

AMENDMENTS TO APPENDICES I AND II OF THE CONVENTION

Other Proposals

A. PROPOSAL

Inclusion in Appendix II of the neotropical populations of Swietenia spp. (S. macrophylla, S. mahagoni and S. humilis, and their natural hybrids), and their parts and derivatives:

1. their timber and wood processed to the first stage of transformation (i.e. primary products), such as logs, wood in the rough, sawn wood, veneer sheets, and plywood;
2. from these taxa within the native range of S. mahagoni or S. humilis and its hybrids, their wood processed or worked to the second to final states of transformation (i.e. secondary to final products), such as furniture and particle board;
3. from those taxa not within the native range of S. mahagoni or S. humilis and its hybrids, exclude originating wood processed or worked to the second to final stages of transformation (i.e. secondary to final products), such as furniture and particle board; and
4. for the Swietenia taxa, exclude the parts and derivatives specified in the standard exceptions (Resolutions Conf. 4.24 and Conf. 6.18).

NOTE: This proposal incorporates revising the current listing of S. humilis to exclude: (a) non-native populations in the Old World; and (b) wood from trees not in the native range, if transformed beyond the first stage. No separate proposal regarding this species is intended.

B. PROPONENT

The United States of America.

C. SUPPORTING STATEMENT

1. Taxonomy

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| 10. Division: | Magnoliophyta (angiosperms; flowering plants) |
| 11. Class: | Magnoliopsida (dicotyledons) |
| 12. Order: | Sapindales |
| 13. Family: | Meliaceae |
| 14. Genus: | <u>Swietenia</u> Jacquin (3 spp., Styles, 1981; Miller, 1990) |
| Species: | <u>S. mahagoni</u> (Linnaeus) Jacquin 1760 |
| | <u>S. macrophylla</u> King 1886 |
| | [e.g. syn. = <u>S. candollei</u> Pittier] |
| * | <u>S. humilis</u> Zuccarini 1836-1837 |
| | [e.g. syn. = <u>S. cirrhata</u> S.F. Blake] |
| | * now in Appendix II |

Hybrids: (see Whitmore & Hinojosa, 1977; Styles, 1981)

Natural hybrids occur between the two species with proximity in their native ranges. Artificial hybrids can occur between native and non-native (introduced or naturalized) species, either: (1) spontaneously, from crosses unaided by people, or (2) artificially, from human-aided crosses (e.g. in research for forestry or horticulture).

Natural: only S. humilis x S. macrophylla. Drier areas, NW Costa Rica (Withmore, 1983; cf. Holdridge & Poveda, 1975). Also potentially in Mexico (Tehuantepec); and Guatemala (yet in the appropriate area, none were found) (Styles, 1981).

Artificial, sometimes spontaneous: S. macrophylla x S. mahagoni [probable syn. = S. x aubrevilleana Stehlé & Cusin]. Several Caribbean islands; also Far East (Withmore & Hinojosa, 1977; Styles, 1981; Howard, 1988; Schubert, 1979).

Artificial, experimental: S. humilis x S. mahagoni (e.g., St. Croix and Costa Rica; Whitmore & Hinojosa, 1977).

15. Common Names:	English:	American mahogany, New World mahogany
	Caribbean mahogany	(<u>S. mahagoni</u>)
	Spanish mahogany	(especially <u>S. mahagoni</u>)
	bigleaf mahogany	(<u>S. macrophylla</u>)
	Honduras mahogany	(<u>S. macrophylla</u>)
	Pacific Coast mahogany	(<u>S. humilis</u>)
	French:	acajou d'Amérique
	Spanish:	Caoba
	Portuguese:	aguano, mógno

Note: "Mahogany" in the trade has expanded to include other genera (Knees & Gardner, 1983a); even "true or genuine mahogany" no longer always means only Swietenia (years ago, it meant only S. mahagoni).

16. Code Numbers:

2. Biological Data

Aspects of the biology of Swietenia species are provided by Miller, 1990; Betancourt, 1987; Whitmore, 1983; Styles, 1981 and Record & Hess, 1943. Much information on ecology, as well as the history, trade, and silviculture of Swietenia, is in Lamb, 1966; see also Betancourt, 1987. Overall conservation concerns are presented by Lamb, 1966; Knees & Gardner, 1983a, 1983b; Read, 1990; Oldfield, 1988; Huxley, 1934; Whitmore, 1981; Bramwell, 1980; Mabberley, 1983; FAO, 1984; Palmberg, 1987 and NRC, 1991.

21. Distribution: (Edlin et al., 1973; maps: § 2.1A, p.15)

211. Swietenia mahagoni: Hispaniola, Jamaica, Cuba, Bahamas and USA (S Florida). Introduced widely elsewhere for forestry (including agroforestry) (e.g. Samba Murty & Subrahmanyam, 1989; Schnee, 1973) and horticulture (e.g. Gooding, 1973; Schubert, 1979); sometimes naturalized, from centuries ago to recently (e.g. Proctor, 1984; Howard, 1988). For the range deemed native, besides Styles, 1981, see Liogier, 1978, 1985;

Adams, 1972; Bisse, 1988; Betancourt, 1987; Correll & Correll, 1982; Patterson & Stevenson, 1977; and Little, 1978, Elias, 1980.

212. Swietenia macrophylla: S Mexico southward ordinarily on Atlantic slope through Costa Rica, through Panama, NW South America and peripheral upper Amazonia to Bolivia and southern Amazonia. Introduced extensively elsewhere for forestry, also horticulture (Styles, 1981; Newman, 1990; Schubert, 1979; Prance & da Silva, 1975); sometimes naturalized (e.g. Howard, 1988).
213. Swietenia humilis: Ordinarily on Pacific slope, from NW Mexico to N Costa Rica. Introductions limited. See Styles, 1981; Mason & Mason, 1987 and Standley & Steyermark, 1946.
22. Population: Populations of Swietenia species have diminished from selective extraction and general deforestation with development (Bevan, 1945). Roads sometimes are made to log mahogany, deforestation then resulting from the access created. Light aircraft, aerial photography and satellite imagery may be used to locate areas promising for logging (Lamb, 1966; Gifford, 1946).

Extant natural populations of the unlisted species are depleted substantially by extraction (e.g. Lamb, 1966; Foster, 1990; Smith, 1965; Correa, 1990; Swabey, 1949; Adams, 1972; Betancourt, 1987). Genetic loss within and of populations from exploitation and reduction by land-use change is critically important (FAO, 1984; Palmberg, 1987; Mabberley, 1983; Oldfield, 1984; cf. Gifford, 1946). Samples from some no longer existing populations have been preserved by gene-banking (Palmer, 1978). Selective removal of mature, choice specimens has been going on for centuries to decades, to current first-time logging in newly accessible areas. Although trees may grow rather robustly (S. macrophylla ± rapidly, S. mahagoni moderately), the mature, often canopy-emergent trees may be one to several centuries old (Gentry & Terborgh, 1990; Betancourt, 1987; Mabberley, 1983; Liogier, 1978).

221. Swietenia mahagoni: Commercial exploitation for nearly 500 years has severely reduced the numbers and the quality of remaining plants over its natural range. This once-priced timber tree (to over 20 m tall and 1-3+ m diameter in the wild) is now in most areas only a much-branched shrub to small tree, and is "a prime example of extreme genetic erosion due to past over-exploitation of the best genotypes" (Styles, 1981).

Coastal stands in **Jamaica** were thoroughly depleted by 1735; in 1774 there were still "vast quantities" inland (Long ex Swabey, 1949). Yet by 1949, Swabey reported that almost no mature trees remained from its continued extraction (Walker, 1989); moreover, young trees were killed by stripping their bark to make mahogany dye. Jamaican mahogany remains rare and difficult to obtain (Adams, 1972; Oldfield, 1984). On **Hispaniola (Dominican Republic and Haïti)**, inventories reporting amount and size are few, yet it is considered widespread (Liogier, 1985) - large trees were reported scarce in the Dominican Republic (Liogier, 1978); protection is limited (IUCN, 1982; com. NRDC, Ashley, 1990; Zanoni, 1990). **Cuba** banned its export in 1947; by 1966, Cuban demand exceeded their national supply; natural regeneration is scarce (Oldfield, 1984; Lamb, 1966; Betancourt, 1987). Some populations in the **Bahamas** are endangered or commercially extinct, but individual trees may still be relatively common (Oldfield, 1984; Patterson & Stevenson, 1977; Correll

& Correll, 1982). In the **USA (Florida)**, the State considers it threatened, primarily due to habitat loss, but mature trees in unprotected areas still are sometimes logged (com. NRDC, White, 1990; com. USWFS, Hilsenbeck, 1991; note Gifford, 1946).

222. *Swietenia macrophylla*: Dispersed in a hectare to km² of undisturbed forest are just a few mature trees (to 40-70 m tall and 2-3.5+ m diameter). (Whitmore, 1983; Betancourt, 1987; Edlin et al., 1973; Sanderson & Loth, 1965). Populations are undergoing exploitation nearly throughout its natural range (com. NRDC, Pennington, 1990). It is listed as a high priority species for genetic resource conservation by the International Board for Plant Genetic Resources (IBPGR).

Even though large natural populations still occur in **Brazil**, increasingly they are affected by illegal as well as legal logging, and by illegal as well as planned deforestation. Brazil listed the species on the CNWH Annex (see § 42. below); it is considered **Vulnerable** (Villa-Lobos, 1991). In other countries, the more limited populations vary from still common to threatened, e.g. as follows (and see § 42. for CNWH listings by Venezuela, Costa Rica and Nicaragua):

Nation	Status (Cat. IUCN)	Comments	Sources (Refs. § 8)
Guatemala	E	Last remnants in N (Depto. Petén). Illegal extraction prevalent. Export prohibited.	CDC; Moser; Villa-Lobos
Honduras	Abundant	Limited data. Broadleaf forest 35% gone 1964-1986. Now ↓ 64,450 ha./yr. Sp. mostly cut out where accessible. Export of unfinished wood prohibited.	SRN; Dautherty; Shank
Costa Rica	T	Remainder overexploited and scarce.	INBD
Panama	I	Thoroughly extracted from accessible localities, where ≈ threatened. Chocó (E border) ~ reserve, while remote.	Coolidge '45; Smith; Duke; Villa-Lobos
Venezuela	V	Abundant: W savanna extractive reserves. Population declines 2/3 in < 15 years, may be gone by 2000.	Cremonese & Capobianco; BIOMA
Colombia	R	In Juarado region in 1989, 9687 m ³ remained. Temporary prohibition on exploitation recommended.	CDC
Peru	T	Selective extraction has led to urgent need for protection (L1-L2). Reduction in populations has been drastic.	CDC

Bolivia	Common to nearly extirpated	Logging below stated minimum diam. prohibited. Still common to N in Depto. Pando (not yet logged). Near commercial extinction in SE (Depto. Santa Cruz).	Pennington com. NRDC; Collins
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223. Swietenia humilis: Populations in much of its range have been fragmented and reduced, with only scattered trees remaining in pastures and along borders of cultivated areas (Styles, 1981; Whitmore, 1983). It was abundant in **Guatemala**, but from export and some local use the populations so diminished that the law required its replanting wherever cut (Standley & Steyermark, 1946). Guatemala and Costa Rica include it in the CNWH Annex (see § 42.); it is recorded as **Endangered in Costa Rica** (cf. Knees & Gardner, 1983a), but as not threatened elsewhere (Villa-Lobos, 1991). Speculation that it occurred and was extirpated from Panama (Smith, 1965; Frankel & Soulé, 1981) is omitted (discounted) by Styles (1981).

23. Habitat: The species of Swietenia occur in moist (or even wet) to dry, evergreen to deciduous tropical to subtropical forests, with typically (800-) 1000-2500 mm of annual rainfall (Whitmore, 1983; Betancourt, 1987; Rzedowski, 1978; Toledo, 1982; Pennington & Sarukhán, 1968). Swietenia mahagoni occurs at altitudes from 0-800 m (Styles, 1981), and S. macrophylla to 1400 m (Lamb, 1966). Swietenia humilis often grows in dry deciduous forest and savanna, from 0-1200 m (Styles, 1981; Breedlove, 1981).

3. Trade Data

31. National Utilization and ± Legal International Trade: National and international utilization and trade in Swietenia chiefly involve their timber. Properties of mahogany woods including easy workability, stability, durability, and above all beauty (*grain*, colour and finish) have made the unlisted species perhaps the most valuable timbers of the neotropics (e.g., see Bramwell, 1976; Walker, 1989; Linnell & Arnoult n.d.; Contantine, 1959; Lewington, 1990; Whitmore, 1981; Fosberg, 1945; Lamb, 1966; Styles, 1981; FPRL, 1956; and Chudnoff, 1984).

Trees continue to be used by Amerindians for canoes. Mahogany was extensively used in building the great sailing ships, and remains popular for watercraft. The oldest extant example of European usage is a cross dated 1514, with carved woodwork in the cathedral in Santo Domingo, Dominican Republic. Mahogany is particularly desired now for high-class cabinets, chairs, joinery, panelling and pianos, and is used as solid wood or veneer (Walker, 1989; Bramwell, 1976; Samba Murty & Subrahmanyam, 1989). Costs increasing, with the supplies diminishing, have resulted in greater usage in commerce of only the veneer.

See tables of Trade Data in § 3.1A, appended (also Lamb, 1966 and Knees & Gardner, 1982, 1983a). The Customs import and export data provide extensive information on volumes of wood traded internationally. However, the country provided is not necessarily the initial source (originating country). Further, tariff-

schedule listings vary, and do not allow direct correlation between the export and import data, of to species.

311. International mahogany commerce began nearly 5 centuries ago in the Caribbean with extraction of S. mahagoni. The severe decline in S. mahagoni populations from overexploitation by about the 1850s caused a commercial shift to S. macrophylla (Samba & Murty & Subrahmanyam, 1989). Sporadic export of mahogany still emanates from this region, possibly from residual native specimens of S. mahagoni, but there is importation as well (see the trade tables appended, § 3.1A).
312. Although its wood is coarser grained and considered inferior (Styles, 1981; Bramwell, 1976), S. macrophylla remains the main source for the mahogany market (when it is not supplied by similar woods from Southeast Asia or Africa; Knees & Gardner, 1982, 1983a). Readily accessible populations in Central America also have been diminished considerably (e.g. Boucher et al., 1983; Walker, 1989). Until about 1923, S. macrophylla was not known to occur in the Amazonian periphery (Little & Wadsworth, 1964), so the intensive extraction of its last stronghold has arisen rather recently, with the opening and development of that region (e.g. White, 1978 for Peru). Representative is the 1977-1987 sixfold increase in mahogany extraction with Bolivia's NE road construction (Depto. Beni) (Collins, 1990).
313. Swietenia humilis is used in local carpentry, but has not been a major source for international commerce (Styles, 1981; cf. Standley & Steyermark, 1964). Nevertheless, CITES records show a regular trade in worked S. humilis with Japan.
32. Artificial Propagation Considerations:

321. Cultivation: Plantations for wood production of Swietenia macrophylla especially and/or S. mahagoni have been reported in e.g.: Mexico (also reforestation), Belize (founded to log native mahogany), Honduras, Cuba, Puerto Rico, Martinique (also reforestation), Trinidad and Tobago, Venezuela, Brazil, USA (Hawaii), Fiji, Indonesia, Philippines (also reforestation), Malaysia, Myanmar, Bangladesh, Sri Lanka, India and Nigeria. Swietenia macrophylla trees so cultivated may grow 3-4 times faster than in natural forest. The plantation crop may mature in 30 years, so yielding 3.5 times more wood than from natural forest (Evans, 1982; NRC, 1991). A plantation of S. humilis was begun in Guatemala (Standley & Steyermark, 1946), with estimated maturity in 40 years.

However, Whitmore (1983) stated that most large-scale planting efforts had failed. Clearly, the demand for wood of wild trees continues to be very high; detailed information on plantation performance has not been obtained. A major factor that has restricted Swietenia silviculture [particularly in the Americas (Collins, 1990)] is the shoot-borer Hypsipyla grandella (Zeller), Lep. Pyralidae. These moth larvae feed on the growing, terminal shoots of young trees, causing excessive branching and poorly formed trunks (Grijpma, 1976; Betancourt, 1987; Whitmore, 1983; Lamb, 1966). Planting in Fiji was suspended after devastation of a semi-mature plantation by a Hypsipyla shoot-borer (Palmer, 1978; Knees & Gardner, 1983a; Huxley, 1984; cf. Bramwell, 1980; Whitmore, 1980). The mahogany grown in Indonesia reportedly costs between 2 and 3 times

more in the United Kingdom than wood from wild trees of South America (com. NRDC, Read, 1991). The production from plantations in India also seems reliable (Samba Murty & Subrahmanyam, 1989).

Swietenia mahagoni (as well as S. macrophylla) also are grown somewhat throughout the tropics for amenity (e.g. for shade or as a street tree) (Styles, 1981; Storer, 1958; Gooding, 1973; Schubert, 1979; Neal, 1965; Leathart, 1977); their hybrid has been promoted for such ornamental use (Schubert, 1979).

322. Exception: Old World Swietenia populations (specimens originating in the paleotropics) are excluded from this proposal. Enforcement is simplified by avoiding unnecessary control on such non-native specimens (thus also entailing removal of Old World S. humilis from Appendix II). It is improbable that to evade CITES, timber (logs) or wood (parts and/or derivatives) obtained from natural populations in detrimental quantities would be transported to the Old World (illegally exported and imported) to then attempt re-export unnoticed or export claiming local production.

In the neotropics, however, S. macrophylla or S. mahagoni might occur within a country in a changing mosaic or spectrum from artificial (plantations) to natural populations, as well as \pm isolated trees of such origin(s). Thus, it is only practical for each Party to determine its natural populations and trees, rather than attempting to delineate in Appendix II within countries which are non-natural populations that might be excluded without risk and complications.

33. Illegal International Trade: Illegal logging of natural populations can be a major problem. Accurate estimation of volumes of illegally removed mahogany may be difficult, as illegal timber may be admixed with legally extracted timber. Continuing high demand for this valuable wood, the often remote areas where it is obtained, and difficulties in enforcement result in widespread extraction of nominally protected mahogany, such as its removal from unauthorized areas, nature reserves (e.g. national parks), and Amerindian lands (e.g. Monbiot, 1991; Terborgh, 1990; Correa, 1990; com. USWFS, Cantwell, 1991). Logs are transported by river and/or truck, particularly along new roads increasingly penetrating many neotropical areas. Since logging and admixing can occur distant from centres of national trade documentation, officials and importers may no longer be able to determine the actual origin(s) for some shipments of mahogany (Monbiot, 1991). Regulation by CITES can improve awareness and approval for the sources of wood in world trade.

4. Protection Status

41. National: Included are general and/or specific logging regulations, and the establishment of timber reserves, nature reserves, and Amerindian lands (see the table at § 222). Many countries of origin have more or less economic regulation of the Swietenia trade, particularly, restricting the export of unprocessed logs. In some instances, regulations also ban export of the wood, if not processed beyond the first stage of transformation (e.g. more than simply cut slabs or blocks).
411. Swietenia mahagoni bark was prohibited by Jamaica from sale and purchase (Swabey, 1949). In the Dominican Republic, this species is not protected under a particular law, but all timber felling is generally

restricted. Although there are no inventories for most parks, it is known in Parque Nacional (PN) Los Haitises, PN del Este, and PN Jaragua (com. NRDC, Zanoni, 1990). In **Haïti**, the species can regenerate naturally over a wide range but it is only in a few small reserves, which is considered inadequate to assure conservation of representative samples (com. NRDC, Ashley, 1990; cf. IUCN, 1982). In the **USA (Florida)**, it is under the State law as a threatened species, and may be uplisted to endangered (Hilsenbeck, 1991); it occurs in two State preserves and a national park, and on private land.

412. The extensive distribution of Swietenia macrophylla has fostered its inclusion in national parks and nature and forestry reserves. Yet, they are not considered sufficient for assuring conservation of adequate biological populations of the species and its genetic variability, in part because of illegal logging (e.g. Monbiot, 1991; Correa, 1990). The species is (e.g.) in the Biosphere Reserves Montes Azules (and surrounding yet threatened Selva Lacandona) in **S Mexico** (Hernández, 1964), and Río Plátano in **NE Honduras**, but illegally exploited (IUCN, 1982; NYZS, 1990; CI, 1991). It occurs in four forestry reserves in **Venezuela**. In **Peru**, while found in a variety of parks and reserves, logging is such that the only populations still protected sufficiently are in the remote PN Manú (Chávez, 1990; Terborgh, 1990).

413. Swietenia humilis in **El Salvador** occurs in the protected areas PN Deinninger, Montecristo, El Imposible and Namchuminame (TPC, 1982). In **Costa Rica**, it is in Rafael Lucas Rodríguez Wildlife Refuge (IUCN, 1982; Holdridge & Poveda, 1975).

42. International: Five countries include their Swietenia populations in the Annex to the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (CNWH) (OEA, 1967; USDS, 1942; Coolidge, 1945, 1949; Orejas-Miranda, 1976):

Brazil	22/10/65:	<u>S. macrophylla</u>
Venezuela	03/02/42:	<u>S. macrophylla</u> [as <u>S. candollei</u>]
Costa Rica	22/10/65:	<u>S. macrophylla</u> and <u>S. humilis</u>
Nicaragua	23/04/41:	<u>S. macrophylla</u> [likely; "caoba <u>S. mahagoni</u> " (not native) misused in past (Standley & Steyermark, 1946); with comparable spp.]
Guatemala	22/10/65:	<u>S. humilis</u>
USA	22/10/65:	<u>S. mahagoni</u> [informative non-official list]

Swietenia humilis (timber) was included in CITES Appendix II 02/03/73 (effective 01/07/75), based on a proposal from **Mexico**.

43. Additional Protection Needs: The severe genetic erosion in S. mahagoni, as well as great risk of similar deterioration in S. macrophylla along with its genetic distortion already in Central America, are major biological factors indicating the need to regulate the international trade. As selective logging removed and/or continues to remove the best mature trees and genotypes, the long-term survival and ecological roles of these species will continue to be affected in dubious ways (Styles, 1981; FAO, 1984; NRC, 1991). Furthermore, the intensifying deforestation in many areas curtails populations of the species.

Conservation is urgently needed for adequate representative natural populations, which may require genetic research and restoration especially for S. mahagoni. Effective conservation of base-line natural populations might assist in the development of sustainable extractive reserves, and successful plantations (UNESCO/UNEP/FAO, 1978). In a few areas (e.g. Brazil), the trees are logged in strips (corridors) through native forest, then replanted, relying on surrounding forest for restoration, which may create a 30-year harvest cycle (Newman, 1990) and somewhat mimic the natural gaps from treefalls. If sufficient tropical forest habitats of S. macrophylla are not converted to other land uses, even some much-exploited populations might recover sustainability without overly intensive management, as suggested by the ancient Maya system of silviculture (Whitmore, 1983; Mabberley, 1983).

5. Information on Similar Species

Mahogany wood (from Swietenia) is well known and generally readily recognizable (Bramwell, 1976; Edlin, 1969; Bond, 1950; Koehler, 1922; Miller, 1990). International Swietenia trade data may be recorded just as mahogany. Often the particular species can be surmised from the place of export, but plantation-grown wood may complicate analyses (FPRL, 1956). Thus, information on the more threatened S. mahagoni could be lost in the data on S. macrophylla. With some expertise, wood of S. mahagoni generally can be distinguished from the wood of S. macrophylla. Although S. humilis timber has been regulated under the Convention since 1975 (and the species with most parts and derivatives included since 1985), perhaps some international trade in it has been undetected in these general "mahogany" statistics (a concern Costa Rica has expressed).

Within the Meliaceae, Khaya and Entandrophragma species sometimes are referred to as African mahoganies. They and Swietenia produce similar timbers, but are considered distinct in commerce (Bramwell, 1976; Walker, 1989; Knees & Garder, 1982, 1983a). The neotropical Carapa guianensis Aublet (andiroba, crabwood or bastard mahogany) sometimes is mixed with S. macrophylla in trade; its wood is known to be inferior (Record & Hess, 1943; Knees & Gardner, 1982).

6. Comments from Countries of Origin

Mexico informed the United States that its S. macrophylla population would benefit from Appendix III controls. Costa Rica informed the United States that Swietenia ought to be included in Appendix II. Colombia advised a U.S. NGO that inclusion of Swietenia in Appendix II seemed appropriate. Most governments where these species are native were written by US NGOs, which requested information and comments on the need for this proposal. Due to the press of time, the United States must rely unduly on this 5-month review process by Parties to stimulate **additional comments**, which it **welcomes**. [They may be sent directly to the U.S. Scientific Authority (U.S. FWS/OSA, Washington) at **telefax 703-358-2276** or **-2202**, or to the U.S. Management Authority at **telefax 703-358-2281**].

7. Additional Remarks

There is considerable variation and local adaptation in Swietenia, suggesting that conserving the genetic variability of the species must include populations from throughout their ranges. Additional species infrequently are recognized (see synonyms in § 141 above, and Styles, 1981). There has been limited speculations whether to taxonomically reduce the three species usually recognized to one species for the genus (Styles, 1981; Whitmore & Hinojosa, 1977).

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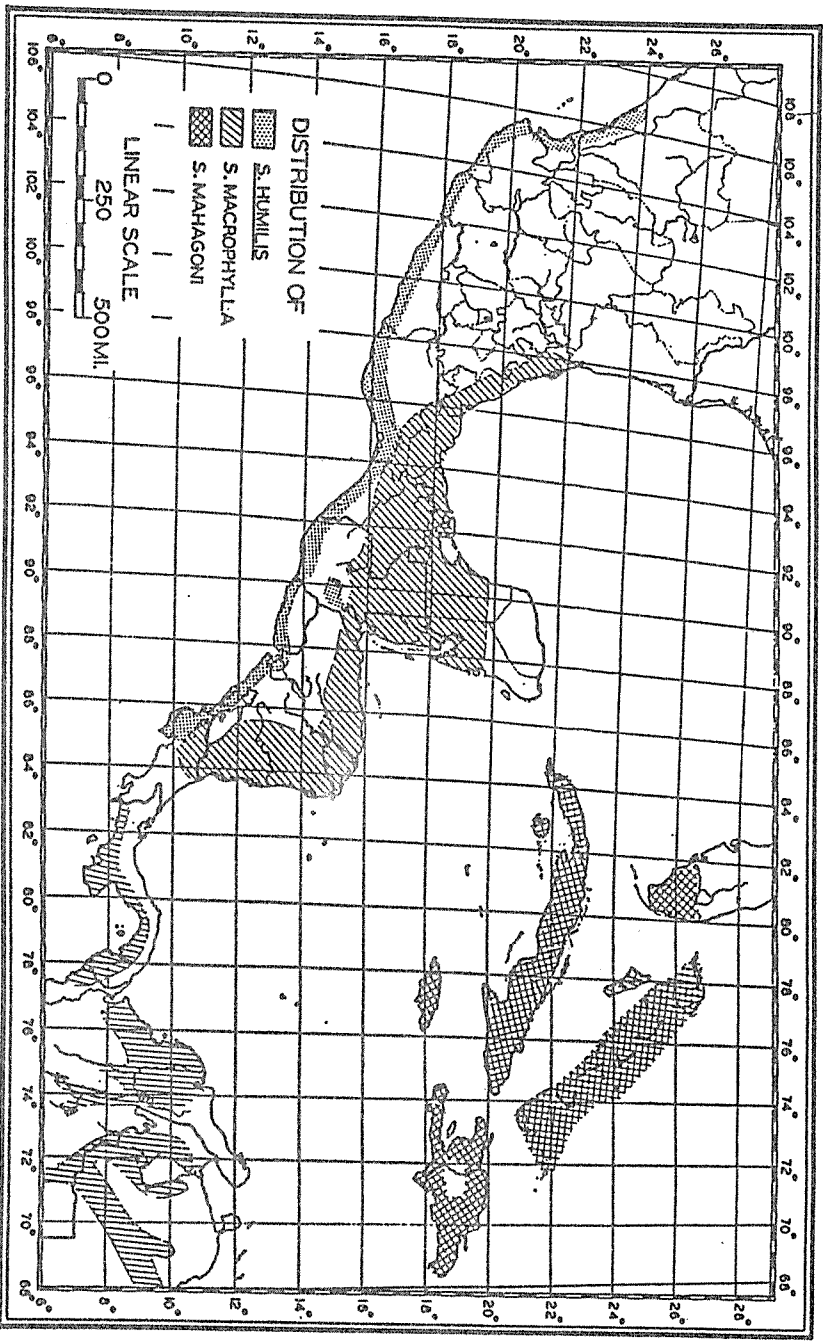
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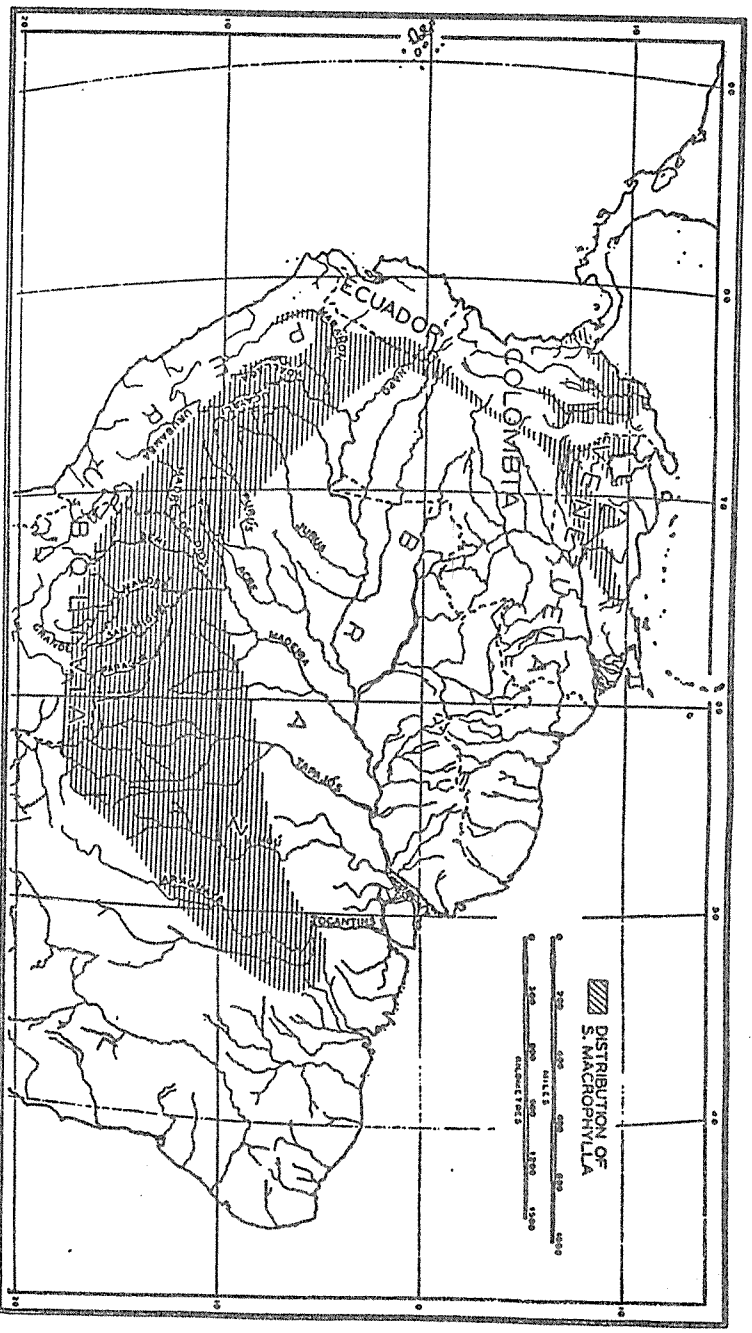
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2.1A. General Distribution (From Lamb 1966; see details in Styles 1981).



Distribution map of mahogany in Central America and Caribbean area.



Distribution map of mahogany in South America.

3.1A. International Trade Data (see §3.1 above, p. 5)

3.1A.1. EXPORT: MAHOGANY FROM BRAZIL

m ³ IMPORTER	Aguano, Mógno (4405.99-07) [1984 = 44.05-299, 4405.02] [1982 = 44.05-205, 4405.02] [1981 = 44.05-299, 4405.02]			Aguano, Mógno (4414.06-00) [= 44.14-199, 4414.00] [= 44.14-299, 4414.00] [= 44.14-199, 4414.00]		
	1981	1982	1984	1981	1982	1984
Iceland			19			
Ireland	1348	954	1149			
UK	10097	14389	14465	235	105	271
Denmark	748	521	475	177	154	247
Norway	298	15	418	51	16	60
Sweden	446	398	624	223	206	139
Finland	48					
USSR				32		
FR Germany	4928	4387	4082	394	348	908
Netherlands	450	741	336		22	7
Belgium ±	472	194	172	10	17	6
Luxembourg						
France	98					2
Guadeloupe			210			
Spain	204	89	390	3	22	13
Italy	60	232		237	192	182
Malta	1000		515			
Cyprus	58					
Lebanon	150					
Egypt		21				
Saudi Arabia	1996	1098	1342			
Kuwait	18					
Bahrain			30			
South Africa	721	110	253	51	2	18
Canada	813	571	299	66	54	312
USA	5173	10826	6484	1458	1728	5231
Puerto Rico	356	859	146			
Jamaica	19	1579	50			
Barbados	20	214	400			
Trinidad & Tobago		212	384			
Venezuela	823	4146	648	1011	622	861
Ecuador				6		
Perú					1	
Argentina			2822	448	1107	242
Uruguay				5	5	3
New Zealand			87			
Australia	628	369	322	8	11	
Japan	28	77	101	16	32	26
Total	31000	42002	36223	4431	4644	8528

3.1A.2.1. IMPORT TO EUROPEAN COMMUNITY [EC]: MAHOGANY (& other species)

Tariff Schedule	+ other spp. SAWN WOOD			+ rosewood & other spp. VENEER + PLYWOOD SHEETING			PLYWOOD		
	1988	1989	1990	1988	1989	1990	1988	1989	1990
ORIGINATING COUNTRY (selection) (EXPORTER)									
<i>S. macrophylla</i> p.p.:									
Chile	100		550		19	22	1788	327	406
Argentina		25				7			
Paraguay	40	523	2727	26			44	184	307
Bolivia	78	1305	1316	115	76			1	
Brazil	78340	70555	57989	2166	1941	1340	10705	17754	16766
Perú	104	84	30					103	11
Ecuador	760	796	1512				322	313	292
Colombia		1							
Venezuela		14	512			1			
Trinidad & Tobago								16	
Guyana	294	1322	980						
Surinam								193	
Fr Guiana			26		20				
Panamá		437							
Costa Rica			5				22		1
Nicaragua			47						
Honduras	21	53	60						
Guatemala	3	24	31						
Belize		14	6						
? <i>S. mahagoni</i> :									
Antigua & Barbuda							97		
Jamaica					4				
Bahamas				9					
Total	79740	75169	65771	2315	2060	1370	12978	18891	17783

FLORA (1)

In 1966, 79,000 m³ of various "mahoganies" at £38/m³ were imported by British traders; by 1979, 196,000 m³ were imported but at £230/m³. From the Jamaican *S. mahagoni* population in 1770, 230 m³ of mahogany valued at £210/m³ were imported to England (Huxley 1984; Knees & Gardner 1982, 1983a).

3.1A.2.2. IMPORT TO JAPAN: MAHOGANY (& other species)

m ³ Tariff Schedule	+ other spp. SAWN WOOD		+ rosewood & other spp. VENEER + PLYWOOD SHEETING	
	4407.23-000 [= 44.05-599 + 44.13-590 p.p.]		4408.20-010 + 4408.20-090 [= 44.13-400, 44.13-590 p.p., 44.14-230 + 44.14-290]	
ORIGINATING COUNTRY (EXPORTER)	1988	1989	1988	1989
Bolivia		64		61483
Brazil	373	118	239254	20339
Perú	7	99		
Ecuador	1138	1463		
Honduras		4		
Guatemala	834	181		
Belize	225	5		
Total	2577	1934	239254	264873

3.1A.2.3.1. IMPORT TO USA: "MAHOGANY" LOGS (2003537)
[U.S. Dept. Commerce data]

tbf [1 tbf = 2.36 m³] (1000s board feet, M bd ft; 1 bd ft = 0.00236 m³)

EXPORTER	1985	1987	1988
Chile	18		
Brazil	100		35
Belize		108	295
Total	118	108	330

31A.2.3.2. IMPORT TO USA: "MAHOGANY" [U.S. Dept. Commerce data]

tbf [1 tbf = 2.36 m³] (1000s board feet, M bd ft; 1 bd ft = 0.00236 m³)

EXPORTER	ROUGH CUT (2023420 = 4407.230025)							DRESSED [nesoi] (2023440 = 4407.230030)						
	1985	1986	1987	1988	1989	1989	1990	1985	1986	1987	1988	1989	1989	1990
	tbf		m ³		m ³		tbf		m ³		m ³		m ³	
<i>S. macrophylla:</i>														
Chile	646	194	135	70	5378	12693	370	57	152	4	802	288	679	622
Argentina	18	3			10	24								239
Paraguay	16		50											
Bolivia	22	148	3079	10538	9560	22561	38705	164		18	802	1764	4163	7211
Brazil	44843	34832	113290	33442	21520	50788	33476	9555	14273	4153	4512	3791	8947	4188
Perú	643	79	659	20	151	356	778	393	5	44		93	220	
Ecuador			38				8							
Colombia			2											
Venezuela	67				112	265		16						161
Fr Guiana														23
Panamá										51				
Costa Rica							19				80			
Nicaragua							12							
Honduras	10	25	23	1			34	2	51	168	180		230	27
Guatemala	756	1411	4736	5261	3539	8630	4106	489	338	700	84	568	1341	300
Belize	88	57	1769	113	169	400	169	97	13	41	47			1469
México	8		197	23				12			8			
? <i>S. mahagoni:</i>														
Trinidad & Tobago														
British Virgin Islands														46
Jamaica		1												
Cayman Islands [UK]				624				1						
Bahamas			28								2			
Total	50256	38586	129155	52288	41841	99024	80399	11443	16624	6641	7104	7039	16612	15355

FLORA (1)
135

3.1A.2.3.4. IMPORT TO USA: DRESSED "MAHOGANY" (2023440 = 4407.23-0030) [from manifests]

tbf [1 tbf = 2.36 m³] (1000s board feet, M bd ft; 1 bd ft = 0.00236 m³)

EXPORTER	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	tbf ⇌ m ³	
												1989 ⇌	1989
<i>S. macrophylla:</i>													
Chile			100		35	92		57	152	4	802	288	679
Argentina		40	22										
Uruguay			20										
Paraguay		1											
Bolivia	185	60	71	466	31	62	181	164		18		1764	4163
Brazil	2232	6040	6039	6107	9543	5909	3470	9555	14273	4153	4512	3791	8947
Perú		8	14	298	211	193	83	393	5	44		93	220
Ecuador	70												
Colombia	72	19		54	139								
Venezuela							4	16					
Surinam	11												
Panamá							61				51		
Costa Rica						13						80	
Nicaragua	2		50										
Honduras	38	8	548	7	40	87		2	51	168	180	97	230
Guatemala	33		11		28		15	489	338	700	84	568	1341
Belize					47	147	7	97	13	41	47		
México							1	12					
<i>? S. mahagoni:</i>													
Barbados										2			
Fr: Caribbean						3							
Jamaica			8		18								
Cayman Islands [UK]								1					
Bahamas											2		
Total	2643	6176	6883	6932	10092	6506	3822	10786	14834	5211	5705	6601	15580

3.1A.2.3.3. IMPORT TO USA: ROUGH "MAHOGANY" (2023420 = 4407.23-0025) [from manifests]

tbf [1 tbf = 2.36 m³] (1000s board feet, M bd ft; 1 bd ft = 0.00236 m³)

EXPORTER	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	tbf ⇌ m ³		
												1989	1989	
<i>S. macrophylla:</i>														
Chile		42	385	154	12		110	646	194	135	70	5378	12693	
Argentina	251	300	15					18	3			10	24	
Paraguay	60													
Bolivia	10356	5981	9026	6584	415	587	937	22	148	3079	10538	9560	22561	
Brazil	9905	14012	23161	27609	14939	31948	40720	44833	34832	113290	33442	21520	50788	
Perú	487	308	685	123	66	226	195	643	79	659	20	151	356	
Ecuador												38		
Colombia												2		
Venezuela								67				112	265	
Panamá			10					16						
Costa Rica			33	61	61									
Nicaragua	29	158				62								
Honduras	241	36		34	24	30	6	10	25	23	1			
Guatemala	581	174	288	465	236	562	452	756	1411	4736	5443	3657	8630	
Belize	229	18	32	4	117	166	59	88	57	1769	113	169	400	
México						37		8		197	23			
<i>? S. mahagoni:</i>														
Trinidad & Tobago		20												
Jamaica									1					
Cayman Islands [UK]											624			
Bahamas										28				
Total	22139	21049	33635	35034	15870	33618	42479	47107	36750	123956	50324	40557	95717	