

The Global Tree Seed Bank Programme

Report for the Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew



FORRU-CMU nursery officer, Yoi (salary sponsored by this project) teaches Karen college teachers and forest officers from Myanmar seed collection and processing at a FORRU workshop July 2023

Year 3, FORRU-CMU

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1. Project Overview

This project was part of the international ‘Global Tree Seed Bank Program’, co-ordinated by the Royal Botanic Gardens Kew, UK, which aimed to collect and bank seeds of 3,000 tree species, to provide materials for research, propagation and for use by future generations. Under the project, Thailand’s contribution was set at 300 seed collections of native tree and shrub species (new to the GTSBP), collected by two partner organisations: The Forest Herbarium (BKF) and the Forest Restoration Research Unit Chiang Mai University (FORRU-CMU). FORRU-CMU was allocated 150 species. The target of seed collection of the current project period was 50 species, with FORRU’s collections sent to the National Biobank of Thailand (NBT) for issuing of phytosanitary certificates and dispatch to the Millennium Seed Bank (MSB) by the end of December 2023. Duplicate batches were banked in Thailand as facilities became available (at NBT and Doi Suthep Nature Centre), whilst the project progressed. Field and processing data on all collections was shared among project partners, via the Millennium Seed Bank Partnership’s Data Warehouse online database.

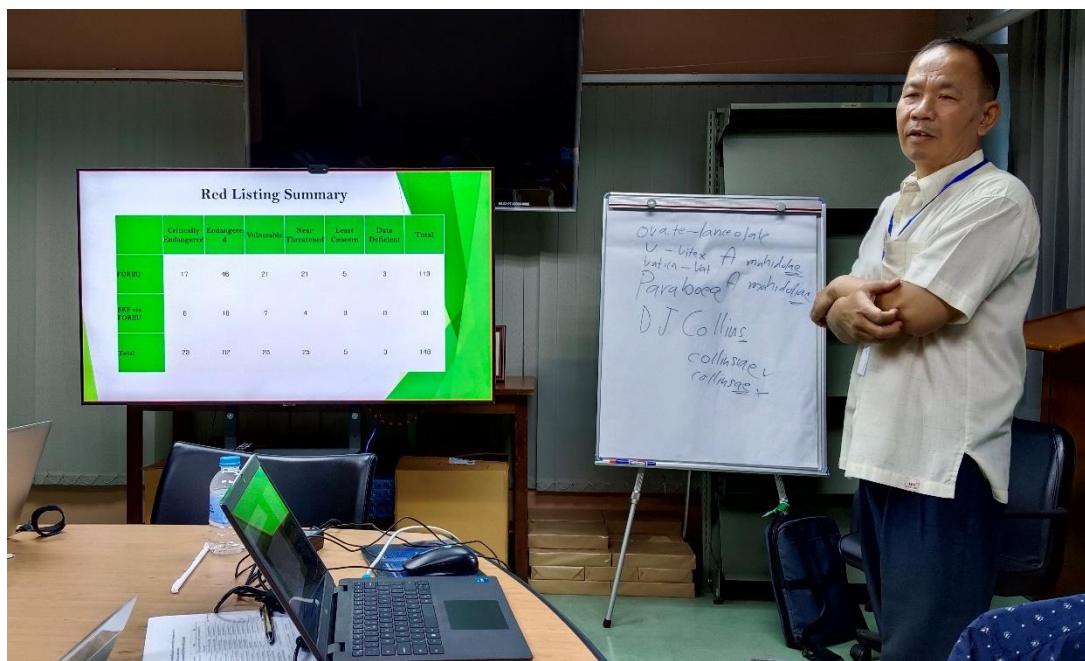


*Dispatch of seed batches from FORRU-CMU
December 2023*



Arrival of seed batches at NBT for certification and forwarding to MSB

In addition, the project assessed the distribution and extinction risk of 250 of Thailand’s rare and endemic native woody species, of which FORRU-CMU was allocated 112 species, with technical and financial support from RBG Kew’s Plant Assessment Unit (PAU). The rest were allocated to BKF.



Presenting Red Listing results at the GW3 wrap up workshop

2. Achievements

Progress

Seed Collection

Seeds of fifty-three species were collected from January to December 2023, exceeding the annual target at 50 species and bringing the total number of species collected to 122, or 81.3% per cent of 3-year target of the entire project period (150 to Dec 2023). Collections were restricted to areas outside of national parks at first until we finally received a seed-collection permit from the DNP. The total 122 species include twenty-four tree species, which were collected during the interim period between the GW2 and GW3 projects (Table 3), whilst we were waiting for contract finalization. Seed batches of all 122 species were sent to NBT on 2/1/24 for issuance of phytosanitary certificates and final dispatch to the MSB, following guidelines recently received on splitting samples between NBT and MSB. Furthermore, some duplicate sub-batches were held at the seed bank at the Doi Suthep Nature Centre.

Collection Summary Table

Collections	Actual (Jan-Dec 23)	Target (Jan-Dec 23)	Actual (whole project)	Target (whole project)
Collections	53	50	122	150
Species	53	50	122	150
Species New to MSB	53	50	122	150
Threatened Species	2	-	5	-
Endemics	0	-	0	-
Useful Species	53	-	122	-

Red Listing

Draft Red Listing accounts of 113 species (assigned to FORRU) and 34 species (assigned to BKF) were finished in October 2023 and reviewed by Kew staff. Furthermore all accounts were evaluated and augmented at the final workshop at BKF, 14-16 November. A list of suggested corrections was made, all of which have now been responded to and the final species accounts submitted. FORRU staff will join a final online assessment, to deal with any remaining gaps in knowledge with Kew staff in January.



Gathering information for red listing in Thailand's herbaria: left to right Bangkok (Agriculture Dept.), Forest Herbarium (BKF) and Khon Kaen.

2.1 Additional Activities (spin offs and side benefits)

FORRU-CMU Seed Bank

The Kew-GW projects have had a tremendous impact on seed collection and banking at CMU, inspiring and supporting the creation and management of a small regional seed bank, particularly to support forest ecosystem restoration, seed research and education – directly involving the younger generation in tree-species conservation and ecological restoration. The bank also serves as a model for institutions in other regions of Thailand and neighbouring countries. It has already attracted visitors from Lao PDR, Myanmar, Cambodia and a multi-nation project from W. Africa. National interest in the facility led to matching funding from 'Plant Genetic Conservation Project under the Royal Initiative of Her Royal Highness Princess Maha Chakri Sirindhorn,' since 2020. The bank is located in CMU's Doi Suthep Nature Study Center (DNSC)'s. Its running costs were partially supported by the GW3 project grant. Furthermore, the training, provided by Kew, has largely influenced the collection and storage procedures used there. The bank stores sub-batches of seeds of many of the species, collected under the GW3 project. Seed bank staff and students have benefitted greatly from synergies with the Kew-GW3 project, including identification of potential seed trees in nearby native forest ecosystems on Doi Suthep, seed collection and implementing experiments to determine optimal seed-storage conditions of various native forest tree species. Currently, 94 species have undergone testing for desiccation tolerance and storage behaviours, under various research projects. Currently, 62 species are stored in the seed bank.



CMU Seed bank activities include (a) seed collection, (b) extraction and (c) cleaning, before experiments and/or (d) storage. The seed bank is also used during FORRU-CMU's education programs, related to forest restoration. (e) FORRU officer, Tomtam, explains the role of the seed bank to school children, whilst Nat (f) demonstrate storage methods to workshop participants.

Student projects

The seed bank has provided many opportunities for CMU Biology Department students and interns to learn seed collection and banking methods and to develop their own thesis projects. The facility provides such students with an instantly available seed supply, without them having to wait for their target tree species to come into fruit before starting their experiments:

No.	Student name	Year	Project types	Topic
1	Khuanphirom Naruangsri (Aom)	2020	PhD	Developing Techniques for Direct-Seeding for Forest Restoration in Northern Thailand
2	Nattanit Yiamthaisong (Tomtam)	2022	MSc	Seed Storage Behaviour and Seed Surface Fungal Sterilization of Native Tree Species in Northern Thailand
3	Phakaphorn Kumsopha (Brine)	2022	Interns	Study of Seed Morphological Trait and Seed Storage Behavior 6 Native Tree Species
4	Asst. Prof. Dr. Papangkorn Inkeaw	2023	CMU Professor	Developing an application to classify species and count seeds from photographs
5	Kunnaree Pakkad (Kik)	2023	Special project	Effects of moisture content on the seed germination of some framework species in Northern Thailand after seed storage
6	Nay Tun Lin, Htet Aung Khant (Scott), Yadanar Pyae Sone (Nant)	2023	Interns/Special project	Allelopathic properties of <i>Prunus cerasoides</i> extract on the seed germination of weeds and pioneer trees
7	Jirawan Khamkong	2023	Summer project	Seed traits and storage behaviours of nine native tree species of Thailand



Previous page: research projects: (a) seed collection, (b) sorting and weighing seeds ready for (c) cut tests for viability, (d) germination testing, (e) morphological studies under the microscope and examining the effects of allelochemicals on germination rates.

Young forest restorers (YFR) project

The [Young Forest Restorers](#) project addresses the frustration of today's youth with lack of political action on climate change, by providing teachers and their pupils with the knowledge and skills needed to take direct action to sequester carbon via forest ecosystem restoration. Project activities include seed collection and production of planting stock in on-campus school nurseries. The FORRU-CMU seed bank acts as a seed-swapping centre among the participating schools (9 schools to date) enabling excess seeds collected by one school to be stored and shared with others, thus increasing the diversity of tree species grown in each school nursery and allowing pupils to learn to identify a wider range of tree species. The seed-swapping network is co-ordinated via a group chat in the LINE mobile app.



YFR open day: The event introduced school pupils to forest restoration, seed collection, processing and banking and the LINE app seed-swapping mechanism. Pupils from each school subsequently collected seeds from around their school campuses or in nearby forest remnants and germinated them in their own on-campus nurseries, with training from FORRU staff and financial support for nursery construction costs from the YFR project grant.

The seed banking pages from the [Young Forest Restorers' Action Book](#) with the QR code for seed swapping. Pupils' books are stamped each time they complete an activity and once they've accumulated the whole set, they can take an online test to become a certified Young Forest Restorer.

SEED BANKING

Seed banking means storing dried seeds in a freezer until they are needed. Research at CMU's Seed Bank is finding out which of northern Thailand's tree species have orthodox and which have recalcitrant seeds.



The seeds of some tree species can remain viable for many years when frozen. They are called "ORTHODOX".

Others are killed by drying and freezing. They are called "RECALCITRANT".

- If you collect more seeds of a species than you need, you can deposit the surplus in the CMU Seed Bank, so other schools can use those seeds in the future.
- If you would like to grow tree species in your school nursery, but cannot find seed trees, contact the CMU Seed Bank to ask for seeds of the species.



YFR LINE GROUP

To let YFR members know when you deposit or withdraw seeds in the CMU Seed Bank, please request the species name the YFR LINE group. A list of the species available in the bank will be posted there from time to time.

To experience seed-banking procedures, please ask your teacher to contact the CMU Seed Bank for an activity session.

It is located in the Doi Suthep Nature Study Centre - location and contact details here:

<https://goo.gl/maps/S9RhWaWVzphGEMgL7>



Seed Bank Datasheet

Species information

Species name : _____ Common name : _____

Genus : _____ Family : _____

Growth form : _____

Seed/Pyrene size : _____ No. seed per pyrene : _____

Specimen information

Collection date : _____ Collection no. : _____

Collector(s) : _____

No. individuals from which seed was collected : _____

No. collected seed : _____ Initial germination : _____

Location : _____

Forest type : _____ Altitude (m) : _____

Notes : _____



3. Wrap up meeting and paper preparation

FORRU staff, Steve, Greuk and Aom contributed to the GW3 wrap up workshop in Bangkok 15-19/11/23. Greuk presented progress with FORRU-CMU's contribution to the project. We spent the subsequent 2 days reviewing the red listing drafts of more than 100 tree species, in collaboration with representatives from all project partners. The final day of the workshop was devoted to procedures for closing the project: final report writing and account, and negotiation with NBT staff about shipping of seed lots to the MSB. Finally, we began planning the drafting of a paper on the status/distribution of Thailand's rare/threatened tree species based on a synthesis of all RL data sheets from the project.



Wrap-up Workshop at BKF 14-16th November 2023

Project-closure Action Points

- Before Jan 12th 2024 submit technical and financial reports
- Continue to collect seeds to increase from 122 to 150 tree species until 30th April 2024
- Supplementary report on the “post project” activities, due on June 7th 2024
- Send two batches of 50 species to NBT (completed 4th January 2024)
- Send final batch (50 species) to NBT before April 30th 2024
- Quarantine certification will be done at the office at DNP HQ, and we may have to use some remaining Kew funds to pay certification costs
- Final payment from Kew to cover Greuk's work on BKF-allocated RL species accounts and certification costs before end December 2023

Discussion of The Paper:

Title - provisional titles suggested:

- “Assessment of Thailand’s threatened (endemic??) tree species: towards a conservation plan” ?? (I like this one)
- “Status and conservation of Thailand’s threatened tree species” ?? (We need to include the reference to action)
- “Red listing Thailand’s forest tree species: towards a national conservation strategy”?
-

Journals - suggested were: *Conserv. Biol.* (Wiley), *Biological Conservation* (Elsevier)

Authorship – 1st author TBD (should be a Thai national from government authority), plus the authors/reviewers of the red list sheets (BKF, CMU, NBT and Kew teams). Corresponding author (including language editing and co-ordination among authors) – Steve. Steve will ask authors to register their interest and institutional affiliations shortly.

Co-ordination - Early January – online meeting to finalize reviews of any remaining species and finalize the data set. Then analyse and then prepare tables and charts for the results section of the paper. First draft by end March? Kate said that we also have 1 week of Kew staff time (Rosie Dunkley) to help with data set preparation in January. Authors will work online on shared copy via Teams, OneDrive or Google Docs.

Provisional Rough Outline

- **Intro** – value of Red Listing. Overview of Thailand forest tree conservation *in situ* (PA’s) *ex situ* (botanical gardens etc.)
- **Methods** – species selection for red listing and the process described to collect data on ex- and in- situ conservation – limitations etc.
- **Results**
 - Overview of numbers and % of species in each category. Geographic, taxonomic associations etc.
 - Summary of main threats to the species.
 - Summary of *ex-* and *in-situ* conservation status of the species
 - Species info listed in massive appended table.
- **Discussion**
 - Advantages and difficulties with the Red-Listing process.
 - Suggest *ex situ* conservation proposed measures – Orthodox spp - PA staff as seed collectors (add to smart patrol apps) – alerting staff to recognize the target species. Feeding orthodox seeds to regional seed banks and subsequently into local forest restoration nurseries and restoration plantings. Subsamples to NBT and MSB.
 - Recalcitrant species – collect wildlings, transfer to nearest botanical gardens for to establish seed orchards and from nurseries to nearby restoration plantings.
 - In situ – protection in PA’s – OECMs etc.
 - Integrating red list species into forest ecosystem restoration goals and projects
 - Awareness raising and training and resource needs e.g. A field guides with images, identification tips, phenology, seed-storage and cultivation advice in collaboration with Kew’s BBVA project with BKF and FORRU-CMU’s work on “propagation-data deficient” species (under KW4).
 - Funding and institutional collaboration needed.

4. Images with Captions



Seed collection



Tetradium glabrifolium



Dracontomelum dao



Ficus abellii



Flora of Thailand			
CMU Herbarium, Faculty of Science, Chiang Mai University			
Chiang Mai, Thailand			
FAMILY:	Fabaceae		
BOTANICAL NAME:	<i>Bauhinia variegata</i> L.		
Province:	Chiang Mai	District:	Muang
Location:	Doi Suthep Pui National Park, Phuphong Palace	18.19325 N	98.92181 E
Elevation:	873 m.	Date:	23-Mar-2020
Notes:	Tree 7 m tall; blades simple, deltoid, base cordate, apex obcordate, green above, pale green underneath; pods dehiscent, dark brown; seeds brown.		
Collected By:	Thonglao Piulakul, Thongyod Chiangkuntha,	FORR Number:	FORRU-GW3-NO: 1 Duplicates: 3

Specimens and label for collection number: FORRU-GW3-No: 1: *Bauhinia variegata* L.



Sending seed batches to NBT

5. Project Challenges

- Administrative delays and COVID resulted in late issuing of the contract. Originally scheduled to start in November 2020, the contract was finally signed in mid-March 2021 with a starting date of March 1st – unfortunately too late for the peak fruiting season in northern Thailand. So, the opportunity to collect many species was delayed by 1 year. However, we included some seed collections from the interim period (between GW2 & 3), which boosted the number of collected towards the target. The non-funded extension for seed collection to April 30th should offset this problem and we expect to make up the difference (122 to 150 species) by then.
- The Red Listing workshop was delayed from Nov. 2020 to Feb 2021. We had problems with the SIS database system. However, online meetings with Kate Hardwick and Jack Plummer, solved such technical issues, so that we also took on extra work dealing with RL accounts originally allocated to BKF, which BKF staff were unable to complete.
- FORRU-CMU received the seed-collection permit late from the DNP on 4 February 2022 (applied January 2021). This made it difficult for FORRU to collect seeds from protected areas
- National parks were closed during the COVID period. This limited seed-collection trips to sites outside natural forest, mostly remnant trees on the university campus and roadside trees etc.
- For Red Listing, we needed access to the BKF Herbarium, to extract information from specimen labels there. BKF was also closed due to COVID so we had to wait for restrictions to be lifted. Letters requesting permission to access specimens and floras, held by BKF, Khon Kaen University and Prince of Songkla University were sent and the work was able to proceed in late 2022. Despite this difficulty we were able to complete all CMU allocated RL species drafts and many of those allocated to BKF to help with their staffing problems.
- CMU's herbarium was closed for renovation, making it impossible to access specimens to confirm species identifications and we currently do not have a qualified plant taxonomist on the team. The solution to this problem was to request Kew staff to confirm species identifications using the Kew herbarium. Voucher specimens were included with all seed batches collected.

6. Appendix

Seeds Collected in 2023 (53 tree species)

Scientific Name	Threatened	Endemic	Useful	New to MSB
<i>Acronychia pedunculata</i>	LC	N	Y	Y
<i>Albizia procera</i>	LC	N	Y	Y
<i>Biancaea sappan</i>	LC	N	Y	Y
<i>Caesalpinia pulcherrima</i>	LC	N	Y	Y
<i>Casuarina equisetifolia</i>	LC	N	Y	Y
<i>Crateva magna</i>		N	Y	Y
<i>Dalbergia glomeriflora</i>	DD	N	Y	Y
<i>Dalbergia rimosa</i>	LC	N	Y	Y
<i>Dalbergia sp.</i> (Kew to check sp i.d.)		N	Y	Y
<i>Diospyros malabarica</i>		N	Y	Y
<i>Dracontomelon dao</i>	LC	N	Y	Y
<i>Fernandoa adenophylla</i>		N	Y	Y
<i>Ficus abellii</i>	LC	N	Y	Y
<i>Ficus annulate</i>		N	Y	Y
<i>Ficus capillipes</i>		N	Y	Y
<i>Ficus elastica</i>	LC	N	Y	Y
<i>Ficus microcarpa</i>	LC	N	Y	Y
<i>Ficus sarmentosa</i>		N	Y	Y
<i>Ficus sp.</i> (Kew to check sp i.d.)		N	Y	Y?
<i>Ficus sp.</i> (Kew to check sp i.d.)		N	Y	Y?
<i>Ficus sp.</i> (Kew to check sp i.d.)		N	Y	Y?
<i>Ficus sp.</i> (Kew to check sp i.d.)		N	Y	Y?
<i>Ficus sp.</i> (Kew to check sp i.d.)		N	Y	Y?
<i>Ficus sp.</i> (Kew to check sp i.d.)		N	Y	Y?
<i>Ficus sp.</i> (Kew to check sp i.d.)		N	Y	Y?
<i>Fraxinus floribunda</i> Wall.	LC	N	Y	Y
<i>Hibiscus tiliaceus</i>	LC	N	Y	Y
<i>Holarrhena pubescens</i>	LC	N	Y	Y
<i>Imbralyx leucanthus</i>		N	Y	Y
<i>Lagerstroemia calyculata</i> Kurz		N	Y	Y
<i>Lagerstroemia duperreana</i>		N	Y	Y
<i>Lagerstroemia macrocarpa</i>	LC	N	Y	Y
<i>Lagerstroemia sp.</i> (Kew to check sp i.d.)		N	Y	Y
<i>Lagerstroemia tomentosa</i>		N	Y	Y
<i>Lagerstroemia villosa</i>		N	Y	Y
<i>Mallotus floribundus</i>	LC	N	Y	Y
<i>Millettia kangensis</i>		N	Y	Y
<i>Millettia pubinervis</i>		N	Y	Y
<i>Mitragyna diversifolia</i> (Wall.		N	Y	Y
<i>Mitragyna parvifolia</i>	LC	N	Y	Y
<i>Mitragyna rotundifolia</i>		N	Y	Y
<i>Ptilostigma malabaricum</i>		N	Y	Y
<i>Pterocarpus macrocarpus</i>	EN	N	Y	Y
<i>Schoutenia glomerata</i> King		N	Y	Y
<i>Senegalia catechu</i>	LC	N	Y	Y
<i>Senegalia megaladena</i>		N	Y	Y
<i>Tectona grandis</i>	EN	N	Y	Y
<i>Terminalia catappa</i>		N	Y	Y
<i>Tetradium glabrifolium</i>	LC	N	Y	Y
<i>Thespesia populnea</i>	LC	N	Y	Y
<i>Unknown Species</i>		N	Y	Y
<i>Vitex limoniifolia</i>	LC	N	Y	Y
<i>Wrightia pubescens</i>	LC	N	Y	Y

Red Listing (drafts for IUCN's SIS system, reviewed and corrected)

Family	Species	Institute
Pentaphylacaceae	<i>Adinandra coarctata</i>	BKF
Pentaphylacaceae	<i>Adinandra oblonga</i>	FORRU
Fabaceae	<i>Afzelia xylocarpa</i>	FORRU
Sapindaceae	<i>Allophylus eustachys</i>	FORRU
Sapindaceae	<i>Allophylus montanus</i>	FORRU
Sapindaceae	<i>Allophylus pallidus</i>	FORRU
Sapindaceae	<i>Allophylus sootepensis</i>	FORRU
Araliaceae	<i>Aralia stellata</i>	FORRU
Fabaceae	<i>Archidendron conspicuum</i>	FORRU
Primulaceae	<i>Ardisia betongensis</i>	FORRU
Primulaceae	<i>Ardisia ionantha</i>	FORRU
Primulaceae	<i>Ardisia kerrii</i>	FORRU
Primulaceae	<i>Ardisia labisiifolia</i>	FORRU
Primulaceae	<i>Ardisia multipunctata</i>	FORRU
Primulaceae	<i>Ardisia nervosa</i>	FORRU
Primulaceae	<i>Ardisia pachysandra</i>	FORRU
Primulaceae	<i>Ardisia palustris</i>	FORRU
Primulaceae	<i>Ardisia paralleloneura</i>	FORRU
Convolvulaceae	<i>Argyreia thorelii</i>	BKF
Moraceae	<i>Artocarpus montanus</i>	FORRU
Moraceae	<i>Artocarpus rubrosocatus</i>	FORRU
Lecythidaceae	<i>Barringtonia khaoluangensis</i>	FORRU
Lecythidaceae	<i>Barringtonia schmidtii</i>	FORRU
Lecythidaceae	<i>Barringtonia thailandica</i>	FORRU
Fabaceae	<i>Bauhinia prainiana</i>	FORRU
Fabaceae	<i>Bauhinia saccocalyx</i>	FORRU
Euphorbiaceae	<i>Blachia andamanica</i>	FORRU
Phyllanthaceae	<i>Bridelia affinis</i>	FORRU
Fabaceae	<i>Burkilliodendron album</i>	FORRU
Calophyllaceae	<i>Calophyllum touranense</i>	BKF
Burseraceae	<i>Canarium kerrii</i>	BKF
Burseraceae	<i>Canarium venosum</i>	BKF
Salicaceae	<i>Casearia parvistipula</i>	BKF
Salicaceae	<i>Casearia pseudoglomerata</i>	BKF
Oleaceae	<i>Chionanthus ambliirrhinus</i>	FORRU
Oleaceae	<i>Chionanthus decipiens</i>	FORRU
Oleaceae	<i>Chionanthus eriorachis</i>	BKF
Oleaceae	<i>Chionanthus maxwellii</i>	FORRU
Oleaceae	<i>Chionanthus sutepensis</i>	BKF
Oleaceae	<i>Chionanthus velutinus</i>	FORRU
Meliaceae	<i>Chisocheton grandiflorus</i>	FORRU
Meliaceae	<i>Chisocheton penduliflorus</i>	FORRU
Phyllanthaceae	<i>Chorisandrachne diplosperma</i>	FORRU
Euphorbiaceae	<i>Claoxylon oliganthum</i>	BKF
Euphorbiaceae	<i>Claoxylon putii</i>	FORRU
Phyllanthaceae	<i>Cleistanthus denudatus</i>	FORRU
Cordiaceae	<i>Cordia globifera</i>	BKF
Euphorbiaceae	<i>Croton acutifolius</i>	BKF

Family	Species	Institute
Euphorbiaceae	<i>Croton fluviatilis</i>	FORRU
Euphorbiaceae	<i>Croton hutchinsonianus</i>	FORRU
Euphorbiaceae	<i>Croton kerrii</i>	FORRU
Euphorbiaceae	<i>Croton kongkandanus</i>	FORRU
Euphorbiaceae	<i>Croton poomae</i>	FORRU
Euphorbiaceae	<i>Croton santisukii</i>	FORRU
Euphorbiaceae	<i>Croton sepalinus</i>	FORRU
Fabaceae	<i>Dalbergia cultrata</i>	FORRU
Araliaceae	<i>Dendropanax siamensis</i>	BKF
Sapotaceae	<i>Diploknema siamensis</i>	BKF
Hamamelidaceae	<i>Distylium indicum</i>	FORRU
Putranjivaceae	<i>Drypetes dasycarpa</i>	FORRU
Putranjivaceae	<i>Drypetes harmandii</i>	FORRU
Putranjivaceae	<i>Drypetes helferi</i>	FORRU
Meliaceae	<i>Dysoxylum papillosum</i>	FORRU
Ehretiaceae	<i>Ehretia siamensis</i>	FORRU
Fabaceae	<i>Erythrophleum teysmannii</i>	FORRU
Moraceae	<i>Ficus griffithii</i>	FORRU
Moraceae	<i>Ficus mollissima</i>	FORRU
Moraceae	<i>Ficus oreophila</i>	FORRU
Malvaceae	<i>Firmiana kerrii</i>	FORRU
Clusiaceae	<i>Garcinia plena</i>	FORRU
Rubiaceae	<i>Gardenia thailandica</i>	BKF
Putranjivaceae	<i>Gardenia truncata</i>	FORRU
Phyllanthaceae	<i>Glochidion santisukii</i>	FORRU
Anacardiaceae	<i>Gluta usitata</i>	FORRU
Rubiaceae	<i>Greenea adangensis</i>	BKF
Malvaceae	<i>Grewia hypotephra</i>	FORRU
Achariaceae	<i>Hydnocarpus curtisii</i>	BKF
Calophyllaceae	<i>Kayea kunstleri</i>	BKF
Myristicaceae	<i>Knema globulatericia</i>	FORRU
Celastraceae	<i>Kokoona filiformis</i>	BKF
Lythraceae	<i>Lagerstroemia spireana</i>	FORRU
Lythraceae	<i>Lagerstroemia undulata</i>	FORRU
Sapotaceae	<i>Madhuca chai-ananii</i>	FORRU
Sapotaceae	<i>Madhuca Chiangmaiensis</i>	FORRU
Sapotaceae	<i>Madhuca esculenta</i>	FORRU
Sapotaceae	<i>Madhuca floribunda</i>	FORRU
Sapotaceae	<i>Madhuca klackenbergi</i>	BKF
Sapotaceae	<i>Madhuca krabiensis</i>	BKF
Sapotaceae	<i>Madhuca punctata</i>	FORRU
Sapotaceae	<i>Madhuca smitinandii</i>	BKF
Sapotaceae	<i>Madhuca stipulacea</i>	FORRU
Sapotaceae	<i>Madhuca takensis</i>	FORRU
Euphorbiaceae	<i>Mallotus calocarpus</i>	FORRU
Euphorbiaceae	<i>Mallotus hymenophyllus</i>	FORRU
Euphorbiaceae	<i>Mallotus pallidus</i>	FORRU
Melastomataceae	<i>Memecylon tricolor</i>	FORRU
Fabaceae	<i>Ormosia mekongensis</i>	FORRU

Family	Species	Institute
Sapotaceae	<i>Palaquium garrettii</i>	FORRU
Sapotaceae	<i>Palaquium hansenii</i>	FORRU
Phyllanthaceae	<i>Phyllanthus angkorensis</i>	FORRU
Phyllanthaceae	<i>Phyllanthus orientalis</i>	FORRU
Pinaceae	<i>Pinus kesiya</i>	FORRU
Sapotaceae	<i>Planchonella stellibacca</i>	FORRU
Polygalaceae	<i>Polygala kradungensis</i>	BKF
Escalloniaceae	<i>Polyosma adangensis</i>	FORRU
Escalloniaceae	<i>Polyosma pilosa</i>	BKF
Araliaceae	<i>Polyscias meliifolia</i>	BKF
Araliaceae	<i>Polyscias thailandica</i>	BKF
Putranjivaceae	<i>Psydrax calcicola</i>	FORRU
Malvaceae	<i>Pterospermum littorale</i>	FORRU
Malvaceae	<i>Pterospermum wilkieanum</i>	FORRU
Rubiaceae	<i>Ridsdalea sootepensis</i>	BKF
Rubiaceae	<i>Ridsdalea thailandica</i>	BKF
Rubiaceae	<i>Ridsdalea uranthera</i>	BKF
Rubiaceae	<i>Ridsdalea wittii</i>	BKF
Malvaceae	<i>Schoutenia godefroyana</i>	FORRU
Salicaceae	<i>Scolopia lucida</i>	BKF
Fabaceae	<i>Senegalia meeboldii</i>	FORRU
Euphorbiaceae	<i>Spathiostemon moniliformis</i>	FORRU
Styracaceae	<i>Styrax apricus</i>	BKF
Myrtaceae	<i>Syzygium cacuminis</i>	FORRU
Myrtaceae	<i>Syzygium corticosum</i>	FORRU
Myrtaceae	<i>Syzygium craibii</i>	FORRU
Myrtaceae	<i>Syzygium fuscescens</i>	FORRU
Myrtaceae	<i>Syzygium globiflorum</i>	FORRU
Myrtaceae	<i>Syzygium ixoroides</i>	FORRU
Myrtaceae	<i>Syzygium kerrii</i>	FORRU
Myrtaceae	<i>Syzygium lakshnakarae</i>	FORRU
Myrtaceae	<i>Syzygium nitrasirakii</i>	FORRU
Myrtaceae	<i>Syzygium refertum</i>	FORRU
Myrtaceae	<i>Syzygium smalianum</i>	FORRU
Myrtaceae	<i>Syzygium winitii</i>	FORRU
Putranjivaceae	<i>Tarenna cinerea</i>	FORRU
Putranjivaceae	<i>Tarenna puberula</i>	FORRU
Putranjivaceae	<i>Tarenna sakae</i>	FORRU
Moraceae	<i>Taxotrophis perakensis</i>	FORRU
Combretaceae	<i>Terminalia glaucifolia</i>	FORRU
Combretaceae	<i>Terminalia pedicellata</i>	FORRU
Fabaceae	<i>Thaigentadopsis tenuis</i>	FORRU
Anacardiaceae	<i>Toxicodendron rhesoides</i>	FORRU
Euphorbiaceae	<i>Trigonostemon kerrii</i>	FORRU
Putranjivaceae	<i>Urophyllum aequale</i>	FORRU
Putranjivaceae	<i>Urophyllum talangense</i>	FORRU
Polygalaceae	<i>Xanthophyllum geesinkii</i>	BKF
Sapotaceae	<i>Xantolis burmanica</i>	FORRU
Sapotaceae	<i>Xantolis siamensis</i>	FORRU