

CHANGE OF VEGETATION IN KUTAI NATIONAL PARK, EAST KALIMANTAN

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I INTRODUCTION

The forest in Kutai Nature Reserve (now national park) in East Kalimantan is known as the most developed and well reserved tropical rain forest dominated by many Dipterocarpaceous species in the world. For 11 months from 1982 to 1983 it has exposed an extreme desiccation without rain, and a large area of it caught fire and was burnt off besides limited areas in places of the reserve.

Tropical rain forests grow in the wet tropical lowland and are re hard to catch fire. Misfortune in the case of Kutai Nature Reserve should be turned into a blessing. The way to the fortune is to make use of this golden opportunity for study given by nature. Detailed records in a stage of reforestation process may be useful for greening devastated tropical areas by synthesizing data to be obtained successive studies. In this connection we designed the present research plan in co-operation with the scientists of both countries.

Forest fire is the worst way of forest damages. The largest area damaged by the forest fire of the world is the Kalimantan fire covering 3.1 million ha. The second one is Penshtigo fire by which forests of 1.5 million ha were destroyed in 1871. Last year we had a news of big fire in Ta Hsing An Ling mountain range where mixed forests of birch and larch in one million ha were burnt to ashes. The pattern of forest damage and destroy is different from place to place. Climate, weather, and vegetation give an important role for the pattern of burning. It is our purpose to make clear the degree of forest damage in various places, pattern of forest recovery by seedlings or sprouts, and the process of increase in species diversity.

Identification of plant species from Kalimantan is quite difficult, because there are few knowledge on the flora of Kalimantan and our specimens collected from quadrats were almost

sterile. In the field identification was done firstly by WIRAWAN and OKA, and afterwards by Mr. Tukirin PARTOMIHARDJO, Junior Botanist in the Herbarium Bogoriense. Still there are many species in question. Because of the unfinished identification of plants and no ample time for full analysis of data, this paper will be revised in near future.

II METHODS

1 Description of study sites

Climate According to Kantor Statistik Propinsi Kalimantan Timur (1985) and Lembaga Meteorologi dan Geofisika (1983), annual mean rainfall from 1963 to 1980 is 2108mm, and the distribution of monthly mean rainfall from January to December and that in 1982 are shown in the followings.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Mean	187	181	201	165	192	157	103	148	119	128	169	220	2108mm
1982	396	163	158	46	133	138	0	66	73	29	24	43	1269mm

In every month rainfall is more than 100mm in the ordinary years, but in 1982 it was extremely lower than in the ordinary years (see also Fig. 1). We could not obtain meteorological data of 1983. The drought period from 1982-1983 was broken by a heavy shower in May 1983.

LEIGHTON and WIRAWAN (1985) discussed the climate of East Kalimantan based on the meteorological record for 44 years since 1940, and recognized 10 times of drought. Among them 9 were accompanied by El Nino phenomena in the East Pacific.

Geology According to WIRAWAN (1985) Kutai Basin was formed before Eocene. During Eocene and lower Oligocene this basin sank under the sea water by the crustal movement, and fine clay particles were sedimented at the top of the basin. The Kutai Basin uplifted again in connection with the movement of Sunda Shelf at the end of Oligocene. Oceanic sedimentation was gradually replaced by the deltaic sedimentation with coarser materials, and this activity reached maximum in upper Miocene to Pliocene. The oceanic sedimentation produced Pamaluan and Bebulu Formations, while the deltaic sedimentation made Pulau Balang, Balikpapan and Kampungbaru Formations. Quarternary Alluvium deposits are restricted to the beach area (Fig. 2).

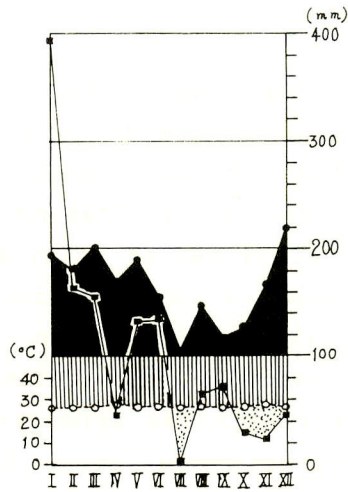


Fig. 1 Climate diagramme in Bontang
Squares and straight line show the
rainfall in 1982.

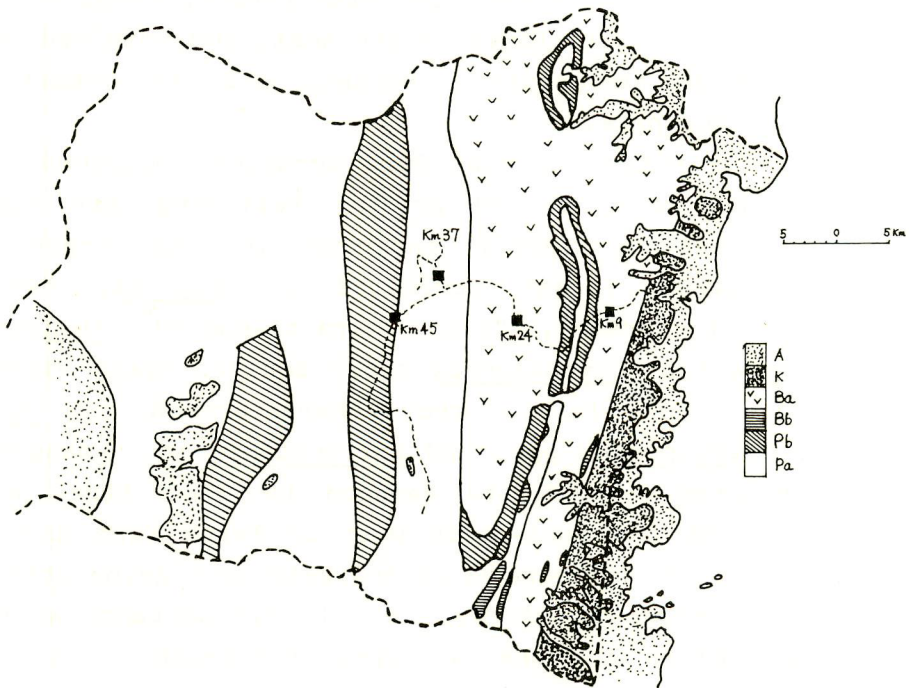


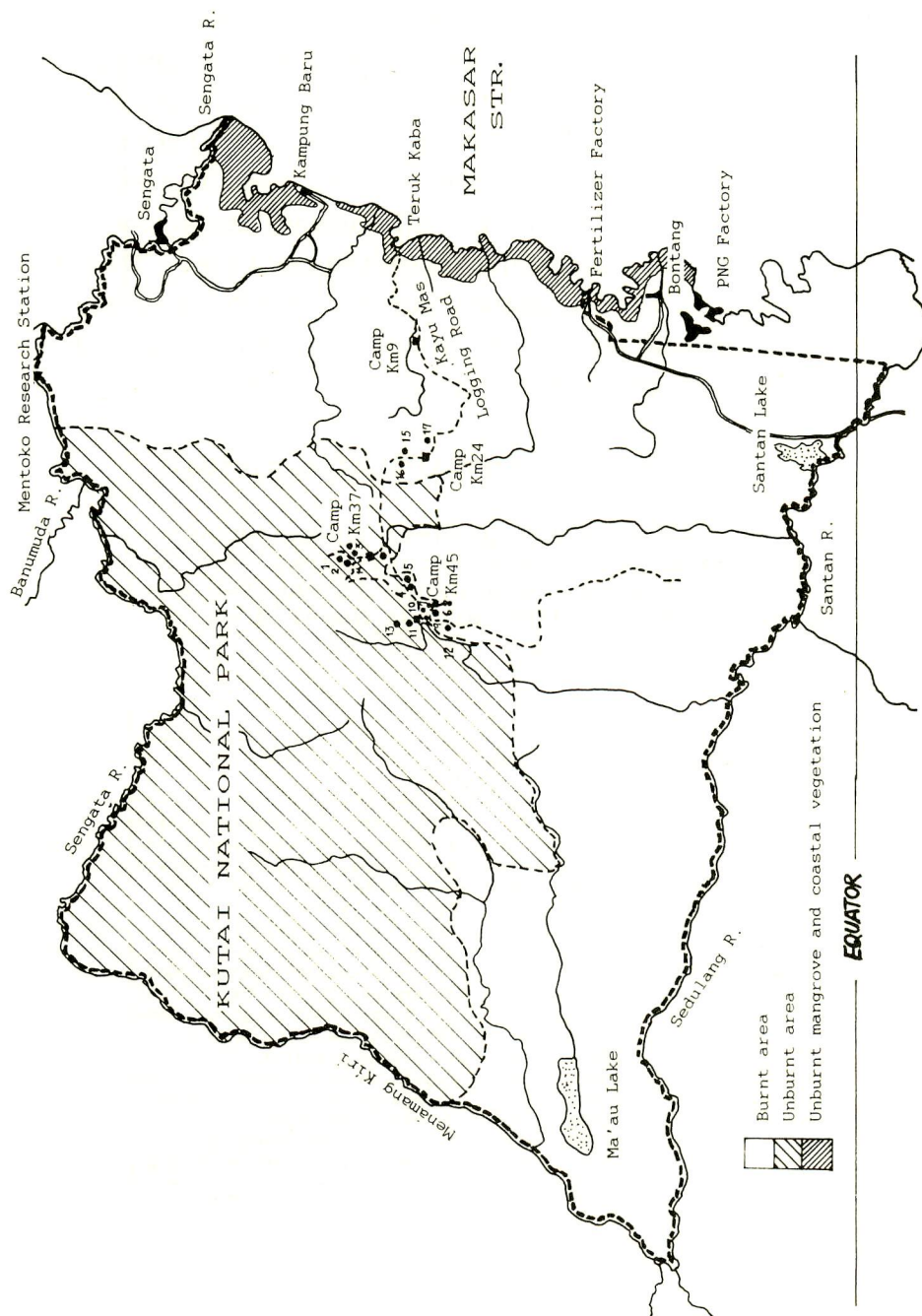
Fig. 2 Geological structure in Kutai National Park (WIRAWAN, 1985)
A: Alluvium deposits, K: Kampungbaru Formation, Ba: Balikpapan
Formation, Bb: Babulu Formation, Pb: Pulau Balang Formation, Pa:
Pamalu Formation

Babulu Formation consisted mainly of limestone distributed primarily outside the park area. Kampungbaru Formation is intercalated between Balikpapan Formation and Alluvium and exposed on the coastal area. We did not establish sample plots on these two formations, because vegetation (kerangas) on the latter was greatly damaged by logging as described above. Pamaluan Formation is consisted of silty and sandy claystone, and soils were muddy because of bad drainage. While, Pulau Balang Formation is formed with sandstone, and the water drainage of soils from weathered sandstone is better than those from mudstones. Balikpapan Formation is consisted of alternated strata of sandstone and mudstone. Coal seams to a thickness of a few feet were intercalated in this formation, and exposed on the ground surface. The coal caught fire and continued to produce smoke after extinction of forest fire.

Topography The Kutai Basin has nearly flat and undulate topography with solitary peaks in places (the highest peak is 397m at the top of Tandung Mayang Mountain). The geological structure runs north and south, and the undulation runs parallel to the shore. The Kutai Park is enclosed with rivers; Sengata River in the north, Menamang Kiri River in the west, and both Sedulang and Santan Rivers in the south. Bontang and its outskirts were excluded from the park.

Vegetation Kutai National Park occupies 320,000ha in East Kalimantan, and was covered by the following six types of vegetation (WIRAWAN, 1985); mangrove in the beach areas, fresh-water swamp forest dominated by Eugenia, "kerangas" (tropical heath forest), "ulin- meranti-kapur" (Eusideroxylon zwageri-Shorea spp.-Dryobalanops spp.) forest, mixed dipterocarp forest and flood plain forest characterized by Octomeles sumatrana, Pterospermum spp. and Barringtonia sp. Mangrove and fresh-water swamp were little damaged by 1983 fire. Kerangas forest occurs at the foot-hills west of Teruk Kaba and in the Menamang area, and was damaged intensively by logging activities preceding the drought and fire. In this circumstance we did not set up sample plots in those two types of forests.

In eastern part of the park from the beach to the fire front (Fig. 3) there is a network of logging road made by several companies. The forest damage was heavier on the roadside than distant places from the road, because there were a heap of logs and branches and low and young trees which had been germinated



after logging on the roadside.

2 Sample plots

We established 4 camps (at Km9, Km24, Km37 and Km45) on Kayu Mas Road. At the camp Km37 (at 37km from the shore in Teruk Kaba) there was logging huts left behind withdrawal from lumbering activity, and we used them as the base camp. It is desirable to establish plural quadrats in unburnt forest stands in each geological formation, but there is no time for setting up so many quadrats. In addition, on Balikpapan Formation it was difficult to find forest stands not affected by fire. Therefore, our search for unburnt forest stands was focused only on Pamaluan and Pulau Balang Formations but not for stands of subsere. General description of quadrats is given in Table 1.

Table 1. General description of quadrats

Asterisks indicate the quadrat in the unburnt forest stand. As to geological marks, Pa, Pb and Ba, see Fig. 2. Dominants in the table were recognized by the largest basal area shown in Tables 2 - 23.

Quadrat number	Altitude (m)	Slope exposure	Inclination (°)	Size (m ²)	Geology	Dominants
1*	185	S	7-15	40x50	Pa	Shorea spp.-Eusideroxylon zwageri
2*	166	N50E	16	40x50	Pa	Eusideroxylon zwageri-Pithecellobium sp.
3	150	0	0	20x20	Pa	Anthocephalus chinensis-Macaranga pruinosa
4	324	N45E	8	20x20	Pa	Homalanthus populneus
5	280	S45E	20	15x30	Pa	Croton argyratus
6	245	S	20	40x50	Pb	Borassodendron borneensis-Eu. zwageri
7	280	N40E	8-24	20x30	Pb	Glochidion capitatum-Mallotus macrostachyus
8	230	N,N10W	8-18	10x30	Pb	Melastoma malabathricum, Duabanga moluccana
9	240	N40E	10	10x10	Pb	Macaranga trichocarpa
10	220	N80E	25	20x20	Pb	Eu. zwageri-Macaranga pruinosa
11*	200	N52E	16	40x50	Pb	Dryobalanops sp.
12	230	N22E	12-15	20x20	Pb	Macaranga gigantea
13*	210	N67W	10	40x50	Pb	Dryobalanops sp.-Shorea polyandra
14	150	0	0	20x20	Pa	Macaranga pruinosa-Eu. zwageri
15	280	N22E	10	10x20	Ba	Tristania whittiana
16	280	S67W	13	10x20	Ba	Evodia alba-Macaranga gigantea
17	200	0	0	5x15	Ba	Shorea leprosula-Macaranga gigantea

The distribution of the quadrats is shown in Fig. 3. The quadrats were concentrated to areas near the camps because of saving time. The size of the quadrats was determined by the area of forest stands and the height of trees.

In every quadrat the following characters were recorded; diameter at breast height (DBH), height (H) of trees, the number of sprouts and their size (H and DBH when H was longer than 130cm), the number of seedlings, saplings and herbaceous plants (or the number of shoots in case of indefinite individuality) including ferns. In some quadrats forest profiles and crown projection diagrammes were drawn on the section paper.

In the subseral forests in the damaged area, quadrats were set up in the relatively homogenous stand. White and rotten trunks were stood high swinging in the wind and were falling down with the heavy thud.

III RESULTS

Results after simple analysis of the data is shown in Tables 2-23. In the tables, the following attributes are shown; the number of individuals, mean and maximum DBH, maximum height of the trees, basal area (DBH^2), and volume ($DBH^2 \times H$) in each species.

Plant sociological analysis based on the tentative species identification is given by Miyagi et al in this report. As the classification of forest types based on the similarity of species composition is not yet carried out, there is a risk for describing community types in the present stage of research. However, we recognized three types of natural forest in the unburnt area; Shorea forest and Eusideroxylon forest on Pamaluan Formation and Dryobalanops forest on Pulau Balang Formation. YAMAKURA et al (1986) reported Shorea cf. laevis forest from Sebulu near Samarinda, East Kalimantan. RISWAN AND KENWORTHY (1984) discussed the source and fate of Shorea polyandra-S. ovalis forest and secondary forests in Lempake near Samarinda. MIYAWAKI et al (1982) recognized a few types of plant communities in Sotek near Balikpapan on the standpoint of BRAUN-BLANQUET system. From these papers we know that there are a number of forest types in a limited area of lowland Kalimantan Timur (East Kalimantan Province).

Although those three types of forest we recognized were lightly influenced by 1982-3 drought, we used them as the control of subseral communities. The prominent trees reached more than 60m, and a few strata were recognized.

The degree of damage by fire varied whether timbers had cut down before the fire or not. In the place where logging had been done before the fire, there were many types of regrowth vegetation on the forest floor with woods, branches and dry leaves in disorder. In such a place fire burned down everything leaving denuded ground. We witnessed such a case along the Kayu Mas logging road. Along the both side of the road there were nearly pure stands dominated with secondary tree species, such as Anthocephalus chinensis, Homalanthus populneus, Glochidion capitatum, Macaranga trichocarpa, M. gigantea, Croton argyratus, Tristania whitiana, Mallotus spp. and so on. These secondary species also appeared in the open of the forests with a little damage by the fire, but seldom in undisturbed forests. To answer the purpose of this research, sample plots were selectively set up in such a pure stand of subseral as described above.

Lightly damaged forest stands (cf. photos on the frontispiece) were widely distributed in the eastern and southern part of the park. There the fire swept away undergrowth vegetation as well as dry litter on the floor. Only the tall trees wound round by lianes caught fire at their crown. Some emergent trees over 50m and lower ones were stood alive, and shrub layer was occupied by the subseral species described above. Near the topographic depression such as rivers and ravines a number of original plants were alive and were vigorously growing. A palm species, Borassodendron borneensis, and Eusideroxylon zwageri were strongly resistant to fire. Only the latter species sprouted at the base of a trunk. There were no other tree species which produce sprouts around the dead trunk, but for the secondary species.

Eu. zwageri produces not so many but larger fruits. On A333 tree in P-3 quadrat, for example, more than 107 fruits were counted, 31 were dead and rotten and only one were germinating. Fruits of the same species were not observed even on the trees and on the floor in the burned area. Two exceptions were observed by Parinaria sp. (Rosaceae) and Bor. borneensis. Both species produce a large fruits with hard and thick seed coat.

In the present stage of data analysis, it is impossible to derive further discussion and some conclusions. We will wait for the advanced analysis of data, and this paper will be revised in near future.

Successive or intermittent observations of recovering forest are necessary to realize our purpose.

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Table 2 P-1 at Km 37, tree layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1 138 Anno. Goniothalamus macrophyllus	1	7.10	7.1	808	0.020	2036.56
2 134 Anno. Mitrephora heyneana	1	5.50	5.5	840	0.012	1270.50
3 151 Anno. Polyalthia lateriflora 1	2	5.20	5.5	752	0.021	1988.75
4 110 Anno. Polyalthia lateriflora 3	2	7.30	8.1	928	0.042	4979.35
5 131 Anno. Polyalthia sumatrana	8	13.45	19.3	1700	0.624	116809.00
6 136 Anno. Pseuduvaria reticulata	1	7.30	7.3	1204	0.021	3208.06
7 Arec. Korthalsia spp.	4	5.68	7.1	684	0.052	4324.65
8 112 Burs. Dacryodes rostrata	2	8.70	11.7	1800	0.067	13860.10
9 109 Conn. Ellipanthus beccarii var. peltatus	2	5.35	6.0	812	0.023	2144.18
10 82 Dipt. Shorea koordersii	1	5.00	5.0	647	0.010	808.75
11 84 Dipt. Shorea leposula	5	6.24	8.7	1250	0.081	10199.90
12 85 Dipt. Shorea leposula	1	9.50	9.5	1700	0.035	7671.25
13 113 Dipt. Shorea polyandra	3	31.07	81.1	4400	2.612	1449480.00
14 107 Dipt. Shorea sp.1	1	7.10	7.1	884	0.020	2228.12
15 Dipt. Shorea spp.	13	32.90	120.0	5500	9.918	5646450.00
16 83 Eben. Diospyros sp.1	1	21.50	21.5	1900	0.182	43913.70
17 94 Eben. Diospyros sp.2	1	5.70	5.7	795	0.013	1291.48
18 96 Eben. Diospyros sp.3	1	8.30	8.3	650	0.027	2238.93
19 115 Eben. Diospyros sp.4	1	39.90	39.9	2500	0.625	199001.00
20 87 Euph. Aporosa grandistipulata 1	1	7.20	7.2	808	0.020	2094.34
21 120 Euph. Aporosa lunata	1	8.20	8.2	865	0.026	2908.13
22 108 Euph. Baccaurea angulata	1	21.30	21.3	1600	0.178	36295.20
23 125 Euph. Baccaurea javanica	2	16.10	22.6	1800	0.237	50332.20
24 117 Euph. Baccaurea macrocarpa	1	11.60	11.6	1275	0.053	8578.20
25 104 Euph. Baccaurea stipulata	23	6.73	12.0	900	0.435	37037.40
26 146 Euph. Baccaurea sumatrana	2	6.80	7.5	994	0.037	4196.58
27 116 Euph. Cleistanthus myrianthus	1	8.60	8.6	1096	0.029	4053.01
28 133 Euph. Drypetes longifolia	9	15.78	23.3	2000	1.076	234341.00
29 Euph. Euphorbiaceae spp.	1	10.40	10.4	1450	0.042	7841.60
30 88 Euph. Glochidion sp.1	1	5.40	5.4	743	0.011	1083.29
31 Euph. Macaranga spp.	1	18.40	18.4	1500	0.133	25392.00
32 93 Euph. Mallotus affinis 2	5	12.56	20.8	1700	0.363	61145.30
33 143 Euph. Mallotus lackeyi	3	10.63	14.5	880	0.143	13750.00
34 97 Laur. Actinodaphne sp.1	1	8.00	8.0	1400	0.025	4480.00
35 158 Laur. Actinodaphne sp.2	1	19.00	19.0	2350	0.142	42417.50
36 132 Laur. Endiandra sp.	2	8.75	12.1	1300	0.069	11078.20
37 420 Laur. Eusideroxylon zwageri	8	44.59	93.0	4200	8.636	3887640.00
38 Laur. Lauraceae spp.	2	14.15	21.1	1154	0.195	28615.00
39 127 Laur. Litsea angulata	1	4.70	4.7	600	0.009	662.70
40 128 Laur. Litsea robusta	1	5.70	5.7	569	0.013	924.34
41 114 Legu. Millettia antropurpurea	1	14.00	14.0	0	0.077	0.00
42 86 Legu. Pithecellobium sp.	6	12.28	40.9	2900	0.749	253581.00
43 149 Legu. Spatholobus ferrugineus	1	5.20	5.2	0	0.011	0.00
44 106 Meli. Aglaia odoratissima	2	7.35	9.6	1400	0.046	7440.88
45 123 Moni. Kibara coriaceae	1	4.90	4.9	490	0.009	588.25
46 Mora. Ficus strangler spp.	2	5.45	5.9	0	0.023	0.00
47 90 Mora. Ficus uncinata 1	4	7.13	8.1	866	0.080	6660.19
48 91 Mora. Ficus uncinata 2	2	6.70	8.2	772	0.037	3138.97
49 118 Myri. Knema latifolia	1	5.40	5.4	442	0.011	644.44
50 Myri. Myristicaceae spp.	1	43.00	43.0	3100	0.726	286595.00

Table 2 (continued) P-1 at Km 37, tree layer

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
51	160 Myrt. <i>Eugenia</i> sp. 1	1	5.20	5.2	858	0.011	1160.02
52	154 Olac. <i>Ochanostachys amentacea</i>	1	5.00	5.0	1067	0.010	1333.75
53	95 Prot. <i>Helicia serrata</i>	1	7.70	7.7	1209	0.023	3584.08
54	Rubi. <i>Gardenia</i> spp.	1	10.60	10.6	1550	0.044	8707.90
55	825 Rubi. <i>Urophyllum corymbosum</i>	1	6.00	6.0	474	0.014	853.20
56	137 Sapi. <i>Lepisanthes amoena</i> ?	2	27.35	42.8	2800	0.775	265662.00
57	101 Sapi. <i>Paranephelium nitidum</i>	16	13.91	33.6	2500	1.644	431484.00
58	147 Sapi. <i>Paranephelium nitidum</i> ?	1	7.50	7.5	1041	0.022	2927.81
59	121 Sapo. <i>Palaquium</i> sp.1 <i>Ficus</i> ?	1	5.20	5.2	548	0.011	740.90
60	122 Sapo. <i>Palaquium</i> sp.2	3	9.47	14.6	1450	0.124	21598.70
61	XXXX.	5	20.04	42.2	3000	1.149	362207.00
62	135 XXXX. -	1	5.00	5.0	1119	0.010	1398.75
63	XXXX. Pinnate leaf tree	6	32.45	85.2	3500	4.073	1650830.00
64	Total	180	14.93	120.0	5500	35.958	15289900.00
Dead trees							
	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
65	104 Euph. <i>Baccaurea stipulata</i>	2	13.25	16.5	1104	0.146	15028.20
66	420 Laur. <i>Eusideroxylon zwageri</i>	1	90.10	90.1	0	3.188	0.00
67	101 Sapi. <i>Paranephelium nitidum</i>	2	28.15	34.6	353	0.655	21129.90
68	XXXX.	9	14.97	45.5	917	1.267	12452.50
69	Total	14	21.97	90.1	1104	5.256	48610.60

Herb: Herbarium number. Fam: Family. No: No of trees in the plot.

BA: Basal area (Summed area of stem cross sections at height of 1.3m) DDH: Sum of DBH x DBH x H

Same species name of different Herbarium number: not sure to be the same.

Species name with spp.: not only one species.

Table 3 P-1 at Km 37, shrub layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1 24 Acti. Saurauia cf. acuminata	5	1.04	1.6	297	0.012	383.75
2 Anno. Annonaceae spp.	1	0.60	0.6	184	0.001	16.56
3 138 Anno. Goniotalamus macrophyllus	2	2.65	3.4	303	0.030	981.51
4 319 Anno. Meiohyne virgata	1	0.50	0.5	174	0.000	10.88
5 134 Anno. Mitrephora heyneana	2	1.60	2.2	374	0.011	511.79
6 283 Anno. Oxymitra cuneiformis	1	0.80	0.8	0	0.001	0.00
7 201 Anno. Polyalthia elliptica	1	0.30	0.3	145	0.000	3.26
8 297 Anno. Polyalthia lateriflora	1	0.90	0.9	190	0.002	38.48
9 151 Anno. Polyalthia lateriflora 1	1	1.90	1.9	286	0.007	258.12
10 264 Anno. Polyalthia oblonga	6	0.73	1.1	255	0.007	181.74
11 136 Anno. Pseuduvaria reticulata	1	1.80	1.8	294	0.006	238.14
12 212 Anno. Uvaria elmeri	2	1.85	2.4	876	0.015	370.11
13 Arec. Korthalsia spp.	11	1.04	2.7	318	0.032	1023.45
14 239 Burs. Canarium denticulatum	1	1.00	1.0	169	0.002	42.25
15 276 Burs. Canarium odontophyllum	3	1.20	1.7	307	0.009	305.08
16 112 Burs. Dacryodes rostrata	1	0.90	0.9	188	0.002	38.07
17 214 Burs. Santiria griffithii	1	0.90	0.9	255	0.002	51.64
18 282 Burs. Santiria sp.1	1	2.80	2.8	365	0.015	715.40
19 215 Cela. Lophopetalum javanicum	1	3.20	3.2	347	0.020	888.32
20 109 Conn. Ellipanthus beccarii var. peltatus	8	1.13	3.3	548	0.036	2203.14
21 273 Conn. Rourea mimosoides ?	1	1.00	1.0	178	0.002	44.50
22 284 Conn. Rourea minor sp.2	1	0.80	0.8	189	0.001	30.24
23 269 Cryp. Crypteronia sp.	1	0.90	0.9	0	0.002	0.00
24 19 Dipt. Dryobalanops sp.	5	0.88	1.9	299	0.011	381.96
25 85 Dipt. Shorea leprosula	2	0.80	1.0	190	0.003	63.52
26 285 Dipt. Shorea parvifolia 1	1	0.70	0.7	210	0.001	25.73
27 113 Dipt. Shorea polyandra	31	0.78	1.4	285	0.045	1365.71
28 271 Dipt. Shorea sp.3	5	0.68	1.2	467	0.006	216.23
29 Dipt. Shorea spp.	2	1.60	1.9	250	0.010	321.96
30 280 Eben. Diospyros malayana?(Oka)	3	0.83	2.1	574	0.009	636.00
31 293 Eben. Diospyros sp.6	1	3.10	3.1	544	0.019	1306.96
32 120 Euph. Aporosa lunata	2	1.45	1.8	338	0.009	341.24
33 68 Euph. Baccaurea griffithii	2	2.20	2.7	406	0.020	958.85
34 292 Euph. Baccaurea sp.3	1	2.30	2.3	267	0.010	353.11
35 104 Euph. Baccaurea stipulata	16	2.18	4.7	525	0.231	12568.70
36 278 Euph. Baccaurea sumatrana	1	1.10	1.1	213	0.002	64.43
37 272 Euph. Blumeodendron elateriosperum	1	3.00	3.0	481	0.018	1082.25
38 288 Euph. Chaetocarpus castanocarpus	1	2.10	2.1	382	0.009	421.16
39 92 Euph. Drypetes longifolia	9	2.10	4.3	426	0.103	4260.77
40 366 Euph. Glochidion arborescens	2	1.15	1.7	247	0.006	193.58
41 155 Euph. Mallotus affinis 1	3	1.37	2.1	412	0.013	599.60
42 93 Euph. Mallotus affinis 2	1	0.60	0.6	186	0.001	16.74
43 263 Euph. Mallotus miquelianus	49	1.18	2.9	360	0.175	6594.91
44 18 Euph. Omphalea bracteata	2	3.00	4.6	517	0.045	2837.83
45 270 Euph. Ostodes sp.	1	1.30	1.3	186	0.003	78.59
46 279 Faga. Lithocarpus spicatus	1	1.80	1.8	402	0.006	325.62
47 294 Laur. Cinnamomum pendulum	1	3.20	3.2	469	0.020	1200.64
48 289 Laur. Endiandra sp.	1	0.90	0.9	235	0.002	47.59
49 295 Laur. Endiandra sp.	1	0.40	0.4	159	0.000	6.36
50 420 Laur. Eusideroxylon zwageri	14	1.15	3.7	697	0.058	3608.79

Table 3 (continued) P-1 at Km 37, shrub layer

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
51	Legu. Leguminosae liana spp.	3	0.83	1.0	806	0.004	231.27
52	275 Legu. Leguminosae sp.1	7	0.77	1.4	275	0.010	288.89
53	Legu. Leguminosae spp.	1	1.30	1.3	163	0.003	68.87
54	265 Legu. <i>Milletia splendissima</i>	1	2.10	2.1	0	0.009	0.00
55	86 Legu. <i>Pithecellobium</i> sp.	8	1.79	4.2	755	0.077	6175.48
56	166 Magn. <i>Talauma beccari</i>	2	1.90	3.1	517	0.020	1261.69
57	291 Mela. <i>Pternandra rostrata</i>	1	2.50	2.5	501	0.012	782.81
58	262 Meli. <i>Aglaia dokko</i>	1	2.70	2.7	524	0.014	954.99
59	245 Meli. <i>Aglaia odoratissima</i>	1	3.80	3.8	641	0.028	2314.01
60	Meli. <i>Aglaia</i> spp.	1	0.80	0.8	156	0.001	24.96
61	317 Meli. <i>Aglaia tomentosa</i>	1	2.60	2.6	518	0.013	875.42
62	287 Meli. <i>Chisocheton beccarianus</i>	1	1.60	1.6	292	0.005	186.88
63	937 Myri. <i>Horsfieldia irya</i>	1	3.80	3.8	656	0.028	2368.16
64	118 Myri. <i>Knema latifolia</i>	4	1.25	2.0	293	0.014	469.24
65	243 Myrs. <i>Ardisia horsei</i>	3	0.80	1.0	538	0.004	115.33
66	Myrt. <i>Eugenia perspicinervia</i> by Oka	2	3.30	3.3	599	0.043	3065.53
67	160 Myrt. <i>Eugenia</i> sp. 1	1	0.40	0.4	161	0.000	6.44
68	286 Myrt. <i>Eugenia</i> sp. 3	1	4.10	4.1	586	0.033	2462.66
69	207 Myrt. <i>Eugenia</i> sp. 4	1	0.80	0.8	180	0.001	28.80
70	827 Myrt. <i>Eugenia</i> sp.10	1	3.40	3.4	520	0.023	1502.80
71	267 Poly. <i>Xanthophyllum ellipticum</i>	1	2.10	2.1	302	0.009	332.96
72	257 Prot. <i>Heliciopsis artocarpoides</i>	1	3.70	3.7	608	0.027	2080.88
73	27 Rubi. <i>Pavetta sylvatica</i>	3	0.53	0.7	177	0.002	36.34
74	277 Rubi. <i>Prismatomeris albidiflora</i>	1	1.90	1.9	428	0.007	386.27
75	298 Rubi. <i>Randia</i> sp.	1	2.40	2.4	318	0.011	457.92
76	Rubi. Rubiaceae spp.	1	2.40	2.4	300	0.011	432.00
77	268 Rubi. <i>Urophyllum corymbosum</i>	1	0.60	0.6	151	0.001	13.59
78	31 Rubi. <i>Urophyllum macrophyllum</i>	3	1.87	2.6	443	0.027	1201.31
79	79 Sapi. <i>Nephelium mutabile</i>	3	1.23	2.1	358	0.012	479.22
80	266 Sapi. <i>Nephelium</i> sp.2	1	2.10	2.1	265	0.009	292.16
81	101 Sapi. <i>Paranephelium nitidum</i>	8	2.08	3.8	640	0.092	5915.20
82	Sapi. Sapindaceae spp.	1	0.30	0.3	166	0.000	3.74
83	281 Thym. <i>Phaleria capitata</i>	1	2.20	2.2	354	0.010	428.34
84	290 Tili. <i>Microcos lorzingii</i>	1	0.40	0.4	141	0.000	5.64
85	XXXX.	3	0.77	1.4	335	0.005	180.82
86	XXXX. Liana A538 Opposit Leaf	10	1.58	6.6	447	0.105	2239.20
87	XXXX. Sample check!!	2	1.00	1.6	278	0.005	185.00
88	Total	297	1.37	6.6	876	1.729	86070.10

Table 4 P-2 at Km 37, tree layer

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1	241 Anac. <i>Buchanania sessilifolia</i>	1	7.60	7.6	1094	0.024	3291.12
2	194 Anac. <i>Semecarpus</i> sp.2	2	8.25	9.6	1150	0.057	7302.90
3	255 Anno. <i>Cyathocalyx bancana</i>	1	7.50	7.5	1320	0.023	3867.19
4	174 Anno. <i>Polyalthia borneensis</i>	4	5.78	6.1	564	0.055	3638.92
5	201 Anno. <i>Polyalthia elliptica</i>	1	5.60	5.6	614	0.013	1002.87
6	224 Anno. <i>Polyalthia lateriflora</i> 3	1	5.50	5.5	511	0.012	805.09
7	131 Anno. <i>Polyalthia sumatrana</i>	7	14.19	26.7	2050	0.783	187235.00
8	200 Anno. <i>Popowia pisocarpa</i> 1	3	5.80	6.4	690	0.042	3445.43
9	136 Anno. <i>Pseuduvaria reticulata</i>	6	9.73	14.5	1850	0.260	49967.00
10	212 Anno. <i>Uvaria elmeri</i>	1	5.90	5.9	0	0.014	0.00
11	233 Anno. <i>Uvaria elmeri</i>	5	5.44	6.9	0	0.062	0.00
12	227 Anno. <i>Uvaria</i> sp.1	1	4.90	4.9	0	0.010	0.00
13	216 Anno. <i>Xylopia ferruginera</i>	2	5.80	6.3	974	0.028	3091.69
14	Arec. <i>Korthalsia</i> spp.	1	5.50	5.5	510	0.012	803.52
15	239 Burs. <i>Canarium denticulatum</i>	1	14.00	14.0	1012	0.080	10330.80
16	184 Burs. <i>Canarium littorale</i>	1	6.70	6.7	950	0.018	2221.12
17	112 Burs. <i>Dacryodes rostrata</i>	4	6.10	8.0	1000	0.063	6401.48
18	214 Burs. <i>Santiria griffithii</i>	2	5.30	5.5	963	0.023	2791.86
19	215 Cela. <i>Lophopetalum javanicum</i>	2	5.40	5.8	657	0.024	1938.88
20	236 Conn. <i>Agelaea borneensis</i>	4	16.03	31.7	2200	0.631	115144.00
21	235 Conn. <i>Ellipanthus beccarii</i>	1	6.00	6.0	809	0.015	1516.87
22	109 Conn. <i>Ellipanthus beccarii</i> var. <i>peltatus</i>	3	5.67	6.1	911	0.040	3969.58
23	604 Dat. <i>Octomeles sumatrana</i>	1	165.00	165.0	5900	11.137	8366020.00
24	222 Dill. <i>Dillenia excelsa</i> 1	1	18.90	18.9	1550	0.146	28837.30
25	Dill. <i>Dillenia</i> spp.	1	24.80	24.8	2250	0.252	72075.00
26	242 Dill. <i>Tetracera fafifolia</i>	2	15.30	20.0	0	0.210	0.00
27	82 Dipt. <i>Shorea koodersii</i>	1	4.90	4.9	605	0.010	756.57
28	113 Dipt. <i>Shorea polyandra</i>	6	5.80	7.9	981	0.085	8291.58
29	182 Dipt. <i>Shorea</i> sp.2	1	5.10	5.1	427	0.011	578.45
30	Dipt. <i>Shorea</i> spp.	5	20.40	35.8	3000	1.053	354288.00
31	191 Eben. <i>Diospyros sumatrana</i>	1	4.80	4.8	806	0.009	967.20
32	221 Euph. <i>Antidesma stipulare</i>	2	19.60	33.8	2600	0.479	155794.00
33	87 Euph. <i>Aporosa grandistipulata</i> 1	1	5.30	5.3	734	0.011	1073.86
34	120 Euph. <i>Aporosa lunata</i>	1	7.00	7.0	1003	0.020	2559.74
35	108 Euph. <i>Baccaurea angulata</i>	3	7.70	12.4	1300	0.087	12420.90
36	204 Euph. <i>Baccaurea</i> sp.1	1	8.10	8.1	342	0.027	1168.68
37	237 Euph. <i>Baccaurea</i> sp.2	1	21.30	21.3	1500	0.186	35444.50
38	104 Euph. <i>Baccaurea stipulata</i>	40	6.23	10.0	1033	0.668	62930.20
39	133 Euph. <i>Drypetes longifolia</i>	4	6.60	7.0	786	0.071	6044.14
40	Euph. <i>Euphorbiaceae</i> A205	4	8.15	10.6	1750	0.114	15516.20
41	Euph. <i>Euphorbiaceae</i> spp.	1	21.20	21.2	2050	0.184	47987.10
42	238 Euph. <i>Glochidion</i> sp.2	2	5.50	5.8	943	0.025	2100.06
43	155 Euph. <i>Mallotus affinis</i> 1	1	5.45	5.5	820	0.012	1268.54
44	93 Euph. <i>Mallotus affinis</i> 2	22	11.99	30.5	1700	1.793	283228.00
45	203 Laur. <i>Beilschmiedia</i> sp.	1	6.10	6.1	982	0.015	1903.14
46	249 Laur. <i>Cryptocarya</i> cf. <i>crassinervia</i>	1	5.50	5.5	729	0.012	1148.55
47	190 Laur. <i>Dehaasia</i> cf. <i>firma</i>	1	10.80	10.8	1375	0.048	8353.13
48	198 Laur. <i>Dehaasia coriantha</i>	1	7.90	7.9	883	0.026	2870.21
49	252 Laur. <i>Dehaasia incrassata</i>	1	7.70	7.7	970	0.024	2995.38
50	192 Laur. <i>Dehaasia</i> sp.	1	9.70	9.7	1300	0.038	6370.68

Table 4 (continued) P-2 at Km 37, tree layer

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
51	420 Laur. Eusideroxylon zwageri	17	35.53	123.2	4900	17.039	8150410.00
52	162 Laur. Litsea angulata	1	5.70	5.7	731	0.013	1236.99
53	229 Laur. Litsea sp.4	1	5.30	5.3	600	0.011	877.81
54	Laur. Litsea spp.	1	15.60	15.6	1270	0.100	16097.30
55	Legu. Leguminosae Koompasia??	2	5.20	5.6	2500	0.022	4355.67
56	86 Legu. Pithecellobium sp.	6	29.70	72.9	3700	3.855	1715240.00
57	230 Legu. Sindora coriacea	1	8.20	8.2	854	0.028	2990.78
58	171 Legu. Spatholobus palawanensis	1	9.10	9.1	0	0.034	0.00
59	166 Magn. Talauma beccari	2	6.45	7.2	961	0.034	3545.71
60	33 Meli. Aglaia argentea	1	4.90	4.9	693	0.010	866.61
61	106 Meli. Aglaia odoratissima	5	8.68	10.8	1340	0.159	23616.30
62	245 Meli. Aglaia odoratissima	1	5.50	5.5	719	0.012	1132.80
63	188 Meli. Chisocheton sp.1 ?	1	7.90	7.9	626	0.026	2034.83
64	196 Meli. Chisocheton sp.2	1	5.60	5.6	695	0.013	1135.17
65	169 Meli. Didimocheton nutan 1	2	11.70	16.2	2150	0.129	31712.50
66	211 Mora. Artocarpus anisophylla	1	7.80	7.8	1100	0.025	3485.63
67	206 Mora. Artocarpus komando?(Oka)	1	7.70	7.7	1172	0.024	3619.16
68	183 Mora. Artocarpus lanceifolius	2	7.65	8.9	990	0.049	5795.20
69	Mora. Ficus strangler spp.	5	7.24	8.8	5000	0.109	69588.50
70	782 Myri. Knema cinerea	1	20.80	20.8	1850	0.177	41686.70
71	181 Myri. Knema furfuracea	1	4.90	4.9	471	0.010	589.00
72	Myri. Myristicaceae spp.	1	19.30	19.3	1600	0.152	31040.80
73	243 Myrs. Ardisia horsei	1	6.40	6.4	682	0.017	1454.93
74	160 Myrt. Eugenia sp. 1	3	5.67	6.3	1018	0.040	3987.64
75	197 Myrt. Eugenia sp. 2?	1	17.10	17.1	1450	0.120	22083.00
76	207 Myrt. Eugenia sp. 4	1	7.00	7.0	1155	0.020	2947.66
77	247 Myrt. Eugenia sp. 5	1	8.40	8.4	1200	0.029	4410.00
78	250 Poly. Xanthophyllum scortechinii	1	7.30	7.3	710	0.022	1970.62
79	95 Prot. Helicia serrata	1	7.10	7.1	877	0.021	2302.58
80	187 Rubi. Urophyllum arboreum 1	1	6.40	6.4	805	0.017	1717.33
81	199 Sapi. Haupulia sp.2	1	6.90	6.9	1110	0.019	2752.45
82	101 Sapi. Paranephelium nitidum	10	11.10	31.0	2600	0.796	205068.00
83	246 Sapi. Pometia pinnata	1	9.20	9.2	1045	0.035	4606.71
84	121 Sapo. Palaquium sp.1 Ficus?	1	7.70	7.7	1600	0.024	4940.83
85	234 Sapo. Palaquium sp.2	1	6.80	6.8	1136	0.019	2735.87
86	165 Tili. Microcos lorzingii	1	7.60	7.6	905	0.024	2722.54
87	202 Tili. Microcos paniculata	1	4.90	4.9	520	0.010	650.27
88	228 Tili. Microcos reticulata	1	6.40	6.4	942	0.017	2009.60
89	220 Ulma. Gironniera nervosa	1	5.00	5.0	675	0.010	878.91
90	248 Urti. Dendrocnide sp.	1	24.50	24.5	1250	0.246	39078.80
91	XXXX.	6	8.52	12.4	2000	0.196	32565.20
92	XXXX. Pinnate leaf tree	2	15.65	25.1	2100	0.273	70799.30
93	XXXX. Sample check!!	1	10.80	10.8	741	0.048	4501.58
94	Total	255	11.82	165.0	5900	43.073	20417000.00
Dead trees							
	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
95	Dipt. Shorea spp.	2	90.00	114.8	2200	7.130	1793500.00
96	104 Euph. Baccaurea stipulata	2	4.95	5.5	572	0.020	1415.45
97	101 Sapi. Paranephelium nitidum	1	63.00	63.0	2100	1.624	434109.00
98	XXXX.	3	27.37	43.0	190	1.240	257.39
99	Total	8	41.88	114.8	2200	10.014	2229280.00

Table 5 P-2 at Km 37, shrub layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
1 24 Acti. Saurauia cf. acuminata	12	1.35	2.2	428	0.050	1945.98
2 241 Anac. Buchanania sessilifolia	1	2.10	2.1	424	0.009	485.67
3 319 Anno. Meiogyne virgata	1	2.90	2.9	340	0.017	742.70
4 134 Anno. Mitrephora heyneana	3	0.57	0.8	224	0.002	54.30
5 283 Anno. Oxymitra cuneiformis	2	0.30	0.3	158	0.000	7.06
6 151 Anno. Polyalthia lateriflora 1	1	2.60	2.6	517	0.014	907.77
7 264 Anno. Polyalthia oblonga	4	1.63	2.6	415	0.024	1062.71
8 311 Anno. Polyalthia subcordata	1	0.80	0.8	228	0.001	37.90
9 200 Anno. Popowia pisocarpa 1	3	1.87	3.3	508	0.028	1752.16
10 212 Anno. Uvaria elmeri	60	1.52	3.8	426	0.352	330.96
11 Arec. Calamus spp.	10	1.17	1.7	159	0.030	80.95
12 Arec. Korthalsia spp.	37	1.03	2.0	551	0.088	1409.38
13 276 Burs. Canarium odontophyllum	1	1.20	1.2	173	0.003	64.71
14 112 Burs. Dacryodes rostrata	1	2.20	2.2	447	0.010	561.94
15 214 Burs. Santiria griffithii	8	1.55	2.4	696	0.048	3126.23
16 334 Burs. Santiria sp.1	1	2.60	2.6	567	0.014	995.56
17 215 Cela. Lophopetalum javanicum	7	1.83	3.8	464	0.063	2967.89
18 236 Conn. Agelaea borneensis	10	0.55	1.0	161	0.007	16.17
19 309 Conn. Agelaea trinervis 3	14	0.74	1.6	497	0.019	195.54
20 109 Conn. Ellipanthus beccarii var. peltatus	11	0.86	2.2	267	0.023	726.46
21 222 Dill. Dillenia excelsa 1	1	1.50	1.5	318	0.005	185.84
22 517 Dill. Tetracera (big leaf)	3	1.20	2.6	156	0.015	6.48
23 Dill. Tetracera spp.	4	0.58	0.8	0	0.003	0.00
24 285 Dipt. Shorea parvifolia 1	10	1.34	3.3	577	0.061	3756.21
25 113 Dipt. Shorea polyandra	12	1.52	3.0	668	0.078	4834.48
26 308 Dipt. Shorea sp.6	7	1.84	3.6	502	0.061	3327.98
27 Dipt. Shorea spp.	1	0.90	0.9	206	0.002	43.34
28 70 Eben. Diospyros buxifolia	1	0.40	0.4	152	0.000	6.32
29 280 Eben. Diospyros malayana?(Oka)	11	1.95	3.8	596	0.103	6488.18
30 335 Eben. Diospyros sp.(Annonaceae No1?)	6	1.32	2.9	416	0.032	1485.56
31 72 Euph. Aporosa grandistipulata 1	4	1.83	2.9	510	0.035	1955.24
32 120 Euph. Aporosa lunata	3	1.43	1.9	399	0.013	571.86
33 68 Euph. Baccaurea griffithii	6	1.32	3.3	557	0.032	1821.01
34 104 Euph. Baccaurea stipulata	18	1.97	4.1	510	0.187	9141.41
35 146 Euph. Baccaurea sumatrana	1	0.70	0.7	202	0.001	25.71
36 92 Euph. Drypetes longifolia	9	1.93	4.4	442	0.091	4001.71
37 Euph. Euphorbiaceae spp.	1	0.60	0.6	171	0.001	15.99
38 326 Euph. Ghaleria sp.	1	1.60	1.6	235	0.005	156.26
39 366 Euph. Glochidion arborescens	7	1.16	1.6	297	0.021	608.70
40 155 Euph. Mallotus affinis 1	3	1.83	2.6	509	0.023	1402.86
41 93 Euph. Mallotus affinis 2	8	0.84	1.6	288	0.014	371.08
42 263 Euph. Mallotus miquelianus	10	1.42	2.6	312	0.052	1728.49
43 18 Euph. Omphalea bracteata	8	1.14	2.5	599	0.027	732.38
44 332 Faga. Lithocarpus spicatus	1	0.50	0.5	183	0.001	11.88
45 329 Faga. Lithocarpus spicatus	1	2.60	2.6	449	0.014	788.37
46 304 Icac. Stemonurus sp.	6	0.63	1.0	215	0.006	64.26
47 337 Laur. Actinodaphne procera	1	0.90	0.9	195	0.002	41.03
48 321 Laur. Actinodaphne sp.	2	1.30	1.5	208	0.007	182.53
49 203 Laur. Beilschmiedia sp.	1	1.30	1.3	232	0.003	101.84
50 198 Laur. Dehaasia coriantha	1	1.50	1.5	220	0.005	128.57

Table 5 (continued) P-2 at Km 37, shrub layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
51 295 Laur. Endiandra sp.	1	0.40	0.4	140	0.000	5.82
52 420 Laur. Eusideroxylon zwageri	16	1.96	4.0	830	0.169	11204.80
53 324 Laur. Litsea adscendens	2	0.90	1.1	216	0.003	86.72
54 162 Laur. Litsea angulata	3	2.23	4.1	610	0.042	2930.81
55 379 Laur. Litsea oppositifolia	1	2.90	2.9	457	0.017	998.28
56 128 Laur. Litsea robusta	2	3.00	3.7	446	0.039	2062.69
57 316 Laur. Litsea sp.4	4	1.80	3.8	649	0.038	2779.71
58 704 Lecy. Barringtonia sp.	3	2.10	2.6	516	0.028	1547.30
59 818 Leea. Leea aculeata	59	1.73	3.7	620	0.430	20844.60
60 795 Leea. Leea indica	11	2.05	4.1	901	0.114	8843.92
61 Legu. Leguminosae liana spp.	5	1.32	2.6	164	0.027	24.62
62 275 Legu. Leguminosae sp.1	4	1.38	3.2	140	0.025	38.03
63 341 Legu. Phanera sp.	1	1.90	1.9	0	0.007	0.00
64 86 Legu. Pithecellobium sp.	11	1.58	4.2	527	0.082	3274.26
65 328 Legu. Spatholobus sp.	1	0.60	0.6	0	0.001	0.00
66 166 Magn. Talauma beccari	8	1.43	2.8	484	0.039	1306.40
67 314 Mela. Memecylon walichii	1	0.40	0.4	162	0.000	6.73
68 291 Mela. Pternandra rostrata	1	0.30	0.3	159	0.000	3.72
69 33 Meli. Aglaia argentea	1	0.40	0.4	158	0.000	6.57
70 574 Meli. Aglaia dokko	1	0.80	0.8	208	0.001	34.58
71 245 Meli. Aglaia odoratissima	12	0.77	2.8	561	0.026	1402.57
72 317 Meli. Aglaia tomentosa	2	1.45	1.8	340	0.009	369.73
73 325 Meli. Dysoxylum sp.1	3	1.77	2.4	383	0.021	826.94
74 322 Meni. Pycnarrhena ?	1	0.70	0.7	0	0.001	0.00
75 118 Myri. Knema latifolia	4	1.08	1.4	227	0.011	294.71
76 243 Myrs. Ardisia horsei	11	1.56	3.6	424	0.078	3606.37
77 330 Myrs. Ardisia sp.2	1	0.90	0.9	136	0.002	28.61
78 Myrt. Eugenia perscinnervia by Oka	2	1.25	1.3	300	0.006	200.00
79 160 Myrt. Eugenia sp. 1	6	1.30	2.5	483	0.026	1237.14
80 327 Myrt. Eugenia sp. 6	1	1.20	1.2	249	0.003	93.13
81 336 Pipe. Piper sp.	3	0.83	1.7	0	0.007	0.00
82 Pipe. Piper spp.	1	0.50	0.5	0	0.001	0.00
83 338 Prot. Helicia serrata ?	1	1.00	1.0	226	0.002	58.70
84 21 Rham. Zizyphus horsfieldii	1	2.30	2.3	0	0.011	0.00
85 320 Rham. Zizyphus sp.	4	1.18	3.2	578	0.023	1596.38
86 59 Rosa. Rubus moluccanus	4	1.55	3.1	0	0.028	0.00
87 27 Rubi. Pavetta sylvatica	3	0.87	1.1	203	0.005	120.77
88 313 Rubi. Plectronia cf. confertum	7	1.03	2.2	284	0.019	558.17
89 30 Rubi. Streblosa glabra	1	0.70	0.7	198	0.001	25.20
90 25 Rubi. Urophyllum arboreum 1	2	1.65	2.4	403	0.013	630.70
91 312 Rubi. Urophyllum arboreum 3	6	0.88	1.7	546	0.012	574.81
92 268 Rubi. Urophyllum corymbosum	1	1.10	1.1	242	0.002	76.06
93 31 Rubi. Urophyllum macrophyllum	3	0.87	1.4	306	0.006	185.10
94 342 Sapi. Lepisanthes amoena ?	1	0.40	0.4	141	0.000	5.86
95 79 Sapi. Nephelium mutabile	3	0.60	0.9	232	0.003	65.10
96 101 Sapi. Paraneuphelia nitidum	4	0.93	1.2	291	0.007	238.98
97 315 Sapi. Pometia pinnata	1	1.90	1.9	354	0.007	331.93
98 57 Ster. Pterospermum oblongatum	4	0.65	1.1	218	0.005	124.50
99 165 Tili. Microcos lorzingii	1	0.40	0.4	159	0.000	6.61
100 340 Vita. Cayratia cf. geniculata	2	0.45	0.6	0	0.001	0.00

Table 5 (continued) P-2 at Km 37, shrub layer

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
101	Vita. Vitaceae spp.	1	0.80	0.8	0	0.001	0.00
102	XXXX.	13	1.75	4.0	630	0.111	3520.20
103	306 XXXX. -	1	0.40	0.4	141	0.000	5.86
104	XXXX. Eugenia-Melastoma	3	1.13	2.6	381	0.014	683.52
105	XXXX. Liana A538 Opposit leaf	8	1.31	3.2	214	0.041	132.04
106	XXXX. Pinnate leaf tree	2	2.50	3.6	551	0.030	1971.38
107	Total	596	1.39	4.4	901	3.299	136428.00

Dead trees

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
108	74 Arec. Calamus sp.1	1	1.30	1.3	0	0.003	0.00
109	104 Euph. Baccaurea stipulata	1	4.50	4.5	327	0.041	1719.94
110	420 Laur. Eusideroxylon zwageri	1	1.70	1.7	276	0.006	207.18
111	316 Laur. Litsea sp.4	1	1.00	1.0	215	0.002	55.84
112	XXXX.	10	1.83	4.1	758	0.083	4233.41
113	Total	14	1.91	4.5	758	0.136	6216.37

Table 6 P-3 at Km 37

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1	134 Anno. Mitrephora heyneana	1	6.20	6.2	0	0.075	0.00
2	276 Burs. Canarium odontophyllum	1	4.70	4.7	721	0.043	3981.72
3	604 Dati. Octomeles sumatrana	2	13.20	15.0	1400	0.697	115659.00
4	19 Dipt. Dryobalanops sp.	4	6.33	8.4	985	0.326	33968.50
5	353 Euph. Bridelia minutiflora	1	8.40	8.4	1500	0.139	26460.00
6	354 Euph. Croton argyratus	1	5.40	5.4	729	0.057	5314.41
7	356 Euph. Glochidion borneensis	2	4.65	4.8	610	0.085	6417.41
8	794 Euph. Macaranga pruinosa	9	8.37	14.9	1550	1.429	218408.00
9	93 Euph. Mallotus affinis 2	1	9.90	9.9	1072	0.192	26266.70
10	143 Euph. Mallotus lackeyi	2	5.50	6.0	498	0.120	7469.50
11	18 Euph. Omphalea bracteata	1	6.80	6.8	0	0.091	0.00
12	349 Laur. Litsea sp.	1	7.00	7.0	770	0.096	9432.50
13	818 Leea. Leea aculeata	2	4.65	5.0	800	0.085	7579.36
14	230 Legu. Sindora coriacea	1	10.60	10.6	1250	0.221	35112.50
15	91 Mora. Ficus uncinata 2	1	8.80	8.8	832	0.152	16107.50
16	351 Myrt. Eugenia sp. 5	1	5.10	5.1	633	0.051	4116.08
17	799 Rubi. Anthocephalus chinensis	14	25.51	49.7	2550	20.301	5019200.00
18	833 Ruta. Evodia alba	1	19.60	19.6	1450	0.754	139258.00
19	266 Sapi. Nephelium sp.2	1	7.50	7.5	731	0.110	10279.70
20	101 Sapi. Paraneplium nitidum	4	8.50	8.8	1110	0.569	68906.40
21	51 Sonn. Duabanga moluccana	2	17.50	17.9	1860	1.203	276920.00
22	Total	53	12.88	49.7	2550	26.797	6030860.00

Dead trees

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
23	794 Euph. Macaranga pruinosa	3	14.87	17.8	397	1.340	53485.90
24	799 Rubi. Anthocephalus chinensis	1	15.30	15.3	1014	0.460	59341.80
25	101 Sapi. Paraneplium nitidum	2	22.35	29.3	1050	2.151	62254.50
26	XXXX.	5	32.58	65.5	908	17.441	211315.00
27	Total	11	24.32	65.5	1050	21.392	386397.00

Table 7 P-4

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1	359 Comp. Blumea chinensis	4	1.73	2.2	939	0.025	600.96
2	222 Dill. Dillenia excelsa 1	1	2.70	2.7	216	0.014	393.66
3	280 Eben. Diospyros malayana?(Oka)	3	5.70	9.3	700	0.242	20582.70
4	358 Euph. Glochidion sp.3	1	0.47	0.5	142	0.000	7.84
5	143 Euph. Mallotus lackeyi	21	1.91	5.5	557	0.202	9078.33
6	362 Euph. Omalanthus populneus	54	10.15	17.6	1240	11.838	1519060.00
7	18 Euph. Omphalea bracteata	2	0.87	1.1	485	0.003	165.65
8	818 Leea. Leea aculeata	5	1.56	5.3	627	0.059	4485.47
9	Pipe. Piper cf. aduncum?	10	5.44	7.7	892	0.607	55552.00
10	989 Urti. Pipturus argenteus ?	1	9.50	9.5	800	0.177	18050.00
11	22 Verb. Clerodendron buchanani	7	1.06	2.7	339	0.024	907.32
12	XXXX.	1	2.00	2.0	358	0.008	358.00
13	Zing. Zingiberaceae spp.	367	1.00	1.9	368	0.772	23289.30
14	Total	477	2.23	17.6	1240	13.971	1652530.00

Dead trees

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
15	143 Euph. Mallotus lackeyi	2	7.40	9.0	415	0.225	11397.70
16	362 Euph. Omalanthus populneus	1	5.70	5.7	832	0.064	6757.92
17	Pipe. Piper cf. aduncum?	1	1.70	1.7	246	0.006	177.74
18	Pipe. Piper spp.	1	2.40	2.4	152	0.011	218.88
19	Total	5	4.92	9.0	832	0.306	18552.20

Table 8 P-5

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1	Anno. Annonaceae spp.	3	5.70	12.1	965	0.299	34205.10
2	151 Anno. Polyalthia lateriflora 1	1	10.30	10.3	180	0.198	4546.71
3	200 Anno. Popovia pisocarpa 1	2	2.40	3.0	438	0.023	1146.86
4	388 Arec. Calamus sp.2	2	1.20	1.3	0	0.005	0.00
5	Arec. Korthalsia spp.	9	2.26	3.0	0	0.088	0.00
6	112 Burs. Dacryodes rostrata	3	3.10	5.1	946	0.065	4397.07
7	744 Conn. Agelaea trinervis 1	1	0.50	0.5	232	0.000	13.81
8	386 Conn. Connarus sp.	1	0.40	0.4	0	0.000	0.00
9	109 Conn. Ellipanthus beccarii var. peltatus	1	0.40	0.4	160	0.000	6.10
10	40 Dill. Dillenia excelsa 1	1	8.10	8.1	444	0.123	6935.92
11	376 Dipt. Shorea parvifolia 2	3	4.03	5.0	640	0.098	7325.57
12	113 Dipt. Shorea polyandra	4	2.63	3.6	678	0.057	3913.85
13	372 Dipt. Shorea sp.7	2	1.90	2.8	312	0.017	74.29
14	280 Eben. Diospyros malayana?(Oka)	5	2.72	4.7	509	0.081	4796.03
15	335 Eben. Diospyros sp.(Annonaceae No1?)	1	1.70	1.7	280	0.005	192.67
16	354 Euph. Croton argyratus	45	11.45	24.8	1400	13.835	1974990.00
17	92 Euph. Drypetes longifolia	1	1.10	1.1	212	0.002	61.08
18	143 Euph. Mallotus lackeyi	38	1.91	5.9	812	0.392	21428.30
19	362 Euph. Omalanthus populneus	20	7.73	11.8	1450	2.418	342453.00
20	18 Euph. Omphalea bracteata	9	1.97	3.5	337	0.078	1144.90

Table 8 (continued) P-5

21	379 Laur.	<i>Litsea oppositifolia</i>	1	4.70	4.7	244	0.041	1283.32
22	818 Leea.	<i>Leea aculeata</i>	6	1.78	2.4	402	0.039	1407.48
23	795 Leea.	<i>Leea indica</i>	1	0.60	0.6	149	0.001	12.77
24	371 Legu.	<i>Cassia nodosa</i>	2	13.55	15.3	1260	0.698	111999.00
25	Legu.	<i>Leguminosae liana spp.</i>	15	0.77	1.7	346	0.022	111.34
26	373 Legu.	<i>Milletia antrorepurea</i>	2	2.35	4.1	0	0.032	0.00
27	325 Meli.	<i>Dysoxylum sp.1</i>	1	7.10	7.1	770	0.094	9241.83
28	374 Meni.	<i>Coscinum fenestratum</i>	2	2.40	3.0	406	0.023	870.00
29	385 Meni.	<i>Tinomiscium sp.</i>	1	0.30	0.3	0	0.000	0.00
30	91 Mora.	<i>Ficus uncinata 2</i>	1	11.90	11.9	970	0.265	32705.20
31	384 Mora.	<i>Ficus variegata</i>	1	6.30	6.3	948	0.074	8958.60
32	Myri.	<i>Myristicaceae spp.</i>	1	3.40	3.4	354	0.022	974.34
33	391 Myrt.	<i>Eugenia sp. 7</i>	1	0.50	0.5	178	0.000	10.60
34	383 Olea.	<i>Chionanthus sp.</i>	1	1.40	1.4	264	0.004	123.20
35	21 Rham.	<i>Zizyphus horsfieldii</i>	1	1.70	1.7	0	0.005	0.00
36	378 Rubi.	<i>Nauclea orientalis</i>	1	12.50	12.5	1065	0.292	39620.50
37	381 Rubi.	<i>Uncaria attenuata</i>	8	3.61	6.2	0	0.230	0.00
38	101 Sapi.	<i>Paranephelium nitidum</i>	14	4.11	11.6	1135	0.798	99424.50
39	411 Schi.	<i>Lygodium circinatum</i>	1	0.20	0.2	0	0.000	0.00
40	387 Vita.	<i>Tetrastigma pedunculare</i>	1	0.90	0.9	0	0.002	0.00
41	XXXX.		8	5.30	27.5	1460	1.563	264104.00
42	XXXX.	<i>Liana A538 Opposit leaf</i>	2	0.60	0.7	0	0.001	0.00
43	Total		224	4.99	27.5	1460	21.994	2978480.00

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
44 Dipt. <i>Shorea spp.</i>	1	135.00	135.0	670	34.081	2907320.00
45 XXXX.	10	28.53	88.0	1080	34.440	421716.00
46 Total	11	38.21	135.0	1080	68.520	3329040.00

Table 9 P-6 at Km 45, tree layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1 452 Arec. Borassodendron borneensis	16	25.90	43.0	1500	4.729	474344.00
2 463 Bomb. Durio acutifolium	2	15.00	24.5	1400	0.263	45471.80
3 458 Bomb. Durio kutejensis	1	22.30	22.3	2230	0.208	58987.10
4 112 Burs. Dacryodes rostrata	1	5.70	5.7	330	0.014	570.30
5 466 Burs. Haplolobus sp.	2	24.20	33.7	3250	0.565	203801.00
6 428 Dill. Dillenia sp.1	1	4.90	4.9	260	0.010	332.05
7 465 Dipt. Dipterocarpus elongatus	3	19.57	47.4	5270	0.966	632843.00
8 461 Dipt. Dipterocarpus gracilis	1	43.30	43.3	3710	0.783	369992.00
9 85 Dipt. Shorea leprosula	1	5.50	5.5	550	0.013	884.97
10 Dipt. Shorea spp.	1	54.00	54.0	3750	1.218	581649.00
11 456 Euph. Baccaurea javanica	1	6.60	6.6	810	0.018	1876.79
12 467 Euph. Koilodepas brives	1	4.60	4.6	420	0.009	472.72
13 427 Euph. Macaranga gigantea	88	8.31	14.0	1250	2.785	349861.00
14 794 Euph. Macaranga pruinosa	49	6.65	13.9	1330	1.011	125578.00
15 848 Euph. Macaranga trichocarpa	16	5.16	6.6	1100	0.180	15931.30
16 460 Euph. Mallotus leptophyllus	3	13.67	18.0	2250	0.259	64484.70
17 454 Euph. Mallotus macrostachyus	75	6.36	17.0	930	1.383	127282.00
18 455 Euph. Mallotus paniculatus	2	5.20	5.6	800	0.023	2278.13
19 Faga. Lithocarpus spp.	1	7.90	7.9	100	0.026	331.97
20 420 Laur. Eusideroxylon zwageri	3	38.17	81.8	4150	3.074	1554260.00
21 316 Laur. Litsea sp.4	1	42.10	42.1	0	0.740	0.00
22 795 Leea. Leea indica	1	5.40	5.4	740	0.012	1147.79
23 Legu. Archidendron clipealea ? by Oka	1	76.20	76.2	4850	2.426	1497940.00
24 464 Legu. Millettia sericea 1	1	4.30	4.3	580	0.008	570.44
25 439 Legu. Millettia sericea 1	1	6.30	6.3	210	0.017	443.35
26 166 Magn. Talauma beccari	1	4.70	4.7	580	0.009	681.50
27 46 Mela. Pternandra rostrata	1	12.20	12.2	160	0.062	1266.72
28 468 Meli. Aphanamixis humile	1	29.70	29.7	2810	0.369	131844.00
29 90 Mora. Ficus uncinata 1	2	5.10	5.6	570	0.022	1475.60
30 327 Myrt. Eugenia sp. 6	1	9.80	9.8	1260	0.040	6436.72
31 469 Myrt. Eugenia sp. 8	1	70.60	70.6	4100	2.082	1087010.00
32 462 Olac. Scorodicarpus borneensis	1	47.30	47.3	1620	0.935	192788.00
33 Rosa. Parastemon urophyllum	1	48.10	48.1	3450	0.967	424572.00
34 Rubi. Nauclea spp.	1	22.80	22.8	0	0.217	0.00
35 Verb. Callicarpa longifolia by Oka	1	4.50	4.5	570	0.008	613.96
36 370 Verb. Guensia furfuracea	1	6.30	6.3	720	0.017	1520.04
37 XXXX.	7	26.87	118.3	5800	6.426	4474200.00
38 XXXX. Eugenia-Melastoma	1	8.20	8.2	960	0.028	3433.53
39 Total	293	10.53	118.3	5800	31.921	12437200.00

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
40 452 Arec. Borassodendron borneensis	1	21.10	21.1	135	0.186	3196.99
41 Dipt. Shorea spp.	3	92.60	113.0	4830	11.032	3658150.00
42 456 Euph. Baccaurea javanica	2	6.85	7.0	790	0.039	3897.62
43 104 Euph. Baccaurea stipulata	2	6.25	7.1	410	0.033	1363.05
44 427 Euph. Macaranga gigantea	3	8.53	13.6	650	0.108	2017.11
45 794 Euph. Macaranga pruinosa	4	4.38	4.7	400	0.032	962.20
46 848 Euph. Macaranga trichocarpa	1	5.80	5.8	40	0.014	71.57
47 454 Euph. Mallotus macrostachyus	9	6.64	9.6	960	0.173	11031.30
48 420 Laur. Eusideroxylon zwageri	6	11.42	23.3	2800	0.439	101411.00
49 XXXX.	137	9.36	62.5	3050	7.848	655786.00
50 Total	168	10.62	113.0	4830	19.904	4437880.00

Table 10 P-6 at Km 45, shrub layer

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1	528 Anno. Artabotrys suaveolens	3	0.59	0.8	307	0.003	71.40
2	138 Anno. Goniothalamus macrophyllus	2	0.93	1.3	181	0.004	91.47
3	534 Anno. Melodorum kentii	21	0.87	2.0	684	0.040	1677.28
4	747 Anno. Oxymitra cuneiformis? shrub	1	0.86	0.9	236	0.002	45.93
5	264 Anno. Polyalthia oblonga	2	0.56	0.8	244	0.002	46.37
6	537 Anno. Popowia sp.	1	0.68	0.7	203	0.001	24.70
7	212 Anno. Uvaria elmeri	1	0.57	0.6	143	0.001	12.23
8	540 Anno. Uvaria sp.2	1	1.89	1.9	598	0.007	562.14
9	542 Anno. Uvaria sp.3	4	0.74	0.9	234	0.005	124.03
10	216 Anno. Xylopiia ferruginera	3	0.88	1.6	397	0.006	267.45
11	531 Arec. Calamus sp.4	1	2.00	2.0	473	0.008	497.90
12	389 Arec. Korthalsia rigida	1	0.90	0.9	185	0.002	39.43
13	390 Arec. Korthalsia rostrata	1	0.64	0.6	220	0.001	23.71
14	541 Bomb. Durio sp.	2	0.34	0.3	276	0.000	13.32
15	112 Burs. Dacryodes rostrata	1	1.15	1.2	232	0.003	80.74
16	429 Conn. Cnestis platantha	1	1.66	1.7	387	0.006	280.64
17	109 Conn. Ellipanthus beccarii var. peltatus	1	3.48	3.5	389	0.025	1239.72
18	706 Dill. Dillenia sp.2	8	1.54	2.2	388	0.043	1422.06
19	517 Dill. Tetracera (big leaf)	3	0.74	0.9	353	0.004	126.34
20	Dill. Tetracera spp.	1	3.05	3.1	0	0.019	0.00
21	480 Dipt. Hopea bracteata	2	0.51	0.5	207	0.001	26.21
22	456 Euph. Baccaurea javanica	1	1.98	2.0	240	0.008	247.60
23	427 Euph. Macaranga gigantea	10	2.15	4.3	702	0.118	6981.27
24	794 Euph. Macaranga pruinosa	54	1.63	4.1	710	0.396	23670.10
25	848 Euph. Macaranga trichocarpa	22	2.33	4.2	723	0.292	20473.50
26	548 Euph. Mallotus echinatus	1	1.24	1.2	312	0.003	126.25
27	460 Euph. Mallotus leptophyllus	2	0.54	0.6	215	0.001	27.92
28	454 Euph. Mallotus macrostachyus	30	2.66	4.2	586	0.496	29825.90
29	546 Laur. Actinodaphne sp.3	1	1.00	1.0	281	0.002	73.95
30	533 Laur. Beilschmiedia lucidula ?	3	1.02	1.3	233	0.007	177.71
31	535 Laur. Litsea ferruginea	1	0.48	0.5	145	0.000	8.79
32	539 Laur. Litsea resinosa	1	1.15	1.2	276	0.003	96.06
33	795 Leea. Leea indica	2	0.62	0.7	160	0.002	32.79
34	529 Legu. Derris sp.	4	0.76	1.1	907	0.005	321.71
35	Legu. Leguminosae liana spp.	2	1.02	1.2	0	0.004	0.00
36	464 Legu. Milletia sericea 1	4	0.89	1.1	230	0.007	178.21
37	166 Magn. Talauma beccarii	3	1.27	1.9	356	0.011	442.60
38	400 Mela. Melastoma malabathricum	2	1.19	1.4	309	0.006	211.99
39	46 Mela. Pternandra rostrata	3	0.58	0.8	199	0.002	54.65
40	Mora. Ficus shrub spp.	1	0.68	0.7	150	0.001	18.25
41	90 Mora. Ficus uncinata 1	1	1.06	1.1	234	0.002	69.19
42	207 Myrt. Eugenia sp. 4	1	1.40	1.4	310	0.004	159.90
43	547 Poly. Xanthophyllum ellipticum	1	3.42	3.4	773	0.024	2379.29
44	430 Pter. Stenochlaena palustris	4	0.48	0.8	544	0.002	123.27
45	538 Rubi. Uncaria glabra	1	0.43	0.4	130	0.000	6.33
46	Rubi. Uncaria spp.	4	0.50	0.7	228	0.002	50.43
47	25 Rubi. Urophyllum arboreum 1	1	2.33	2.3	357	0.011	510.03
48	268 Rubi. Urophyllum corymbosum	1	0.39	0.4	162	0.000	6.48
49	137 Sapi. Lepisanthes amoena ?	1	0.92	0.9	175	0.002	38.98
50	Sapi. Sapindaceae spp.	1	0.77	0.8	158	0.001	24.65
51	Verb. Callicarpa longifolia by Oka	3	1.36	2.4	320	0.016	608.88
52	543 Verb. Callicarpa sp.1	2	0.80	1.1	226	0.003	80.69
53	22 Verb. Clerodendron buchanani	2	1.24	1.5	294	0.007	236.06
54	Vita. Vitaceae spp.	1	0.45	0.5	0	0.000	0.00
55	XXXX.	3	0.62	1.0	396	0.003	76.72
56	Total	235	1.51	4.3	907	1.624	94013.20

Table 10 (continued) P-6 at Km 45, shrub layer

Dead trees

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
57	112 Burs. <i>Dacryodes rostrata</i>	1	2.45	2.5	224	0.012	353.83
58	427 Euph. <i>Macaranga gigantea</i>	4	2.10	3.2	292	0.045	1210.41
59	794 Euph. <i>Macaranga pruinosa</i>	1	2.17	2.2	171	0.010	211.90
60	XXXX.	11	2.06	3.0	430	0.106	4050.89
61	Total	17	2.10	3.2	430	0.173	5827.04

Table 11 P-7 at Km 45

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
1	Anno. <i>Annonaceae</i> spp.	1	0.70	0.7	154	0.001	13.48
2	452 Arec. <i>Borassodendron borneensis</i>	1	16.50	16.5	627	0.382	30482.30
3	Arec. <i>Calamus</i> spp.	1	1.10	1.1	433	0.002	93.56
4	390 Arec. <i>Korthalsia rostrata</i>	2	1.30	1.9	203	0.006	146.35
5	585 Burs. <i>Canarium hirsutum</i> 2	1	12.30	12.3	1010	0.212	27286.20
6	899 Cluc. <i>Cratoxylum cochinchinense</i>	3	3.57	8.0	812	0.095	9398.32
7	335 Eben. <i>Diospyros</i> sp.(<i>Annonaceae</i> No1?)	2	0.60	0.6	231	0.001	29.38
8	584 Eben. <i>Diospyros</i> sp.6	1	1.70	1.7	249	0.004	128.50
9	354 Euph. <i>Croton argyratus</i>	1	0.60	0.6	205	0.001	13.18
10	559 Euph. <i>Glochidion capitatum</i>	90	6.20	12.2	1099	5.824	630687.00
11	427 Euph. <i>Macaranga gigantea</i>	2	7.50	8.5	991	0.161	18142.40
12	794 Euph. <i>Macaranga pruinosa</i>	6	1.62	3.2	559	0.028	1686.62
13	848 Euph. <i>Macaranga trichocarpa</i>	62	2.35	9.9	887	0.633	58120.80
14	143 Euph. <i>Mallotus lackeyi</i>	2	1.20	1.7	309	0.005	177.84
15	454 Euph. <i>Mallotus macrostachyus</i>	24	7.87	19.6	1009	2.466	272613.00
16	795 Leea. <i>Leea indica</i>	13	1.01	1.9	380	0.021	770.50
17	464 Legu. <i>Milletia sericea</i> 1	1	0.70	0.7	147	0.001	12.86
18	400 Mela. <i>Melastoma malabathricum</i>	7	2.37	4.0	803	0.067	4585.55
19	574 Meli. <i>Aglaia dokko</i>	1	1.20	1.2	221	0.002	56.83
20	581 Mora. <i>Artocarpus rigidus</i> 1	1	14.00	14.0	838	0.275	29330.00
21	575 Mora. <i>Ficus obscura</i>	8	5.79	11.0	908	0.452	37736.40
22	580 Mora. <i>Ficus obscura</i>	1	3.90	3.9	534	0.021	1450.38
23	573 Mora. <i>Ficus</i> sp.2	2	0.55	0.7	145	0.001	16.52
24	576 Mora. <i>Ficus</i> sp.4	1	0.40	0.4	209	0.000	5.97
25	90 Mora. <i>Ficus uncinata</i> 1	15	2.77	9.7	838	0.294	28136.60
26	577 Myrs. <i>Embelia philippinensis</i>	4	1.43	1.6	0	0.012	0.00
27	Pipe. <i>Piper</i> spp.	2	1.65	2.2	0	0.008	0.00
28	430 Pter. <i>Stenochlaena palustris</i>	2	0.55	0.6	544	0.001	30.71
29	59 Rosa. <i>Rubus moluccanus</i>	5	0.54	0.7	374	0.002	76.13
30	799 Rubi. <i>Anthocephalus chinensis</i>	1	30.80	30.8	862	1.330	146023.00
31	572 Rubi. <i>Gardenia forsteriana</i>	4	4.85	6.7	758	0.148	11849.10
32	381 Rubi. <i>Uncaria attenuata</i>	21	2.05	3.2	908	0.131	4257.79
33	578 Ster. <i>Sterculia stipulata</i>	1	1.20	1.2	231	0.002	59.40
34	583 Urti. <i>Astrothelamus reticulata</i>	1	8.40	8.4	636	0.099	8013.60
35	22 Verb. <i>Clerodendron b Buchananii</i>	1	0.40	0.4	140	0.000	4.00
36	582 Vita. <i>Cayratia</i> cf. <i>geniculata</i>	28	0.44	3.5	707	0.026	338.14
37	579 Vita. <i>Cissus</i> sp.	4	0.88	1.2	0	0.005	0.00
38	Vita. <i>Vitaceae</i> spp.	1	0.70	0.7	0	0.001	0.00
39	XXXX.	9	8.07	67.0	985	6.303	347.97
40	594 Zing. <i>Costus speciosus</i>	3	1.10	1.4	198	0.005	116.54
41	Total	336	3.91	67.0	1099	19.028	1322240.00

Table 12 P-8 at Km 45.

The quadrat was divided into P-8-1 and 2.

*** P-8-1 Melastoma shrub

230m, 14°, N

Area = 97 m²

File	Herb. No.	Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1	2 Comp.	Blumea balsamifera	5	0.88	1.5	330	0.036	1155.91
2	400 Mela.	Melastoma malabathricum	79	0.76	2.0	303	0.496	14975.70
3	0 Total		84	0.77	2.0	330	0.532	16131.60

Dead trees

File	Herb. No.	Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
4	400 Mela.	Melastoma malabathricum	1	0.52	0.5	167	0.002	46.55
0 Total			1	0.52	0.5	167	0.002	46.55

*** P-8-2 Duabanga Forest

N10W, 8°~18°, 230m

Area = 195 m²

File	Herb. No.	Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1	589 Anno.	Xylopia ferruginera by Oka ?	1	2.00	2.0	372	0.016	763.08
2	2 Comp.	Blumea balsamifera	5	1.06	1.3	310	0.023	746.76
3	794 Euph.	Macaranga pruinosa	2	1.70	1.9	371	0.024	1064.13
4	18 Euph.	Omphalea bracteata	1	0.90	0.9	223	0.003	92.63
5	795 Leea.	Leea indica	5	1.62	2.3	437	0.057	2738.97
6	400 Mela.	Melastoma malabathricum	14	0.69	1.2	280	0.032	961.12
7	381 Rubi.	Uncaria attenuata	1	0.80	0.8	0	0.003	0.00
8	51 Sonn.	Duabanga moluccana	29	8.21	17.5	1012	9.563	1066260.00
9	Vita.	Vitaceae heart shaped leaf	1	0.60	0.6	189	0.001	34.89
10	0 XXXX.		1	0.40	0.4	154	0.001	12.64
11	594 Zing.	Costus speciosus	2	1.30	1.5	278	0.014	436.81
12	Zing.	Zingiberaceae sp. red	1	1.40	1.4	217	0.008	218.11
13	Zing.	Zingiberaceae sp. white	1	0.00	0.0	241	0.000	0.00
14	0 Total		64	4.27	17.5	1012	9.744	1073330.00

Dead trees

File	Herb. No.	Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
15	2 Comp.	Blumea balsamifera	5	1.16	1.4	250	0.027	633.24
16	400 Mela.	Melastoma malabathricum	2	1.05	1.2	232	0.009	245.68
17	0 XXXX.		1	73.00	73.0	0	21.464	0.00
18	0 Total		8	10.11	73.0	250	21.500	878.92

Table 13 P-10 at Km 45

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1 Anno. Annonaceae spp.	2	0.70	0.8	150	0.002	15.00
2 597 Anno. Artabotrys suaveolens	4	0.90	1.1	250	0.008	167.36
3 534 Anno. Melodorum kentii	3	1.47	1.7	270	0.014	220.75
4 602 Anno. Melodorum manubriatum	1	0.70	0.7	390	0.001	53.08
5 Anno. Plyalthia sp.2	4	0.55	0.7	170	0.003	56.92
6 216 Anno. Xylopi ferruginera	1	1.00	1.0	0	0.002	0.00
7 452 Arec. Borassodendron borneensis	1	28.00	28.0	640	1.710	139378.00
8 601 Arec. Calamus sp.5	1	1.60	1.6	340	0.006	241.78
9 Arec. Calamus spp.	1	1.60	1.6	0	0.006	0.00
10 Arec. Korthalsia spp.	3	1.53	2.4	300	0.019	699.83
11 112 Burs. Dacryodes rostrata	2	1.15	1.4	360	0.006	256.75
12 2 Comp. Blumea balsamifera	1	0.70	0.7	150	0.001	20.42
13 109 Conn. Ellipanthus beccarii var. peltatus	6	0.92	1.2	270	0.012	370.57
14 599 Conn. Rourea minor 2	1	0.70	0.7	0	0.001	0.00
15 604 Dati. Octomeles sumatrana	2	14.60	18.0	1450	0.981	167435.00
16 706 Dill. Dillenia sp.2	6	1.67	2.5	450	0.039	1514.29
17 410 Dill. Tetracera scandens	3	0.83	1.4	270	0.006	107.96
18 559 Euph. Glochidion capitatum	1	1.10	1.1	190	0.003	63.86
19 595 Euph. Glochidion sp.5	2	4.30	6.6	650	0.104	8153.89
20 427 Euph. Macaranga gigantea	2	9.25	15.0	1010	0.518	64350.00
21 794 Euph. Macaranga pruinosa	21	4.70	10.5	1020	1.474	160812.00
22 848 Euph. Macaranga trichocarpa	19	2.42	6.3	750	0.374	27950.20
23 454 Euph. Mallotus macrostachyus	4	9.08	11.6	890	0.749	68056.50
24 603 Faga. Lithocarpus conocarpus	1	3.50	3.5	500	0.027	1701.39
25 304 Icac. Stemonurus sp.	1	0.60	0.6	200	0.001	20.00
26 Laur. Cinnamomum spp.	1	0.60	0.6	150	0.001	15.00
27 190 Laur. Dehaasia cf. firma	1	1.20	1.2	260	0.003	104.00
28 420 Laur. Eusideroxylon zwageri	3	22.43	50.3	1870	6.037	1211170.00
29 Laur. Lauraceae spp.	3	1.80	4.3	350	0.042	1833.01
30 162 Laur. Litsea angulata	1	0.70	0.7	140	0.001	19.06
31 128 Laur. Litsea robusta	1	7.50	7.5	650	0.123	10156.30
32 795 Leea. Leea indica	2	1.50	2.2	420	0.012	598.44
33 Legu. Leguminosae spp.	1	0.56	0.6	2	0.001	0.15
34 439 Legu. Milletia sericea 1	1	0.60	0.6	150	0.001	15.00
35 45 Mela. Dissochaeta gracilis	1	0.40	0.4	190	0.000	8.44
36 400 Mela. Melastoma malabathricum	4	1.68	3.3	490	0.038	1873.32
37 317 Meli. Aglaia tomentosa	1	12.20	12.2	930	0.325	38450.30
38 573 Mora. Ficus sp.2	1	1.50	1.5	330	0.005	206.25
39 90 Mora. Ficus uncinata 1	1	6.50	6.5	890	0.092	10445.10
40 139 Myrs. Embelia javanica	1	0.40	0.4	0	0.000	0.00
41 596 Myrs. Maesa ramentacea	14	1.04	1.9	350	0.039	974.25
42 320 Rham. Zizyphus sp.	2	0.45	0.5	180	0.001	19.11
43 59 Rosa. Rubus moluccanus	6	0.85	1.0	320	0.010	118.22
44 381 Rubi. Uncaria attenuata	4	1.18	1.8	195	0.014	138.88
45 598 Rubi. Uncaria sp.	3	0.87	1.5	170	0.006	130.85
46 Rubi. Uncaria spp.	3	1.30	2.1	420	0.014	168.00
47 187 Rubi. Urophyllum arboreum 1	1	0.60	0.6	160	0.001	16.00
48 51 Sonn. Duabanga moluccana	3	12.90	14.5	930	1.101	125245.00
49 600 Tili. Pentace burmanica	1	0.80	0.8	235	0.001	41.78
50 Verb. Callicarpa longifolia by Oka	12	0.89	1.7	370	0.025	931.44

Table 13 (continued) P-10 at Km 45

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
51 22 Verb. Clerodendron buchanani	1	0.40	0.4	150	0.000	6.67
52 Vita. Vitaceae heart shaped leaf	7	1.06	1.6	390	0.018	355.11
53 XXXX.	4	1.60	3.3	690	0.035	2260.18
54 XXXX. Liana A538 Opposit leaf	1	0.50	0.5	0	0.001	0.00
55 Total	178	2.95	50.3	1870	14.011	2046940.00

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
56 109 Conn. Ellipanthus beccarii var. peltatus	2	3.55	5.5	595	0.072	5205.88
57 Dipt. Shorea spp.	1	36.20	36.2	2690	2.859	979190.00
58 794 Euph. Macaranga pruinosa	3	2.97	3.5	230	0.059	1195.64
59 454 Euph. Mallotus macrostachyus	1	11.00	11.0	860	0.264	28905.60
60 190 Laur. Dehaasia cf. firma	1	5.60	5.6	820	0.068	7143.11
61 420 Laur. Eusideroxylon zwageri	1	9.40	9.4	940	0.193	23071.80
62 596 Myrs. Maesa ramentacea	1	2.60	2.6	170	0.015	319.22
63 187 Rubi. Urophycium arboreum 1	1	5.20	5.2	80	0.059	600.89
64 Verb. Callicarpa longifolia by Oka	1	0.50	0.5	150	0.001	10.42
65 XXXX.	37	7.89	59.2	2350	14.383	2523050.00
66 Total	49	7.73	59.2	2690	17.972	3568700.00

Table 14 P-9 at Km 45

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
1 534 Anno. Melodorum kentii	2	0.40	0.4	359	0.003	57.44
2 517 Dill. Tetracera (big leaf)	1	0.70	0.7	477	0.004	233.73
3 410 Dill. Tetracera scandens	1	0.50	0.5	0	0.002	0.00
4 593 Dios. Dioscorea sp.	1	0.10	0.1	0	0.000	0.00
5 84 Dipt. Shorea leposula	1	1.10	1.1	283	0.010	342.43
6 592 Euph. Glochidion sp.4	1	8.80	8.8	755	0.608	58467.20
7 427 Euph. Macaranga gigantea	1	4.80	4.8	692	0.181	15943.70
8 794 Euph. Macaranga pruinosa	3	1.30	1.9	504	0.044	2426.64
9 848 Euph. Macaranga trichocarpa	286	1.52	7.5	846	6.876	478568.00
10 454 Euph. Mallotus macrostachyus	3	4.60	5.6	609	0.511	37052.10
11 Legu. Leguminosae liana spp.	1	0.20	0.2	0	0.000	0.00
12 400 Mela. Melastoma malabathricum	1	0.50	0.5	147	0.002	36.75
13 46 Mela. Pternandra rostrata	6	0.52	0.9	227	0.015	373.67
14 580 Mora. Ficus obscura	1	0.50	0.5	167	0.002	41.75
15 577 Myrs. Embelia philippinensis	1	0.90	0.9	145	0.006	117.45
16 462 Olac. Scorodicarpus borneensis	1	0.40	0.4	134	0.001	21.44
17 59 Rosa. Rubus moluccanus	10	0.62	1.3	617	0.038	1500.45
18 381 Rubi. Uncaria attenuata	7	1.51	2.7	619	0.164	1577.92
19 Total	328	1.50	8.8	846	8.467	596760.00

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
20 Euph. Euphorbiaceae spp.	1	2.60	2.6	127	0.053	858.52
21 848 Euph. Macaranga trichocarpa	8	2.73	6.5	487	0.726	28009.00
22 462 Olac. Scorodicarpus borneensis	1	8.00	8.0	257	0.503	16448.00
23 XXXX.	5	4.12	6.7	422	0.767	25016.50
24 Total	15	3.53	8.0	487	2.049	70332.10

Table 15 P-11 at Km 45, tree layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1 Anno. Annonaceae spp.	1	16.10	16.1	1500	0.106	20250.80
2 138 Anno. Goniiothalamus macrophyllus	1	5.50	5.5	660	0.012	1039.84
3 629 Anno. Monocarpia euneura	1	13.30	13.3	1057	0.072	9738.16
4 624 Anno. Polyalthia rumphii 2	1	14.20	14.2	1700	0.082	17853.50
5 98 Anno. Polyalthia sumatrana	5	15.52	20.3	2050	0.528	113251.00
6 615 Anno. Sageraea lanceolata	2	16.75	18.5	1500	0.232	17943.50
7 452 Arec. Borassodendron borneensis	10	22.52	42.0	1320	2.281	287962.00
8 650 Bomb. Durio cf. acutifolium ?	1	6.90	6.9	1079	0.019	2675.58
9 625 Bomb. Durio griffithii ?	1	8.10	8.1	639	0.027	2183.58
10 112 Burs. Dacryodes rostrata	3	8.43	10.5	1340	0.090	14231.50
11 614 Burs. Santiria sp.2	1	7.10	7.1	809	0.021	2124.05
12 618 Cluc. Garcinia parvifolia	1	8.30	8.3	972	0.028	3487.56
13 109 Conn. Ellipanthus beccarii var. peltatus	4	5.10	5.6	891	0.043	3414.01
14 Dipt. Dipterocarpaceae spp.	2	90.50	175.0	2200	12.542	3510430.00
15 465 Dipt. Dipterocarpus elongatus	2	4.90	5.2	769	0.020	1726.30
16 Dipt. Dipterocarpus spp.	1	121.00	121.0	6100	5.989	4651570.00
17 19 Dipt. Dryobalanops sp.	33	32.08	151.7	6300	34.863	22579000.00
18 480 Dipt. Hopea bracteata	2	10.35	15.0	2100	0.105	26343.90
19 84 Dipt. Shorea leposula	2	9.15	10.7	1345	0.070	11085.80
20 85 Dipt. Shorea leprosula	1	24.00	24.0	3800	0.236	114000.00
21 610 Dipt. Shorea ovalis	3	7.80	11.4	1600	0.083	14015.60
22 113 Dipt. Shorea polyandra	3	4.77	4.9	725	0.028	2441.42
23 617 Dipt. Shorea seminis	2	6.35	7.6	957	0.034	4012.96
24 613 Dipt. Shorea sp.4	1	8.70	8.7	1220	0.031	4809.47
25 Dipt. Shorea spp.	1	5.20	5.2	630	0.011	887.25
26 665 Dipt. Vatica papuana	1	5.50	5.5	636	0.012	1002.03
27 191 Eben. Diospyros sumatrana	1	7.20	7.2	745	0.021	2011.50
28 635 Euph. Aporosa grandistipulata 3	1	7.30	7.3	808	0.022	2242.62
29 120 Euph. Aporosa lunata	1	18.20	18.2	1900	0.135	32779.00
30 609 Euph. Aporosa sp.1	2	9.70	10.1	1049	0.077	9942.80
31 627 Euph. Baccaurea sp.4	1	8.00	8.0	1131	0.026	3770.00
32 104 Euph. Baccaurea stipulata	4	5.65	6.6	833	0.053	4749.61
33 667 Euph. Blumeodendron tokbrai	1	8.10	8.1	955	0.027	3263.41
34 99 Euph. Drypetes longifolia	1	21.70	21.7	1800	0.193	44145.90
35 467 Euph. Koilodepas brives	93	6.52	14.7	1040	1.737	159253.00
36 623 Euph. Koilodepas sp.	3	14.53	22.4	2100	0.319	71218.20
37 93 Euph. Mallotus affinis 2	1	12.60	12.6	1850	0.065	15297.20
38 548 Euph. Mallotus echinatus	20	11.73	21.8	2300	1.300	299749.00
39 611 Faga. Lithocarpus sp.1	1	10.20	10.2	980	0.043	5310.37
40 676 Flac. Ryparosa javanica	1	31.20	31.2	3000	0.398	152100.00
41 420 Laur. Eusideroxylon zwageri	4	64.03	120.5	4200	11.233	5818660.00
42 Laur. Lauraceae spp.	1	62.70	62.7	3700	1.608	757592.00
43 439 Legu. Milletia sericea 1	6	6.12	8.2	949	0.095	8630.03
44 45 Mela. Dissochaeta gracilis	1	21.70	21.7	918	0.193	22514.40
45 672 Meli. Didimocheton nutan 1	1	5.20	5.2	796	0.011	1121.03
46 12 Mora. Artocarpus lanceifolius	3	17.47	26.2	1750	0.475	94413.10
47 634 Mora. Artocarpus rigidus 2	2	32.05	37.3	2200	0.863	190993.00
48 Myri. Horsfieldia lanceifolius by Oka	2	12.10	16.8	2300	0.138	37118.40
49 307 Myri. Nema laurina	8	6.78	9.8	1090	0.158	18527.20
50 633 Myri. Myristica elliptica	1	7.10	7.1	682	0.021	1790.61

Table 15 (continued) P-11 at Km 45, tree layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
51 Myri. Myristicaceae spp.	2	33.85	40.5	3100	0.974	380432.00
52 626 Myrt. Eugenia sp. 3	1	22.30	22.3	2250	0.203	58276.20
53 327 Myrt. Eugenia sp. 6	1	6.30	6.3	1125	0.016	2325.59
54 630 Myrt. Eugenia sp. 9	2	6.00	7.0	720	0.030	2592.71
55 673 Poly. Xanthophyllum eurhynohum ?	1	6.30	6.3	597	0.016	1234.11
56 257 Prot. Heliciopsis artocarpoides	1	9.30	9.3	773	0.035	3482.12
57 Rosa. Parastemon urophyllum	1	17.50	17.5	3300	0.125	52636.70
58 378 Rubi. Nauclea orientalis	1	17.30	17.3	2400	0.122	37411.20
59 187 Rubi. Urophyllum arboreum 1	1	5.80	5.8	919	0.014	1610.16
60 607 Sapi. Harpulia sp.1	2	10.45	14.6	2000	0.103	24308.60
61 621 Sapi. Nephelium eriopetalum	1	7.20	7.2	789	0.021	2130.30
62 628 Sapot. Palaquium sp.2	1	9.40	9.4	1095	0.036	5039.28
63 612 Ster. Scapium macropodium	1	7.80	7.8	920	0.025	2915.25
64 677 Ster. Sterculia rubiginosa	1	9.10	9.1	975	0.034	4205.20
65 632 Thym. Gonystylus keithii	3	15.23	20.2	1800	0.312	66231.60
66 616 Tili. Microcos crassifolia	1	29.00	29.0	2500	0.344	109505.00
67 619 Tili. Microcos hirsuta	2	8.85	11.8	1213	0.071	10555.40
68 671 Ulma. Gironniera subaequalis	3	10.10	16.2	2200	0.152	38195.60
69 XXXX.	5	8.04	13.3	848	0.147	1923.90
70 XXXX. Pinnate leaf tree	1	9.60	9.6	1400	0.038	6720.00
71 Total	278	14.36	175.0	6300	79.597	39986400.00

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
72 19 Dipt. Dryobalanops sp.	2	67.75	95.0	1400	4.363	119602.00
73 467 Euph. Koilodepas brives	1	6.00	6.0	245	0.015	459.38
74 420 Laur. Eusideroxylon zwageri	2	107.50	115.0	860	9.500	447917.00
75 XXXX.	11	17.22	61.5	4400	2.619	892153.00
76 Total	16	34.12	115.0	4400	16.497	1460130.00

Table 16 P-11 at Km 45, shrub layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1 688 Anno. Desmos sp.	1	1.64	1.6	0	0.006	0.00
2 134 Anno. Mitrephora heyneana	1	0.74	0.7	191	0.001	27.52
3 669 Anno. Monocarpia euneura	1	3.30	3.3	600	0.023	1719.47
4 684 Anno. Oxymitra sp.	1	0.42	0.4	0	0.000	0.00
5 Anno. Pylalthia sp.2	4	1.19	2.1	366	0.015	636.68
6 689 Anno. Polyalthia subcordata	1	1.59	1.6	263	0.005	174.97
7 601 Arec. Calamus sp.5	1	0.48	0.5	0	0.000	0.00
8 112 Burs. Dacryodes rostrata	2	3.56	4.2	876	0.054	5092.86
9 670 Cluc. Garcinia rigida	1	1.70	1.7	150	0.006	114.08
10 236 Conn. Agelaea borneensis	23	0.70	1.4	545	0.029	351.02
11 309 Conn. Agelaea trinervis 3	6	0.81	1.4	400	0.010	76.05
12 109 Conn. Ellipanthus beccarii var. peltatus	9	1.58	3.3	404	0.063	2507.53
13 Dill. Tetracera spp.	1	0.93	0.9	0	0.002	0.00
14 465 Dipt. Dipterocarpus elongatus	3	0.86	1.1	222	0.005	114.20
15 19 Dipt. Dryobalanops sp.	66	1.40	4.3	736	0.390	24179.80
16 480 Dipt. Hopea bracteata	5	1.59	3.6	465	0.039	1172.70
17 826 Dipt. Hopea dryobalanoides	1	1.27	1.3	310	0.003	131.58
18 84 Dipt. Shorea leposula	4	0.88	1.7	216	0.009	234.68
19 610 Dipt. Shorea ovalis	2	0.86	1.2	253	0.003	101.56
20 285 Dipt. Shorea parvifolia 1	1	1.09	1.1	212	0.002	66.28

Table 16 (continued) P-11 at Km 45, shrub layer

21	113	Dipt. Shorea polyandra	28	1.38	4.3	732	0.170	10920.70
22		Dipt. Shorea spp.	1	1.25	1.3	240	0.003	98.68
23	665	Dipt. Vatica papuana	2	1.63	2.8	196	0.017	418.21
24	293	Eben. Diospyros sp.6	3	1.10	1.5	353	0.008	327.58
25	683	Euph. Agrostostachys sp.	1	1.09	1.1	307	0.002	95.99
26	668	Euph. Antidesma trunciflorum	1	0.30	0.3	150	0.000	3.55
27	680	Euph. Aporosa sp.2	1	1.87	1.9	227	0.007	208.89
28	685	Euph. Aporosa stellifera 1	1	1.48	1.5	330	0.005	190.22
29	99	Euph. Drypetes longifolia	1	2.60	2.6	505	0.014	898.37
30	467	Euph. Koilodepas brives	28	2.61	4.1	660	0.471	30768.30
31	155	Euph. Mallotus affinis 1	2	2.51	3.0	579	0.027	1699.43
32	548	Euph. Mallotus echinatus	6	1.46	4.2	769	0.047	4042.95
33	203	Laur. Beilschmiedia sp.	1	0.87	0.9	180	0.002	35.85
34	679	Laur. Cryptocarya crassinervia	1	0.33	0.3	130	0.000	3.73
35	162	Laur. Litsea angulata	1	0.78	0.8	198	0.001	31.70
36		Legu. Leguminosae liana spp.	1	0.30	0.3	160	0.000	3.79
37	439	Legu. Milletia sericea 1	7	2.12	3.4	526	0.073	4086.32
38		Magn. Magnoliaceae spp.	3	1.24	1.7	424	0.010	447.05
39	681	Mela. Dissochaeta sp.2	1	1.08	1.1	413	0.002	126.77
40	691	Meli. Aglaia ganggo	1	4.58	4.6	347	0.043	1915.48
41	686	Meli. Dysoxylum arborescens ?	1	0.36	0.4	175	0.000	5.97
42	12	Mora. Artocarpus lanceifolius	2	2.03	3.3	520	0.023	1495.59
43	307	Myri. Knema laurina	2	1.22	2.0	225	0.008	234.12
44		Myrt. Eugenia perspicinervia by Oka	2	1.42	2.2	575	0.011	719.38
45	682	Myrt. Eugenia sp. 3	1	3.35	3.4	605	0.023	1786.74
46	187	Rubi. Urophyllum arboreum 1	2	1.03	1.3	235	0.005	136.00
47	312	Rubi. Urophyllum arboreum 3	1	0.42	0.4	142	0.000	6.59
48	137	Sapi. Lepisanthes amoena ?	2	1.43	1.5	398	0.008	358.80
49	494	Ster. Scapium borneensis	1	1.67	1.7	304	0.006	223.11
50	632	Thym. Gonystylus keithii	1	3.55	3.6	660	0.026	2188.86
51	829	Vita. Tetrastigma lanceolarium	1	0.30	0.3	0	0.000	0.00
52		Vita. Vitaceae spp.	1	0.50	0.5	210	0.001	13.82
53	XXXX.		3	1.96	3.6	570	0.034	2239.09
54	XXXX.	Eugenia-Melastoma	1	1.01	1.0	288	0.002	77.31
55	XXXX.	Liana A538 Opposit leaf	4	0.98	1.8	340	0.010	279.77
56		Total	250	1.48	4.6	876	1.727	102790.00

Table 17 P-12 at Km 45 (to be continued to page at 46)

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1 700 Anac. Semecarpus forstenii	1	0.75	0.8	214	0.001	30.87
2 597 Anno. Artabotrys suaveolens	5	0.79	1.2	514	0.007	106.23
3 534 Anno. Melodorum kentii	13	0.72	1.1	616	0.015	165.24
4 702 Anno. Melodorum sp.	2	0.45	0.6	175	0.001	16.67
5 693 Anno. Xylopia ferruginera	8	3.76	6.4	723	0.288	22853.90
6 452 Arec. Borassodendron borneensis	5	21.44	26.0	1400	4.690	634505.00
7 112 Burs. Dacryodes rostrata	1	1.72	1.7	410	0.006	311.01
8 236 Conn. Agelaea borneensis	1	0.60	0.6	0	0.001	0.00
9 14 Conn. Agelaea euphlebius	1	1.95	2.0	0	0.008	0.00
10 309 Conn. Agelaea trinervis 3	2	0.32	0.4	0	0.000	0.00
11 706 Dill. Dillenia sp.2	6	2.64	7.8	309	0.149	4719.76
12 Dill. Tetracera spp.	2	0.70	1.0	377	0.002	108.54
13 427 Euph. Macaranga gigantea	51	8.22	14.2	1250	8.217	1107510.00
14 794 Euph. Macaranga pruinosa	49	4.14	11.8	1094	2.325	247723.00
15 848 Euph. Macaranga trichocarpa	67	3.18	6.5	1159	1.617	148312.00
16 520 Euph. Macaranga winkleri	2	1.99	2.5	302	0.017	418.01
17 93 Euph. Mallotus affinis 2	1	0.32	0.3	146	0.000	3.83
18 454 Euph. Mallotus macrostachyus	23	4.41	7.5	817	0.971	74274.80
19 535 Laur. Litsea ferruginea	2	2.42	3.1	417	0.026	1269.16
20 697 Laur. Litsea umbelata	2	1.85	2.1	460	0.014	727.89
21 695 Laur. Phoebe sp.	1	1.78	1.8	300	0.006	243.72
22 704 Lecy. Barringtonia sp.	1	2.25	2.3	395	0.010	512.74
23 795 Leea. Leea indica	1	0.75	0.8	197	0.001	28.41
24 Legu. Leguminosae spp.	3	21.23	60.0	3400	7.264	3139020.00
25 439 Legu. Millettia sericea 1	5	1.23	1.7	372	0.016	553.20
26 400 Mela. Melastoma malabathricum	1	1.02	1.0	213	0.002	56.82
27 12 Mora. Artocarpus lanceifolius	1	1.58	1.6	179	0.005	114.58
28 90 Mora. Ficus uncinata 1	2	1.94	3.1	398	0.021	1002.71
29 Myrs. Embelia ribes by Oka	1	0.30	0.3	0	0.000	0.00
30 699 Myrt. Rhodamnia cinerea	1	0.42	0.4	0	0.000	0.00
31 154 Olac. Ochanostachys amentacea	2	0.61	0.6	191	0.001	36.09
32 430 Pter. Stenochlaena palustris	5	0.43	0.5	605	0.002	78.28
33 696 Rubi. Nauclea subdita 1	1	0.46	0.5	147	0.000	7.98
34 381 Rubi. Uncaria attenuata	6	1.69	3.5	169	0.044	156.17
35 538 Rubi. Uncaria glabra	6	1.50	2.8	237	0.037	178.82
36 Rubi. Uncaria spp.	1	2.13	2.1	0	0.009	0.00
37 411 Schi. Lygodium circinatum	1	0.10	0.1	210	0.000	0.54
38 694 Sima. Eurycoma longifolia	1	0.73	0.7	140	0.001	19.13
39 616 Tili. Microcos crassifolia	1	1.86	1.9	332	0.007	294.51
40 Verb. Callicarpa longifolia by Oka	2	2.31	2.4	360	0.021	957.68
41 Vita. Vitaceae heart shaped leaf	1	0.50	0.5	0	0.001	0.00
42 XXXX.	1	1.48	1.5	151	0.004	84.81
43 XXXX. Liana A538 Opposit leaf	1	0.30	0.3	166	0.000	3.83
44 Total	290	4.28	60.0	3400	25.809	5386410.00

Table 18 P-13 at Km 45, tree layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² m/ha
1 735 Anac. Semecarpus sp.4	1	5.60	5.6	859	0.013	1367.42
2 Anno. Annonaceae spp.	1	5.40	5.4	356	0.012	526.95
3 134 Anno. Mitrephora heyneana	4	6.35	8.2	1135	0.067	8019.84
4 716 Anno. Monocarpia euneura	2	7.85	8.5	833	0.049	4722.60
5 Anno. Polyalthia sp.2	1	10.00	10.0	1200	0.040	6091.37
6 151 Anno. Polyalthia lateriflora 1	3	5.43	6.3	885	0.036	3738.62
7 740 Anno. Polyalthia lateriflora 1	1	12.50	12.5	1500	0.062	11897.20
8 98 Anno. Polyalthia sumatrana	1	5.20	5.2	688	0.011	944.34
9 615 Anno. Sageraea lanceolata	1	6.50	6.5	754	0.017	1617.08
10 452 Arec. Borassodendron borneensis	3	19.67	21.8	1202	0.468	50552.40
11 184 Burs. Canarium littorale	1	9.40	9.4	1250	0.035	5606.60
12 112 Burs. Dacryodes rostrata	3	6.73	7.7	1070	0.055	6088.52
13 719 Burs. Santiria cf. pilosa	1	49.70	49.7	3400	0.985	426310.00
14 Burs. Santiria oblongifolia by Oka	1	4.80	4.8	646	0.009	755.53
15 732 Burs. Santiria sp.1	2	9.25	13.7	1550	0.084	15649.30
16 215 Cela. Lophopetalum javanicum	1	5.50	5.5	920	0.012	1412.69
17 309 Conn. Agelaea trinervis 3	1	6.00	6.0	0	0.014	0.00
18 109 Conn. Ellipanthus beccarii var. peltatus	7	5.40	7.5	1096	0.084	8120.03
19 19 Dipt. Dryobalanops sp.	33	25.42	91.0	5400	17.428	9811580.00
20 713 Dipt. Hopea bracteata	2	20.85	31.2	3500	0.432	181761.00
21 84 Dipt. Shorea leposula	3	9.33	17.1	1600	0.141	26114.90
22 85 Dipt. Shorea leposula	1	4.60	4.6	810	0.008	870.03
23 610 Dipt. Shorea ovalis	1	4.80	4.8	751	0.009	878.33
24 113 Dipt. Shorea polyandra	8	40.50	110.3	6400	10.539	7800420.00
25 Dipt. Shorea spp.	1	20.00	20.0	2150	0.159	43654.80
26 335 Eben. Diospyros sp.(Annonaceae No1?)	1	5.90	5.9	625	0.014	1104.38
27 293 Eben. Diospyros sp.6	4	6.45	11.0	1400	0.078	10941.80
28 Eben. Diospyros spp.	1	9.50	9.5	1008	0.036	4617.87
29 660 Eben. Diospyros sumatrana	1	66.00	66.0	4600	1.737	1017140.00
30 742 Euph. Aporosa elmeri 1	1	7.80	7.8	904	0.024	2791.85
31 72 Euph. Aporosa grandistipulata 1	2	8.80	10.2	1144	0.063	8251.57
32 226 Euph. Baccaurea angulata	1	21.50	21.5	1500	0.184	35196.70
33 68 Euph. Baccaurea griffithii	1	11.70	11.7	1138	0.055	7907.66
34 104 Euph. Baccaurea stipulata	2	6.70	7.9	644	0.037	2858.02
35 667 Euph. Blumeodendron tokbrai	2	7.00	8.0	863	0.040	4361.22
36 733 Euph. Cleistanthus sumatrana 1	1	7.20	7.2	853	0.021	2244.65
37 99 Euph. Drypetes longifolia	5	13.06	21.8	1850	0.441	97351.10
38 467 Euph. Koilodepas brives	108	6.94	16.4	1300	2.286	209924.00
39 623 Euph. Koilodepas sp.	2	14.85	21.0	1500	0.206	35695.70
40 155 Euph. Mallotus affinis 1	2	13.90	22.3	1800	0.210	46388.20
41 548 Euph. Mallotus echinatus	24	11.08	20.4	2000	1.340	247594.00
42 270 Euph. Ostodes sp.	2	19.80	23.2	2800	0.322	96980.30
43 724 Euph. Ryparosa hulfetii	1	8.80	8.8	1200	0.031	4717.16
44 741 Faga. Lithocarpus urceovalis	1	14.60	14.6	985	0.085	10658.00
45 737 Laur. Actinodaphne sp.2	1	13.20	13.2	1500	0.069	13267.00
46 723 Laur. Endiandra sp.	1	7.50	7.5	1400	0.022	3997.46
47 295 Laur. Endiandra sp.	1	6.20	6.2	881	0.015	1719.07
48 420 Laur. Eusideroxylon zwageri	6	21.40	45.8	3900	1.518	584180.00
49 721 Laur. Litsea sp.1	1	5.10	5.1	642	0.010	847.64
50 704 Lecy. Barringtonia sp.	1	18.70	18.7	1500	0.139	26626.10

Table 18 (continued) P-13 at Km 45, tree layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
51 Legu. <i>Koompassia malaccensis</i>	1	13.90	13.9	2000	0.077	19615.20
52 439 Legu. <i>Milletia sericea</i> 1	2	5.10	5.5	990	0.021	2169.42
53 734 Magn. <i>Talauma</i> sp.2	1	6.20	6.2	709	0.015	1383.45
54 720 Mela. <i>Memecylon</i> sp.3	1	5.60	5.6	664	0.013	1057.01
55 245 Meli. <i>Aglaia odoratissima</i>	1	7.60	7.6	1300	0.023	3811.57
56 715 Meli. <i>Aglaia</i> sp.3	1	7.40	7.4	1210	0.022	3363.43
57 731 Meli. <i>Aphanamixis humile</i>	1	4.80	4.8	1007	0.009	1177.73
58 12 Mora. <i>Artocarpus lanceifolius</i>	5	9.20	24.5	1700	0.287	56846.90
59 729 Mora. <i>Artocarpus rigidus</i> 2	1	19.50	19.5	1800	0.152	34743.70
60 Myri. <i>Horsfieldia lanceifolius</i> by Oka	1	17.80	17.8	1850	0.126	29754.00
61 307 Myri. <i>Knema laurina</i>	4	10.63	21.8	1700	0.260	53344.60
62 243 Myrs. <i>Ardisia horseii</i>	1	6.40	6.4	610	0.016	1268.30
63 39 Myrs. <i>Ardisia macrophylla</i>	1	5.40	5.4	850	0.012	1258.17
64 327 Myrt. <i>Eugenia</i> sp. 6	2	15.75	21.5	1900	0.224	51689.10
65 469 Myrt. <i>Eugenia</i> sp. 8	1	7.30	7.3	583	0.021	1577.06
66 Myrt. <i>Eugenia</i> spp.	1	6.50	6.5	402	0.017	862.16
67 462 Olac. <i>Scorodiscus borneensis</i>	1	11.40	11.4	945	0.052	6234.12
68 257 Prot. <i>Heliciopsis artocarpoides</i>	1	4.70	4.7	643	0.009	721.01
69 696 Rubi. <i>Nauclea subdita</i> 1	1	26.20	26.2	2500	0.274	87111.70
70 381 Rubi. <i>Uncaria attenuata</i>	1	7.00	7.0	0	0.020	0.00
71 25 Rubi. <i>Urophyllum arboreum</i> 1	2	4.80	5.6	832	0.019	1762.21
72 268 Rubi. <i>Urophyllum corymbosum</i>	2	6.70	7.5	1110	0.036	4026.41
73 31 Rubi. <i>Urophyllum macrophyllum</i>	1	4.70	4.7	510	0.009	571.87
74 718 Sapi. <i>Nephelium</i> sp.3	1	7.00	7.0	1208	0.020	3004.67
75 725 Sapi. <i>Nephelium</i> sp.4	1	4.60	4.6	695	0.008	746.51
76 Sapo. Sapotaceae spp.	3	6.13	9.5	935	0.052	5254.11
77 632 Thym. <i>Gonystylus keithii</i>	1	20.40	20.4	1600	0.166	33799.80
78 619 Tili. <i>Microcos hirsuta</i>	1	5.20	5.2	883	0.011	1212.00
79 736 Tili. <i>Microcos lorzingii</i>	2	13.30	21.8	3450	0.199	84007.40
80 639 Tili. <i>Pentace laxiflora</i>	1	7.80	7.8	1087	0.024	3357.01
81 XXXX.	7	11.17	19.8	2400	0.406	83613.20
82 XXXX. <i>Eugenia-Melastoma</i>	1	5.40	5.4	855	0.012	1265.57
83 Total	309	11.80	110.3	6400	42.363	21476700.00

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
84 452 Arec. <i>Borassodendron borneensis</i>	2	23.25	23.5	835	0.431	44624.20
85 19 Dipt. <i>Dryobalanops</i> sp.	2	68.10	117.0	2300	5.604	692746.00
86 113 Dipt. <i>Shorea polyandra</i>	1	20.80	20.8	2950	0.172	64786.20
87 467 Euph. <i>Koiloceras brives</i>	1	7.50	7.5	408	0.022	1164.97
88 548 Euph. <i>Mallotus echinatus</i>	1	8.20	8.2	471	0.027	1607.62
89 818 Leea. <i>Leea aculeata</i>	1	5.60	5.6	90	0.013	143.27
90 XXXX.	21	17.74	95.0	5000	6.535	2450920.00
91 Total	29	20.60	117.0	5000	12.805	3255990.00

Table 19 P-13 at Km 45, shrub layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1 24 Acti. Saurauia cf. acuminata	2	1.05	1.5	329	0.005	205.98
2 Anno. Annonaceae spp.	3	1.07	1.7	348	0.009	244.02
3 745 Anno. Disepalum sp.	4	0.92	1.7	276	0.010	315.96
4 751 Anno. Melodorum manubriatum	1	0.47	0.5	410	0.000	23.22
5 305 Anno. Oxymitra cuneiformis	1	0.77	0.8	162	0.001	24.63
6 747 Anno. Oxymitra cuneiformis? shrub	1	1.15	1.2	210	0.003	71.21
7 Anno. Polyalthia sp.2	5	1.10	1.9	339	0.014	500.46
8 201 Anno. Polyalthia elliptica	1	1.55	1.6	317	0.005	195.28
9 264 Anno. Polyalthia oblonga	1	0.54	0.5	170	0.001	12.71
10 752 Anno. Polyalthia rumphii 2	1	0.56	0.6	164	0.001	13.19
11 746 Anno. Popowia pisocarpa 2	2	2.44	2.9	325	0.025	939.49
12 615 Anno. Sageraea lanceolata	1	0.83	0.8	189	0.001	33.39
13 212 Anno. Uvaria elmeri	4	0.86	1.4	246	0.007	24.94
14 749 Arac. Anadendron sp.	1	0.50	0.5	320	0.001	20.51
15 Arec. Calamus spp.	1	1.28	1.3	0	0.003	0.00
16 756 Bomb. Durio griffithii	1	1.04	1.0	231	0.002	64.06
17 112 Burs. Dacryodes rostrata	1	0.23	0.2	150	0.000	2.03
18 236 Conn. Agelaea borneensis	34	0.57	2.4	463	0.040	291.28
19 743 Conn. Agelaea trinervis 1	6	1.06	3.3	535	0.026	120.92
20 744 Conn. Agelaea trinervis 1	2	0.40	0.4	229	0.001	17.13
21 309 Conn. Agelaea trinervis 3	1	0.39	0.4	239	0.000	9.32
22 109 Conn. Ellipanthus beccarii var. peltatus	4	1.08	1.8	352	0.011	404.06
23 Dill. Tetracera spp.	2	3.37	6.3	157	0.081	6.77
24 19 Dipt. Dryobalanops sp.	19	1.28	3.7	745	0.087	5087.34
25 713 Dipt. Hopea bracteata	9	0.90	1.7	367	0.020	790.80
26 480 Dipt. Hopea bracteata	1	0.20	0.2	135	0.000	1.38
27 84 Dipt. Shorea leposula	4	1.44	2.2	377	0.021	802.21
28 610 Dipt. Shorea ovalis	1	2.67	2.7	439	0.014	802.46
29 113 Dipt. Shorea polyandra	55	1.56	4.2	661	0.370	20415.20
30 335 Eben. Diospyros sp. (Annonaceae No1?)	1	0.22	0.2	152	0.000	1.89
31 293 Eben. Diospyros sp.6	1	2.59	2.6	419	0.014	720.69
32 685 Euph. Aporosa stellifera 1	1	0.62	0.6	172	0.001	16.95
33 226 Euph. Baccaurea angulata	1	1.54	1.5	169	0.005	102.77
34 104 Euph. Baccaurea stipulata	1	0.31	0.3	144	0.000	3.55
35 467 Euph. Koilodepas brives	15	2.27	4.5	550	0.199	10267.30
36 427 Euph. Macaranga gigantea	1	0.89	0.9	145	0.002	29.45
37 548 Euph. Mallotus echinatus	9	0.87	3.7	743	0.037	3020.70
38 18 Euph. Omphalea bracteata	1	1.12	1.1	129	0.003	41.49
39 295 Laur. Endiandra sp.	1	1.73	1.7	321	0.006	246.34
40 420 Laur. Eusideroxylon zwageri	5	1.77	3.6	495	0.045	2474.17
41 Laur. Lauraceae spp.	1	1.14	1.1	232	0.003	77.31
42 748 Laur. Litsea sp.2	1	0.59	0.6	173	0.001	15.44
43 795 Leea. Leea indica	4	0.96	1.2	284	0.008	238.90
44 753 Legu. Dalbergia parviflora	1	0.71	0.7	0	0.001	0.00
45 439 Legu. Millettia sericea 1	1	0.78	0.8	135	0.001	21.06
46 166 Magn. Talauma beccari	1	1.53	1.5	273	0.005	163.86
47 681 Mela. Dissochaeta sp.2	3	0.56	1.1	201	0.003	4.04
48 46 Mela. Pternandra rostrata	1	2.87	2.9	501	0.017	1058.12
49 287 Meli. Chisocheton beccarianus	1	2.08	2.1	308	0.009	341.68
50 Myri. Horsfieldia lanceifolius by Oka	1	0.42	0.4	130	0.000	5.88

Table 19 (continued) P-13 at Km 45, shrub layer

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
51 754 Myri. Knema laurina	1	0.78	0.8	176	0.001	27.46
52 327 Myrt. Eugenia sp. 6	1	1.51	1.5	226	0.005	132.13
53 257 Prot. Heliciopsis artocarpoides	1	3.75	3.8	216	0.028	778.85
54 Rubi. Rubiaceae spp.	1	1.51	1.5	208	0.005	121.61
55 381 Rubi. Uncaria attenuata	2	1.41	1.6	572	0.008	492.42
56 25 Rubi. Urophyllum arboreum 1	3	1.62	3.5	307	0.026	978.41
57 750 Rubi. Urophyllum arboreum 3	1	1.03	1.0	242	0.002	65.83
58 31 Rubi. Urophyllum macrophyllum	1	2.07	2.1	249	0.009	273.57
59 101 Sapi. Paraneuph. nitidum	2	2.82	3.6	733	0.035	2973.82
60 Sapi. Sapindaceae spp.	1	1.14	1.1	294	0.003	97.97
61 Sapo. Sapotaceae spp.	2	2.36	3.0	465	0.024	1289.71
62 736 Tili. Microcos lorzingii	1	0.91	0.9	231	0.002	49.05
63 Vita. Vitaceae spp.	2	1.09	1.6	0	0.006	0.00
64 XXXX.	5	1.20	2.0	410	0.018	429.60
65 755 XXXX. -	1	0.42	0.4	167	0.000	7.55
66 XXXX. Liana A538 Opposit leaf	3	0.80	1.0	340	0.004	123.68
67 Total	249	1.26	6.3	745	1.293	58133.20

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
68 XXXX.	1	2.75	2.8	286	0.015	554.58
Total	1	2.75	2.8	286	0.015	554.58

Table 17 (continued from page at 21) P-12 at Km 45

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
45 693 Anno. Xylopi. ferruginera	1	1.88	1.9	438	0.007	396.94
46 112 Burs. Dacryodes rostrata	1	8.60	8.6	230	0.149	4361.74
47 Dipt. Shorea spp.	1	24.00	24.0	356	1.160	52578.50
48 120 Euph. Aporosa lunata	1	1.80	1.8	727	0.007	603.97
49 427 Euph. Macaranga gigantea	7	6.20	13.8	890	0.731	60811.10
50 794 Euph. Macaranga pruinosa	15	2.28	5.2	436	0.185	6599.27
51 848 Euph. Macaranga trichocarpa	3	1.76	2.0	340	0.019	481.70
52 454 Euph. Mallotus macrostachyus	3	3.72	4.1	374	0.085	3379.04
53 Legu. Leguminosae spp.	1	3.35	3.4	186	0.023	535.23
54 439 Legu. Millettia sericea 1	1	3.93	3.9	384	0.031	1520.73
55 154 Olac. Ochanostachys amentacea	1	16.80	16.8	1410	0.568	102041.00
56 XXXX.	41	11.68	71.0	4100	33.999	7550530.00
57 Total	76	8.33	71.0	4100	36.964	7783840.00

Table 20 P-14 at Km 37

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1 24 Acti. Saurauia cf. acuminata	22	1.36	3.9	524	0.118	5361.11
2 Anno. Annonaceae spp.	1	1.14	1.1	300	0.003	97.47
3 597 Anno. Artabotrys suaveolens	5	0.51	0.8	292	0.003	61.48
4 831 Anno. Cananga odorata	3	8.97	9.8	1270	0.481	59286.30
5 534 Anno. Melodorum kentii	3	0.87	1.2	509	0.005	34.41
6 212 Anno. Uvaria elmeri	1	1.13	1.1	0	0.003	0.00
7 236 Conn. Agelaea borneensis	91	0.39	2.7	567	0.046	246.32
8 309 Conn. Agelaea trinervis 3	1	0.20	0.2	167	0.000	1.67
9 706 Dill. Dillenia sp.2	2	6.90	7.2	956	0.187	22282.20
10 Dill. Tetracera spp.	17	0.55	1.5	230	0.012	64.41
11 19 Dipt. Dryobalanops sp.	4	1.48	3.4	470	0.029	1560.60
12 826 Dipt. Hopea dryobalanoides	1	1.10	1.1	271	0.002	81.98
13 104 Euph. Baccaurea stipulata	1	0.46	0.5	138	0.000	7.30
14 Euph. Euphorbiaceae spp.	1	1.84	1.8	400	0.007	338.56
15 356 Euph. Glochidion borneensis	10	2.48	5.5	710	0.190	14415.40
16 766 Euph. Macaranga bancana	1	5.10	5.1	922	0.051	5995.30
17 427 Euph. Macaranga gigantea	1	4.06	4.1	889	0.032	3663.48
18 834 Euph. Macaranga hypoleuca	46	7.76	26.5	1900	8.169	1501950.00
19 794 Euph. Macaranga pruinosa	53	11.78	30.2	2100	18.408	4053150.00
20 143 Euph. Mallotus lackeyi	10	1.57	2.8	404	0.061	2473.95
21 263 Euph. Mallotus miquelianus	1	0.37	0.4	201	0.000	6.88
22 44 Euph. Mallotus moritzianus	7	1.23	1.7	310	0.021	742.45
23 664 Euph. Omalanthus giganteus	1	9.60	9.6	1240	0.181	28569.60
24 18 Euph. Omphalea bracteata	3	1.14	1.3	0	0.008	0.00
25 304 Icac. Stemonurus sp.	1	1.08	1.1	0	0.002	0.00
26 420 Laur. Eusideroxylon zwageri	5	17.53	86.0	3400	14.523	6286630.00
27 818 Leea. Leea aculeata	6	2.85	5.1	630	0.109	6369.47
28 795 Leea. Leea indica	31	1.58	5.3	570	0.234	11576.30
29 Legu. Leguminosae liana spp.	1	1.57	1.6	0	0.005	0.00
30 Lili. Smilax odoratissima by Oka	2	0.46	0.5	0	0.001	0.00
31 66 Loga. Fagraea racemosa	5	4.31	7.2	737	0.255	18768.20
32 48 Mela. Dissochaeta pasilan	6	1.29	1.9	160	0.023	8.46
33 823 Mora. Ficus fistulosa	2	5.70	6.3	739	0.129	11279.70
34 90 Mora. Ficus uncinata 1	1	5.10	5.1	660	0.051	4291.65
35 91 Mora. Ficus uncinata 2	9	3.46	6.2	809	0.277	24584.60
36 828 Mora. Ficus variegata	1	12.30	12.3	1010	0.297	38200.70
37 139 Myrs. Embelia javanica	4	1.37	2.6	0	0.021	0.00
38 Myrs. Embelia ribes by Oka	2	1.57	1.7	0	0.010	0.00
39 822 Myrs. Maesa sp.	11	0.90	1.7	0	0.020	0.00
40 10 Myrt. Eugenia sp. 1	2	2.94	3.2	492	0.034	2040.26
41 827 Myrt. Eugenia sp.10	1	0.50	0.5	167	0.000	10.44
42 830 Pipe. Piper sp.	1	0.40	0.4	0	0.000	0.00
43 320 Rham. Zizyphus sp.	1	1.36	1.4	557	0.004	257.56
44 832 Rubi. Ixora havilandii	3	0.67	0.8	166	0.003	54.68
45 Rubi. Rubiaceae spp.	1	0.34	0.3	130	0.000	3.76
46 381 Rubi. Uncaria attenuata	8	1.71	3.5	710	0.056	264.19
47 538 Rubi. Uncaria glabra	2	0.82	1.2	158	0.003	60.74
48 Rubi. Uncaria spp.	1	2.08	2.1	280	0.008	302.85
49 825 Rubi. Urophyllum corymbosum	1	0.72	0.7	160	0.001	20.74
50 31 Rubi. Urophyllum macrophyllum	1	1.20	1.2	220	0.003	79.20
51 833 Ruta. Evodia alba	3	17.57	20.9	2000	1.926	458782.00
52 101 Sapi. Paraneuphorbia nitidum	4	4.36	7.5	847	0.178	15286.70
53 Sapi. Sapindaceae spp.	1	1.61	1.6	340	0.005	220.33
54 829 Vita. Tetrastigma lanceolarium	7	1.01	1.3	0	0.015	0.00
55 Vita. Vitaceae spp.	1	0.12	0.1	0	0.000	0.00
56 XXXX.	5	6.83	24.1	1900	1.237	284333.00
57 Total	416	3.83	86.0	3400	47.449	12863800.00

Table 20 (continued) P-14 at Km 37

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
58 Dipt. Dipterocarpaceae spp.	1	72.50	72.5	120	10.321	157688.00
59 834 Euph. Macaranga hypoleuca	6	4.13	6.0	591	0.223	9972.04
60 794 Euph. Macaranga pruinosa	5	5.76	11.7	674	0.443	18792.00
61 420 Laur. Eusideroxylon zwageri	1	88.50	88.5	134	15.379	262380.00
62 48 Mela. Dissochaeta pasilan	2	0.59	0.7	0	0.001	0.00
63 Rubi. Uncaria spp.	2	0.99	1.0	0	0.004	0.00
64 XXXX.	8	1.92	3.1	320	0.074	1571.96
65 Total	25	9.32	88.5	674	26.444	450404.00

Table 21 P-15 at Km 24

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1 851 Cype. Scleria purpurascens	2	0.36	0.5	160	0.001	21.50
2 400 Mela. Melastoma malabathricum	36	0.53	1.3	275	0.045	1061.61
3 805 Myrt. Tristania whitiana	89	2.84	9.5	1200	4.948	579183.00
4 Rosa. Parastemon urophyllum	1	0.18	0.2	130	0.000	2.11
5 858 Rubi. Gardenia sp.	2	0.38	0.4	137	0.001	18.79
6 Rubi. Uncaria spp.	2	0.92	1.3	183	0.008	176.73
7 Total	132	2.08	9.5	1200	5.003	580464.00

Dead trees

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
8 400 Mela. Melastoma malabathricum	1	0.77	0.8	198	0.002	58.70
9 805 Myrt. Tristania whitiana	12	0.91	2.5	534	0.059	2749.16
10 Total	13	0.90	2.5	534	0.061	2807.85

Table 22 P-17 at Km 24

Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
1 597 Anno. Artabotrys suaveolens	1	0.39	0.4	169	0.002	34.27
2 534 Anno. Melodorum kentii	1	0.92	0.9	0	0.009	0.00
3 305 Anno. Oxymitra cuneiformis	2	0.51	0.6	0	0.005	0.00
4 892 Anno. Polyalthia rumphii 1	1	1.23	1.2	413	0.016	833.10
5 216 Anno. Xylopia ferruginera	1	0.86	0.9	240	0.008	236.67
6 112 Burs. Dacryodes rostrata	1	2.07	2.1	414	0.045	2365.26
7 899 Cluc. Cratoxylum cochinchinense	2	1.10	1.9	218	0.037	1033.18
8 706 Dill. Dillenia sp.2	1	2.41	2.4	505	0.061	3910.79
9 Dill. Tetracera spp.	14	0.61	1.2	320	0.065	90.28
10 465 Dipt. Dipterocarpus elongatus	1	0.95	1.0	236	0.009	283.99
11 761 Dipt. Shorea gratissima	3	0.87	1.3	298	0.029	910.73
12 884 Dipt. Shorea johorensis	2	5.20	6.4	743	0.596	55117.70
13 85 Dipt. Shorea leprosula	27	2.44	6.7	788	2.569	202239.00
14 221 Euph. Antidesma stipulare	1	0.86	0.9	210	0.008	207.09
15 685 Euph. Aporosa stellifera 1	1	0.55	0.6	175	0.003	70.58
16 427 Euph. Macaranga gigantea	28	2.42	6.1	823	2.415	185381.00
17 794 Euph. Macaranga pruinosa	15	1.59	5.2	765	0.612	47567.50
18 848 Euph. Macaranga trichocarpa	7	0.69	1.6	544	0.047	2646.00
19 972 Glei. Gleichenia dicotoma	1	0.36	0.4	0	0.001	0.00
20 887 Laur. Litsea densiflora	1	1.66	1.7	503	0.029	1848.09
21 795 Leea. Leea indica	3	1.29	1.6	420	0.057	2713.87
22 439 Legu. Millettia sericea 1	1	0.32	0.3	144	0.001	19.66
23 400 Mela. Melastoma malabathricum	11	1.42	2.9	548	0.312	18712.10
24 46 Mela. Pternandra rostrata	35	1.42	5.4	618	1.174	66253.40
25 374 Meni. Coscinum fenestratum	1	0.25	0.3	0	0.001	0.00
26 90 Mora. Ficus uncinata 1	5	1.40	2.4	563	0.123	7491.70
27 Myrs. Embelia ribes by Oka	1	0.29	0.3	0	0.001	0.00
28 Myrt. Eugenia desyphyens by Oka	1	1.70	1.7	306	0.030	1179.12
29 Myrt. Eugenia perspecinnervia by Oka	1	0.37	0.4	149	0.001	27.20
30 351 Myrt. Eugenia sp. 5	1	0.61	0.6	320	0.004	158.76
31 805 Myrt. Tristania whitiana	2	6.33	9.2	1250	1.012	151825.00
32 430 Pter. Stenochlaena palustris	1	0.78	0.8	0	0.006	0.00
33 401 Rubi. Hedyotis ocimoides	27	0.68	1.7	274	0.149	3779.93
34 378 Rubi. Nauclea orientalis	4	0.82	1.2	228	0.033	863.57
35 885 Rubi. Psychotria sp.2	2	0.24	0.3	0	0.001	0.00
36 381 Rubi. Uncaria attenuata	4	1.14	1.6	257	0.062	1083.41
37 861 Rubi. Uncaria gambir	2	1.14	1.3	462	0.027	1432.25
38 538 Rubi. Uncaria glabra	16	0.89	1.4	397	0.144	5083.85
39 598 Rubi. Uncaria sp.	3	0.89	1.5	224	0.032	207.17
40 25 Rubi. Urophyllum arboreum 1	5	0.50	0.7	196	0.014	320.87
41 891 Rubi. Urophyllum sp.2	1	0.89	0.9	0	0.008	0.00
42 Sapi. Guioa bijuga by Oka	1	0.40	0.4	182	0.002	38.83
43 890 Ulma. Celtis sp.	1	0.68	0.7	205	0.005	126.39
44 889 Verb. Vitex sp.	1	0.10	0.1	141	0.000	1.88
45 886 Vita. Cissus rostrata	11	0.76	2.1	0	0.089	0.00
46 Vita. Vitaceae spp.	1	1.05	1.1	231	0.012	339.57
47 XXXX.	2	0.45	0.5	154	0.004	59.88
48 XXXX. Liana A538 Opposit Leaf	2	0.69	1.0	0	0.011	0.00
49 Total	257	1.38	9.2	1250	9.882	766494.00
Dead trees						
Herb. Fam. Species	No	Mean D	Max D	Max H	BA m2/ha	DDH cm2*m/ha
50 85 Dipt. Shorea leprosula	2	2.67	3.2	561	0.155	10291.00
51 Euph. Euphorbiaceae spp.	1	0.60	0.6	144	0.004	69.12
52 400 Mela. Melastoma malabathricum	3	0.74	1.1	272	0.021	276.42
53 XXXX.	4	1.33	3.1	409	0.135	6470.71
54 Total	10	1.35	3.2	561	0.315	17107.30

Table 23 P-16 at Km 24

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
1	863 Comp. <i>Vernonia</i> sp.	21	0.40	1.4	658	0.019	148.47
2	851 Cype. <i>Scleria purpurascens</i>	11	0.42	0.6	256	0.008	186.77
3	706 Dill. <i>Dillenia</i> sp.2	1	2.71	2.7	378	0.030	1423.63
4	Dill. <i>Tetracera</i> spp.	1	0.20	0.2	0	0.000	0.00
5	864 Euph. <i>Breynia cernua</i> (liana?)	1	0.80	0.8	168	0.003	55.14
6	366 Euph. <i>Glochidion arborescens</i>	1	0.59	0.6	161	0.001	28.74
7	559 Euph. <i>Glochidion capitatum</i>	6	3.71	4.8	889	0.354	27986.80
8	427 Euph. <i>Macaranga gigantea</i>	10	7.98	14.5	1350	3.196	454991.00
9	794 Euph. <i>Macaranga pruinosa</i>	7	2.11	5.4	1178	0.190	22736.00
10	848 Euph. <i>Macaranga trichocarpa</i>	22	1.66	4.9	847	0.328	27581.80
11	795 Leea. <i>Leea indica</i>	27	1.40	3.5	758	0.266	17606.10
12	439 Legu. <i>Milletia sericea</i> 1	1	0.48	0.5	159	0.001	18.79
13	400 Mela. <i>Melastoma malabathricum</i>	1	1.00	1.0	210	0.004	107.69
14	Meni. <i>Cyclea robusta</i> by Oka	47	0.45	4.7	928	0.143	5887.09
15	90 Mora. <i>Ficus uncinata</i> 1	20	1.37	2.6	470	0.181	6690.64
16	139 Myrs. <i>Embelia javanica</i>	10	1.20	1.7	918	0.063	3886.04
17	577 Myrs. <i>Embelia philippinensis</i>	1	1.13	1.1	672	0.005	440.04
18	59 Rosa. <i>Rubus moluccanus</i>	2	1.03	1.5	522	0.010	602.31
19	865 Rubi. <i>Paederia verticillata</i>	1	1.04	1.0	492	0.004	272.90
20	381 Rubi. <i>Uncaria attenuata</i>	1	3.32	3.3	732	0.044	4137.64
21	538 Rubi. <i>Uncaria glabra</i>	2	1.82	2.6	0	0.032	0.00
22	833 Ruta. <i>Evodia alba</i>	61	6.96	15.7	1350	14.465	1961350.00
23	51 Sonn. <i>Duabanga moluccana</i>	1	2.90	2.9	383	0.034	1651.81
24	Vita. <i>Ampleocissus ochracea</i>	8	0.98	1.6	645	0.037	917.51
25	Vita. <i>Vitaceae</i> spp.	1	0.82	0.8	0	0.003	0.00
26	XXXX.	7	0.52	1.3	184	0.012	91.60
27	Total	272	2.65	15.7	1350	19.433	2538800.00

Dead trees

	Herb. Fam. Species	No	Mean D	Max D	Max H	BA m ² /ha	DDH cm ² *m/ha
28	863 Comp. <i>Vernonia</i> sp.	1	0.32	0.3	0	0.000	0.00
29	Meni. <i>Cyclea robusta</i> by Oka	5	0.41	0.5	0	0.004	0.00
30	90 Mora. <i>Ficus uncinata</i> 1	1	1.70	1.7	125	0.012	185.26
31	577 Myrs. <i>Embelia philippinensis</i>	1	0.51	0.5	0	0.001	0.00
32	833 Ruta. <i>Evodia alba</i>	3	3.67	5.2	1050	0.178	20186.10
33	XXXX.	14	2.22	6.1	724	0.486	35559.10
34	Total	25	1.87	6.1	1050	0.681	55930.40