1.1 Workshop Report: “Securing the supply chain for Teak in Myanmar using DNA” held in Yangon on the 25th of February 2016

A workshop entitled, “Securing the supply chain for Teak in Myanmar using DNA” was held in Yangon on the 25th of February. The purpose of this workshop was to bring together a variety of regional stakeholders to discuss the potential for application of DNA markers to aid in controlling and verifying the supply chain of Myanmar teak. Attendees represented the interests of government, industry, and the scientific partners. Each key stakeholder group had a chance to present in order to establish key issues and current developments surrounding Myanmar timber trade, domestic certification schemes, as well how DNA can be applied to timber supply chain verification. An open question and answer format was held after each presentation. See appendix 1 for final participant list and workshop materials.

1.1.1 Presentations summary

1. Overview of teak trade/forest governance issues in Myanmar

Presented by: U Myint Thu, Myanmar Forest's Products Merchant's Federation (MPFMF)

- A general introduction to the history of the Myanmar timber industry
- Overview of recent trends in timber volume and value exports and to what countries
- Overview of the structure of the private sector industry as well as supply chain flows
- Current legal certification and CoC requirements
- Overview of Teak trade volumes, products, values, markets
- Issues facing forest governance

2. Overview of Myanmar Timber Certification Initiative

Presented by: U Barber Cho, Secretary of MFCC

- MTCI aims to ensure certification ensures, sustainable forest management, legality, and chain of custody transparency to link SFM to each sector of the market
- Chain of custody verification is critical to linking SFM and legal logs to market
- Overview of other certification systems EURT LACY FSC PEFC…
- MTCI based on the Malaysian timber certification model
- Structure and current state of the MTCI
- Barriers to Myanmar teak exports
- Limitation of MTCC and operating budget
- Overview of Myanmar's will for strengthened forest governance

3. Using DNA to protect and conserve tropical timber trees

Presented by: Prof. Andrew Lowe, University of Adelaide, Australia

- Overview of forest governance and international demand for sustainable forestry CITES Lacey EUTR
- Governance without enforcement produces no change
- Declining cost of genomic mapping and overview of species currently barcoded
- DNA's ability to verify species, origin, and the application to supply chain control
- Difference and background to DNA barcoding, fingerprinting, and population assignment
- Plan for DNA tracking applied to Myanmar teak
- Project progress/work to date

4. Practical applications of DNA to safeguard timber supply chains around the world

Presented by: Darren Thomas, Executive Director, Double Helix Tracking Technologies Pte Ltd

- State of global timber trade; increasingly complex, producer country regulatory legislation, certification systems, consumer country illegal logging regulations
- DNAs ability to provide traceability through entire supply chain
- DNA verification's application example *Prunus africana Congo Cameroon*
- DNA was used to exclude and identify illegal material from outside legal FMUs.
- This intern can create better supply chain control potential for expanded CITES quotas for export
- DNA application to Big Leaf maple theft in Washington state USA

- Individual assignment DNA markers were used as key evidence in case against theft of high value maple from nation parks
- DNA application to UK white oak product market investigation
- Samples were collected across many products and retailors
- Widespread false claims and species mixing among claimed white oak were found
- DNA verification systems can be used to support existing certification, supply chain control initiatives and expand market access

5. Current genetic structure of Myanmar teak detected by microsatellite markers

Presented by: Dr. Thwe Thwe Win, Assistant Director, Dry Zone Greening Department

- Background characteristics of teak, native range, growing area, Myanmar plantation area
- Genetic diversity and applications of DNA markers including barcoding, population genetics, mapping, breeding, and plantation tree improvement
- Myanmar teak genetic differentiation, overall unclear
- Sampling plan and sample collection for population marker development
- Marker types for development and methods
- Results; chloroplast markers low diversity, Nuclear microsatellite high diversity relatable to region

9 Appendixes

9.1 Appendix 1: Supporting materials from Myanmar workshop, Yangon, 25th Febrauray 2016

Ecosystem Conservation and Community Development Initiative (ECCDI),

Australian Centre for International Agricultural Research,

University of Adelaide &

Double Helix Tracking Technologies Pte Ltd

cordially invite you to participate in the

Inception Workshop of the project:

"Securing the Chain of Custody for Teak in Myanmar using DNA"

Venue : International Business Centre (IBC), 88 Pyay Road, Yangon.

Date : 25th February 2016

Time : 9:00 AM – 5:00 PM

RSVP **(by 23.2.2016)**: Goh Soo Lin (soo@doublehelixtracking.com or +65 6227 9706)

"Securing the Chain of Custody for Teak in Myanmar using DNA"

Project Concept Note

This project aims to determine the feasibility of verifying the legality of teak supply chains in Myanmar* through the application of a genetic markers. Properly applied, DNA can safeguard supply chains from illegal timber substitution, enhance the credibility of the Myanmar timber industry and facilitate international trade with key export markets such as the USA, European Union and Australia.

The project will bring together key stakeholders from governments, industry and civil society to develop a framework for verifying chain of custody documentation and origin of harvest.

Teak – a valuable natural resource
Teak is one of the most commercially important timbers in the world, valued for its durability, water resistance and versatility. In Myanmar, almost all teak comes from natural forests where the world's largest remaining natural stands of teak are found here.

How do DNA markers work?
In natural forests, trees that are located closer to each other are more genetically similar compared to trees that are further apart. Sampling across teak's natural range makes it possible to develop a set of genetic markers specific to each population, concession, and even individual trees. This approach has been proven to work for other important timber species such as merbau (*Intsia* spp.), oak (*Quercus* spp.) and Bigleaf maple (*Acer macrophylum*).

Project partners
This project is led by Professor Andrew Lowe from the University of Adelaide. Prof. Lowe is Director of the Centre for Conservation Science and Technology, an international centre of research excellence in tree ecological and evolutionary genetics. All scientific and laboratory work will be conducted by Prof. Lowe's team at the University of Adelaide.

Ecosystem Conservation and Community Development Initiative (ECCDI) is the key Myanmar project partner bringing experience and knowledge of Myanmar forestry and on-the-ground expertise. ECCDI field teams will be collecting DNA samples from teak trees in several locations across Myanmar.

Double Helix Tracking Technologies (DoubleHelix) is focused on the practical application of scientific techniques such as DNA and chemical isotopes, to safeguard global timber supply chains from illegal timber laundering. DoubleHelix is responsible for ensuring that project outputs will integrate with any future Myanmar national timber legality system and support compliance with international timber trade regulations.

**This project is also being conducted in Indonesia, focusing on plantation teak in community forests.*

"Securing the Chain of Custody for Teak in Myanmar using DNA"

Inception Workshop Programme

08:30 – 09:00	Registration	
09:00 – 10:30	***Session I: Opening***	
09:00 – 09:15	Welcome and opening remarks	Dr. Kyaw Tint, Chairman, ECCDI
09:15 – 09:30	Welcome remarks	Director General, Forest Department, Ministry of Environmental Conservation and Forestry
09:30 – 09:45	Key-note Speech	Prof. Andrew Lowe, University of Adelaide, Australia
09:45 – 10:30	Group photo and refreshment	
10:30 – 16:10	***Session II: Paper Presentation***	
10:30 – 11:00	Overview of teak trade / forest governance issues in Myanmar	U Myint Thu, Myanmar Forest's Products Merchants Federation (MFPMF)
11:00 – 11:20	Question & Answer	
11:20 – 11:50	Overview of Myanmar Timber Certification Initiative	U Barber Cho, Secretary of MFCC
11:50 – 12:10	Question & Answer	
12:10 – 13:10	Lunch	
13:10 – 13:40	Using DNA to protect and conserve tropical timber trees	Prof. Andrew Lowe, University of Adelaide, Australia
13:40 – 14:00	Question & Answer	
14:00 – 14:30	Practical applications of DNA to safeguard timber supply chains around the world	Darren Thomas, Executive Director, Double Helix Tracking Technologies Pte Ltd
14:30 – 14:50	Question & Answer	
14:50 – 15:20	Refreshment	
15:20 – 15:50	Current genetic structure of Myanmar teak detected by microsatellite markers	Dr. Thwe Thwe Win, Assistant Director, Dry Zone Greening Department
15:50 - 16:10	Question & Answer	
16:10 - 16:30	***Session III: Closing***	
16:10 - 16:20	Wrap-up Remarks	Prof. Andrew Lowe, University of Adelaide, Australia
16:20 - 16:30	Closing Remarks	Dr. Kyaw Tint, Chairman, ECCDI

Workshop participation lists

ECCDI

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Inception Workshop of the Project ***"Securing the Chain of Custody for Teak in Myanmar Using DNA"***

25th February, 2016 (Thursday)
International Business Center, Pyay Road, Yangon

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