The Editors would like to thank all reviewers of volume 19(1):

Hubert Kurzwell, Singapore Botanic Gardens, Singapore
Andrew Powling, School of Biological Sciences, University of Portsmouth, United Kingdom
Mark Hughes, Royal Botanic Garden, Edinburgh, Scotland, United Kingdom
Timothy M. A. Utteridge, Kew, Richmond, London, United Kingdom
Wong Khoon Meng, Herbarium Singapore, Singapore Botanic Gardens, Singapore
Leonid Averyanov, Komarov Botanical Institute of the Russian Academy of Science, Russian Federation
Liam A. Trethowan, Royal Botanic Garden Kew, Richmond, London, United Kingdom
TREE SPECIES DIVERSITY AND ETHNOBOTANY OF DEGRADED PEAT SWAMP FOREST IN CENTRAL KALIMANTAN

Received February 18, 2020; accepted, June 15, 2020

TITI KALIMA
Forest Research and Development Center, Ministry of Environment and Forestry, Jln. Gunung Batu No. 5 Bogor, Indonesia. Email: titi_kalima@yahoo.co.id

SRI SUHARTI
Forest Research and Development Center, Ministry of Environment and Forestry, Jln. Gunung Batu No. 5 Bogor, Indonesia. Email: suharti23@gmail.com

SUMARHANI
Forest Research and Development Center, Ministry of Environment and Forestry, Jln. Gunung Batu No. 5 Bogor, Indonesia. Email: sumarhani26@yahoo.co.id

LIAM A. TRETHOWAN
Royal Botanic Garden Kew, Richmond, London, TW9 3AE, United Kingdom. Email: l.trethowan@kew.org

ABSTRACT
KALIMA, T., SUHARTI, S., SUMARHANI & TRETHOWAN, L. A. 2020. Tree species diversity and ethno botany of degraded peat swamp forest in Central Kalimantan. Reinwardtia 19(1): 27–54. — Most peat swamp forest has been degraded. This has resulted in decline of its biodiversity. The objective of this study was to identify the composition, diversity, and plants used by local people in Bagantung swamp forest. The study was conducted on degraded peat swamp forest area in Bagantung, Mentangai Sub-District, Kapuas District, Central Kalimantan Province. The Shannon-Wiener (H’) and the Importance Value (IV) indices were used for analyzing the species diversity and the species importance across a number of forest plots. Useful tree species were identified by interviewing local villagers. There were 2,562 individual plants in 32 plots (each plot 20 m × 20 m). We identified 100 tree species and 16 non-tree species, from 74 genera, and 46 families. Myrtaceae, Sapotaceae, Ebenaceae, Dipterocarpaceae and Clusiaceae were the most dominant families. Large tree (H’=1.46) and small tree diversity was similar (H’=1.75). In both small and large tree size classes Calophyllum nodatum was the most dominant species. There were 16 tree species and two non-tree species used by local people for house and boat construction, furniture, handicrafts, medicine, and insect repellent.

Keywords: Bagantung forest, degraded forest, species composition, useful species.

ABSTRAK
KALIMA, T., SUHARTI, S., SUMARHANI & TRETHOWAN, L. A. 2020. Keragaman jenis pohon dan etnobotani hutan rawa gambut yang terdegradasi di Kalimantan Tengah. Reinwardtia 19(1): 27–54. — Hutan rawa gambut unumnya telah mengalami kerusakan. Penelitian ini bertujuan untuk mengetahui komposisi, keanekaragaman dan jenis tumbuhan yang dimanfaatkan oleh masyarakat setempat dari hutan gambut Bagantung. Penelitian dilakukan di hutan gambut terdegradasi di Blok Bagantung, Kecamatan Mentangai, Kabupaten Kapuas, Provinsi Kalimantan Tengah. Analisis keanekaragaman jenis dan nilai penting jenis dilakukan pada sejumlah plot hutan mengikuti metode Shannon-Wiener (H’) dan Index Nilai Penting (INP). Jenis pohon berguna diidentifikasi dengan cara mewawancarai penduduk desa setempat. Hasil penelitian menunjukkan terdapat 2,562 individu tumbuhan dalam 32 plot (20 m × 20 m). Kami telah mengidentifikasi 100 jenis pohon dan 16 jenis non-pohon, terdiri atas 74 marga dari 46 suku. Suku yang dominan adalah Myrtaceae, Sapotaceae, Ebenaceae, Dipterocarpaceae dan Clusiaceae. Indeks keragaman pohon besar (H’=1.46) hampir sama dengan pohon kecil (H’=1.75). Pohon Calophyllum nodatum baik yang berukuran besar maupun kecil merupakan jenis yang paling dominan. Terdapat 16 jenis pohon dan dua jenis non-pohon yang dimanfaatkan masyarakat lokal untuk konstruksi bangunan dan perahu, mebel, kerajinan tangan, obat-obatan serta obat nyamuk.

Kata kunci: hutan Bagantung, hutan terdegradasi, jenis yang dimanfaatkan, komposisi jenis.
INTRODUCTION

It is estimated that Indonesia has the largest area of peatland forest in the tropics (Page et al., 2011), containing 55–61 Gt of carbon (Siegert & Jaenicke, 2008; Shiodera et al., 2012). Carbon is stored not only in the living biomass, but also in the peat soil (Draper et al., 2014; Wang et al., 2018). In Kalimantan, peatland forest area is estimated to be between 3.1 to 6.3 million hectares (Wahyunto et al., 2004). This large uncertainty is indicative of the lack of knowledge about Indonesia’s peatlands and forests more generally (Brearley et al., 2019).

Peat swamp forests are unique ecosystems due to extreme acidic, anaerobic and nutrient poor conditions (Shiodera et al., 2012). They contain diverse forms of flora, fauna and microbes with many endemic and endangered species.

Furthermore, peat swamp forests provide food, shelter and products for the domestic market (Mac Dicken, 2002; Limin et al., 2007). Most of Central Kalimantan's low-income population depend on its surrounding natural resources. Loss of edible, medicinal, and ritual plants risks the welfare of indigenous peoples and their cultural practices.

In spite of its importance, most of peat swamp forest in Central Kalimantan encounters fire and logging that threatens both biodiversity and the carbon stock. Peatland forest are also converted to oil palm plantation (Koh et al., 2011). Studying the impacts of disturbance and deforestation is needed to document the threats to species used by local people (Cámara-Leret et al., 2019).

To build on our knowledge of Indonesian peat swamp forest we carried out a study on the diversity and uses of tree species in Bagantung forest area in Central Kalimantan, Indonesia. The objective of the present study is to obtain a basic descriptive account of the structure and floristic composition of a peat swamp forest in the area that may be useful for sustainable management, including long-term investigation of forest dynamics and floristic changes. In this paper, analysis of the species inventory data collected in the plots will be limited to the description of the forest in terms of the main structural parameters, species richness, pattern of relative abundance family composition and documentation of species used by local people.

MATERIALS AND METHODS

Field study was conducted between 18th–28th September 2012 in the secondary peat swamp forest of Bagantung and two surrounding forest villages; Kalumpang and Katimpun. These sites are located in the Sub-District of Mantangi, Kapuas District, Central Kalimantan Province (Fig. 1).

The area is a river delta dominated by peat with depth of more than 0.5 m (920,000 ha) and more than 3.0 m (450,000 ha). Field measurement
showed that the average temperature at daytime is 24°C–30°C, the average humidity is 80%–88% and the average soil pH is 4.1–5.5. Transect I, transect II, transect III and transect IV are located at 18–20 m asl; 23 m asl; 25 m asl and 23 m asl respectively. Geographic coordinates for the four transects can be found in Table 1.

Transects differ in their levels of anthropogenic disturbance. For large trees, small trees and saplings, transect I was the most disturbed, followed by transect III, transect IV and transect II. Whereas for the herb layer, most disturbance occurs at transect II, followed by transect III, I and IV.

Myrtaceae (410 individuals), Sapotaceae (321), Ebenaceae (191), Dipterocarpaceae (81), and Clusiaceae (42) were the most common families found for tree, small tree and sapling level in terms of the number of individuals. One hundred and sixteen species, belonging to 74 genera and 46 families were recorded in this study, of which 102 were dicotyledons, one monocotyledons, four ferns and one conifer species (Appendix 1). Twenty one families were represented by single species, while seven families were represented by more than five species. Myrtaceae was the most diverse with 11 species, followed by Lauraceae (8), Dipterocarpaceae (6) and Myristicaceae (6).

Overall there were 56 species of large trees (dbh > 20 cm) distributed into 40 genera and 30 families. Out of which only one species (Diospyros areolata) was found in all the study sites. Nineteen species were represented at all growth rates, nine as large trees only, six as small trees only, seven as sapling only and 18 as herbs and lianas. Two species were collected as sapling and herb layer, 23 as large tree, small tree and sapling, 11 small tree and sapling, eight large tree and sapling, eight small tree, sapling and seedling, while one as large tree, small tree and seedling. The number of large trees species were more in the transect III and IV, followed by transect II and I. Small tree and sapling tendencies are the same, namely in transect III, IV followed by transect II and I. The herb layer was present in the slightly disturbed area (transect II, III, I). Nepenthes spp., Coleus amboinicus and Carex baccans were very abundant and covered open areas, particularly at transect I and II.

Shannon Wiener Diversity Index of large tree, small tree, sapling and herb layer stages across all plots were 1.461, 1.749, 1.626 and 1.345 respectively. Table 3 shows 12 species having high Importance Value for large tree, small tree, sapling and herb layer stages.

A. General floristics

Previously, Bagantung Forest, Central Kalimantan was a primary forest habitat with various protected flora and fauna. At present the forest is slightly disturbed due to illegal logging and local community activities that use timber and forest products from the forest (Fig. 2).

The results of the analysis on four transects (32 plots) found there were various types of plants from the large tree level, small trees, sapling and herbaceous layers. We recorded 2,562 individuals, 116 species and 46 families with an area of 1,683 ha (Table 2).

For large trees, small trees and saplings, transect I shows the most severe disturbance, followed by transect III, transect IV and transect II. Whereas for the herb layer, the most disturbance occurs at transect II, followed by transect III, I, and IV.

B. Uses of Tree Species by Local People

There were 16 tree species and two non-tree species used by local people for house construction, boat, furniture, handicrafts, medicine, and insect repellent (Table 4). These plants have been used by the community for generations.

Tree species were mostly used for timber (14 species) in building construction (Table 4, 5). A comprehensive list of uses is provided in Appendix 1. There are also some tree species that are sold outside the local area and used for boat construction such as (Calophyllum hose, C. nodosum, Notaphoebe umbelliflora, Shorea balangeran, S. rugosa, Gomphia serrata, Parastemon urophyllus, and Pouteria maingayi).
Table 1. The geographical measurements of each transect in Bagantung forest.

| Transect | Coordinates |
|----------|-------------|
| I        | 02° 12 48.7 South Latitude and 114° 36 39.6 East Longitude |
| II       | 02° 12 23.4 South Latitude and 114° 34 20.0 East Longitude |
| III      | 02° 12 38.1 South Latitude and 114° 37 33.9 East Longitude |
| IV       | 02° 12 55.8 South Latitude and 114° 36 30.1 East Longitude |

Table 2. Number of individuals, species, genera, and family in Bagantung peat swamp forest for large trees, small trees, sapling and the herb layer.

| Stage            | Number      | Total |
|------------------|-------------|-------|
|                  | Herb layer  | Sapling | Small tree | Large tree |       |
| Total area (ha)  | 0.003       | 0.08    | 0.32       | 1.28       | 1.683 |
| Individual       | 562         | 867     | 607        | 526        | 2,562 |
| Species          | 54          | 77      | 71         | 56         | 100*  |
|                  |             |         |            |            | 16**  |
| Genera           | 44          | 52      | 45         | 40         | 74    |
| Family           | 35          | 36      | 30         | 30         | 46    |

*tree species  
**non-tree species

Table 3. The highest three dominant species of all sample plots in Bagantung peat swamp forest Mantangai Sub-District, Kapuas District, Central Kalimantan.

| Species                        | Herb layer | Importance Value Index (%) | Sapling | Small tree | Large tree |
|--------------------------------|------------|-----------------------------|---------|------------|------------|
| Calophyllum nodusum Vesque     | -          | 20.76                       | 29.08   | 38.87      |
| Camnosperma auriculatum (Blume) Hk.f. | -          | 11.66                       | -       | -          |
| Carex baccans Nees **         | 21.24**    | -                           | -       | -          |
| Diospyros areolata King & Gamble | -          | 18.20                       | -       | -          |
| Stemonurus scorpiodes Becc.   | -          | 44.95                       | -       | -          |
| Nepenthes melampora Blume **  | 24.96**    | -                           | -       | -          |
| Nepenthes rafflesiana Jack**   | 24.96**    | -                           | -       | -          |
| Palaquium cochlearifolium P.Royen. | -          | 19.03                       | -       | 29.11      |
| Shorea teysmanniana Dyer ex Brandis | -          | -                           | -       | 26.44      |
| Syzygium Garcinaefolia King    | 21.08      | -                           | -       | -          |
| Mangifera similis Blume       | 9.63       | -                           | -       | -          |
| Microcos ovatolanceolata Burr.| 9.63       | -                           | -       | -          |
Fig. 2. Local community collection of timber products (*Shorea balangeran*) (a & b) and (c) a non timber product (*Notaphoebe umbelliflora*) at the research site in Bagantung logged-over peat swamp forest (Photos by T. Kalima).

Fig. 3. Number of individuals for species, genera, and family for each growth rate on peat degraded swamp forest at four transects.
Fig. 4. Number of individuals for each growth rate on degraded peat swamp forest at four transects.

Fig. 5. Example of plot site in Central Kalimantan peat swamp forest (Photo by T. Kalima).
There were some other tree species that we did not sample across our plots that were also used for boat construction (Eusideroxylon zwageri, Callophyllym soulatri, and Dipterocarpus tenpines). Species required for building and boat construction but not gathered from the surrounding forest, are purchased elsewhere.

Few tree species are used for food. There were edible fruit-producing trees (Garcinia parvifolia, G. havilandii, G. celebica, and G. morella), but fruits are consumed rarely by the local community.

The contribution of forest products to total income in Katimpun and Kalumpang was 4.6% and 3.6% respectively. The contribution of forest product could be higher if illegal logging for commercial purpose is included. However, it was difficult to estimate the income derived from illegal logging as this was kept secret.

Some tree species are cultivated (Table 6). Seven to eight year old rubber trees are tapped an average of 3–5 times a week and the latex can be sold easily. Rattan, which formerly was gathered from forest, is planted in combination with the cultivated tree species.

In addition, some plant species in the research plot have economic value and some potential uses. General information including family names, regional names, plant species names with simple usage descriptions of those plant species are presented in Appendix 1. There are 116 plant species that have been recorded consisting of 74 genera and 46 families that are used as food, medicines, building materials, cosmetics and other uses. Some of these species have multiple functions.

DISCUSSION

A. General Floristics

We found a total of 2,562 individual plants recorded in the surveys, consisting of 526 large tree, 607 small tree, 867 saplings and 562 layer herbs (Table 2). The number of individuals recorded at the study site is much higher compared to the results of the Mirmanto survey (2010) in the Sebangau Peat Swamp Forest, Kalimantan who recorded 1,660 individuals and Kalima & Denny (2019) in the Lake Punggualas Sebangau National Park who recorded 2,253 individuals.

Also, the number of species recorded at the study site was much higher compared to the results from other studies. Kalima & Denny (2019) recorded 99 species in the Sebangau peat swamp forest, while Mirmanto, (2010) found there were 103 species in the Sebangau National Park peat swamp forest. Subsequently Nugroho (2012) reported there were 113 species found at peat swamp forest, Sebangau National Park, Central Kalimantan and according to survey results from Randi et al. (2014), there were 107 species of trees making up peat swamp forest, Danau Sentarum National Park, Kapuas Hulu.

Peat swamp forests are a key part of tropical megadiversity (Draper et al., 2018). Posa et al. (2011) lists 30–122 tree species in one ha peat swamp forest plots in Southeast Asia, while degraded (and burnt) peat swamp forest have only 7–10 species (Giesen, 2009). In the disturbed peat swamp forest at Bagantung, Central Kalimantan we found 116 species. We found more large (56) and small tree species (71) compared to other forests in Mantangai Sub-District (Awan, 2009; Daryono, 2009) (Table 6). But we found less species compared to secondary peat swamp forest in Pontianak Regency where 119 tree species and 33 families were recorded within 1.6 ha in eight plots (Susiarti & Mirmanto 2002). These differences are likely due to different levels of forest degradation.

B. Threatened Species

At our sites Nepenthes melampora and N. rafflesiana dominate the herb layer. Both species are protected by Government Regulation (PP) No. 7/1999 and are also included in CITES Appendix II. This species is widely traded internationally, therefore the trade quota is limited. In addition, this species is commonly used as traditional medicinal plant (Bhore et al., 2013).

We identified 11 threatened species, from the IUCN Red List (IUCN, 2016) that have economic value in the study area. These species are Shorea teysmaniana (Endangered/EN A1cd (Ashton, 1998a); S. rugosa (endemic species, Critically Endangered / CR A1cd, C2a) (Ashton, 1998b), S. balangeran (endemic species, Critically Endangered/CR A4cd; C1) (Robiansyah & Purwamontingi, 2020), S. uliginosa (Vulnerable/ VU A1cd) (Ashton, 1998c), Vatica rassak (Vulnerable/VU A4 cd) (Kalima & Wardani, 2020), (Cotylelumbium melanoxyylon (Least Concern) (Barstow, 2019), Dyera polyphylla (Vulnerable / VU A1cd) (WCMC,1998a), Mangifera simals (Vulnerable / VU A1c) (WCMC, 1998b), Combretocarpus rondatus (Vulnerable/VU A1cd) (WCMC, 1998c), and Gonystylus bancanus (Endangered/EN A2c, Appendix II CITES) (Pratama, 2020). Currently, these species occur naturally in the logged-over Bagantung peat swamp forests. Their conservation needs special attention because they are among the most important commercial timber species.

C. Uses of Tree Species by Local People

Most local people need the forest to meet their daily needs. This has been the case for generations (Parhusip et al., 2019; Suharti et al., 2016a; Suharti et al., 2016b). Main livelihoods
Table 4. List of tree and non-tree species used by local people from Katimpun and Kalumpang Villages, Mantangai Sub-District, Kapuas District, Central Kalimantan.

| No | Local Name | Scientific Name | Utilization |
|----|------------|-----------------|-------------|
| 1  | Gemor      | *Notaphoebe umbelliflora* Blume | Insect repellent (bark) |
| 2  | Mahadingan | *Calophyllum nodusum* Vesque | Boat construction |
| 3  | Tumih      | *Combretocarpus rotundatus* Dans | Building construction |
| 4  | Kayu malam | *Diospyros areolata* King & Gamble | Building construction |
| 5  | Pantung, jelutung | *Dyera polyphylla* (Miq.) Steenis | Building constr., bubble gum |
| 6  | Ramin      | *Gonystylus bancanus* (Miq.) Kurz. | Building constr., furniture |
| 7  | Gelam punai | *Melaleuca caajupiti* Maton & Sm. Ex R. Powell | Medicine (leaf) |
| 8  | Keput pajuput | *Magnifera similis* Blume | Building construction |
| 9  | Belangeran, kahoi | *Shorea balangeran* Burck | Building constr., furniture, roof |
| 10 | Meranti    | *S. retusa* Meijer | Building construction |
| 11 | Meranti lanan | *S. rugosa* F. Heim | Building construction |
| 12 | Meranti rawa | *S. teysmanniana* Dyer ex Brandis | Building construction |
| 13 | Meranti lanan | *S. uliginosa* Foxw. | Building construction |
| 14 | Kayu tulang | *Slemonurus scorpioides* F. Heim | Medicine |
| 15 | Gelam tikus | *Syzygium curtisii* (King) Merr. & L. M. Perry | Building construction |
| 16 | Rasak      | *Vatica rassak* Blume | Building construction, floor |

**B. Non Tree Species**

| No  | Local Name     | Scientific Name | Utilization |
|-----|----------------|-----------------|-------------|
| 1   | Rotan cabang   | *Korthalsia rigida* Blume | Handicraft  |
| 2   | Pandan | *Pandanus helicopus* Kurz ex Miq | Handicraft  |

Table 5. Percentage of tree and non-tree species used by local people in the research site.

| Utilization               | Tree Species | Non-Tree Species |
|---------------------------|--------------|-----------------|
|                           | Number | %          | Number | %          |
| 1 Timber                   | 14     | 14.0*      | -      | -          |
| a. Building construction   | 13     | 13.0*      | -      | -          |
| b. Boat construction       | 1      | 1.0*       | -      | -          |
| c. Furniture               | 2      | 2.0*       | -      | -          |
| 2 Medicine/insect repellent | 3   | 3.0*       | -      | -          |
| 3 Gum                      | 1      | 1.0*       | -      | -          |
| 4 Handicraft               | -      | -          | 2      | 12.5 (**)  |
| All Species                | 16     | 14.7 (*)   | 2      | 1.7 (*)    |

* Compared to all tree sp. (100) and **to all non-tree sp. (16)
(*) Compared to all species (116)

Table 6. Tree and non-tree species cultivated by local people.

| No  | Local name     | Scientific name | Utilization                         |
|-----|----------------|-----------------|-------------------------------------|
| 1   | Jelutung       | *Dyera polyphylla* (Miq.) Steenis | Building construction, bubble Gum |
| 2   | Rubber tree    | *Hevea brasiliensis* (Willd. ex A.Juss.) Müll.Arg | Rubber |
| 3   | Mahang         | *Macaranga pruinosa* (Miq.) Müll. Arg. | Light building constr., firewood |
| 4   | Gelam          | *Melaleuca caajupiti* Maton & Sm. ex R.Powell | Poles and fuelwood, medicine (leaf) |
| 5   | Sengon         | *Paraserianthes falcata* (L.) I. C.Nielsen | Peat land rehabilitation |
| 6   | Rotan irit     | *Calamus trachycoleus* Beccari** | Handicraft |

** non-tree species
Table 7. Number of species and families of the studies conducted in several different study sites

| Site                                      | Total Area (ha) | Number of Species / Families | Source                        |
|------------------------------------------|-----------------|------------------------------|-------------------------------|
| 1. Dayak Kendayan, Pontianak Regency     | 1.6             | Small tree: — — Large tree: 29/17 24/14 Small tree & large tree: 119/33 | Susiarti & Mirmanto (2002)    |
| 2. Sei Mantangai, Central Kalimantan     | 3.0             | — — —                        | Awan (2009)                  |
| 3. SPI-21, MRP-Central Kalimantan        | 1.2             | — — —                        | Daryono (2009)               |
| 4. Katunjung, Central-Kalimantan         | 2.0             | — — —                        | Sidiyasa (2012)              |
| 5. Tuanan, Central Kalimantan            | 1.0             | — — —                        | Sidiyasa (2012)              |
| 6. Bagantung, Central Kalimantan         | 1.28            | 71/30 56/30 80/35            | This study in 2012            |

are farming, handicraft makers and fishing. Farming activities in the research site usually focused more on staple food and cash crop cultivation. Farmers and fishermen rely heavily upon plants, both cultivated and wild from the forest. In this study, we found 100 tree species and 16 non tree species that have economic value. Some species have multiple functions, such as mangosteen bark (Tristaniopsis whiteana) for medicine (Setyowati et al., 2005) and wood for construction (Boer & Lemmens, 1998 & Mahmudah et al., 2013). Most of the plants used for food, medicine, construction purposes, and culture by the community come from forests (Akiefnawati & Rahayu, 2016; Cámara-Leret et al., 2019).

A study on traditional medicinal plants used by Dayak Desa community in Sintang, West Kalimantan found that there are 25 species of medicinal plants from nine families used by the community. Medicinal plants are used as the first alternative step to treat diseases. Species from Araceae family dominate the medicinal plants used. They make use of all parts of the plants as medicine. But the most widely used part is the leaves (48%) (Supiandi et al., 2019). In our study, we found there were more medicinal species than those used by the Ngaju Dayak Tribe (26 species) in Tumbang Senamang region, Katingan, Central Kalimantan (Irnawati, 2016) and the Dayak Bakumpin tribe (40 species) from Murung Raya, Central Kalimantan (Ibrahim, 2016). However, according to Denny & Kalima (2016) and Yantoko (2014), there were more medicinal plant species found at those locations.

In Bagantung forest, people collect Nothaphoebe umbelliflora locally known as gemor. Gemor is scattered through all provinces in Kalimantan. There are two gemor species harvested by the community for their bark i.e. Nothaphoebe coriacea and N. umbelliflora (Adinugroho et al., 2010). Both species are native to Kalimantan and have high economic value (Andrian et al., 2016). Gemor bark contains alkaloids, tannins, phenols, flavonoids, triterpenoids and glycoxydic compounds which are natural bioinsecticides (Cahyana & Rachmadi, 2011). Susanti et al. (2013) found that gemor bark detrimentally effects Aedes aegypti larvae. These mosquitos carry the virus that causes Dengue Hemorrhagic Fever (DHF).

Many people also use plants as materials for making crafts and souvenirs. Putra et al. (2011) documented this for Diospyros maingayi and D. siamang. Siska et al. (2015) and Gusniati (2017) mentioned that in Kasromego Village, Bedui Subdistrict, Sanggau used Korthalsia rigida stems collected from natural forests for making handicrafts. Shoots were also cut into pieces to be cooked. The use of rattan plants by local people in Katimpun Village and Kalumpang Village is based on knowledge gathered generations previously (Soekarman & Riswan, 1992). Nowadays, traditional wisdom dictates the need to preserve rattan species. In Paru Village Forest, Stjunjung, West Sumatra, rattan is the main non timber forest product. They process rattan into semi-finished or finished goods such as simple furniture and sell it outside the region.

There are also some tree species that are planted by farmers. An example being, jelutung (Dyera polyphylla) that produces latex, used for chewing gum and insolation of cables. This species occurs naturally in peat swamp forest. Around Kalumpang, several thousand logs are removed each month mainly consisting of jelutung (D. polyphylla) and terentang (Camposperma coriaceum) (Giesen, 2008).

In Central Kalimantan, gelam (Melaleuca cajuputi) occurs naturally in the research site (Bagantung forest). Gelam produces the cajuputi essential oil, which is extracted from leaves. Cajuput oil is used for various ointments, balms (e.g. tiger balm), medicines and aromatherapy. Cajuput oil is not produced in Central Kalimantan province. Most of the gelam related trade is carried out by business person. The main gelam products in Central Kalimantan are used for poles and fuelwood. Poles are often sold in Banjarmasin and Java, while fuelwood is mainly for the local market. Gelam poles are widely used
in Indonesia for construction purposes (scaffolding, piles) and for lining water courses, while thicker trunks are used for sawn timber, high quality fuelwood and charcoal. Another tree species commonly cultivated by local people at the research site is mahang (*Macaranga pruinosa*). Mahang is mainly used for tanning. *Macaranga* leaves are also used for rice and cake packages by several tribes in Kalimantan including Dayak Kenyah Uma 'Tukung, Dayak Benuaq, and Dayak Agabaq (Atmoko et al., 2016; Puri, 2001). For local communities in Kalimantan, due to the large size of the leaves, the use of *macaranga* leaves for food wrappers is common.

*Hevea brasiliensis* is commonly planted and used as the main source of natural latex. Rubber plantations cover a total land area of 396,708 ha and is the primary cash crop for the people in the research site. Rubber is produced year-round, but yield great fluctuates from month to month.

*Paraseriathanthes falcatoria* is planted as an ornamental and shade tree. Often planted in home gardens for fuelwood (charcoal), and the leaves can be used as fodder for chickens and goats. *Paraseriathanthes falcatoria* is a nitrogen-fixing species, and is commonly planted to improve soil fertility in forest restoration projects (Rojo et al., 1994b). The natural drop of leaves and small branches contributes nitrogen, organic matter and minerals to the upper layers of soil (Krishnawati et al., 2011).

Two peat swamp non forest tree species have been identified as being commonly used for weaving hats and mats, *i.e.* 1) *Pandanus helicopus* (Denny & Kalima, 2017). This species is also commonly used for traditional roofing material and construction of walls (Bappenas & Ditjen Sumber Daya Air, 2013); 2) *Calamus trachycoleus* is cultivated in plantations to produce good quality cane. *Calamus trachycoleus* fine cane is split and used for weaving as well (Jasni et al., 2010), but is not found at the study site.

There are a lot of trees with potential economic value that can be taken and used from the forest that can generate additional income for the community, but from the results of the interviews, contribution of forest products to total income in Katimpun and Kalumpang was still relatively low (less than 5%). The low contribution shows that local people use plant products from the forest mostly for subsistence and not for commercial purposes. By taking forest products in moderation, the local community have played an important role in current forest conservation. When marketing the forest products, the people in the research site sell it in the form of raw material or semi-finished material, resulting in limited economic value being added to the products.

**CONCLUSION**

The local people of Bagantung are strongly dependent upon the existence of forest for supporting their livelihood by providing construction materials, ship building materials and firewood. The cultivation of some other tree species should be developed to fulfill local people requirements of forest products, mainly timber. It could be developed on communal or customary forest. Management of the existing communal forest has to be supported. We suggest that state forest could use a utilization, conservation, and preservation zonation system. In utilization zone, community has access to cultivate the land and take forest products both for subsistence and commercial purpose as long as it does not damage forest function. The rules in the conservation zone would be stricter, preventing the excessive use of natural resources and limiting, as much as possible, damage to flora and fauna. Here use should only account for what the people need to ensure the resources aren’t entirely depleted for future generations. In the Preservation zone, the rules would be far more stringent than the previous zones. The Preservation zone, would be areas with little or no signs of human life - to maintain and safeguard the forest. This should help reduce forest degradation.

**ACKNOWLEDGEMENTS**

The authors thank the Director of Forest Research and Development Centre, Dr. Ir. Kirsfianti Linda Ginoga, M.Sc., for valuable inputs during implementation of this research. We thank the Head of Forestry Service of Central Kalimantan Province and villagers from Katimpun and Kalumpang who helped during the field work and also all technicians of Herbarium Botany and Forest Ecology, FRDC Bogor for helping us with species identification. Finally, we thank two anonymous reviewers for their comments that improved the manuscript.

**REFERENCES**

ADINUGROHO, W. C., MUKHLISI & SIDIYASA. K. 2010. Mengenal gemor https://wahyukdephut.wordpress.com/2010/02/23/ mengenal-gemor/. (Accessed 18 April 2020).

AJNINGRUM, P. S. 2017. Keanekaragaman jenis tumbuhan obat-obatan dan pemanfaatannya berdasarkan pengetahuan masyarakat lokal di Kecamatan Malinau Utara, Kabupaten Malinau, Kalimantan Timur. *Stigma Journal of science* 10(1): 45–48.

AKBARINI, D. 2016. Pohon pelawang (*Tristaniopsis merguensis*): Spesies kunci keberlanjutan Taman Keanekaragaman Hayati
Namang–Bangka Tengah. *Al-Kauniyah Jurnal Biologi* 9(1): 66–73. DOI:10.15408/kauniyah.v9i1.3500.

AKENG, G., NOR AINI, A. S., NOR AKHIR-RUDIN, M., HAZANDY, A. H., KUMAR, M. S. & ISMAIL, P. 2018. The prospect of micropropagating *Gonystylus bancanus* (Miq.) Kurz, a tropical peat swamp forest timber species through tissue culture technique. *Journal of Forest science* 64(1): 1–8. DOI: 10.17221/130/2017-JFS.

AKIEFNAWATI, R. & RAHAYU, S. 2016. Pedoman agroforestri dalam pengelolaan hutan desa: Pembelajaran dari Jambi. Bogor (ID): World Agroforestry Centre (ICRAF) Southeast Asia Regional Program. 27 pp.

AL-ABD, N. M., MOHAMED NOR, Z., MANSOR, M., AZHAR, F., HASAN, M. S. & KASSIM, M. 2015. Antioxidant, antibacterial activity, and phytochemical characterization of *Melaleuca calyputii* extract. *BMC Complementary and Alternative Medicine* 15 (385). DOI:10.1186/s12906-015-0914-y.

ALIMAH, D. 2014. Studi karakteristik dan potensi punak (*Tetramerista glabraba*) sebagai jenis tanaman rawa gambut multiguna. *Galam* 7(2): 1–8.

ALONZO, D. S. 1998. *Stemonurus scorpoides* Becc. In: SOSEF, M. S. M., HONG, L. T. & PRAWIROTAMODJO, S. (Eds.). *Plant Resources of South-East Asia No 5(3). Timber trees: Lesser-known timbers*. Backhuys Publisher, Leiden. Pp. 534–535.

AMIRTA, R., YULIANSYAH, A., ANGI, E. M., ANANTO, B. R., SETYONO, B., HAQIQI, M. T., SEPTIANA, H. L., LODONG, M. & OKTAVIANTO, R. N. 2016. Plant diversity and energy potency of community forest in East Kalimantan, Indonesia: Searching for fast growing wood species for energy production. *Nusantara Bioskience* 8(1): 22–31.

ANDRIANI, S., HALWANY, W., LESTARI, F. & PANJAITAN, S. 2016. Tataniga dan peluang pengembangan genmor (*Nothaphoebe coriacea* Kosterm.) di Kalimantan Selatan dan Kalimantan Tengah. In: SOENDJOTO, M. A., DHARMONO, & RIEFANI, M. K. (Eds.). Prosiding Seminar Nasional Lahan Basah Jilid 1. Potensi, peluang, dan tantangan pengelolaan. Lambung Mangkurat University Press. Pp. 389–394.

ANOOP, M. V. & BINDU, A. R. 2015. In-vitro anti-inflammatory activity studies on *Syzygium zeylanicum* (L.) DC. leaves. *International Journal of Pharma Research & Review* 4(8): 18–27.

ARIFIANI, D. & MAHYUNI, R. 2012. Keanekaragaman flora di Taman Nasional Bukit Barisan Selatan, Provinsi Lampung. *Berita Biologi* 11(2): 149–160.

ASHTON, P. S. 1998a. *Shorea rugosa*. The IUCN Red List of Threatened Species 1998. DOI:10.2305/IUCN.UK.1998.RLTS.T334339A978408 (Accessed 22 March 2020).

ASHTON, P. S. 1998b. *Shorea teysmanniana*. The IUCN Red List of Threatened Species 1998:e.T33139A9761632. DOI:10.2305/IUCN.UK.1998.RLTS.T33139A9761632. (Accessed 16 March 2020).

ASHTON, P. S. 1998c. *Shorea uliginosa*. The IUCN Red List of Threatened Species 1998:e.T33140A9762164. DOI: 10.2305/IUCN.UK.RLTS.T33140A9762164.en. (Accessed 22 March 2020).

ASIAN PLANT NET. http://www.asianplantnet/lauraceae/Nothaphoebe_umbelliflora.htm. (Accessed 21 February 2020).

ASH, I. A. R. A., GUNAWAN, I. W. G. & ARIANI, N. M. D. D. 2010. Isolasi dan identifikasi senyawa golongan triterpenoid dari ekstrak n-eksa daun kepup (*Sterculia foetida* L.) serta uji aktivitas antiradikal bebas. *Jurnal Kimia* 4(2): 135–140.

ATMOKO, T., ARIFIN, Z. & PRIYONO, P. 2016. Struktur dan sebaran tegakan Dipterocarpaceae di sumber bener Merapit, Kalimantan Tengah. *Jurnal Penelitian Hutan dan Konservasi Alam* 8(4): 399–413.

AWAN, 2009. Kanekaragaman jenis vegetasi tumbuhan tingkat tiang dan pohon di kawasan eks PLG Sei Mentangai, Kabupaten Kapuas Kalimantan Tengah. Skripsi Fakultas Kehutanan, Universitas Palangkaraya. Unpublished.

BALAI BESAR LITBANG TANAMAN OBAT. 2008. *Tanaman Obat (herbal) dan Khasiat Empirik nya*. Departemen Kesehatan RI – Badan Penelitian dan Pengembangan Kesehatan.

BAPPENAS & DITJEN SUMBER DAYA AIR. 2013. *Quick assessment and nationwide screening (QANS) of peat and lowland resources and action planning for the implementation of a national lowland strategy*. Paludiculture: sustainable alternatives on degraded peat land in Indonesia. Report on QANS Activity 3.3.

BARSTOW, M. 2019. *Cotylelobium melanoxylon*. The IUCN Red List of Threatened Species 2019: e.T33070A68069829. DOI:10.2305/IUCN.UK.20191.RLTS.T33070A68069829.en. (Accessed 22 March 2020).

BHORE, S. J., KOMATHI, V. & KANDASAMY, K. I. 2013. Diversity of endophytic bacteria in medicinally important *Nepenthes* species. *Journal of Natural Science Biology Medicine* 4(2): 431–434.

BOER, E., SOSEF, M. S. M., WONG, W. C. & QUY, V-C. 1995. *Lithocarpus concaropus* (Oudem.) Rehder. In: LEMMENS, R. H. M.
Climate change threatens New Guinea

GALA, S. R., RAMADHANIL, PRAYOTO, ARINI, D. I. D., ISTOMO, KOMAR, T. E., CÁMARA
PÉREZ, J. T. 1987. Taxonomic revision of the genus Microcos (Malvaceae-Grewioidae) in Peninsular Malaysia and Singapore. Blumea 56(3): 273–299. DOI: 10.3767/000651911X619704.

Curtis, J. T. & COTTAM, G. 1962. Plant Ecology Workbook. Burgess Publishing Company, Minneapolis, MN.

DAHLAN, Z., HANUM, L. & ZAHAR, E. 2009. Eksplorasi dan studi keragaman Garcinia L. berdasarkan sumber bukti makromorfologi dan pemanfaatannya bagi perkuilahan morfologi tumbuhan. Forum Kependidikan 28(2): 164–172.

DAHRUDDIN, H., FARIDA, W. R. & ROHMAN, A. S. 2005. Jenis-jenis tumbuhan sumber pakan dan tempat bersarang kuskus (famili Phalangeridae) di Cagar Alam Biak Utara, Papua. Biodiversitas 6(4): 253–258. DOI: 10.13057/biodiv/d060408.

DARYONO, H. 2009. Potensi, permasalahan dan kebijakan yang diperlukan dalam pengelolaan hutan dan lahan rawa gambut secara lestari. Jurnal Analisis Kebijakan Kehutanan 6(2): 71–101.

Denny & Kalima, T. 2016. Keanekaragaman tumbuhan obat pada hutan rawa gambut Punggualas, Taman Nasional Sebangau, Kalimantan Tengah. Buletin Plasma Nutfah 22(2): 137–148.

Dey, S. & Rahaman, M. D. S. 2013. Antimicrobial activity of crude extracts obtained from Chaetocarpus castanocarpus Roxb. Thw against human pathogens. Journal of Biological Sciences 4(1 & 2): 83–90.

Draper, F. C., ROUCOUX, K. H., LAWSON, I. T., MITCHARD, E. T., CORONADO, E. N., LÄHTEENOJA, O., MONTENEGRO, L. T., SANDOVAL, E. V., ZARATE, R. & BAKER, T. R. 2014. The distribution and amount of carbon in the largest peatland complex in Amazonia. Environmental Research Letters 9(12): 124017.

Draper, F. C., Coronado, E. N. H., Rouncoux, K. H., Lawson, I. T., Pitman, N. C. A., Fine, P. V. A., Phillips, O. L., Montenegro, L. A. T., Sandoval, E. V., Mesones, I., García-Villa-Corta, R., Ramirez Arevalo, F. R. & Baker, T. R. 2018. Peatland forests are the least diverse tree communities documented in Amazonia, but contribute to high regional beta-diversity. Ecography 41(8): 1256–1269.

Due, R. 2013. Etnobotani tumbuhan obat suku Dayak Pesagan dan implementasinya dalam pembuatan ‘flash card’ biodiversitas. Program Studi Pendidikan Biologi, Jurusan PMIPA, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Tanjungpura, Pontianak. https://media.neliti.com/media/publications/214687-etnobotani-tumbuhan-obat-suku-dayakpesa.pdf. (Accessed 17 April 2018).

Duma, Y. 2007. Kajian habitat, tingkah laku, dan populasi kalawet (Hylobates agillis albibarbis) di Taman Nasional Sebangau Kalimantan.
Tengah, Pascasarjana Institut Pertanian Bogor. [PhD. Thesis].

GHANI, S. H. A., ALI, N. A. M., JAMIL, M., MOHTAR, M., JOHARI, S. A., ISA, M. M. & PATAH, M. F. Z. 2015. Chemical compositions and antimicrobial activity of twig essential oils from three *Xylopia* (Annonaceae) species. *African Journal of Biotechnology* 15(10): 356–362.

GARVITA. 2015. Pemanfaatan tumbuhan obat secara tradisional untuk memperlancar persalinan oleh suku Dayak Meratus di Kalimantan Selatan. *Warta Kebun Raya* 13(2): 51–56.

GIESEN, W. 2008. *Biodiversity and the EMRP*. Master plan for the conservation and development of the Ex Mega Rice Project Area in Central Kalimantan. Euro consult Mott MacDonald, Delft Hydraulics and associates, for Government of Indonesia & Royal Netherlands Embassy, Jakarta.

GIESEN, W. 2009. *Biodiversity and the EMRP*. Master Plan for the conservation and development of the Ex-Mega Rice Project Area in Central Kalimantan. Euro consult Mott MacDonald and Deltares Delft Hydraulics in association with DHV, Alterra / WUR, Witteveen+Bos, PT MLD and PT INDEC, Indonesia. For Government of Indonesia and the Royal Netherlands Embassy, Jakarta.

GOVAERTS, R. & FRODIN, D. G. 1998. World Checklist and Bibliography of Fagales (Betulaceae, Corylaceae, Fagaceae and Ticideendraceae). Richmond, Royal Botanic Gardens, Kew.

GUSNIATI., ZAINAL, S. & FAHRIZAL. 2017. Studi pemanfaatan rotan oleh masyarakat setempat pada kawasan hutan di Desa Kasromego, Kecamatan Beduan, Kabupaten Sanggau. *Jurnal Hutan Lestari* 5(2): 282–291.

HARBELUBUN, A. E., KESAULIJA, E. M. & RAHAWARIN, Y. Y. 2005. Natural colourant plant and the use of traditionally by tribe of Marorri Men-Gey in Wasur National Park, Merauke Regency. *Journal of Biological Diversity* 6(4): 281–284.

HARON, N. W., LAMING, P. B., FUNDTER, J. M. & LEMMENS, R. H. M. J. 1995. *Syzygium garciniaefolia* (King) Merr. & Perry. In: LEMMENS, R. H. M. J., SOERIANEGARA, I. & WONG, W. C (Eds.). *Plant Resources of South-East Asia No 5(2)*. Timber trees: Minor commercial timbers. Prosea Foundation, Bogor, Indonesia. Pp. 441–474.

HARIYADI. 2013. Inventarisasi tumbuhan kantung semar (*Nepenthes* spp.) di lahan gambut Bukit Rawi, Kalimatan Tengah. *Jurnal Biospecies* 6(1): 24–27.

HASSAN, S. H. A., FRY, J. R. & BAKAR, M. F. A. 2013. Phytochemicals content, antioxidant activity and acetylcholinesterase inhibition properties of indigenous *Garcinia parvifolia* fruit. *Biology Medicine Research International* (Article 138950): 1–7. DOI: 10.1155/2013/138950.

HASTUTI, S., MUIN, A. & THAMRIN, E. 2014. Keanekegaraman jenis vegetasi pada hutan rawa gambut sekunder dan belukar rawa Desa Sungai Pelang Kabupaten Ketapang. *Jurnal Hutan Lestari* 2(3): 435–443.

HEIJDEN, E. V. D & KEBLER, P. J. A. 1990. *Studies on the tribe Saccopetalaeae* (Annonaceae) – III. Revision of the genus *Mezzettia* Beccari. *Blumea* 35: 217–228.

HERIYANTO, N. M., SAMSOEDIN, I. & BISMARK,, M. 2019. Keanekegaraman hayati flora dan fauna di kawasan hutan Bukit Datuk Dumai Provinsi Riau. *Jurnal Sylva Lestari* 7(1): 82–94.

HEYNE, T. 1987. *Tumbuhan berguna Indonesia*. Jilid 1-4. Terjemahan oleh Badan Litbang Kehutanan Jakarta. Yayasan Sarana Wana Jaya, Jakarta.

http://tropical.theferns.info/viewtropical.php?id=Baccarea+bracteata. (Accessed 23 September 2019).

http://www.mpbd.info/plants/coleus-amboinicus.php. *Coleus amboinicus* Lour. Medicinal Plants of Bangladesh. (Accessed 18 April 2018).

https://indiabiodiversity.org/species/show/12281. *Garcinia morella* (Gaertn.) Desr. Indian Biodiversitas Portal. (Accessed 08 October 2019).

http://tropical.theferns.info/viewtropical.php?id=Korthalsia+rígida. (Accessed 23 September 2019).

http://tropical.theferns.info/viewtropical.php?id=Mangifera+similis. *Mangifera similis* Lour. Tropical Plant. (Accessed 19 April 2018).

http://tropical.theferns.info/viewtropical.php?id=Parkia+singularis. *Parkia singularis* Miq. (Accessed 08 October 2019).

http://tropical.theferns.info/viewtropical.php?id=Shorea+uliginosa. (Accessed 23 September 2019).

http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=210000447. Flora of China. (Accessed 08 October 2019).

http://portal.cybertaxonomy.org/flora-malesiana/node/13128. Flora Malesiana. (Accessed 3 February 2020).

https://www.nparks.gov.sg/florafloraweb/flora2/2/9/2964. Flora & Fauna Web. (Accessed 3 February 2020).

HIDAYAT, S. 2014. Kondivisi vegetasi hutan lindung Sesaot, kabupaten Lombok Barat, Nusa Tenggara Barat, sebagai informasi dasar pengelolaan kawasan. *Jurnal Penelitian Kehutanan Wallacea* 3(2): 97–105.
IBRAHIM. 2016. Inventarisasi tumbuhan obat tradisional masyarakat suku dayak Bakumpai di Kecamatan Murung, Kabupaten Murung Raya. IAIN Palangka Raya. [Undergraduate thesis].

IDRAMSA, SOETARTO, E. S., NUGROHO, L. H. & PRATIWI, R. 2016. Antimicrobial activities of endophytic bacteria isolated from Cotylelobium melanoxylon (Hook.f.) Pierre. International Journal of Pharma and Bio Sciences 7(2): 666–672.

IDRIS, S. 1998. Baccaraea bracteata Mull.Arg. In: SOSEF, M. S. M., HONG, L. T. & PRAWIROHATOMDOJO, S. (Eds.). Plant Resources of South-East Asia No 5(3). Timber trees: Lesser-known timbers. Back-huys Publishers, Leiden. Pp. 95–98.

IRNAWATI. 2016. Etnobotani tumbuhan berkhasiat obat oleh suku Dayak Ngaju di wilayah Kelurahan Tumbang Senamang, Kecamatan Katingan Hulu, Kabupaten Katingan, Kalimantan Tengah. IAIN Palangka Raya. [Undergraduate thesis].

ISLAM, S. S. 2003. State of forest genetic resources, conservation and management in Bangladesh. Working paper FGR/68E. Rome, Italy: Forest Resources Development Service, Forest Resources Division, FAO. http://www.fao.org/forestry/6646-04322ad252f01b 26949a2f126e64e9057.pdf. (Accessed 08 December 2019).

ISLAM, A., KAMAL, T., HOSEN, M., SHARMIN, N., HOSSAIN, S. & ISLAM, N. 2019. Lethal efficacy of indoor ornamental plant Aglaonema marantifolium (Schott.) against three economically important stored product pests Callosobruchus chinensis (L.), Sitophilus oryzae (L.) and Tribolium castaneum (HBST). Journal of Pharmacognosy and Phytochemistry 8(1): 2198–2201.

IUCN. 2016. Rules of Procedure for IUCN Red List Assessments 20172020. Version 3.0.

JASNI, DAMAYANTI, R., KALIMA, T., MALIK, J. & ABDURACHMAN. 2010. Atlas Rotan Indonesia Jilid 2. Pusat Penelitian dan Pengembangan Keteknikan Kehtanan dan Pengolahan Hasil Hutan. Bogor.

JENSEN, M. 1995. Trees Commonly Cultivated in Southeast Asia. FAO Regional Office for Asia and the Pasific, Bangkok, Thailand.

KALIMA, T & DENNY. 2019. Komposisi jenis dan struktur hutan rawa gambut Taman Nasional Sebangau, Kalimantan Tengah. Jurnal Penelitian Hutan dan Konservasi Alam 16 (1): 51–72.

KALIMA, T. & WARDANI, W. 2020. Vatica rassak (Korth.) Blume. In: YULITA, K. S., PARTOMIHARDJO, T. & WARDANI, W. (Eds.). 50 Jenis Pohon Kayu Komersil. Prekursor Bulu Daftar Merah Indonesia 1: 173–177. (In press).

KARTASUBRATA, J., MARTAWIJAYA, A., MILLER, R. B., DES SANTOS, G. & SOSEF, M. S. M. 1994a. Cratoxylum arborescens (Vahl) Blume In: SOERIANEGARA, I. & LEMMENS, R. H. M. J. (Eds.). Plant Resources of South-East Asia No 5(1). Timber trees: Major commercial timbers. Prosea Foundation, Bogor, Indonesia. P. 148.

KARTASUBRATA, J., MARTAWIJAYA, A., MILLER, R. B., DES SANTOS, G. & SOSEF, M. S. M. 1994b. Madhuca motleyana (de Vriese) J. F. Macbr. In: SOERIANEGARA, I. & LEMMENS, R. H. M. J. (Eds.). Plant Resources of South-East Asia No 5(1). Timber trees: Major commercial timbers. Prosea Foundation, Bogor, Indonesia. Pp. 291–292.

KARTASUBRATA, J., TONANON, N., LEMMENS, R. H. M. J., KLAASSEN, R. 1994c. Palaquium cochlearifolium P.Royen. In: SOERIANEGARA, I. & LEMMENS, R. H. M. J. (Eds.). Plant Resources of South East Asia No 5(1). Timber Trees: Major Commercial Timbers. Prosea Foundation, Bogor, Indonesia. P. 310.

KARTASUBRATA, J., TONANON, N., LEMMENS, R. H. M. J., KLAASSEN, R. 1994d. Palaquium ridleyii King & Gamble. In: SOERIANEGARA, I. & LEMMENS, R. H. M. J. (Eds.). Plant Resources of South East Asia No 5(1). Timber Trees: Major Commercial Timbers. Prosea Foundation, Bogor, Indonesia. Pp. 316–317.

KEßLER, P. J. A. & SIDHYASA, K. 1994. Trees of the Balikpapan-Samarinda Area, East Kalimantan, Indonesia. A Manual to 280 Selected Species. The Tropenbos Foundation Wageningen, The Netherlands.

KENT, M. & COKER, P. 1992. Vegetation description and analysis: A practical approach. Belhaven Press, London.

KISSINGER, ZUHUD, A. M. E., DARUSMAN, L. K. & SIREGAR, I. Z. 2013. Keanekaragaman jenis tumbuhan obat dari hutan Kerangas. Jurnal Hutan Tropis 1: 17–23.

KOCHUMMEN, K. M., WONG, W. C., FUNDTER, J. M. & SOSEF, M. S. M. 1994a. Shorea balangeran Burck. In: SOERIANEGARA, I. & LEMMENS, R. H. M. J. (Eds.). Plant Resources of South-East Asia No 5(1). Timber Trees: Major Commercial Timbers. Prosea Foundation, Bogor, Indonesia. P. 428.

KOCHUMMEN, K. M., WONG, W. C., FUNDTER, J. M. & SOSEF, M. S. M.
diversity / James V. LaFrankie, Jr.; with illustrations by the author; supplemented with photographs by other regional biologists. - Version details. Trove. ISBN 9789719479406. (Accessed 2 March 2020).

LEMMENS, R. H. M. J. 2003a. Calophyllum nodusum Vesque. In: LEMMENS, R. H. M. J. & BUYAPRAHATSARA, N. (Eds.). Plant Resources of South-East Asia No. 12 (3). Medicinal and Poisonous Plants 3. Backhuys Publishers, Leiden. P. 119.

LEMMENS, R. H. M. J. 2003b. Calophyllum calaba var. bracteatum (Weight) P. F. Stevens. In: LEMMENS, R. H. M. J. & BUYAPRAHATSARA, N. (Eds.). Plant Resources of South-East Asia No. 12(3). Medicinal and Poisonous Plants 3. Backhuys Publishers, Leiden. P. 103.

LEMMENS, R. H. M. J. 2003c. Calophyllum. In: LEMMENS, R. H. M. J & BUYAPRAHATSARA, N. (Eds.). Plant Resources of South-East Asia No. 12(3). Medicinal and Poisonous Plants 3. Backhuys Publishers, Leiden. P. 100.

LIM, S. C. & CHUNG, R. C. K. 2002. A dictionary of Malayen Timbers. In: WONG, T. M. Malayan Forest records No. 30. Forest Research Institute Malaysia, Kuala Lumpur.

LIMIN, S. H., JENTHA & ERMIAI, Y. 2007. History of the development of tropical peatland in Central Kalimantan, Indonesia. Tropics 16 (3): 291 – 301.

MACDICKEN, K. 2002. Cash for tropical peat: land use change and forestry projects for climate change mitigation. In: RIELEY, J. O. & PAGE, S. E. (Eds.). Peatlands for people: natural resource functions and sustainable management. Proceedings of the International Symposium on Tropical Peatlands. Agency for the Assessment and Application of Technology (BPPT) and Indonesian Peat Association (IPA). Pp.1–6.

MAHMUDAH, R. H., WALUYO, E. B., WARDHANA, W. & SUSANTI, T. 2013. Keanekaragaman spesies tumbuhan berguna di Hutan adat imo Mengkadi Sarolangan, Jambi. Prosiding Seminar Nasional MIPA dan Pendidikan MIPA. Pp. 221–229. https://docplayer.info/63096681-Keanekaragaman-spesies-tumbuhan-berguna-di-hutan-adat-imo-mengkadi-sarolangan-jambi.html. (Accessed 16 April 2018).

MARIA R. 2017. Rasau, pandan rawa gambut, makanan alternatif bekantan. http://www.tnsebangau.com/rasau-pandanrawa-gambut-makanan-alternatif-bekantan/. (Accessed 6 February 2020).

MATSUMA, H., ASAO, Y., NAKAMURA, S., HAMAO, M., SUGIMOTO, S., HONGO,
M., PONGPIRIYADACHA, Y. & YOSHIKAWA, M. 2009. Antidiabetogenic constituents from the Thai traditional medicine *Cotyleobium melanoxyylon*. Chem. Pharm. Bull. 57(5): 487–494.

MIRMANTO, E. 2010. Vegetation analyses of Sebangau peat swamp forest, Central Kalimantan. *Biodiversitas* 11(2): 82–88. DOI: 10.13057/biodiv/d10206.

MUHAIMIN, M., HIDAYAT, I. W. & MUSLIM. 2016. Plants exploration and vegetation composition study in hill zone of mount Patah, Bengkulu. In: SETYAWAN, A. D., SUGIYARTO, PITOYO et al. (Eds.). Prosiding Seminar Nasional Masyarakat Biodiversitas Indonesia 2(2). Pp. 132–137.

NATIONAL UNIVERSITY OF SINGAPORE. 2015. The digital nature archive (DNA) of Singapore. Singapore: Lee Kong Chian Natural History Museum.

NOVIANTINA, E., LINDA, R. & WARDOYO, E. R. P. 2018. Studi etnobotani tumbuhan kosmetik alami masyarakat suku Dayak Kanayatn Desa Sebatih Kecamatan Sengah Temila, Kabupaten Landak. *Jurnal Protobiont* 7(1): 61–68.

NURFADILAH, S., HAPSARI, L. & ABYWIIJAYA, I. K. 2017. Species richness, conservation status, and potential uses of plants in Segara Anakan Area of Sempu Island, East Java, Indonesia. *Biodiversitas* 18(4): 1568–1588.

NURSANTI, NOVRIYANTI & WULAN, C. 2018. Ragam jenis tumbuhan obat potensial di areal hutan kota Muhammad Sabki kota Jambi. *Media Konservasi* 23(2): 169–177.

NUGROHO, A. W. 2012. Struktur vegetasi dan komposisi jenis pada hutan rawa gambut di Resort Habaring Hurung, Taman Nasional Sebangau, Kalimantan Tengah. In: SUMEDI, N., SIDIYASA, K., TURJAMAN, M. et al. (Eds.) Prosiding Seminar hasil-hasil penelitian BPTKSDA. Hasil-hasil riset untuk mendukung konservasi yang bermanfaat dan pemanfaatan yang konservatif. Samboja, Balikpapan. Pp. 201–210.

PAGE, S. E., RIELEY, J. O. & BANKS, C. J. 2011. Global and regional importance of the tropical peatland carbon pool. *Global Change Biology* 17(2): 798–818.

PARHUSIP S., SUHARTI S., SUKANDI T., AMANO M. & MATSUMORA, N. 2019. Economic analysis of local peoples involvement in Community-based Forest Management (CBFM) in Ciomas Village, Indonesia. *Journal of Forest Planning* 25: 1–14.

PERMENKES (PERATURAN MENTERI KESEHATAN). 2013.Nomor 88 Tahun 2013 tentang Rencana Induk Pengembangan Bahan Baku Obat Tradisional.

POSA, M. R. C., WIJEDASA, L. S. & CORLETT, R. T. 2011. Biodiversity and conservation of tropical peat swamp forests. *BioScience* 61: 49–57.

PRATAMA, B. A. 2020. *Gonystylus bancanus* (Miq.) Kurz. In: YULITA, K. S., PARTOMI-HARDJO, T. & WARDANI, W. (Eds.). 50 Jenis pohon kayu komersil. *Prekosur Buku Daftar Merah Indonesia* 1: 223–226. (In press).

PURI, R. K. 2001. *Bulungan Ethnobiology Handbook*. A field manual for biological and social science research on the knowledge and use of plants and animals among 18 indigenous groups in Northern East Kalimantan Indonesia. Center for International Forestry Research, Bogor.

PUTRA, C. A. S., MANURI, S., HERIYANTO, & SIBAGARIANG, C. 2011. *Pohon-pohon hutan alam rawa gambut merang*. Merang REDD Pilot Project, German International Cooperation – GIZ. Palembang.

RAHADIANTORO, A. 2014. Keaneakaragaman jenis dan potensi mangga (*Mangifera spp., Anacardiaceae*) koleksi Kebun Raya Purwodadi. In: MANUHARA, Y. S. W. et al. (Eds.). Kumpulan Makalah (Proceeding) Seminar Nasional Biodiversitas V. Pemanfaatan dan konservasi keaneakaragaman hayati untuk kesejahteraan manusia. Pp. 304–307.

RAHMANTO, R. G. H., FAUZI, D.I., & ISKANDAR, A. 2001. Gemor, hasil hutan bukan kayu dari Kalimantan Timur. *Tajuk Tropika* 1(2): 10–11.

RANAWEERA, C. B., KARUNATHILAKA, N., SILVA, A. R. N., KARUNARATHNA, S., PATHIRANA, R. & RATNASOORIYA, W. D. 2016. Antibacterial activity of aqueous root, seed, flower and stem bark extracts of *Acronymia pedunculata* grown in Sri Lanka. *International Journal of Pharmaceutical Research & Allied Sciences* 5(2): 21–25.

RANJI, A., MANURUNG, T. F., & SIAHAAN, S. 2014. Identifikasi jenis-jenis pohon penyusun vegetasi gambut Taman Nasional Danau Sentarum Kabupaten Kapuas Hulu. *Jurnal Hutan Lestari* 2(1): 66–73.

ROBANSYAH, I. & PURWANINGSIH. 2020. *Shorea balangeran* Burck. In: YULITA, K. S., PARTOMI-HARDJO, T. & WARDANI, W. (Eds.). 50 jenis pohon kayu komersil. *Prekosur Buku Daftar Merah Indonesia* 1. (In press).

RODRIGO, S. K., JAYASINGHE, U. L. B. & BANDARA, B. M. R. 2007. Antifungal, antioxidant and cytotoxic activity of
Acronychia pedunculata and Adenanthera pavonina. In: K. D. W. NAANDALAL et al. (Eds.). Proceedings of the Peradeniya University Research Sessions, Sri Lanka, Agricultural, Biological and Medical Sciences 12(1): 94–97.

ROJO, J. P. & ALONZO, D. S. 1994a. Dialium indum L. In: SOERIANEGARA, I. & LEMMENS, R. H. M. J. (Eds.). Plant Resources of South East Asia No 5(1). Timber trees: Major commercial timbers. Prosea Foundation, Bogor, Indonesia. Pp. 161–166.

ROJO, J. P. & ALONZO, D. S. 1994b. Paraserianthes falcatoria. In: SOERIANEGARA, I. & LEMMENS, R. H. M. J. (Eds.). Plant Resources of South East Asia No 5(1). Timber Trees: Major Commercial Timbers. Prosea Foundation, Bogor, Indonesia. Pp. 319–325.

ROY A., BISWAS, S. K., CHOWDHURY, A., SHILL, M. C., RAIHAN, S. Z. & MUHIT, Md. A. 2011. Phytochemical screening, cytotoxicity and antibacterial activities of two Bangladeshi medicinal plants. Pakistan Journal of Biological Sciences 14(19): 905–908.

SAM, H. V., NANTHAVONG, K. & KESSLER, P. J. A. 2004. Trees of Laos and Vietnam: A Field Guide to 100 species economically or ecologically important species. Blumea 49 (2/3): 201–349.

SANTA, E. K., MUKARLINA & LINDA, R. 2015. Kajian etnobotani tembukan yang digunakan sebagai pewarna alami oleh suku Dayak Iban di Desa Mensiau Kabupaten Kapuas Hulun. Jurnal Protobiont 4(1): 58–61.

SARI, A., LINDA, R. & LOVADI, I. 2015. Pemanfaatan tembukan obat pada masyarakat suku Dayak Jangkang Tanjung di Desa Ribau, Kecamatan Kapuas, Kabupaten Sanggau. Jurnal Protobiont 4(2): 1–8.

SEPTIANA, E. & SIMANJUNTAK, P. 2017. Toksisisitas dan aktivitas antioksidan dan secara in vitro ekstrak etanol daun dan kutil batang bintangur (Calophyllum rigida Miq.). Jurnal Tumbuhan Obat Indonesia 10(1): 10–16. DOI: 10.22435/jto.v10i6.7560.10.16.

SETYOWATI, F. M. 2003. Aglaonema marantifolium Blume. In: LEMMENS, R. H. M. J. & BUYAPRAPHATSARA, N. (Eds.). Plant Resources of South-East Asia No 12 (3). Medicinal and Poisonous Plants 3. Backhuys Publishers, Leiden. Pp. 51–52.

SETYOWATI, F. M., RISWAN, S. & SUSIARTI, S. 2005. Etnobotani masyarakat Dayak Ngaju di daerah Timbah, Kalimantan Tengah. Jurnal Teknologi Lingkungan 6(3): 502–510.

SHIODERA, S., ATIKAH, T. D., RAHAJOE, J. S., APANDI, I., SEINO, T., HARAGUCHI, A., AFENTINA. & KOHYAMA, T. 2012. Impact of peat-fire disturbance to forest structure in tropical peat forest in Central Kalimantan, Indonesia. Boreal Forest Research 60: 59–62.

SIEGERT, F. & JAENICKE, J. 2008. Estimation of carbon storage in Indonesian peatlands. Tropical Peatlands 254–256. In: RIELEY, J. O., & BANKS, C. J. S. E. (Eds.). Future of tropical peatlands. Paper presented at the special session on tropical peatlands at the 13th International peat Congress, Tullamore, Ireland. Pp. 15–19.

SISKA, L., ZAINAL, S. & SIRAIT, S. M. 2015. Etnobotani rotan sebagai bahan kerajinan anyaman masyarakat sekitar kawasan Taman Wisata Alam Bukit Kelam Kabupaten Sintang. Jurnal Hutan Lestari 3(4): 496–506.

SCHNEIDER, H. & TAWAN, C. S. 2003. Taenitis blechnoides Sw. In: DE WINTER, W. P. & AMOROSO, V. B. (Eds.). Plant Resources of South-East Asia No 15(2). Cryptogams: Ferns and fern allies. Backhuys Publishers, Leiden. Pp. 188–190.

SOEKARMA & RISWAN S. 1992. Status pengetahuan etnobotani di Indonesia. In: Seminar dan lokakarya Nasional Etnobotani, Cisarua Bogor: Departemen Pendidikan dan Kebudayaan RI. Pp. 1–7.

SOEPADMO, E., SAW, L. G. & CHUNG, R. C. K. 2002. Tree Flora of Sabah and Sarawak. Vol. 4. Kuala Lumpur: Forest Research Institute Malaysia (FRIM), Sabah Forestry Department and Sarawak Forestry Department.

SOERIANEGARA, I., SIM, H. C., HO, Y. F. & SOSEF, M. S. M. 1995a. Litsea firma (Blume) Hook.f. In: LEMMENS, R. H. M. J., SOERIANEGARA, I. & WONG, W. C. (Eds.). Plant Resources of South East Asia No 5(2). Timber trees: Minor commercial timbers. Prosea Foundation, Bogor, Indonesia. P. 315.

SOERIANEGARA, I., SIM, H. C., HO, Y. F. & SOSEF, M. S. M. 1995b. Litsea grandis (Wallich ex Ness) Hook.f. In: LEMMENS, R. H. M. J., SOERIANEGARA, I. & WONG, W. C. (Eds.). Plant Resources of South East Asia No 5(2). Timber trees: Minor commercial timbers. Prosea Foundation, Bogor, Indonesia. Pp. 316–317.

SOH, W. K. & PARNELL, J. 2015. A revision of Syzygium Gaertn. (Myrtaceae) in Indochina (Cambodia, Laos and Vietnam). Adansonia ser. 3, 37(2): 179–275. DOI: 10.5252/a/2015n2a1.

SUHANDONO, S. 1998a. Alseodaphne bancana Miq. In: SOSEF, M. S. M., HONG, L. T. & PRAWIRAATMODJO, S. (Eds.). Plant Resources of South East Asia No 5(3). Timber
Trees: Lesser-known Timbers. Backhuys Publishers, Leiden. Pp. 67–69.

SUHANDONO, S. 1998b. Alseodaphne insignis Gamble. In: SOSEF, M. S. M., HONG, L. T. & PRAWIRATMODJO, S. (Eds.). Plant Resources of South East Asia No 5(3). Timber Trees: Lesser-known Timbers. Backhuys Publishers, Leiden. Pp. 67–69.

SUHARTI, S., DARUSMAN, D., NUGROHO, B. & SUNDAWATI, L. 2016a. Kelembagaan dan perubahan hak akses masyarakat dalam pengelolaan hutan mangrove di Sinjai Timur, Sulawesi Selatan. Jurnal Sosiologi Pedesaan Sosodity 4(2): 167–177.

SUHARTI, S., DARUSMAN, D., NUGROHO, B. & SUNDAWATI, L. 2016b. Strengthening social capital for propelling collective action in mangrove management. Wetlands Ecology and Management 24(3): 13–23.

SUNARNO, B., WONG, W. C., LIM, S. C. & SOSEF, M. S. M. 1995a. Cryptocarya crassimervia Miq. In: LEMMENS, R. H. M. J., SOERIANEGARA, I. & WONG, W. C. (Eds.). Plant Resources of South-East Asia No 5(2). Timber Trees: Minor Commercial Timbers. Prosea Foundation, Bogor, Indonesia. Pp. 152–161.

SUNARNO, B., WONG, W. C., LIM, S. C. & SOSEF, M. S. M. 1995b. Cryptocarya ferrea Blume In: LEMMENS, R. H. M. J., SOERIANEGARA, I. & WONG, W. C. (Eds.). Plant Resources of South-East Asia No 5(2). Timber Trees: Minor Commercial Timbers. Prosea Foundation, Bogor, Indonesia. Pp. 156–161.

SUNARYO, 2002. Manajemen eboni, konservasi eboni (Diospyros celebica Bakh.) Berita Biologi (Edisi Khusus) 6(2): 239–243.

SUPIANDI, M. I., MAHANAL, S., ZUBAIDAH, S., JULONG, H. & EGE, B. 2019. Ethnobotany of traditional medicinal plants used by Dayak Desa Community in Sintang, West Kalimantan, Indonesia. Biodiversitas 20(5): 1264–1270.

SUPRIADI, A. 2019. Machining quality of punak (Tetramerista glabra Miq.) wood based on steam depth. Jurnal Ilmu Pertanian Indonesia 24(1): 12–19.

SUSANTI, P. D., BIYATMOKO, D., SOFARINI, D. & SUSILAWATI. 2013. Penggunaan ekstrak kulit kayu gemor (Notaphoebe coriacea K.) sebagai larvasida hayati terhadap tingkat mortalitas jentik nyamuk Aedes aegypti serta dampaknya pada kualitas air hujan. EnviroScientiae 9: 100–105.

SUSIARTI, S. & MIRMANTO, E. 2003. Potential use of peat swamp forest by Dayak Kendayan society in Pontianak Regency, West Kalimantan. In: OSAKI, M., IWAKUMA, T. et al. (Eds.). Proceedings of the International Symposium on Land Management and Biodiversity in South East Asia. Pp. 479–483.

TAN, P. Y., CORLETT, R., & TAN, H. T. W. 2010. A field guide to the native garden @ HortPark: An urban oasis of the native flora and fauna of Singapore. Centre for Urban Greenery and Ecology.

TATA, H. L., MUCHUGI, A., KARIBA, R. & VAN NOORDWIJK, M. 2018. Genetic diversity of Dyera polyphylla (Miq.) Steenis populations used in tropical peatland restoration in Indonesia. Mires and Peat 21 (Article 01): 114. DOI: 10.19189/MaP.2017.OMB.269.

TURJAMAN, M., SANTOSO, E., TAMAI, Y., OSAKI, M., TAWARAYA, K. 2006. Effect of arbuscular mycorrhizal colonization on early growth and nutrient content of two peat swamp forest tree species seedlings, Calophyllum hosei and Ploiarium alternifolium. Journal of Forestry Research 3(1): 19–30.

UJI, T. 2005. Keanekeparan dan potensi flora di Suaka Margasatwa Buton Utara, Sulawesi Tenggara. Biodiversitas 6(3): 205–211.

VAN WELZEN, P. C. & VERHEIJ, E. W. M. 1991. Nepheleum lappaceum L. In: VERHEIJ, E. W. M. & CORONEL, R. E. (Eds.). Plant Resources of South-East Asia No 2. Edible fruits and nuts. Pudoc, Wageningen, the Netherlands. Pp. 235–236.

WAHYUNTO, RITUNG, S & SUBAGJO, H. 2004. Peta sebaran lahan gambut, luas dan kandungan karbon di Kalimantan 2000–2002. Wetlands International - Indonesia Programme &Wildlife Habitat Canada (WHC).

WANG, S., ZHUANG, Q., LÄHTEENJOJA, O., DRAPER, F. C., CADILLO-QUIROZ, H. 2018. Potential shift from a carbon sink to a source in Amazonian peatlands under a changing climate. Proceedings of the National Academy of Sciences 115(49): 12407–12412.

WINARA, A. & MUKHTAR, A. S. 2016. Pemanfaatan tumbuhan obat oleh suku Kanum di Taman Nasional Wasur, Papua. Jurnal Penelitian Hutan dan Konservasi Alam 13(1): 57–72.

WONG, T. M. 2002. Dacrydium pectinatum Parl. A dictionary of Malaysian Timbers. Malayat Forest Records No. 30. Forest Research Institute Malaysia, Kuala Lumpur.

WORLD CONSERVATION MONITORING CENTRE. 1998a. Dyera polyphylla. The IUCN Red List of Threatened Species. DOI:10.2305/ IUCN.UK.1998.RLTS.T33243A9770852.en. (Accessed 22 March 2020).

WORLD CONSERVATION MONITORING CENTRE. 1998b. Mangifera simislis. The IUCN Red List of Threatened Species. DOI: 10.2305/ IUCN.UK.1998. RLTS.T31397A9626299.en.
(Accessed 22 March 2020).

WORLD CONSERVATION MONITORING CENTRE 1998c. Combretocarpus rotundatus. The IUCN Red List of Threatened Species. DOI:10.2305/IUCN.UK.RLTS.T37687A10066829.en. (Accessed 22 March 2020).

YANTOKO, M. Y. 2014. Ethnobotani tumbuhan obat oleh masyarakat suku Dayak Seruyan, Kabupaten Seruyan, Provinsi Kalimantan Tengah. Universitas Islam Negeri Maulana Malik Ibrahim Malang. [Undergraduate thesis].

ZUHUD, E. A. M., PRASETYO, L. B., DEWI, H. & SUMANTRI, H. 2003. Kajian vegetasi dan pola penyebaran tumbuhan obat Taman Nasional Meru Betiri, Jawa Timur. Laboratorium Konservasi Tumbuhan. Departemen Konservasi dan Sumberdaya Hutan, Fakultas Kehutanan – IPB, Bogor. [Unpublish].

ZULNELY & MARTONO, D. 2003. Pemanfaatan kulit gemor (Alseodaphne sp.) sebagai bahan untuk pembuatan anti nyamuk bakar. Jurnal Ilmu dan Teknologi
## APPENDIX 1. List of families, species and use of found in Bagantung peat swamp forest

| No | Family | Vernacular name | Scientific Name | Plant Part used | Use | Reference |
|----|--------|-----------------|-----------------|-----------------|-----|-----------|
| 1  | Amaryllidaceae | Sawang hutan | *Hymenocallis caribaea* (L.) Herb. | Leaf | Traditional medicinal ingredients anti-rheumatic, antiseptic | Balai Besar Litbang Tumbuhan Obat, 2008 |
|    |        | Tarantang | *Campnosperma auriculatum* (Blume) Hk.f. | Leaf | Traditional medicinal ingredients | Balai Besar Litbang Tumbuhan Obat, 2008 |
| 2  | Anacardiaceae | Keput paju put | *Mangifera simila* Blume | Fruit | Juicy sweetly acid | http://tropical.theferns.info/viewtropical.php?id=Mangifera+similis (Accessed 19 April 2018) |
|    |        | Kambalitan | *Mezzetta umbellata* Beec. | Wood | Building materials, household appliances | Arifiani & Mahyani, 2012 |
|    |        | Haranjang | *Xylopia fusc* Thornson | Leaf | Anti-inflammatory | Denny & Kalima, 2016 |
| 3  | Annonaceae | Jangkang, haranjang | *Xylopia malayana* Hk.f.et Th. | Twig | Anti-inflammatory | Denny & Kalima, 2016 |
|    |        | | | | Antimicrobial activity which may be useful and potential ingredient in the production of health care products. | Ghani et al., 2015 |
| 4  | Apocynaceae | Pantung | *Dyera polyphylla* Steenis | Latex, resin | Industrial production of tubes, pipes and varnish | Tata et al., 2018 |
|    |        | Jambu- jambuan | *Ilex bogorensis* Loes. | Timber | Light construction and furniture | Tan et al., 2010 |
|    |        | | | | Firewood and to construct houses | Tan et al., 2010 |
| 5  | Aquifoliaceae | Kambasira | *Ilex cymosa* Blume | Leaves | For treating sprains | Islam et al., 2019; Roy et al., 2011 |
|    |        | | | | For treatment of fever and ripening boils | Tan et al., 2010 |
|    |        | | | | Firewood and to construct houses | Tan et al., 2010 |
| 6  | Araceae | Lampoyang, ulat bulu, | *Aglaoemna marant- tifolium* Blume | Extracts of plant | Traditional medicinal to induce labour. | Garvita, 2015 |
|    |        | | | | Laxative | Setyowati, 2003 |
| 7  | Areaceae | Owe sigi, owe paka, owe jerakah | *Korthalsia rigida* Blume | Fruits | Sometimes eaten | Personal communication, 2012 |
| 8  | Aspleniaceae | Bahakung, paku kajang | *Asplenium nidus* L. | Leaf | Treating cancer and tumors | Dari, 2013 |
|    |        | Pantimon, tanitimum, bingir | *Pliaria num alternfolium* Mele. | Leaf | Deep wounds, eliminating dandruff | Sari et al., 2015. |
| 9  | Bonnetiaceae | Maha-dingan, bintangor | *Calophyllum hosei* Ridley | Leaf | Soften hair | Noviantina et al., 2018 |
| 10 | Chrysobalanaceae | Bintan | *Licaniia splendens* Prance | Timber | The wood is used railway bearing | Amirta et al., 2016 |
|    |        | | | | The fruit is edible. |  |
| 11 | Clusiaceae | Jinjit | *Calophyllum hosei* Ridley | Timber | Used for furniture, plywood and to build boats | Turjaman et al., 2006 |
|    |        | Maha-dingan, bintangor | *Calophyllum nodosum* Vesque | Timber | Construction of boats, furniture, plywood | Lemmens, 2003a |
|    |        | | | | | Personal observation |
| No. | Family | Vernacular name | Scientific Name | Plant Part used | Use | Reference |
|-----|--------|-----------------|-----------------|-----------------|-----|-----------|
| 1   |        |                 |                 | Timber,         | Construction of boats, furniture, plywood. | Lemmens, 2003c |
| 2   |        |                 |                 | Bark, latex, leaves, flowers and seeds | Bark and latex is used for diarrhea, after childbirth treatment, eye diseases healing and rheumatism. Leaves, flowers and seeds are also used for medicinal need. | Lemmens, 2003b. |
| 3   |        |                 |                 | Bark, leaves | Used in ship building and for general construction. | Septiana & Simanjuntak, 2017 |
| 4   |        |                 |                 | Latex | Used as a fish poison, and in Cambodia for shampoo. | Septiana & Simanjuntak, 2017 |
| 5   |        |                 |                 | Fruits | The fruits are edible. | Personal observation |
| 6   |        |                 |                 | Fruit skin | Fruit skin has benefits as a source of natural antioxidants, anti-inflammatory, antihistamines, and antibacterial | Lailati, 2017 |
| 7   |        |                 |                 | Rind | Lower blood | Due, 2013 |
| 8   |        |                 |                 | Fruit is rather acidic | Food seasoning | Dahlan et al., 2009 |
| 9   |        |                 |                 | Flower | Eliminates body odor | Due, 2013 |
| 10  |        |                 |                 | Timber | Furniture and ukiran | Krisdianto & Dewi, 2012 |
| 11  |        |                 |                 | Leaf | Poultry feed is very good for increasing egg production. The bark is used locally to prevent frothing in sweet palm juice and to arrest fermentation of toddy and local wine. Antibacterial drugs. | Heyne, 1987; Matsuda et al., 2009; Idramsa et al., 2016 |
| 12  |        |                 |                 | Bark | The bark is used for the walling of houses, construction of boats, furniture, plywood. Lighting | Heyne, 1987; Kochummen et al., 1994a; Robiansyah & Purwaningsih, 2020. In press |
| 13  |        |                 |                 | Resin | The bark is used local houses for walls and flood and for temporary shelters. Antioxidants, antibacterial | Kochummen et al., 1994c |
| 14  |        |                 |                 | Timber | Used for interior and exterior necessary such as flooring, panelling and cabinetwork even for building boats or doors. | Kochummen et al., 1994d; http://tropical.theferns.info/viewtropical.php?id=Shorea+uliginosa. (Accessed 23 September}
| No | Family   | Vernacular name | Scientific Name       | Plant Part used | Use                                                                 | Reference                          |
|----|----------|-----------------|-----------------------|-----------------|----------------------------------------------------------------------|------------------------------------|
|  1 |          | Reversbila      | Reversbila            | Timber          | Furniture, kitchen set, carving. Traditionally, dammar resin is used  | Krisdianto & Dewi, 2012            |
|    |          |                 |                       | Resin           | for purposes such as caulking boats and baskets, as an adhesive, a    | Kalima & Wardani, 2020. In press   |
|    |          |                 |                       |                 | medicine, as a fuel for torches and sometimes in food.               |                                    |
|  2 |          | Rasak danum     | Vatica rassak Blume   | Timber          | The timber used for boats, doers, and frames                        | Kochummen et al., 1994c;          |
|    |          |                 |                       |                 | The raw materials for handicrafts, furniture and building materials  | Kalima & Wardani, 2020. In press   |
|    | Ebenaceae|                 |                       |                 | as additional livelihood.                                           |                                    |
|  3 |          | Meranti lanan    | Shorea rugosa F. Heim | Timber          | The raw materials for handicrafts, furniture and building materials  | Kochummen et al., 1994b           |
|    |          |                 |                       |                 | as additional livelihood.                                           |                                    |
|  4 |          | Kayu malam      | Diospyros areolata    | Timber          | The raw materials for handicrafts, furniture and building materials  | Sunaryo, 2002                      |
|    |          |                 | King & Gamble         |                 | as additional livelihood.                                           |                                    |
|  5 |          | Hampuak, kayu   | Diospyros maingayi    | Timber          | The raw materials for handicrafts, furniture and building materials  | Sunaryo, 2002                      |
|    |          | taji             | (Hiern.) Bakh.      |                 | as additional livelihood.                                           |                                    |
|  6 |          | Ehang            | Diospyros siamang    | Timber          | The raw materials for handicrafts, furniture and building materials  | Sunaryo, 2002                      |
|    |          |                 | Bakh.                |                 | as additional livelihood.                                           |                                    |
|  7 |          | Nonang           | Antidesma cuspidatum  | Fruit           | Edible                                                               | Dahruddin et al., 2005             |
|    |          |                 | Mull.Arg.            |                 |                                                                      |                                    |
|  8 |          | Kambasira        | Choeocarpus castanocarpus | Leaf           | Antimicrobial, diabetes, and herpes curing also can be used for    | Dey & Rahman, 2013.                |
|    |          |                 | (Roxb.) Thwaites     |                 | tanning.                                                            | http://tropical.theferns.info/    |
|    |          |                 |                       | Bark, fruit      | The bark is used to relieve eye inflammation                     | viewtropical.php?id=Baccaurea      |
|    |          |                 |                       | Bark            |                                                                      | bracteata.(Accessed 23 September 2019) |
|  9 |          |                   |                       |                 | The shoots used in long-house contraction                          | Idris, 1998                        |
| 10 |          | Tampuak          | Baccaurea bracteata   | Fruit           | The fruits are edible used in construction, e.g. for joinery, beams,| Rojo & Alonzo, 1994a              |
|    | Euphorbiacae|                 | Mull.Arg.            |                 | door and window frames, sills, posts, joists, rafters.             |                                    |
| 11 |          | Keranji          | Dialium indum        | Timber          | Bark used as betel nut alternation, and diarrhoea and herpes curing| Rojo & Alonzo, 1994a              |
|    |          |                 | L.                   |                 | also can be used for tanning.                                       |                                    |
| 12 |          |                   |                       | Bark            |                                                                      | Rojo & Alonzo, 1994a              |
|    |          | Tapanggang       | Parkia singularis    | Fruit, seed     | The fruits are edible                                               | Rojo & Alonzo, 1994a              |
|    |          |                 | Miq.                 |                 |                                                                      |                                    |
| 13 |          |                   |                       | Seed            | Fruits and seeds are edible                                         | Boer et al., 1995                 |
|    |          |                   |                       |                 | The seed is usually cooked before eating, though it can also be    |                                    |
|    |          |                   |                       |                 | eaten raw.                                                          |                                    |
| 14 |          |                   |                       | Bark            | The bark of most species is rich in tannins and can be used as a    |                                    |
|    |          |                   |                       |                 | dye and preservative for ropes etc.                                  |                                    |
| 15 |          | Tampaning        | Lithocarpus coccarpus | Timber          | The wood is used locally for purposes such as house building, fence | Boer et al., 1995                 |
|    | Fagaceae |                 | Rehder               |                 | posts, mining props, shingles, boat building, and for making tool   |                                    |
|    |          |                   |                       |                 | handles, rice pounder, poles for carts                             |                                    |
| No | Family       | Vernacular name               | Scientific Name                          | Plant Part used | Use                                                                 | Reference                                      |
|----|--------------|--------------------------------|------------------------------------------|-----------------|----------------------------------------------------------------------|-----------------------------------------------|
| 19 | Hypericaceae | Nipa, garonggang               | Cratoxyllum arborescens (Vahl) Blume     | Resin           | Wood is used for firewood and charcoal manufacture. Resin is used as remedy for scabies and leg wounds. A decoction of the bark, leaves, roots has been used against tooth ache, stomachache, and fever. Timber soft, not durable, locally used for planks and household utensils. | Kartasubrata et al., 1994a                    |
| 20 | Icacinaceae  | Keput pajuput, kayu tulang     | Stemonurus scorpiodes Beec.              | Timber          | Wood is suitable for preparation of pulp and paper. It is a good firewood and is suitable for making charcoal. | Govaerts & Frodin (1998)                      |
| 21 | Laminaceae   | Kujang/keladi                  | Coleus ambinicus (Lour.) Spreng          | Leaf            | Wood is used for firewood and charcoal manufacture. Resin is used as remedy for scabies and leg wounds. A decoction of the bark, leaves, roots has been used against tooth ache, stomachache, and fever. Timber soft, not durable, locally used for planks and household utensils. | Kebler & Sidiyasa, 1994                      |
| 22 | Lauraceae    | Mahang, medang pahawas         | Alseodaphne bancana Miq.                 | Timber          | Wood is used for heavy outdoor construction, ship, boat building and salt-water piling. The wood is used for house building, interior finish, furniture and cabinet making carving and agricultural implements. | Suhandono, 1998a;                              |
|    |              | Tagola                          | Alseodaphne insignis Gamble              | Timber          | Wood is used for house building, interior finish, furniture and cabinet making carving and agricultural implements. | Suhandono, 1998b;                              |
|    |              | Gemor                           | Nothaphoebe umbelliflora (Blume) Blume   | Timber          | Wood is used for house building, interior finish, furniture and cabinet making carving and agricultural implements. | Suhandono, 1998b;                              |
|    |              | Kayu katanjung                  | Cryptocarya crassinervia Miq.            | Timber          | Wood is suitable for preparation of pulp and paper. It is a good firewood and is suitable for making charcoal. | Sunarno et al., 1995a                        |
|    |              | Tagula                          | Cryptocarya ferrea Blume                 | Timber          | Wood is used for house building, interior finish, furniture and cabinet making carving and agricultural implements. | Sunarno et al., 1995b                        |
|    |              | Asam-asam, kasar bukey, tagua  | Cryptocarya zollingeriana Miq.           | Timber          | Wood is used for house building, interior finish, furniture and cabinet making carving and agricultural implements. | Personal observation                         |
|    |              | Madang                          | Litsea firma (Blume) Hook.f.             | Timber          | Wood is used for firewood and charcoal manufacture. Resin is used as remedy for scabies and leg wounds. A decoction of the bark, leaves, roots has been used against tooth ache, stomachache, and fever. Timber soft, not durable, locally used for planks and household utensils. | Sunarno et al., 1995a                        |
|    |              | Kamahas                         | Litsea grandis (Wallich ex Ness) Hook.f. | Timber          | Wood is used for firewood and charcoal manufacture. Resin is used as remedy for scabies and leg wounds. A decoction of the bark, leaves, roots has been used against tooth ache, stomachache, and fever. Timber soft, not durable, locally used for planks and household utensils. | Sunarno et al., 1995b                        |
| No | Family       | Vernacular name | Scientific Name | Plant Part used | Use                                                                 | Reference                                                   |
|----|--------------|-----------------|-----------------|-----------------|---------------------------------------------------------------------|-------------------------------------------------------------|
| 23 | Loganiaceae  | Karandau        | Fagraea racemosa Jack | Flower          | Species have been used in traditional medicine, perfumery, and aromatherapy. The flowers are featured in the traditional artwork of | Motley, 2004                                                 |
|    |              | Pahawas, temba bula | Memecylon costatum Miq. | Fruit           | Fruits are edible and some are used as spices.                       | Lafrankie & James, 2010.                                     |
| 24 | Melastomataceae | Pelawan        | Memecylon multiflorum Bak. f | Leave           | Extracted from leaves are traditionally used for                     |                                                             |
|    |              | Kaja laki       | Aglaia rubiginosa (Hiern) Pannell | Bark, root     | Antimicrobial                                                        | Kissinger et al., 2013                                      |
|    |              | Rambangun, papung | Sondoricum beccarianum Baill. | Fruit, leaves, bark, root and wood | Fruits are fresh or made into jams, jelly. Leaves, bark, root have numerous medical uses | Jensen, 1995                                                 |
|    |              |                 |                  |                 | (Ambient)                                                             |                                                             |
| 25 | Meliaceae    | Payayit         | Sondoricum borneense Miq. | Fruit and wood | Edible fruit and wood is used as sase material                       | http://portal.cybertaxonomy.org/flora-malesiana/node/13128 (Accessed 3 February 2020) |
|    |              | Beringin        | Ficus sundaica Blume | Leaves, twigs   | Antimicrobial                                                        | Winara & Mukhtar, 2016                                      |
|    |              | Lunuk           | Ficus parietalis Blume | Leaves          | The wound                                                            | Winara & Mukhtar, 2016                                      |
|    |              |                 |                  | Fruits          | The ripe fruit is edible (like breadfruit), but the unripe seeds are poisonous |                                                             |
|    |              |                 |                  |                 | (Ambient)                                                             |                                                             |
| 26 | Moraceae     | Pakan           | Parartocarpus venenosa (Zoll. & Moritzi) Becc. | Seed | The ripe, chestnut-like seeds are eaten roasted or stewed Locally, the wood is used for light construction, for making boxes, crates, wooden pallets and veneer. | Soepadmo et al., 2002                                      |
|    |              | Kumpang         | Gymnacranthera farquhariana (Hook.f & Thoms.) Warb. | Fruit seed | Gonorrhoea, lungs                                                    | Winara & Mukhtar, 2016                                      |
|    |              | Kandarahan      | Horsfieldia crassifolia (Hook.f. & Thomson) Warb. | Wood            | Heavy construction                                                   | Mahmudah et al., 2013                                      |
|    |              | Kayu daha       | Horsfieldia irya (Gaertn.) Warb. | Wood            | Antibacterial. The fruits are often eaten by monkeys and there are occasional reports of them being eaten by humans | Sam et al., 2004                                            |
|    |              |                 |                  | Fruits, leaves, twigs | Seed Oleoresin of the seed is used ase varnish material               |                                                             |
|    |              |                 |                  |                 | Bark can be used for sore throats medication, while latex is used in the ulcers curing. |                                                             |
| 27 | Myristicaceae | Kayu daha       | Horsfieldia irya (Gaertn.) Warb. | Leaf            | Traditional medicinal for boils and sores                            | https://www.nparks.gov.sg/floraunaweb/flora/2/9/2964 (Accessed 3 February 2020) |
|    |              |                 |                  | Root             | Along with lime juice, root can heal toxic snake bites                |                                                             |
|    |              |                 |                  | Timber           | Wood is useful for bottle lid making.                               |                                                             |
| No | Family | Vernacular name | Scientific Name | Plant Part used | Use | Reference |
|----|--------|----------------|-----------------|-----------------|-----|-----------|
| 28 | Myrsinaceae | Kumpang | *Myristica lowiana* King | Latex | The red sap can be used as a dye that gives a permanent brown stain | Soepadmo et al., 2002 |
| | | Nonang | *Knema galeata* J. Sinclair | Timber | The wood is used for construction. | Personal observation |
| | | Kumpang | *Mezzettia umbellata* Becc. | Timber | The durable wood is used in S. Sumatra for interior timber work. | Heijden & Keßle, 1990 |
| | | Rasak, papung | *Ardisia villosa* Roxb. | Root | Traditional medicinal ingredients | Muhaizinn et al., 2016 |
| | | Gelmay punai | *Melaleuca caupnii* Maton & Sm. ex R.Powell. | Leaf, fruit | Diarrhea, wounds, painkillers | Kissinger et al., 2013; Al-Abd et al., 2015 |
| | | Galam tikus, belawan tikus | *Syzygium zeylanicum* (L.) DC. | Leaf | Traditionally leaf extracts have been used to treat various ailments such as joint pain, head ache, arthritis and fever. | Anoop & Bindu, 2015 |
| | | Belawan merah | *Syzygium claviflorum* (Roxb.) Wall. ex A.M. & J.M.Cowan | Fruit | Edible | Soh & Parnell, 2015 |
| | | Gelmay tikus | *Syzygium curtisii* (King) Merr. & L.M.Perry. | Root | Nutritious to cure diabetes | Nursanti et al., 2018 |
| | | Tatumbu | *Syzygium garsciniaefolia* (King) Merr.& Perry | Timber | The wood is used for construction | Haron et al., 1995 |
| | | | | Fruit | The ripe fruits are preserved as pickle | Haron et al., 1995 |
| | | | | | The wood is used for a number of products including posts, poles, round wood, and other construction materials | Islam, 2003; National University of Singapore, 2015 |
| 29 | Myrtaceae | Katumbu putih | *Syzygium grande* (Wight) Walp. | Fruits, seed, bark | The fruits often eaten by animals such as monkeys, bats, and squirrels which aid in the dispersal of the seeds. | National University of Singapore, 2015 |
| | | Tapohot | *Syzygium laxiflorum* (Blume) DC | Bark | Bark to paint | Zuhud et al., 2003 |
| | | Belawan | *Syzygium clavimyrtus* K.et V. | Leaf | Leaf and fruit as a source of primate feed | Personal observation |
| | | Papahot, tatumbu habang, nyak beruk | *Syzygium sp.* | Leaf and skin roots, stalks, leaves, sap and fruit | Stomach medicine, cough, Natural colourant plant (black) | Source of food consumed by the community | Anoop & Bindu, 2015 |
| | | | | | | Harbelubun et al., 2005 |
| No | Family           | Vernacular name | Scientific Name                  | Plant Part used | Use                                           | Reference                          |
|----|-----------------|-----------------|----------------------------------|-----------------|-----------------------------------------------|------------------------------------|
| 29 | Belawan         |                 | *Tristaniopsis stellata* O. Ktze  | Timber          | The wood is used building material            | Akbarini, 2016                     |
|    |                 |                 |                                  | Bark            | The bark for insectisida                      |                                    |
| 30 | Manggis         |                 | *Tristaniopsis whiteana* (Griffith) Peter G. Wilson & T. Waterhouse | Wood            | Heavy construction such as for house or bridge poles | Boer & Lemmens, 1998; Mahmudah et al., 2013 |
| 30 | Kantong semar   |                 | *Nepenthes ampullaris* Jack**    | Leaf            | Antibacterial                                 | Bhore et al., 2013                |
| 30 | Kantong semar   |                 | *Nepenthes melamora* Blume**     | Young flower    | Kidney stones                                 |                                    |
| 30 | Kantong semar   |                 | *Nepenthes rafflesiana* Jack**   | Young flower    | Kidney stones                                 | Winara & Mukhtar, 2016             |
|    |                 |                 |                                  | Timber          | The wood is used in house building (rafters, poles, planks) and has been used for boats, pumps and blocks. |                                    |
| 31 | Ochnaceae       | Belawan         | *Gomphia serrata* (Gaertn.) Kanis | Leaves          | The leaves are chewed by native people in Peninsular Malaysia. | Kochummen, 1998                   |
|    |                 |                 |                                  | Root            | The bitter roots and leaves is applied medically as a stomachic and anti-emetic tonic in India. The young branches are used against toothache in Cambodia. |                                    |
|    |                 |                 |                                  | Branches        | The plant is used as an ornamental plant | Personal observation |
| 32 | Orchidaceae     | Angrek tanah    | *Spathoglottis* sp.**            | Plant           | Efficacious bulbs as ear inflammation medicine. | Personal observation |
|    |                 | Rasau kelep     | *Freycineta angustifolia* Blume** | Bulbs           | Essential oil                                 | Zuhud et al., 2003                |
|    |                 | Pandan          | *Pandanus helicopus* Karz ex Miq.** | Leaf            | Antioxidants, rheumatism. Alternative food favorite proboscis monkey and orangutan | Due, 2013                         |
|    |                 | Idas            | *Pandanus* sp.**                 | Root            | Treat high blood pressure                     | Maria, 2017                       |
|    |                 |                 |                                  | Leaf            | Food coloring                                 | Santa et al., 2015                |
|    |                 |                 |                                  | Timber          | Wood used for building and ships material A softwood, it should be suitable for decorative works and can be used for paneling, partitioning, veneers, plywood, joinery and furniture making | http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=210000447 (Accessed 8 October 2019); Wong, 2002 |
| 34 | Podocarpaceae   | Alau/cemara     | *Dacrydium pectinatum* Parl.     | Timber          |                                               |                                    |
| 35 | Polygalaceae    | Kemuning        | *Xanthophyllum of ellipticum* Korth. | Bark            | Stomach medicine                             | Ajiningrum, 2017                  |
|    |                 | Kandarin        | *Xanthophyllum* sp.              | Seed            | Cancer sores                                 | Ajiningrum, 2017                  |
| 36 | Polypodaceae    | Kakambat        | *Polypodium congenerum* (Blume) C. Presl.** | Plants          | The plants is used for decorative plants     | Personal observation |
|    | Kakambat        | Paku-pakuan kalakai | *Stenochaena palustris* (Burm F) Bedd** | Leaves, stems   | Blood booster, fever                          | Kissinger et al., 2013            |
|    |                 | Paku-pakuan / bejakah | *Taeunitis blechnoides* Sw.** | Leaves          | A decoction of the leaves of *T. blechnoides* is taken as a postnatal protective medicine in Malaysia. | Schneider & Tawan, 2003           |
| 37 | Rhizophoraceae  | Tumih           | *Combretocarpus rotundatus* Duns  | Leaves          | Antioxidants, antibacterials                  | Kissinger et al., 2013            |
| No | Family     | Vernacular name | Scientific Name                       | Plant Part used | Use                                                                 | Reference |
|----|------------|-----------------|---------------------------------------|-----------------|----------------------------------------------------------------------|-----------|
| 38 | Rosaceae   | Galam tikus     | Parastemon urophyllus (A.DC.)A.DC.    | Timber          | The wood is used for house building and for boat building            | Uji, 2005 |
| 39 | Rubiaceae  | Sari rapat      | Gardenia sp.**                        | Bark, leaf      | Malaria, mag, childbirth scabies, sores, ulcers, smallpox, boils,   | Kissinger et al., 2013 |
|     |            |                 |                                       | Burned leaf     | stomach ailment                                                      | Ranaweera et al., 2016 |
|     |            |                 |                                       | Burned leaf     | For cosmetic fragrances. Contains aromatic, essential oils          | Ranaweera et al., 2016 |
|     |            |                 |                                       | Root, Bark +    | Extracts of its leaves, bark, stems and fruits are widely used in    | http://www.mpbd.info/plants/A-cat.php#medicat (Accessed 18 April 2018) belum ada di references); Rodrigo, et al. 2007; |
|     |            |                 |                                       | leaf            | herbal medicinal applications against sores, scabies and intestinal  |           |
|     |            |                 |                                       | fruit leaf,     | infections, due to their anti fungul and antimicrobial properties.  |           |
|     |            |                 |                                       | bark, leaf,     | The tender leaves are used in salads and as a condiment.            |           |
|     |            |                 |                                       | stems           | The wood is used for carving, poles, house construction and making   |           |
|     |            |                 |                                       |                 | the charcoal preferred by goldsmiths.                               |           |
| 40 | Rutaceae   | Ehang, kayu samidra | Acronychia pedunculata (L.) Miq. | Timber          | The ripe fruit is edible. The tender leaves are used in salads and as | Uji, 2005 |
|     |            |                 |                                       | Root, leaf      | a condiment.                                                        |           |
|     |            |                 |                                       | Fruit leaf,     | The wood is used for carving, poles, house construction and making   | Nurfadilah et al., 2017; Uji, 2005 |
|     |            |                 |                                       | bark, leaf,     | the charcoal preferred by goldsmiths.                               |           |
|     |            |                 |                                       | stems           |                                                                       |           |
| 41 | Sapindaceae| Karanji, boa sanggit | Nephelium lappaceum L. | Leaf            | Traditional medicinal ingredients raw materials of traditional      | Permenkes, 2013 |
|     |            |                 |                                       |                 | medicine and extracts for medicinal herbs                            |           |
|     |            |                 |                                       | Roots           | Tre tin as a source of food                                         | Duma, 2007 |
|     |            |                 |                                       | Bark            | The wood is locally used as firewood                                |           |
|     |            |                 |                                       | leaf            | The wood is locally used as firewood                                |           |
|     |            |                 |                                       | Fruit           | Medical used: the fruit is said to be astringent, stomachic and      | Van Welzen & Verheij, 1991 |
|     |            |                 |                                       |                 | anthelmintic.                                                        |           |
|     |            |                 |                                       |                 |                                                                       |           |
|     |            |                 |                                       |                 |                                                                       |           |
|     |            |                 |                                       |                 |                                                                       |           |
| 42 | Sapotaceae | Hambiwi         | Pouteria maingayi (C.B.Clarke) Baehni | Timber          | The roots are used in decoctions for treating fever                  | Lim & Chung, 2002 |
|     |            |                 |                                       | Root            | The bark as an alterient for disease of the tongue                    |           |
|     |            |                 |                                       | Leaf            | The leaves are used in the wood is very popular as a furniture and    |           |
|     |            |                 |                                       |                 | solid door timber. It is suitable for high class decorative interior   |           |
|     |            |                 |                                       |                 | finishing such as paneling and partitioning. Other uses include strip |           |
|     |            |                 |                                       |                 | and parquet flooring, ceilings boat deck, rotary and sliced veneers,  |           |
|     |            |                 |                                       |                 | plywood and pallets.                                                |           |
|     | Katiau     | Madhuca motleyana (de Vr.) J.F. Mache. | Seed | Seed                          | Fat of the seeds for food ingredients                               | Kartasubrata et al., 1994b |
|     |            |                 |                                       | Timber          | Locally used for posts and planks in houses building.                |           |
|     | Nyato      | Palaquium cochlarefolium | P.Royen. | Seed                          | The fat from the seeds is used in foods                             | Kartasubrata et al., 1994c |
|     |            |                 |                                       | Timber          | Locally used for posts and planks in houses building.                |           |
|     | Nyato undus| Palaquium ridleys King & Gamble | Seed | Seed                          | The timber is used for beans and posts.                             | Kartasubrata et al., 1994d |
| No | Family          | Vernacular name | Scientific Name       | Plant Part used          | Use                                                                 | Reference            |
|----|----------------|-----------------|-----------------------|--------------------------|----------------------------------------------------------------------|----------------------|
| 43 | Sterculiaceae  | Kayu pendok     | Sterculia gilvai Miq. | Bark, fruit, seed.       | Free antiradical activity, antihyperlipidemia, antifungal, antibacterial, antiviral, overcoming menstrual disorders, liver damage, and disease antioxidant and antihyperlipidemic activity through lipase inhibition. Wood carvings, pegs, fence, the other items of turnings, panels, door components, tables, and wall coverings. The timber is used for purlins, ceilings, flooring, posts, beams, door and window frames and all other interior joinery and structural work not in contact with the ground. The tree produces a sour and fresh, red fruit which is used in fruit salads. | Asih et al., 2010.  |
| 44 | Tetrameristaceae | Tantinum       | Tetramerista glabra Miq. | Leaf                     | Antioxidant and antihyperlipidemic activity through lipase inhibition. | Zulviyati et al., 2016. |
| 45 | Thymelaeaceae  | Ramin          | Gonystylus bancanus (Miq.) Kurz. | Timber                   | Timber is widely used for furniture, decorative cabinets and interior decoration. The wood is used for pulping and has been used for fuel. | Supriadi, 2019 Alimah, 2014 |
| 46 | Tiliaceae      | Plimping Jamek | Microcos lanceolata Barret | Bark, resin, fruit      | The plant is used by people to treat malaria.                        | Chung & Soepadmo, 2011 |

**Non-tree species**
INSTRUCTION TO AUTHORS

Scope. Reinwardtia is a scientific regular journal on plant taxonomy, plant ecology and ethnobotany published in June and December. Manuscript intended for a publication should be written in English.

Titles. Titles should be brief, informative and followed by author’s name and mailing address in one-paragraphed.

Abstract. English abstract followed by Indonesian abstract of not more than 250 words. Keywords should be given below each abstract.

Manuscript. Manuscript is original paper and represent an article which has not been published in any other journal or proceedings. The manuscript of no more than 36 pages by using Times New Roman 11, MS Word for Windows of A4 with double spacing, submitted to the editor through <reinwardtia@mail.lipi.go.id>. New paragraph should be indented in by 5 characters. For the style of presentation, authors should follow the latest issue of Reinwardtia very closely. Author(s) should send the preferred running title of the article submitted. Every manuscript will be sent to two blind reviewers.

Identification key. Taxonomic identification key should be prepared using the aligned couplet type.

Nomenclature. Strict adherence to the International Code of Nomenclature is observed, so that taxonomic and nomenclatural novelties should be clearly shown. English description for new taxon proposed should be provided and the herbaria where the type specimens area deposited should be presented. Name of taxon in taxonomic treatment should be presented in the long form that is name of taxon, author’s name, year of publication, abbreviated journal or book title, volume, number and page.

Map/line drawing illustration/photograph. Map, line drawing illustration, or photograph preferably should be prepared in landscape presentation to occupy two columns. Illustration must be submitted as original art accompanying, but separated from the manuscript. The illustration should be saved in JPG or GIF format at least 350 pixels. Legends or illustration must be submitted separately at the end of the manuscript.

References. Bibliography, list of literature cited or references follow the Harvard system as the following examples.

Journal : KRAENZLIN, F. 1913. Cyrtandraceae novae Philippinenses I. Philipp. J. Sci. 8: 163–179.
          MAYER, V., MOLLER, M., PERRET, M. & WEBER, A. 2003. Phylogenetic position and generic
differentiation of Epithemateae (Gesneriaceae) inferred from plastid DNA sequence data. American J.
          Bot. 90: 321–329.
Proceedings : TEMU, S. T. 1995. Peranan tumbuhan dan ternak dalam upacara adat “Djoka Dju” pada suku Lio,
          Ende, Flores, Nusa Tenggara Timur. In: NASUTION, E. (Ed.). Prosiding Seminar dan Lokakarya
          Nasional Etobotani II. LIPI & Perpustakaan Nasional. Pp. 263–268. (In Indonesian).
          SIMBOLON, H. & MIRMANTO, E. 2000. Checklist of plant species in the peat swamp forests of
          Central Kalimantan, Indonesia. In: IWAKUMA, T., INOUE, T., KOHYAMA, T., OSAKI, M.,
          SIMBOLON, H., TACHIBANA, H., TAKAHASHI, H., TANAKA, N., YABE, K. (Eds.). Proceedings
          of the International Symposium on: Tropical Peatlands. Pp. 179 – 190.
Book : RIDLEY, H. N. 1923. Flora of the Malay Peninsula 2. L. Reeve & Co. Ltd, London.
Part of Book : BENTHAM, G. 1876. Gesneriaceae. In: BENTHAM, G. & HOOKER, J. D. (Eds.).
          Genera Plantarum 2. Lovell Reeve & Co., London. Pp. 990–1025.
Thesis : BAIRD, L. 2002. A Grammar of Kéo: An Austronesian Language of East
          Nusantara. Australian National University, Canberra. [PhD. Thesis].
Website : http://www.nationaalherbarium.nl/fmcollectors/k/KostermansAJGH.html. (Accessed 15 February 2012).
REINWARDTIA Author Agreement Form

Title of article : 

Name of Author(s) :

I/We hereby declare that:

- My/Our manuscript was based on my/our original work.
- It was not published or submitted to other journal for publication.
- I/we agree to publish my/our manuscript and the copyright of this article is owned by Reinwardtia.
- We have obtained written permission from copyright owners for any excerpts from copyrighted works that are included and have credited the sources in our article.

Author signature(s) Date

Name
RUTH KIEW. Towards a Flora of New Guinea: Oleaceae. Part 1. Jasminum, Ligustrum, Myxopyrum and Olea ........ 1

TITI KALIMA, SRI SUHARTI, SUMARHANI & LIAM A. TRETHOWAN. Tree species diversity and ethnobotany of degraded peat swamp forest in Central Kalimantan ......................................................................................................................... 27

ELIZABETH A. WIDJAJA. Notes on Fimbribambusa Widjaja, with a new species from the Lesser Sunda Islands ................................................................................................................................................................. 55

WISNU H. ARDI & DANIEL C. THOMAS. Begonia tiasmantoi, a new species from West Sulawesi ................. 61

MALCOLM VICTORIANO & YUDA REHATA YUDISTIRA. Bulbophyllum trinervosum, a new species of section Macrocaulia (Orchidaceae: Bulbophyllinae) from West Java, Indonesia ......................................................................................................................... 67

Reinwardtia is an accredited Journal (10/E/KPT/2019)
http://e-journal.biologi.lipi.go.id/index.php/reinwardtia

Herbarium Bogoriense
Botany Division
Research Center for Biology – Indonesian Institute of Sciences
Cibinong Science Center
Jln. Raya Jakarta – Bogor, Km 46
Cibinong 16911, P.O. Box 25 Cibinong
Indonesia