

Why is Silviculture Essential to Conserve Tropical Forests?

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Unlike the tropical silviculture of today, which still addresses primary forests, tomorrow's silviculture will deal with logged and sometimes degraded forests, which will have to be strictly managed and in some extreme cases restored. Intervening during logging operations will not be enough, there will also have to be involvement in post-logging treatments, such as liana removal, thinning and enrichment planting. It is urgent to promote tropical silviculture to ensure the conservation of a major share of tropical forests whilst deriving economic benefits from them.

In the context of the International Year of Forests, Cirad, CIFOR and Ecofor organized an international conference under the auspices of IUFRO [1.02.00](#); [3.07.00](#); [8.02.00](#), titled "Research priorities in tropical silviculture: towards new paradigms?" from 15-18 November 2011 in Montpellier, France. More than 170 researchers and students attended to hear 72 talks. The abstracts were published in a booklet distributed to the participants and now available in pdf format at the conference website (<http://www.iufro2011-tropical-silviculture.org>). The main objective of the conference was to define the challenges of the future in forest ecology and silviculture for better conservation of tropical forests.

The silviculture of tomorrow: a tool for conservation

The conservation of tropical forests is one of the main challenges of this century. These forests, which amount to 50% of the world's forests, are home to over 2/3 of terrestrial living species. Since World War II, they have been disappearing at an alarming rate, particularly in developing and emerging countries, retreating from advancing cash crops and cattle ranching.

It has to be accepted that the conservation of biodiversity and of the forest ecosystems of tomorrow will mostly take place within anthropized (logged, domesticated) forests, but only if they are well managed. "Well managed" means that logging rules must be established so as to guarantee the perpetuation of those resources, along with most of the services provided by forests.

The talks at the conference clearly demonstrated that exploited forests retain high biodiversity, often as high as in primary forests, and that silvicultural measures after logging help to ensure sustained and sustainable production of forest products. Silviculture is therefore a potential tool that will help to conserve a major share of tropical forests whilst deriving economic benefits from them. If silviculture is acknowledged as being an effective tool enabling the conservation of tropical forests while deriving economic benefits from harvesting of their products, it should then be accepted that it can be partly funded through mechanisms for the payment of environmental services, such as REDD+.

Tropical silviculture: a matter of compromise between production and environmental services

Tropical forest management, is no longer the exclusive domain of logging companies oriented towards timber production as it also raises the interest of local populations with their own perceptions and approaches, geared towards the use of numerous other resources than timber, such as non-timber forest products (NTFP), or ecotourism. Tropical silviculture needs to adapt to this new context and to meet multiple management objectives, such as logging and NTFPs within the same forestry production unit.

In addition, the emergence of new payment for environmental services markets opens up economic development possibilities for the environmental services provided by forests. Of these, biodiversity and carbon storage are the ones attracting by far the most attention. The silviculture of tomorrow will therefore also have to take into account compromises between production of goods (timber, NTFP) and the conservation of services (biodiversity, carbon).

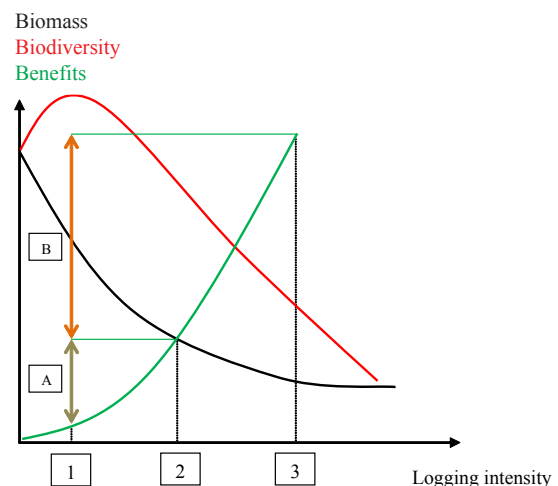


Figure: Theoretical trend curves for biodiversity, aboveground biomass (agb) and immediate logging benefits depending on logging intensity at a given moment. These curves can be used to define production compromises. In a context of payments for environmental services, A, B and A+B represent the lost earnings between the different compromises (respectively between 1 and 2, between 2 and 3 and between 1 and 3) and can form the calculation basis for assessing the cost of payments for environmental services.

Compromise 1: Low intensity and low financial earnings, high agb and biodiversity
Compromise 2: Medium intensity, moderate financial earnings, moderate biodiversity and agb
Compromise 3: High intensity and financial earnings, very low biodiversity and low agb.