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Dynamics of the diameter distribution of a logged forest in Brazilian Amazon

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The Amazon rainforest is undeniably an abundant source of biological diversity, its natural resources have a high economic potential that is used, sustainably or not, by different groups in society. This study verified the 30 years dynamics of the diameter distribution of a logged forest. The study area is the Km67 site of the Tapajos National Forest near to the BR163 highway. The dominant type of forest is Ombrophilous Dense Forest of Terra-Firme with a history of selective logging of four species prior to the establishment of the experiment. In 1979, the area was logged under two different treatments based at the Minimum Diameter Cutting of 45 and 55cm. Sixty-four (64) commercial species were harvested, the accumulated stemwood volume was about 72m³ha⁻¹. Diameter distribution was constructed using nine classes with amplitude of 10cm, minimum diameter was 5cm. Over 30 years of monitoring the diameter distribution showed a continued reverse J-shaped curve. Eight years after logging the diameter classes below 25cm, of the two treatments, recovered their initial densities, at present they showed a deficit of 15% of individuals. Classes between 25 and 45cm surprisingly recovered their densities two years after logging, currently they accumulate a density 170% higher than the original. Diameter classes between 45 and 85 cm observed after logging showed an immediate reduction of 41% in density but at the end of the cycle of 30 years they recovered to 140% the densities. The class above 85 cm still shows a deficit of 53% of its individuals. The high accumulation of individuals in the intermediate classes and the deficit observed in the first diameter classes has as consequence the emergence of a diameter distribution characterized by a constant "q" value (balanced) between classes 15-65 cm, contrasting from that observed before logging.