Preliminary Assessment of Trade in Bigleaf Mahogany (*Swietenia macrophylla*)

June 2006

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1. SUMMARY

The 15th meeting of the Plants Committee (Geneva, May 2005) raised serious concerns about the implementation of CITES Appendix II in relation to trade of the neotropical populations of *Swietenia macrophylla* King (Meliaceae). After more than two years since the up-listing of *S. macrophylla* to Appendix II, the protective measures required by the listing are not being implemented. This is particularly true in Peru, which is a focus of this report because Peru contains some of the last significant stands of bigleaf mahogany, its exports constitute the majority of the international trade in the species, and experts predict that current exploitation levels will render the species commercially extinct in Peru within a decade.

S. macrophylla is gravely threatened because of over-exploitation, illegal logging and a failure by Range States to adhere to the requirements of Appendix II. Trade in the species is driven by record high prices (section 4.2), which result in widespread illegal logging (section 4.5). Protected areas and indigenous reserves are increasingly the sites of remnant *S. macrophylla* populations that are available to loggers. Unless CITES regulations are better enforced, conflict, especially violent conflict with Amerindians, is likely to increase (section 4.3.1), and *S. macrophylla's* survival will continue to be threatened.

Given the prevalence of illegal logging (section 4.5), and lack of field verification, Management Authorities are not providing accurate findings of legal acquisition for exports. Without a chain-of-custody tracking system to monitor the movement of logs, illegally obtained *S. macrophylla* is receiving CITES export permits, thus providing a veneer of legality to illegal wood. By not ensuring the validity of export permits, importing nations are largely failing in their obligation to prevent trade in contravention of the provisions of the Convention.

Likewise, because export quotas have been set without regard for local or national inventories, nor for the biology, life history, demographics, reproductive capacity, and ecological role of the species, findings of non-detriment, to the extent they even exist, are not credible or valid (section 4.8.1). For example, the National Institute of Natural Resources (INRENA), Peru's Management Authority, set quotas in 2005 and 2006 without considering the biology, distribution, or ecological role of the species. Instead, the quotas were based on the past levels of logging that have led to the species' precarious state. Furthermore, even these quotas appear to be ignored, with more exports than authorized and widespread illegal logging (section 4.8.1).

This failure to implement Appendix II regulations undermines CITES, and may result in *S. macrophylla* being listed under Appendix I. Recent advances in analysis of satellite imagery suggest that selective logging is much greater than previously believed (section 4.2), which further threatens the survival and ecological role of *S. macrophylla* (section 4.1). Moreover, protected areas are insufficient to protect *S. macrophylla* and its role in the ecosystem (section 4.3.1).

In order to assess the status of *S. macrophylla* and implementation of Appendix II, Range States and importers are encouraged to provide information concerning the species at the 16th meeting of the CITES Plants Committee in Lima, Peru in July 2006.

2. INTRODUCTION

The neotropical populations of *Swietenia macrophylla* King (Meliaceae) were listed in CITES Appendix II at the 12th meeting of the Conference of the Parties (CoP12, Santiago, Chile) in 2002, after having been listed in Appendix III since 1995. The proposal submitted by Guatemala and Nicaragua entered into force on 15 November 2003 and includes logs, sawn timber, plywood and veneer.

The Mahogany Working Group (MWG) was created at CoP10 and was re-established as a CITES Working Group in Decision 11.4 adopted at CoP11 (Nairobi, 2000), Decision 12.21 (CoP12), and again in Decision 13.55 (CoP 13, Bangkok, 2004). Reports to the MWG have consistently revealed widespread illegal and unsustainable logging of the species, in violation of the Convention. As detailed below, the current state of affairs is worse than before, with remaining mahogany populations rapidly being decimated.

The evidence provided in this report demonstrates not only that bigleaf mahogany warrants inclusion in the Review of Significant Trade, but that much of the work of the review has already been done. The Range States have been consulted. Information on the biology and management of the species has been compiled. The Plants Committee has reviewed the information. The Parties and the Secretariat have provided training workshops and financial assistance to aid in the implementation of the listing. Peru has had enough time to correct the situation. And yet the unsustainable trade of mahogany continues. What is needed is for the Plants Committee to take the necessary action to prevent any further harm to the species. We urge the members of the Plants Committee to recommend an immediate suspension of trade in mahogany from Peru until it can be shown that the provisions of the Convention have been implemented and that continued trade in the species will not be detrimental to its survival and role in the ecosystem.

2.1 CITES Obligations

The primary aim of CITES "is to protect listed species against over-exploitation caused by international trade and to ensure that this trade is sustainable" (MWG 2003a). Thus, determining when international trade is legal and non-detrimental is essential to achieving the aims of the Convention. Article IV of CITES sets out provisions for regulation of trade in specimens of species included in Appendix II of the Convention:

> 2. *The export of any specimen of a species included in Appendix II shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:*
>
> *(a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;*
>
> *(b) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora*.

Further, paragraph 3 of the Convention recognizes that exports must be:

> *limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I, the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits*

The Scientific Authority is thus required to ensure that an Appendix-II species is managed in such a way as to only allow exports on a sustained basis that will not damage the conservation status of the species or its ecological functioning (MWG 2003a). International trade is likely to be detrimental if:

• there is not adequate information for the Scientific Authority to advise on NDFs;

• the NDF itself is incorrect; or

• the Management Authority issues export permits contrary to the advice of the Scientific Authority.

Due to the essentially nonrenewable nature of bigleaf mahogany, accurate non-detriment findings depend on reliable information on the legal status of timber consignments. (see, e.g., MWG 2003a).

3. METHODOLOGY

The information in this document comes from a comprehensive literature review, an analysis of trade data from CITES (UNEP-WCMC) and national trade authorities (such as US Customs), and from documents provided by the Mahogany Working Group. The 16th Plants Committee meeting presents an opportunity for range states to offer feedback and supplement the information provided here.

4. SPECIES BIOLOGY AND CONSERVATION STATUS

Despite its commercial importance, detailed information on the distribution, abundance, ecology and management requirements of *S. macrophylla* is limited (MWG 2003a). Several listing proposals and the MWG reports have reviewed what is known about the species' biology and conservation status. Therefore, this report provides only a brief overview. In summary, what is known establishes that commercial logging as practiced throughout most of the range of *S. macrophylla* is incompatible with its regeneration and with maintaining the species at a level consistent with its role in the ecosystem, as required by CITES.

4.1 Life history and ecology

S. macrophylla is an emergent canopy tree in the seasonally dry forests of **Latin America**. It towers above the forest canopy, in excess of 50 meters tall and 2.5 meters diameter at breast height (dbh).

4.1.1 Growth and reproduction

At average growth rates (and depending on the minimum commercial dbh for the various Range States), *S. macrophylla* requires about 100 years to reach commercial size (Snook 1993, Grogan 2001, Gullison and Hubbell 1992). Reproduction is infrequent and tied to large-scale disturbances, such as gaps in the canopy opened up after hurricanes and fires (Snook 1993 and 1996) or in flooded areas (Gullison *et al.* 1996). Seedlings appear to germinate best in humid conditions, but saplings require high light to survive and reach the canopy. While Brown *et al.* (2003) notes that "catastrophic disturbance is not necessary for the persistence of the species in deciduous forest," poor recruitment after logging has been found at almost all sites studied (see review in Kometter *et al.* 2004).

4.1.2 Pollination

S. macrophylla is monoecious with unisexual flowers and is generally outcrossing. Thus, isolated trees that remain after harvesting may fail to produce viable seeds.

4.1.3 Dispersal

Seeds are wind dispersed and eaten by rodents (Jennings, 2002) and insects, one of which, a moth, has no other known host (Grogan & Galvão 2006). Dispersal is seasonal, and logging—during the dry season—often removes trees before they have dispersed their seeds (Grogan 2001).

4.1.4 Response to harvesting

Loggers often remove virtually the entire population of adult mahogany trees, *e.g.,* in **Belize**, loggers high-grade more than 95% of trees down to 20 cm dbh (Weaver and Sabido 1997) and in Kayapó territory (**Brazil**), 85% of the adult population was removed (Zimmerman *et al.* 2001). Because this harvest is selective (the largest and most fecund), it appears to influence genetic diversity. Using random markers enhanced with polymorph DNA (RAPDs), it was found that increased logging intensity was associated with a reduction of genetic diversity of regeneration (Gillies *et al.* 1999). Further, logging increases inbreeding. Outcrossing rates declined from 100% to 85% when the forest around a stand was logged (Loveless and Gullison 2003). Given that genetic variation buffers species against environmental change, this is likely deleterious to the species' survival.

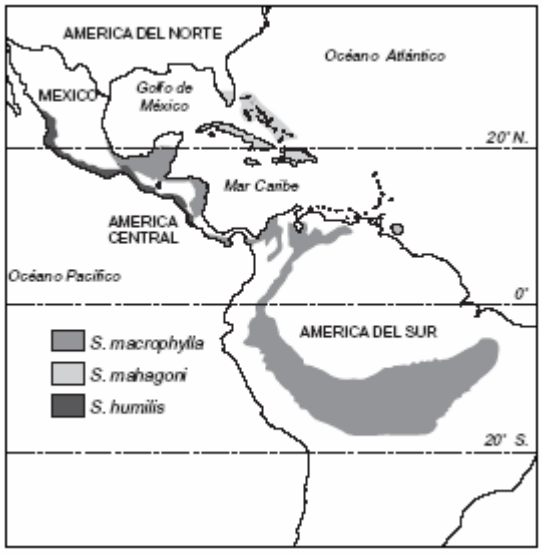

Fig. 1. Range of the genera *Swietenia.*

4.2 Population distribution, status, trend and threats (listed by range State)

S. macrophylla is found from **Mexico** to the **Southern Amazon** (Figure. 1). Throughout this area, deforestation has reduced its range, and where forests remain, selective logging has severely impacted the species (CCT 2001, Kometter *et al.* 2004). Recent advances in satellite image analysis shows that the impact of such selective logging is much greater than previously believed (Asner et al. 2005). In the timber-producing areas of the **Brazilian** Amazon, selective logging covered an area twice that deforested. Fire, conversion to agricultural land, and development of infrastructure also threaten the status of *S. macrophylla* (CITES 2002, MWG 2003a). All range States have experienced the familiar pattern of exploitation leading to local depletion, requiring a shift in the source of supply. In many cases, severe depletion has led to the species' commercial extinction, e.g., **Costa Rica** (CCT 2000), **Colombia** (2001), **Ecuador** (2001), **El Salvador** (2001)**, Honduras** (2001), and **Venezuela** (2001).

Throughout *S. macrophylla's* range, there has been a decrease in trade over time that has been attributed to three potential factors (MWG2 2003a): 1) "reduction in demand; 2) stricter domestic measures; 3) exhaustion of commercial supplies". The record high prices for *S. macrophylla* (presently at $1850 per cubic meter (ITTO 2006a)), show that demand is not declining. Likewise, given the extent of illegal logging (section 6) and failure to adhere to the requirements of Appendix II, there is no evidence that domestic measures have been effective. Throughout its range, the decline in trade in *S. macrophylla*, like *S. mahogani* and *S. humilis* before, is a result of the exhaustion of commercial supplies.

4.2.1 Brazil

Brazil is both the largest Range State and, at one time, the largest exporter. Overharvesting has left *S. macrophylla* commercially extinct in Mato Grosso, south-eastern Pará, Rondônia, Tocantins, east of the Cuiabá-Santarem highway and west of BR-364 in Amazonia, and Acre (Grogan 2001), and trade volumes fell dramatically during the 1990s. Since 2001, exploitation of *S. macrophylla* has been prohibited, due to the widespread illegal logging and depletion of the species. CITES data shows that Brazil continues to export some bigleaf mahogany (e.g. 2,665 cu. m. or approximately $4.5 million-worth in 2004), though it is not clear what the source of this wood is.

4.2.2 Peru

Over the past five years, **Peru** has been the largest exporter of *S. macrophylla* (>50% of exports worldwide). "The drastic decrease in the populations of this species, owing to selective cutting, is more

than apparent and selective cutting could have caused the systematic loss of specimens with the best genetic characteristics" (Peru, 2001). The range of *S. macrophylla* in Peru has shrunk by 50%, and, within a decade, a further 28% will be logged out (Kometter *et al*. 2004). As described in more detail below, nearly all bigleaf mahogany logging in Peru is now taking place illegally in protected reserves. Export volumes have declined from their peak in 2002, following the pattern of other countries where bigleaf mahogany is now commercially extinct.

4.2.3 Bolivia

Bolivia was the largest exporter of *S. macrophylla* in 1996, but has since fallen to 20% of worldwide exports. "The decrease in amounts exported reflects, in part, a decrease in the existence of wood" (Traffic 2001c). "Mahogany populations underwent a rapid and drastic decrease as a consequence of illicit logging" (**Bolivia** 2001), leaving *S. macrophylla* no longer commercially viable (> 60 cm dbh) across 79% of its range (Kometter *et al*. 2004).

4.2.4 Guatemala

Over-harvesting and severe deforestation have severely reduced *S. macrophylla*, and remnant populations are now only located in El Petén (CCT, 2000).

4.2.5 Nicaragua

S. macrophylla is found in only scattered locations (CCT, 2000). **Nicaragua** was responsible for approximately 6% of worldwide exports in 2004.

4.2.6 Belize

Once abundant, *S. macrophylla* has been severely over-harvested (Weaver and Sabido, 1996). **Belize** made up approximately 3% of exports in 2004.

4.2.7 Mexico

Deforestation has eliminated 80 percent of *S. macrophylla* range in **Mexico** (2001), and logging has further reduced the existing populations. Trade is prohibited for uncertified operations (CCT, 2000) -- 378 cubic meters were exported in 2004, less than 1% of worldwide trade.

The remaining Range States did not register any exports under CITES in 2004.

4.2.8 Panama

Panama has experienced severe loss of habitat, and *S. macrophylla* is limited mostly to the Darien, and found at very low densities.

4.2.9 Honduras

Honduras has experienced a 55 percent loss of habitat available for *S. macrophylla* (Listing Proposal 2002). In Honduras, *S. macrophylla* is found principally in the departments of Colón, Gracias a Dios, Yoro, and Olancho (Listing Proposal 2002). The only viable populations are in national parks or reserves, including the Rio Platano Biosphere Reserve, Tawakha Asangni Indigenous Reserve, and Patuca National Park, which form part of the Mesoamerican Biological Corridor crossing six countries (EIA 2005). In 2005, the Environmental Investigation Agency (EIA) released a report documenting the illegal logging in the Río Plátano Biosphere Reserve, and other protected area in Honduras. The Biosphere is home to many endangered species including jaguars, sloths, harpy eagles, and macaws (EIA 2005). The Honduran Public Prosecutor estimated that from 2003 to 2004, two million board feet of mahogany was illegally harvested from the Reserve (EIA 2005). It is estimated that 80% of mahogany harvested in Honduras is illegally cut (EIA 2005). There is evidence to suggest that the

Honduran forestry agency, COHDEFOR, is complicit in the illegal logging (EIA 2005).

4.2.10 Colombia, Costa Rica, Ecuador, El Salvador, Venezuela

Over-exploitation has led to commercial extinction in **El Salvador** (2001)**, Venezuela** (2001), **Costa Rica** (CCT 2000), and mahogany logging is now banned in **Colombia** (2001), **Ecuador** (2001), and **Honduras** (2001).

4.3 Conservation and management

4.3.1 Conservation

Parks can provide an insurance policy to protect the species (Gullison *et al*. 2000). If an adequate and effective network of protected areas exists, parks can provide a buffer to protect the species in its role in the ecosystem – the foundation of the NDF (section 2.1).

However, poor enforcement of protected areas throughout its range has left bigleaf mahogany vulnerable. For example, Greenpeace (2001) identified over 8,000 cubic meters illicitly cut on Kayapó land. Further, in **Peru**, parks, such as La Reserva National Pacaya-Samiria (Loreto), are a "source of illicitly extracted wood." As described below, this illegal extraction has only grown more intense since the Appendix II listing. Given that the largest remaining populations are in protected areas and indigenous reserves, increased logging in parks is inevitable unless national and CITES legal acquisition requirements for all exports are stringently enforced.

4.3.2 Management

Most Range States have laws and regulations that can support sustainable forest management (SFM), including regulations specific to *S. macrophylla* (MWG 2003a). Such regulations provide an opportunity for CITES authorities to link the making of NDFs with initiatives supporting SFM. "However, many countries encounter difficulties in enforcing the regulations that have been developed" (MWG 2003a).

According to MWG (2003a) "the basic requirements for SFM are: 1) a formal approach to land use planning that designates production forests and protected areas as part of the Permanent Forest Estate; 2) management plans for forest management units based on pre-harvest inventory and silvicultural prescriptions that ensure regeneration to replace harvested adults; 3) monitoring of the amounts harvested, the environmental impacts of harvesting, regeneration rates and volumes traded; 4) adjustment of management plans in response to information gained from monitoring (i.e. adaptive management); and 5) enforcement of regulations.

Management plans should address the following issues (MWG 2003b):

- mapping of all merchantable trees and pre-harvest design of road and skidding networks;

- rotation and cutting cycle lengths should be derived from regional or site-specific diameter growth and regeneration rates. Limits should be set so that sub-merchantable trees are retained at sufficient densities to provide additional harvests;

- minimum diameter cutting limits must be strictly enforced;

- seed trees should be retained as sources for seed;

- trees should be felled directionally to open canopy gaps where seeds and seedlings are most likely to occur naturally, that is, in the direction of prevailing dry season winds.

- if tree felling occurs before seed dispersal, unopened fruit should be removed from crowns for seed collection; and

- canopy gaps should be opened downwind of logged and retained mahogany.

While national forest legislation may include these requirements, the technical and regulatory capacity is rarely equal to the level of logging activity and land area involved (MWG 2003b). Indeed, as described further below, most of the inspected concessions in **Peru** were found to be operating illegally, with the approved management and annual operating plans completely disconnected from the reality in the field (INRENA 2006). In **Brazil,** this situation—widespread abuse of the concession system—led to a ban on all exploitation.

4.4 Legislation

Many Range States have a regulatory framework that, in theory, favors conservation and sustainable use of natural resources through specific legal instruments such as environmental and forestry laws and their respective regulations, along with sanctions for failure to comply with the requirements of the Convention (MWG 2003c). In most countries, what is needed to implement the provisions of the Convention is not new laws or regulations but to effectively enforce these laws and regulations, particularly with respect to the findings required by CITES authorities as pre-requisites for CITES export permits.

4.5 Regulation of illegal harvesting and the veneer of legality

Illegal harvesting has characterized the mahogany trade throughout its range and now plagues the last major exporter, **Peru**. Moratoria and stricter management regimes have reduced illegal logging in other Range States, though some cross-border laundering persists where CITES controls are weak.

Exacerbating the problems of widespread illegal logging, MWG2 (2003) found that "a combination of factors (weak control at logging sites, political and social pressure, inconsistencies in regulations and corruption) has led to legalization [i.e., laundering] of illegally cut timber by the same authorities that prohibited it." Specifically, the issuance of CITES export permits and other administrative acts (decrees, resolutions) that purport to legalize de facto situations in which timber of illegal origin is stockpiled create a "vicious cycle and a terrible precedent." Id. Ironically, in these situations, CITES merely provides a veneer of legality to what is otherwise illegal wood (Blundell and Rodan 2003), thus undermining the attempts to manage the species.

The lack of enforcement in both exporting and importing nations drives a cycle that can only end in commercial extinction: under current conditions, timber operators seek to exhaust *S. macrophylla* as soon as possible in order to maximize the current net value of the resource and reduce risk of exposing this resource to regulation (Rice *et al.* 1997). This leads to the familiar pattern of local exhaustion and change in source of supply (Blundell and Gullison 2004).

In order to break this pattern, Parties must effectively monitor the point of origin and the legal status of timber consignments (MWG 2003a). To that end, log tracking using a chain-of-custody monitoring system is critical to ensure the validity of legal acquisition findings for Appendix II export permits.

4.5.1 Peru

As the largest exporter, the situation in **Peru** is examined closely herein.

Prior to the Appendix II listing, the Government of **Peru** estimated that 95 percent of exported mahogany was logged illegally (Peru 2003), despite years of attempts to rein in the contraband trade. There is no evidence that the proportion of illegally logged exports has improved since the listing.

INRENA continues to issue CITES export permits for mahogany, but these cannot represent a legitimate finding of legal acquisition for Peruvian bigleaf mahogany for the simple and incontrovertible reason that there are few commercial stands of bigleaf mahogany left outside of legally protected areas. (Peru 2003; Kommeter 2004; Fagan 2005). While more paperwork is now required to obtain export permits, the

source of mahogany has not changed: mahogany authorized as coming from concessions is actually obtained, as it was before the Appendix II listing, from natural protected areas and territories reserved for indigenous peoples. (Fagan 2005; Schulte-Herbruggen 2003; Chirif 2002). After logging in protected areas, the wood is transported along known routes through the use of falsified transport documents. (INRENA 2005). This fraud continues because Peruvian Authorities do not inspect the concessions before the harvest and export of mahogany. Instead, **falsified concession plans** provide the cloak for wood that is illegally extracted and illegally transported to market. This mahogany continues to be imported by consumer countries where authorities fail to verify whether the export permits are valid.

INRENA's own post-hoc investigations have confirmed that most concessions are operating illegally. Nonetheless, these inspections still fail to reach more than a small fraction of the concessions that are participating in the illegal mahogany trade. Of the more than 500 forest concessions and permits in Peru, only 71 have been inspected, all after the fact (i.e. searching for cut trunks). In 43 of these 71 concessions and permits, it was found that the forestry laws were being violated, typically by utilizing annual operating plans that report large numbers of mahogany trees where none exist (ITTO 2006c).

While the initiation of field inspections is a positive step, at the current pace, it will take between five and ten years to inspect them all—the same time it will take for the commercial extinction of the species: "[Whether commercial extinction will occur in 5 or 10 years], commercial mahogany stocks are undoubtedly near depletion, which is the reason why there is an enormous pressure being exerted for the harvesting of mahogany from reserved areas, conservation units, and native community lands." (ITTO 2005). If the experience in other Range States holds true, commercial extinction may come even sooner.

Moreover, no inspection is necessary to confirm the absence of mahogany in a large number of the concessions, since many are located near populated areas in regions where logging cleared out viable mahogany trees by 2000. These include concessions found within 30 kilometers of the town of Iberia in the Tahuamanu Province of the department of Madre de Dios. In 1999, a state of emergency was declared because of widespread illegal logging in Tahuamanu (Traffic 2001b; Peru 2003) facilitated by the construction of more than 100 kilometers of illegal logging roads (NRDC 2002; Supreme Decree 047-99-A). It is common knowledge that no commercially viable mahogany is left in this area.

Once mahogany is logged in protected reserves under the guise of an authorized concession, **falsified transport documents** are used to convey the wood to the Callao port. As a sample of this activity, INRENA identified more than 50 transport permits which were falsified by writing in mahogany ("caoba") on the carbon copy of a legitimate permit for a non-CITES species (e.g. "ishpingo"). The Director of Peru's Management Authority told local press that this wood had already been exported (El Comercio 2005), but there has been no follow-up investigation to discover the destination of this wood nor have any measures been put in place to stop the longstanding practice of forging transport documents. Continued reports throughout the Peruvian Amazon confirm the extent of illegal logging (see, e.g., Peru 2003). For example, in February 2006, the National Forest Chamber and Ucayali's Association of Forest Harvesters (AEMRU) reported widespread illegal logging and trade, including the involvement of several civil servants in Pucallpa, and sought imposition of a state of emergency in the Ucayali region and a review of the concessions not yet evaluated (ITTO 2006b). Recently, INRENA estimated that Peru loses approximately $44.5 million each year as a result of illegal timber logging in Amazonía (ITTO 2006b). This constitutes approximately 221,000 cubic meters, primarily of *S. macrophylla* and *Cedrela odorata*.

The strategies used to facilitate the trade in illegally harvested mahogany are not new. They are the same strategies that Peru reported before the Appendix II listing (Peru 2003), and very similar to those used in Brazil before it banned the export of mahogany after inspections discovered that 550 of 729 concessions (75%) were operating illegally (Hering 1998). Despite efforts by some Peruvian authorities, these practices persist and dominate the trade.

Peru's efforts to combat illegal logging include the creation (and re-creation) of national and regional commissions on illegal logging, as well as sting operations to seize illegally logged mahogany (INRENA 2005b). As was the case in pre-moratorium Brazil, these periodic enforcement efforts—often led by dedicated and courageous INRENA staff—reach a small portion of the overall illegal activity and show no signs of reducing the overall flow of illegal timber. Indeed, much of the seized wood is auctioned off (see,

e.g., INRENA 2006c), just to find its way back into the stream of illegal international trade. While providing a veneer of enforcement, this activity simply bides time while timber traders deplete the remaining commercially viable mahogany in Peru.

Informal discussions with INRENA staff confirm that strong pressure from the timber industry, including death threats (INRENA 2006b) and corruption of officials at all levels (Peru 2003), impede local enforcement efforts, and make denial of any export permits politically untenable.

4.5.2 Brazil

Almost one-quarter of the range in **Brazil** is in Indian reserves (Contente de Barros *et al.* 1992), and this has been the source of a large volume of illegal timber (Veríssimo *et al.* 1992; Greenpeace 2001). In 1996, IBAMA suspended or cancelled 75 per cent of cutting operations because of violations of logging regulations. Again, in 1999, IBAMA suspended 29 of 31 operations. In 2001, IBAMA found that 80 percent of the *S. macrophylla* harvested was illegal and suspended all trade. However, a **Brazilian** court awarded CITES export permits to companies to trade processed *S. macrophylla*, without legitimate findings from Brazil's CITES authorities (ITTO 2001). When the timber arrived in the **USA**, US agencies seized the wood. In a challenge by importers, a federal appeals court upheld the US agencies' determination that the export permits violated CITES regulations (Castlewood 2004). At CoP 12, when *S. macrophylla* was up-listed to Appendix II, Brazil stated that they are "firmly committed to only resume trade in the species after the implementation of a new System for Monitoring and Control of Forest Species-SISPROF" (Brazil 2002). The current status of this monitoring program is unclear.

4.5.3 Central America

In **Central America**, illicit cutting is more than twice that of legal cutting (CCT 2000). A recent report from **Honduras** (EIA 2005) describes rampant illegal logging, primarily of pine species, accompanied by illegal mahogany logging and laundering of illegally logged mahogany from neighboring countries.

Nicaragua has reported that approximately 60 per cent of the total amount of mahogany exports was illegal, and **Belize** reported 40 per cent illegal exports, of which one fourth was smuggled into neighboring countries. This illicit cross-border trade is a concern throughout much of the range, including between **Colombia** and **Ecuador**, **Costa Rica**, **El Salvador**, **Honduras** and **Nicaragua** (EIA 2005), as well as between **Argentina, Bolivia, Brazil** and **Peru** (Traffic 2001c).

4.7 Basis of non-detriment findings

The MWG (2003a) recommended that three components should form the basis for an NDF:

"a) National or regional level stock assessment as a basis for determining overall quantities for export, for example through an annual export quota.

b) Requirement for management plans for forest management units from which mahogany is harvested for export. Management plans should demonstrate provisions for sustainable management of the forest unit and mahogany stocks as a prerequisite for determining that export will be non-detrimental.

c) Monitoring of mahogany harvesting in the forest management units and timber exports against the overall export quota."

Given the patchy distribution and variable stocking density of *S. macrophylla*, local level information is required to make a valid NDF. In order for an NDF to be made at the local level, the MWG (2003a) considers following criteria:

"a) The existence of a management plan that demonstrates a sustainable approach to harvesting, based on an adequate inventory of the resource and appropriate monitoring of harvesting impacts.

b) The presence of adequate regeneration, either from natural sources, or using artificial means that have been demonstrated to be successful within the area in question.

c) A policy of retaining sufficient seed trees to ensure adequate regeneration following harvesting.

d) Demonstration that legal rights to access and harvest the timber are established.

e) The adoption of harvesting and timber extraction approaches that minimize environmental damage (e.g. directional felling, extraction along well-constructed logging roads etc.)."

At a minimum, a non-detriment finding must reflect evidence that the timber has been harvested in accordance with such an agreed management plan based on a pre-harvest forest inventory (MWG 2003a). Smaller Range States, especially those that require certified operations as a prerequisite for CITES export permits, may be implementing valid NDFs in accordance with these criteria. However, "it remains unclear whether certified areas are managing mahogany on a sustainable basis" (MWG2 2003c).

While many Range States have set a zero quota due to the precarious state of mahogany populations, **Peru** exports the majority of bigleaf mahogany without a valid Scientific Authority non-detriment finding. Most recently, Peru's Management Authority established national quotas without any supporting biological or local inventory data.

4.7.1 Peru

Since the listing of mahogany on Appendix II, Peruvian export permits have been granted without a legitimate Scientific Authority non-detriment finding. The Scientific Authority has stated that it did not make a non-detriment finding and could not make one until there was reliable population inventory data: "The Scientific Authority has not yet emitted an opinion about mahogany populations and non-detrimental harvest levels. In order to emit an accurate opinion the possession of accurate information about mahogany populations is considered essential." (Peru 2004).

At the request of Peru's Scientific Authority, ITTO has funded a project, estimated to take 18 months, to provide the required population data (ITTO 2005). Funds for the project were only disbursed in December 2005, and Peru has reported that the inventories began in 2006. As a result, the population data will be available in June 2007 at the earliest. Without local or national population inventories, there can be no reliable estimate as to how much mahogany can be sustainably harvested and, therefore, Peru's export permits cannot be based on knowledge of the biology, life history, demographics and reproductive capacity of the species, as recommended by the MWG (2003a).

In the absence of any reliable population or distributional information on bigleaf mahogany, Peru's Management Authority has justified exports based on volumes of mahogany previously logged and estimates of current logging. This has taken three forms:

From November 2003 until May 2005, INRENA issued export permits on the basis of sworn statements that the wood was logged "pre-2003" (i.e., before the Appendix II listing went into effect). As noted previously, Peruvian authorities reported in 2003 that more than 95% of exported wood was being logged illegally (Peru 2003), so there is no basis for a legal acquisition finding for this wood. In the absence of such a finding, it appears that INRENA intended this wood to be treated as "pre-Convention" though it provided none of the necessary certificates required by CITES and there is no suggestion that these exports consisted of specimens logged before the pre-Convention date for mahogany, November 16, 1995 (CITES 2003/70).

On May 20, 2005, the Management Authority set a quota for January-December 2005. According to INRENA's report, the quota was based on volumes of mahogany logged in four categories unrelated to population sizes or any biological considerations:

1) Wood logged before November 2003, according to sworn statements.

2) Seized wood that was sold at auction.

3) Mahogany already logged and mobilized from January to May 2005 and an amount of wood equal to the wood logged and mobilized from May to December of the previous year.

4) Mahogany logged but not yet processed (roundwood) for the 2004/5 logging season.

Three months later, on August 23, 2005 the quota had been reached for the last category. Under pressure from the timber industry, on **September 28, 2005**, INRENA announced that it would do away with the categories, allowing an effective increase of 15% in the volume of mahogany exported. The 2005 quota does not take into consideration any scientific or biological criteria.

In **January 2006**, INRENA set a quota for 2006. This quota is largely based on the volumes of roundwood harvested but purportedly still awaiting transport in the forest from the 2003, 2004, and 2005 seasons, in addition to an amount of sawn wood from 2005 in port that has not yet been exported. To this, INRENA adds an estimate of the amount of mahogany that will be harvested and exported in 2006. Again, this determination makes no reference to any scientific or biological criteria.

Notwithstanding the above, in response to notice of an intent to bring litigation to enforce CITES and the Endangered Species Act in the United States, Peru's Scientific Authority recently wrote that "[a]ccording to the information about and the latest analyses of, the bigleaf mahogany populations, the quota established for the year 2006 does not compromise the survival of the species." (La Molina 2006). Given (a) the lack of population data for mahogany in Peru, (b) the Scientific Authority's statements that it does not have the information necessary to make a NDF, and (c) the high levels of illegal logging in Peru, the upcoming CITES meetings present an important opportunity to ask Peru about the basis for its statement in response to the litigation in the United States.

4.7.2 Brazil and Bolivia

Brazil (2001) has decreased its export quota from 150,000 cubic meters in 1990 to 50,000 cubic meters in 2000. However, 'exceptional' permits allowed exports exceeding the official quota. For example, an additional 12,962 cubic meters were shipped in 1999 (Traffic, 2001b). **Bolivia's** quota system has also been undermined by the granting of 'exceptional' permits. For example, in 2000, a presidential order permitted the export of an additional 6,000 cubic meters from Indian reserves. Moreover, it is not clear how and on what basis the quotas were set.

4.7.3 Other Range States

In many cases, Range States have recognized that populations are so seriously overexploited that the most restrictive quota is necessary: outright bans exist in **Colombia** since 1967; **Costa Rica** since 1997; in **Ecuador** since 2000; in **Honduras** since 2000; and **Brazil** since 2001 (Traffic, 2001c).

5. OVERVIEW OF TRADE

5.1 International trade

A review of international trade confirms that **Peru** has replaced Brazil and Bolivia as the major source of bigleaf mahogany and is now responsible for the majority of the trade. Peru's exports are following the pattern of other range states toward commercial extinction. (Tables 2 – 5; all analyses follow the methodology of Blundell and Rodan, 2003). The largest importer is the United States, which is responsible for more than 80% of the imports of Peruvian bigleaf mahogany. The second largest importer until 2002 was the Dominican Republic. Discrepancies between importer and exporter reports, as well as reports from Customs authorities, creates significant uncertainty in the actual trade

volumes. In addition, inconsistent reporting of imports to the Dominican Republic—which, for example, apparently did not report any imports from Peru for 2004—could distort trade data by as much as 10%.

Table 1. CITES exports for range States (based on importer reports in cubic meters).

	Sawnwood					Plywood and Veneer				
	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
Peru	32,584	40,821	51,135	36,742	21,868	.	10	.	25	5
Bolivia	10,107	6,651	4,596	8,694	8,697	.	.	.	.	4
Guatemala	2,716	3,135	2,482	3,702	2,649	.	.	.	21	12
Brazil	34,407	38,221	33,595	6,912	2,547	2,598	3,250	1,308	468	.
Nicaragua	1,255	5,991	6,100	4,540	2,451	.	.	.	.	.
Belize	1,533	709	821	1,731	1,149	.	.	.	.	.
Mexico	.	283	336	229	378	44	.	.	.	.
Colombia	.	.	38	.	.	.	.	.	.	.
Ecuador	.	.	91	225	.	.	.	.	.	.
Honduras	.	15	.	15	.	.	.	.	.	.
Panama	542	1,469	765	56	.	.	.	.	.	.
Venezuela	.	27	.	.	.	.	.	.	.	.

(Note: in 2000 US CITES reports 789,081 m^2 of veneer from Brazil, and in 2002 Spain CITES reports 28m^2 from Brazil; in 2002 US CITES reports a shipment from Peru with no units.)

Table 2. CITES exports for non-range States (based on importer reports in cubic meters).

	Sawnwood				
	2000	2001	2002	2003	2004
USA	767	588	3,547	1,702	3,049
Solomon Islands	.	.	.	.	29
Canada	.	2	12	14	10
Spain	.	.	.	.	1
Barbados	.	.	.	.	1
France	.	.	.	.	1
Dominican Republic	.	.	.	66	.
Cuba	.	.	.	62	.
Surinam	.	9	.	6	.
Germany	4	4	9	.	.
UK	.	.	8	.	.
Unknown	31	.	1	.	.
Denmark	.	45	.	.	.

(Note: in 2000 US CITES reported one shipment from Argentina of 2,692 m^2 of sawnwood; there is no corresponding report from Argentina CITES; in 2000 Canada CITES reports 37,168 m^2 from USA; UK CITES reports imports from the USA but with no units.)

The **USA** remains the largest importer, on average more than 80 per cent of all international trade reported by CITES since 2000 (Table 4).

Table 3. CITES imports (based on importer reports in cubic meters for sawnwood, square meters for plywood and veneer).

	Sawnwood					Plywood and Veneer				
	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
USA	69,627	82,787	64,783	59,236	37,804	2,610	3,377	1,371	572	18
Mexico	.	2,107	2,745	2,022	3,354	.	10	.	.	.
Canada	960	305	21,850	663	421	127	20	20	.	.
Germany	75	494	209	582	346	.	.	.	.	.
Spain	611	738	639	1,473	207	3	2	44	19	4
UK	2,089	1,148	1,073	93	184	.	.	.	.	.
Denmark	.	331	26	229	184	.	.	.	.	.
Japan	1	.	.	.	139	.	.	.	.	.
Belgium	163	77	.	.	101		48	.	.	.
France	.	.	34	.	32	.	.	.	.	.
China	114	.	.	.	29	.	.	.	.	.
Sweden	71	117	.	77	25	.	.	.	.	.
Italy	83	47	148	160	2	.	.	.	.	.
Switzerland	.	.	9		1	.	1	.	.	.
Chile	.	.	88	53	.	.	.	.	.	.
Netherlands	1,139	601	730	42	.	.	.	8	.	.

Dominican Republic	9,009	9,105	11,150	.	.	.	.	.	.	.
Colombia	.	52	41	.	.	.	.	.	.	.
Ireland	.	17	.	.	.	.	.	.	.	.
Norway	.	45	.	.	.	.	.	.	.	.
Portugal	.	.	.	.	.	.	.	1	.	.
Peru							34			

(Note: in 2000 US CITES reported 789,081 m^2 from Brazil and 234,773 m^2 from Canada; in 2001 Austria CITES reported 8,715 m^2 from USA; Canada CITES reported 18,932 m^2 from USA; Japan CITES reported 12,886 m^2 from USA; in 2002 Canada CITES reported 36,914 m^2 from USA; Spain CITES reported 28 m^2 from Brazil; Japan CITES 29,210 m^2 from USA; in 2003 Swiss CITES reported 638 m^2 from Austria; Japan CITES reported 20,452 m^2 from USA; Swiss CITES reported 29 m^2 from France; in 2004 US CITES reported 11,362 m^2 from Canada.)

Table 4. Comparison between import statistics for USA between US Customs and CITES trade data (CITES is based on both USA import reports and exporter reports). All trade is in cubic meters. If the discrepancy between Customs and CITES is greater than 10% the larger record is in bold. Likewise, if the discrepancy between US and exporter reports is greater than 10% the larger is in bold.

	2000			2001			2002			2003			2004		
	Customs	CITES		Customs	CITES		Customs	CITES		Customs	CITES		Customs	CITES	
		USA	Exporter		USA	Exporter		USA	Exporter		USA	Exporter		USA	Exporter
Bolivia	8,811	**9,144**	4,987	5,781	5,840	5,681	**4,899**	4,020	**5,988**	8,880	8,636	8,418	8,619	8,580	8,808
Brazil	**31,604**	27,035	26,145	**38,227**	**33,293**	26,854	**11,223**	7,947	**11,391**	3,310	**5,926**	3,002	1,199	**2,515**	2,665
Belize	**1,939**	**1,533**	1,254	**838**	**709**	.	**1,187**	789	**974**	1,535	**1,494**	1,215	**815**	**618**	.
Colombia	.	.	.	.	.	.	.	.	.	.	.	.	**53**	.	.
Costa Rica	**163**	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ecuador	.	.	.	**31**	.	.	**118**	**50**	.	222	**225**	.	.	.	.
El Salvador	.	.	.	.	.	.	.	.	.	**62**	.	.	.	.	.
Guatemala	**2,004**	**1,730**	.	3,266	**3,078**	.	2,089	2,057	.	3,267	3,536	3,723	**3,187**	2,245	**2,653**
Honduras	**241**	.	.	**680**	.	.	158	.	.	**288**	15	.	.	.	.
Mexico	**43**	.	.	245	283	283	**383**	336	**1,567**	179	229	280	246	347	**644**
Nicaragua	**1,007**	644	**836**	**6,798**	**4,388**	.	3,467	3,599	3,528	3,859	3,837	4,032	**2,976**	2,270	.
Panama	**1,139**	**542**	28	1,240	**1,185**	.	**567**	424	.	56	**56**	.	.	.	.
Peru	**37,613**	**28,995**	13,185	35,893	**33,963**	28,069	45,452	45,550	44,020	36,022	35,282	34,593	**23,428**	21,219	**24,739**
Venezuela	.	.	.	**27**	.	.	.	.	.	.	.	.	.	.	.

5.2 Domestic and unregulated trade

CITES does not record domestic trade, so no such data is available from WCMC-UNEP, nor does it record international trade in wood products made from mahogany. However, given the discrepancy in price between the international market ($1850 per cubic meter) and the local market ($1467 per cubic meter; ITTO 2006a), it is reasonable to assume that most of the commercially viable timber is sold abroad. Moreover, it appears that much of the logging is funded by international buyers.

Central America (CCT 2000) and **Peru** (2001) reported using approximately one third of production locally, and **Brazil** varied between 33 per cent (Veríssimo *et al.* 1995) and 60 per cent (**Brazil** 2001). However, given the price discrepancies noted above and the weakness of local enforcement, it is likely that much of this reported local trade ends up in international markets.

6. OTHER RELEVANT INFORMATION, INCLUDING ON ARTIFICIAL PROPAGATION

6.1 Artificial Propagation

Demand is lower for plantation wood, and commands a lower price than natural *S. macrophylla* ($625 vs $1850; ITTO 2006a). Less than 2 per cent of exports came from plantations, primarily from **Indonesia**. Globally, there are approximately 200,000 ha of plantations of *S. macrophylla*, however almost none are within Range States because plantations cannot compete with low-cost (unsustainable and illegal), high-priced wood from natural forests. Furthermore, plantations in Range States are susceptible to attack by the borer *Hypsipyla*, an insect pest which is not present outside the natural range of *S. macrophylla* (Mayhew and Newton 1998).

6.2 Reporting of species names

If trade data, as captured in the UNEP-WCMC database of CITES reports, are to be used to monitor trade and compliance with aspects of the Convention, then trade reports submitted by Range States must contain species level information. For the most part, range States are precise in separating *S. macrophylla* from its congenors *S. humilis* and *S. mahagoni*. However, it is not known how much *S. macrophylla* is smuggled as other species not listed on CITES, such as Spanish cedar (*Cederla odorata* Meliaceae).

6.3 Terminology used on annual reports

Units of trade need to be standardized. At present, trade records include units volume (square meters for veneer and cubic meters, and occasionally board feet, for sawnwood) and occaisonaly of weight (kg) and. In a few cases, shipment records are unitless and thus basically meaningless for monitoring levels of trade.

7. REQUEST FOR INFORMATION

Information currently available for *S. macrophylla* is incomplete and scattered and should be compiled both on a national and regional level (MWG 2003a). The 16th Plants Committee provides an important opportunity to solicit information from Range States. Given its central role in today's mahogany trade, it is particularly important to obtain information on Peru's implementation, in particular:

a) The basis for Peru's Scientific Authority's recent statement in response to notice of U.S. litigation, especially in light of the Scientific Authority's statements that it does not have sufficient information to make a NDF.

b) To the extent it exists, the most up-to-date information on the location and size of the mahogany population in Peru, including the total volume of verified commercially viable mahogany found within legal concessions.

c) Information linking past and current CITES export permits to specific concessions and transport documents. This will allow transparent identification of illegal logging.

d) Identification of all past or current bigleaf mahogany shipments that can be positively traced to verified mahogany stocks.

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