

In-stream wood volume and dynamics in an unmanaged neotropical headwater catchment

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Abstract. Surveys of wood volume and distribution along 30 stream reaches in forested headwater streams in northeastern Costa Rica represent the first systematic data reported on wood loads in tropical streams. For streams with drainage areas ranging from 0.1 to 8.5 km² and gradients of 0.2-8%, wood load ranged from 3 to 34.7 m³ wood/100 m channel and 41-612 m³ wood/ha channel. These values are within the range reported for temperate streams. The variables drainage area, unit stream power, the presence of backflooding, and stream gradient explain just over half of the variability in wood load among reaches. These results, along with the lateral spatial distribution of wood with respect to the thalweg, suggest that transport exerts a greater influence on wood loads than recruitment processes. The turn over rate of in-stream wood is higher in Costa Rica than rates reported for temperate streams. Wood in temperate zone streams has been shown to be an important component of the fluvial system, affecting channel morphology, flow resistance, habitat complexity, and nutrient dynamics. Based on the initial results, it appears that wood has less influence on channel morphology in the study catchment compared to temperate zone streams, but other studies indicate that the ecological role of wood in tropical streams is as important as in temperate environments. The baseline wood load values and mobility estimates reported here for an undisturbed tropical catchment can help guide management decisions for the rehabilitation of deforested neotropical catchments.