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Title: Sustainability of Reduced Impact Logging in Brazil – a long-term assessment

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Thema: 2. Producing for development

Subtheme: 2.1 Forest management and dynamics

Abstract of the paper: This study explores the present forest management systems in place in the Brazilian Amazon through the analysis of the impacts of logging on the genetic diversity and the ecology of *Hymenaea courbaril*. This study was carried out in the Tapajós National Forest, in a 500 ha Intensive Permanent Plot area as part of the Dendrogene Project (EMBRAPA/DFID). Its main objective is to evaluate the effects of Reduced Impact Logging (RIL) on the species' genetic variability and ecological processes and to predict the likely impacts in the short- and long-term. The specific objectives are to determine impacts of harvesting on forest structure and the species' reproductive population and spatial pattern, to determine *Hymenaea courbaril*'s genetic diversity, spatial genetic structure, pollen flow and mating system, and assess the impact of logging on these processes, and finally to infer the impact of logging on *Hymenaea courbaril*'s sustainability in the long-term using the modelling software Eco-gene. The results show that current forest management practices have negative impacts on the *H. courbaril* species including reduction in reproductive population, spatial distribution and demography. The results of logging scenarios run through Eco-gene suggest that the harvesting cycle for *Hymenaea courbaril* should be between 120 and 150 years in order to reach pre-logging levels both in genetic and ecological terms. However, the scenarios analysis showed that logging might have more important impacts on the species' population structure and productivity (timber volume) than on the species' genetic structure (number of alleles, number of effective alleles, heterozygosity). More importantly, the model suggests that current logging practices are not sustainable in the long-term and these practices will not only affect the species but also the economic viability of harvesting practices. The results provide forest planning and management with specific scientific criteria from a heavily logged species which can help to more effectively manage not only *H. courbaril*, but can also be used to move toward the sustainability of other tree species in the Amazon forest.

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Full paper: -