4TH MEETING OF THE MAHOGANY WORKING GROUP

PROCEDURES FOR MAKING NON-DETRIMENT FINDINGS FOR MAHOGANY

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PATRICIA D. DÁVILA ARANDA
Asesora de la Autoridad Científica de México, en temas de Flora
Investigador Titular de la Facultad de Estudios Superiores, Iztacala, UNAM
e-mail: pdavilaa@servidor.unam.mx

International Workshop of Experts on Non-Detriment Findings for Bigleaf Mahogany (*Swietenia macrophylla*)

- **México, as President of the Working Group on Mahogany, organized Workshop in Cancún, Quintana Roo (April 10-13, 2007)**
- **Based on Decision 13.58 & on recommendations from the 16th Plant Committee meeting in Lima, Perú (PC 16)**

PARTICIPANTS

- 46 participants from 12 countries within the area of distribution (Belize, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, México, Nicaragua, Panamá & Perú), including an expert panel & specialists
- European Union, in its capacity as importer (Belgium & Spain)
- President of the Plants Committee
- Representative of the CITES Secretariat
- Representative of ITTO
- Representatives of 2 NGOs
- Representative of the International Importers Association

Non-Detriment Findings

- represent methodologies and procedures that allow evaluation of species population status, with the objective of determining extraction levels or optimal exploitation rates that will ensure the survival of those populations

BASIC ELEMENTS FOR FORMULATING NDF

- Estimation of mahogany range area
- Population parameters
- Management principles, methods & indicators
- Tools for monitoring & verifying harvests, processing & conservation

I. ESTIMATING DISTRIBUTION AREA

National (potential) =

- **Forest cover maps**
- **Forest production area maps**
- **National forest inventories**
- **Available satelite images (Landsat)**

I. ESTIMATING DISTRIBUTION AREA

Sub-national (regions, states, watersheds) =

- **GIS results from national analyses**
- **National databases (including management units)**
- **Sub-national forest inventories**
- **Sub-national mapping from various sources**
- **Available satellite imagery**

I. ESTIMATING DISTRIBUTION AREA

Local (management unit) =

- **Forest management unit**
- **Statistical samples (for forest management plans)**
- **High or medium resolution satellite images of harvest areas**
- **GIS representation of harvest areas**
- **100%-area commercial censuses (based on georeferenced data)**

II. Population parameters

A. Periodic measurements
B. Indicators of sustainable management
C. Local reference values

A. Parameters for periodic measurements

1. **Characterization of population structures**
2. **Estimation of seed production**
3. **Estimation of standing volume & future harvests**

Characterization of population structures

1. Direct measures

- Diameter (DBH >10 cm, based on sampling methods accounting for irregular distribution patterns)
- Height (total, commercial) = optional
- Ecological situation (climate, geomorphology, topography, hydrology, soil, etc)

2. Derived measures

- Density (trees/ha by diameter size class)
- Volume (m^3)
- Basal area (optional & in addition to density)

ESTIMATING SEED PRODUCTION

- Sample annual seed production from a statistically significant number of trees in different size classes, before & after harvest
- Evaluate periodicity of seed production & change over time (e.g., as a function of tree size, or inter-annual variation)

ESTIMATING CURRENT & FUTURE HARVEST VOLUMES

- **Obtain data about current trees that will provide future harvests (reserved / retained commercial trees + sub-commerical trees) = trees that must be accounted for during current commercial harvests**

B. INDICATORS OF SUSTAINABLE MANAGEMENT

Permit determination of necessary silvicultural practices based on:

- **Estimation of number of seed producing trees (potential)**
- **Regeneration / recruitment rates (natural or artificial / enrichment)**
- **Turnover rates in number of individuals per size class category**
- **Number of trees available for future harvests**

C. LOCAL REFERENCE VALUES

Permit monitoring of population parameters over the long term, for the purpose of adjusting future harvests based on:

- **Compliance with forest management plans & annual harvest plans = local reference allowing verification of harvested trees with georeferenced positions**
- **Growth rate derived from permanent sample plots or from periodic measurements of individual trees (preferably annual)**

III. MANAGEMENT PRINCIPLES, METHODS & INDICATORS

Principles:

1. Sufficient ecological & silvicultural information about mahogany exists to proceed with outlining general management guidelines. We still lack detailed information about reproductive aspects & some silvicultural parameters (e.g., growth, seed tree selection criteria, minimum diameter cutting limit (MDC)).
2. Available data suggests that the species exhibits more or less homogeneous growth & development patterns across its range. Therefore, taking relevant precautions, it is possible to establish common reference values for silvicultural practices across its natural range.

III. MANAGEMENT PRINCIPLES, METHODS & INDICATORS

Principles:

3. Adaptive management for mahogany is essential = derived from current understanding but modified according to results from regeneration & growth studies within management areas

III. MANAGEMENT PRINCIPLES, METHODS & INDICATORS

Principles:

4. **Management plans should consider <u>biological & silvicultural experience</u> establishing:**

- **Tree age at first seed production**
- **Tree age at maximum seed production**
- **Annual diameter increment rates**
- **Timber quality**

III. MANAGEMENT PRINCIPLES, METHODS & INDICATORS

Principles:

5. **Silvicultural practices for mahogany should include secondary timber species. This increases harvest profitability & encourages improved silvicultural practices (e.g. natural regeneration in secondary vegetation).**
6. **Although harvesting multiple species incurs additional costs, it contributes to economic sustainability of harvest operations and to comprehensive & sustainable forest management.**

III. MANAGEMENT PRINCIPLES, METHODS & INDICATORS

Principles:

7. Management occurs at different intensities (intensive in plantations, semi-intensive in secondary forests, extensive in primary forests with low densities of mahogany). In all cases it is possible to consider basic principles & minimum guidelines for management.

SUSTAINABILITY

Methods that guarantee the sustainability of populations:

1. **Planned harvest operations**
2. **Harvest systems**
3. **Regeneration**
4. **Conservation**
5. **Commercial plantations**

1. Planned Harvest Operations

a. **Define harvest operations in accordance with landscape conditions.**

b. **Define silvicultural practices in accordance with harvest system. This implies consideration of initial size class frequency distribution & intended future (second cutting cycle) size class frequency distributions.**

2. Harvest systems

Depending on forest conditions & populations to be harvested, different harvest systems can be implemented:

- **Thinning / selection-cutting methods**
- **Uniform shelterwood / protective cuttings**
- **Clearcut in 1 or 2 stages**
- **Thinning / clearing**

3. Regeneration

Considering the low levels of natural regeneration of mahogany, the following are necessary:

- **Protect future (2nd harvest) commercial trees, based on inventory information & silvicultural practices**
- **Open clearings (ideally >2000 m^2, but determined for each management area)**
- **Enrichment plantings in clearings using artificial regeneration**

3. Regeneration

- **Select & protect seed trees, considering that trees >75 cm DBH with broad crowns are the most productive**
- **Establish a maximum distance between seed trees, accounting for maximum distances to which successful pollination can occur**

4. Conservation

To conserve populations the following steps need to be taken:

- **Protect different populations throughout the natural range to conserve phenotypic & genetic diversity**
- **Establish reserve areas (intact populations, possibly those with low density or unique diameter distributions)**
- **Select seeds adequately for enrichment plantings**

4. Conservation

- Sowing selected seeds or planting nursery-grown seedlings according to local ecological & productive conditions
- Coordination of national & regional seed collection for conservation of different populations & regions
- Protection of individual trees & groups of seed trees
- Creating seed orchards

5. Commercial Plantations

- **Establishment of pure & mixed plantations & agroforestry systems as medium-term alternative to production from natural forests**

IV. LOGGING & PROCESSING

Non-detrimental harvesting & production requires:

1. **Determination of annual production quotas**
2. **Optimization of timber use & processing**
3. **Monitoring & verification**

1. Determination of quotas

- **This implies accurate quantitative knowledge of populations. Without this knowledge, that is, based only on commercial & pre-commercial “stocks”, it is not possible to anticipate impacts of harvests on natural populations.**
- **Quotas should be determined at the level of forest management units because population characteristics can vary between forests & across regions.**

1. Determination of quotas

Determining quotas requires the following activities:

1. **Implementation of minimum viable population models, to supplement information regarding maximum volume production levels.**
2. **Quotas should be determined one year before production to ensure verification capacity.**

1. Determination of quotas

3. **Analysis of extraction / export quotas, based on available roundwood-to-sawnwood yield studies. This allows quotas to account for losses from bark thickness, stem quality & defect rates, inefficiency or waste during log processing, percentage of high quality timber yield for export, etc. If these factors aren't taken into account, it is probable that export cuotas will overestimate production capacity.**

2. Optimizing timber use & processing

- **Ongoing training & capacity building should be available for field personnel involved in harvest operations.**
- **Georeferenced maps of commercial & sub-commercial trees should be available during harvests to allow planned extraction routes reducing collateral stand damages, especially of future crop trees.**

3. Monitoring & Verification

- To the extent possible, it is important to establish permanent plots for detailed & long-term studies of harvest impacts on mahogany populations & the forest.
- Strengthen the chain-of-custody from harvest to export.
- Strengthen forest certification & transparency to improve control of trade in legal & illegal timber.

3. Monitoring & Verification

- **Establish a verification system linking forest inventories to remote sensing systems.**
- **Field verification of harvest areas based on sampling intensity sufficient to ensure compliance with harvest regulations including authorized extraction levels, assisted by high-resolution satellite imagery, is essential.**
- **Establish a control system linked to sufficiently punitive sanctions in case of non-compliance.**

PERSPECTIVES

- **It is urgent that the mahogany trade be brought under control.**
- **This will require precise technical & scientific information allowing determination of export quotas that do not place populations at risk (NDF).**
- **Sufficient information & tools already exist to confirm that NDF are possible for mahogany.**

PERSPECTIVES

- **Other types of information & activities that are lacking or only particially available should be developed as soon as possible.**
- **The Parties have a mandate from CITES to demonstrate that all producer nations have export quotas based on NDF.**
- **Each producer nation should develop its own approach & strategies for making NDF.**

EXPERTS

- Sr. Luis Alfonso Arguelles Suárez (México)
- Dr. James Grogan (USA)
- Dr. Roberto Kometter Mogrovejo (Perú)
- Dr. Carlos Navarro Pereira (Costa Rica)
- Dr. Laura Snook (Biodiversity International)

SPECIALISTS

- Dr. Patrick Van Damme (Belgium)
- Dr. Kenneth Farr (Canada)
- Dr. Rafael M. Navarro Cerrillo (Spain)
- Dr. Alfonso García Ferrer (Spain)

THE PARTICIPANTS