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Feasibility of Sustainable Management of Secondary Atlantic Forest: Recovery and Mortality Rates of Damaged Trees Two Years After Harvesting †

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Abstract: Subject to over exploitation in the past centuries, the Atlantic Forest is now strictly protected including a ban on timber harvesting. However, this strict protection is a very controversial issue. It resulted in a lack of willingness of landholders to conserve and possibly even expand native forest areas. The lack of knowledge on impacts of potential timber-harvesting causes conflicts between conservation and management of the remnant Atlantic Forest. We believe that sustainable forest management, with reduced harvesting impact, has the potential to generate income for the landowners while sustaining important ecological services of the forest. Therefore, we assessed the harvesting impact of a conventional harvesting method (CM) and compared it to an alternative harvesting method (AM) in three different stands. We measured damage intensities of all remnant trees directly after harvesting and two years after harvesting. Tree damages were recorded at three different tree zones (crown, bole and leaning) and rated in three different intensity classes (minor, moderate and severe). Furthermore, we assessed the recovery and mortality rates of each damaged tree two years after harvesting. Improved AM harvesting reduced the impacts on trees with multiple damages, in particular to crown and bole damages combined. There is a strong relationship between steep terrains and crown damages. High mortality rates were related to stands with a high density of smaller trees and also to trees with leaning damages. Moreover, completely recovered trees were related to trees with light bole damages.

Keywords: reduced impact logging; logging damages; tractor winch