



**2<sup>ND</sup> WORKSHOP ON:  
“INTRODUCTION TO FOREST RESTORATION -  
GENERAL CONCEPTS AND SKILLS”**

**FOR KEY STAKEHOLDERS IN THE DOI MAE SALONG  
REFORESTATION PROJECT**

<b>Date</b>	25 <sup>th</sup> – 27 <sup>th</sup> January 2008
<b>Location</b>	Department of Biology, Faculty of Science, Chiang Mai University, Thailand
<b>Sponsored by</b>	IUCN - The World Conservation Union, Bangkok, Thailand
<b>Organized by</b>	Forest Restoration Research Unit (FORRU), Department of Biology, Faculty of Science, Chiang Mai University

### **Introduction**

FORRU was approached by the IUCN to support the forest restoration project in Doi Mae Salong, Chiang Rai province, being coordinated by the Royal Thai Army. FORRU received a grant for 2007-2008 to assist in nursery training and operation techniques by hosting 2 training workshops and contributing to a stakeholders meeting. FORRU hosted this 2<sup>nd</sup> workshop, entitled “Introduction to Forest Restoration - general concepts and skills” from 25<sup>th</sup> – 27<sup>th</sup> January 2008. The objectives of the 2<sup>nd</sup> workshop were the same as for the 1<sup>st</sup> workshop: to pass on the concepts and technical methods developed by FORRU-CMU, and also improve the current situation and special technical training needs from FORRU to enable the key persons to plan and carry out effective forest ecosystem restoration at Doi Mae Salong.

The workshop brought together participants from various stakeholder groups in the region, contributing to the Mae Salong forest restoration project in different fields of work. These included the head of the Mae Salong project, local community representatives, teachers from government schools in Doi Mae Salong, local government representatives, youth group representatives, and forestry officers.

The training workshop included two parts: nursery techniques for growing native forest tree species and forest restoration techniques demonstrated in experimental field trials. Twenty-two participants joined the workshop including IUCN and SC representatives as well as a diversity of stakeholders in the DMSL reforestation project area.

## 1.1 List of Participants

No.	Name	Position / Organization
1	Col. Chaluy Yamphochai	Head of Doi Mae Salong Forest Restoration Project, Doi Mae Salong, Chiang Rai
2	Sergent. Adul Jaichum	Officer, Doi Mae Salong Forest Restoration Project
3	Sergent. Peerapong Pompim	Officer, Doi Mae Salong Forest Restoration Project
4	Mr. Tanet Chuaemuangpan	Public Health Station, Santikeeree Village, Doi Mae Salong, Chiang Rai
5	Ms. Netsai Vetpeum	Public Health Station, Santikeeree Village, Doi Mae Salong, Chiang Rai
6	Mr. Boonserm Katip	Open School Program Teacher, Mae Salong Nok sub-District
7	Mr. Nirawit Tanarach	Open School Program Teacher, Mae Salong Nok sub-District
8	Mr. Maitree Berkbaan	Open School Program Teacher, Mae Salong Nok sub-District
9	Mr. Pibool Yongpet	Open School Program Teacher, Mae Salong Nok sub-District
10	Ms. Supapich Songkham	CCF, Unisef, Chiang Rai
11	Mr. Seksan Treesakorn	Teacher, Ban Ruamjai School
12	Mr. Sombat Kantaraniwat	Vice head of the Taat Village
13	Mr. Lor-ae Ayeeku	Vice head of the Pakasukjai Village
14	Ms. Ashum Maeya	Member of Youth Group, Anglor-Akha Village
15	Mr. Apee Mueleku	Member of Youth Group, Anglor-Akha Village
16	Ms. Siranee Machueku	Member of Youth Group, Lojhangchon Village
17	Ms.. Tidarat Saejhang	Member of Youth Group, Veterans Village
18	Ms. Amporn Saemor	Member of Youth Group, Veterans Village
19	Mr. Kamron Nguaya	Member of Mae-Janluang village
20	Mr. Adisorn Chaepao	Member of Hae-go village
21	Mr. Asha Pinituksom	Member of Jiang Ja Sai village Chiang Rai

**1.2 Workshop Program – the workshop schedule was modified slightly according to feedback from participants of the first workshop.**

<b>Date/Time</b>	<b>Session/Activity</b>
<b>25/01/008 (FRIDAY)</b>	<b>At CMU Biology Department</b>
08.30	Registration
09.00	Welcome Remarks and Introduction to FORRU
09.40	ANR Technique and The Framework Species Method of Forest Restoration Concepts
10.20	Q&A
10.30	Coffee Break
10.50	Framework Tree species selection exercise
11.50	Q&A
12.00	Lunch
13.00	Seed Collection Scheduling
14.00	Planning - time, labour, costs
14.30	Coffee Break
14.50	Building and running a nursery for growing native forest trees
15.30	Mae Sa Long in my vision: Dream and Reality – audience participation
16.00	Chiang Mai University Herbarium – importance of voucher specimens
19.00	Welcome Dinner
<b>26/01/08 (SATURDAY)</b>	<b>At FORRU Research Nursery, Doi Suthep-Pui National Park</b>
08.30	Leave for Doi Suthep nursery
09.20	Walk along Doi Suthep Forest Trail (Target forest type - Phenology , Voucher specimens , Seed collection) – Refreshments
12.00	Lunch
13.00	Nursery Work Stations (Seed preparation, Germination, Potting – media and containers , Watering , Fertilizer , Disease/pest control, Root pruning, grading and hardening off)
15.00	Coffee Break
15.20	Group Discussion & Production scheduling
16.00	Doi Suthep Temple Visit
17.00	Back to Chiang Mai University
<b>27/02/08 (SUNDAY)</b>	<b>At Ban Mae Sa Mai community tree nursery and experimental field plots</b>
07.00	Leave for Ban Mae Sa Mai
08.30	WWF 2007 plot visit - (plantation design, site preparation, spacing, species mixes) and 98.3 PLOT – Recovery of forest structure, function and biodiversity (with refreshment)
10.00	WWF 2006 plot visit
11.00	Lunch in the village nursery
12.00	Discussion with BMSM Conservation Committee – Refreshments
13.00	Closing Ceremony
13.30	Participants Depart

**Friday 25<sup>th</sup> January 2008**

### **1.3 Opening Ceremony by Head of Biology Department**

Associate Professor Dr. Narit Seetasuwan, Head of Biology Department, Faculty of Science, Chiang Mai University welcomed all the key participants from Doi Mae Salong Forest Restoration Project. Each participant then briefly introduced themselves and the work of their organisation.



Associate Professor Dr. Narit Seetasuwan welcomed all the participants



The participants from Doi Mae Salong Forest Restoration Project

### **1.4 Objective of the Workshop by Dr. Prasit Wangpakapattawong, Biology Department, Chiang Mai University**

## **2. FORRU presentation**

The following VDO and PowerPoints were presented.

### **2.1 Introduction of Forest Restoration Research Unit by “Plook Hai Pen Paa” (How to Plant a Forest Documentary Film) and by Ms. Dutsadee Nilubol, FORRU, Chiang Mai University**

### **2.2 Accelerated Natural Forest Regeneration (ANR) Concepts and the Framework Species Method of Forest Restoration Concepts by Dr. Prasit Wangpakapattawong, FORRU, Chiang Mai University**

### **2.3 Framework Tree species selection by Ms. Tidarach Toktang, FORRU, Chiang Mai University**

A participatory exercise was run by FORRU staff Ms. Tidarach Toktang to encourage participants to discuss species selection for their areas, using the framework criteria and taking into consideration other local requirements. Participants listed a total of 39 species which they would like to see included in the DMSL reforestation program

The participants then divided them into 4 main groups according to the most prominent framework characteristic and economic needs i) rapid growth rate, ii) slow

growth rate but long lived, iii) attractive to wildlife, iv) having some economic benefits. The participants planned to select some of these tree species, collect the seed and grow them in the nursery for planting for the Doi Mae Salong forest restoration project in 2008 or 2009.

<b>Rapid Growth</b>	<b>Long life</b>
<ol style="list-style-type: none"> <li>1. <i>Prunus cerasoides</i></li> <li>2. <i>Melia toosendan</i></li> <li>3. <i>Erythrina subumbrans</i></li> <li>4. <i>Macaranga denticulata</i></li> <li>5. <i>Bauhinia variegata</i></li> <li>6. <i>Azadirachta indica</i></li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Quercus spp.</i></li> <li>2. <i>Sandoricum Koetjape</i></li> <li>3. <i>Ficus spp.</i></li> <li>4. <i>Camellia sinensis</i></li> <li>5. <i>Dipterocarpus spp.</i></li> <li>6. <i>Nephelium xestophyllum</i></li> <li>7. <i>Dipterocarpus tuberculatus</i></li> <li>8. <i>Schima wallichii</i></li> </ol>
<b>Attractive to Animals</b>	<b>Economical Benefit Use</b>
<ol style="list-style-type: none"> <li>1. <i>Ficus spp.</i></li> <li>2. <i>Mangifera pentandra</i></li> <li>3. <i>Phyllanthus emblica</i></li> <li>4. <i>Psidium guajava</i></li> <li>5. <i>Spondias pinnata</i></li> <li>6. <i>Eugenia cumini</i></li> <li>7. <i>Diospyros glandulosa</i></li> <li>8. <i>Baccaurea ramiflora</i></li> <li>9. <i>Ficus heterophylla</i></li> <li>10. <i>Ficus auricui</i></li> <li>11. <i>Ficus religiosa</i></li> <li>12. <i>Oroxylum indicum</i></li> <li>13. <i>Elaegnus latifolia</i></li> </ol>	<ol style="list-style-type: none"> <li>1. <i>Tectona grandis</i></li> <li>2. <i>Artocarpus heterophyllus</i></li> <li>3. <i>Gmelina arborea</i></li> <li>4. <i>Senna siamensis</i></li> <li>5. <i>Cassia fistula</i></li> <li>6. <i>Bombax ceiba</i></li> <li>7. <i>Michelia champaca</i></li> <li>8. <i>Afzelia xylocarpa</i></li> <li>9. <i>Bambusa spp.</i></li> <li>10. <i>Pinus kesiya</i></li> <li>11. <i>Millingtonia hortensis</i></li> <li>12. <i>Magnolia baillonii</i></li> </ol>

**Question and Discussion:**

**How can we know all tree species in Doi Maesalong? We don't know much about trees there.**

**Answer:** A tree inventory should be carried out by a professional botanist. Acharn Maxwell from CMU Herbarium already studied about species present on Doi Tung nearby and has a complete list for Doi Suthep. Both these areas are very similar to DMSL so these lists can be used until a more thorough local survey is completed for DMSL. Indigenous knowledge also is very important. By asking the medicine man in the village, information about tree species and also usage can be documented and passed on to the future generations.

The common names are so different among the different tribes. How to clarify the same understanding in the same species?

**Answer:** The handbook “Trees for Northern Thailand” can be used to make sure everyone is talking about the same species. It is a guide to the species present in the North with photos to confirm the name and also recommend to you where to find that species and how to identify it. In that book, every species has a number, so it is easy to communicate species identification by using the numbers and the pictures, even for people who cannot read. If the species is still unidentified, you can prepare voucher specimen and send it to Ach. Maxwell for identification.

**2.4 Seed Collection Scheduling by EEO Team, FORRU, CMU**

The FORRU team then assisted the participants to prepare seed collection schedules to plan the seed collection work needed for their nurseries, based on the species lists they had previously prepared. These schedule charts can help to guide the villagers about when and where to obtain seeds. The activity was run by dividing them into 2 groups, and guiding them to organize their own seed collection charts from the top 15 selected species that they selected from last session. The chart specified when and where to collect seeds in and nearby their communities or villages. The book “Forest Trees of N. Thailand” and FORRU data and staff experience were all used to construct the charts. Villagers’ local knowledge was used to determine where seeds might be found near the villages.



Seed Collection Chart for Group1

Seed Collection Chart for Group2

**2.5 Building and running a nursery for growing native forest trees by Ms. Dutsadee Nilubol, FORRU, Chiang Mai University.**

The 2 groups of participants from Mae Salong project brainstormed to create their own community nursery plan. Furthermore, they also had to allocate the responsibilities among themselves for nursery work.



Group 1 Nursery Model and duties of work



Group 2 Nursery Model and duties of work

## 2.6 Planning Forest Restoration Projects by Ms. Sudarat Sangkam, FORRU, Chiang Mai University

Sudarat Sangkam presented a PowerPoint on planning and logistics of forest restoration – time, labour and costs. She listed the main types of stakeholders usually involved in forest restoration projects and recommended involving all of them all stages of project planning and implementation, and carefully resolving any disagreements that may arise from differences of opinion. She provided an action timeline for preparing for planting events, outlined maintenance and monitoring activities, and explained how to calculate the costs of restoration.

## 2.7 Mae Salong in my vision: Dream and Reality by Ms. Sudarat Sangkam, FORRU, Chiang Mai University

This activity allowed the participants to reflect and present their feelings and vision of their village in the future and also how to reach that point. The participants had time to think about the development of the environment of Mae Salong for the next 5 years. Then the results were presented within A5 paper by poem, drawing, and short paragraph of comment.

The Future Mae Salong was summarized to this:

- Recovery of forest and forest condition becomes as good as it was 40 years ago.
- Return of wildlife and biodiversity in the area.
- Better water quantity in the dry season and quality.
- No more air pollution, especially from man-made forest fires.
- Increasing environmental awareness among villagers towards forest conservation and restoration.
- Establishment of sustainable ecotourism programs in the area.
- More promoting of conservation projects and more support from outside.

## 2.8 Chiang Mai University Herbarium Visiting By: Mr. J.F Maxwell, CMU Herbarium, Chiang Mai University



Mr. Maxwell explains about how to process voucher specimens

### Question and Discussion

#### Why is voucher material needed?

**Answer:** Plant classification is constantly changing. Identifications are subject to change. Voucher specimens help cross-reference these changes to previous research. Without reference specimens, the plant may be misidentified and cannot be approved in scientific and pharmaceutical research, if they have drug properties. If you have knowledge about a species from your projects, you must be able to communicate that knowledge to others. If the species name is wrong, that knowledge will be applied to the wrong species and all your work is for nothing.

#### Is it possible to have a herbarium at Doi Mae Salong? How to do it?

**Answer:** The specimen collections need special care and also plant identification needs long experience and a good reference library. CMU herbarium contains a lot of specimens and many of them were from Doi Tung and Doi Mae Salong. If they have problem with identification, they can send the dry specimens to CMU for identification. If any of them would like to learn about tree identification, they are also welcome to have special training with Maxwell.



26<sup>th</sup> January 2008

**3. FORRU Research Tree Nursery Visiting Program, at Doi Suthep–Pui National Park headquarters.** *Lectured by: Mr. Cherdsak Kuarak, FORRU research team, Chiang Mai University*

### 3.1 Phenology Survey

The participants walked along the nature study trail and looked at the trees along the example trail, then observed trees with binoculars and gave scores for reproductive phenology and leafing phenology, which they recorded on a worksheet.



Participants practice how to do phenology survey.



Phenology data are very important for nursery production and time to collect seeds.

**Question: Why do you collect the data every 3 weeks?**

**Answer (CK):** Based on FORRU's experience, observations once per month often miss short flowering events, so intervals of 3 weeks record more flowering events. Once per week is a waste of time, since the trees don't change so fast.

### 3.2 Seed Collection and Voucher specimen collection

We started with forest tree seed collection, which is related with the phenology study and seed collection for planting. We can't collect forest tree seed all year round, because each type of forest tree produces flowers and fruits at different time periods. After we collect seed, fruit and leaf from any trees that we can't identify, we make voucher specimens of that tree sample to take it back to the botanist for identification. The participants were shown how to collect fruits for nursery production and seeds and voucher specimen for species identification. In the afternoon, the participants learned about how to work in nursery.

### 3.3 Seed preparation, and germination

Each type of forest tree seed has a different dormancy period. In the nursery, we need to learn about the length of dormancy and try to fast track germination to produce

seedlings quickly. The techniques used in FORRU nursery to tackle different kinds of fruits and seeds were demonstrated to the participants and then they practiced themselves. A lot of questions were raised concerning how to propagate some seedling species especially figs which are quite difficult to propagate.



Mr. Cherdsak shows how to prepare seeds.



Fig seeds are very tiny and need special techniques for germination.

### 3.4 Potting, media containers

After seeds are pre-treated, they are ready to sow into germination trays until the seedlings grow large enough to be pricked out. The participants all practiced potting seedlings into bigger container and they were so enjoy this activity.



Ms. Sudarat shows how to pot seedlings



Participants help us to save the world!

### 3.5 Seedling Care

Cherdsak explained how to raise seedlings in the nursery, such as watering, fertilizer application, and also pest and disease control for better seedling production to meet the target number for tree planting.

### 3.6 Seedling Monitoring and Production scheduling discussion

Cherdsak raised the topic of how to produce seedlings of a wide range of different tree species, which all had different germination rates, growth rate, and also different seed collection periods. The aim was try to produce various species of seedlings of a plantable size (c.40 cm) at the same time, early in the rainy season for planting. A very fruitful discussion then took place among the participants and facilitator. This activity allows the participants to consider more deeply how to plan and manage their seedlings and nursery for better production.



Mr. Cherdsak demonstrated how to manage problem species.



The participants think seriously about how to produce quality seedlings by planting time (May).

27<sup>th</sup> January 2008

**4. Ban Mae Sa Mai Community Tree Nursery and Experimental Field Plots Visiting Program:** *By: Dr. Stephen Elliott, co-founder and director, FORRU*

**4.1 Experimental plot planted in 2007 (sponsored by WWF)**

Dr. Steve explained about how to select sites for planting and how to prepare the site and plant trees in a proper way. Aftercare techniques were also described and the participants viewed the effectiveness of these techniques by examining the trees in the plot.



Dr. Steve explains how to manage the planting site



The current state of the 8 months old plot.

**4.2 Experimental plot planted in 1998 and Control plot**

Participants were amazed by the condition of a 9-year-old plot. The questions raised were about how the trees could perform so well. Most of them were inspired by the tree growth and also the biodiversity that had returned. The “control plot” plot next to the 98.3 plot was used for comparison. No tree planting had been implemented there and the plot was still dominated by tall grasses. Very few trees had established beneath the weeds.



Dr. Steve explains how restoration is achieved in 9 years.



The closed canopy of the 9-year-old plot.

### 4.3 Experimental plot planted in 2006 (sponsored by WWF)

This plot had been planted in June 2006 (1 year and 8 months old). Many of the framework tree species had grown very fast and were more than 2 m tall. Canopy closure was beginning to occur in some places. The participants were excited to see the trees growing so well and enjoyed taking photographs beside the tree species that they were interested in, to show to the villagers at home who did not have a chance to see this plot.



### 5. Discussion with BMSM Conservation Committee: By Ms. Tidarach Toktang, FORRU,

Representatives of Ban Mae Sa Mai village presented a brief introduction about the history of the village and also how to work with FORRU. The participants were very curious about how this village has achieved environmental conservation and also land-use issues were raised a lot along the discussion. This forum inspired the villagers to see their land as a resource for the next generation and encouraged sense of belonging among them. A better understanding between the tree planting project officers and the villagers began to be established.

#### Questions and Discussion with the Environment and Conservation Club Committees:

**What is the history of the village in more detail and why was the village moved down from the original upper watershed site?**

**Answer:** Ban Mae Sa Mai village is the biggest Hmong community in the north, and was established by a Hmong group previously living in the Fang and Mae Cham districts in 1941. Approximately 30 years ago they lived in an upland area (1,300 m elevation; now a FORRU planted plot) and grew cabbages, corn, potatoes and other cash crops. In 1966, all of the

villagers moved to live lower down the valley (1,000 m elevation) because of a water shortage problem.

**How many households are there in Ban Mae Sa Mai and what is the population size?**

**Answer:** In the past there was only one village: Ban Mae Sa Mai. Now there are two, as we divided up the growing population all are Hmong. The new village is named Ban Mae Sa Noi. In total in both villages, there are now 210 households and about 1,950 people.

**What is the main occupation of the villagers and how much land area is allocated to each family?**

**Answer:** The main occupation is farmer. Other occupations include casual labor or trading. Most villagers work in the city (80%) especially the younger people. The other 20% have vegetable farms and orchards. In the past, almost all farmers had field crops uphill and litchi orchards downhill. Nowadays, new intensive agriculture is being introduced such as paprika or sweet pepper in nurseries. There are no land title deeds, because the area is in a National Park. The villagers have compromised with the park authority to collect some NTFPs, and some fallen branches for fuel woods. The farming area is about 10 – 15 rai per family. Due to the limited area for farming, many villagers have moved to work in Chiang Mai town.

**What made the villagers want to establish the environmental conservation club?**

**Answer:** Because we had a critical problem about the lack of water for household and agricultural use. Especially in 1989, we had social conflict amongst water users. Some villagers established the conservation club to address this problem, and it was suggested to try to avoid using the upland areas for agriculture, and to restore and conserve forest in those areas to improve the water source.

**Do most villagers agree or support the environmental conservation club? Is there social conflict amongst the villagers still? How you solve the conflict problem?**

**Answer:** At the beginning of the conservation club (in 1990), half of the villagers supported and half disagreed with the club. Those supporting it thought that forest restoration would help to create more rain and water resources. Those against it didn't want to lose their own land for cultivation to restore the forest because they would lose income also. The social conflict between these groups was significant.

**How did you solve this problem?**

**Answer:** The club members at that time were vigorous in their target and tried to make villagers understand the usefulness of forest restoration. They allowed them to move to the low lands gradually, within 3 years. They reduced agriculture in the uplands gradually. This changing of opinions took more than 5 years, but there is a much better acceptance now that they can see the benefits.

### **Does the village have rules for environmental conservation and punishment?**

**Answer:** There are many village rules to protect the forest, e.g. does not cut trees or use timber from the conservation forest (use branches from the community forest instead but don't cut down trees because this is illegal in the Doi Suthep-Pui National Park. Don't hunt; grow vegetables or burn land in the upland areas. Punishment for offenders is a fine, the size of which depends on the severity of the activity.

### **How did the villagers know about FORRU?**

**Answer:** FORRU came through the Doi Suthep-Pui National Park to this village. The first initiative was from the villagers who wanted to plant various species and wanted to select species being planted by them. FORRU was looking for the planting site to test the Framework Species Method in the field by collaborating with villagers. The park also wanted to plant trees and restore some degraded areas in the park for the Golden Jubilee. We all have different reasons to plant trees, but same goal. Thus the joint collaboration was established in 1996.

### **Does the National Park provide any support?**

**Answer:** Doi Suthep-Pui National Park provides some labor on planting day and also supports the firebreak cutting activity and also some money to support the fire-lookout team.

### **What is the usefulness of forest restoration?**

**Answer:** After restoring the forest here for 10 years we found that:

- There is an increase in wildlife returning to the forest, such as civets, hog badgers, barking deer, wild boar etc.
- There is an increase in rainfall and more water and it flows all year.
- Better image to public and society towards environmental conservation.



The environment and conservation club committees



Comments and Questions from participants



Dr. Steve presented the Framework Species Info Cards to Col. Chaluy for using in the project.



The environment and conservation club committee received a donation from the participants' representative to support their fire prevention program.



Mr. Tawatchai from IUCN presented the certificate to the participant.



With pride after workshop closed.

## 5. Workshop Outcome

From this workshop the participants learnt a lot as follows:

- Learning about how to study forests and the ecosystem approach.
- Learning about the framework trees species method for forest restoration
- Learning about how to propagate and produce seedlings for forest restoration project.
- Learning about community nursery design and establishment.
- Learning about how to develop a community approach and also how to manage issues and conflicts among themselves and various stakeholders.

## 6. Workshop conclusion

The workshop ended with the participants resolving to use their new knowledge and techniques, learnt this training workshop, for developing forest restoration activities at Doi Mae Salong in 2008 with assistance of IUCN and FORRU-CMU. They will look for ways



forward to increase cooperation among the villagers for Doi Mae Salong forest restoration activities and their environment conservation awareness creation.



Closing Ceremony of the 2<sup>nd</sup> training workshop on  
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