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A PLANT ECOLOGICAL STUDY OF
UPPER MONTANE RAIN FORESTS (UMRF) OF
KNUCKLES, SRI LANKA.

A Thesis submitted by

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ABSTRACT

This study was carried out to collect base line information on flora and phytosociology of the Knuckles region for the preparation of a management Plan to be implemented by IUCN/Department of Forest.

Using 10 m x 25 m plots, woody taxa of the upper montane rain forests (UMRF) of Kalupahana and Thangappuwa in the Knuckles region were sampled. All woody individuals above 20 cm gbh within plots were enumerated. Importance value indices (IVI) were calculated based on relative values of basal area, density & frequency of each taxon. A total of 1681 individuals were sampled within an area of 5000 m² sampled. In addition, a tentative checklist of flowering plants of the UMRF of Knuckles was prepared. Soil samples of Kalupahana and Thangappuwa were analyzed and tabulated.

In the UMRF of the Knuckles region, 379 species belonging to 238 genera and 83 families were recorded. Of these, only 9 species were recognized as threatened.

In all the woody plants enumerated 23 families, 40 genera and 52 species were encountered. Of the UMRF of Kalupahana & Thangappuwa 761 and 920 woody individuals were enumerated respectively. Based on density, Clusiaceae and Myrtaceae were recorded as the dominant families. 64.96 m² and 76.5 m² of total

basal area of species (per ha) were recorded at Kalupahana & Thangappuwa, respectively. *Calophyllum* and *Syzygium* were recorded as widely distributed genera in UMRF of Knuckles.

Based on IVI, the first five leading species were *Calophyllum trapezifolium*, *Calophyllum walkeri*, *Syzygium umbrosum*, *Semecarpus nigro-viridis*, and *Garcinia echinocarpa* while Clusiaceae, Myrtaceae, Anacardiaceae, Euphorbiaceae and Symplocaceae were the dominant families in UMRF of this region.

The general pattern of girth class distribution at both sites shows a shape of inverted "J" form which is characteristic of relatively undisturbed natural forests. About 66.8% of total individuals sampled were below 50 cm gbh. A single canopy and a shrub layer were characteristic of this forest stand. The minimal area calculated was about 2250 m². About 50 % of woody species and 85 % woody individuals, in the study plots, were endemic to Sri Lanka.

Index of similarity and dissimilarity shows that both sites were more or less similar. The population studies show that 60.87% and 74.3% of species are represented by less than 10 individuals in plots sampled at Kalupahana and Thangappuwa.

The data gathered were compared with the montane forests elsewhere and the uniqueness of this biotic community has been shown.

The soil studies revealed that natural forest of Kalupahana area was more fertile than Thangappuwa area. The average pH value was 5 while about 31.68 % of moisture content was recorded in UMRF of the Knuckles region.