Summary of the Final Report - RB/83/13

PHYTOSOCIOLOGICAL COMPARISON OF MODIFIED AND UNDISTURBED FOREST SITES IN SINHARAJA MAB RESERVE IN SRI LANKA

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SUMMARY

The struture, floristic richness, dominance and performance of endemic and pioneer species in three differently modified lowland rain forest sites with varying gap sizes viz. (i) selectively logged site, (ii) logging trail and (iii) shifting cultivation site were compared with those of an adjacent relatively undistrubed forest. All plants, excluding epiphytes and parasites in each site were examined by plot sampling; the number and size of the plots being determined according to each life form studied and the available land area of each vegetation type.

The undisturbed site was characterized by a continuous, closed canopy while in each of the disturbed sites. the canopy was open and discontinuous. In both the undisturbed and selectively logged sites, the vegetation reached 30-35 m in height and in the remaining sites it was between 8-10 m. In all four sites, 86-94% of the total density was contributed by individuals less than 1 m in height. Individuals of higher girth classes (>90 cm gbh) were totally absent from the plots of the skid trail & shifting cultivation site while those in the selectively logged site contained only 35% of that of the undisturbed forest site. The floristic richness of the vegetation varied between 113 species in 0.04 ha of the logging trail to 267 species in 5 ha of the undisturbed forest. A decrease in the number of families (from 80-54) and genera (from 180-100) was observed in the vegetation subjected to disturbance.

The proportion of pioneer species in the vegetation ranged between 9-11% in the undisturbed and selectively logged sites, and between 28-33% in the logging trail and shifting cultivated site where they dominated the vegetation. The proportion of endemic species in the vegetation ranged between 59-62% in the former 2 sites and between 44-51% in the latter 2 sites. Mahogany (Swietenia macrophylla King) planted as an enrichment species in the logging trail and selectively logged site contributed as much as 80% of the total density and 76% of the total basal area in the vegetation over 10 cm dbh in the former site, thus, indicating its potential for silviculture in disturbed lowland rain forests. However, its introduction into conservation areas may not be advocated because of its ability to out-compete indigenous species, even before reaching reproductive maturity.

This study has laid the foundation for periodic re-enumeration of sites with different extents of disturbance and gap sizes, so that information on the regeneration potential of their constituent, indigenous and introduced species, or rare and endangered endemics with low population densities, may be obtained.

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Presentations based on RG/83/13 Research

1. N.D. de Zoysa, C.V.S. Gunatilleke & I.A.U.N. Gunatilleke (1984). Natural Vegetation of Skid Trails planted with Mahogany (Sweitenia macrophylla King).40th Annual Sessions of the SLAAS p. 37.

2. N.D. de Zoysa, C.V.S. Gunatilleke & I.A.U.N. Gunatilleke (1985). Vegetation studies in undisturbed & selectively logged sites in Sinharaja rain forest. 41st Annual Sessions of the SLAAS p.28.

3. N.D. de Zoysa, C.V.S. Gunatilleke & I.A.U.N. Gunatilleke (1986). Diversity of understorey vegetation in the Sinharaja rain forest. 42nd Annual Sessions of the SLAAS p.

4. N.D. de Zoysa, C.V.S.Gunatilleke & I.A.U.N. Gunatilleke (1986). Secondary vegetation in an abandoned shifting cultivation site in the Sinharaja rain forest. 42nd Annual Sessions of the SLAAS p.

5. N.D. de Zoysa, C.V.S. Gunatilleke & I.A.U.N. Gunatilleke (1986). Comparative phytosociology of natural and modified rain forest sites in Sinharaja MAB Reserve, Sri Lanka. Proceedings of the International Workshop on Rainforest Regeneration & Management held in Guri, Venezuela.