

Wood Diversity and Carbon Stock in Evergreen Forests in Cameroon: Case of the Ngambe-Ndom-Nyanon Communal Forest

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Abstract : Forest degradation causes biodiversity and carbon loss and thus indirectly contributes to climate change. In order to assess the contribution of forests to climate change mitigation, the present study was conducted in the Ngambe-Ndom-Nyanon Communal Forest with the main objective of assessing the floristic diversity and estimating the carbon stock in the different reservoirs of the said forest. Nine plots of 2000 m² each were installed in 3 TOSs of the forest (young secondary forests, gallery forests and fallow lands) with a total area of 18,000 m² or 1,8 ha. All trees with a Diameter at Breast Height (DBH) \geq 5 cm were inventoried at 1.30 m from the ground in each plot. Species richness, floristic diversity indices, and structural parameters were studied. 1542 trees divided into 162 species, 122 genera and 44 families were identified. The most important families were listed: Myristicaceae (30.22%), Apocynaceae (25.20%), Fabaceae (24.41%), Euphorbiaceae (22.91%) and Phyllanthaceae (20.23%). The richest genera are: Cola, Macaranga, Oncoba (4 species each); the genera Diospyros, Trichilia, Vitex and Zanthoxylum (3 species each). The ecologically important species within the forest studied are: Funtumia africana (26.14%), Coelocaryon preussii (18.46%), Pycnanthus angolensis (15.57%), Tabernaemontana crassa (14.85%) and Olax subscorpioidea (13.04%). Assessment of carbon stocks in the six forest reservoirs studied (living trees and roots, understorey, dead wood, litter and rootlets) shows that they vary according to the land-use types. It is 119.41 t.C.ha⁻¹ in gallery forest, 115.2 t.C.ha⁻¹ in young secondary forest and 90.56 t.C.ha⁻¹ in fallow. The Wilcoxon statistical test shows that the carbon in the young secondary forest is identical to that in the fallow, which is identical to the carbon in the gallery forest. At the individual species level, the largest diameter class [25-35[sequesters the most carbon (232.94 tC/ha). This work shows that the quantity of carbon sequestered by a biotope is a function of the age of the stand.

Keywords : floristic diversity, carbon stocks, evergreen forests, communal forest, Ngambé-Ndom-Nyanon

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