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.

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...
loads, guying, etc.) but seemed revolutionary, as the majority of participants possessed only a crude knowledge of logging. Rummer and Sherar have stayed on as consultants and continue to assist with new ideas, donated equipment and technical advice. EcoMadera has stayed in touch with course participants and continues to disseminate our findings.

Our aim is to achieve minimal change to species composition, using detailed inventories and management plans as performed by our forestry staff. Continued monitoring of permanent plots will document effects of differing logging treatments on growth and biodiversity. Results from our research will ensure that appropriate technology will be selected to balance productivity with sustainable forest management.

Expanding EcoMadera’s Scope

In Ecuador, Pinchot Institute Research Fellow Dr. Amy Rogers has been hired to expand EcoMadera’s geographic and programmatic reach. Amy is spearheading an integrated conservation management strategy within Mache-Chindul Ecological Reserve, with habitat restoration at its core. These efforts intentionally dovetail with those of the Institute’s EcoMadera project at the outskirts of sister reserve, Cotacachi-Cayapas. Together, the two programs are contributing to our development of a well-rounded ‘tool box’ of tangible solutions to tropical forest conservation both within and outside of protected areas. Inclusion of Mache-Chindul has helped to define the Institute’s niche in Ecuador: 1) geographically, by establishing a presence in both of the country’s last substantive tracts of standing Chocó rain forest and 2) contextually, by bolstering our ability to address reforestation and the integrity of large-scale ecological processes in addition to deforestation and socioeconomic concerns.

Bay Bank Marketplace Launched

The Pinchot Institute for Conservation, Sustainable Solutions, LLC and many supporting partners have developed and launched the Bay Bank Marketplace — the Chesapeake’s conservation marketplace! Featured in The Pinchot Letter, Winter 2010, this online resource provides basic ecosystem market information to buyers and sellers and provides a marketplace for buyers to find credits.

For more information, go to www.thebaybank.org.