

**Title:** Distribution and Carbon Stock Estimation of Mangrove Species in Kokkilai Lagoon of Mullaitivu District in Sri Lanka

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**Abstract:** The aim of this study was to assess the diversity of mangrove tree species and to estimate above ground biomass in mangrove-forested areas. While there has been extensive research on mangroves both in tropical and sub-tropical regions of the world, there is limited available information on the community structure and carbon stock of mangroves in Mullaitivu District. The community structure, species diversity, and aboveground biomass of mangroves were estimated and distinct community types were identified. Aboveground biomass was estimated as the product of tree volume and wood density. Four very common species, two common species and one rare species and six mangrove associates were documented from seven locations distributed randomly over lagoon. Four communities had *Avicennia marina* (Forssk.) Vierh. as dominant species but with different structure and habitat. Among the sampled locations, Karunaddukerny had the highest number of species. More numbers of *A. corniculatum* (L.) Blanco seedlings and saplings were observed compared to other species. Seedling population was higher than the sapling population and this may be due to the anthropogenic activities. In general the forest was dominated by small sized trees, maximum mean height was 5.5 m and highest mean dbh was 27.6 cm which indicates that forest has not reached the climax stage. Estimated total carbon stock in study area was 54.89 t/ha. Maximum mean carbon stock was exhibited by *A. mariana* (25.28 t/ha) and least carbon stock was exhibited by *A. corniculatum* (0.64 t/ha). The people have been benefited from this ecosystem throughout the year such as medicinal, fuel, timber and other products and it is a breeding sites for fauna especially shrimp and crabs. However, major threat for mangroves were harvesting of sapling and parking of boat.

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