

Research Article

Does Selective Logging Have Impact on Abundance and Above Ground Biomass of Woody Species in Yechi Forest? In case Essera District Dawro Zone South West Ethiopia

Bekele Tona Amenu*, Getahun Shanko Mamo, Nejb Mohammed, Alemie Adane

Wolaita Sodo University, Dawuro-Tarcha Campus P.O.Box, 01, Tarcha, Ethiopia

*Corresponding Author's E-mail: bekele.tona@yahoo.com

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ABSTRACT

In the Essera district, selective logging is used to extract wood, particularly in the naturally high forests. Selective logging has been defined as a harvesting method used primarily in native forests and hardwood plantations where a few desired and economically valuable tree species are harvested in accordance with predetermined criteria as opposed to clear cutting, where a whole forest compartment is completely clear-cut in the harvesting process. The purpose of the study was to evaluate the effects of selective logging on woody species' abundance and above-ground biomass in the Yechi Forest, Essera District, and Dawro Zone of south-western Ethiopia. To estimate the above and belowground biomass/carbon, a non-destructive approach which involves the use of allometric models was used. The popular allometric equation of Chave et al. (2014) was used in this study to determine the biomass of tree species having ≥ 5 cm DBH as it fits to biophysical conditions of the study area. The model: $AGB = 0.0673 \times (\rho D^2 H)^{0.976}$. 3.51 Mg ha⁻¹ of harvested above-ground biomass, or 0.83 trees per hectare, was taken from the research forest. In terms of species, *Cordia africana* was the most heavily harvested species (0.53 tree ha⁻¹, or 68.08% of all trees collected). Additionally, it represented 58.4% of all the aboveground biomass that was harvested per hectare. The second most frequently encountered tree species was *Syzygium guineense* (18.3% of all trees and 0.14 tree ha⁻¹). The Shannon-Wiener Diversity (H') Index and the average evenness values for the total forest were 2.1 and 0.50, respectively. These results suggest that the study forest has low diversity and a less even representation of all the species found in the analyzed quadrants. Government must support alternative energy and building material sources. Establishing programs, such as participatory forest management, to help local communities feel more ownership over their environment and reduce the negative effects of human activity.

Key word: Above ground biomass, Abundance, Forest, Woody Species

