CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Twenty-third meeting of the Plants Committee
Geneva (Switzerland), 22 and 24-27 July 2017

Species specific matters

Malagasy ebonies (*Diospyros* spp.) and palisanders
and rosewoods (*Dalbergia* spp.)

REPORT OF MADAGASCAR ON THE IMPLEMENTATION OF DECISION 17.204, PARAGRAPHS A) TO D)

1. This document has been submitted by Madagascar*.

2. At CoP17, a new version of the decision on the implementation of the Convention for trade in Malagasy ebonies (*Diospyros* spp.) and palisanders and rosewoods (*Dalbergia* spp.) was adopted. The table below refers to new Decision 17.204, paragraphs a), b), c) and d), and summarizes the progress made by Madagascar in its implementation.

* *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

17.204 Directed to Madagascar

a) continue to develop an inclusive process to identify the main commercially valuable species in these genera from Madagascar, in cooperation with transit and destination Parties, the CITES Secretariat and relevant partners, such as the International Tropical Timber Organization (ITTO), the International Consortium on Combating Wildlife Crime (ICCWC), the Food and Agriculture Organization of the United Nations (FAO) and other intergovernmental and non-governmental organizations concerned with trade in timber of rosewood, ebonies and palisanders;

Date/Status	Progress made by Madagascar	Comments
2016	**Creation of a consortium coordinated by the CITES Scientific Authority** and composed of: ✓ The University of Antananarivo, represented by the Forestry Department of the School of Agronomy (ESSA) and the Plant Anatomy Laboratory (LABAP) of the Plant Biology and Ecology section ✓ Missouri Botanical Garden (MBG) Paris and Madagascar, ✓ ETH Zurich University, represented by IBZ (Integrative Biology Zurich) ✓ University of Missouri-St. Louis.	Studies to identify Malagasy species of *Dalbergia* and *Diospyros* require the use of several disciplines. A consortium bringing together the institutions that work in these disciplines has been created in order to maximize results on the identification of wood of these 2 genera. Forestry Department of the School of Agronomy (University of Antananarivo): near infrared spectroscopy (NIRS) Plant Anatomy Laboratory (LABAP): wood anatomy Missouri Botanical Garden (MBG) Paris and Madagascar: taxonomy IBZ-ETH Zurich: Molecular analysis of *Dalbergia* University of Missouri-St. Louis: Molecular analysis of *Diospyros*
Since 2015	**Improvement of the list of the main species that are likely to be exported, that is, of minimum exploitable diameter (MED), and of the genetic database of Malagasy *Diospyros* species thanks to 2 PhD theses on the 2 genera** **NB:** In this report, MED is 20 cm or more. 1/ "Phylogeny and genetics of the populations of *Diospyros* species of the Mascarene Islands". **RAD-seq database of 10 species of *Diospyros* and 39 species of *Diospyros***	Molecular research in St. Louis conducted by Alex Linan on *Diospyros* was financed by MBG and the University of St. Louis with the support of the Global Ebony Assessment project. This thesis generated RAD-seq databases with about 350 samples and 200 chloroplast sequences. The DNA samples are available at the University of Missouri-St. Louis. The development of the techniques (including the primers) necessary for sequencing the other accessions of the genus *Diospyros* could contribute to the development of the necessary barcodes for identifying species originating from Madagascar.

September 2015 to February 2019	2/ "Conservation genomics of Malagasy *Dalbergia* precious woods: insights and implications for forensic species identification," in progress.	This molecular study of *Dalbergia* at IBZ-ETH Zurich is conducted in the framework of the thesis of Simon Crameri and post-doctoral research by Sonja Hassold. The purpose of the thesis is to (1) explore the usefulness of nuclear genetic markers of species of the Fabaceae family; (2) improve the delimitation of Malagasy species of *Dalbergia* spp. through comparative and integrative morphological analyses as well as nuclear and chloroplast DNA; and (3) test and validate genetic methods to determine the origin of samples of Malagasy rosewood.

Limitations: Madagascar did not have enough funds to conduct research through thesis work. The molecular studies of *Dalbergia* and *Diospyros* that are currently under way in laboratories in Zurich and Saint Louis only partially address the identification of the main species with commercial value expected by CITES, as they were financed by MBG, the University of St. Louis and the Global Ebony Assessment for *Diospyros* and by ETH for *Dalbergia*.

2015-2017	ITTO-CITES Project (TMT-SPD 022/15), near completion. "Establishment of a fully documented reference sample collection and identification for all CITES-listed *Dalbergia* species and a feasibility study for *Diospyros* and look-alike species"	Thanks to this project, part of the reference databases have been created. These databases include information on fertile herbarium specimens identified as thoroughly as possible by specialists and also on macroscopic and microscopic sections taken from wood samples and DNA samples.
	Inclusion in the collection of herbarium specimens and reference wood samples composed of 22 species of *Dalbergia*, 21 of *Diospyros* and 8 look-alike species from 5 regions of Madagascar: BOENY REGION: Mont Français, Ankarana, along main roads RN4 and RN6, Ankarafantsika ATSIMO ANDREFANA REGION: Analavelona SAVA REGION: Masoala and its surroundings ANOSY REGION: Fort-Dauphin: Antanitsara, Androangabe, Bemangidy MENABE REGION: Kirindy, Kiboy-Tsimafana and Andranomena	The collection of herbarium specimens and wood samples of species of *Dalbergia* and *Diospyros* is available at the LABAP of the University of Antananarivo. Identical parts of each herbarium specimen are deposited in the national and international herbaria of TAN-PBZT in Antananarivo, St. Louis, Missouri, and the French National Museum of Natural History (MNHN) in Paris.
	Database with the genetic sequence of 21 species of *Dalbergia* (of which 18 are of MED), 8 of *Diospyros* (of which 7 are of MED) and 11 look-alike species, and microsatellites of 21 species of *Dalbergia* (of which 18 are of MED).	The DNA collection will later be deposited at the LABAP of the University of Antananarivo for *Dalbergia* and *Diospyros*, with copies at IBZ-ETH Zurich for *Dalbergia* and at MBG St. Louis for *Diospyros*. The structure, centralization, management and accessibility of collected materials

	Standard collection protocol prioritizing species of MED used, tested and mastered  **Improvement of information on the geographic range and the database of Malagasy species of *Dalbergia* and *Diospyros* in the Madagascar Catalogue (www. tropicos.org/project/mada)**	(herbarium specimens – wood samples – microscopic wood sections and DNA) are being discussed by all the members of the consortium. In the framework of this ITTO-CITES project, a standard collection protocol has been developed by researchers of ETH Zurich, MBG and the University of Antananarivo. Its aim is to collect complete samples of species of *Dalbergia* and *Diospyros*, composed of herbarium specimens, wood, fresh leaves and wood cores, accompanied by photographs taken in the field. The specimens were collected respecting the harvesting conditions of the specimens used to develop the various identification methods such as wood anatomy, molecular analysis and mass spectrometry. This protocol promotes and facilitates the sharing of study specimens between partner laboratories. Species are identified by experts on the relevant group, i.e., *Dalbergia* or *Diospyros*. Every sample, harvested from a unique georeferenced tree marked by a numbered label, is accompanied by a set of photographs and includes a series of voucher herbarium specimens for identification, leaves for morphometric analysis, leaves dried with silica gel and heartwood for molecular analysis, wood samples for anatomical analysis and heartwood for mass spectrometry and chemical analysis. Field observations and data are also collected and species that could potentially be traded are recorded. The sampling strategy and protocol were developed, tested, mastered and used during these projects and could easily be used to collect the species of *Dalbergia* and *Diospyros* that have not been sampled yet. The implementation of the protocol focuses on species of minimum exploitable diameter (MED) in the entire geographic range in order to obtain representative samples. Maximum coverage in the whole range of both genera was planned, so areas of high species concentration where a certain number of species of *Diospyros* and *Dalbergia* were known to occur were given priority. Species of *Dalbergia* and *Diospyros* occur in the 22 regions of Madagascar. In this project, specimen collection took place in five regions of Madagascar.

Limitations: The amount of funding allocated to fieldwork only covered 5 regions of Madagascar. Only relatively easily accessible sites were visited. In order to maximize the collection of samples of all the species that occur in Madagascar, the collection should cover all the ecosystems that are natural habitats of the target species.

b) for those species identified under paragraph a) establish, in collaboration with the CITES Secretariat, a precautionary export quota based upon a scientifically robust non-detriment finding;

Since March 2017	**FAO-FLEGT Programme** **Terms of reference drafted on:** **Development of methods to estimate the amount of standing timber in order to make a non-detriment finding (NDF)**	Making an NDF is key so as not to compromise and threaten the survival of rare species of the genus *Dalbergia* and also to ensure the sustainability of the harvest. In Madagascar, the making of an NDF requires developing a clear and adequate method based on centralized, reliable and updated scientific data. The FAO-FLEGT Programme will support a pilot programme on the development of methods to identify and monitor the status of the existing populations of *Dalbergia* spp. in order to establish a management plan for each species or group of species and assess the stocks of standing timber. Such methods will later be developed and used for the rest of the species. Madagascar will be assisted by international experts who have already worked on similar projects regarding the making of NDFs. The research proposal on this project has already been drafted since March 2017, the date initially planned for the launch of the project, but due to a delay for reasons beyond Madagascar's control the project will only start at the end of May 2017, when the international experts are scheduled to arrive in Madagascar.

Limitations: Madagascar wished to start this project with fieldwork, which was planned to take place during the rainy season (March-April 2017) in order to collect the fertile herbarium specimens necessary for a good identification by specialists and for the reference collection. However, because of the delay in the start of the project, it is no longer possible to go to the field because the leaves of the dense dry forest in western Madagascar already start to fall at the end of May.

c) subject to the availability of funds, organize workshops in support of the implementation of paragraphs a) and b) of this Decision, and to strengthen the national capacity to formulate non-detriment findings, and identify and agree on monitoring mechanisms that include appropriate technology (e.g. timber tracking);

May 2016	**Identification of the needs, capitalization of the achievements made on Malagasy species of *Dalbergia* and *Diospyros* and identification of priority activities** Established by the World Resources Institute (WRI) and the World Bank, in cooperation with researchers from ETH Zurich, MBG, the SA of Madagascar and the University of Antananarivo, with the financial support of the Program on Forests (PROFOR). **65 species of *Diospyros* currently recognized (described and not described) are assessed as having MED.**	Thanks to the various interviews and to the contributions of the consortium of scientists/experts working on the genera *Dalbergia* and *Diospyros,* a detailed review was made of all the information available and the gaps that need to be filled to be able to make NDFs. The assessment dealt with: 1) the geographic range and status of the population of the species; 2) technologies for species identification; 3) the regeneration potential of these species for forestry; and 4) the potential of the private sector to develop a value chain for the sustainable harvest of precious woods. For each of these research areas, the following elements were identified: a) the acquisition of physical infrastructure/equipment as well as the requirements and related maintenance costs; b) capacity-building and training needs regarding human resources; and c) promising options regarding international technical cooperation and financial assistance from donors to implement a capacity-building programme This assessment is of major importance to commercially exploit these timber resources. It provides a global overview of everything that has been done and that still needs to be done regarding taxonomy, field collection and identification, the creation and management of a reference collection and a database, wood anatomy, molecular barcoding and near infrared spectroscopy.
January 2017	**Validation workshop of the IUCN conservation status of 51 species of *Diospyros* (of which 20 are of MED).** Funded by the Global Ebony Assessment	The IUCN mandated the Madagascar Plant Specialist Group, based at the University of Antananarivo, to validate the scientific data on Malagasy species according to the IUCN Red List assessment criteria. The categories proposed for 51 species of *Diospyros* were validated on 18 January 2017. The 51 species were classified as follows: 3 CR, 6 EN, 10 VU, 16 LC, 14 NT and 2 DD. These categories are still in the process of being validated by the IUCN and will soon be included in the official Red List.

June 2017	**Meeting to finalize the identification method and transfer skills on the genus *Dalbergia*** Funded by the Consortium	A meeting with all the national and international institutions such as MBG, SNGF, RBG Kew, PBZT, ETH, ESSA and MBEV is planned in June 2017. Its main objectives are to finalize the identification method for species of *Dalbergia* and transfer skills from senior Malagasy researchers to young researchers.

Limitations: Currently, there are no longer any specialists in Malagasy species of *Dalbergia* or *Diospyros*. Considering the taxonomic complexity of the genus and the number of newly identified species, the number of experts who are able to recognize the members of the genus is very limited, which complicates and delays research work if the reference collection is not finalized very soon. Because of this, Madagascar would greatly appreciate all the necessary assistance to train national experts and set up essential laboratory equipment to resolve the taxonomic issues related to species of *Dalbergia* and *Diospyros* as fast as possible.

June 2017	**National capacity-building workshop on CITES implementation for precious wood species listed in Appendix II.** Funded by WWF Madagascar	A national capacity-building workshop for all CITES stakeholders has been scheduled for June 2017. Its purpose is to: 1/ improve the understanding and implementation of legal texts related to precious woods in order to facilitate the implementation of the CITES Convention; 2/ inform about the numerous taxonomic updates of species of *Dalbergia* and *Diospyros*, the existence of a well-documented reference collection of the species and the results of the identification methods used, particularly wood anatomy, molecular barcoding and near infrared spectroscopy. 3/ deliver training on identification of Malagasy timbers traded with palisander, rosewood and ebony. This workshop will be held in the city of Toamasina because of the existence of the large port of shipment of exported wood. The players responsible for implementing the CITES Convention (i.e., officials of the regional forestry authority, the gendarmerie and police, the Ministry of Justice, law enforcement and customs) from 8 regions producing rosewood, palisander and ebony will be targeted and prioritized for this national workshop. These regions are Alaotra-Mangoro, Analanjorofo, Antsinanana, Anosy, Boeny, Menabe, Sava and Sofia.

d) continue the production of identification materials for identifying timber and timber products of species of the genera Dalbergia *and* Diospyros *from Madagascar;*

April 2017	**Official publishing by SPRINGER of the first atlas based on wood anatomical traits of 19 species of *Dalbergia* (of which 17 are of MED) and 31 species of *Diospyros* (of which 23 are of MED) from Madagascar.** "Stem anatomy of *Dalbergia* and *Diospyros* species from Madagascar, with a special focus on wood identification". http:/www.springer.com/us/book/9783319511450	The atlas provides anatomical descriptions of 19 species of *Dalbergia* and 31 species of *Diospyros*, most of which are endemic to Madagascar. Each species is illustrated with colour micrographs of sections of the xylem, the bark and the pith of the trunk, branches and twigs, double stained with Safranin O and Astra blue. In addition, a photograph of each plant and information on its size, its DBH, natural habitat and geographic distribution are also included. This atlas provides a general overview of the internal structure of the wood and the traits of the wood of each species. Once there have been more repetitions for each species, it will be used as a baseline and will later enable anatomic identification of the various woods and their derivatives.

* Limitations: Due to the lack of funding, the atlas is only available in English and costs 175€, which is too expensive for Malagasy researchers. This atlas is a reference book for all the researchers who work on the two genera. Madagascar would like the book to be translated into French and mass produced so that it can be accessible to Malagasy researchers.

May 2017	**Completed taxonomic revision of 33 species of *Diospyros*, of which 13 are of MED. The related articles are in preparation and in press.**	The titles of the scientific articles are the following: Schatz, G. E. & P.P. Lowry II. Synoptic revision of the *Diospyros* L. (Ebenaceae) Squamosa group in Madagascar (in prep.), with a description of 5 new species. Schatz, G. E. & P. P. Lowry II. New Species of *Diospyros* L. (Ebenaceae) from the island of Nosy Mangabe in the Bay of Antongil region of Madagascar (in prep.), with 7 new species. Mas, C., P.P. Lowry II & G.E. Shatz. Révision taxonomique des *Diospyros* L. (Ebenaceae) de la région malgacho-comorienne. I. Le groupe Gracilipes. *Boissiera* (in press). So far, the important work that represents considerable progress in the taxonomic knowledge of Malagasy species of *Diospyros* is the compilation of data on the whole set of species, including those that are new to science and must be named and described. The purpose is to find out which ones produce trees large enough to be potentially harvested.

May 2017 (in progress)	**Identification catalogue of 20 species of *Dalbergia* (of which 18 are of MED), 20 of *Diospyros* (of which 14 are of MED), and 10 look-alike species available at the LABAP, University of Antananarivo.**	The catalogue provides macroscopic and microscopic descriptions of the wood of 20 species of *Dalbergia*, 20 species of *Diospyros* and 10 look-alike species endemic to Madagascar. Each species is illustrated with photographs of the plant as well as macroscopic and microscopic colour micrographs of anatomic sections of the trunk. This catalogue with look-alike species already includes a part of the timber species traded by Madagascar and can be used as a basis for the identification of logs at shipping ports.

Decisions on Malagasy ebonies (*Diospyros* spp.) and palisanders and rosewoods (*Dalbergia* spp.)

17.203: Directed to source, transit and destination Parties for Malagasy Diospyros *spp. and* Dalbergia *spp.*

Source, transit and destination Parties for specimens of species of the genera *Dalbergia* and *Diospyros* occurring in Madagascar are urged to:

a) enforce all the measures that are recommended by the CITES Standing Committee concerning commercial trade in specimens of these species from Madagascar, including suspensions of such trade;

b) develop action plans to effectively manage timber stockpiles of *Dalbergia* spp. and *Diospyros* spp. from Madagascar; and

c) provide written reports describing progress made with implementation of paragraphs a) and b) of this Decision to the Standing Committee.

17.204: Directed to Madagascar

Madagascar

a) continue to develop an inclusive process to identify the main commercially valuable species in these genera from Madagascar, in cooperation with transit and destination Parties, the CITES Secretariat and relevant partners, such as the International Tropical Timber Organization (ITTO), the International Consortium on Combating Wildlife Crime (ICCWC), the Food and Agriculture Organization of the United Nations (FAO) and other intergovernmental and non-governmental organizations concerned with trade in timber of rosewood, ebonies and palisanders;

b) for those species identified under paragraph a) establish, in collaboration with the CITES Secretariat, a precautionary export quota based upon a scientifically robust non-detriment finding;

c) subject to the availability of funds, organize workshops in support of the implementation of paragraphs a) and b) of this Decision, and to strengthen the national capacity to formulate non-detriment findings, and identify and agree on monitoring mechanisms that include appropriate technology (e.g. timber tracking);

d) continue the production of identification materials for identifying timber and timber products of species of the genera *Dalbergia* and *Diospyros* from Madagascar;

e) for those species identified under paragraph a), significantly strengthen control and enforcement measures against illegal logging and export at the national level including seizures, investigations, arrests, prosecutions, and sanctions;

f) submit regular updates on audited inventories of at least a third of the stockpiles of species of *Dalbergia* and *Diospyros* from Madagascar, and a use plan for consideration, approval and further guidance from the Standing Committee; and

g) provide written reports on progress with the implementation of paragraphs a) to d) of this Decision to each meeting of the Plants Committee; on progress with the implementation of paragraphs e) and f) of this Decision to the Standing Committee; and on progress with the implementation of this Decision to the Conference of the Parties at its 18th meeting.

17.205 Directed to Parties

Parties and relevant partners indicated in Decision 17.204 paragraph a) are invited to:

a) provide technical and financial assistance to support the implementation of Decisions 17.203 to 17.208;

b) provide technical and financial assistance in support of conducting audited inventories of *Dalbergia* spp. and *Diospyros* spp. from Madagascar; and

c) provide reports to the Standing Committee, including information received from relevant partner organizations, concerning progress with the implementation of paragraphs a) and b) of this Decision.

17.206: Directed to the Plants Committee

The Plants Committee shall:

a) review and assess reports from Madagascar on its implementation of Decisions 17.204 paragraphs a) to d), and from the Secretariat on the implementation of Decision 17.208, and provide recommendations to Madagascar and the Standing Committee and other bodies as appropriate;

b) continue supporting the preparation of a standard reference for the names of species of the genera *Diospyros* and *Dalbergia* occurring in Madagascar, to be adopted, if appropriate, at the 18th meeting of the Conference of the Parties; and

c) assist Madagascar in the identification of technical resources in support of the implementation of Decisions 17.204 paragraphs a) to d), and if needed, make recommendations to Madagascar, Standing Committee and other relevant organizations.

17.207: Directed to the Standing Committee

The Standing Committee shall review and assess reports from Madagascar on the implementation of Decision 17.204 paragraph e) and f), and from the Secretariat on the implementation of Decision 17.208, and make recommendations, which may include appropriate compliance measures and an assessment as to whether the conditions for a partial sale of audited stocks are in place, in accordance with the criteria established in Decision 17.204, paragraphs e) and f).

17.208: Directed to the Secretariat

The Secretariat shall:

a) assist Madagascar, relevant Parties, and the Standing and Plants Committees in the implementation of Decisions 17.203 to 17.207;

b) subject to available funding, assist with relevant capacity-building activities in Madagascar and transit and destination countries concerned by the trade in specimens of *Diospyros* spp. and *Dalbergia* spp. from Madagascar, including through international capacity building workshops; and

c) provide written reports on progress with the implementation of this Decision to the Plants Committee and the Standing Committee, as appropriate.