

Watershed Modeling of Smallholder Timber Management in the Amazon Estuary

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After centuries of logging in the Amazon Estuary, the persistence of floodplain forests indicates a potential for sustainable timber management. Currently, hundreds of small-scale, family-run timber operations supplied by many more thousands of smallholders with forest resources rely on timber as a source of income. However, the sustainability and long-term economic viability of these small-scale operations have not yet been determined.

My research evaluates the ecological and economic viability of timber use in the Amazon estuary based on modeling of community and watershed level timber resource availability and use. The proposed model incorporates land cover patterns, ecology and yield of species utilized, and economics of timber production in the evaluation of current and sustained-yield scenarios of timber extraction. Once completed, the model will provide insights into the limitations of sustainable timber use in the Amazon estuary.

This interdisciplinary research is grounded on multiple academic disciplines (ecology, economics, and geography) and utilizes a combination of conventional and participatory methods, including large-scale and long-term forest inventories, self-monitoring of timber related activities and participatory mapping. Preliminary findings suggest that the diverse demography of common timber species results in drastically different species-specific impacts of exploration. Economic analyses also reveal that small returns from the watershed family-run timber industry likely drive most producers into illegality.

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