Issue Number 2-12 May 2016

ITTO - CITES

PROGRAM FOR IMPLEMENTING CITES LISTINGS OF TROPICAL TREE SPECIES

Newsletter

This Newsletter reports on activities under the second phase of the ITTO-CITES Program for Implementing CITES Listings of Tropical Tree Species. Following up on the successful first phase of the Program (2007-2011), this second phase is continuing work during 2012-2016 on the most important CITES-listed tropical tree species in trade. The Program is majority-funded through a grant from the European Union (via the European Commission), which also provides for part of the available funds to be devoted to activities relevant to both the ITTO-CITES Program and the ITTO Thematic Program on Trade and Market Transparency (TMT). The Newsletter is published on a quarterly basis, in English, French and Spanish, and is made available to all Program stakeholders and other individuals interested in the progress of the ITTO–CITES Program. This issue covers a summary of the Program activities up to May 2016.

In this Issue

Donors

Private sector donors: Abbott-Solvay, Indena, EuroMed and Plavuma

Editorial

ITTO and CITES: an enduring partnership

This quarterly newsletter has informed donors, participating countries and other stakeholders about the work done by the ITTO–CITES Programme for a decade. This will be the last issue produced during Phase II of the Programme which is now drawing to a close.

Both the ITTO and the CITES Secretariats are proud of this partnership that has been so fruitful since 2005. A special edition of ITTO's Tropical Forest Update (TFU) was recently dedicated to the outcomes of work undertaken as part of what is now known as the ITTO–CITES Programme for Implementing CITES Listings of Tropical Tree Species. This year we celebrate the 10th anniversary of this collaborative Programme. In addition to the TFU which many readers may have already seen, a joint press-release will be soon published on both the ITTO and CITES websites to highlight and celebrate this enduring partnership.

The Programme has worked to promote sustainable management of some of the most valuable tree species globally and it has demonstrated that CITES is an effective and irreplaceable tool that can assist range States in using their tree species in a sustainable manner while conserving their forests in the long term. The cooperation between ITTO and CITES fostered through the Programme constitutes a strategic alliance that can benefit many tree species in trade beyond those listed in the CITES Appendices.

Impacts

The Programme's activities in the range States of targeted tree species have resulted in improved forest management and the regulation of trade in CITES-listed tree species, mainly through the work done by national CITES Scientific Authorities, but also jointly with Management Authorities. The Programme has increased awareness and cooperation in research, silviculture and CITES compliance, while increasing the integration of knowledge on sustainable forest management (ITTO's core mandate) and species conservation, management and international trade (CITES's core mandate), providing a coherent policy framework. Many lessons have been learned, including the importance of: engaging with all stakeholders; improving the understanding of CITES regulations and their implementation; and clear communication between CITES authorities in countries and the private sector.

The information published in this issue of the newsletter provide examples of these activities and indicate some of the benefits they have yielded for conservation and sustainable use and trade of CITES listed tropical tree species.

Participating countries have made enormous progress in the first two phases of the Programme in generating information and building capacities to sustainably harvest and to control the trade in some of the most heavily traded CITES-listed tree species, but there is a need to consolidate and build on these initial steps. Moreover, new tree species continue to be listed in CITES. The 17th Conference of the Parties to CITES (CoP17) will take place from 24 September-05 October 2016 in Johannesburg, South Africa. During that meeting 10 proposals on tree species will be discussed and potentially 198 additional tree species could be included in Appendix II and one tree species in Appendix I. The number of listings of tree species in CITES over the last ten years has rocketed partly because range States better appreciate the benefits of such listings given the support provided by the ITTO–CITES Programme.

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ITTO-CITES Program

The "ITTO-CITES Program for Implementing CITES Listings of Tropical Tree Species" aims to ensure that international trade in CITES-listed tropical tree species is consistent with their sustainable management and conservation. The specific objective of the Program is to assist CITES national authorities and the private sector to meet the requirements for managing and regulating trade in CITES-listed tree species; to provide capacity-building support, and to conduct specific studies where information is lacking so as to develop an enhanced global framework for the collection and analysis of information related to the biology and management of species and trade in tropical forest products. The main species covered to date are *Pericopsis elata* (afrormosia or assamela), *Prunus africana* (pygeum) and *Diospyros* spp. (ebony) of Central Africa and Madagascar; *Swietenia macrophylla* (big-leaf mahogany), *Cedrela odorata* and other *Cedrela* spp. (cedro) in Latin America; as well as *Dalbergia* spp. (rosewood) in both Africa and Latin America. Those covered in Southeast Asia are *Gonystylus* spp. (ramin) and *Aquilaria* spp./*Gyrinops* spp. (agarwood).

The main range States exporting significant volumes of these species are Cameroon, Democratic Republic of Congo, Madagascar and Republic of Congo in Africa; Indonesia and Malaysia in Asia; and Bolivia, Brazil, Guatemala, Honduras, Paraguay and Peru in Latin America. The direct beneficiaries of this Program are public authorities and private sector operators in the forest sector in the range States. The indirect beneficiaries are other Parties to CITES and members of ITTO that trade in these species, who will benefit through capacity building and awareness raising programs. Program assistance is available to countries that are significant exporters of products from CITES-listed tree species, or that have the potential to become significant exporters.

Program funding

Phase II of the Program has an approved budget of nearly $9 million (EUR 7.5 million) and has to date been funded by the European Union (through the European Commission - EC), United States of America, Germany, Norway, the Netherlands, China and the private sector. The third (and final significant) installment of EUR 1.2 million under the ITTO-EC contract that provides for two-thirds of the Phase II budget was received from the European Commission in February 2015. The United States of America also continues to support the Program, pledging USD 125,000 during the 51st ITTC Session in November 2015. China also became a donor to the Program in 2015, with a pledge of $100,000. The government of Germany also agreed that starting in 2015, half of the budget it was providing under ITTO's regular project cycle for PD 620/11 Rev.1 (M) (total budget $2,046,274) "Development and Implementation of a Species Identification and Timber Tracking System in Africa with DNA Fingerprints and Stable Isotopes" (reported completed in previous Newsletter) could be counted as a contribution to the ITTO-CITES Program due to the close linkages between the Program and project objectives. A total of nearly $3 million has to date been provided by non-EC contributions to the Program, meeting the co-financing objectives for this phase.

Activity progress reports

Under Phase II of the Program, ITTO has, in consultation with the CITES Secretariat, funded 10 new Activities in Africa, 12 in Asia, 10 in Latin America and two global Activities; while one Activity in both Africa and Latin America approved during Phase I of the ITTO-CITES Program was extended and continued to be implemented under Phase II of the Program. All of the 36 Activities approved or extended under Phase II are now underway or have been completed. In addition to the 36 Activities approved or extended under Phase II of the Program, eight Activities under the TMT component are currently under implementation. Progress in the German-funded project PD 620/11 Rev.1 is also reported on as noted above. An additional 14 Activity proposals (eight in Africa, two in Asia and four in Latin America) submitted to ITTO by countries are pending approval/availability of funds under the proposed Phase III of the Program.

Information about each country Activity (country, Activity document summary, executing and implementing agency, final reports, other outputs, etc.) can be found on the Program website (http://www.itto.int/cites_programme). The following section provides brief descriptions and progress reports for ongoing Activities and those completed since the last issue of the Newsletter (earlier completed Activities have already been reported on in previous issues of the Newsletter).

Africa

Cameroon

Law enforcement and management of* Pericopsis elata *in production forests in Cameroon

Implementing agency: *Agence Nationale d'Appui au Développement Forestier* (ANAFOR)
Status: Operational
Start date: November 2013
Planned duration: 18 months
Actual duration: 29 months

This Activity is a continuation of assistance to Cameroon to address recommendations from its first non-detriment findings (NDF) report on *Pericopsis elata* in production forests produced under Phase I of the ITTO-CITES Program. The Activity aims to implement the main recommendations outlined in the NDF report and those related to law enforcement regarding *P. elata*. It is executed by the *Agence Nationale d'Appui au Développement Forestier* (ANAFOR) in collaboration with the national association of timber companies. A total of nine experts have been recruited to implement nine specific activities in the field. They are from research institutions, including universities, and the National Institute for Development and Agricultural Research (IRAD).

The disbursement of the final instalment of funds from ITTO was made in February 2016 following the presentation of a paper on "soil properties" for ITTO's Tropical Forest Update. ANAFOR organized a second meeting of the Scientific Committee in January 2016 with the aim to examine two reports including (i) testing different sampling designs to better assess the stock of *P. elata* in production forests in Cameroon; and (ii) studying the physical and technological properties of *P. elata*

wood. The third meeting of the Scientific Committee was organized on 11 March 2016 and examined the remaining specific activities including biological and phonological studies of *P. elata*. The phenological study encountered a huge delay due to irregular fructification of *P. elata* in 2015. The Regional Coordinator for Africa (RC) made some observations on the method used by the expert in charge of conducting phonological studies on the sample used to define the minimum diameter for observing regular fructification which was limited to trees of more than 40 cm in diameter at breast high (DBH). The expert explained that this was caused by the lack of mother trees in that diameter class (30–40 cm). The expert in charge of physical and technological properties was asked to make concrete proposals for the utilization of the wood in different diameter classes. Finally, the RC reminded ANAFOR and the experts on the necessity of producing relevant scientific data. The National Technical Committee met on 14 March 2016 to discuss the main outputs of the Activity, lessons learned and the way forward. The RC conducted a field trip from 7-10 March 2016 and visited specific activities implemented in cooperation with the PALISCO forest concession based at Mindourou, Haut Nyong division, East region of Cameroon. ANAFOR allocated 2 ha of *P. elata* seedlings in two forest concessions and organized several meetings with local communities on the silviculture of that tree species. The final completion of the Activity is scheduled by the end of June 2016 with a review and evaluation workshop which will present the nine studies conducted under the Activity.

Sustainable management of* Pericopsis elata *towards the implementation of the simple management plan of the Bidou II plantation in the Kienké South Forest Reserve, Cameroon

Implementing agency: ANAFOR
Status: Operational
Start date: November 2013
Planned duration: 18 months
Actual duration: 29 months

The Activity aims to implement the simple management plan of Bidou II plantation of *Pericopsis elata*, based in the south region of Cameroon, which was prepared during Phase I of the ITTO-CITES Program. The Activity is executed by ANAFOR in collaboration with the National Institute for Development and Agricultural Research (IRAD).

ANAFOR organized the third meeting of the Scientific Committee on 11 March 2016. A total of four studies were examined by the members of the Committee including (i) the study of the technological properties of *P. elata* wood; (ii) phenological and dynamic observations; (iii) settlement of village plantations; and (iv) the development of the simple management plan for the Ndeng Ndeng forest plantation.

The study on the technological properties of *P. elata* wood provided concrete measures for using the wood of *P. elata* produced by trees of small diameter (40-70 cm) growing in plantation. The second and the third studies have encountered delays. For the second study, delays were due to irregular fructification. For the third study, the expert encountered high mortality rates, but has nevertheless produced seedlings from vegetative propagation which are being distributed to farmers for planting. The last study was the preparation of the simple management plan for the Ndeng Ndeng forest reserve. In this reserve, *P. elata* plots are threatened by agriculture and illegal logging. The expert proposed concrete measures for saving those plots which will be addressed within a possible Phase III of the Program. As for the other activity, the Regional Coordinator for Africa (RC) reminded ANAFOR and the experts on the necessity of producing relevant scientific data. The RC conducted a field trip from 11-13 March 2016 and visited specific activities implemented in cooperation with the Institute for Agricultural research and Rural Development (IRAD) in the Bidou, South region of Cameroon. The final completion of the Activity is scheduled by the end of June 2016 with a review and evaluation workshop which will present the five outputs produced under the Activity.

Third meeting of the Scientific Committee for the Activity "Law enforcement and management of *P. elata* in production forests in Cameroon", Yaoundé, 11 March 2016. Photo: ANAFOR

Pilot implementation of a DNA traceability system for* Pericopsis elata *in forest concessions and sawmills in Cameroon.

Implementing agency: ANAFOR in collaboration with Double HELIX
Status: Completed
Start date: April 2014
Planned duration: 12 months
Actual duration: 24 months

The Activity commenced implementation in April 2014 and was completed in April 2016. It seeks to demonstrate that through the use of DNA techniques *Pericopsis* timber could be traced back to specific trees from the controlled Forest Management Units (FMU). ANAFOR had organized the second National Technical Committee meeting in October 2015. All field activities planned under the Activity have been achieved and samples have been analyzed by Double HELIX. The Activity encountered big delays due to problems of communication between the importing country (where the bark is being analyzed) and the Cameroon CITES authority regarding the issuance of CITES permits to allow the samples to be shipped. ANAFOR had organized the final National Technical Committee on 14 March 2016 and also organized a review and evaluation workshop on 2 April 2016.

Pilot implementation of a DNA traceability system for* Prunus africana *in* Prunus *Allocation Units in Cameroon

Implementing agency: ANAFOR in collaboration with Double HELIX
Status: Completed
Start date: June 2014
Planned duration: 18 months
Actual duration: 22 months

The Activity commenced implementation in June 2014 and contributes to the ITTO-CITES Program output calling for development of cost-effective regulatory systems for the trade in CITES-listed tree species. It was completed by the end of April 2016.

ANAFOR organized a review and evaluation workshop on 2 February 2016 at the Hotel Hilton, Yaoundé, where participants from the Directorate of Forestry (CITES Management Authority), ANAFOR (CITES Scientific Authority), private sector, research institutions, universities, and international organizations (CIFOR, GIZ, ITTO) attended. The workshop elaborated on the problems related to the management of Prunus africana in Cameroon before focusing on the results of the Activity.

The original Activity objective was to implement an effective DNA-based traceability system that would allow *P. africana* bark to be traced back to specific trees from controlled PAUs. Mid-way through the Activity in March 2015, a change to the scope of work was requested based on a better understanding of ground operations and operational limitations in DRC. The approved change meant that additional work would be undertaken to develop traceability back to distinct populations (or geographic areas) of *Prunus*, as well as to individual trees. This work was conducted at no extra cost to ITTO. All the activities were successfully carried out, including additional sampling and laboratory work required under the expanded scope of work. The Activity duration was extended from 18 to 20 months due to delays in sampling, issuance of CITES permits for scientific samples and impounding of samples by customs authorities.

Tangible outputs from the Activity included a suite of 16 genetic markers that can be used to assign samples back to both individual trees and populations (distinct geographic regions such as PAUs or harvest zones) with a high degree of confidence. Genetic reference data for 8 *Prunus* populations have been developed which could be utilized for traceability purposes. Raw genetic sequence data generated by this Activity could also be used to support other research efforts such as landscape rehabilitation or climate change adaptation for the species. A comprehensive DNA verification system has also been designed that allows for routine verification of CITES permit applications, and the issuance of export and import permits. Key lessons learnt were in relation to improving field sampling practices to avoid errors in collection and sample recording. It is also clear that population assignment is a more useful technique to apply where chain-of-custody procedures are either non-existent or lacking. However, assignment of bark to individual trees is viable in areas such as Mount Cameroon where good chain-of-custody procedures already exist. Many difficulties were encountered with the existing CITES permit application process and shipment of samples, even as part of this scientific study.

This Activity has proven that randomly selected samples can be matched back to a PAU or harvest zone of origin, or an individual tree if necessary. A DNA verification system has been proposed that can verify claims of origin on CITES export and import permits to be applied at multiple 'control points' along the *Prunus* supply chain. Before it can be implemented, it is strongly recommended that a review of the CITES permit process be undertaken to increase the speed of approval for scientific samples, otherwise routine verification will be too slow.

In future, further genetic reference data can be easily established for other PAUs and harvest zones that would enable the whole coverage of all authorized *Prunus* exploitation and secure the trade in sustainably harvested *Prunus* bark. The same approach could be applied to secure the sustainability of other CITES listed tree species around the world.

Pericopsis elata *database management in Cameroon*

Implementing agency: ANAFOR
Status: Operational (TMT Component)
Start date: August 2015
Planned duration: 10 months
Actual duration: 8 months

The Activity aims to assist ANAFOR in managing and updating the database developed for the management, logging, processing and trade in *Pericopsis elata* in Cameroon which was developed through a related Activity in 2014. Specific activities include the training of forest officers in the management of the database, and providing assistance in field data collection, including equipment and materials.

ANAFOR organized the first meeting of the National Technical Committee (NTC) on 25 August 2015 where the Activity document including the objectives, the work plan and the budget were examined. The NTC appreciated the link made between this Activity and the former one implemented in 2014. The NTC recommended that: (i) an additional data sheet be included in the current field logging book with specific elements related to *P. elata*; (ii) the data collection be automatic (obliged) for any forest company that wishes to exploit *P. elata* in Cameroon; and (iii) the coordination team should work closely with the timber industry association in planning field missions for data collection. Terms of references for the three studies had been developed and validated by the Scientific Committee in September 2015, namely, (i) updating of field sheets for data collection in different forest concessions; (ii) updating the volume base tariff; and (iii) updating and integration of the processing coefficient (log/sawn wood) in the database. The Regional Coordinator for Africa (RC) stressed that the studies related to the revision of the volume base tariff and in processing the coefficient should be in phase with similar studies being done by another project (C2D) funded by the French government as to avoid any duplication and to assure synergies. ANAFOR organized the second meeting of the Scientific Committee in February 2016 with the aim to validate the reports produced by the experts. There are no impediments foreseen that may affect the completion of this Activity on schedule by the end of June 2016.

Republic of Congo

Pilot implementation of a DNA traceability system for* Pericopsis elata *in forest concessions and sawmills in Congo

Implementing agency: CNIAF in collaboration with Double HELIX
Status: Operational
Start date: April 2014
Planned duration: 12 months
Actual duration: 24 months

The Activity commenced in April 2014 in conjunction with similar work being carried out in Cameroon. Collection of cambium samples of *Pericopsis elata* has been conducted in two forest management units in north Congo, including the Tala Tala and Dua-Ikié Forest Management Units (FMUs), as well as from all exploitable trees with diameter at breast height of at least 70 cm in the 2015 annual logging coupe of the Tala Tala FMU. Wood samples were also collected from the logs and sawn wood at the Tala Tala sawmill. These samples are being analyzed by Double HELIX and field specific activities are now completed after delays in accessing field sites and in sending samples to Double HELIX. CNIAF is planning to organize a review and evaluation workshop to complete the Activity by the end of June 2016.

Settlement of a monitoring system of logging of* Pericopsis elata *in North Congo

Implementing agency: CNIAF
Status: : Operational (TMT Component)
Start date: August 2015
Planned duration: 12 months
Actual duration: 8 months

The Activity aims to assist the Congo authorities in putting in place a database on the exploitation of *Pericopsis elata* in North Congo. The database will be able to track each log of *P. elata* produced in the two main production sites, Tala Tala and Dua-Ikié. The first National Technical Committee (NTC) met for the first time in September 2015 and examined the Activity document including the objectives, the work plan and the budget. The NTC appreciated the link made between this Activity and the recommendations formulated in the non-detriment findings report developed during the first phase of the Program. A total of three experts were recruited with the assistance of the Regional Coordinator for Africa (RC), namely, (i) an expert on the state-of-the-art of the current control system; (ii) an expert on geographic information system (GIS specialist); and (iii) a database specialist. The Scientific Committee met for the first time from 2-3 December 2015 in hotel Phoenix at Brazzaville and examined and validated the reports submitted by the experts with some specific observations. This meeting was organized by the coordination team. In this regard, the database developed is quite simple, easy to use, and based on Excel work package. The training workshop on the use of the database was organized at Ouesso, North Congo in February 2016. The Activity is expected to be completed on schedule by August 2016.

Democratic Republic of Congo

Non-detriment findings for* Prunus africana *(Hook.f.) Kalman in North and South Kivu, Democratic Republic of Congo

Implementing agency: *Institut Congolais pour la Conservation de la Nature* (ICCN)
Status: Completed
Start date: March 2011
Planned duration: 10 months
Actual duration: 57 months

The Activity started in March 2011 under Phase 1 of the ITTO-CITES Program and is now completed. ICCN sent their final report to the Regional Coordinator for Africa (RC) in December 2015. The report comprises five sections, covering (i) background/origin of the Activity; (ii) difficulties encountered; (iii) reaction/response to the difficulties; (iv) achievements; and (v) the way forward. It was forwarded to ITTO in April 2016 following review and editing by the RC.

The Activity suffered from several problems that had delayed its implementation, mainly the instability/insecurity in many *Prunus* production sites due to the presence of armed rebel groups, the long distance between the production sites and the coordination team based in Kinshasa, administrative procedures and the lack of adequate and trained persons on *Prunus* management.

To address those problems, ITTO proposed to use the "Public-Private sector Partnership (PPP)" approach, where ICCN as the executing agency signed a MoU with the "Centre for the information and promotion of agricultural projects" (CIPAGRI) and the Catholic University of Grabben (CUG). It was also agreed that ICCN would play the role of a facilitator, while field activities would be implemented directly by CUG and CIPAGRI. Inventories were conducted in the field with the assistance of CIPAGRI and the CUG of Butembo under the supervision of ICCN. To enhance the implementation of such approach, the Activity proceeded in two phases involving (i) training of field teams of the private sector on *Prunus* management inventories in 2013; and (ii) training of CIPAGRI and CUG field teams and officers in conducting *Prunus* inventories and developing simple management plans in 2014.

As a result, inventories were effectively conducted in different production sites. The current annual quota for *P. africana* in DRC is 232 tons of dried bark where the production sites in Mwenda and Ibathaama are allocated with a quota of 72 tons, Walikalé with 30 tons, Manguridjipa with 44.67 tons and Lumé with a quota of 85.19 tons. Field inventories have recently been completed for the Rwenzory Mountain and the results will be published soon, which will increase the quota for 2016. ICCN and the private sector (PLAVUMA and KAHINDO) had started a huge regeneration program where a total of 3,800 and 5,000 seedlings had been produced in nurseries established in Lumé and Walikalé respectively. Some of the seedlings had already been planted through enrichment planting techniques in two hills identified in the Walikalé's NDF report as poor or less abundant with *P. africana* including Kateku and Ngambi (refer to Walikalé's NDF report).

ICCN attended the national review and evaluation workshop on 29 March 2016 in Kinshasa to share the results of the Activity and discuss further the way forward, especially in addressing the "possibility of harvesting *P. africana* in protected areas as a tool for implementing the participative management of the resource with villagers". ICCN is seeking additional funds from the German International Cooperation (GIZ) for organizing the workshop.

Although the Activity took longer than expected to complete all its planned activities, it has yielded important results that have allowed DRC to recommend sustainable exports of *Prunus* bark and allowed it to test with success the "PPP" approach.

The RC conducted a monitoring mission in North Kivu from 18-21 March 2016, to assess the level of the implementation of the guidelines prescribed in the 2011 NDF report for the 72 tons quota defined for Ibathaama and Mwenda**.**

Elaboration of non-detriment findings for* Pericopsis elata *in the Democratic Republic of Congo

Implementing agency: *Direction de la conservation de la nature* (DCN)
Status: Operational
Start date: September 2013
Planned duration: 12 months
Actual duration: 31 months

The Activity is executed by the Directorate of Nature Conservation (DCN), the CITES management authority. It aims to collect data on the status of *Pericopsis elata* in the forest concessions of the Democratic Republic of Congo (DRC). The DRC authorities succeeded in producing the NDF report for *Pericopsis elata* in May 2014, where a quota of 23,000 m3 of harvest from the production forests was agreed upon. The Regional Coordinator for Africa (RC) conducted a monitoring and evaluation mission to DRC in November 2014 and again in March 2015.

In July/August 2015, the verification of management inventories in areas of high densities of *P. elata* as identified in the concessionaire's inventory reports was conducted by the Directorate in charge of inventories and management of the Ministry of Environment and Sustainable Development (MEDD). The validation team comprised the RC, an independent observer, and staff from the local CITES authorities. The verification report was presented to the cabinet of the Minister of Environment and Sustainable Development on 20 August 2015. The results reveal that timber companies working in *P. elata* areas in DRC have conducted or are still conducting forest inventories in accordance with the national guidelines adopted by the DRC authorities. The DRC authorities submitted an updated NDF report and quota request based on the recommendations of the verification reports to CITES and the EU SRG at the end of August 2015. This quota has been revised in November 2015 and February 2016 based on the progress made by timber companies such as COTREFOR (validated management plan) and Bego Congo (completed management inventories). DCN attended the national review and evaluation workshop on 29 March 2016 in Kinshasa to share the results of the Activity and discuss further the

way forward, especially in addressing the issues on refining management parameters, and development of a fair tracking system and market transparency. The method used by the program for verifying inventories conducted more than 6 months before was validated and is being adopted by AGEDUFOUR, a French project which assists DRC in setting national standards/ norms for managing production forests. The project completion report will be submitted to ITTO by June 2016.

Pilot implementation of a DNA traceability system for* Prunus africana *in* Prunus *Allocation Units in Democratic Republic of Congo

Implementing agency: Ministry of Environment, Nature Conservation and Tourism (MECNT) in collaboration with Double HELIX
Status: Operational
Start date: June 2014
Planned duration: 18 months
Actual duration: 22 months

The Activity has been implemented in parallel with the similar Activity in Cameroon. It seeks to demonstrate that through the use of DNA techniques *Prunus africana* bark could be traced back to specific trees from controlled production sites in the North Kivu. The proposed DNA traceability system will secure controlled supply chains, detect substitution of illegally harvested bark and allow for timely corrective actions to be taken.

An integral part of the traceability system involves taking DNA samples from the cambium of standing trees in *Prunus* Allocation Units (PAUs) and match them with DNA samples taken from bark post-harvest. However, Double HELIX has encountered some difficulties (mixture of bark samples much earlier in the supply chain and insecurity problems) in this approach and in March 2015 requested ITTO to change the scope of this Activity. Rather than matching the bark to individual trees (DNA fingerprinting), Double HELIX proposes to match bark samples back to distinct *Prunus* populations. Whilst the Activity would no longer be aiming to identify the specific tree that a piece of bark came from, Double HELIX would be able to identify and verify the PAU that the bark was obtained from.

Samples collected according to the new approach had encountered delay in their analysis due to problems of communication between the German CITES authority (where the bark is being analyzed) and the DRC CITES authority regarding the CITES permits to allow the samples to be shipped. This shows the need for CITES to consider special permits and/or communication protocols for materials being exported for research/scientific purposes that are designed to promote the sustainability of the species. Nevertheless, all field specific activities planned under the Activity have been achieved and samples are now being analyzed by Double HELIX. The implementing agency organized a review and evaluation workshop to complete the Activity on 29 March 2016 in Kinshasa. The final report will be submitted to ITTO by June 2016.

Ghana

Improving intra-African trade and market transparency in timber and timber products

Implementing agency: Ghana Timber Millers' Organization (GTMO)
Status: Completed (TMT Component)
Start date: April 2013
Planned duration: 24 months
Actual duration: 36 months

The Activity to improve market transparency for African timber products (including those arising from CITES-listed species) has completed its activities. The tariff database website (http://atmam.org/wp-content/uploads/StatPlanet.html) has been fully developed. The translation of the database into French has also been completed in so far as the web software allows. The resulting online tariff database in English and French, together with the on-line magazine (African Forests and Timber) launched at the end of 2015, will facilitate the expansion of sustainable timber markets in the region.

Improving sustainable* Pericopsis elata *conservation and trade regulation in Ghana

Implementing agency: Nature and Development Foundation
Status: Operational (TMT Component)
Start date: September 2015
Planned duration: 18 months
Actual duration: 8 months

The Activity aims to assess remaining stands of *Pericopsis elata* in Ghana (which is not a significant exporter of the species) and develop a plan for conservation and sustainable trade of the species. A desk review of the areas where *P. elata* can be found is at an advanced stage. A consultant has been engaged to conducting a market survey to determine the possibility of trade in the species on the local market, overland and other channels. The consultant is carrying out the work in close collaboration with the Timber Industry Development Division, the Domestic Lumber Traders Association and NDF to identify representative timber trade actors and market centers to collect data on *P. elata* trade in Ghana. The consultant will also develop and design a tool or mechanism that will ensure regular data collection in routine trade patterns in the future for suggestion to the Forestry commission. In collaboration with the forestry commission, certain timber markets have been sampled for the study. These are markets spread across the high forest regions of Ghana and some sections of the transition zone. The project is on schedule to be completed by early 2017.

Asia

China

Supporting SMEs and importers of tropical timber for better understanding of CITES and the need to comply with CITES rules in China

Implementing agency: Research Institute of Forestry Policy and Information, Chinese Academy of Forestry (RIFPI/CAF)
Status: Operational (TMT Component)
Start date: October 2015
Planned duration: 18 months
Actual duration: 7 months

The project is being implemented in line with the project plan and is proceeding smoothly. The major activities implemented in this period are summarized:

As of 31 January 2016, the project had completed the 'Start-up Phase' with necessary arrangements for project implementation concluded. The first instalment of funds was received on 12 October 2015 after the Inception Report was finalized. The official starting date of the project was 12 of October while the 'on-the ground' activities commenced in the second half of October.

The start-up phase mainly comprised desk work such as literature review, trade data procurement, references collection, telephone surveys of industry and the establishment of the project coordination. Following completion of the start-up phase, the implementation activities are well on track according to the work plan. The relevant activities have been carried out as follows:

- Collected and procured relevant data and information.
- Collected and reviewed relevant materials.
- Survey of importers was conducted to determine extent of knowledge and appreciation of impact of CITES regulation on business practices and plans.
- Coordination of the project was established.
- The web information gathering is in execution.
- Identification of commercial timbers included in CITES Appendices which are imported and utilized by SMEs is in execution.
- Survey of SMEs and importers is underway, to understand their situation regarding commercial timbers imported and utilized

Field visit to the Estate Meranti, PT. Riau Andalan Pulp and Paper, Riau, Pekanbaru, 10 December 2015. Photo: Directorate of Biodiversity Conservation, Ministry of Environment and Forestry

that are included in CITES Appendices including the *Dalbergias*.

- Established mobile web page in Chinese providing updated information on CITES and providing a capacity for dialogue between SMEs and experts on CITES.
- A CITES web page has been developed and linked to the State Forestry Administration (SFA) website.

Indonesia

Development of a ramin (Gonystylus spp.) conservation concept for plantation forest concessions

Implementing agency: Directorate of Biodiversity Conservation and Association of Indonesian Forest Concessionaires (APHI)
Status: Operational
Start date: February 2015
Planned duration: 12 months
Actual duration: 14 months

The Activity commenced implementation in February 2015 and was granted a no-cost extension for three months. It will be completed at the end of May 2016. It aims to (i) formulate a ramin conservation concept for plantation forest concessions; (ii) develop a ramin conservation guideline for plantation forest concessions operation; and (iii) conduct a review of the Minister of Forestry Decree No. 127/KPTS-V/2002 on Temporary Moratorium of Logging Activities and Ramin Trade.

The expert panel working group meeting on the development of a concept of ramin conservation within the area of operation of plantation forest concessions was conducted on 15 December 2015 and attended by 20 participants. This was followed by a national workshop the next day on 16 December 2015 in Jakarta which was attended by 40 participants.

A field visit to Riau (Pekanbaru) to collect information for developing the guideline on ramin conservation within the area of operation of plantation forest was undertaken from 9-12 December 2015. In this regard, a national workshop to discuss the draft Guideline on Ramin Conservation was held in late March 2016.

Focused group discussion to identify problems and preparatory meetings for conducting the expert panel working group and national workshop to review the Minister of Forestry Decree No. 127/KPTS-V/2002 on Temporary Moratorium of Logging Activities was conducted on 19 January 2016 in Jakarta. In this context, the expert panel working group and national workshop were conducted in the first week of April 2016.

At the conclusion of the Activity, it is envisaged that three technical reports, namely, (i) Concept of Ramin Conservation within the Area of Operation of Plantation Forest Concessions; (ii) Guideline on Ramin Conservation within the Area of Operation of Plantation Forest Concessions; and (iii) Review of the Minister of Forestry Decree No. 127/KPTS-V/2002 on Temporary Moratorium of Logging Activities and Ramin Trade will be prepared and published, besides the Activity Completion Report.

Ensuring genetic diversity of ramin seed sources and ramin population from rooted cuttings

Implementing agency: Center for Forest Biotechnology and Tree Improvement Research (CFBTIR)
Status: Completed
Planned duration: 12 months
Actual duration: 15 months

The Activity commenced implementation in January 2015 and was granted a no-cost extension for three months. It was completed at the end of March 2016. It aimed to contribute to the conservation and planting of ramin using wildlings and rooted cuttings in Sumatra and Kalimantan through genetic analyses and infusion of genetic materials to ramin cuttings.

All field activities involving sample collection and characters measurements had been completed. DNA molecular analysis in the laboratory in Yogyakarta and the study of the morphological growth variation of the ramin plantation using the materials collected from the conservation gardens at Ogan Komering Ilir (OKI), South Sumatra and Tumbangnusa, Central Kalimantan had also been completed.

The collection of wild genetic resources of non-Gonystylus bancanus species from Sumatra and Kalimantan was conducted in October 2015 and in early March 2016. Two non-*G. bancanus* species were found, namely, *G. maingayi* (benban hitam) and *G. velutinus* (kayu minyak) of the *Thymelaeceae* family. A total of 1,050 of the collected *G. velutinus* wildings was nursed in the nursery in Yogyakarta. The growth of the wildings was very slow with high mortality. An estimated 200 surviving individuals were planted in the conservation garden in Bondowosa, East Java.

Currently, four technical reports are being finalized for publication, namely, (i) Morphology and Genetic Variation of Cuttings of Ramin in OKI, South Sumatera; (ii) Genetic Variation of Hedge Orchard of Ramin in OKI, South Sumatera and

Morphological variation of ramin leaves collected at Ogan Komering Ilir, South Sumatra. Photo: Antonius YPBC Widyatmoko

Tumbangnusa, Central Kalimantan; (iii) Exploration on non-*Gonystylus bancanus* in Sumatera and Kalimantan; and (iv) Initial Establishment of ex situ Conservation of non-*Gonystylus bancanus*.

Establishment of an integrated agarwood cluster in Bintan Island, Indonesia

Implementing agency: Center for Rehabilitation and Conservation, Forestry Research and Development Agency (FORDA)
Status: Completed
Planned duration: 12 months
Actual duration: 15 months

The Activity commenced implementation in January 2015 and was granted a no-cost extension for three months. It was completed at the end of March 2016. It aimed to ensure (i) the sustainable production of agarwood from both natural and planted forests; and (ii) the sustainable production and conservation of the genetic resources, as well as to improve transparancy of trade in agarwood products.

All the field work required to develop an integrated agarwood cluster had been completed. This included conducting a field trial of agarwood inoculation in three locations, namely, at the Simpang Katis, Sungai Selan and Lubuk Besar Sub-Regency; and the initial planting of agarwood producing species in the Trubus village in December 2015. In this regard, a decree (188.45/161/DPK/2016 dated 13 January 2016) was issued by the Central Bangka Regent for the establishment of the agarwood cluster in the Trubus village in the Lubuk Besar Sub-Regency covering 10 ha and the Air Mesu village in the Pangkalan Baru Sub-Regency covering 30 ha. All the sites are located in the Central Bangka Regency.

Dr. Erdy Santoso checking for the development of agarwood in tissue that has been innoculated 3 months earlier, 18 December 2015. Photo: Charomaini

A public meeting attended by 59 participants from various relevant institutions, such as the Ministry of Environment and Forestry, Indonesia (MOEF), provincial and local governments, university, farmers and agarwood associations, was held on 17 December 2015 in Bangka to solicit inputs and feedbacks for the finalization of agarwood cluster design. A workshop was also held on 8 December 2015 in Bogor with relevant stakeholders, especially with the CITES Scientific and Management Authories in Indonesia, and farmers and traders, to collect data and market information on agarwood.

Another workshop was held in Bogor on 14 December to further raise public awareness on agarwood market and the development of the agarwood website which was attended by 30 participants from various relevant institutions such as MOEF, university, traders and farmers. It involved sharing of experiences and information on the export of agarwood and CITES requirements for trade in agarwood, as well as the development of the agarwood website by the Activity. In this regard, the agarwood website has been developed and could be accessed through http://www.gaharu.web.id.

Currently, two tecnical reports are being finalized, namely, (i) Disain Klaster Gaharu Terintegrasi (An Integrated Agarwood Cluster Design); and (ii) Sistim Informasi Pasar pada Gaharu (Market Information System of Agarwood).

Malaysia

Capacity building of Forestry Department Peninsular Malaysia's staff in identifying* Aquilaria *to species level and in the grading of agarwood

Implementing agency:Forestry Department Peninsular Malaysia (FDPM)
Status: Completed
Start date: September 2014
Planned duration: 12 months
Actual duration: 18 months

The Activity commenced implementation in September 2014 and was granted a no-cost extension for six months. It was completed in February 2016. It aimed to (i) develop training materials, including practical field manual to enable staff of the Forestry Department Peninsular Malaysia (FDPM) to undertake identification of *Aquilaria* to species level; (ii) develop a manual for the grading of agarwood to be used by the staff of FDPM; and (iii) provide training to a core team of trainers, which consists of 30 persons from FDPM, in order to provide continuous training to all the other staff of FDPM when required.

All data collection in Peninsular Malaysia was successfully undertaken, including conducting a training workshop on the identification of *Aquilaria* to species level and in the grading of agarwood. The field manual on the identification of *Aquilaria* to species level, as well as a manual for the grading of agarwood had been field-tested by the staff of FDPM in September 2015. A syllabus on the identification of *Aquilaria* to species level and in the grading of agarwood was also prepared.

In addition to the Completion Report of the Activity, six reports entitled (i) *Manual for the Grading of Agarwood*; (ii) *Manual for Identification of* Aquilaria *to Species Level*; (iii) *Field-tested Manual for the Identification of* Aquilaria *to Species Level in Peninsular Malaysia*; (iv) *Field-tested Manual for the Grading of Agarwood to be used by the Staff of FDPM*; (v) *Syllabus on the Identification of* Aquilaria *to Species Level and in the Grading of Agarwood*; and (vi) *Report on the Two Workshops on the Identification of* Aquilaria *to Species Level and in the Grading of Agarwood* are being finalized for publication. These reports will be uploaded to the ITTO-CITES website once they are published.

Training on the grading of agarwood. Photo: Forestry Department, Peninsular Malaysia

Latin America
Brazil

Ecology and silviculture of mahogany (*Swietenia macrophylla *King) in the western Brazilian Amazon (Phase II)

Implementing agency: *Universidade Federal Rural da Amazonia* (UFRA)
Status: Operational
Start date: February 2014
Planned duration: 24 months (extended to 31 months)
Actual duration: 26 months

Three students completed their research work with financial support from the Activity since the last Newsletter. The subjects covered issues related to mahogany seedling demography and volume equations for the Seringal Novo Macapá forest management unit, western Brazilian Amazon.

During the four-year study period, the bulk of the mahogany natural regeneration occurred within 100 m of the seed bearers; logging had completely destroyed regeneration in the vicinities of the trees extracted; and no regeneration was found in the saplings of diameter at breast height (DBH) of ≤2.5 cm to ≤ 5.0 cm and poles of DBH of ≤5.0 cm to ≤10.0 cm. Although population of mahogany plantlets and seedlings has drastically reduced close to mahogany trees which survived after logging, density of natural regeneration recovered to its pre-logging situation due to better seed dispersal and light conditions after canopy opening. The government regulation to leave 20% of commercial sized trees as seed bearers seems to have had a positive effect on species natural regeneration. However, a four-year observations period might be too short to confirm these findings and therefore a longer monitoring period is needed to corroborate the research results.

Monitoring dynamics of remaining mahogany trees during the four-year period revealed a periodic annual increment of 0.7 cm ± 0.8 cm (N=27; min=0.01 cm; max=2.3 cm). Mortality was quite high (14%) for such a short period of observations. It is inferred that strong winds that hit the area combined with logging impacts also contributed to the high mortality found. It is therefore necessary to increase the data base and the monitoring period to get more reliable results and discern trends on mahogany growth and yields dynamics.

A single mahogany tree harvested and bucked in Fazenda Novo Macapá, Acre, Brazil. Photo: Agrocortex

Additional regression analysis to develop interim volume equations for standing trees in the Seringal Novo Macapá forest management unit has been carried out. For the one-entry model, the best fit was obtained with the model LnV= -7.2209+2.0686.lnD (R2(adj)=87.57; sy.x(%)=20.41) and for the two-entry model the best results were obtained with the model LnV= -9.3475+2.0157.lnD+0.8470. lnH (R2(adj)=96.64; sy.x(%)=10.62). The latter model should be preferred if it is possible to measure the height of trees with good accuracy, otherwise the one entry model should be used despite being less precise. Further efforts must be done to increase the number of sample trees in order to enhance precision of the one-entry model. Testing non-linear models for both cases should also be considered. Both equations should be used for trees ranging from 50-150 cm DBH. The Activity is expected to be completed by October 2016.

The counter part company of this project, Agrocortex, is the only company authorized to manage mahogany in the Amazon, which achieved FSC certification in December 2015. It is an innovative company, always innovating to improve procedures of technical logging operations. Each tree will have an electronic identification tag that will allow tracing them. A news article entitled "The only company authorized to manage mahogany in the Amazon recognizes action of IFT to achieve FSC certification" was published on May 16, 2016 (available at: http://www.painelflorestal.com.br/noticias/madeira-nobre/unica-empresa-autorizada-a-manejar-mogno-na-amazonia-reconhece-acao-do-ift-para-conseguir-certificacao-do?utm_campaign=governo_quer_mais_12_usinas_de_biomassa_no_proximo_leilao_de_energia&utm_medium=email&utm_source=RD+Station#.Vz92c8KmvGI.gmail).

Big-leaf mahogany (*Swietenia macrophylla*) in the Brazilian Amazon: Long-term studies of population dynamics and regeneration ecology towards sustainable forest management

Implementing agency: Institute of Tropical Forestry (IFT)/J. Grogan
Status: Completed
Start date: September 2012
Planned duration: 22 months (extended to 40 months)
Actual duration: 41 months

The Activity's final field season under Phase II of the ITTO-CITES Program was implemented successfully during November–December 2015 at two long-term research sites in southeast Pará, Brazil (see http://www.swietking.org/interactive-maps.html). This year's field work marks the 20th consecutive annual census since the Activity began in 1995 with the support of the ITTO Fellowship Program. These are the most comprehensive and longest-term data available describing mahogany adult survival, growth, and reproductive behavior under natural forest conditions. Without consistent annual effort to obtain these data, many of this Activity's main outputs, including the Big-Leaf Mahogany Growth & Yield Model (http://www.swietking.org/model-applet.html), would not have been possible.

Project activities continue to focus on data management, analysis, and synthesis for publication. A list of all publications resulting from the support of the ITTO-CITES Program is available at http://www.swietking.org/our-research.html. All publications are also available on request in PDF format (jgrogan@swietking.org).

The objective has been to establish a biological foundation for understanding how natural mahogany populations maintain themselves in seasonal Amazonian forests, and to use this understanding to evaluate and improve current forest management practices designed specifically for big-leaf mahogany in Brazil and beyond. In scientific publications and technical reports, the Activity team has identified the principal population parameters that determine whether harvest rates are sustainable or not. Three dynamic 'rates' are most important, namely, stem size-specific survival and growth rates, the frequency distribution of seedling regeneration, saplings, and pole-sized juveniles, and adult trees within a given production area. Using the Big-Leaf Mahogany Growth & Yield Model to simulate population recovery under current forest regulations in Brazil and Guatemala, the Activity team has shown that future timber yields will be determined by the rate at which sub-commercial 'future crop trees' already in place within a given harvest area can grow to commercial size. Harvest intensities must be restricted to replacement levels for two reasons: first, to ensure that sufficient timber value is retained within the forest to prevent conversion to other land uses; and second, to provide sufficient seed sources to drive population recovery, that is, for third and fourth harvests and beyond through seedling establishment at rates comparable to those in natural forest. Of course, there is nothing surprising about this result! And yet, all too often forest management regulations serve economic, social and political interests without considering biological realities.

For the best treatment of these issues see the Activity team's recent articles in the Journal of Applied Ecology ('Big-leaf mahogany *Swietenia macrophylla* population dynamics and implications for sustainable management, 2014, vol. 51, pp. 664-674) and in the forthcoming issue of ITTO's Tropical Forest Update ("How sustainable is mahogany management? Modelling indicates that the management of big-leaf mahogany in Guatemala's Maya Biosphere Reserve is on track, but changes are needed in Brazil"). The Activity is now completed and the final report was submitted to ITTO at the end of April 2016.

Using the Near Infrared Spectroscopy (NIRS) technique on a pilot scale, as a potential tool for the monitoring of mahogany trade

Implementing agency: Laboratory of Forest Products / Brazilian Forest Service (LPF/SFB)
Status: Operational
Start date: February 2014
Planned duration: 24 months
Actual duration: 26 months

The aim of the Activity is to develop technology for identification of *Swietenia macrophylla* (Big leaf mahogany) timber, which contributes to compliance with CITES regulations and to implement the recommendations of the CITES Mahogany Working Group (MWG) and CITES Plants Committee. The Activity is now expected to be completed in October 2016.

The Mahogany Project ID team of the Brazilian Forest Service, Forest Products Laboratory (FPL) carried out its 4th Pilot Mission in Guatemala from 21-28 February 2016, with two main objectives. The first objective was to conduct a short training course on NIRS technology (16 hours) for 22 people, including professors and students of the University of San Carlo de Guatemala (USAC), governmental representatives such as the Consejo Nacional de Áreas Protegidas (CONAP) and the Instituto Nacional de Bosques (INAB), and civil society organization such as the Nature for Life Foundation. The training course was divided into three correlated topics, namely, (i) NIRS technology for similar woods identification by Tereza C. M. Pastore, FPL; (ii) identification using wood anatomy characters by Vera T. R. Coradin, FPL; and (iii) notions of chemometrics by Jez W. B. Braga, University of Brasilia.

The second objective was to collect NIR spectra of *Swietenia humilis* and *S. macrophylla* in two regions of Guatemala, Escuintla and El Petén. The NIRS team, accompanied by four M.Sc. students from USAC, visited the Finca Banduria, Finca San Julian, and Industria Forestal El Tejar in the Escuintla region. In El Petén, the NIRS spectra of *S. macrophylla* were collected in two sawmills, AFISAP and CUSTOSEL, both belonging to forest concessions operated by local communities.

The outcome of the mission, after the results were analyzed, will be the inclusion of Guatemala into the list of countries producing mahogany that could be identified by NIRS technology. On 27 February 2016, a meeting was held with Prof. Myrna Herrera (USAC) and Eng. César Beltetón (CONAP) to discuss a cooperation project for discrimination of similar woods from Guatemala. The project is expected to be submitted for funding under a possible Phase III of the ITTO-CITES Program.

Guatemala

Inventory of population and species abundance of* Dalbergia retusa *and* D. stevensonii *in areas of natural occurrence in Guatemala

Implementing agency: *Fundación Naturaleza para la Vida* (FNPV)
Status: Operational
Start date: April 2014
Planned duration: 24 months
Actual duration: 24 months

The Activity on inventory of species *Dalbergia retusa, D. stevensonii* and other species of this genus in the areas of natural occurrence in Guatemala is in the final phase of its implementation, with 80% of research results accomplished.

After having completed the fieldwork, preliminary results of the current status of the

Photo (A) - Victor Macario of University of San Carlo collecting NIR spectra of planted *Swietenia humilis*, in Escuintla, Guatemala; Photo (B) - CUSTOSEL workers collecting NIR spectra of native *S. macrophylla*, in Petén, Guatemala. Photos: SFB Mahogany ID Project

populations of the genus *Dalbergia* indicated that 18.18% of the total 101 sample parcels have been verified. In this regard, a loss of natural distribution area of 60% to 80% nationally was due to land use change caused by human settlement (e.g. livestock, agriculture, population growth, etc.) over the period of 22 years (1991-2012). This reflects an alarming situation for these species, leaving them restricted to small and isolated forest areas with minimum/small values, according to natural distribution GIS models regarding presence and quantification of values of trees/ha, BA/ha and volume /ha.

Regarding species growth dynamics and identification, a total of 9 permanent plots has been established, mainly for *Dalbergia retusa, D. stevensonii* and *D. tucurensis*; which will allow the species to be monitored systematically as to their current annual increment (CAI), mean annual increment (MAI), phenology, dynamics of species, diseases, adaptations, etc., which are essential for developing guidelines for sustainable forest management in Guatemala.

The governing bodies of forest management in Guatemala, CONAP, INAB, MARN and Ministerio de Agricultura, Ganadería y Alimentación (MAGA), will have to take concrete and timely decisions based on the results of the Activity such as values numberof trees/ha, BA/ha and volume/ha, of the genus *Dalbergia* to improve sustainable forest management of the remaining forests and protect the last germplasm and its genetic wealth. It is a necessary requirement for recovery and propagation of *Dalbergia* and other threatened species in naturally occurring areas. The Activity is expected to be completed by October 2016.

Establishment of a forensic laboratory for wood identification and description for the application of legal processes and systems of traceability of products included in CITES

Implementing agency: Nature for Life Foundation (FNPV)
Status: Operational
Start date: April 2014
Planned duration: 24 months
Actual duration: 24 months

The forensic laboratory for wood identification project team is working on microscopic, macroscopic and physical features of wood of Appendix II CITES-listed tree species. To date, the phytogeographical, phenological and botanical studies on *Swietenia macrophylla, S. humilis, Dalbergia calycina, D. retusa, D. tucurensis, S. stevensonii* and *Guaiacum sanctum* have been concluded. The scientific knowledge gained is fundamental to strengthen the laboratory capabilities to support the legal processes needed to reduce illegal trade in CITES-listed wood species.

Tree measurement in a permanent sample plot. Photo: FNPV

One of the most important capacity building activities was the Workshop on Wood Identification using NIRS (Near infrared light spectroscopy) Technology, held from 21-22 February 2016 which was conducted by Dr. Tereza Pastore and Dr. Vera Coradin from the Brazilian Forest Service and Dr. Jez Braga from the Brasilia University, who carried out NIRS studies on *S. macrophylla* and *S. humilis*.

The forensic laboratory team also organized and participated in the Workshop for Identification of Timber Species in Central America, which was conducted by Dr. Michael Wiemann from the USFS Forest Products Laboratory. The workshop was held at the Forensic Wood Laboratory from 14-16 March 2016. Representatives from CONAP, INAB, OIRSA, MAGA, customs officers in charge of export permits and wood species verification, personnel related to forest governance, academia and students of the forestry department of the University of San Carlos attended the workshop.

The results of the Activity will enable the identification of future research needs required to achieve sustainable management of these species and the conservation of fitogenetic resources concerning *S. macrophylla, S. humilis, D. stevensonii*, *S. retusa, D. calycina, D. tucurensis* and *G. sanctum*. The Activity is expected to be completed by October 2016.

Non-detriment findings - Practical guidance for CITES-listed tree species

Implementing agency: *Universidad de Córdoba* (Spain), CONAP and BALAM Association
Status: Operational
Start date: September 2014
Planned duration: 19 months
Actual duration: 19 months

The objective of the Activity is to "provide guidance to CITES authorities regarding the processes, methodologies and information necessary for making non-detriment findings for timber species and other species of non-timber trees. The outcomes achieved include a compilation of the available information and analysis of the different options for the making of NDFs, and the holding of an expert working group meeting in Antigua, Guatemala, from 16 -19 September 2015.

In this regard, a total of 14 experts attended the meeting in Antigua in September 2015 and the outcome of the workshop was a revision of the various components in the Resolution Conf. 16.7 and the identification of elements required to adequately respond to it. Currently, the NDF manual is being finalized and translation into French and Spanish is underway. The Activity is expected to be completed by the end of June 2016.

Guyana

Enhancing the sustainable management and commercial utilization of the CITES-listed species* Cedrela odorata *(red cedar) in Guyana

Implementing agency: Guyana Forestry Commission (GFC)
Status: Completed (TMT component)
Start date: August 2014
Planned duration: 18 months
Actual duration: 18 months

The Activity was implemented from August 2014 to February 2016 under the ITTO–CITES Program. It is now completed and the final report was submitted to ITTO in mid-April 2016. The Activity focused on the assessment, development, marketing and promotion of Cedrela odorata (known locally as red cedar and more generally in the region as cedro), building on Guyana's efforts to develop and promote its lesser-used species as part of a multipronged strategy for managing the country's commercial forest estate sustainably.

The Activity supported a resource assessment of red cedar in Guyana's forest estate to establish the status of the species; increased understanding of the conservation status of red cedar; and increased capacity in Guyana for managing red cedar and for CITES reporting. A diagnostic of the reporting framework was completed for the issuance of forest permits and in monitoring which includes most elements for an effective chain-of-custody management system for forest products. The Activity had made recommendations for strengthening and improving the management of the supply and production chain.

Workshop on wood identification using NIRS technology, 21-22 February 2016, Guatemala City. Photo: FNPV

Participants of the Expert Working Group Meeting in Antigua, Guatemala, 16-19 September 2015. Photo: BALAM

If Guyana decides that the national population of red cedar should be included in Appendix III of CITES, exports of red cedar logs, sawnwood and veneer sheets from the country will require CITES export permits issued by its Management Authority. The Activity has significantly enabled Guyana to prepare for this possibility, as well as for potential listings of other species on the CITES appendices.

Synergies have been created between the Activity and other initiatives in Guyana. For example, the ongoing work towards a voluntary partnership agreement (VPA) as part of the European Union's Forest Law Enforcement, Governance and Trade (EU FLEGT) initiative has benefited considerably from the diagnostic assessment of forest monitoring systems conducted under the Activity. This has, among others, enabled the streamlining of several links in the chain-of-custody under the timber legality assurance system required by the EU FLEGT VPA.

Mahogany tree flower with a possible pollinator taken by a camera trap set on a branch. Photo: Proyecto UNALM-CITES-ITTO

Peru

Management of mahogany (*Swietenia macrophylla *King.) and cedar (*Cedrela *spp.) seed stands in a forest concession for the conservation of the Tahuamanu Seed Stand in the province of Tahuamanu, Madre de Dios, Peru

Implementing agency: *Universidad Nacional Agraria La Molina* (UNALM)
Status: Operational
Start date: August 2014
Planned duration: 18 months
Actual duration: 20 months

This activity is in its final stage of completion which is expected in June 2016. All field work has been completed, where a total of 25 mahogany trees and 33 cedar trees have been evaluated. Information collected consisted of dasometric data and qualitative variables such as vigor, shape of the tree crown, sanitary condition, dominance, and infestation of lianas and jungle vine. It also included an evaluation of associated species to characterize the sites.

Adult red cedar tree in Guyana. Photo: ECOSdelBOSQUE

Sample plots for natural regeneration (establishment) and seeds (dispersal) have been established around selected trees and for phenological monitoring. In addition, meteorological data (temperature, precipitation, wind speed and direction, solar radiation, etc.) were recorded at a weather station installed by the Activity in the study area. A dendrochronological analysis was also carried out to determine the age of seed trees and linking it with the production of reproductive material and phenotype of the tree.

High resolution cameras were placed on the top of some mahogany trees that are flowering to capture images of a potential mahogany pollinator of the family *Vespidae*. Sticky traps to catch potential pollinators were also installed. This would provide the possibility to undertake in-depth studies on this potential pollinator and its relationship with mahogany. Photographs of the phenology of mahogany and cedar seed tress have been obtained in Rodal. However, it is important to note that 2015 was an atypical year because of the influence of El Niño.
Among the products derived from the Activity is the development of a manual for monitoring mahogany and cedar seed trees. This manual will allow the monitoring of mahogany and cedar seed trees in different forest areas of the country and in preparing general management plan for seed stands of both species, leading to effective guidelines to ensure the sustainability of both the species.

Global

Preparation of the publication "Atlas of tropical timber species - 1st Edition: Technological characteristics and uses of 273 tropical timber species (and 17 temperate species)"

Implementing agency: CIRAD, France
Status: Operational (TMT component)
Start date: October 2013
Planned duration: 24 months
Actual duration: 30 months

The project aims to make reliable and timely information available on the technological characteristics and uses of tropical timber species by producing, publishing and disseminating an Atlas of tropical timber species covering the information contained in the latest TROPIX software.

The project agreement was signed in September 2013. The project implementation started in October 2013 and the project is basically on track in accordance with the work plan following some minor delays. The following activities have been carried out:

- Documentary research and complementary literature reviewed. The number of 290 species to be described in the Atlas was increased to 328 species;
- Additional testing technology and digitization of wood samples developed;
- Collection photo books or wood products carried out. 150 more pictures have been collected and the continuation of the collection is running;
- Writing Technical descriptions for species to be added in Tropix and Atlas finalized. The share of added species in Tropix and written software rose to 80%;

- The manuscript of the Atlas for the printer-model maker finalized and completed. The new version of the Tropix software (V 7.5) as the basis for the script receives the latest validation and will soon be available on the website http: // tropix. cirad.fr/;
- Proofreading of technical descriptions of the Atlas essences: Before the construction of the model that will prove to be the final stage before production of the Atlas, it was decided to start proofreading of technical documents. This will have only one reading of this model before printing.

The project will produce a final output, the Atlas of tropical wood, which will be a reference as well as a key tool for tropical timber industries internationally. The project has received a favorable reaction from all private or public operators informed of its existence and all who are involved in the project work. The Atlas of tropical timber is highly anticipated and a number of these operators have already spontaneously volunteered to participate by providing highly relevant data and information on timbers as well as pictures to illustrate the technical descriptions in the Atlas. All operators surveyed agree that the quality of the work has to be high for the Atlas to be useful and the project team will continue to work for a product of international standard that will be universally recognized. The project will be completed by mid-2016.

Establishment of a fully documented reference sample collection and identification system for all CITES-listed* Dalbergia *species and a feasibility study for* Diospyros *and look-alike species

Implementing agency: Institute of Integrative Biology (IBZ), Switzerland
Status: Operational (TMT Component)
Start date: November 2015
Planned duration: 13 months
Actual duration: 6 months

The first installment of funds was sent to the implementing agency in early November 2015. The Activity aims to assist Madagascar to implement the Appendix II listings of nearly 200 *Dalbergia* and *Diospyros* species and Central American countries to implement the Appendix II listings of several *Dalbergia* species approved at CITES COP 16. The reference sample collection will be facilitated by collaborative agreements between the implementing agencies and CITES authorities in Madagascar and Guatemala.

In Madagascar, field sampling was conducted in two different areas in the Western part of the country (region of Morondava and Tulear) where fruits and flowers of *Dalbergia, Diospyros* and look-alikes were collected using the developed sampling protocol and are now being analyzed. In addition, a sampling strategy and a work plan have been prepared for Guatemala. This was to have been followed by a field visit to Guatemala that aimed to exchange knowledge about techniques and species, as well as to discuss the sampling procedure and initiate sampling. However activities in Guatemala have been cancelled due to the inability of the country to authorize export permits for the research samples required.

For Madagascar, laboratory work at the ETH Zurich (*Eidgenössische Technische Hochschule Zürich*) continued to test different protocols for DNA extraction and amplification of *Dalbergia* wood, and to increase the reference dataset. These tests were completed in March 2016. The establishment of the wood anatomy laboratory is also completed and wood anatomy work has commenced. The project will be completed on schedule by the end of 2016.

Activity Overview

As this is the final Newsletter to be published under Phase II of the ITTO-CITES Program, the Regional Coordinators for Africa, Asia and Latin America have provided a brief summary of the Activities implemented under the Program in their respective region. The summary has included, among others, activities implemented, outputs achieved and their contribution to ensure that trade in forest products is in compliance with CITES regulations and in enhancing sustainable management and conservation of the CITES-listed tree species.

Africa (Jean Lagarde Betti)

The Second Phase (2012-2016) of the ITTO-CITES Program pursued the work started in Phase I emphasizing on the development non-detriment findings (NDF) and simple management plans (SMP) on *Pericopsis elata* in Democratic Republic of Congo (DRC), considered as the main reserve of *P. elata* in the Congo basin. But the big challenge of the program in Phase II is to assist range countries in (i) respecting the guidelines prescribed in the NDF reports; and (ii) implementing the SMP developed.

The implementation of the SMP includes: demarcation of annual plots, conducting yearly systematic inventories of exploitable trees in annual plots (exploitation inventories), enforcing the control and monitoring scheme, training people on how to harvest sustainably the product, conducting research as to better refine management parameters, and putting in place fair tracking systems for each product and for each country. Developing robust tracking systems was one of the most challenging tasks in this Phase, as concerns have been observed for (i) the illegal harvesting of *Prunus africana* bark from the previous production sites inventoried in the North Kivu, DRC; and (ii) harvesting of *P. elata* timber out of the previous forest management units inventoried in Cameroon and Congo-Brazzaville. Refining management parameters is another key issue that we started to tackle in this Phase. Most of the management parameters used until now by range countries are based on empirical ways, little were defined on a scientific scheme such as minimum diameter of exploitability (MDE), harvesting rotation (*P. africana* for example: 4, 5, 6, 7, or 8 years...?), and the reconstitution rates for both timber and barks.

The activities under the ITTO-CITES Program cover other items including harmonized regulatory frameworks for aligning forestry and CITES legislation, and the work of relevant institutions in relation to forest management and species conservation; enhanced relevant authorities to comprehensively access timely and reliable information on timber trade; capacities required to monitor existing tropical timber markets and develop new markets, including the trade in tropical timber from sustainably managed and legally harvested sources; and enhanced market transparency and to share experiences on trade and trade promotion.

Under Phase II of the Program, ITTO has, in consultation with the CITES Secretariat, funded 15 new Activities in Africa distributed as follow: Cameroon (6 Activities), Congo-Brazzaville (4), DRC (2), Ghana (2) and one at regional level. One Activity started in Phase I continued in Phase II in DRC. Nine Activities representing 60% and including 4 in Cameroon, 2 in Congo-Brazzaville, 1 in DRC, 1 in Ghana and the one at regional level are/were focusing on items related to database, tracking systems and market transparency. Four Activities including 2 in Cameroon and 2 in Congo-Brazzaville were focusing on items related to the training of people on the knowledge of CITES tools and procedures, and promotion of silviculture and research to better refine management parameters. Two Activities were dealing with NDFs on *P. elata* in DRC and Ghana.

Concrete results included (i) refining range estimates the two tree species at the national levels; (ii) training field inspectors in the control of the trade in *P. elata* and implementation of CITES in Cameroon and Congo Brazzaville; (iii) established tracking systems (including pilot activities on DNA-based) and improved statistical information systems in Cameroon and Congo; (iv) formulating NDF and setting export quotas based on management inventories in DRC for the tree species; (v) verification and control of inventories conducted by trade companies in DRC -

the method of verification of inventories conducted after many years proposed by the Program is being used for other timber species in DRC; (vi) biological and ecological knowledge on *P. elata* and results to be used for refining management parameters and updating NDFs in Cameroon and Congo-Brazzaville; (vii) technological and physical properties of the wood of *P. elata* from natural forests and plantations with concrete solutions for use at different diameter/age; and (viii) *P. elata* from Cameroon and DRC withdrawn from the significant trade review process, and the ban on the export of *P. africana* to the EU lifted.

The Program attempted to extend its assistance to non ITTO member countries by building capacity for formulating NDF and setting export quota for *P. africana*. This has been done in Burundi, and is about to be replicated in Equatorial Guinea. The Program started working on new threatened tree species such as *Dalbergia* species in Madagascar, and *Guibourtia* (Bubinga) and *Millettia* (Wengé) species in the Congo Basin.

The Program encountered big delays in DRC. These delays were due to three causes including (i) dysfunction of the implementing Agencies, namely the two CITES bodies (MA and SA); (ii) the long distance which separates the headquarters of the implementing agencies (Kinshasa) and the field (North Kivu or Equator); and (iii) the instability/insecurity in the production sites due the present of many rebel groups. However a new strategy known as the "Public-Private sector Partnership (PPP)" which promotes the collaboration between the executing agency, civil society and local research institutions was proposed and is bearing some good results for *P. africana*. The Program will continue to encourage such approaches for ensuring the sustainability of the actions taken.

The monitoring mission of the CITES Secretariat conducted from 17–21 November 2015 to monitor the implementation of the Convention in DRC noted important progress for tree species, compared to wildlife, and called upon international organizations such as PNUD, FAO, and COMIFAC to join their support to ITTO and CITES to assist DRC in addressing CITES-listed species.

The most important development challenge of the Program is to continue in the possible Phase III, the work initiated in Phase II so as to better manage the species, and replicate the DNA tracking system activities in all the PAUs. The Program should also attempt to assist range countries in implementing the SMP developed for *P. africana* as many concerns have been expressed on the lack of respect given to the guidelines contained in NDFs and SMP. The monitoring mission conducted by the Regional Coordinator for Africa (RC) in previous inventoried production sites in Cameroon revealed important dysfunctions between the guidelines contained in NDFs and SMP and their implementation in the field. The assistance of the Program should be extended to tackle the problems identified such as harvesting techniques, respecting of existing norms (diameter, annual plot, etc), developing additional norms, and refining management parameters.

Asia (Thang Hooi Chiew)

Under Phase II of the ITTO-CITES Program, a total of 12 Activities was implemented in Asia with 7 Activities in Indonesia and the balance of 5 Activities in Malaysia. The Activities implemented in Indonesia involving *Gonystylus bancanus* (ramin) ranged from an assessment of the genetic diversity of ramin seed sources and population from rooted cuttings, including its requirements for plantation establishment; and the development of ramin conservation guidelines for forest plantation concessionaires operation; to the wider adoption and dissemination of the ramin non-detriment findings guideline and the roadmap for sustainable management and conservation of ramin in the wild, both developed under Phase I of the IITTO-CITES Program. It also included capacity building on ramin vegetative propagation techniques, especially for those who work on nursery preparation under the national rehabilitation and plantation programs in Sumatra and Kalimantan where ramin is found growing naturally. The other activities implemented in Indonesia involved the species *Aquilaria* and *Gyrinops* although most of the work was done on agarwood, especially on the management of agarwood plantation, and the development of an integrated agarwood cluster in the Central Bangka Regency.

Among the the key achievements of the Activities implemented in Indonesia are the following:

(i) small-scale re-planting of ramin in five provinces, namely, Riau, Jambi, South Sumatra, West and Central Kalimantan, was initiated;

(ii) conservation gardens of ramin which also function as sources for planting materials were established and pooled in several hedge orchards in Sumatra and Kalimantan;

(iii) a manual for the production of rooted cuttings was published;

(iv) the Minister of Forestry Decree No. 127/KPTS-V/2002 on Temporary Moratorium of Logging Activities and Ramin Trade was reviewed and inputs provided to the government for its further work on the Decree;

(v) the roadmap for sustainable management and conservation of ramin was widely disseminated;

(vi) a guideline book on non-detriment findings of *Gonystylus* species was prepared;

(vii) guidelines on ramin conservation within the area of operation of forest plantation concessions was formulated;

(viii) the production of agarwood and its quality in 2014, 2016 and 2020 was estimated;

(ix) the Director General of Biodiversity Conservation Regulation on Guidelines for Registration Procedures of Agarwood Plantation was issued and disseminated;

(x) a website on agarwood was developed, http://www.gaharu.web.id, to enable growers to register their agrwood plantations, and where the public could also access, among others, market information on agarwood;

(xi) the design for an integrated agarwood cluster as a model for developing sustainable management and conservation practices was developed; and

(xii) conservation gardens for *Aquilaria* and *Gyrinops* were established in the Dramaga Research Forest, Bogor, where more than 2,000 seedlings collected from different provenances were planted.

In Malaysia, the Activities implemented ranged from the work on in vitro propagation of *G. bancanus* and the use of DNA for identification of *Gonystylus* species, including the geographical origin of its timber in Sarawak to studies on the reproductive and genetic diversity of *Aquilaria malaccensis* in Peninsular Malaysia, as well as capacity building of the staff of the Forestry Department in identifying *Aquilaria* to species level and in the grading of agarwood. It also included the development of an information database for the management, conservation and sustainable use of *G. bancanus* and *A. malaccensis* in Malaysia (MyCITES).

The key achievements in Malaysia included the following:

(i) induction of somatic embryos from leaf samples of *G. bancanus* which will enable planting materials to be raised for its recovery program was successfully demonstrated;

(ii) standard DNA extraction protocol for *Gonystylus* species was developed;

(iii) DNA database for identifying the geographical origin of ramin timber in Sarawak was developed;

(iv) population and individual DNA profiling databases of *A. malaccensis* to enable verification the source of origin of suspected wood at population and/or regional level were developed;

(v) a conservation action plan for *A. malaccensis* to prevent the decline in population viability in Peninsular Malaysia was formulated;

(vi) a manual for identification of *Aquilaria* species to species level, and a manual for the grading of agarwood in Peninsular Malaysia were prepared; and

(vii) a web-based database and information system (MyCITES) that comprises information on ramin and agarwood, including the current status of their population, research and development, import and export, publications, production and trade of their products was developed.

In conclusion, the Activities implemented in Indonesia and Malaysia will enable further enhancement in planning, management, utilization and sustainable trade in ramin and agarwood products. More specifically, the use of rooted cuttings and in vitro propagation of *G. bancanus* via plant tissue culture techniques (micro-propagation) will enable mass production of the species. Furthermore, the integrated agarwood cluster model for developing sustainable management and conservation practices in Indonesia will enabe growers to enhance their production and trade in agarwood; while the registration procedures and the agarwood website will provide them the means to further improve transparency in the trade of agarwood products in the global market place.

The ability of molecular DNA database to identify ramin species and track and trace its geographical origin in Sarawak, Malaysia, will further curb illegal harvesting of the species. However, it is recommended that the haplotypes of ramin from other countries within the ramin geographical range be defined and compiled to enhance its regional applicability and effectiveness.

In addition, the availability of DNA profiling databases of *A. malaccensis* will strengthen the capacity of enforcement officers to track, trace and undertake species authentication, as well as to certify whether an *Aquilaria* product is genuinely derived from planted or sustainably managed forests.

Nevertheless, consistent efforts and commitment from various parties are still needed to safeguard long-term efforts to fully translate the achievements into practice. It is also imperative that further research and development with regard to breeding and artificial propagation be undertaken to enhance the recovery of *Gonystylus* and *Aquilaria* populations in the wild.

Latin America (Ivan Tomaselli and Sofia Hirakuri)

A total of 10 Activities have been implemented during Phase II of the ITTO-CITES Program in Latin America (LA). Among them, 5 Activities (Brazil 2, Peru 2, and Guyana 1) were completed and 5 Activities are in the process of finalizing their activities (Brazil 2, Guatemala 2, and Guatemala/ Spain 1). Each Activity has produced a number of results. The key accomplishments relevant to CITES implementation are as follows:

(1) Key Accomplishments

(i) establishment of a biological foundation for SFM systems for mahogany across southern Amazonia (Brazil, Bolivia, Peru) based on long-term studies covering reproduction, regeneration and growth of natural populations and logged forests;

(ii) development of an empirical framework for making NDFs through application of silvicultural research results and the use of the Big-leaf Mahogany growth & yield model to assess long-term sustainability of management plans in Brazil;

(iii) improved scientific and technical understanding of mahogany population and regeneration dynamics in Bolivia, Brazil and Peru;

(iv) in Peru, the project implementing agencies have worked in partnership with conservation NGOs and with timber concessionaires/companies to achieve biodiversity conservation and sustainable use objectives;

(v) governmental forestry plans for mahogany and cedar populations' recovery in Peru were adjusted based on the results of the projects through a participatory planning process;

(vi) Guatemala in partnership with Spain (University of Cordoba) implemented an Activity on "NDF – Practical guidance for CITES-listed tree species". It takes into account the development of simple, clear and comprehensive guidance for CITES exporting Parties in making NDF;

(vii) sustainable harvest quotas for all species were established on the basis of population estimates growth and demographic characteristics of populations. Annual export quotas established were mainly based on population surveys (Peru, Bolivia);

(viii) improvement in the dynamics of tracking valuable species such as cedar and mahogany for issuing CITES export permits were implemented in Peru;

(ix) development of a study on using the Near Infrared Spectroscopy (NIRS) technique on a pilot scale, as a potential tool for monitoring of mahogany trade, was undertaken in Brazil;

(x) establishment in Guatemala of a forensic laboratory for wood identification and description for the application of legal processes, and systems of traceability of products included in CITES;

(xi) decision on the resumption of export of mahogany products from Brazil. The site of the approved mahogany exports is part of the project implemented under the Program (Ecology and silviculture of mahogany (*Swietenia macrophylla* King) in the western Brazilian Amazon), which helped put in place the required procedures to allow for the export; and

(xii) development of computer-based user-friendly population model "the Big-Leaf Mahogany Growth & Yield Model" which is capable of simulating response by local mahogany populations to a wide range and intensity of harvest practices, based on the Activity implemented in Brazil. A user Manual was also developed.

(2) Knowledge Sharing and Capacity Building

(i) scientific and technical publications have been broadly disseminated, including in scientific journals, manuals, and presentations in academic conferences/ symposiums at local, national and international levels. Products derived from Activities implemented in LA totals 116, so far;

(ii) manual for evaluation of seed trees and regeneration of mahogany (*Swietenia macrophylla King*.) and cedar (*Cedrela spp*.) has been widely used by the Peruvian government and other organizations;

(iii) manual for monitoring mahogany and cedar seed trees in different forest areas in Peru as well as other countries has been widely disseminated;

(iv) training workshops conducted on a regional and sub-regional basis for both the CITES Authorities (Peru, Brazil, Bolivia, Guatemala and Guyana); and

(v) regional workshops on the sharing of findings from the project activities implemented under the Program in LA allowed the exchange of experiences among CITES MA and SA of range states, and strengthened their capacities

All information generated from the Program implementation will serve as inputs to

prepare NDFs for CITES-listed timber species in range states in LA.

(3) Synergies among Activities

The LA region presents a good example of synergies promoted by the Program. For instance, the cooperation between the Guatemala wood identification laboratory activity and the Brazilian Forest Service/ Forest Products Laboratory NIRS activity promoted a joint training course to exchange experiences on NIRS technology.

(4) Need for Future Research

An important perspective on future research needs for implementing CITES-listed timber species can be gained from an evaluation of the results of Activities implemented in Phase II of the ITTO-CITES Program. The research/project results provided important information in existing fields such as behavior, reproduction, and population dynamics, among others, of CITES-listed timber species, and in new fields, such as wood identification through NIRS and forensic laboratory for wood description.

There are many areas that still need to be focused on either as continued research or new topics to be explored in order to improve management of CITES-listed timber species in LA. Such areas are grouped into three categories and are presented below.

(i) Improve technical capacity for preparation of forest management plans/ non-detriment findings

(a) studies on natural regeneration and growth and yield dynamics of specific populations;

(b) development of additional silvicultural experiment to enhance mahogany natural regeneration;

(c) new developments on volume equations for mahogany and other dominant species;

(d) studies on forest genetics, phenology and silviculture of specific CITES-listed species;

(e) continued long-term data collection on population dynamics (growth, mortality, reproduction) in southeast Amazonia to improve growth and yield modeling of mahogany;

(f) tree ring analysis of intact and logged populations to understand the origins (temporal and spatial) of current populations and how the establishment conditions can be mimicked during harvest operations; and

(g) studies on identification of potential species that may attract similar CITES listing and develop management plans for these species.

(ii) Wood identification tools

(a) expansion of NIRS technology, study on different provenances/origins of CITES-listed species; and

(b) expand the countries involved in the NIRS technology experiment, from Brazil, Bolivia, Guatemala to other South American countries such as Ecuador, Colombia and Venezuela.

(iii) Dissemination/Communication

(a) collaboration between countries, and even region-based projects, for sharing information and expertise;

(b) at the regulatory and policy level, improve communication with government agencies involved with forest management;

(c) dissemination of the NIRS technology to other countries. Statistical models of identification should be developed for each country/region specifically, meeting the local needs and demand;

(d) establish synergies between the work of the Program and that of other institutions such as EU FLEGT, IUCN Red Listing and UK Timber Procurement applications; and

(e) other countries not currently part of the Program, e.g. Paraguay that is working on CITES issues, specifically on *Bulnesia Samientol* sp., might benefit from the Program in a follow-up phase.

Relevant event/initiative

The Regional Coordinator for Asia attended the 2nd Regional Dialogue on Preventing Illegal Logging and Trade of Siamese Rosewood that was held in Bangkok, Thailand, from 4-5 April, 2016. The main objective was to review and assess progress made against the agreed Action Points developed during the 1st Regional Dialogue on Preventing Illegal Logging and Trading of Siamese Rosewood that was also held in Bangkok, Thailand, from18-19 December 2014. It also included updating the Action Points and adding new Action Points where relevant. It was attended by delegates from Cambodia, China, Thailand and Vietnam, as well as representatives, among others, from the CITES Secretariat, FAO, Freeland, IUCN, ITTO, Interpol, RILO-AP, EIA, and Global Eye.

The Dialogue was informed that the population of naturally occurring Siamese Rosewood is low in Cambodia and Vietnam as compared to Thailand, and hence these two countries have undertaken planting programs to conserve the species, as well as protecting the remaining natural population in the wild, mainly located in national parks and protected areas. There is also an urgent need to prepare nom-detriment findings (NDFs) reports on Siamese Rosewood, especially in Cambodia and Vietnam. In this regard, China has established a CITES Permitting System where a CITES permit for import of all CITES-listed species, including Siamese Rosewood, would be required in its efforts to curb the illegal trade in CITES-listed species.

The CITES Management Authority for Flora, Department of Agriculture, Thailand, presented the proposal to delete Annotation 4 and replace it with Annotation 5 of the Appendix II CITES-listed *Dalbergia cochinchinesis* where all parts and derivatives will be included, except for seed, seedling in vitro culture and flower, and urged range states and international organizations and agencies to support the proposal at the Conference of the Parties to CITES (CoP17) that will be held in Johannesburg, Africa, from 24 September - 5 October 2016.

At the conclusion of the meeting, a Joint Press Release on Cooperation to Combat Illegal Logging and Trade of Siamese Rosewood was made by Thailand, China, Cambodia and Vietnam that, among others, acknowledged that to combat the illegal logging and trade of protected Siamese Rosewood would require better cooperation and collaboration of all stakeholders, strengthened capacity building and increased manpower, and enhanced criminal legislation relating to rosewood trafficking, with the aim to impose penalties appropriate to the serious nature of the offence committed.

Articles from Program activities

***"Monitoring of the implementation of guidelines contained in* Prunus *simple management plans and Non-detriment findings (NDFs) reports in Cameroon".* Betti J.L., Mbongo M, Alain Nonga A., Ngankoué Manga R.C., Njimbam Njukouyou O.F. (accepted on 25th May 2016 for publication in "Journal of Agriculture and LifeSciences" (JALS))**

Prunus harvesting and exports have been regulated as "a special forest products" since 1994 through a system of annual based exploitation permits for dried bark. This method of special permit attribution was realized over the years to have some weaknesses which largely contributed to the gradual depletion of the natural existing *Prunus* stock. Given these challenges a new system for the allocation of special permits for *Prunus* bark exploitation called *Prunus* Allocation Units (PAUs) was adopted. The

PAU grants long term exploitation rights for the exploitation of *Prunus africana* within a territory specified according to an inventory and subsequent Management Plan for the unit.

The assistance of the ITTO-CITES Program to date on *P. africana* has focused on the development of Non-detriment findings (NDFs) (including simple management plans, resource inventories, etc.) for key production regions using limited funds provided by the private sector. The lack of NDFs was identified at the earliest stages of the Program's work on this species as a key factor leading to bans and voluntary zero quotas that gave rise to the private sector's interest in funding this work. Program funds provided by the EU and other government donors have subsequently been used to undertake pilot studies on using DNA from bark samples to allow tracing back to production sites, given the obvious importance of being able to identify bark from sites covered by the NDFs from other bark.

The Regional Coordinator (RC) for the ITTO - CITES Program in Africa led a monitoring mission from 12th November to 2nd December 2015 in inventoried PAUs delimitated in the North West and South West regions of Cameroon. The mission team, composed of the RC and the Cameroon CITES management authority staff visited community forests and private farms in the North West region and bloc 1 of the Mount Cameroon National Park. Discussions were made with local forest officers and communities, and field observations were made to appreciate the respect of norms and reaction of trees upon harvesting

The mission noted that many progress have been made by the Cameroon Government to promote the sustainable harvesting of *P. africana* in the country including the delimitation of the *Prunus* range area in PAUs, the development of simple management plans (SMPs) and definition of annual quota on a scientific basis for each PAU, the obligation of conducting exploitation inventories prior to the harvesting in each annual plot, the fixation of the minimum exploitable diameter, the harvesting techniques, the documentary tracking system (usage of field log book and way bills) etc.

The degree of implementation of the SMPs developed within the ITTO-CITES Program varies from one region to another, and sometimes in the same region (North West for example), from one division to another. In Mount Cameroon, in spite of the existence of private farms, the quantity of *Prunus* provided until now has been harvested from the Mount Cameroon National Park as proposed by the 2010 management inventories. In the North West region, except for the two first years (2011 & 2012) of harvesting after the lifting of the zero quota in the Boyo division, the quantity of *Prunus* provided by the North West region is coming from private farms/ plantations, which is not in conformity with the guidelines fixed in the NDF and simple management plans of that region. Two reasons explain the difference noted between the North West and the South West regions including (i) the position of traditional authorities (rulers) in the Bui division; and (ii) the low buying price practiced in the North West region. Since 2011, traditional rulers have obtained a ban to harvest *Prunus* in the community forests found in the Bui division due to misunderstanding on the question of benefit sharing mechanism. So, the 140 tons of dried bark that was supposed to come from those forests could no longer be obtained and should be removed from the regional annual quota. The local trade companies in the North West buy the bark of *Prunus* at very low price which discourages the harvesters. The buying price used by the trade companies in the North West region is 130 FCFA/kg of wet bark or 0.24 USD, which is 4.23 times less than the 550 FCFA/kg practiced in the Mount Cameroon National Park. As a result, harvesters prefer over-harvesting trees exploited in the first annual plots or in the adjacent private farms using bad techniques, than taking the risk to go far into the forest to harvest in authorized plots.

This concern, coupled with the problem of the usage of false documents to convey *Prunus* barks by some traders and forest officers, outline the urgent need to settle a fair tracking system which will be able to really fix the harvesting of *Prunus* in the space. The ongoing ITTO-CITES Program activities on the settlement of a tracking system using DNA to better control the origin of the barks is therefore welcome and should be extended to all PAUs in Cameroon. In general, the mission noted that, it is in the North West region where harvesters do not really respect the norms of harvesting in terms of harvesting techniques and exploitable diameter. This situation is more observed in private farms/plantations where there is no control. This mission was not able to visit the Adamawa region considered as the most important in terms of the contribution in national quota (more than the half: amounting to 600 tons of dried bark). We assume that the same problems observed in non-control areas such as in the North West region can be observed in Adamawa, and may be in a very bad situation. In this region, people are not organized in community forests as in the North West nor in any kind of association as in Mount Cameroon with MOCAP, a locally organized CIG. Villagers are directly faced with the local trade companies who may decide to pay what they want.

The sustainable management of *Prunus* requires a lot of financial and technical inputs. So far, the relatively good results recorded in the Mount Cameroon may be attributed to the financial and technical support of the Program for the sustainable management of natural resources in the South West region of Cameroon (PSMNR-SWR). The PSMNR-SWR is a development program of the Government of Cameroon, co-financed by the Federal Republic of Germany through the KFW, in cooperation with GIZ.

The mission noted some discrepancies (big differences) between the estimated annual quota and the real production in the Mount Cameroon PAU. But these differences can be explained through two facts: (i) sampling

The Regional Coordinator and the Divisional Delegate of Forestry and Wildlife of Boyo, Fundong at the entrance of the community forest of MUTEF. Photo: Njimbam

***Prunus* tree debarked with a bad technique in the MUTEF Community forest. Photo: Ngankoué**

intensity, and (ii) the increase of the surface area and unequal delimitation of the annual plots. The sampling intensity used in the 2010 management inventories was 1.15 %, which is in conformity with the national standards for management inventories for surface areas of between 6,000 ha to 50,000 ha. The norms propose that the sampling rate should be at least 1%. Even if the sampling rate was more than 1.15%, it was not easy to get the exact number of trees obtained in the systematic inventory at 100% and this has never been the key objective of the management inventory. The national standards suggest for setting management measures to divide (split) the total useful area of a given production site by rotation to obtain the surface area of a single annual plot (block). In the case of Mount Cameroon National Park, the useful area defined during the 2010 management inventories was 22,000 ha. On this basis, a single annual plot was supposed to have about 4,400 ha. The problem is that the Park service decided an arbitrary delimitation of annual blocks, independent to the useful area and volume of the bark. The total surface area delimitated for the five blocks identified in the Mount Cameroon National Park management plan was 32,800 ha, which is 1.5 times higher than compared to the useful area defined during the 2010 management inventories (22,000 ha). Furthermore, the five blocks proposed do not have equal surface area. For example, the blocks 3 and 5 are twice larger than the blocks 1 and 2. The block 4 on the other hand is thrice higher than the blocks 1 and 2. In this context, one cannot expect an equal annual quota of 130 tons for all annual blocks in the Mount Cameroon. If the Park service officers wanted to be rational, they should reconsider the management inventory data per delimitated block, limiting the quota in the lines identified in each block, instead of mixing all.

Whatever be the situation, the recovery rate of exploited sides of trees was estimated at 100% while the annual regeneration rate of the thickness of the bark ranged from 0.7 mm/year in the North West to 1.6 mm/year in the Mount Cameroon PAU. In 3 or 4 years, the exploited sides of the trees regenerated at least 50% of the un-exploited side. These results tend to show that the 10 years rotation is enough to allow the harvested side of the tree to reach the initial level of thickness of trees. But these results should be revisited, in regard to the high differences between the medium, minimal and maximum values. In the North West for example, the annual regeneration growth rate of the bark is 1.63 mm/year. This means that, the bark can reach 16.3 mm in 10 years, which is close to the 16.6 mm observed as the maximum thickness for un-exploited sides, assuming that the annual growth rate of the bark does not vary too much within the 10 years. The high difference between the average value 9.9 mm and the maximum value 16.6 mm for un-exploited trees may be explained by the fact that those trees have been over-exploited in the past years. This can again question the 10 years rotation, which may not allow the bark to reach its maturity. And the 34 kg of fresh bark obtained as the average mass of the bark that was really harvested per tree in Mount Cameroon, may explain that hypothesis, since they are very low compared to the 50 kg obtained in the same area with indirect method or the 55 kg obtained in the North West with direct method. May be it would be good to wait some years before starting the harvesting in the Mount Cameroon. Ten years rotation is enough to allow the regeneration of the bark, but may not be sufficient to allow the bark to attain its high maturity that can yield huge volume.

Since 1990s, many people in the North West and South West have planted *P. africana* in their farms. Most of those plantations were settled on low altitudes and abandoned by farmers. The quantity of bark that can be yielded from those plantations is too small compared to what is found in natural forests. In the Mount Cameroon PAU, the 115 farms identified can yield only 3.7 tons of dried bark/year when harvested according the national norms instead of 18.7 tons as proposed by the Park service and the PSMNR-SWR. The low quantity of the bark is linked to the low number of trees with diameter high than 60 cm (48%). But the situation may be different for the North-west region according to local authorities.

Anyway, harvesting can be allowed in private plantations, but upon rigorous inventories, simple management plans, and a fair tracking system that will be able to distinguish the origins of the products. Wild *Prunus* remains until now, the principal source of Cameroon *Prunus* for the pharmaceutical industries. The pilot tracking system activity using DNA launched by the Program should be extended to other production sites and plantations as to detect illegal products.

In conclusion, Cameroon Government has made many efforts to promote the sustainable harvesting of *P. africana* in the country, but many problems remain in terms of the implementation of the guidelines prescribed in the NDF or simple management plans. The assistance of the ITTO-CITES Program should include the phase of implementation of the simple management plans developed which included delimitation of annual plots on useful forests, conducting exploitation

A view of the Mount Cameroon forests. Photo: Ngankoué

The RC and the Division Delegate of Forestry and Wildlife of the Bui division visiting a new private farm of Prunus africana in Kumbo. Photo: Oumar

inventories, setting fair tracking system, silviculture (nurseries and plantations), training harvesters on the use of good techniques, and conducting research to better refine management parameters. Cameroon authorities have submitted a follow-up proposal to ITTO, with the aim to address the concerns expressed in this paper.

***NIRS species identification of* Swietenia macrophylla *is robust across specimens from 27 countries.* Maria C. J. Bergo, Tereza C. M. Pastore, Vera T. R. Coradin, Alex C. Wiedenhoeft, and Jez W. B. Braga. (accepted on 9 February 2016 for publication in the IAWA Journal).**

Abstract

Big-leaf mahogany is the world's most valuable widely traded tropical timber species and Near Infrared Spectroscopy (NIRS) has been applied as a tool for discriminating its wood from similar species using multivariate analysis. In this study four similar species *Swietenia macrophylla* (mahogany or big-leaf mahogany), *Carapa guianensis* (crabwood), *Cedrela odorata* (cedar or cedro) and *Micropholis melinoniana* (curupixá) have been successfully discriminated using NIRS and Partial Least Squares for Discriminant Analysis using solid block and milled samples. Species identification models identified 155 samples of *S. macrophylla* from 27 countries with a correct classifications rate higher than 96.8%. For these specimens, the NIRS spectrum variation was more powerful for species identification than for determining provenance of *S. macrophylla* at the country level.

Upcoming events

17th meeting of the Conference of the Parties to CITES (CoP17), Johannesburg, South Africa, 24 September – 5 October, 2016 (ITTO and CITES plan to jointly host a Program side event and also a meeting of the Program Advisory Committee during the CoP).

2nd International Scientific Symposium on Agarwood 2016 (ISSA). 10-12 October 2016, Faculty of Forestry, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia (Attn: Dr. Azita Zawawi) E-mail: issa.upm2016@gmail.com.

52nd Session of the International Tropical Timber Council – 7-12 November 2016, Yokohama, Japan.

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The ITTO–CITES Programme draws its strength from the continuity of its work, the outstanding quality of its results, and the long-term sustainability of its activities. The demand for support from range States continues to exceed the available financial resources.

This Programme stands out as a model of effective cooperation between an implementing entity and a Convention Secretariat. We are eager to continue working with the Parties to CITES and with the member countries of ITTO, that so enthusiastically participate in the ITTO-CITES programme for CITES tree listed species. We also hope that donors will maintain their generous contributions that have already made a difference in the way CITES is implemented, strengthening sustainable forest management worldwide.

The future

The implementation of Phases I and II of the ITTO–CITES Programme allowed the identification of important gaps still requiring attention. Key activities or work areas to be addressed in the future are further strengthening non-detriment findings (NDFs), forensic work for the identification of traded specimens, marking and tracking, and supporting national, regional and global fora, prioritizing countries with broad CITES compliance needs. A proposal has been developed and negotiations are ongoing to seek donor support for future work that encompasses these and other relevant emerging issues.

Both ITTO and CITES have been promoting the sustainable management of tropical forests for many years, which is why the partnership has been so successful. The ITTO–CITES Programme constitutes a high-added-value example of international cooperation promoting sustainable forest management worldwide. Although the main aim of the Programme is to ensure that international trade in CITES listed tree species is consistent with their sustainable management and conservation, it also aims to help countries develop robust forest management systems that will also benefit other tropical forest products in trade. The two secretariats plan to continue working to strengthen their partnership and to enhance support for countries in responsibly managing tropical forests and helping to ensure that forest products in international trade are sustainably produced.

Milena Sosa Schmidt, CITES Secretariat

Program Monitoring

To ensure the transparency of the ITTO-CITES Program, regular monitoring of field implementation is conducted in Africa, Asia and Latin America by the respective Regional Coordinators. Mid-term and ex-post monitoring are also conducted as per the terms of the grant agreement with the EC and ITTO's rules and procedures.

In this context, the Regional Coordinator for Africa undertook a monitoring mission in Cameroon from 7-13 March 2016. He also attended several Activity closing workshops, such as those scheduled on 29 March 2016 in Kinshasa (DRC), 31 March 2016 in Brazzaville (Congo) and 2 April 2016 in Kribi (Cameroon), to ensure timely completion of all ongoing Activities.

For the Asian region, the Regional Coordinator for Asia undertook a monitoring mission to the Ministry of Natural Resource and Environment, Malaysia on 15 February 2016. The aim was to evaluate and discuss action to be taken to ensure timely closure of all the Activities implemented in Malaysia, especially the "Capacity Building of Forestry Department Peninsular Malaysia's Staff in Identifying Aquilaria to Species Level and in the Grading of Agarwood" that was being implemented by the Forestry Department Peninsular Malaysia. A similar mission was also undertaken by him on 3 March 2016 to evaluate the progress of the two Activities that were being implemented by the Center for Forest Biotechnology and Tree Improvement Research (CFBTIR) in Yogyakarta, Indonesia, namely, "Ensuring Genetic Diversity of Ramin Seed Sources and Ramin Population from Rooted Cuttings", and "Establishment of an Integrated Agarwood Cluster in Bintan Island, Indonesia", as well as to ensure both Activities will be successfully completed at the end of March 2016.

For the Latin America region, a staff of the Regional Coordinator for Latin America, Ms. Sofia Hirakuri, carried out a monitoring mission to Guyana from 14-21 January 2016. The major objective was to conduct in situ monitoring of the Activity entitled "Enhancing the sustainable management and commercial utilization of red cedar in Guyana".

The agenda included a meeting with the Activity Team and participation in the Technical Committee meeting with representatives from the Guyana Forestry Commission (GFC) and two other stakeholders, namely, the Forest Product Development & marketing Council (FPDMC) and the Community Forestry Association (CFA). During the Technical Committee Meeting, FPDMC and CFA stated that they are satisfied with the implementation of activities under the ITTO-CITES Program.

The agenda included a field visit to Buckhall located in the margin of Essequibo River, in Guyana to monitor in situ the forest area under concession with occurrence of red cedar. Visits to sawmill and veneer manufacturing plant were also conducted, where all phases of wood laminating process were observed. Overall, the Activity is progressing well within the planned budget and timelines, and the preliminary results have been satisfactory.

Red cedar log and GFC wood identification tags at the timber yard in Buckhall, Guyana. Photo: Sofia Hirakuri

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