

Darwin Initiative/Darwin Plus Projects Half Year Report (due 31st October 2020)

Project reference	25-023
Project title	Conserving Rosewood genetic diversity for resilient livelihoods in the Mekong
Country(ies)/territory(ies)	Cambodia, Lao PDR, Vietnam
Lead organisation	University of Oxford
Partner(s)	Bioversity International (Malaysia) Institute of Forest & Wildlife Research & Development, Cambodia Forest Science Research Center, National Agriculture & Forestry Research Inst., Lao PDR Forest Genetics & Conservation Dept, Center for Biodiversity & Biosafety, Vietnam Academy of Agricultural Sciences University of Copenhagen, Denmark Research Institute of Forestry, Chinese Academy of Forestry
Project leader	Prof. John MacKay
Report date and number (e.g. HYR3)	31 October 2020 HYR2
Project website/blog/social media	http://www.apforgen.org/initiatives/conserving-dalbergia

1. Outline progress over the last 6 months (April – Sept) against the agreed project implementation timetable (if your project has started less than 6 months ago, please report on the period since start up to end September).

Progress on project Activities

Output 1: Regional assessment of the conservation status of *Dalbergia cochinchinensis*, *D. oliveri* and *D. cultrata*

Activities reported as completed at the end of Year 2: Activities 1.1-1.5

Activity 1.6 Populate database with collected data (Y2 Q1)

- In Year 2, Bioversity hired a web developer to create a restricted area on the website where only registered users can view detailed information about the *Dalbergia* species, given their sensitive status. The launch of the global database has been delayed until end of 2020 due to issues with contractor partly related to Covid-19 impacts.

Activity 1.7: Identify conservation priorities through comparison of distribution, threat, and socioeconomic data, existing collections, strengths of past initiatives (ending Y2 Q3)

- Analyses were completed in Y2. Results are being written as a research paper.

Output 2: Filling gaps to conserve *Dalbergia* genetic resources through *in situ*, *ex situ* programmes and provenance testing

Activities 2.1.: Identify locations for conservation units in collaboration with stakeholders & between countries, to ensure sustainability & complementarity

- In Lao PDR, sites for *in situ* and *ex situ* conservation units were identified, with ongoing consultations with District Agriculture and Forestry Offices for establishment and seedling preparation. In Nong district, consultation was on a 2 ha *ex-situ* site for 1,500 *D. cochinchinensis* and 300 of *D. cultrata* seedlings and a 5-10 ha area for *in-situ* conservation in Labaokhok village. In Thapangthong district, 1,500 seedlings of *D. cochinchinensis* and 250 of *D. oliveri* and *D. cultrata* were prepared for planting in 2-3 ha to establish an *ex-situ* site, with an *in-situ* site proposed for 15-28 ha in Daensatueng village sanctuary forest (nearby project site with mature *D. cochinchinensis*, *D. oliveri* and *D. cultrata* trees).
- In Vietnam, an *ex situ* conservation site for *D. cochinchinensis* was planted in the Chu Mom Ray National Park in August 2020 (5x5m spacing) with fencing and a notice board.
- The China group finished a genome survey and assembly for *D. cultrata* and also developed 24 microsatellite markers to assess genetic diversity and mating system in *D. cultrata* in China. These papers are currently being prepared and submitted soon.

Activity 2.2: Develop institutional arrangements and management guidelines, including material transfer agreements for regional trials

- Revised funding letters are in preparation by Oxford to capture the extended timeframe, budget and workplan changes that were approved by the Darwin Initiative administration.

Activity 2.3: Develop and translate training materials, based on assessment of capacities (1.2) and new conservation strategies (2.2) (ending Y2 Q3)

- Trainings were completed in Y2 (see Y2 Annual Report)

Activity 2.4: Organise and run trainings (ending Y2 Q4)

- All planned trainings have been completed. However, with the project changes, approved by DI administration, we are aiming to utilize the materials to develop online training

Activity 2.5: Design and conduct seed collections among country partners

- Work planned for Y2 Q3/Q4 in Lao PDR and Vietnam was delayed owing to poor seeding and travel restrictions under COVID-19. The work is now planned for Y3 Q3 and Q4.
- In Vietnam, seed collection started on year 3 for *D. cochinchinensis* and *D. oliveri* with few trees. Main harvesting season will be in Q4.
- In Lao PDR, seed collection was planned in project sites and other potential sites in the central and southern part of Lao PDR and will be implemented in Y3 Q3..
- Chinese partners have implemented the following activities: monitoring of growth in a half-sib progeny trial (33 half-sib families) of *D. cultrata* from Yunnan and established in Fujian in spring 2019, with the aim to select superior individuals. A recent field trip revealed good conditions for *D. cultrata* fruiting, allowing increased seed collection in the spring 2021.

Activity 2.6. Establish provenance trials

- A *D. cochinchinensis* provenance trial was established in July 2020 in Khun Ream commune (Siem Reap province, Cambodia). 1024 seedlings from five provinces (Siem Reap, Kampong Thom, Pursat, Koh Kong, and Kampong Speu) were planted in a 1 ha plot (3 m x 3 m spacing). Weeding was conducted once after planting, in September 2020, barbed wire fencing was erected and the survival rate after two months is 90%.
- In Lao, due to the pandemic, this activity will not take place as planned. It has been rescheduled for March-June 2021 at FRC's research site of about 2 ha.

Activity 2.7: Evaluate progress and changes in knowledge and practices and communicate lessons learned

- There is an on-going activity of feedback and reflection by project partners. Monthly project meetings since May 2020 foster exchange of experiences between partners. An M&E Advisory Committee meeting (Y3 Q2) produced several recommendations on

impact mapping and means to assess changes in knowledge and practice.

Output 3: Multiplication to support use, income generation and reduced pressure on natural populations (propagation strategies, community nurseries etc)

Activities reported as completed at the end of Year 2: Activities 3.1, 3.3, 3.7

*Activity 3.2: Test *D. cochinchinensis* vegetative propagation method in other countries and *Dalbergia* spp.*

- Work on vegetative propagation was finished in Cambodia in Y2; however testing of methods planned for Lao PDR in Y3 has been postponed to Y4 due to Covid-19.
- In Lao PDR, in Q3 of year 2, a training on nursery establishment, seed germination, seedling production and marketing was implemented to encourage derivation of additional income for communities, especially women.

Activity 3.3: Develop guidelines for appropriate use to multiply genetically diverse planting material

- Guidelines have been developed based on work in Cambodia in Y2. Extension of the guidelines to other countries is pending test in Lao PDR in Y4.

Activity 3.4: Analyse current practices for seed & seedling sourcing in ≥ 3 state-owned & ≥ 3 private sector nurseries, knowledge of seed quality & genetic diversity among programme staff, & their attitudes to community-based seed supply (Y1 Q3-4)

- Based on the results and those from Activities 3.5 & 3.6 a paper is being written identifying strengths and weaknesses in current practices and strategies to overcome these.

Activity 3.8 Train & mentor community members in good seed collection practices, propagation (including vegetative propagation), tree nursery management, developing business plans & pursuing market linkages (Y2Q1 onwards)

- Activities planned to support quality seed collection and propagation during Y3 fruiting season in Oct 20 – Jan 21.
- In Vietnam, a new nursery was established in Chu Mom Ray National Park by the Park staff and members of the local community. The nursery has 600 *D. cochinchinensis* seedlings and some *D. oliveri* seedlings.
- A farmer seed source was established on a farmer land (0.45 ha) in Pursat province (Cambodia). 195 grafted *D. cochinchinensis* seedlings were planted in July 2020 with fencing and a noticeboard erected. After two months the survival rate is 85%.
- In Lao PDR, establishment of a seed supply network was planned for 6 villages in Nong district and 4 villages in Thapangthong district through consultations with the District and Provincial Agriculture and Forestry Offices. Field data collection and institutional arrangements will be made in November 2020. The Forest Research Centre team is also assisting a PhD candidate affiliated with Bioversity International to carry out a pilot study to identify genetic bottlenecks in the seed supply for *D. cochinchinensis*.

Activity 3.9 Evaluate changes in seed production & value chains between communities & government & private sector nurseries, communicating lessons learned (Y2Q2 onwards)

- Research by a socio-economist, contracted at the end of Y2, to evaluate gender and social inclusion in seed supply chains had to be cancelled due to Covid-19 related travel restrictions. Related questions will be integrated in end-of-project household surveys.

Progress towards project Outputs

Output 1: Regional assessment of the conservation status of *Dalbergia cochinchinensis*, *D. oliveri* and *D. cultrata*

Updated and expert-validated distribution & threat maps (Indicator 1.1) are available at an online database (www.tree-diversity.org, Indicator 1.2). Users can download data layers for analysis.

The database is being populated with additional information. Results are being developed into a journal article (1.4) with progress slower than expected due to Covid-19 impacts on staff time.. Genomics research at Oxford to fill knowledge gaps of adaptation in *Dalbergia* produced two peer-reviewed articles (on stress response and transcriptome analysis, respectively), which are published and highlighted on the project website. A landscape genomic study with hundreds of samples from the Mekong sub-region is being processed for DNA analysis, and a high-quality genome assembly developed for *Dalbergia cochinchinensis* (Indicator 1.3).

Output 2: Filling gaps to conserve *Dalbergia* genetic resources through *in situ*, *ex situ* programmes and provenance testing

All *in situ/ex situ* conservation units have been identified and are under development, with active planning, data collection, consultation on going for *in situ* units, and seedling growth and site preparation for *ex situ* units (Indicator 2.1). The Covid-19 pandemic has delayed work on some conservation units but none have been abandoned. 58 forestry officers were trained on *in situ/ex situ* conservation in Y2 in Cambodia, Lao PDR and Vietnam, almost completing the project target of 60 trainees (Indicator 2.2). There have been no new training activities. New seed collections are planned for Q3/Q4 in all partner countries to meet the project target of 15 new collections (Indicator 2.3). Cambodia established a *D. cochinchinensis* provenance trial in Q1 of Y3, with ongoing monitoring and maintenance (survival rate 90%). Lao PDR is developing a trial but more seeds are needed and will be collected in Q3 of Y3 (Indicator 2.4).

Output 3: Multiplication to support use, income generation and reduced pressure on natural populations (propagation strategies, community nurseries etc)

D. cochinchinensis vegetative propagation was developed and successfully used in government-owned and community nurseries in Cambodia in Y2 (Indicator 3.1). Planned trainings of officers and community members on seed sourcing and seed markets were completed in Y2, but the target number of trained community members was not reached (Indicators 3.3, 3.4). Additional trainings could not be planned in 2020 due to the pandemic. One additional nursery (Vietnam), and farmer seed source (Cambodia) were successfully established in Y3, completing the project target of 4 nurseries with a mean capacity of 10,000 seedlings per year (Indicator 3.5). Nurseries will contribute to supporting targets of tree planting by community members (Indicator 3.6), as lack of seedlings was identified as a barrier to planting during baseline surveys. The process to establish a seed supply network in Lao PDR project sites was designed, with identification of participants and potential seed sources as well as development of joint agreements for seed source management (Indicator 3.6). Field work will be carried out in Oct-Nov 2020.

Progress toward Project Outcome

Indicator 0.1: At least 50% increase in number of designated *in situ/ex situ* *Dalbergia* conservation units across 4 countries (new for some countries or species)

The project is on target for meeting the objective of 23 new conservation units within the newly extended timeframe.

Indicator 0.2: At least 20% increase in forest-related income of 175 rural households in 3 countries (end year 3), through *Dalbergia* seed/seedling production and planting.

Many rural households have been trained and are engaged in these activities. The upcoming seed collection season will provide key data to measure the impacts in yr 4.

Indicator 0.3: Methods and training materials for conservation, multiplication and value chain development exist and >100 professionals and 175 rural households trained to use and adapt them to enable scaling out.

Very good progress has been made with several training activities held in yr 2, educational and technical communication materials developed, while interactions with communities and individual households have continued in yr 3.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months (for Covid-19 specific delays/problems, please use 2b). Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

2b. Please outline any specific issues which your project has encountered as a result of Covid-19. Where you have adapted your project activities in response to the pandemic, please briefly outline how you have done so here. Explain what residual impact there may be on your project and whether the changes will affect the budget and timetable of project activities.

Delayed activities:

1. Field assessment of gender and social inclusion in seed value chains.
 - Cancelled due to travel restrictions and consultant is not available after 2020.
2. Preparation for provenance trials, ex situ conservation, seed production and nurseries: Mar – June 2020
 - Siem Reap (Cambodia) : completed by July 2020
 - Lao PDR: completion July 2020 to winter 2021.
 - Vietnam: completion October 2020 to winter 2021.
 - The communication of project results at international events
3. Leaf/seed sample shipment for DNA analyses at Oxford: delayed 3-4 months, not yet completed.

Lao PDR:

- Due to COVID-19, Lao PDR went under lock down 6 months ago, with domestic and international flights cancelled.
- Community-based project activities in Thapangthong and Nong districts (Savannakhet Province) were postponed to the last 6 months of 2020. Some activities have been postponed to 2021 due to uncertainty regarding the duration of COVID-19. Work with local communities in targeted villages depends on a monthly notice from Prime Minister's Office regarding COVID mitigation measures. International flights are still banned.

Vietnam:

- Covid-19 affected both budget & activities timetable e.g. conservation unit establishment.

Project extension and revised plans:

Extension: 9 months, from 1 April 2021 to 31 December 2021.

Updated work plans (Y3 and new Y4). No new activities. See change requests for details

- (1) Completion of the postponed field work; and establishment and monitoring of *in situ* and *ex situ* conservation units, and of provenance trials, in the project countries.
- (2) Final household surveys, training activities, engagement activities with local communities in the project countries; the preparation of project outputs.
- (3) Public communication (including scientific presentations) and outreach activities.
- (4) Final project workshop & local dissemination activities presenting project outcomes and discussing further uptake.

Financial changes:

- Recover unspent funds from Y2 and reallocate funds from Thailand partner
- Spread funds over Y3 and Y4.

2c. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS: Yes

Formal change request submitted: Yes

Received confirmation of change acceptance Yes

3a. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this year?

Yes No Estimated underspend: £

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary. Please DO NOT send these in the same email as your report.

4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?

None to report

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also** be raised with LTS International through a Change Request. **Please DO NOT send these in the same email.**

Please send your **completed report by email** to Darwin-Projects@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 25-001 Darwin Half Year Report**