

Title: Species Diversity, Distribution and Biomass Estimation of Selected Sites of Forest Reserve in Mullaitivu District in Sri Lanka

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Abstract: The Mullaitivu district covers approximately 8.6 % of forest vegetation which contributes for the economic development of the rural community and environmental conservation of the district. However, information is scanty on species diversity, their distribution pattern and contribution for carbon sequestration of the forest ecosystems in Mullaitivu district. Hence, a study was conducted in selected areas of the reserved forest in Mullaitivu district located in the dry zone of Sri Lanka with the objective of assessment of the diversity of woody plants, their distribution and estimates the biomass. Field assessment was conducted in six locations of the forest, namely Kulamurippu-A, Kulamurippu-B, Puthukudiyirupu, Nagansolai, Andankulam and Theravil. Above ground and below ground biomass of trees were estimated using tropical allometric equation. Sampling plots were randomly selected from each location at a size of 20 m × 20 m with three replicates. Samples were collected and herbarium specimens were prepared and submitted to the National Herbarium, Royal Botanical Garden, Peradeniya for species identification. A total of 31 woody tree species and six lianas were identified from 20 families. Shannon diversity index and evenness for the tree species were 1.94 ± 0.11 and 0.91 ± 0.01 , respectively, revealed that tree species were equally distributed with medium species diversity. Eight species, namely *Chloroxylon swietenia* DC. *Diospyros affinis* Thw., *D. ebenoides* Kosterm., *D. ebenum* Koenig., *Drypetes sepearia* (Wight & Arn.) Pax & Hoffm. *Manilkara hexandra* (Roxb.) Dubard, *Memecylon petiolatum* Trimen ex Alston. and *Vitex altissimamilla* L. f. were commonly distributed in the study sites. The forest was dominated by *D. sepearia* followed by *M. hexandra*. About 21 woody tree species were identified in Puthukudiyiruppu site out of 31 species, revealed that the location has highest species richness than other sites. Mean carbon stock of the forest reserve was 206.34 ± 19.12 -1Mg C ha , shows that mean carbon stock of the forest was higher than other dry zone forests (92.62 -1 -1Mg C ha) and lower than wet zone forest (336.8 Mg ha) in Sri Lanka. Out of identified species, five, four, three and eight species were identified as vulnerable (VU), near threaten (NT), endangered (EN) and least conservation (LC), respectively. Results of the study provide baseline information for

formulation of conservation and management guidelines for forest ecosystems in Mullativu district.

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