

## SECTION 3: VEGETATION AND LAND USE TYPES

*Suhardjono & J.J. Afriastini*

*Herbarium Bogoriense, Botanical Division, Research and Development Center for Biology  
LIPI, Jl. Juanda 22, Bogor, Indonesia.*

### 3.1 Background:

The forested lowland in Sumatra is a highly complex ecosystem that is of great interest for research. Compared with other natural ecosystems in Sumatra, perhaps the forest lowland ecosystem is the most comprehensively studied so far. In Sumatra biodiversity is highest in lowland vegetation. For instance, in the valley surrounding the Ranum river in North of Sumatra, for vegetation which has diameter 15 cm has Simpson Index diversity 0.96 and 0.94 on Bangka island hill (from result study by Tim PUSLIT SDL-USU). Some studies on the phytosociology of forest of the pamah land use type have been done in Sumatra (Mogea 1980; Mirmanto 1986; Abdulhadi *et al.* 1989, 1991; Abdulhadi 1991 and Mirmanto dkk. 1992). Nonetheless the structure and composition of vegetation vary from one to another place depending on habitat condition. Human activity in forestland use will greatly influence changes in vegetation composition.

### 3.2 Aims and objectives:

- To provide baseline data for above-ground biodiversity assessment based on vascular plant species, plant functional types, vegetation structure and key site physical attributes.
- To provide a biophysical baseline and sample reference point for other multidisciplinary input.
- To identify the best sub-set of plant-based variables that be used to estimate distribution in other biota.

### 3.3 Personnel:

Dr A.N. Gillison, Plant Ecologist (CIFOR)  
Ms N. Liswanti, Research Assistant (CIFOR)  
Drs Suhardjono, Botanist (LIPI, *Herbarium Bogoriense*)  
Mrs Afriastini, Botanist (LIPI, *Herbarium Bogoriense*)  
Mr Edi Purnomo, Botanist (BIOTROP)

### 3.4 Methods:

Based on radar satellite and remote sensing of lowland forest in Jambi, there were 8 land use types in Pasir Mayang, Pancuran Gading village, and Kuamang Kuning. They are primary forest, secondary forest, selectively -logged forest 1983, *Paraserianthes* plantation 1993-1994, rubber plantation, jungle rubber, *Chromolaena* fallow, *Imperata* and Cassava garden. For each land use type we recorded the spatial coordinate using GPS, elevation, slope, soil depth, soil type, canopy height, using a 40x5 m strip transect. In each plot we recorded all the vascular plant species, life form, leaf size, leaf inclination, and herbarium specimen for identification at Herbarium Bogoriense, Balitbang Botany, Puslitbang Biology-LIPI, Bogor.

### 3.5 Discussion:

The results of herbarium identifications from the survey are 765 species. There are 83 families, 276 genera and 428 species (Annex III, Table 2). Selective logged forest (1983) contained the highest species recorded during the survey, followed by jungle rubber, intact rain forest, rubber plantation, secondary rain forest, *Paraserianthes* plantation, *Chromolaena* fallow, Cassava plantation, and *Imperata* grassland. The diversity of vegetation on this study is higher than land use forest in Riau. In other studies of the pamah land use type in Bukit Tigapuluh, Riau, Sumatra on secondary forest (belukar) within 0.25ha sample plots, Mirmanto (1993) recorded 19 families, 30 genera and 45 species. In disturbed forest within 0.25ha sample plot, there were 27 families, 48 genera and 57 species. In primary forest, there were 20 families, 37 genera and 60 species (Annex III. Table 3).

### 3.6 References:

- Abdulhadi, R. E. Mirmanto and Yusuf, R. (1989). Struktur dan komposisi petak hutan Dipterocarpaceae di Ketambe, Taman Nasional G. Leuser, Aceh. *Ekologi Indonesia* 1(2):29-36.
- Abdulhadi, R., R. Yusuf and Kartawinata, K. (1991). A riverine tropical rain forest in Ketambe, G. Leuser National Park, Sumatera, Indonesia. *Biotrop Spec. Publ.* 41:247-255.
- Abdulhadi, R. (1991). A Meliaceae forest in Ketambe, G. Leuser National Park, Sumatra, Indonesia with special reference to the status of Dipterocarps species. *Biotrop Spec. Publ.* 41: 307-315.
- MacKinnon, J.R. (1974). The behaviour and ecology of wild orang utan (*Pongo pygmaeus*). *Anim. Behav.* 22:3-74.
- Mirmanto, E. (1994) Fitososiologi hutan lahan pamah di kawasan Bukit Tigapuluh, Riau, Sumatra. *Dalam* : Sanbukt, O. and H. Wiridinata (ed.) Rain Forest and Resource Management. Proceeding of the NORINDRA Seminar, Jakarta 25-26 May 1993, LIPI : 29-35
- Mogea, J.P. (1980). Komposisi flora pohon hutan primer di Biak Mentelang, Kutacane, Aceh Tenggara. *Dalam* : Budiman, A. dan K. Kartawinata (eds.) *Laporan Teknik 1979-1980*. Bogor, LBN-LIPI :137-139.
-