

## Aboveground Carbon stock and Tree Diversity in the Tropical Dry Forests of Sri Lanka

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### Abstract

Sri Lanka along with the Western Ghats of India is one of the global biodiversity hotspots, which is home for high ecosystem and species diversity in the Asia Pacific region. The dryland of Sri Lanka covers 66 % of the total land extent (6.5 million ha), whereas 86 % of the natural forests are located in the dry and intermediate zones. The objective of this study was to assess the aboveground carbon and tree diversity in the tropical dry forests of Sri Lanka. The tree diversity and carbon stock were estimated in three major districts of the dry zone in Sri Lanka namely Mullaitivu, Kilinochchi and Amuradhapura. In all sampling areas, plots was established with a dimension of 20 × 20 m. All the trees (5 cm dbh threshold) were tagged, enumerated and their height and diameter were measured. Diversity parameters of Shannon Weiner Index (SWI), evenness and species richness for trees, seedlings and saplings were assessed. The carbon stock of the trees were estimated by using pan-topical allometric equations. Mean carbon stock varied from 163-232 MgC ha<sup>-1</sup> and this value was lower than that of wet zone forest (336.8 Mg ha<sup>-1</sup>) in Sri Lanka. Mean density of trees, saplings and seedlings was ranged from 446-1,500, 694-3,400, 773-4,475 stems ha<sup>-1</sup>, respectively. Seedling diversity was higher than saplings and trees and suggesting a high recruitment rates in these forests. Floristic diversity (SWI) and evenness ranged 1.1-1.94 and 0.6-0.9, respectively indicating a medium diversity level. A total basal area was ranged from 11.4-44.8 m<sup>2</sup>ha<sup>-1</sup>. Important value of the dominant species was ranged 39-51 %. Dominant species in the different study areas were *Manilkara hexandra* (Roxb.) Dubard., *Drypetes sepearia* (Wight & Arn.) Pax & Hoffm., *Diplodiscus verrucosus* (Thw.) Kosterm., *Mesua ferrea* L., *Dimocarpus longan* Lour., *Pterospermum suberifolium* (L.) Willd., *Chloroxylon swietenia* DC. and *Diospyros ebenum* Koenig. Socio-economic data and systematic comparisons of ecosystem services in these forests are not available suggesting their critical importance for the conservation decision making process.

Keywords: Carbon stock; Governance; Floristic diversity; Tropical dry zone forest  
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