

RESILIENCE OF TROPICAL ECOSYSTEMS – FUTURE CHALLENGES AND OPPORTUNITIES

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FOREST RECOVERY OVER 30 YEARS FOLLOWING MANAGEMENT INTERVENTIONS OF DIFFERENT INTENSITIES IN THE BRAZILIAN AMAZON

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When managing tropical forests sustainably, a detailed understanding of these ecosystems and their responses to management effects is required. The recovery of tropical forests following silvicultural interventions is not yet well understood, in particular the medium and long-term responses to these anthropogenic disturbances have not been amply analysed. In this study, we will present results on one long-term experiment on forest dynamics following logging and thinning conducted at the Tapajos National Forest in the Brazilian Amazon. We analysed the influence of different silvicultural disturbance intensities on forest recovery compared to the pre-logging condition and to a control treatment. The interventions comprised logging in 1982 and thinning in 1993-1994 and ranged from 19 to 53% reduction of the original basal area. Trees with diameter at breast height (DBH) ≥ 5 cm were measured on eight occasions in 41 permanent sample plots of 0.25 ha each. Stand basal area returned to similar levels within 30 years except for the highest disturbance intensity. Number of stems per hectare increased with disturbance intensity. Mortality was high soon after logging but following this period recruitment exceeded mortality for about five years. Annual mortality and recruitment rates declined over time but they were still higher than in the unlogged forest. These results improve our understanding of the medium-term responses of tropical rain forests in the Brazilian Amazon to different silvicultural disturbance intensities. Additional studies are needed to evaluate the recovery of other ecological and productive features so as to provide sound information that can support future decisions on sustainable forest management in this region.

Merian Award Applicant

