Evaluated
T5P6	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	11.3	Not Evaluated
T5P6	<i>Nauclea parva</i> (Havil.) Merr.	Jengkai	Rubiaceae	6.5	Not Evaluated

T5P6	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Semukau	Annonaceae	18.6	Not Evaluated
T5P6	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	8.4	Not Evaluated
T5P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	7.4	Not Evaluated
T5P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	7.7	Not Evaluated
T5P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	17.8	Not Evaluated
T5P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	21.5	Not Evaluated
T5P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	21.8	Not Evaluated
T5P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	21.8	Not Evaluated
T5P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	24.8	Not Evaluated
T5P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	7.0	Near Threatened
T5P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	21.6	Near Threatened
T5P6	<i>Shorea beccariana</i> Burck	Meranti	Dipterocarpaceae	5.5	Least Concern
T5P6	<i>Shorea beccariana</i> Burck	Meranti	Dipterocarpaceae	5.9	Least Concern
T5P6	<i>Shorea beccariana</i> Burck	Meranti	Dipterocarpaceae	8.0	Least Concern
T5P6	<i>Shorea crassa</i> P.S.Ashton	Selangan batu	Dipterocarpaceae	15.2	Least Concern
T5P6	<i>Shorea curtisii</i> Dyer ex King	Seraya	Dipterocarpaceae	18.1	Least Concern
T5P6	<i>Shorea faguetiana</i> Heim	Lun	Dipterocarpaceae	14.6	Endangered
T5P6	<i>Shorea faguetiana</i> Heim	Lun	Dipterocarpaceae	17.4	Endangered

T5P6	<i>Shorea faguetioides</i> P.S.Ashton	Selangan	Dipterocarpaceae	5.3	Near Threatened
T5P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	6.4	Least Concern
T5P6	<i>Strombosia lucida</i> Teijsm. & Binn.	Belian landak	Olacaceae	33.4	Not Evaluated
T5P6	<i>Syzygium acuminatissimum</i> (Blume) DC.	Ubah putih	Myrtaceae	9.7	Least Concern
T5P6	<i>Syzygium arcuatinervium</i> (Merr.) Craven & Biffin	Ubah merah	Myrtaceae	10.5	Not Evaluated
T5P6	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	34.1	Not Evaluated
T6P4	<i>Adinandra balukar</i>	Legai	Theaceae	32.1	Not Evaluated
T6P4	<i>Alstonia scholaris</i> (L.) R. Br.	Pelai lilin	Apocynaceae	8.4	Least Concern
T6P4	<i>Aquilaria macrocarpa</i> Baill.	Gaharu	Thymelaeaceae	45.2	Not Evaluated
T6P4	<i>Ardisia</i> sp. 1	Patah dahan	Primulaceae	9.8	-
T6P4	<i>Artocarpus rigidus</i> Blume	Pudau paya	Moraceae	73.3	Not Evaluated
T6P4	<i>Baccaurea racemosa</i> (Reinw. ex Blume) Müll.Arg.	Tampoi	Phyllanthaceae	8.2	Not Evaluated
T6P4	<i>Camptosperma auriculatum</i> (Blume) Hook. f.	Terentang	Anacardiaceae	30.1	Least Concern
T6P4	<i>Cyathocalyx carinatus</i> (Ridl.) J. Sinclair	Selemo	Annonaceae	14.5	Not Evaluated
T6P4	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	10.1	Least Concern
T6P4	<i>Dialium platysepalum</i> Baker	KerANJI	Fabaceae	7.1	Not Evaluated
T6P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	10.6	Not Evaluated

T6P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	22.1	Not Evaluated
T6P4	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	37.2	Not Evaluated
T6P4	<i>Glochidion arborescens</i> Blume	Ubah-ubah	Phyllanthaceae	43.7	Not Evaluated
T6P4	<i>Gluta aptera</i> (King) Ding Hou	Rengas kerbau jalang	Anacardiaceae	9.4	Not Evaluated
T6P4	<i>Gonocaryum minus</i> Sleumer	Medang	Icacinaceae	8.4	Not Evaluated
T6P4	<i>Gymnocranthera</i> sp. 1	Kumpang	Myristicaceae	19.2	-
T6P4	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	9.9	Least Concern
T6P4	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	15.1	Least Concern
T6P4	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	24.5	Not Evaluated
T6P4	<i>Myristica latifolia</i> Warb.	Kumpang	Myristicaceae	10.4	Not Evaluated
T6P4	<i>Nephelium cuspidatum</i> Blume	Lotong	Sapindaceae	11.9	Least Concern
T6P4	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	11.6	Least Concern
T6P4	<i>Parkia speciosa</i> Hassk.	Petai	Fabaceae	48.3	Least Concern
T6P4	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	20.7	Not Evaluated
T6P4	<i>Polyalthia cauliflora</i> Hook. f. & Thomson	Mempisang	Annonaceae	8.6	Not Evaluated
T6P4	<i>Prunus arborea</i> (Blume) Kalkman	Enteli	Rosaceae	19.1	Least Concern
T6P4	<i>Prunus arborea</i> (Blume) Kalkman	Enteli	Rosaceae	26.1	Least Concern
T6P4	<i>Randia grandis</i> (Korth.) Valetton	Sabar bubu	Rubiaceae	13.3	Not Evaluated

T6P4	<i>Shorea faguettiana</i> Heim	Damar hitam siput	Dipterocarpaceae	49.5	Endangered
T6P4	<i>Shorea foxworthyi</i> Symington	Selangan batu bukit	Dipterocarpaceae	13.3	Vulnerable
T6P4	<i>Shorea foxworthyi</i> Symington	Selangan batu bukit	Dipterocarpaceae	15.3	Vulnerable
T6P4	<i>Shorea foxworthyi</i> Symington	Selangan batu bukit	Dipterocarpaceae	30.1	Vulnerable
T6P4	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	13.7	Least Concern
T6P4	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	22.6	Least Concern
T6P4	<i>Syzygium</i> sp. 2	Ubah	Myrtaceae	8.6	-
T6P4	<i>Syzygium</i> sp. 3	Ubah	Myrtaceae	10.0	-
T6P4	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	12.8	Not Evaluated
T6P5	<i>Adinandra acuminata</i> Korth.	Legai	Theaceae	35.2	Not Evaluated
T6P5	<i>Alstonia angustifolia</i> Wall. var. <i>angustifolia</i>	Pelai tikus	Apocynaceae	36.2	Least Concern
T6P5	<i>Baccaurea sumatrana</i> (Miq.) Müll.Arg.	Tampoi	Phyllanthaceae	17.8	Not Evaluated
T6P5	<i>Beilschmiedia madang</i> Blume	Medang	Lauraceae	6.3	Least Concern
T6P5	<i>Blumeodendron calophyllum</i> Airy Shaw	Entawah Besai	Euphorbiaceae	11.9	Not Evaluated
T6P5	<i>Cratoxylum arborescens</i> Blume	Gerongga	Hypericaceae	8.6	Least Concern
T6P5	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	13.6	Least Concern
T6P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	5.9	Endangered
T6P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	7.0	Endangered

T6P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	7.4	Endangered
T6P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	9.0	Endangered
T6P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	9.4	Endangered
T6P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	12.1	Endangered
T6P5	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	14.1	Endangered
T6P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.5	Not Evaluated
T6P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	6.0	Not Evaluated
T6P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	6.3	Not Evaluated
T6P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	8.2	Not Evaluated
T6P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	11.8	Not Evaluated
T6P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	31.8	Not Evaluated
T6P5	<i>Gymnacranthera forbesii</i> (King) Warb.	Pendarahan	Myristicaceae	10.7	Not Evaluated
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	6.5	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	6.5	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	6.7	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	7.2	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	8.2	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	8.8	Data Deficient

T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	9.0	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	9.3	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	9.8	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	10.1	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	10.3	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	11.4	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	13.9	Data Deficient
T6P5	<i>Hopea latifolia</i> Symington	Luis Daun Bulat	Dipterocarpaceae	14.7	Data Deficient
T6P5	<i>Knema ashtonii</i> J.Sinclair	Kumpang semah	Myristicaceae	6.3	Vulnerable
T6P5	<i>Knema ashtonii</i> J.Sinclair	Kumpang semah	Myristicaceae	7.8	Vulnerable
T6P5	<i>Litsea accedens</i> Boerl.	Medang engkala burong	Lauraceae	11.4	Least Concern
T6P5	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	19.0	Least Concern
T6P5	<i>Macaranga havilandii</i> Airy Shaw	Benuah semut	Euphorbiaceae	19.7	Not Evaluated
T6P5	<i>Melanochyla oba</i>	Rengas	Anacardiaceae	7.2	-
T6P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	9.9	Least Concern
T6P5	<i>Parishia insignis</i> Hook. f.	Upi bung	Anacardiaceae	11.2	Least Concern
T6P5	<i>Pternandra echinata</i> Jack	Puloh	Melastomataceae	17.4	Not Evaluated
T6P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	5.6	Vulnerable

T6P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	7.5	Vulnerable
T6P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	18.3	Vulnerable
T6P5	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	8.2	Least Concern
T6P5	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	15.6	Least Concern
T6P5	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	22.0	Least Concern
T6P5	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	31.1	Vulnerable
T6P5	<i>Shorea havilandii</i> Brandis	Selangan batu	Dipterocarpaceae	17.5	Least Concern
T6P5	<i>Syzygium arcuatinervium</i> (Merr.) Craven & Biffin	Ubah lusu	Myrtaceae	15.8	Not Evaluated
T6P5	<i>Syzygium</i> sp. 4	Ubah	Myrtaceae	15.7	-
T6P5	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	12.5	Not Evaluated
T6P6	<i>Antidesma tomentosum</i> Blume	Bernai	Phyllanthaceae	9.0	Least Concern
T6P6	<i>Artocarpus borneensis</i> Merr.	Kepala musoh	Moraceae	17.4	Not Evaluated
T6P6	<i>Canarium caudatum</i> King	Seladah	Burseraceae	6.0	Not Evaluated
T6P6	<i>Canthium glabrum</i> Blume	Janang	Rubiaceae	30.8	Not Evaluated
T6P6	<i>Castanopsis evansii</i> Elmer	Berangan	fagaceae	9.1	Not Evaluated
T6P6	<i>Cleistanthus baramicus</i> Jabl.	Pala beriak	Euphorbiaceae	5.5	Not Evaluated
T6P6	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	8.3	Least Concern
T6P6	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	11.2	Least Concern

T6P6	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	6.3	Endangered
T6P6	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	10.6	Least Concern
T6P6	<i>Dryobalanops lanceolata</i> Burck	Kapur paji	Dipterocarpaceae	12.5	Least Concern
T6P6	<i>Drypetes stipulare</i>	Melingkat	Putranjivaceae	7.1	-
T6P6	<i>Drypetes stipulare</i>	Melingkat	Putranjivaceae	9.9	-
T6P6	<i>Drypetes stipulare</i>	Melingkat	Putranjivaceae	17.5	-
T6P6	<i>Drypetes stipulare</i>	Melingkat	Putranjivaceae	23.8	-
T6P6	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	5.9	Not Evaluated
T6P6	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	9.9	Not Evaluated
T6P6	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	10.9	Not Evaluated
T6P6	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	11.4	Not Evaluated
T6P6	<i>Eusideroxylon zwageri</i> Teijsm. & Binn.	Belian	Lauraceae	44.9	Vulnerable
T6P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	5.8	Least Concern
T6P6	<i>Gluta aptera</i> (King) Ding Hou	Rengas	Anacardiaceae	10.9	Not Evaluated
T6P6	<i>Litsea aurea</i> Kosterm.	Medang	Lauraceae	6.7	Not Evaluated
T6P6	<i>Mesua elmeri</i> (Merr.) Kosterm.	Mergasing	Calophyllaceae	15.7	Not Evaluated
T6P6	<i>Myristica lowiana</i> King	Kumpang	Myristicaceae	9.7	Near Threatened
T6P6	<i>Myristica maxima</i> Warb.	Merjemah	Myristicaceae	10.0	Least Concern

T6P6	<i>Myristica maxima</i> Warb.	Merjemah	Myristicaceae	10.0	Least Concern
T6P6	<i>Neoscortechinia kingii</i> (Hook. f., Pax & K.Hoffm.)	Bantas	Euphorbiaceae	20.2	Not Evaluated
T6P6	<i>Nephelium cuspidatum</i> Blume	Rambutan hutan	Sapindaceae	15.8	Least Concern
T6P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	5.7	Least Concern
T6P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	8.2	Least Concern
T6P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	9.3	Least Concern
T6P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	10.8	Least Concern
T6P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	13.0	Least Concern
T6P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	22.2	Least Concern
T6P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	23.6	Least Concern
T6P6	<i>Palaquium decurrens</i> H.J.Lam	Nyatoh	Sapotaceae	7.1	Least Concern
T6P6	<i>Parartocarpus bracteatus</i> (King) Becc.	Minggi	Moraceae	48.3	Not Evaluated
T6P6	<i>Parishia paucijuga</i> Engl.	Upi	Anacardiaceae	24.5	Near Threatened
T6P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	12.1	Not Evaluated
T6P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	13.5	Not Evaluated
T6P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	7.2	Not Evaluated
T6P6	<i>Polyalthia rumphii</i> (Blume ex Hensch.) Merr.	Semukau	Annonaceae	10.1	Not Evaluated
T6P6	<i>Ptychopyxis arborea</i> (Merr.) Airy Shaw	Bantas	Euphorbiaceae	12.3	Not Evaluated

T6P6	<i>Semecarpus glauca</i> Engl.	Rengas	Anacardiaceae	20.0	Not Evaluated
T6P6	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	25.5	Near Threatened
T6P6	<i>Shorea beccariana</i> Burck	Meranti	Dipterocarpaceae	8.0	Least Concern
T6P6	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	12.8	Least Concern
T6P6	<i>Shorea fallax</i> Meijer	Engkabang layar	Dipterocarpaceae	24.3	Least Concern
T6P6	<i>Shorea ferruginea</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	11.1	Vulnerable
T6P6	<i>Shorea ferruginea</i> Dyer ex Brandis	Meranti	Dipterocarpaceae	39.5	Vulnerable
T6P6	<i>Shorea flava</i> Meijer	Selangan batu	Dipterocarpaceae	9.4	Endangered
T6P6	<i>Shorea flava</i> Meijer	Selangan	Dipterocarpaceae	10.2	Endangered
T6P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	7.0	Least Concern
T6P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	7.3	Least Concern
T6P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	14.2	Least Concern
T6P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	40.5	Least Concern
T6P6	<i>Shorea multiflora</i> (Burck) Symington	Lun jantan	Dipterocarpaceae	8.3	Least Concern
T6P6	<i>Shorea pinanga</i> Scheff.	Meranti langgai	Dipterocarpaceae	7.0	Least Concern
T6P6	<i>Sindora beccariana</i> De Wit	Sepetir	Fabaceae	66.3	Data Deficient
T6P6	<i>Syzygium ochneocarpum</i> Merr.	Ubah parit	Myrtaceae	11.0	Not Evaluated
T6P6	<i>Vatica havilandii</i> Brandis	Resak	Dipterocarpaceae	16.1	Critically Endangered

T6P6	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	15.5	Endangered
T6P6	<i>Vatica nitens</i> King	Resak	Dipterocarpaceae	21.4	Endangered
T6P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	14.8	Not Evaluated
T6P6	<i>Xanthophyllum ellipticum</i> Korth. ex Miq.	Nyalin tikus	Polygalaceae	15.1	Not Evaluated
T7P4	<i>Adinandra balukar</i>	Legai	Theaceae	29.2	Not Evaluated
T7P4	<i>Aglaia borneensis</i> Merr.	Segera	Meliaceae	16.7	Near Threatened
T7P4	<i>Anisoptera parvifolia</i> Warb.	Mersawa	Dipterocarpaceae	8.6	Not Evaluated
T7P4	<i>Antidesma stipulare</i> Blume	Berenai	Phyllanthaceae	9.8	Least Concern
T7P4	<i>Aporosa nitida</i> Merr.	Kayu masam	Phyllanthaceae	7.9	Not Evaluated
T7P4	<i>Artocarpus elasticus</i> Reinw. ex Bl.	Terap	Moraceae	25.9	Least Concern
T7P4	<i>Brownlowia peltata</i> Benth.	Baru	Malvaceae	7.4	Not Evaluated
T7P4	<i>Canarium merrillii</i> H.J.Lam	Seladah	Burseraceae	6.6	Not Evaluated
T7P4	<i>Dialium indum</i> L. var. <i>indum</i>	Keranji	Fabaceae	20.8	Not Evaluated
T7P4	<i>Dialium platysepalum</i> Baker	Keranji	Fabaceae	29.8	Not Evaluated
T7P4	<i>Diospyros ashtonii</i>	Malam balik	Ebenaceae	5.0	-
T7P4	<i>Diospyros ashtonii</i>	Malam balik	Ebenaceae	10.1	-
T7P4	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	7.3	Least Concern
T7P4	<i>Ficus geocharis</i> Corner	Entimau badak	Moraceae	6.1	Not Evaluated

T7P4	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	5.4	Least Concern
T7P4	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	6.1	Least Concern
T7P4	<i>Garcinia bancana</i> Miq.	Manggis hutan	Clusiaceae	6.0	Least Concern
T7P4	<i>Garcinia</i> sp. 2	Kandis	Clusiaceae	13.0	-
T7P4	<i>Hopea dryobalanoides</i> Miq.	Luis/Cengal	Dipterocarpaceae	6.6	Least Concern
T7P4	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empili	Fagaceae	28.7	Not Evaluated
T7P4	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	23.3	Least Concern
T7P4	<i>Litsea nidularis</i> Gamble	Medang puteh	Lauraceae	10.1	Not Evaluated
T7P4	<i>Melanochyla elmeri</i> Merr.	Rengas	Anacardiaceae	9.5	Not Evaluated
T7P4	<i>Neoscortechinia sumatrensis</i> S.Moore	Bantas	Euphorbiaceae	6.8	Not Evaluated
T7P4	<i>Neoscortechinia sumatrensis</i> S.Moore	Bantas	Euphorbiaceae	21.3	Not Evaluated
T7P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	5.2	Least Concern
T7P4	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	14.9	Least Concern
T7P4	<i>Polyalthia glauca</i> (Hassk.) F.Muell.	Selaut batu	Annonaceae	22.1	Not Evaluated
T7P4	<i>Pternandra echinata</i> Jack	Puloh	Melastomataceae	9.1	Not Evaluated
T7P4	<i>Pternandra echinata</i> Jack	Puloh	Melastomataceae	10.2	Not Evaluated
T7P4	<i>Sandoricum borneense</i> Miq.	Kelampu	Meliaceae	9.9	Not Evaluated
T7P4	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	15.1	Not Evaluated

T7P4	<i>Saurauia glabra</i> (Ruiz & Pav.) Soejarto	Mata ikan	Actinidiaceae	16.7	Not Evaluated
T7P4	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok	Malvaceae	7.8	Least Concern
T7P4	<i>Shorea collaris</i> Slooten	Lun	Dipterocarpaceae	7.4	Vulnerable
T7P4	<i>Syzygium</i> sp. 5	Ubah	Myrtaceae	8.2	-
T7P4	<i>Vatica micrantha</i> Slooten	Resak hijau	Dipterocarpaceae	15.9	Least Concern
T7P4	<i>Xylopiella elliptica</i> Maingay ex Hook. f. & Thomson	Ako	Annonaceae	5.6	Least Concern
T7P5	<i>Adinandra balukar</i>	Legai	Theaceae	26.6	Not Evaluated
T7P5	<i>Anisoptera parvifolia</i> Warb.	Mersawa	Dipterocarpaceae	5.7	Not Evaluated
T7P5	<i>Antidesma stipulare</i> Blume	Berenai	Phyllanthaceae	5.5	Least Concern
T7P5	<i>Antidesma stipulare</i> Blume	Berenai	Phyllanthaceae	5.6	Least Concern
T7P5	<i>Artocarpus anisophyllus</i> Miq.	Bintawak	Moraceae	10.1	Vulnerable
T7P5	<i>Canarium merrillii</i> H.J.Lam	Seladah	Burseraceae	6.0	Not Evaluated
T7P5	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	5.3	Least Concern
T7P5	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	5.3	Least Concern
T7P5	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	5.8	Least Concern
T7P5	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	7.7	Least Concern
T7P5	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	9.1	Least Concern

T7P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	13.3	Not Evaluated
T7P5	<i>Elateriospermum tapos</i> Blume	Kelampai	Euphorbiaceae	24.2	Not Evaluated
T7P5	<i>Ficus aurata</i> (Miq.) Miq.	Tempan	Moraceae	23.3	Not Evaluated
T7P5	<i>Ficus</i> sp. 1	Kayu ara	Moraceae	19.1	-
T7P5	<i>Gluta aptera</i> (King) Ding Hou	Rengas	Anacardiaceae	12.6	Not Evaluated
T7P5	<i>Gluta aptera</i> (King) Ding Hou	Rengas	Anacardiaceae	31.3	Not Evaluated
T7P5	<i>Horsfieldia grandis</i> Warb.	Kumpang	Myristicaceae	11.1	Least Concern
T7P5	<i>Knema rufa</i> Warb.	Pendarahan/Kumpang	Myristicaceae	5.4	Vulnerable
T7P5	<i>Koompassia malaccensis</i> Benth.	Menggris	Fabaceae	95.8	Conservation Dependent
T7P5	<i>Linociera nervosa</i> Elmer	Sapoh/Mok/Buntut manok	Oleaceae	7.4	Least Concern
T7P5	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	5.8	Least Concern
T7P5	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	6.4	Least Concern
T7P5	<i>Litsea castanea</i> Hook. f.	Medang keladi	Lauraceae	15.6	Least Concern
T7P5	<i>Mallotus wrayi</i> King ex Hook.f.	Ensarai	Euphorbiaceae	5.5	Least Concern
T7P5	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	10.2	Not Evaluated
T7P5	<i>Melanorrhoea oba</i> Merr.	Rengas	Anacardiaceae	34.1	Not Evaluated
T7P5	<i>Ochanostachys amentacea</i> Mast.	Sentikal	Olacaceae	12.3	Data Deficient
T7P5	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	8.5	Least Concern

T7P5	<i>Parishia insignis</i> Hook. f.	Rengas susu/Upi	Anacardiaceae	15.2	Least Concern
T7P5	<i>Pometia acuminata</i> Radlk.	Kasai	Sapindaceae	5.4	Least Concern
T7P5	<i>Pometia acuminata</i> Radlk.	Kasai	Sapindaceae	18.1	Least Concern
T7P5	<i>Pternandra coerulescens</i> Jack	Puloh	Melastomataceae	6.0	Not Evaluated
T7P5	<i>Pternandra coerulescens</i> Jack	Puloh	Melastomataceae	7.1	Not Evaluated
T7P5	<i>Pternandra coerulescens</i> Jack	Puloh	Melastomataceae	7.8	Not Evaluated
T7P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	6.0	Vulnerable
T7P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	7.0	Vulnerable
T7P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	7.2	Vulnerable
T7P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	8.8	Vulnerable
T7P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	9.7	Vulnerable
T7P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	9.9	Vulnerable
T7P5	<i>Shorea acuminatissima</i> Sym.	Lun runcing	Dipterocarpaceae	11.1	Vulnerable
T7P5	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	5.7	Least Concern
T7P5	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	9.8	Least Concern
T7P5	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	14.7	Least Concern
T7P5	<i>Shorea pinanga</i> Scheff.	Meranti langgai bukit	Dipterocarpaceae	15.5	Least Concern
T7P5	<i>Sterculia macrophylla</i> Vent.	Melebu/biris	Sterculiaceae	8.1	Not Evaluated

T7P5	<i>Sterculia macrophylla</i> Vent.	Melebu/biris	Sterculiaceae	10.4	Not Evaluated
T7P5	<i>Syzygium</i> sp. 6	Ubah	Myrtaceae	7.1	-
T7P5	<i>Xanthophyllum amoenum</i> Chodat	Nyalin	Polygalaceae	22.3	Not Evaluated
T7P5	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	8.9	Not Evaluated
T7P5	<i>Xylopia ferruginea</i> (Hook. f. & Thomson) Hook. f. & Thomson	Ako	Annonaceae	25.5	Not Evaluated
T7P6	<i>Alangium nobile</i> Harms ex King	Midong besai bulat	Alangiaceae	10.7	Least Concern
T7P6	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleceae	5.7	Least Concern
T7P6	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleceae	6.8	Least Concern
T7P6	<i>Anisophyllea beccariana</i> Baill.	Mertama mit	Anisophylleceae	9.4	Least Concern
T7P6	<i>Aporosa aurea</i> Hook. f.	kayu masam	Phyllanthaceae	11.8	Not Evaluated
T7P6	<i>Dacryodes costata</i> (A.W. Benn.) H.J.Lam	kimayau	Burseraceae	23.3	Least Concern
T7P6	<i>Dialium indum</i> L. var. <i>indum</i>	keranji	Fabaceae	7.5	Not Evaluated
T7P6	<i>Dialium indum</i> L. var. <i>indum</i>	keranji	Fabaceae	11.4	Not Evaluated
T7P6	<i>Dryobalanops lanceolata</i> Burck	kapur	Dipterocarpaceae	6.7	Least Concern
T7P6	<i>Dryobalanops lanceolata</i> Burck	kapur	Dipterocarpaceae	7.7	Least Concern
T7P6	<i>Dryobalanops lanceolata</i> Burck	kapur	Dipterocarpaceae	11.0	Least Concern
T7P6	<i>Eugenia subrufa</i> King	ubah	Myrtaceae	7.9	Not Evaluated

T7P6	<i>Gluta aptera</i> (King) Ding Hou	Rengas	Anacardiaceae	6.3	Not Evaluated
T7P6	<i>Gluta aptera</i> (King) Ding Hou	Rengas	Anacardiaceae	7.1	Not Evaluated
T7P6	<i>Gluta aptera</i> (King) Ding Hou	Rengas	Anacardiaceae	11.7	Not Evaluated
T7P6	<i>Knema rufa</i> Warb.	Kumpang	Myristicaceae	10.4	Vulnerable
T7P6	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empenit	Fagaceae	9.8	Not Evaluated
T7P6	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empenit	Fagaceae	14.8	Not Evaluated
T7P6	<i>Lithocarpus bennettii</i> (Miq.) Rehder	Empenit	Fagaceae	48.8	Not Evaluated
T7P6	<i>Neoscortechinia kingii</i> (Hook. f., Pax & K.Hoffm.)	Bantas	Euphorbiaceae	12.2	Not Evaluated
T7P6	<i>Nephelium cuspidatum</i> Blume	Rambutan hutan	Sapindaceae	15.4	Least Concern
T7P6	<i>Nephelium cuspidatum</i> Blume	Rambutan hutan	Sapindaceae	20.7	Least Concern
T7P6	<i>Palaquium dasyphyllum</i> Pierre ex Dubard	Nyatoh	Sapotaceae	17.3	Least Concern
T7P6	<i>Palaquium decurrens</i> H.J.Lam	Nyatoh babi bukit	Sapotaceae	10.6	Least Concern
T7P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	5.9	Least Concern
T7P6	<i>Parinari villamillii</i> Merr.	Merbatu	Chrysobalanaceae	12.0	Not Evaluated
T7P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	41.3	Not Evaluated
T7P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	9.5	Not Evaluated
T7P6	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	8.0	Not Evaluated

T7P6	<i>Shorea dasyphylla</i> Foxw.	Meranti	Dipterocarpaceae	20.7	Endangered
T7P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	13.4	Least Concern
T7P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	25.1	Least Concern
T7P6	<i>Sindora beccariana</i> De Wit	Tampar hantu	Fabaceae	7.0	Data Deficient
T7P6	<i>Stemonurus secundiflorus</i> Blume	Semburok	Icacinaceae	5.8	Not Evaluated
T7P6	<i>Sterculia rubiginosa</i> Vent.	Biris	Sterculiaceae	8.2	Not Evaluated
T7P6	<i>Syzygium arcuatinervium</i> (Merr.) Craven & Biffin	Ubah merah	Myrtaceae	5.9	Not Evaluated
T7P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	36.4	Not Evaluated
T8P4	<i>Adinandra balukar</i>	Legai	Theaceae	25.6	Not Evaluated
T8P4	<i>Aporosa elmeri</i> Merr.	Kayu masam	Phyllanthaceae	8.1	Not Evaluated
T8P4	<i>Ardisia</i> sp. 2	Menjemah	Primulaceae	5.8	-
T8P4	<i>Artocarpus integer</i> (Thunb.) Merr.	Bangkong	Moraceae	49.3	Not Evaluated
T8P4	<i>Baccaurea kunstleri</i> King ex Gage	Jentik-jentik merah	Phyllanthaceae	27.8	Not Evaluated
T8P4	<i>Canthium confertum</i> Korth.	Janang	Rubiaceae	5.4	Not Evaluated
T8P4	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	9.6	Vulnerable
T8P4	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	9.9	Least Concern
T8P4	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	7.8	Not Evaluated
T8P4	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	9.7	Not Evaluated

T8P4	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	12.6	Not Evaluated
T8P4	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	18.7	Not Evaluated
T8P4	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	37.6	Not Evaluated
T8P4	<i>Elateriospermum tapos</i> Blume	Perah	Euphorbiaceae	58.2	Not Evaluated
T8P4	<i>Ficus</i> sp. 2	Kayu ara	Moraceae	8.3	-
T8P4	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	6.2	Least Concern
T8P4	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	6.5	Least Concern
T8P4	<i>Gironniera nervosa</i> Planch.	Medang kasap	Ulmaceae	5.8	Not Evaluated
T8P4	<i>Gluta aptera</i> (King) Ding Hou	Rengas kerbau jalang	Anacardiaceae	6.1	Not Evaluated
T8P4	<i>Gluta aptera</i> (King) Ding Hou	Rengas kerbau jalang	Anacardiaceae	19.2	Not Evaluated
T8P4	<i>Gonocaryum minus</i> Sleumer	Medang	Icacinaceae	20.0	Not Evaluated
T8P4	<i>Hopea beccariana</i> Burck	Merawan batu	Dipterocarpaceae	6.2	Vulnerable
T8P4	<i>Hopea micrantha</i> Hook. f.	Merawan	Dipterocarpaceae	9.2	Critically Endangered
T8P4	<i>Horsfieldia castanea</i>	Kumpang	Myristicaceae	10.3	-
T8P4	<i>Horsfieldia castanea</i>	Kumpang	Myristicaceae	13.7	-
T8P4	<i>Horsfieldia grandis</i> Warb.	Darah-darah	Myristicaceae	8.1	Least Concern
T8P4	<i>Koilodepas longifolium</i> Hook.f.	Bantas	Euphorbiaceae	50.1	Not Evaluated
T8P4	<i>Koompassia excelsa</i> (Becc.) Taub.	Tapang	Fabaceae	6.9	Conservation Dependent

T8P4	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	8.3	Least Concern
T8P4	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	10.0	Least Concern
T8P4	<i>Macaranga hullettii</i> King ex Hook. f.	Benuah	Euphorbiaceae	10.2	Not Evaluated
T8P4	<i>Madhuca ridleyi</i> H.J.Lam	Bitis paya	Sapotaceae	7.2	Vulnerable
T8P4	<i>Memecylon edule</i> Roxb.	Nipis kulit	Melastomataceae	7.1	Not Evaluated
T8P4	<i>Mezzetia leptopoda</i> (Hook. f. & Thomson) Oliv.	Kepayang babi	Annonaceae	15.4	Not Evaluated
T8P4	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	8.5	Not Evaluated
T8P4	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	25.1	Not Evaluated
T8P4	<i>Palaquium rostratum</i> (Miq.) Burck	Nyatoh sidang	Sapotaceae	15.9	Least Concern
T8P4	<i>Polyalthia cauliflora</i> Hook. f. & Thomson	Karai larak merah	Annonaceae	6.8	Not Evaluated
T8P4	<i>Potoxylon melagangai</i> (Symington) Kosterm.	Belian melagangai	Lauraceae	25.7	Least Concern
T8P4	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	7.8	Not Evaluated
T8P4	<i>Pternandra echinata</i> Jack	Sial menahun	Melastomataceae	6.4	Not Evaluated
T8P4	<i>Santiria tomentosa</i> Blume	Kedondong kerantai bulu	Burseraceae	16.8	Least Concern
T8P4	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok besar	Malvaceae	19.4	Least Concern
T8P4	<i>Scaphium macropodum</i> (Miq.) Beumee ex K.Heyne	Kembang semangkok besar	Malvaceae	62.1	Least Concern
T8P4	<i>Semecarpus heterophylla</i> Blume	Rengas	Anacardiaceae	8.9	Near Threatened

T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	5.6	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	5.7	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	6.3	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	6.5	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	6.8	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	8.2	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	8.3	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	8.8	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	14.2	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	14.3	Vulnerable
T8P4	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	24.7	Vulnerable
T8P4	<i>Shorea glaucescens</i> Meijer	Selangan batu daun halus	Dipterocarpaceae	53.3	Vulnerable
T8P4	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	10.5	Least Concern
T8P4	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	37.5	Least Concern
T8P4	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Ubah	Myrtaceae	6.0	Not Evaluated
T8P4	<i>Syzygium</i> sp. 7	Ubah	Myrtaceae	7.5	-

T8P4	<i>Vatica micrantha</i> Slooten	Resak hijau	Dipterocarpaceae	45.3	Least Concern
T8P4	<i>Vatica sarawakensis</i> Heim	Resak daun besar	Dipterocarpaceae	7.5	Vulnerable
T8P4	<i>Xanthophyllum amoenum</i> Chodat	Minyak berok	Polygalaceae	31.2	Not Evaluated
T8P5	<i>Artocarpus kemando</i> Miq.	Keledang/pudau	Moraceae	8.9	Not Evaluated
T8P5	<i>Canarium apertum</i> H.J.Lam	Kedondong kemansul	Burseraceae	5.3	Not Evaluated
T8P5	<i>Canarium apertum</i> H.J.Lam	Kedondong kemansul	Burseraceae	5.8	Not Evaluated
T8P5	<i>Carallia borneensis</i> Oliv.	Meransi	Rhizophoraceae	7.9	Not Evaluated
T8P5	<i>Dacryodes expansa</i> (Ridl.) H.J.Lam	Seladah	Burseraceae	7.2	Vulnerable
T8P5	<i>Drypetes kikir</i> Airy Shaw	Melingkat	Putranjivaceae	6.3	Least Concern
T8P5	<i>Ficus geocharis</i> Corner	Buah abung	Moraceae	6.8	Not Evaluated
T8P5	<i>Gironniera nervosa</i> Planch.	Medang kasap	Ulmaceae	17.5	Not Evaluated
T8P5	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	8.2	Not Evaluated
T8P5	<i>Glochidion obscurum</i> (Roxb. ex Willd.) Blume	Menyam	Phyllanthaceae	36.1	Not Evaluated
T8P5	<i>Knema rufa</i> Warb.	Pendarahan/Kumpang	Myristicaceae	6.6	Vulnerable
T8P5	<i>Litsea elliptica</i> Blume	Medang pawas	Lauraceae	7.0	Least Concern
T8P5	<i>Litsea nidularis</i> Gamble	Medang miang	Lauraceae	11.4	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	7.5	Not Evaluated

T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	9.4	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	10.2	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	11.7	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	12.4	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	12.5	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	15.5	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	16.5	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	19.4	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	22.1	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	24.1	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	24.3	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	24.9	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	27.2	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	29.7	Not Evaluated
T8P5	<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	Benuah cincin merah	Euphorbiaceae	30.1	Not Evaluated
T8P5	<i>Madhuca ridleyi</i> H.J.Lam	Bitis paya	Sapotaceae	8.9	Vulnerable
T8P5	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Mempisang	Annonaceae	15.2	Not Evaluated
T8P5	<i>Nauclea parva</i> (Havil.) Merr.	Jengkai	Rubiaceae	8.4	Not Evaluated

T8P5	<i>Nephelium cuspidatum</i> Blume	Rambutan hutan/lotong	Sapindaceae	38.6	Least Concern
T8P5	<i>Palaquium rostratum</i> (Miq.) Burck	Nyatoh sidang	Sapotaceae	13.7	Least Concern
T8P5	<i>Pentace laxiflora</i> Merr.	Melunak	Tiliaceae	6.9	Least Concern
T8P5	<i>Pentace laxiflora</i> Merr.	Melunak	Tiliaceae	9.1	Least Concern
T8P5	<i>Pentace laxiflora</i> Merr.	Melunak	Tiliaceae	12.6	Least Concern
T8P5	<i>Phoebe opaca</i> Zoll.	Medang kuning	Lauraceae	25.7	Not Evaluated
T8P5	<i>Pimelodendron griffithianum</i> (Müll.Arg.) Benth. ex Hook. f.	Perah ikan	Euphorbiaceae	6.2	Not Evaluated
T8P5	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	7.3	Not Evaluated
T8P5	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	15.0	Not Evaluated
T8P5	<i>Pternandra coerulescens</i> Jack	Sial menahun	Melastomataceae	15.3	Not Evaluated
T8P5	<i>Randia grandis</i> (Korth.) Valetton	Sabar bubu	Rubiaceae	5.9	Not Evaluated
T8P5	<i>Santiria rubiginosa</i> Blume	Kedondong kerantai	Burseraceae	8.1	Not Evaluated
T8P5	<i>Shorea acuminatissima</i> Sym.	Seraya kuning runcing	Dipterocarpaceae	10.4	Vulnerable
T8P5	<i>Shorea crassa</i> P.S.Ashton	Selangan batu daun tebal	Dipterocarpaceae	22.2	Least Concern
T8P5	<i>Shorea dolichocarpa</i> Slooten	Damar hitam katup	Dipterocarpaceae	10.5	Not Evaluated
T8P5	<i>Shorea dolichocarpa</i> Slooten	Damar hitam katup	Dipterocarpaceae	23.1	Not Evaluated
T8P5	<i>Shorea dolichocarpa</i> Slooten	Damar hitam katup	Dipterocarpaceae	31.7	Not Evaluated

T8P5	<i>Tarenna costata</i> (Miq.) Merr.	Nyarum	Rubiaceae	17.7	Not Evaluated
T8P6	<i>Ardisia hosei</i> Mez	Patah dahan	Primulaceae	11.4	Not Evaluated
T8P6	<i>Artocarpus dadah</i> Miq.	Dadak	Moraceae	6.8	Not Evaluated
T8P6	<i>Artocarpus dadah</i> Miq.	Terap	Moraceae	11.9	Not Evaluated
T8P6	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	13.7	Not Evaluated
T8P6	<i>Barringtonia sarcostachys</i> Miq.	Putat	Lecythidaceae	39.1	Not Evaluated
T8P6	<i>Beilschmiedia madang</i> Blume	Medang	Lauraceae	6.0	Least Concern
T8P6	<i>Bhesa paniculata</i> Arn.	Serunai	Centroplacaceae	12.0	Least Concern
T8P6	<i>Cephalomappa beccariana</i> Baill.	Arau	Euphorbiaceae	10.5	Not Evaluated
T8P6	<i>Dacryodes rostrata</i> (Blume) H.J.Lam	Seladah	Burseraceae	10.5	Least Concern
T8P6	<i>Diospyros bantamensis</i> Koord. & Valetton ex Bakh	Kayu malam	Ebenaceae	23.5	Not Evaluated
T8P6	<i>Diospyros havilandii</i> Bakh.	Kayu malam	Ebenaceae	5.8	Endangered
T8P6	<i>Diospyros havilandii</i> Bakh.	Kayu malam	Ebenaceae	10.4	Endangered
T8P6	<i>Diospyros havilandii</i> Bakh.	Kayu malam	Ebenaceae	18.4	Endangered
T8P6	<i>Dipterocarpus lowii</i> Hook. f.	Keruing	Dipterocarpaceae	22.3	Near Threatened
T8P6	<i>Dipterocarpus lowii</i> Hook. f.	Keruing	Dipterocarpaceae	27.8	Near Threatened
T8P6	<i>Dipterocarpus sublamellatus</i> Foxw.	Keruing	Dipterocarpaceae	21.9	Endangered
T8P6	<i>Dryobalanops lanceolata</i> Burck	Kapur	Dipterocarpaceae	17.8	Least Concern

T8P6	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	6.1	Least Concern
T8P6	<i>Drypetes crassipes</i> Pax & K.Hoffm.	Melingkat	Putranjivaceae	16.0	Least Concern
T8P6	<i>Eugenia havilandii</i> Merr.	Ubah	Myrtaceae	6.3	Not Evaluated
T8P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	7.6	Least Concern
T8P6	<i>Fordia coriacea</i> Dunn	Biansu	Fabaceae	9.0	Least Concern
T8P6	<i>Grewia laevigata</i> Vahl	Bunsi	Malvaceae	8.0	Least Concern
T8P6	<i>Horsfieldia grandis</i> Warb.	Kumpang	Myristicaceae	11.8	Least Concern
T8P6	<i>Knema latifolia</i> Warb.	Kumpang	Myristicaceae	7.6	Least Concern
T8P6	<i>Knema latifolia</i> Warb.	Kumpang	Myristicaceae	16.3	Least Concern
T8P6	<i>Lithocarpus pulcher</i> (King) Markgr.	Empili	Fagaceae	6.8	Not Evaluated
T8P6	<i>Lithocarpus pulcher</i> (King) Markgr.	Empili	Fagaceae	16.7	Not Evaluated
T8P6	<i>Lithocarpus pulcher</i> (King) Markgr.	Empili	Fagaceae	28.2	Not Evaluated
T8P6	<i>Lithocarpus pulcher</i> (King) Markgr.	Empili	Fagaceae	44.6	Not Evaluated
T8P6	<i>Lithocarpus pulcher</i> (King) Markgr.	Empili	Fagaceae	50.0	Not Evaluated
T8P6	<i>Madhuca kingiana</i> (Brace ex King & Gamble) H.J.Lam	Nyatoh ketiau	Sapotaceae	8.7	Near Threatened
T8P6	<i>Memecylon elmeri</i> Merr.	Mutik	Melastomataceae	5.6	Not Evaluated
T8P6	<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair	Semukau	Annonaceae	6.1	Not Evaluated
T8P6	<i>Myristica intermedia</i> Blume	Kumpang	Myristicaceae	12.8	Not Evaluated

T8P6	<i>Myristica maxima</i> Warb.	Kumpang	Myristicaceae	12.0	Least Concern
T8P6	<i>Nephelium beccarianum</i> Radlk.	Rambutan hutan	Sapindaceae	5.9	Not Evaluated
T8P6	<i>Palaquium cochleariifolium</i> P.Royen	Nyatoh terong	Sapotaceae	6.2	Least Concern
T8P6	<i>Palaquium cochleariifolium</i> P.Royen	Nyatoh terong	Sapotaceae	6.2	Least Concern
T8P6	<i>Palaquium decurrens</i> H.J.Lam	Nyatoh	Sapotaceae	8.3	Least Concern
T8P6	<i>Palaquium decurrens</i> H.J.Lam	Nyatoh	Sapotaceae	12.7	Least Concern
T8P6	<i>Palaquium decurrens</i> H.J.Lam	Nyatoh	Sapotaceae	14.3	Least Concern
T8P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	7.1	Least Concern
T8P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	10.8	Least Concern
T8P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	12.8	Least Concern
T8P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	14.2	Least Concern
T8P6	<i>Palaquium ridleyi</i> King & Gamble	Nyatoh terong	Sapotaceae	15.7	Least Concern
T8P6	<i>Parartocarpus venenosus</i> (Zoll. & Moritzi) Becc.	Minggi	Moraceae	20.8	Least Concern
T8P6	<i>Pentace borneensis</i> Pierre	Baru bukit	Tiliaceae	7.3	Not Evaluated
T8P6	<i>Pouteria malaccensis</i> (C.B.Clarke) Baehni	Nyatoh sundit	Sapotaceae	8.5	Not Evaluated
T8P6	<i>Pternandra multiflora</i> Cogn.	Pulu	Melastomataceae	6.9	Not Evaluated
T8P6	<i>Semecarpus glauca</i> Engl.	Rengas putih	Anacardiaceae	7.3	Not Evaluated
T8P6	<i>Shorea amplexicaulis</i> P.S.Ashton	Meranti	Dipterocarpaceae	29.5	Near Threatened

T8P6	<i>Shorea beccariana</i> Burck	Meranti	Dipterocarpaceae	13.5	Least Concern
T8P6	<i>Shorea beccariana</i> Burck	Meranti	Dipterocarpaceae	32.1	Least Concern
T8P6	<i>Shorea faguetiana</i> Heim	Meranti	Dipterocarpaceae	9.4	Endangered
T8P6	<i>Shorea macrantha</i> Brandis	Engkabang bungkus	Dipterocarpaceae	16.4	Critically Endangered
T8P6	<i>Shorea macroptera</i> Dyer	Meranti melantai	Dipterocarpaceae	9.0	Least Concern
T8P6	<i>Shorea parvifolia</i> Dyer	Meranti sarang punai	Dipterocarpaceae	28.2	Least Concern
T8P6	<i>Syzygium arcuatinervium</i> (Merr.) Craven & Biffin	Ubah	Myrtaceae	5.2	Not Evaluated
T8P6	<i>Syzygium arcuatinervium</i> (Merr.) Craven & Biffin	Ubah	Myrtaceae	8.1	Not Evaluated
T8P6	<i>Syzygium arcuatinervium</i> (Merr.) Craven & Biffin	Ubah	Myrtaceae	10.6	Not Evaluated
T8P6	<i>Vatica havilandii</i> Brandis	Resak	Dipterocarpaceae	7.0	Critically Endangered
T8P6	<i>Vatica micrantha</i> Slooten	Resak hijau	Dipterocarpaceae	13.3	Least Concern
T8P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	13.9	Not Evaluated
T8P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	22.0	Not Evaluated
T8P6	<i>Xanthophyllum affine</i> Korth. ex Miq.	Nyalin	Polygalaceae	44.5	Not Evaluated
T8P6	<i>Xanthophyllum ferrugineum</i> Meijden	Senumpol	Polygalaceae	6.0	Not Evaluated

Appendix C: Summary of T-test analyses

Parameters	Forest Edge	Forest Interior	P value
Structural characteristics			
Number of trees/ha (DBH $\geq$ 5 cm)	988	1184	0.0179*
Number of trees/ha (DBH $\geq$ 10 cm)	609	651	0.4800
Basal area (m ² /ha) (DBH $\geq$ 5 cm)	28.1	29.3	0.6880
Basal area (m ² /ha) (DBH $\geq$ 10 cm)	26.3	26.9	0.8310
Number of species	274	318	0.0143*
Number of genera	137	126	0.7304
Number of families	59	52	0.0627
Top five families with the greatest total basal area of trees with DBH $\geq$ 5 cm			
Dipterocarpaceae	6.1	6.5	0.7595
Euphorbiaceae	3.4	2.8	0.0167*
Lauraceae	2.0	1.9	0.5656
Fabaceae	-	1.8	-
Burseraceae	1.7	-	-
Anacardiaceae	1.5	1.5	-
Top five families with the greatest total basal area of trees with DBH $\geq$ 10 cm			
Dipterocarpaceae	5.9	6.0	0.9489
Euphorbiaceae	3.4	2.8	0.0167*
Burseraceae	1.6	-	-
Lauraceae	1.9	1.8	-
Annonaceae	1.1	-	-
Anacardiaceae	-	1.4	-
Sapotaceae	-	1.1	-
Top five genera with the greatest total basal area of trees with DBH $\geq$ 5			
<i>Shorea</i>	5.5a	4.9a	0.5108
<i>Macaranga</i>	1.6a	1.2a	0.5897
<i>Litsea</i>	1.6a	1.3a	0.5778
<i>Elateriospermum</i>	1.4a	1.3a	0.8406
<i>Santiria</i>	1.3	-	-

*Significant at 0.05 level

Parameters	Forest Edge	Forest Interior	P value
Top five genera with the greatest total basal area of trees with DBH ≥ 10			
<i>Shorea</i>	5.3	4.6	0.4367
<i>Macaranga</i>	1.5	1.1	0.5519
<i>Elateriospermum</i>	1.4	1.2	0.8117
<i>Santiria</i>	1.3	-	-
<i>Pternandra</i>	0.7	-	-
<i>Litsea</i>	-	1.2	-
<i>Adinandra</i>	-	1.1	-
Top five species with the greatest total basal area of trees with DBH ≥ 5 cm			
<i>Elateriospermum tapos</i> Blume	1.4	1.3	0.8406
<i>Shorea ovata</i> Dyer ex Brandis	1.0	-	-
<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	-	0.7	-
<i>Palaquium dasyphyllum</i> Pierre ex Dubard	-	0.8	-
<i>Koompassia malaccensis</i> Benth.	-	0.8	-
<i>Shorea parvifolia</i> Dyer	-	0.6	-
<i>Shorea macroptera</i> Dyer	0.8	0.5	0.5689
<i>Santiria tomentosa</i> Blume	0.7	-	-
<i>Pternandra multiflora</i> Cogn.	0.7	-	-
Top five species with the greatest total basal area of trees with DBH ≥ 10 cm			
<i>Elateriospermum tapos</i> Blume	1.4	1.2	0.8117
<i>Santiria tomentosa</i> Blume	0.6	-	-
<i>Pternandra multiflora</i> Cogn.	0.6	-	-
<i>Adinandra acuminata</i> Korth.	0.4	0.6	0.7117
<i>Macaranga triloba</i> (Thunb.) Müll.Arg.	-	0.8	-
<i>Palaquium dasyphyllum</i> Pierre ex Dubard	-	0.7	-
Aboveground biomass (AGB)			
Mean aboveground biomass (DBH ≥ 5 cm)	260	279	0.0287*
Mean aboveground biomass (DBH ≥ 10 cm)	249	269	0.0446*

*Significant at 0.05 level

Parameters	Forest Edge	Forest Interior	P value
Diversity indices of forest edge and core with DBH ≥ 5 cm			
Shannon-Wiener index (H')	2.25	2.28	0.6239
Pielou index (J')	0.4	0.4	0.2765
Margalef index (Dmg)	39.8	45.1	0.0203*
Simpson index (E')	0.99	0.99	0.9476
Morisita index (Id)	1.03	1.04	0.0938

*Significant at 0.05 level