Improving Conventional Timber Harvest and Log Yield in Working Forests of the Mountainous Tropics

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Encompassing roughly 50,000 hectares, the Rio Canandé watershed is one of the last unprotected and relatively intact areas of Ecuador's Chocó wet forest. Despite longstanding recommendations by foresters for basic improvements of logging methods in the tropics, poor practices are still the norm. Common problems include lack of planning, poor felling, that often results in damaged stems and collateral damage to the remaining stand, wasted timber through selection of only the prime logs, poor skidding practices and unsustainable harvest intensities. Most small-scale timber harvest in the tropical forests of Ecuador involves little more than chainsaws and draft animals. It is largely unregulated, targets a limited number of merchantable species, and is often practiced in conjunction with land conversion. Milling of logs via free hand chain sawing is low yield (25%–35%), and labor spent in extraction via mules is restricted by the distance from rivers, thus concentrating timber harvest to a zone within 2 to 4 kilometers from the river valleys.

Steel cable and ropes used to move logs along cable.

Our research focuses on measuring the expected increase on efficiency and yield with the implementation of the following basic technologies and improved practices: a) a cable system allowing efficient transport of equipment and timber, b) training local technicians in reduced impact logging techniques (RIL), c) the transport of a portable sawmill to the harvest site for increased log yield, and d) wood property testing on species that are currently non-merchantable. Successful implementation of these practices could raise the value of forestland, making it competitive with various forms of land conversion, such as cattle grazing, palm oil, and cacao plantations.

Preliminary analysis suggests that the Peterson portable sawmill has increased log yield to 50%–60%, and drastically reduced flaws in dimensioned lumber. Bunching of logs sawn-to-length to landings, via heavy-duty, Swiss made chainsaw winches appear to have reduced time otherwise spent transporting the saw and milled lumber.

Studies suggest that although adoption of RIL techniques requires an increase in time dedicated to planning, the benefits of reduced damage to timber, decrease in road and skid trail density, and full recovery of felled timber make it economically competitive with conventional logging. Maintenance of forest structure, composition, and function, in addition to reduction in mortality and damage to the remaining stand are of concern for biodiversity and future harvest.

Implications for EcoMadera

We are in the process of sending a container of lumber to a Pennsylvania-based contractor who will include many of our lesser-known species that will be tested, utilized and marketed. Company-owned land would be divided between harvest (60%) and reserve (40%) areas, and in those areas designated for harvest, growth data indicates the suggested removal of 20 m3, per 20-year cycle, is in line with sustained timber yield.

EcoMadera hopes to use revenue generated through polycyclic, sustainable forestry to purchase additional land and to provide employment to the local population, which is currently engaged in illegal logging and land clearing.

We have received support from the USDA Forest Service and hosted a course on cable logging and RIL instructed by Professor Bob Rummer of the Southern Research Station, and Jim Sherar, a retired engineer. In addition to our own staff, local residents, foresters operating out of the Amazon and a forester working in the Chachi indigenous reserve attended the course. The material covered was basic (cable splicing, safe working