Executive Summary of the Workshop:

The Status of Mahogany in Mesoamerica

CENTRO CIENTIFICO TROPICAL

WWF

PROARCA / CAPAS CCAD - USAID

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ACERCA DE ESTA PUBLICACIÓN

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Presentation

This summary reviews the current situation of the timber species S*wietenia macrophylla* ("bigleaf mahogany") in Mesoamerica. The strong market demand for the wood of this species, and the pressure that this places on forest resources, leads to different viewpoints regarding strategies for mahogany management and protection. Regarding international trade, some observers believe that exports of bigleaf mahogany should be governed by the rules of Appendix I or II of CITES. Others believe that governments could permit the trading of mahogany that originates from forests under management plans and certification systems.

However, this major debate on mahogany has not been adequately supported with data. Rather, positions on the issue often reflect ideologies and assumptions rather than informed analysis. In an effort to fill this information gap and represent the true situation of mahogany in Mesoamerica, the project PROARCA/CAPAS contracted the Tropical Science Center (San Jose, Costa Rica) to make a current diagnostic of the status of mahogany in Mesoamerica. PROARCA/CAPAS is funded by USAID (Guatemala-Central American Programs) in support of the mission of the Central American Commission for Environment and Development (CCAD).

The Tropical Science Center and consultants in each of eight countries (i.e., Central America plus Mexico) carried out this regionwide diagnostic in 1999. The points that were addressed in the country-level analyses included: the historical and current distribution of mahogany, mahogany utilization and trading, legal and institutional aspects that bear on mahogany protection and management, and promising management approaches for mahogany. At a regional level, the Tropical Science Center integrated geographical information on mahogany in Mesoamerica from the country-level diagnostics and from other geo-referenced sources. This has resulted in four maps relevant to the discussions of mahogany.

In October 1999, the World Wildlife Fund (WWF) joined efforts with PROARCA/CAPAS and the Tropical Science Center to review and discuss the findings and maps from these analyses. The WWF support is from its campaign, Forests for Life, to establish a strategic framework to protect forests in a way which will be ecologically representative. The review of the mahogany analyses was held in San Jose, and it was structured in two parts: (1) technical discussions of the maps and country-level diagnostics by the consultants and by other invited participants, and (2) implications of the mahogany analyses in relation to CITES. For this latter session, we are very grateful to Ximena Buitron of Traffic International for her leadership role.

The mahogany diagnostics, maps, and workshop proceedings are being made available (in Spanish) on a compact disk and on the CAPAS website: www.capas.org We wish to express our sincere gratitude to all participants for their valuable contributions. We especially thank Don Masterson and Matt Perl of WWF for the resources to sponsor the review workshops in San Jose, as well as for supporting the production and distribution of this summary in English.

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PART I:

THE STATUS OF MAHOGANY IN MESOAMERICA: WORKSHOP SUMMARY

1. The regional situation of mahogany

Except for Costa Rica, where it has been possible to commercialize over 100 native forest species for wood, commercial exploitation of the hardwood forests in the rest of the Mesoamerican countries has been concentrated on very few species, mainly valuable ones such as mahogany and Spanish cedar.

The data collected and interpreted for this current overview suggests that the original distribution of bigleaf mahogany in Mesoamerica may have been approximately 41 million ha (see Table 1). By the mid-1990s, the area of natural forests containing or ecologically suitable for mahogany had been reduced to approximately 16 million ha. Of that remaining area, approximately 12% (1.87 million ha) is in legally-declared protected areas (i.e., national parks, wildlife reserves, etc.). The countries in which the mahogany resource has most rapidly been reduced (in percentage terms) are Costa Rica, El Salvador, Mexico, and Panama.

Table 1: Distribution of natural forests in Mesoamerica that have or are ecologically suitable for mahogany.

Country	Reference Year	Original Area (thousand ha)	Present Area (thousand ha)	Reduction in Area (%)	Protected Areas with Mahogany (thousand ha)
Mexico	1985	14,825	3,626	76	563
Belize	1994	1,415	950	33	138
Guatemala	1995	5,252	2,774	47	588
El Salvador	1975	708	137	81	*
Honduras	1995	3,793	1,728	54	164
Nicaragua	1998	9,404	5,052	46	126
Costa Rica	1997	1,796	291	84	28
Panama	1992	4,024	1,050	74	263
TOTAL		41,216	15,609	62	1,871

** Very small, not estimated.*
Sources: GIS maps generated by the Tropical Science Center, based on information provided by the consultants for each country in the current diagnostic. The data refer to different years (2nd column), and are based principally on LandSat images. In view of the different scales and methodologies of forest inventories and maps from one country to another, the figures in the table should be considered rough approximations.

In Mesoamerica, bigleaf mahogany is well distributed across most of the so-named "Mayan Forest" (i.e., in northern Guatemala, Belize and southeastern Mexico). Here mahogany is relatively plentiful, with a normal diameter distribution that indicates the presence of all stages of growth and development. In the Mosquitia subregions of Honduras and Nicaragua, mahogany is still relatively plentiful, but it occurs mainly in the form of large-diameter trees, and the reproduction stage is currently not as evident. In the southern part of Mesoamerica (e.g., the Darien region of Panama), bigleaf mahogany is found at very low densities. The ecological reasons for these differences are related to the degree of light that reaches the forest floor, which is directly related to forest density, which in turn is explained by soil and climate (and climatic events such as hurricanes).

Based on the best available data, an approximate figure for current legal extraction of mahogany in Mesoamerica is about 125 thousand cubic meters per year (Table 2). This estimate does not include illicit mahogany removals. Some experts assert that the ratio of illegal to legal production is at least 2:1. Costa Rica and El Salvador have no commercial production, and are omitted from Table 2. Panama's legal production is relatively minor.

Table 2. Annual legal production and export of mahogany in Mesoamerica (in cubic meters)

Country	Average Annual Production		Recent Annual Production		Average Annual Exports		Recent Annual Exports	
	Volume	Period	Volume	Year	Volume	Period	Volume	Year
Belize	13,449	1989-97	8,270	1998	10,344	1989-97	7,032	1998
Guatemala	24,000	1888-93	24,000	1993	14,065	1988-93	3,627	1998
Honduras	36,500	1985-92	30,000	1998				
Nicaragua			34,622	1996	13,398	1996-97	5,758	1998
Panama	639	1990-99	250	1999	0*		0*	
Mexico	26,066	1988-96	27,844	1997				
TOTAL	119,654		124,986		37,807		16,417	

** Blank cells indicate the absence of information, while zeros are data.*
Sources: Data obtained by the consultants for each country. In view of the deficiencies in the production and trade data for these countries, the figures in the table should be considered rough approximations.

Assuming a continuing annual legal harvest of 125 thousand cubic meters per year, and a ratio of 2:1 for illegal to legal extraction, then Mesoamerica is currently removing roughly 375 thousand cubic meters of bigleaf mahogany per year from its forests. In the Maya Forest a reasonable estimate of mahogany stocking is 0.6 cubic meters per ha. These crude estimates suggest that a forest area of approximately 625 thousand ha provides the current annual level of mahogany harvest. As shown in Table 1, an estimate of the current area of natural forest in Mesoamerica that is ecologically appropriate for mahogany, and that is not under protected status, is 13.7 million ha. However, the commercial mahogany has been removed from an unknown percentage of that total area. Secondly, growth and productivity rates (cubic meters per ha per year) are highly variable for mahogany in regenerating and immature natural forests. Both of these factors complicate the estimate of mahogany stock in relation to mahogany removals.

The principal markets for legal exports of Mesoamerican mahogany are the USA, Europe, El Salvador, and the Caribbean islands. Roughly two-thirds of legal mahogany production in the 1990s for the aggregation of Belize, Guatemala, and Nicaragua was legally exported (see Table 2). However, this estimate of the share of legal production that is legally exported is not reliable without export data for Mexico and Honduras. The cases of Belize, Guatemala, and Nicaragua suggest that legal export volumes of mahogany have been falling rapidly.

An estimate of illegal removals and trade is difficult to make. The countries of Mesoamerica are weak in systems of effective registration and control of timber cutting. Illegal removals take place to evade taxes and permits, and to generally avoid controls on where and how mahogany can be harvested and sold.

To attempt to retake control, some governments have applied prohibitions such as logging moratoriums or closed seasons on forest cutting, including for mahogany. The experience of Mesoamerica has been that these measures can actually encourage illegal activities and corruption when governments are unable to exercise control of their laws and regulations.

To the extent that government oversight and control has not been effective, some observers believe that forest certification is a more workable alternative. Forest certification for natural forests containing mahogany has

begun in Mexico, Guatemala, Belize, and Honduras. Certification is a requirement for all forest concessions authorized in Guatemala. Yet forest certification has advanced very little in Nicaragua due in large part to disputed land tenure. This comparison illustrates some of the major differences from one country to another.

With some exceptions, Mesoamerica's primary wood-processing plants are technologically obsolete. Many sawmills generate considerable waste, and the introduction of an adequate mix of species besides mahogany and Spanish cedar has not been widely occurring. A considerable percentage of mahogany is used for the production of veneer from large-diameter logs, and in general this technology is inefficient. Most of the secondary processing of mahogany is for furniture and doors, mainly for domestic consumption. The enterprises in these lines vary from small artisan workshops to large-scale export factories. A considerable volume of wood waste in small factories and carpenters' shops is explained by the absence of norms for standardized dimensions, wood classification, and drying.

2. Elements in a regional strategy to sustain mahogany

The workshop participants in San Jose divided into discussion groups, and the following is a summary of their main recommendations on how to improve the management and protection of the mahogany resource in Mesoamerica:

Protected areas.—As noted previously, the protected areas of the region include an estimated 1.87 million ha of forests in which mahogany is demonstrably present or likely to be found (i.e., by means of forest inventories). Future expansion of protected areas faces the often substantial costs of land acquisition and patrolling, as well as pressures by rural communities and special interests opposed to new zones that restrict land uses. Nevertheless, each country needs to consider possible new protection areas that would benefit mahogany, using the Mesoamerican Biological Corridor as a conceptual framework.

Mahogany growing.— Governments and other actors should be actively fostering the regeneration of mahogany in buffer zones around protected areas, and in multiple-use zones of community forest concessions. Positive experiences have been reported with small-scale plantations and agro-forestry systems of mahogany in Panama, Honduras, Guatemala, and Mexico. In spite of the problem of the shoot borer *Hypsipyla grandella,* mahogany growing seems feasible when sites have been chosen well, and when the trees are properly tended (e.g., pruned).

Working groups and data sharing.— Mahogany could be better managed and protected via stronger communication links among government authorities, wood-processing enterprises, and the holders of forest concessions (including community-based concessions). Several individuals believe it would be important to form a regional group for the conservation and management of mahogany. This group would promote applied research on mahogany in natural forests and in agro-forestry plantations, and it would monitor the situation of mahogany in the region. Several regional and international organizations have shown their interest in mahogany protection and management, and would need to be incorporated in the working group(s).

Forest certification.— Many of the preceding aims can be supported by giving increased support to the environmental and social certification of forest management. The first groups that sought forest certification were responding principally to external threats to boycott the purchase of tropical timber. However, at present there is at least some genuine commitment in Mesoamerica to the concept of forest sustainability. Those enterprises which are certifying their mahogany production and sales are doing so in the belief that it will favor their prices or market shares in international markets, give them advantages with national-level decision makers, or strengthen their internal management systems. Presently, many efforts in forest certification are being promoted and wholly or partially financed by international donors and conservation NGOs. Thus there remains an important question about how to make forest certification affordable when it is no longer subsidized.

Wood-processing plants.—From the viewpoint of wood-using enterprises, forests will be managed and protected when wood utilization is commercially attractive. Current legal and illegal exports of mahogany logs and semi-processed wood are a major disincentive to modernization. The wood-processing industries argue for a transformation process that will better utilize raw material from the forest, achieve higher value-added, and increase profitability. This transformation begins with changes to utilize and market the presently valuable

species, such as mahogany, and then broadens to progressively include the supply of other species. The set of appropriate actions includes technology transfer, applied research, financing for processing modernization, and the formulation of laws and regulations that will make this transformation possible. *(N.B. This element of the strategy is not necessarily accepted by actors external to the wood-using enterprises.)*

PART II:

MAHOGANY AND CITES IN MESOAMERICA: WORKSHOP SUMMARY

1. Background on mahogany in relation to CITES (Convention on International Trade in Endangered Species)

The Convention on International Trade in Endangered Species (CITES) operates through three appendices:

Appendix I—Lists species and products that are prohibited from international trade.

Appendix II—Permits international trade when that trade is well-monitored and regulated.

Appendix III—Refers to species and products that are traded internationally with the cooperation of trading partners to verify the origins of those materials.

The export situation for bigleaf mahogany (*Swietenia macrophylla)* refers to one of the most important tropical woods in international trade. To date, two Mesoamerican countries—Mexico and Costa Rica—have listed bigleaf mahogany in Appendix III of CITES. The world's largest exporters of bigleaf mahogany—Brazil and Bolivia—also have listed bigleaf mahogany in Appendix III. For raw and semi-processed bigleaf mahogany, Appendix III requires that importing countries must verify export documentation ("export permits" from Mexico, Costa Rica, Brazil, and Bolivia; "certificates of origin" from all other exporting countries).

Honduran mahogany (*S. humiles*) and Caribbean mahogany (*S. mahagoni*) were listed in Appendix II of CITES in 1975 and 1992, respectively, because of a noticeable reduction in their wild populations attributed to international market demand. Most of the recent debate about bigleaf mahogany in relation to CITES refers to listing or not listing the species in Appendix II. The eighth, ninth, and tenth conferences of the CITES parties were presented with proposals to include bigleaf mahogany in Appendix II. These proposals fell short of the two-thirds majority required for passage.

The inclusion of tropical timbers in CITES is very controversial. Most environmental NGOs have supported adding bigleaf mahogany to Appendix I or II on grounds that the species is truly threatened, and that international trade is responsible for the pressure on the species. The industrial forest products sector has argued that efforts to promote timber management and protection should not be discussed within the CITES framework, but rather that other policy frameworks are more important.

2. Discussion points raised at the workshop

The following synthesis of viewpoints emerged during the workshop in San Jose:

Main reasons for listing bigleaf mahogany in Appendix II:

- The countries which produce and trade bigleaf mahogany have not been able to protect the species under Appendix III. A stricter standard is required, but not as strict as Appendix I. Therefore, Appendix II is the appropriate choice.

- Appendix III does not cover the trade of bigleaf mahogany in the form of manufactured products, and for that reason is inadequate as a protection measure.

- Legitimate producers and exporters of bigleaf mahogany will benefit from Appendix II, since its application will tend to reduce illegal removal and commercialization. This will give advantages to legal operations.

- Appendix II will obligate the governments of the region to improve their data collection regarding inventories, production, and trade of bigleaf mahogany and, implicitly, of other forest production.

- Appendix II will directly and indirectly strengthen the legal and institutional frameworks for forest protection and management in Mesoamerica.

Main reasons for not listing bigleaf mahogany in Appendix II:

- Not everyone agrees that commercial utilization of bigleaf mahogany has put the species in danger, especially as evidenced by the Maya Forest, where the species is still relatively abundant, even after having been cut and exported for centuries.

- A substantial proportion of bigleaf mahogany in Mesoamerica is oriented to domestic markets, and CITES has no relevance for domestic production and distribution.

- When used inappropriately, Appendix II for bigleaf mahogany will become a barrier to trade and an instrument for extreme environmentalists to prohibit forest cutting.

- Compliance with Appendix II will add more paperwork and administrative costs to bureaucracies which already require numerous formal procedures and documents from legitimate forest users. The added administrative burden will fuel even more corruption, and divert an even larger share of bigleaf mahogany into the black market.

- If bigleaf mahogany is included in Appendix II, it could add administrative costs to the production and export of mahogany from plantations and agro-forestry systems. That will further discourage mahogany growing.

3. Practical steps for CITES authorities in Mesoamerica

- At present, many CITES authorities in Mesoamerica believe that much of the opposition to Appendix II is due to incorrect interpretation and a scarcity of information about what will be entailed. Thus the CITES authorities should be attempting to educate decision makers in the private and public sectors regarding the requirements and processes for Appendix II as applied to bigleaf mahogany, explaining the intended benefits.

- Currently, the CITES authorities of the region operate quite differently from one country to another. If Appendix II were to apply for bigleaf mahogany, it will be important for the countries of Mesoamerica to harmonize their approaches.

- If Appendix II is approved for bigleaf mahogany, some countries will require an adjustment period to get into position. The CITES authorities of each country should be assessing their own situations in terms of being prepared to manage bigleaf mahogany under CITES, and planning concrete measures to be ready for possible implementation.

PART III: ANNEX

SUMMARY OF THE MAHOGANY SITUATION IN MESOAMERICA BY COUNTRIES

Here we present a very brief synopsis of the context of bigleaf mahogany in the eight countries, recognizing that the focus varies widely from one author to another. Costa Rica and El Salvador are the last countries to be summarized, since they have no presently commercial production of mahogany.

Mexico (by Alfonso Arguelles)
The greatest concentrations of mahogany are distributed within a few key zones. Approximately 500 thousand ha of forests with mahogany are found in the Sian Ka'an region and the south of Quintana Roo. Another 450 thousand ha are found in the Calakmul region and the border area with Guatemala. The Lacandon forest of Chiapas includes another 300 thousand ha, and the area of Chimalapas adds 200 thousand ha more. However, this is only a fraction of the original forest cover of Mexico that had mahogany.

Mahogany is typically found in the forest in close association with chicle. Over time, this has permitted commercial producers and communities to obtain both resources. Early forest policy emphasized large forest concessions to exploit mahogany. This has changed dramatically in recent times to favor communities. Social groups called "ejidos" have managed to develop social and technical management of their forests, and have become one type of model in Latin America for the management of forests with mahogany.

On the other hand, the Mexican government recently decided to prohibit the export of mahogany. This severely affects Quintana Roo and its communities, even where forest certification already had been obtained. However, decision makers need to be clear about the causes of the pressure on Mexico's forests. The causes are basically agricultural development policies. While the data are not current, it is estimated that eight million hectares of mahogany were eliminated between 1960 and 1985, primarily due to the expansion of the agricultural frontier.

Belize (by Oscar Rosado)
Natural distribution of mahogany covers over half the country, and the greatest concentration is in the north. Forest inventories show that the present distribution of mahogany is principally in the Rio Bravo reserve, in the Chiquibul region, in the Maya Mountains and the Columbia Forest Reserve, and in the Cockscomb Basin Forest Reserve. Forest management relies on forty-year cutting cycles and minimum felling diameters. The Belize government authorizes forest concessions on public lands.

As in Guatemala, the relative abundance of mahogany in Belize is thought to be due to the effects of previous Mayan cultures. Mahogany still exists after centuries of utilization, an indication that the species has good potential to be successfully managed.

Guatemala (by Elmer Lopez)
The original area of mahogany in Guatemala has been substantially reduced, and the remaining area of currently harvestable mahogany is restricted to the Petén subregion. On the Pacific Coast, the species *S. humilis* had been commercially eliminated by about 1950. A great deal of logging occurred in Petén from 1940 to 1957. Between 1958 and 1982, agrarian programs substantially changed land use in Petén. Mahogany was widely exploited between 1982 and 1995. Only since 1995 are there clear policies for the development and conservation of the forests of Petén.

At present there are an estimated 500 thousand ha of forests with mahogany that are being managed. Guatemala's current policy is to promote certification on all forest concessions, and this is intended to provide sustainable production. Approximately 20% of mahogany in Guatemala is obtained from small producers.

Honduras (by Miguel Mendieta)
Mahogany is found principally in the departments of Colon, Gracias a Dios, and Olancho. The Rio Platano is a transportation route for much of the Honduran production. In Honduras some 300 thousand ha of forest were damaged by Hurricane Mitch, including a large amount of mahogany.

The forest law assigns forest resources to communities, and therefore all mahogany is in the hands of community groups. Currently there are 50 community management plans, with an average of 700 hectares each. In 18 plans the commercial stocking of mahogany is 0.19 to 31 m3/ha, with an average that is probably lower than 5 m3/ha. Because the forest usufruct agreements between the government and the communities are fairly recent, it is too early to comment on their effectiveness.

Forest certification in Honduras is still in its infancy. The agro-forestry groups under COATLAHL were certified by Smartwood in 1991, and were among the very first communities in the world to receive forest certification. Yet that is the only forest certification to date in Honduras.

Honduras has been growing mahogany in plantations for over 40 years, but these experiences have not been thoroughly evaluated. Moreover, research on mahogany in natural forests has been minimal.

Nicaragua (by Jaime Guillen)
The presence of mahogany has been substantially reduced or eliminated in a number of areas such as in Boaco and Chontales (central region), large parts of Matagalpa and Jinotega (northern region), and in the zone of the Rio San Juan (southern region). The Bluefields region once had major mahogany resources, but they were thoroughly cut over for export.

At present more mahogany is extracted from the hardwood forests than any other timber. Illegal production is perhaps 50 to 80% of legal production. The problem of control and regulation is complicated by the complex political framework for the forest sector, social conflicts, inadequate government resources, corruption, and the economic crisis. Most mahogany is currently on indigenous lands where land tenure is at issue. Forest certification could be an interesting instrument for planning, but the greatest challenge is the problem of land tenure

Panama (by Efrain Lao)
Panama is a minor producer of mahogany. The majority of the remaining forests which contain mahogany are in Darién in forest concessions. Bigleaf mahogany occurs in these forests in very low densities. After the year 2000, concessions will be granted for 20 years in order to better manage the forests than under the current 5 and 10-year arrangements. At present mahogany may represent only 4% of the commercial forest volume, and this means that Panama's forest sector does not depend on it.

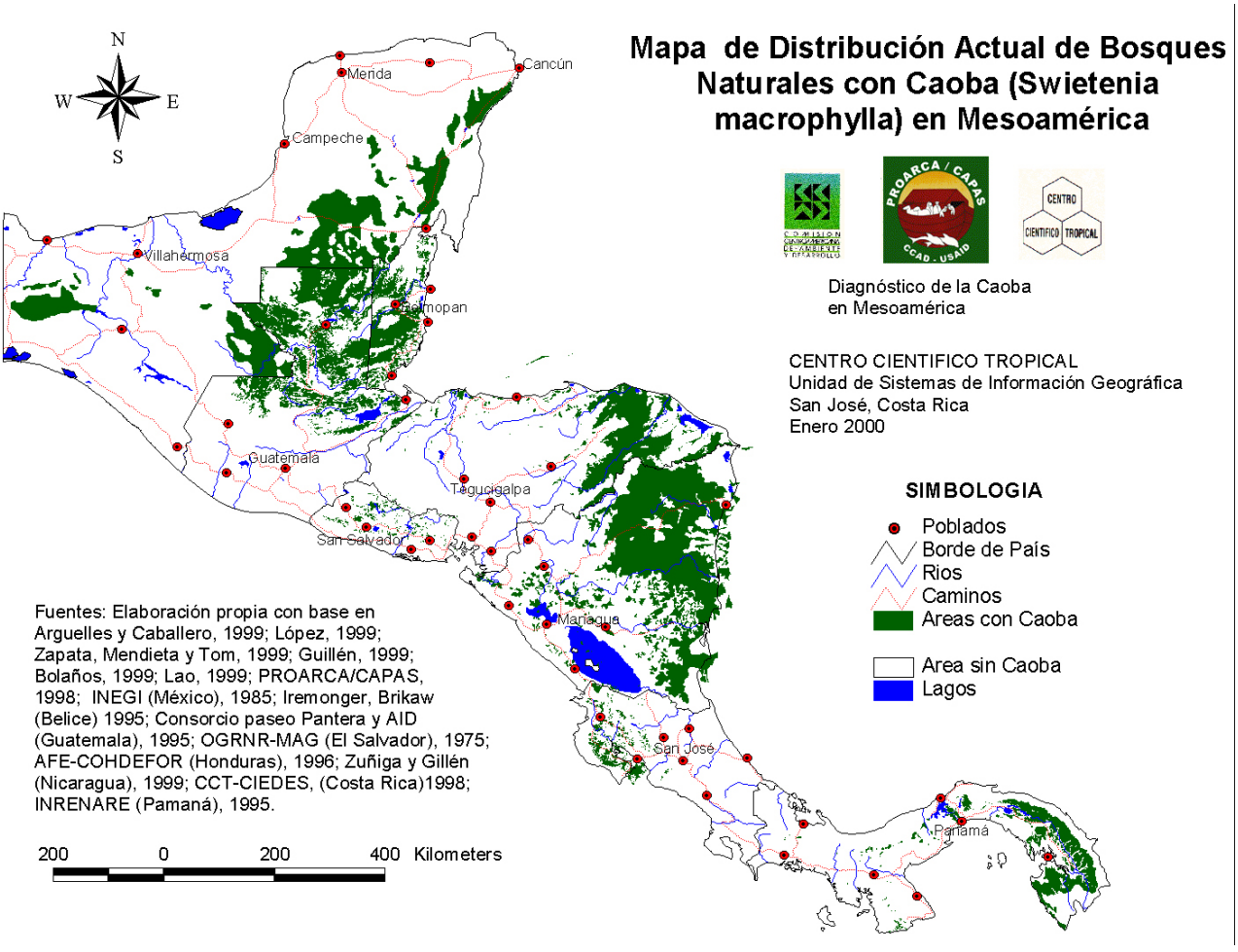
There is no forest certification, principally because there is no international market for wood produced in Panama. Mahogany is felled in very small quantities, and it is all for local consumption. Panamanian law prohibits mahogany from being exported. Most of the small volume of mahogany comes from agro-forestry systems, where felling is permitted without complicated formalities. In Darién there is some illegal felling due to the unrest caused by the presence of foreign guerrillas.

Costa Rica (by Rafael Bolaños)
An estimated 26% of the national territory was covered by original forests containing mahogany. Mahogany was once plentiful in the North Pacific area, where it had been widely exploited since 1908. Today mahogany exists in secondary forests where there has been intervention, and these are located principally in protected areas of the dry Pacific and Upala zones of Costa Rica. Mahogany is not commercially exploited due to its very low density, and because the felling of mahogany has been prohibited for many years.

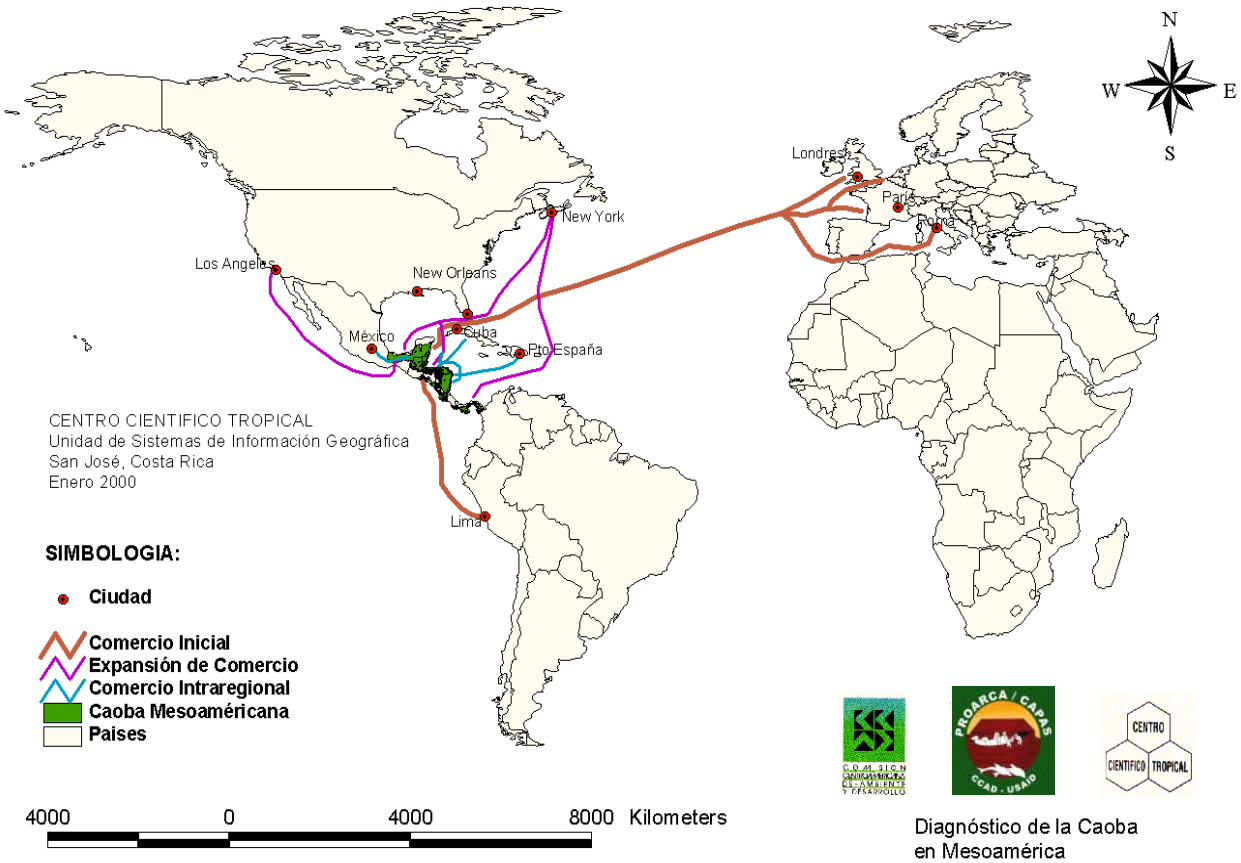
CATIE is making a study of the genetics of mahogany in the region. This study has revealed that mahogany with a potential for genetic improvement is unprotected. Even though it has been declared an endangered species, Costa Rica probably experiences small-scale illegal felling of mahogany. Conservation leaders have proposed that the government pay incentives for conservation services to the owners of mahogany trees, since CATIE's studies imply that the species can be genetically improved in the future.

El Salvador (by Rafael Bolaños)
In 1955 Dr. Lester Holdridge described bigleaf mahogany (*S. macrophylla*) in a natural forest in association with the native species *S. humilis*. If bigleaf mahogany was present, a remaining question concerns whether it was found naturally or whether it was planted.

In a visit to El Salvador, the Tropical Science Center interviewed Dr. Holdridge's assistant who participated in the 1955 study to confirm the field data reported by Holdridge. Recent reports indicate that mahogany is found in El Imposible National Park.

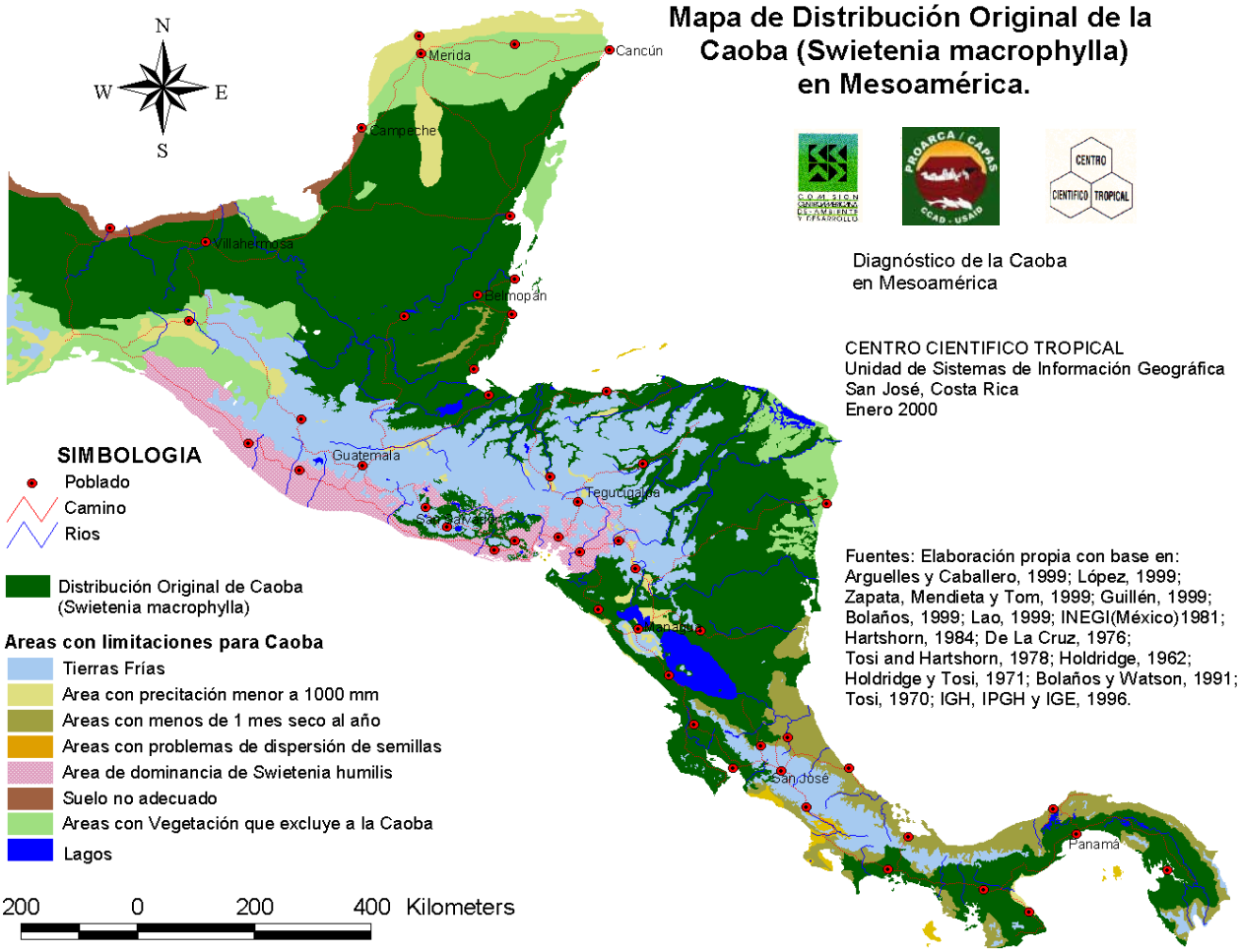


Mapa de las Principales Rutas de Comercio Histórico de Caoba



Diagnóstico de la Caoba
en Mesoamérica

Mapa de Distribución Original de la Caoba (Swietenia macrophylla) en Mesoamérica.



Diagnóstico de la Caoba
en Mesoamérica

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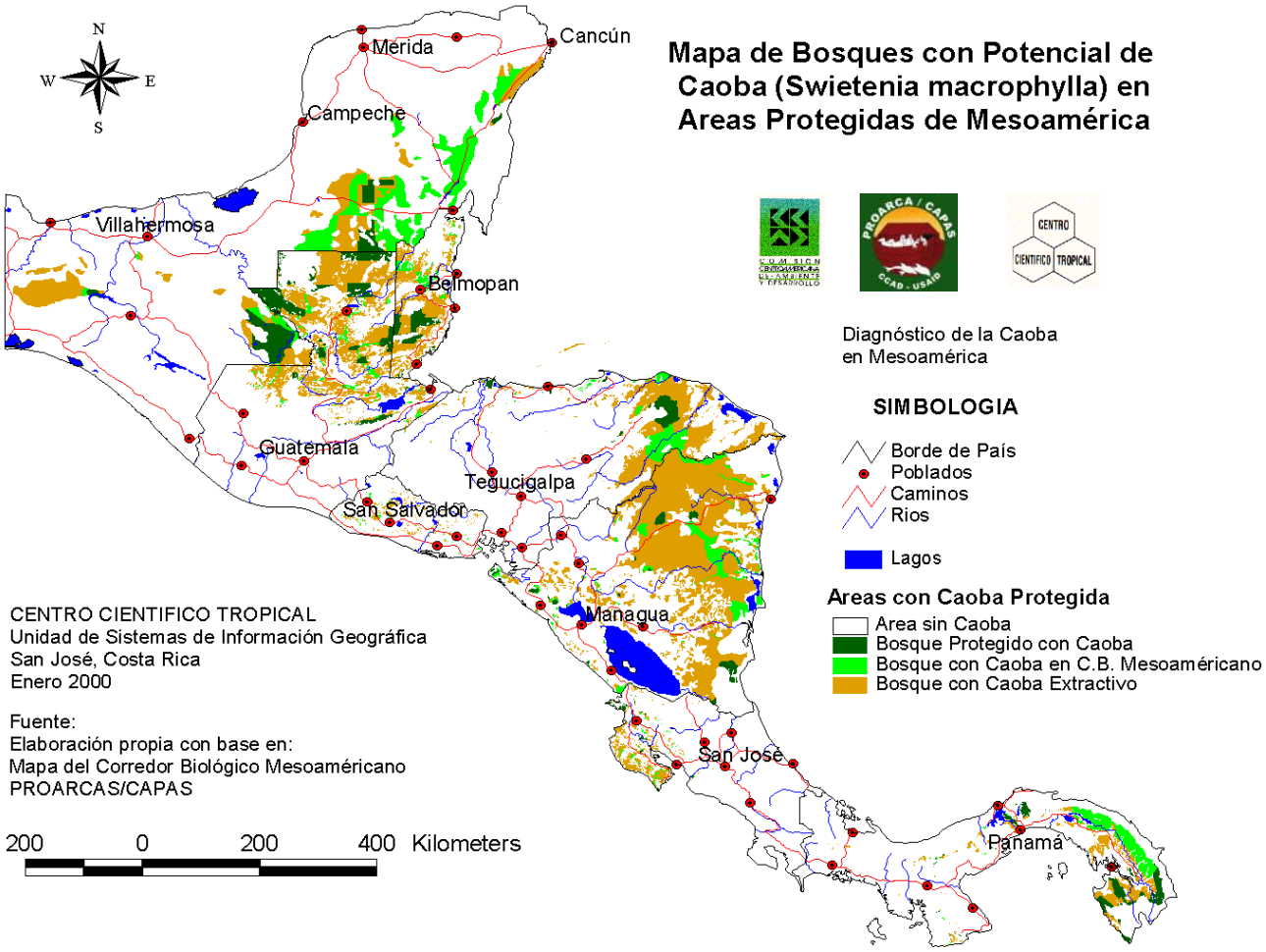
Unidad de Sistemas de Información Geográfica
San José, Costa Rica
Enero 2000

Fuentes: Elaboración propia con base en: Arguelles y Caballero, 1999; López, 1999; Zapata, Mendieta y Tom, 1999; Guillén, 1999; Bolaños, 1999; Lao, 1999; INEGI(México)1981; Hartshorn, 1984; De La Cruz, 1976; Tosi and Hartshorn, 1978; Holdridge, 1962; Holdridge y Tosi, 1971; Bolaños y Watson, 1991; Tosi, 1970; IGH, IPGH y IGE, 1996.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Merida
Cancún
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Villahermosa
Belmopan
Guatemala
Tegucigalpa
San Salvador
Managua
San José
Panamá
Mapa de Bosques con Potencial de Caoba (Swietenia macrophylla) en Areas Protegidas de Mesoamérica
Diagnóstico de la Caoba en Mesoamérica
SIMBOLOGIA
Borde de País
Poblados
Caminos
Rios
Lagos
Areas con Caoba Protegida
Area sin Caoba
Bosque Protegido con Caoba
Bosque con Caoba en C.B. Mesoamericano
Bosque con Caoba Extractivo
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