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PROTECTION OF MAHOGANY: A CATALYTIC SPECIES IN THE DESTRUCTION OF RAIN FORESTS IN THE AMERICAN TROPICS

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Mahogany as a catalytic species

Logging of American (bigleaf) Mahogany (Swietenia spp.) initiates a series of events that leads to degradation and later destruction of tropical forests in the New World. It also is a spearpoint for penetration of indigenous areas by loggers, who inflict both social and environmental impacts on the tribes. Mahogany populations are declining and are not being replenished by natural regeneration; the situation of the species continues to worsen in the field.

Mahogany wood is extremely valuable (FOB over US$700/$m^3$ for rough lumber in Europe and North America), leading loggers to go to great lengths to locate and remove the trees. Unlike Asian forests, tropical forests in the New World are largely composed of tree species that are either noncommercial or are of value much lower than the most valuable one (mahogany). Mahogany therefore often acts as a catalytic species in the destruction of rain forests in the New World tropics: its removal opens the way to logging and agricultural uses that have much greater impact than the removal of the mahogany itself. This situation does not apply at remote locations during a certain window of time prior to arrival of more general logging and agricultural frontiers, the most important case being the Chimanes Reserve in Bolivia (Rice et al., 1997; McRae, 1997).

More than one way exists to neutralize mahogany's role as a catalytic species for destruction of tropical forests in the New World. One is to reduce or eliminate the market for mahogany by restricting its harvest, international trade and sale. The other (advocated by Rice et al., 1997) is to remove the mahogany trees from the forest, with an effect akin to that of dehorning a rhinoceros.

Difficulty of sustainably managing mahogany

Mahogany is a species that is especially vulnerable to extirpation through logging (Gullison et al., 1996; Howard et al. 1996). It is also a species that is difficult to manage sustainably in forestry management schemes such as those specified in 'management plans' that gain approval from the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA). Mahogany has neither seed banks nor seedling banks that would provide recruitment to fill the small gaps left when individual trees are harvested; instead it relies on propagules from adult seed trees that survive hurricanes or other natural disturbances (precisely the large individuals that are harvested), allowing the species to rapidly colonize larger openings created by this kind of disturbance (Snook, 1996). Blowdowns created by strong but highly localized winds are a common disturbance in Amazonian forest (Nelson et al., 1994). Although regeneration has not yet been linked to these blowdowns,

they are a logical candidate.

Extraction of mahogany causes substantial direct damage to the remaining forest. At the time of the initial mahogany extraction, the number and volume of other trees damaged is higher than the already very high damage caused by other forms of logging (Martini et al., 1994; Verissimo et al., 1995). This is because of the relatively low density of mahogany trees (even within the clumps where they occur) and the long distances over which logging roads must be built to reach the mahogany clumps.

Sustainable management of tropical forests has long been illusory, often serving as a smokescreen for destruction. The most fundamental problem is the contradiction between restraining harvest rates to levels that will allow the forest to regenerate and maximizing financial returns to loggers. If loggers can earn a better return on their investments by destroying the resource and investing the proceeds elsewhere, they will do exactly that, regardless of whatever sustainable management system they may have promised government authorities that they would follow. Because tropical forests grow at a rate about three times lower than the returns than can be obtained from capital invested in competing activities, sustainable management will remain a chimera unless economic decision criteria are changed (Fearnside, 1989; see also Clark, 1973, 1976).

Sustainable management should not be confused with minimizing environmental impact. The dependence of mahogany on major disturbances for regeneration means that managing it for sustainable production would cause greater environmental impact than simply allowing it to be removed unsustainably, although it should be noted that the environmental impacts of regenerating mahogany depend on the scale at which it is carried out. Rice et al. (1997) have argued that environmentalists should focus their efforts on obtaining commitments from governments and logging firms to set aside as protected areas a portion of each property or logging concession. These authors have suggested that an arrangement could be developed for environmental groups to purchase or have set aside the forests after mahogany has been extracted (see McRae, 1997). Some caveats would be necessary to assure a positive result for biodiversity were mahogany cutting to be opened up under the scenario foreseen by these authors. One is that the plan could only be expected to work where very few or no other tree species are present that are commercially valuable under present conditions. Another is that funds would have to be lined up to purchase and protect the logged forest immediately after the mahogany is removed.

Brazil's foreign ministry has long opposed inclusion of mahogany in Appendix II of the Convention on International Trade in Endangered Species (CITES), and, at the CITES convention held in Harare, Zimbabwe, in June 1997, Brazil was instrumental in

blocking a proposal to include mahogany in the Appendix. Inclusion in Appendix II would make international trade in this species subject to licensing dependent on determination that trade will not be detrimental to the survival of the species. This process can clearly be linked to sustainable harvesting as part of sustainable forest management regimes. The foreign ministry's position that internal controls are sufficient to assure that exported mahogany comes from sustainably managed forests is open to question. However, even if the internal controls were as effective as the official position implies, Brazil would gain from inclusion of mahogany in Appendix II by 1.) adding the additional force of market controls in the importing countries to assure that the species continues to produce on an indefinite basis, as espoused in official descriptions of the objectives of Brazil's forestry management regulations, and 2.) reducing the likelihood that the sustainably produced mahogany that Brazil will theoretically be producing from management schemes will suffer unfair competition from unsustainably extracted mahogany from other countries.

Inadequacy of internal controls

Given that, in reality, Brazil's internal controls are insufficient to control predatory exploitation of mahogany, the reasons for market restrictions in importing countries are even greater than the theoretical situation of effective harvest controls implies. IBAMA (the federal agency responsible for forestry and the environment) does not have funds or personnel to make field visits to any but an insignificant fraction of the Amazonian locations involved. The majority of IBAMA staff is still concentrated in Brasília. The Brazilian Embassy in London released a statement in 1996 indicating that "non-discriminatory access to markets is an indispensable condition for the promotion of sustainable use of forest resources..". I disagree: what is needed is the most highly discriminatory access possible, such that timber can only find a market if independently certified as coming from sustainable sources (or, as appropriate, from low-impact non-sustainable systems with associated compensatory measures). In the absence of such discrimination, timber from sustainable and/or low-impact systems will never compete with wood from predatory sources.

Data on the volumes of mahogany extracted and exported are biased downward and highly unreliable, even those coming from IBAMA or from IBGE (Brazilian Institute for Geography and Statistics), and those reported to FAO (Food and Agriculture Organization of the United Nations). In the end, all of these numbers come from the timber industry itself. Mahogany is especially subject to bias, as the data are affected not only by underreporting of volumes generally, but also by misrepresenting the species as one of lower value in order to escape taxes. The fact that a large part of the mahogany extracted comes from

indigenous areas and other illegal sources adds to the motivation not to report it. For what is reported, there is a tendency to exaggerate the proportion consumed domestically, in part in order to defuse nationalistically motivated criticism and the actions of international environmentalist groups (which feel more secure in attacking targets like multinational corporations and the World Bank than they do in confronting Brazilian business interests). A few years ago environmental groups in the UK tried to match the volumes of mahogany the UK reported as being imported from Brazil with the volumes that the Brazilian government reported as being exported to the UK, and the two numbers were not even close to matching, much more being reported as imported to the UK than was reported as exported from Brazil.

One common misconception is that the role of Brazilian Indians is confined to that of hapless victims of loggers who invade their lands, sometimes even killing members of the tribes in their incursions to get mahogany. While this does indeed happen, it is also true that a number of tribes have been corrupted by the loggers, and the Indians then vehemently (and even violently) defend the logging operations against those who would try to stop them. This has happened in Rondônia and in the portion of the state of Amazonas that borders on Rondônia, and is also evident in the Kayapó area in Pará. The Kayapó reportedly continue to export mahogany without difficulty despite the moratorium declared by IBAMA in July 1996.

FUNAI (National Foundation of the Indian) is no longer serving as an intermediary in selling mahogany from indigenous reserves. However, this did happen in 1987, as attested by a series of contracts registered in 'cartórios' (document registry offices) in Rondônia and Mato Grosso (of which this author has photocopies). Despite the practice having stopped, it is important to realize that FUNAI is most definitely not an environmental agency. Efforts to get FUNAI transferred from the Ministry of Justice to the Ministry of Environment have been on hold since 1992. Logging in Indian reserves tends to fall into a power vacuum, with FUNAI considering it IBAMA's problem and IBAMA considering it FUNAI's problem. The issue of some indigenous tribes having been corrupted by loggers is one that nobody has the courage to face, including many environmental and indigenous rights advocacy groups in Brazil and abroad.

The unlikely scenario of IBAMA being able to enforce a ban on mahogany cutting was dramatized in 1996 when it was discovered (according to Eduardo Martins, head of IBAMA) that loggers had built several hundred kilometers of roads inside the forest in the airforce reserve that surrounds Serra do Cachimbo (where pits were built for nuclear tests prior to the 1991 presidential announcement of the program's termination). If the military cannot protect an area like this, it is difficult to imagine IBAMA doing so. Mahogany theft has taken on many similarities

with drug trafficking, including heavily armed escorts and ability to penetrate bureaucratic barriers with bribes and threats. Cutting down the high street price of unsustainably produced mahogany in importing countries is obviously a vital measure if controls in the source areas are to work.

The ecosystem-level importance of controlling the mahogany trade is an important reason for restrictions on the sources of mahogany imported to consuming countries. What is at stake is much more than the survival of a single species of tree. Mahogany loggers play a key role in building roads that give access to new areas by squatters and loggers taking less-valuable species. The process that this initial step sets in motion eventually leads to destruction of the entire ecosystem.

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