

CEDI - P. I. B.
DATA
COD. 10 0 000 92

American Mahoganies
are
"To Die For"

Prepared by
Sierra Club
&
Natural Resources Defense Council

When you buy mahogany, you are funding destruction of tropical forests in Central and South America.

Genuine mahoganies are trees of the genus Swietenia, and are native to the American tropics. The demand from American and British consumers for fine furniture and architectural woodwork from this beautiful and versatile wood threatens the future of both mahogany trees and the tropical forests in which they live. Don't buy mahogany unless you are certain that it comes from sustainable sources.

Trade is now almost entirely in "big-leaf" mahogany, Swietenia macrophylla, because other species have been so depleted that it is no longer profitable to harvest them.¹

In 1991, 97% of mahogany timber imported to the United States came from countries where the tree grows in natural forests. Researchers have known for more than 30 years that mahogany rarely grows back naturally following logging of virgin forests (Lamb, 1966; Quevedo, 1986; Verissimo, 1992).

Most mahogany now comes from the Amazon -- Brazil and Bolivia -- where regional commercial extinctions are increasing (US FWS, 1992; Collins 1990; Verissimo et al, 1992). The Brazilian Society of Botany has included S. macrophylla in a list of threatened species for that country. Overall, its conservation status is considered to be Vulnerable (Villa-Lobos 1991; NRC 1991).

We and the British are the two largest importers of mahogany. In 1991, we Americans imported 48,646 m³ of sawn mahogany lumber from Brazil -- 37% of the allowed export. This figure does not include veneers, which are an increasing proportion of the trade. According to Contente de Barros et al. (1992), up to three times the volume of trees must be cut to supply a given quantity of lumber. Using this calculation, we see that American imports may have stimulated the cutting of up to 40,000 mahogany trees. We imported a similar quantity of timber from Bolivia.

¹Caribbean mahogany, which had the finest wood, is "a prime example of extreme genetic erosion due to past overexploitation of the best genotypes" (Styles, 1981). Both Caribbean and Pacific Coast mahogany are now listed in CITES Appendix II.

In March 1992, the U.S. Government proposed to list "big-leaf" mahogany in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). John Turner, Director of the U.S. Fish and Wildlife Service, defended this proposal by saying that:

" . . . the Caribbean and big-leaf species of American mahogany have been the subject of intense use and habitat losses that have damaged their abundance and quality of the species, risking their ecological extinction."

Unfortunately, the powerful importer and furniture-manufacturing lobby persuaded higher officials in the Administration to withdraw the proposal before the member countries of CITES could vote on it. According to the industry journal, Wood Purchasing News, the International Hardwood Products Association (IHPA)

"... was in constant communication with industry organizations in more than 25 producing and consuming nations, along with the U.S. Trade Representative and the U.S. State Department. ...

During the weeks leading up to the CITES conference, IHPA also maintained contact with elected and appointed U.S. officials, representatives from producing and consuming nations, and many experts from scientific communities.

As a result, IHPA was able to have a resolution passed by the U.S. Senate backing its position."

U.S. timber importers have argued that the timber trade will never cause complete extinction of mahogany -- a few trees will persist in reserves, inaccessible areas, and as ornamental trees in yards. They go so far as to condone "commercial extinction" of mahogany and reject use of CITES to encourage sustainable management.

What are the implications of their stance?

Forestry management in Bolivia is notoriously ineffective. According to a summary "Forest Management in Bolivia" contained in a 1991 report by T.J. Synott and D.S. Casselle for the International Tropical Timber Organization (ITTO):

" ... in reality, no Bolivian forests are at present subject to professional management for sustained yield of commercial timber. In all forests, essential elements of management are either incomplete or absent. ..."

The Synott & Casselle (1991) report focuses on the Chimanes Region, where ITTO has provided over \$400,000 to develop a "model" of sustainable tropical forest management which includes logging. The authors reported that:

"The managers of logging companies told the Review Team that they did not expect to maintain their present rates of logging for more than a few years, before exhausting the best areas. Indeed, they seemed to prefer to remove the large Mara [mahogany] quickly and perhaps return

in the future when markets for other species improve. . . . However, our recommendations must aim at encouraging slower use of Mara supplies, more rapid addition of other species, and secure conditions for investment in more wood processing equipment . . ."

The situation in Brazil is not much better. Jose Lutzenberger, the Brazilian Minister for the Environment, was removed from his post in 1992 in part because of his opposition to the illegal mahogany trade. In a letter to British consumers, Lutzenberger (1992) stated that:

"The trade in Brazilian mahogany and other tropical woods is out of control. In 1992 most of the timber leaving this country for Britain will come, illegally, from Indian and Biological reserves. By buying Brazilian timber you in Britain are threatening many of the Amazon's indigenous with extinction. . . . Please stop this trade: you are dealing with Human Lives."

The Brazilian Constitution guarantees exclusive use of the lands traditionally occupied by the Indians. According to British journalist George Monbiot, this "protection" is ignored in every reserve in which timber cutters are operating. Even U.S. industry sources are aware that mahogany is being cut illegally, and the Wood Purchasing News (Aug/Sept. 1991) reported that much of Brazil's timber "production is still being smuggled from Amazonia".

Concerns about the status of mahogany in Brazil have already prompted calls from the ITTO for measures to conserve the genetic variability of Brazilian mahogany (ITTO, Pre-Project Proposal on The Conservation of Tropical Timbers in Trade). A consortium of Brazilian government and academic researchers (Contente de Barros et al. 1992), with the assistance of mahogany exporters, recently concluded that "a policy for the rationalization of the use of this species" was an "urgent necessity".

Mahogany logging stimulates settlement and land clearing, which prevent any significant regrowth of the forest generally or mahogany in particular. According to George Monbiot, in Brazil,

The immediate damage inflicted in the extraction of mahogany is the least of the problems associated with the industry. Logging is now among the principal means by which new agricultural frontiers are being established in Amazonia: colonists and ranchers make use of the roads cut through previously inaccessible regions and clear the forests the loggers opened. As mahogany cutters range further than any other loggers and are characteristically the first invaders of the reserves, they provide the means by which settlers can reach the remotest parts of the forest.

In their 1991 report for the ITTO, Synott and D.S. Casselle found that, in Bolivia,

"The principal weaknesses, which make existing operations unsustainable, are the lack of adequate controls over rates and intensities of timber harvesting (by both licensed and unlicensed loggers), and the lack of adequate controls over forest settlement and clearance by colonists, farmers and other land-owners."

The forests being levelled as a result of uncontrolled and often illegal mahogany logging are home to jaguar, howler monkey, spider monkey, squirrel monkey, amazon parrots, blue and gold and scarlet macaws, and toucans. Contente de Barros et al. note that parrots feed on mahogany seeds.

Attempts to grow mahogany in plantations have almost always failed, usually because of attack by insects such as the shoot borer. Even if these problems are overcome, it will be 40 to 100 years before plantations or forest re-growth will reach commercial maturity. In addition, when discussing plantation-grown mahogany at the First Pan American Furniture Manufacturers' Symposium on Tropical Hardwoods (November 1991), Jim Martin, an importer, stated that:

"The unfortunate end to the story is that when we got the logs [plantation mahogany] back to the states and sliced them into veneer, the quality was poor and we had a significant loss on our hands. The age of the logs was estimated to be 40 years old."

Because plantation wood often costs more, and the quality is not as high as virgin wood, incentives to extract wild mahoganies will continue whether or not plantations become biologically and commercially viable.

What can Americans do to change mahogany logging from a "mining" operation to practices likely to sustain both the species and the forests? They can put pressure on our importers and manufacturers to take steps to ensure that the wood they sell comes from "sustainable sources". At present, few such sources are available for mahogany, although various efforts are under way to "certify" certain sources as sustainable.

More stringent requirements would mandate that wood be obtained from sustainable sources. The countries that belong to the International Tropical Timber Organization (ITTO) have pledged that all tropical timber in trade should come from sustainably managed areas by the year 2000. However, not one ITTO member country has yet adopted the ITTO "Guidelines for Sustainable Management of Natural Tropical Forests," and only 7 (not including the U.S.) have reported taking any steps toward achieving the Target 2000 goal. Given that less than 1% of traded tropical timbers currently originate from forests under "sustainable" or "sustained yield" management, it is highly unlikely that this goal will be met.

Another way of requiring that wood comes from sustainably-managed forests or from plantations is to list the species in Appendix II of CITES. FWS Director John Turner feels that a CITES Appendix II listing of mahogany would:

"provide the opportunity for producing and consuming nations to collaborate through international efforts, to enable those range States to more effectively enforce national legislation and implement their management programs for the mahogany resource."

AMERICAN MAHOGANIES (Swietenia spp.)
Biological Status

prepared by
Natural Resources Defense Council

Swietenia contains species: S. humilis, S. mahogani, and S. macrophylla

COMMON NAMES: Mahogany, Acajou, Mogno, Caoba, Mara.

SELECTIVE RESTRICTIONS: logging of immature S. mahogani specimens for small processed items, such as carved ornaments, further exacerbates the severity of genetic and population resource depletion. Thus, all facets of commercial trade in S. mahogani and S. humilis require regulation and monitoring.

The U.S. proposal (but not the Costa Rican one) would exempt processed items of S. macrophylla from CITES permitting procedures in order to encourage "value-added" indigenous industries.

POPULATION STATUS: Populations have declined from selective extraction for nearly 500 years, and from the general deforestation accompanying development. These population declines pose a considerable adverse impact on the role of mahoganies in rainforest ecosystems.

- S. humilis: Confined to the Pacific coast of Central America. Populations over much of its range have been fragmented and reduced, with only scattered trees remaining in pastures and along borders in cultivated areas (Styles 1981; Whitmore 1983). Currently in CITES Appendix II.
- S. mahogani: Indigenous populations are confined to Cuba, Hispaniola, Jamaica, the Bahamas, Cayman Islands, and the USA (tip of Florida; not Puerto Rico or the US Virgin Islands). Commercial exploitation for nearly 500 years has severely reduced the number and quality of remaining specimens over much of its natural range. This once prized tree now occurs as little more than a much-branched bush in most areas, and is "a prime example of extreme genetic erosion due to past over exploitation of the best genotypes" (Styles 1981). It is listed as a Threatened species in Florida, and may be uplisted to Endangered (Hilsenbeck 1991).

-- S. macrophylla: Populations are undergoing exploitation virtually throughout its natural range in Central and South America. Population declines are particularly evident in Central America. Extraction is now concentrated in Brazil and Bolivia, where regional commercial extinctions are increasing (Collins 1990; 1987 draft CITES proposal, Videz; Uhl pers comm. 1992). Brazil has listed S. macrophylla on the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (CNWH), as have Venezuela, Costa Rica & Nicaragua. The Brazilian Society of Botany has included S. macrophylla in a list of endangered species for the country. Overall, its conservation status is considered to be Vulnerable (Villa-Lobos 1991; NRC 1991). S. macrophylla is listed as a high priority species for genetic resource conservation by the International Board for Plant Genetic Resources [IBPGR]. Reports from other range states include:

Country	Status	Explanatory notes
Guatemala	Endangered	Last remnants in north, with illegal extraction prevalent.
Honduras	Abundant	Limited data, mostly cut out where accessible.
Costa Rica	Threatened	Remainder over-exploited and scarce.
Panama	Indeterminate	Thoroughly extracted where accessible.
Venezuela	Vulnerable	2/3 reductions in last <15 years, and populations may be gone by the year 2000.
Colombia	Rare	
Peru	Threatened	Drastic reductions in populations
Bolivia	Common to nearly extirpated.	Commercial extinction in SE (Depto. Santa Cruz).

US industry spokespeople have argued that the timber trade will never cause complete extinction of mahogany -- a few trees will persist in reserves, inaccessible areas, and as ornamentals. They go so far as to condone "commercial extinction" of mahogany and reject use of CITES to encourage sustainable management.

SUSTAINABLE HARVEST OF MAHOGANY

prepared by
Natural Resources Defense Council

At present, plantation-grown mahogany accounts for a very small proportion of internationally traded timber. United States Department of Commerce statistics reveal that 98.5% of mahogany timber imported to the United States in 1990 came from countries with indigenous mahogany populations.

It is hoped that the increased scientific monitoring resulting from CITES Appendix II listing will encourage and support efforts to grow mahogany in plantations. However, plantation grown mahoganies do not compensate for the loss of naturally occurring populations, especially where plantation mahoganies are hybrids or are grown in non-indigenous regions.

Goodland, et al. (1991), define "sustainable harvesting" as the "use of natural forest which indefinitely maintains the forest substantially unimpaired in the environmental services it provides, as well as in its biological quality. Clearly, any harvest must not exceed the regeneration rate of the resource nor impair the potential for similar harvest in the future." The authors cite five authorities in stating that tropical hardwood logging is not being managed on a sustainable basis at present.

There are at least four major factors mitigating against sustainable harvesting of mahoganies, either in plantations or managed forest reserves:

- a) Poor natural regeneration: Although mature mahoganies seed well and disperse this seed over a wide area (Lamb 1966), the most recent field research in Brazil and Boliva (Quevedo, 1986; Verissimo, 1992) indicates that there is virtually no natural regeneration following selective, high-grade logging as now carried out.
- b) Shoot borers: The shoot borer, Hypsipyla spp. (esp. H. grandella) has severely compromised or even ruined most attempts at mahogany silviculture. Mahoganies can be repeatedly attacked at any stage in their life cycle, from tiny seedlings to full size (comm. Newton 1991). The shoot borer burrows into the terminal shoot of a growing mahogany plant, causing the plant to produce a cluster of new shoots. This branching reaction makes the tree unsuitable for timber production, although useful as a shade tree in the tropics (comm. Newton 1991). The US Forest Service notes that virtually all terminal shoots can be attacked within a year, and that the multiple-branched stems "will seriously reduce the stand value and utility at maturity" (US Forest Service 1986, 1987). Insecticide control is costly and not too effective (US Forest Service 1987). Mahogany seedlings can

also be attacked by the sugar cane stalk borer (Diaprepes abbreviatus), and heavy infestations can kill entire seedling beds (US Forest Service 1987). In experimental plantings, reducing densities of mahogany seedlings and practicing certain silvicultural techniques show promise in reducing shoot borer attacks, but these actions also reduce return on investment.

- c) Economic viability: Plantations will remain uneconomical while it is cheaper to extract several hundred year old wild mahogany specimens. Only government regulation, both domestic and international, can protect native mahoganies and add an economic impetus toward the research and implementation of sustainable harvesting programs.
- d) Political viability: Mahogany plantations need 30 - 40 years to reach maturity, even if they survive borer infestation. The creation and preservation of such plantations requires considerable commitment of both capital resources and political stability. Almost mature plantations have been razed for alternative uses, such as growing bananas, when this was deemed more profitable (Lamb 1966).

A US importer announced that his firm stopped importing plantation-grown S. macrophylla from Indonesia because value-added taxes raised the price and plenty of wood was available more cheaply from other sources (that is, natural forests in the Amazon).

Sustainably harvested forest reserves may be destroyed by settlers (see separate fact sheet). In the presence of demographic and short-term economic pressures, considerable effort is required from political and industry sources to preserve forest reserves into perpetuity.

CITES listing would help solve these problems by encouraging funding to assist range states in determining the status of S. macrophylla and obtaining technical assistance to improve sustainable management and plantation techniques. Indeed, the January 1992 draft Issues and Options paper for the Global Environmental Facility specifically recommends funding projects under the auspices of CITES.

MAHOGANY, ROADS & DEFORESTATION

prepared by
Natural Resources Defense Council

The issues of logging, roads, settlement and deforestation are inter-related. The adverse effects are direct -- both stimulating logging for mahogany and preventing any significant mahogany regrowth.

- According to Dr. James D. Nations (1987), "The first stage is road construction. ... [I]n most cases, rainforest roads in Mesoamerica are built for logging. Logging teams build roads to penetrate the rainforest and take out commercially valuable timber. In Mexico and Central America, this means mahogany and tropical cedar ..." Logging roads then introduce the second stage of rainforest destruction in Mesoamerica: colonization.
- Two thirds of the secondary roads in the region of Para, Brazil studied by Uhl et al. (1990) had been built by loggers, frequently in exchange for partial logging rights on the lands of ranchers and agricultural colonists.
- The process also works the other way -- settlement precipitates, and is dependent upon, logging of the commercially valuable timbers present on the property. Uhl et al. (1990) found that it is the presence of valuable commercial species on subsistence plots that makes these economically viable in the short term. By selling timber, colonists are able to persist for longer periods while continuing to cut the forest each year to produce food for home consumption and sale. The short lifetime of cleared forest plots means that colonists must clear large areas (frequently >3 ha) each year to meet basic needs. When the land is exhausted, they move elsewhere. 68% of the original landholders in their research area had already moved off their land, and 52% of those remaining were not receiving enough income from crop sales to meet subsistence expenses.
- Even where companies have followed careful practices to cut small areas of tropical hardwoods, including lifting trees out by a system of ropes and winches (e.g. Carton de Colombia), "[W]e have a very serious problem here, with the colonists cutting the secondary growth before it is mature." Settlers poach pole size trees for building their houses (Caufield 1985).
- In forests that are selectively logged for mahogany and left to regrow, the mahogany seedlings, where present, perform poorly. (Verissimo, 1992, Quevedo 1986). Thus, the value of the forest to small landholders decreases after one or two

cutting cycles, further encouraging total clearing for agriculture.

- The combination of continued international demand, selective extraction, general deforestation, poor regrowth, and failed plantations paints a bleak picture for the long term commercial, genetic and population viability of the neotropical mahoganies.

GENETIC CONSERVATION

prepared by
Natural Resources Defense Council

One of the primary goals of CITES listing of S. macrophylla will be to prevent this species from suffering the same genetic erosion that befell S. mahogani. Selection of the tallest, straightest trees with the best timber production capacity, without appropriate compensatory propagation, led to the survival and breeding of only those trees unsuitable for timber purposes.

- S. mahogani: "[I]n most areas this once famous tree occurs as little more than a much-branched bush or small tree, a prime example of extreme genetic erosion due to past over exploitation of the best genotypes" (Styles 1981).
- According to Dr. Adrian Newton (Institute of Terrestrial Ecology, Edinburgh), S. mahogani is one of the best examples of dysgenic selection.
- S. macrophylla is listed as a candidate for high priority genetic conservation by the International Board for Plant Genetic Resources [IBPGR].
- The U.S. National Academy of Science (NRC 1991) reviewed data supplied directly by universities, state and national forest services, and private companies to determine the existence of breeding or testing activities with regard to forest trees. No breeding programs were identified for any of the mahogany species, and only for S. macrophylla were testing programs identified at more than three locations. S. humilis was identified as an Endangered species, and S. macrophylla as Vulnerable (NRC 1991).
- In the early 1970s, CATIE (Costa Rica) employed 100 scientists in an attempt to solve the shoot borer problem through various planting techniques and pesticides, but with no positive results (Newton, comm. 1991). Currently, Dr. Adrian Newton is heading an experiment to genetically improve S. macrophylla to resist borer infestation. As noted previously, most mahoganies respond to the shoot borer by forming multiple branches, in the process ruining their timber value. Other mahogany specimens respond by sending up one dominant shoot, which eventually forms a straight trunk of sufficient length to be useful for lumber. Current research involves planting out seeds of wild growing trees with straight trunks, and determining which specific genetic lines pass on this ability. Unfortunately, the seed trees with straight boles necessary for this essential research are exactly the ones that loggers extract, compromising this avenue of research.

MAHOGANY TRADE

prepared by
Natural Resources Defense Council

Selected extraction of S. mahogani has occurred for almost 500 years. With depletion of that resource, the trade turned first to S. macrophylla in Central America, and now to populations in South America. Mahogany is the premium timber from the tropics due to its easy workability, stability, durability, and above all its beauty (grain, color and finish). In the 16th Century mahogany was first used by Europeans in the construction of boats, because of its resistance to natural and parasitic degradation. Subsequently, mahogany became increasingly popular in the production of fine furniture and architectural woodwork. Currently, the use of mahogany veneers is increasing in response to the rising costs of sawnwood.

TRADE LEVELS

S. humilis: CITES records indicate a continued trade in worked S. humilis.

S. mahogani: Still exported sporatically from Caribbean islands where it is native, although far less than in previous centuries due to commercial extinction. British importers will sell the wood if they can obtain it. Trade in furniture and ornaments is likely to be extensive, but cannot be determined from current trade statistics.

S. macrophylla: Very large volumes of mahogany are traded internationally (see the US CITES proposal).

- The United Kingdom, United States, and West Germany are the major importers of mahogany from the neotropics.
- Brazil and Bolivia are currently the largest exporters of mahogany.
- Brazilian mahogany exports to the United States peaked in 1987 at about 276,000 m³.
- Mahogany is predominantly an export commodity. Bolivian statistic (1985) indicate that ~73% of mahogany production was exported, representing 88% of total Bolivian timber exports.
- As a result of Brazilian export enhancement programs, by 1983 mahogany lumber accounted for more than 30% of all Brazilian lumber exports, and 58.6% of Brazilian lumber imported into the United States.
- In 1990, Bolivia superceded Brazil as the major mahogany supplier to the United States.

ILLEGAL LOGGING OF MAHOGANY

prepared by
Natural Resources Defense Council

Many range states have legislation aimed at monitoring and controlling the extraction of mahogany, particularly the export of unprocessed logs. However, lack of enforcement resources and corruption have led to widespread disregard for these laws. Listing of mahogany on Appendix II of CITES would aid these nations in enforcing their own logging restrictions. Companies violating the terms of laws and decrees and which then export the timber without proper permits would be subject to legal sanctions in the importing as well as the exporting country.

Permits issued under CITES Appendix II listing would provide the details on export volumes, origins, destinations, and shippers of mahogany needed to improve enforcement. Examples of the need for tighter controls include:

- Brazil has instituted harvest quotas for mahogany, and enacted decrees to enhance the "value added", such as banning the export of mahogany logs and restricting the export of timber greater than 3 inches in diameter. Brazil has also instituted a policy (Forestry Code Decree Law 4771) whereby at least 50% of all forest areas opened to new agriculture should be kept in natural forest. Unfortunately, even the Brazilian government recognizes that enforcement is inadequate, with only about 50 forest rangers to monitor the entire Amazon region. (Source: Plowden and Kusuda 1989).
- The illegal extraction of mahogany directly threatens the Amazon's Indian and biological reserves. George Monbiot (1991) reports considerable illegal extraction from Amerindian reserves, after which the mahogany is admixed with "legal" timber for export. Industry sources confirm the illegal trade, noting that much of the timber "production is still being smuggled from Amazonia" (Wood Purchasing News Aug/Sep 1991). Plowden and Kusuda (1989) also relay accounts of mahogany logs being smuggled out of Brazil into neighboring countries.
- In Guatemala, Hugo Juarez (1990) reports illicit trafficking in logs of cedar and mahogany from the Peten National Reserves of Guatemala to Mexico, using "ghost" (false) permits. Modern industrial sawmills process the wood in Quintana Roo, ten kilometers from the border. Threatened by this illegal trade are mahogany trees over 200 years old, surrounding the Mayan ruins at Tikal.
- Peru (CDC 1991) has reported considerable illegal extraction from parks and reserves, to the extent that the only populations still sufficiently protected are those in the remote Manu National Park (Chavez 1990, Terborgh 1990).