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Characterization and quantification of aboveground biomass in two different forest types in Amazon

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Knowing and quantifying the biomass from different forest types allows estimating the potential emission and carbon stocks of the ecosystems, which is helpful to understand the carbon cycle. The aim of this study was to characterize and quantify tree biomass of two different forest types in the Amazon. This work was developed in two forest sites, an anthropized amazon varzea (AAV; flooded from February to October) and a 15-years old upland secondary forest (USF; cleared in the past for agricultural activities), both located in Arapixuna's District. We installed 4 plots of 50 x 50m for each site, and collected information on the popular name, diameter and height from all DBH$\geq$10 cm trees. DBH and height data were used to calculate the aboveground biomass (AGB), using specific allometric equations for each site. Botanical identification was made through the analyses of the exsiccates made with fertile vegetative material collected at the sites and deposited at the HSTM Herbarium at the Federal University of Western Para. The phytosociological analysis yielded the importance value index (IVI) as well as ecological indexes, Shannon-Wiener diversity (H'), Jaccard (J) similarity and Morisita (M) distribution, complemented by the variance/ mean ratio (V/M). At the USF site, the density was 379 individuals ha^{-1}, which was subdivided into 22 families. The most representative families were Fabaceae (8), Euphorbiaceae, Apocynaceae (4) and Burseraceae (3). 43 species were identified and the most representative were *Handroanthus albus* (Cham.) Mattos, *Inga* sp. Mill., *Vismia macrophylla* Kunth and *Caryocar brasiliense* Cambess., which represent 33.6% of the total IVI. At the AAV site, density was 334 individuals ha^{-1}, which was subdivided into 17 families. The most representative families were Fabaceae, Salicaceae, Euphorbiaceae and Malvaceae. At this site 22 species were identified and the most representative species were *Cassia leiandra* Benth., *Schizolobium amazonicum* Huber ex Ducke, *Vitex cymosa* Bertero ex Spreng. and *Gustavia augusta* L., which represent 53.5% of the total IVI. The ecological index results showed very low similarity between AAV and USF sites (J = 0.02), sharing in common only *S. amazonicum*; also showed a greater diversity for USF (H '= 3.07) compared to AAV site (H' = 2.35), as well as an aggregate distribution in AAV (M = 1.04, V / M = 5.3, p $<$0.001), and tendency to aggregation for USF (M = 1.01, V / M = 1.92, p = 0.124). Despite of the previously results, the AAV forest had a greater AGB (71.6 $\pm$ 19.4 ton ha^{-1}) than USF site (44.6 $\pm$ 24.7 ton ha^{-1}). Although it is much more recent in the successional stage, USF presented higher density, diversity and distribution in comparison to AAV, even though both sites presented species dominance. Despite this, the AAV forest showed greater importance for the carbon cycle, since it presents almost twice of the ABS observed in USF and considering its low capacity to store carbon, could represent a greater potential for emission.