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LOCAL-SCALE HYPERDOMINANCE IN CARBON STOCK IN THE ATLANTIC FOREST: FOCUSING ON TREE FUNCTIONAL ATTRIBUTES

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Carbon storage is one of the most important ecosystem services on a global scale, contributing strongly to the balance between atmosphere and biosphere. Forest ecosystems represent the largest terrestrial carbon reservoir and its biodiversity and ecological interactions affect the maintenance of C stocks. To evaluate the relative importance of tree species in carbon storage, in terms of functional attributes, we identified the carbon hyperdominant species, which together account for ~50% of forest's total carbon storage. We established 50 10x10m contiguous plots in one old-secondary forest (OSF), one mid-secondary forest (MSF) and one young-secondary forest (YSF); where all live trees with DBH $\geq$ 3.18 cm were measured, identified and classified by successional strategy (pioneer and shade tolerant), dispersal syndrome (zoochoric and non-zoochoric) and wood density (softwood < 0.7 g/cm^3 and hardwood $\geq$ 0.7 g/cm^3). As expected by their successional stage, the OSF presented the highest carbon stock (163.95 MgCha^{-1}) followed by MSF (108.84 MgCha^{-1}) and YSF (47.37 MgCha^{-1}). We verified six carbon dominant species in the OSF: all were shade-tolerant, 50% zoochoric and 66% hardwood species. *Sloanea granulosa* with only two individuals held the second largest carbon storage (11.4%). The MSF presented four carbon hyperdominant species of which 75% were pioneer, zoochoric and softwood. In YSF only the two species *Miconia cinnamomifolia* and *Tapirira guianensis*, both pioneer and zoochoric, held ~50% of total carbon stock. Our results show that carbon dominant species in late-successional forests are mainly shade-tolerant, what could explain their largest carbon storage, once this species have a greater potential to store carbon than pioneer; whereas in younger forests are mainly pioneer species and, regardless of forest successional stage the zoochoric are the most carbon hyperdominant species. Our results suggest that few species ($\pm$2.7%) are responsible for approximately half of the total carbon stored by forests, at local scale.

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