Carbon stock estimation of mangrove forest in Sulaman Lake Forest Reserve, Sabah, Malaysia

ABSTRACT

Suhaili NS, Fei JLJ, Sha'ari FW, Idris MI, Hatta SH, Kodoh J, Besar NA. 2020. Carbon stock estimation of Sulaman Lake Forest Reserve in Sabah, Malaysia. Biodiversitas 21:5657-5664.Mangrove Forest has a significant role in sequestering carbon gases from the atmosphere but there are lesser literature has been made on it. This research was conducted to quantify the aboveground, belowground and soil carbon stock in Sulaman Lake Forest Reserve, Sabah, Malaysia. Nine transect lines with 125m length were established and a circle with 7m radius was set in every 25m. Forest inventory was done to get the diameter breast height of standing trees and soil sampling with four different depths (0-15 cm, 15-30 cm, 30-50 cm and 50-100 cm) were taken for soil analysis and bulk density. Allometric equation was used to calculate aboveground and belowground biomass then its carbon stock was estimated as 50% from its total biomass. The result shows the total carbon stock in the study area was 441.72Mg C ha-1, and soil has the highest value of carbon stock (351.98± 11.73Mg C ha-1) followed by aboveground carbon (67.30± 20.55 Mg C ha-1) and belowground carbon (22.44± 0.17Mg C ha-1). This study found that soil carbon stock made up almost 80% of the total carbon stock in the mangrove forest. This ecosystem also shows a higher value of carbon stock compared to other locations hence emphasized the importance of prioritizing a mangrove forest in any climate mitigation efforts.