

# News on the Model Forest Approach



## to Sustainable Forest Management

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This newsletter is produced by the FAO/Government of Japan Regional Project on Assistance for the Implementation of the Model Forest Approach for Sustainable Forest Management in the Asia Pacific Region (GCP/RAS/177/JPN)

### Ngao MF Partners Visit Successful Bamboo and Medicinal Plant Enterprises

Thirty five (35) Ngao MF partners visited successful bamboo and medicinal plant enterprises in Prachinburi, Chachoengsao, Kanchanaburi, Ang Thong and Chainat from 5-9 Feb 2002. The study tour was supported by the RMFP and included Ngao MF partnership committee members, field staff and leaders of organisations actively involved in the development of Ngao MF. The study tour included lectures on management techniques and harvesting regulations, on-site observations, and discussions with experts. The places visited reflected different aspects of the conservation, management, utilization and marketing of bamboo and medicinal plants.

#### Nong Khon Community Forest

The local people earn their main income by making and selling bamboo wicker baskets called "Kheng". Better prices and markets have resulted in an increased demand for the raw material, *Pai Ruak* (*Thyrsostachys siamensis*), which is generally collected from forests, and the community faced a shortage of raw material. In 1999, the local community started a community forest programme to conserve the forest and ensure supply of raw materials. Community Forest Committees were established, and regulations formulated for the management of the community forests.

*Continued on page 2*



**Khun Phumsak Boontham explaining how to develop a successful bamboo farm**

#### Terminal Evaluation of RMFP

The terminal evaluation of the Regional Model Forest Project (GCP/RAS/177/JPN) is scheduled to be carried out from 14 April to 11 May 2002 by a three-person team comprising Dr. Kok-Chew Lai, representing FAO (mission leader), Dr. Kenichi Ishida, representing the Government of Japan (donor), and Dr. Jerry Canonizado, representing the four Project countries. The mission will visit all four Project countries during the evaluation.

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#### QUOTE

"Hatred never ceases by hatred,  
but by love alone"  
Dhammapada

*Continued from page 1 - NgaoMF Partners Visit Bamboo Enterprise*

The main community forest activities are fire protection, forest patrolling and enrichment planting using *Pai Ruak*. In addition, the community has promoted bamboo cultivation on public lands such as schools and temples.

### **Bamboo Culm Cultivation**

*Khun Sangob Nongkaew* and *Khun Sompong Wongwai* have cultivated *Pai Tong Dam* (*Dendrocalamus* sp.) and *Pai Tong Moh* (*Dendrocalamus* sp.), both indigenous species, for over 10 years for the production of shoots and culms. Compared to *Pai Tong Sri Prachin*, *Pai Tong Dam* produces a bigger and tastier shoot. However, due to lack of water, local people are unable to produce off-season shoots. The main income is, therefore, derived from producing bamboo culms for fishery and a paper pulp factory.

Optimal spacing for *Pai Tong Dam* is 6m x 6m. It requires weeding, pruning and clearing of old aged stems. Each year, only 3-4 new stems will be maintained per clump. The provision of fertilizers (27-5-5 of NPK) and salt is recommended. In the fourth year of planting *Pai Tong Dam*, the culms can be harvested. Most markets require three-year old culms. The average price is about 30-40 Baht/culm. Culms of 14 meters or more in length attract a better price. A larger-sized bamboo, *Pai Tong Moh*, can attract up to 200-250 Baht/culm in the market (1 USD = about 44 Baht).

### **Bamboo Furniture Factory**

C.H. Bamboo Company Limited is one of the leading manufacturers and exporters of hand-made bamboo products, including souvenirs and furniture. In addition to bamboo, rattan is also used in the production of items. All raw materials are supplied by local villagers, and all materials except *Pai Ruak* are collected from forests.

### **Bamboo Shoot Cultivation: *Pai Tong Sri Prachin***

*Khun Phumsak Boonthum* is one of the most successful bamboo cultivators in Prachinburi, with over 10 years experience. Like other farmers, he planted *Pai Tong Kieo* (*Dendrocalamus* sp.), which generated good returns, until 1995, when *Pai Tong Kieo* flowered all over Thailand and then died. *Pai Tong Sri Prachin* was then introduced, but early plantings did not do well due to insufficient knowledge. Another significant adverse factor was high ground water level. Research in 1999 helped in the modification of planting methods, and the subsequent successful cultivation of *Pai Tong Sri Prachin*. Currently, *Khun Phumsak* owns more than 100 rai (16 ha) of *Pai Tong Sri Prachin* in monoculture, as well as integrated with fruits, such as orange, jackfruit and pomelo.

*Pai Tong* can grow well in dry areas. Technical management is required to improve drainage when planted close to water. Optimal spacing is 6m x 6m, with 44 clumps per rai. In general, farmers can start harvesting shoots after 8 months to one year of planting. As *Pai Tong Sri Prachin* requires high nutrients, fertilisers, chicken manure and chemical fertilisers (27-5-5), should be provided once every three months after planting. Weeding is necessary to reduce competition. Mulching with straw or bamboo leaves will help maintain soil moisture and produce early shoots. Stems older than three years are cleared,

and three new stems per clump are left. In addition, farmers usually cover the top of bamboo shoots with a bag of rice husk to produce white shoots, which fetch a better price. Labor requirement is about 2 persons per 30-rai plot.

According to *Khun Phumsak*, the processes for off-season shoot production start with cleaning the bamboo clump in October and fertilizing with chicken manure in November. First watering will begin on or around 5 December, and repeated every 5-7 days. Off-season shoot harvesting can be started from 25 January. In general, younger bamboo (one year old) will yield off-season shoots earlier than older bamboo. *Pai Tong Sri Prachin* yields about 100 kg/rai/year. Harvesting for bamboo shoots follows a 3-day cycle. To generate productive and qualified shoots, the



*Pai Tong Sri Prachin* air-layering, Prachinburi

shoots will be cut above ground level, and at least 2 buds left to generate new shoots. In general, the new shoots will emerge after 15 days. There are no major pests or diseases. Income derived from the cultivation of *Pai Tong Sri Prachin* can be classified into 3 categories: shoot, stem and seedling. The price of bamboo shoots, the main product, varies from season to season, with seasonal shoots selling at around 3-10 Baht/kg, while off-season shoots attract about 30 Baht/kg. Total income from bamboo shoots is about 35,000 Baht/rai/year. Old stems cleared from the plots will be sold to a paper and pulp factory at 500 Baht/ton. Price of bamboo seedlings is about 10-15 Baht/seedling. Currently, there is no market limitation for *Pai Tong Sri Prachin* shoots, stems and seedlings. The demand for shoots



is high, from both the public and bamboo shoot factories.

### **Bang Chao Cha Basketry and Museum**

Traditionally, bamboo baskets were used as containers by rice growers. Over time, people switched to plastic baskets. Bang Chao Cha bamboo wicker was initially produced for household use, later expanding to a commercial scale. As the importance of bamboo wicker was realised, so did Bang Chao Cha's wisdom and skills, and the community development office started to promote and diversify bamboo wicker products to meet the needs of the market. Since 1993, the demand for Bang Chao Cha's products has increased, and in 1977, a Royal Project under the patronage of Princess Sirintorn sponsored two members of Bang Chao Cha Basketry to attend training to increase their efficiency in bamboo wicker production.

In 1999, the Bang Chao Cha Bamboo Basketry Museum was opened, to collect bamboo works related to local culture and livelihood; conserve traditional wisdom; increase income for local people; and transfer knowledge of bamboo wicker to younger generations.

Bamboo wicker products are classified as fine, intermediate and coarse based on their quality. Fine products are used for export, and the remainder for the domestic market. The raw materials used are *Pai Si Suk (Bambusa blumeana)*, *Pai Sang Nuan (Dendrocalamus membranaceus Munro)* and rattan.

### **Chao Praya Apai Phubas Hospital**

*Medicinal Plants, Thai Traditional Medical and Health Tour*  
The hospital houses the Thai Traditional Medical Museum, which collects textbooks and references on the use of Thai traditional medicines. Research on the use of medicinal plants did not seriously start until 1983. Ms. Supaporn Pitiporn, a pharmacist at the hospital, started the medicinal plant program by conducting surveys of local medicinal plants at Khao Yai National Park. Medicinal plant species and medical indications were identified with the support of local experts. Scientific methodology was also applied for the analysis and synthesis for medical indications.

#### *Medicinal plant initiative*

The main objectives of the medicinal plant initiative are to conduct research and develop herbal medicines; conserve Thai wisdom and support the *Sufficient Economic Theory*; reduce medicinal imports; and produce, market and protect Thai intellectual property. The hospital now provides three main groups of medicinal herbal plant products, herbal medicines (24 items), cosmetics (19 items) and beverages (7 items). The total income generated from herbal products is approx. 8-9 million Baht/month, with some products exported, mainly to Japan and Australia.

Raw materials are obtained by

promoting the cultivation of required medicinal plants by providing local people with seedlings and intensive training; buying from Khao Hin Sorn Education and Development Centre; and buying from other regions of the country if local supplies are not sufficient.

#### *Thai traditional medicine program*

The hospital started a Thai traditional medical program in 1998 with "one-spot" herbal massages and saunas. Oil and foot massages were introduced in 2000. The program is popular among orthopaedic and allergy patients, post-delivery women and health tour groups.

### **Khao Hin Sorn Education and Development Centre**

Khao Hin Sorn Education and Development Centre is a Royal Project, established in 1979. The activities of the center include, sustainable agriculture, water resource, soil, plant and welfare development; propagation of *Saccharum spontaneum* for soil and water conservation; forest rehabilitation; and technology transfer and welfare development.

#### *Medicinal plant program*

In 1980, King Rama IX initiated a medicinal plant program at the center. A medicinal plant garden covering about 15 rai was established to collect Thai medicinal plants for public education, and research on medical indications. Today, the garden contains over 400 species of medicinal plants. Activities are diverse and include: promoting medicinal plant cultivation among farmers with a market oriented policy; cooperating with 15 villages to grow medicinal plants for the production of herbal products; transferring technology on producing herbal products to people; cooperating with Chao Phaya Apai Phubas Hospital to organize health tour programs for the public; and producing medicinal plant seedlings for public distribution.

*By Ms. Phusin Ketanond and Mr. Jira Jintanugool  
Royal Forest Department, Thailand*



**Observing medicinal plants at Khao Hin Sorn  
Education and Development Centre**

# Ants at Ngao MF

## Overview

The ant is a group of insect known worldwide. Ants are found in many locations with different environments. It can be found in the house, forest, on the ground, beneath the soil, or in the tree canopy. The population of some ant species is more than 1,000,000 individuals per colony. The average size of an ant colony is about 2,000-3,000 individuals. About 15,000 species of 300 genera of ant have been classified.

In Thailand, there are about 800-1,000 ant species. Since ant diversity (number of species, number of individuals and location) is very high, it can play a major role in many ecological systems. Some ants are scavengers that decompose organic matter; some can improve the soil physical character; some are hunters of small insects. This latter advantage can be applied for biological control of insect pests. Some ants are also edible e.g. the red ant (*Oecophylla smaragdina*) has been consumed for a very long time. On the other hand, some ants can be harmful to humans.

## Beneficial ants at Ngao MF

As mentioned above, ants can be beneficial for ecological and consumption purposes.

### 1. Ecological role:

Most ants build their nest under the ground, usually using decayed wood for nest building. This activity will stimulate the decomposition process of wood. Some ants that have their nests in the soil gather seeds dropped on the ground and store them in the nest. Seeds contain “elaiosomes”, a substance that is food for ants. Most of these seeds can still germinate. It is believed that seeds stored by ants have higher germination rates compared to other seeds, due to the proper germination environment in the nest, such as moisture content and temperature. Moreover, seeds stored inside an ant nest would escape seed predators.

### 2. Biological control:

Ants are one of the most effective predators for insect pest control because of their number and “cruel habits”. Ants hunt their prey at every stage, i.e. egg, larvae and adult. At Ngao MF, it was found that *Crematogaster spp.* ants eat the eggs and young larvae of the Teak beehole borer. This is beneficial for using the ant to control this most important teak pest. There are many research activities at Ngao MF concerning biological control of Teak beehole, in which ants are the most common control agent.

### 3. Consumption:

There are 2 ant species consumed by human beings, which include the red ant and *Carebara sp.* For the red ant, people usually eat the egg and young nymph, while *Carebara sp.* is harvested in the adult stage. There are many nutrients in ants.



Red ant eggs are very popular for eating

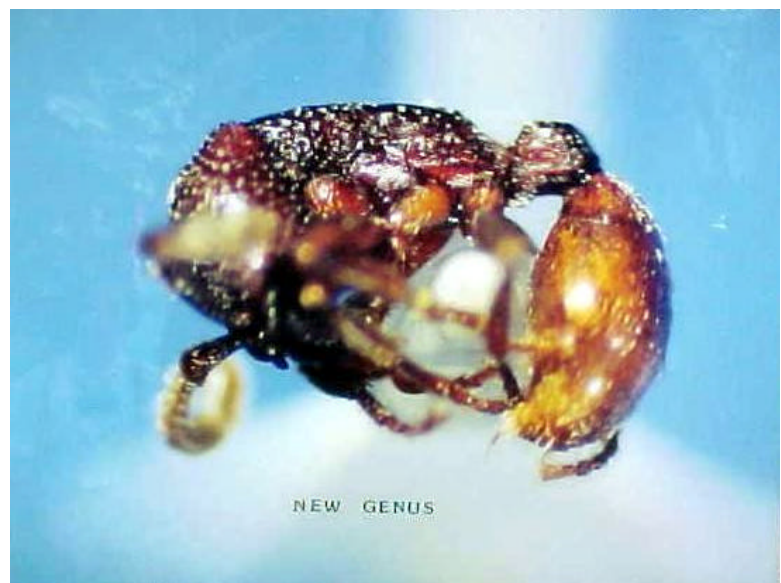
## New ant genus at NMF

Associate Professor Decha Wiwatwittaya of the Faculty of Forestry, Kasetsart University first discovered a new ant genus in Tung Yai Naresuan Wildlife Sanctuary. The classification procedure is in process. The ant taxonomist had surveyed the Ngao MF area during September-December 2001, and also found this new ant genus. Hence, it is possible that other new species may be discovered at NMF if there is enough research.

## Ants abundant at NMF

From the ant survey at NMF, 108 species of 47 genera were reported. The taxonomist remarked that there is a high possibility of discovering more new species since there are many land use patterns in NMF that taxonomists have not studied.

*By Kobsak Wanthonchai and Sasithorn Hasin, RFD Forest Pest Research and Control Center 1, Ngao, Lamphang*



A new genus of ant, first discovered at Tung Yai Naresuan, was also found at Ngao MF



## Ngao MF Partnership Progresses

An interim Ngao MF Partnership Committee was formed on 19 October 2001 at a meeting of Ngao MF stakeholders. Mr. Ubol Jarig was elected as chairman, Mr. Sumai Maiman as secretary, and 9 others as committee members. The first meeting was held on 2 November to assign responsibilities to committee members, and discuss its role and further action. Steps to establish a permanent body for Ngao MF, namely a *Ngao Model Forest Development Association*, were agreed too as a priority. Formal and informal meetings have been held to further discuss the establishment of a Ngao MF Development Association, and partnership development among stakeholders. Mr. Tang Hon Tat and Mr. Ravi Hegde of the RMFP participated in the partnership committee meeting on 3 April at Pongtao Tambol Administrative Organisation in Ngao MF.

Two study tours were conducted to provide more knowledge and experience to the interim committee and partnership group. The first was from 6-9 February 2002. Nine of the 11 committee members and 24 other stakeholders joined the study tour to observe best practices in bamboo cultivation, medicinal plant cultivation and utilisation, community forest management and other community development activities in the provinces of Prachinburi, Chachoengsao, Kanchanaburi, Angthong and Bangkok. The second study tour was organised for the committee and key stakeholders to observe and learn from the successful partnership development in Nan and Phrae Provinces from 19-20 March 2002.

*By Mr. Jira Jintanugool, RFD, Thailand*

*Continued from page 4*

### Ant species identified at Ngao MF

No.	Scientific name	No.	Scientific name	No.	Scientific name
1.	<i>Aenictus sp.</i>	36.	<i>Lepisiota sp.1</i>	72.	<i>Pheidole sp.2</i>
2.	<i>Amblyopone reclinata Pachycondyla sp. 4 of WJT</i>	37.	<i>Lepisiota sp.2</i>	73.	<i>Pheidole sp.3</i>
3.	<i>Anochetus graefferi</i>	38.	<i>Leptanilla sp.1</i>	74.	<i>Pheidole sp.4</i>
4.	<i>Anoplolepis gracilipes</i>	39.	<i>Leptogenys diminuta</i>	75.	<i>Pheidole sp.5</i>
5.	<i>Anoplolepis longipes</i>	40.	<i>Leptogenys kitteli</i>	76.	<i>Pheidologaton diversus</i>
6.	<i>Camponotus sericeur</i>	41.	<i>Leptogenys sp.1</i>	77.	<i>Philidris sp.1</i>
7.	<i>Camponotus (Myrmosericus) rufoglaucus</i>	42.	<i>Leptogenys sp.2</i>	78.	<i>Plagiolepis sp.2</i>
8.	<i>Camponotus (Tanaemyrmex) sp.2</i>	43.	<i>Meranoplus bicolor</i>	79.	<i>Plagiolepis sp.1</i>
9.	<i>Camponotus (Colobopsis)</i>	44.	<i>Monomorium destructor</i>	80.	<i>Polyrhachis (Myrmhopla) bicolor</i>
10.	<i>Camponotus (Colobopsis) leonadi</i>	45.	<i>Monomorium chinensis</i>	81.	<i>Polyrhachis (Campomyrma) holidayi</i>
11.	<i>Camponotus (Tanaemyrmex) sp.</i>	46.	<i>Monomorium phloricola</i>	82.	<i>Polyrhachis (Crytomyrma) laevissima</i>
12.	<i>Camponotus (Tanaemyrmex) sp.3</i>	47.	<i>Monomorium pharaonis</i>	83.	<i>Polyrhachis (Myrma) proxima</i>
13.	<i>Cataulacus granulatus</i>	48.	<i>Monomorium sechellense</i>	84.	<i>Polyrhachis (Myrmhopla) dives</i>
14.	<i>Centromyrmex sp.</i>	49.	<i>Mymecina sp.1</i>	85.	<i>Prenolepis sp.1</i>
15.	<i>Cerapachys sp.</i>	50.	New Genus * (This new species is being classified process.)	86.	<i>Protanilla sp.1</i>
16.	<i>Cerebara sp.1</i>	51.	<i>Ochetellus sp.1</i>	87.	<i>Pseudolasius sp.1</i>
17.	<i>Crematogaster (Crematogaster) rogenhoferi</i>	52.	<i>Odontomachus rixosus</i>	88.	<i>Recurvidris sp.1</i>
18.	<i>Crematogaster (Crematogaster) sp 1.</i>	53.	<i>Odontoponera denticulata</i>	89.	<i>Solenopsis geminata</i>
19.	<i>Crematogaster (Crematogaster) sp 2.</i>	54.	<i>Oecophylla smaragdina</i>	90.	<i>Solenopsis sp.2</i>
20.	<i>Crematogaster (Orthocrema) sp 1.</i>	55.	<i>Oligomyrmex sp.1</i>	91.	<i>Strumignys sp.1</i>
21.	<i>Crematogaster (Physocrema) inflata</i>	56.	<i>Pachycondyla sp. 4 of WJT</i>	92.	<i>Tapinoma melancephalum</i>
22.	<i>Cryptopone sp.1</i>	57.	<i>Pachycondyla (Bothroponera) sp.1</i>	93.	<i>Tapinoma sp.1</i>
23.	<i>Diacamma sp.1</i>	58.	<i>Pachycondyla (Brachyponera) luteipes</i>	94.	<i>Technomyrmex butteli</i>
24.	<i>Diacammavagans</i>	59.	<i>Pachycondyla astuta</i>	95.	<i>Technomyrmex modiglianii</i>
25.	<i>Dilobocondyla sp.1</i>	60.	<i>Pachycondyla leewenhoveki</i>	96.	<i>Technomyrmex kraepelini</i>
26.	<i>Dolichoderus thoracicus</i>	61.	<i>Pachycondyla sp.1</i>	97.	<i>Tetramorium lanuginosum</i>
27.	<i>Dolichoderus tuberiferi</i>	62.	<i>Paratrechina longicornis</i>	98.	<i>Tetramorium nipponense</i>
28.	<i>Dolyrus laevigatus</i>	63.	<i>Paratrechina opaca</i>	99.	<i>Tetramorium parrum</i>
29.	<i>Gnamptogenys sp.1</i>	64.	<i>Paratrechina sp.1</i>	100.	<i>Tetramorium simillimum</i>
30.	<i>Gnamptogenys bicolor</i>	65.	<i>Paratrechina sp.2</i>	101.	<i>Tetramorium sp.1</i>
31.	<i>Gnamptogenys binghami</i>	66.	<i>Paratrechina sp.3</i>	102.	<i>Tetramorium walshi</i>
32.	<i>Hypoconera sp.1</i>	67.	<i>Paratrechina sp.4</i>	103.	<i>Tetraconera allaborans</i>
33.	<i>Hypoconera sp.2</i>	68.	<i>Pheidole capellini</i>	104.	<i>Tetraconera attenuata</i>
34.	<i>Hypoconera sp.3</i>	69.	<i>Pheidole nodifera</i>	105.	<i>Tetraconera rufonigra</i>
35.	<i>Iridomyrmex anceps</i>	70.	<i>Pheidole plagiaria</i>	106.	<i>Tetraconera attenuata</i>
		71.	<i>Pheidole sp.1</i>	107.	<i>Tetraconera rufonigrm</i>
				108.	<i>Vollenhovia sp.1</i>

**Remark:** \* This new species is being classified.

*Continued from page 10 - DENR Deploys Technical Assistance Teams in Samar*

The Teams will conduct information, education, and communication activities to POs/barangays on the Community Based Forest Management Program and relevant forest and environmental policies and programs. They will also assist POs in establishing linkages and networks with government and private institutions.

The deployment of these Teams is possible through the concerted efforts of the Ulot Watershed MF Project, Samar Island Biodiversity Project and the management of the DENR through its regional and field offices.

*By Ms. Purificacion S. Daloos, DENR, Tacloban*

## Lin'an MF Partners' Meeting

A Lin'an MF partners' meeting was held on 5 February 2002 at the Lin'an Forestry Bureau (LFB). About 30 persons, including representatives from the LFB, Zhejiang Forestry College (ZFC), Hangzhou Forestry Department, Lin'an Forest Research Institute, Forestry Stations, Women's Federation, farmers, flower growers and the private sector, attended. Also present were Prof. Jiang Chunqian of the CAF and Deputy NPC to the RMFP, Mr. Tang H.T. and Mr. Ravi Hegde of the RMFP. The meeting chairperson, Mr. Tang Mingrong, Deputy Director, LFB, announced that there were some new partners present and asked everyone to introduce themselves.

Mr. Wang Anguo, coordinator of the Lin'an MF partnership, then presented a review of the work carried out in the LMF partnership development. Among the activities carried out were identifying new markets for Lin'an's NTFPs in Nanjing and Shanghai; initiating bamboo partnership and hickory partnership group meetings to discuss issues; helping farmers to solve problems in bamboo development; giving assistance to poor people; and providing training workshops to its partners.

Professor Zhou Guomo, Vice President, ZFC, said that improvement of LMF partnerships and meeting the needs of the partners are very important aspects of the LMF Project. The ZFC has received much support from the LFB, and much of its research publications are based on work in Lin'an. It is also collaborating with the LFB in a number of MF activities supported by the RMFP, e.g. review of forest policy; impacts of *Lei* bamboo monocultures on soil erosion and fertility, and biodiversity; impacts of eco-tourism development; and development of a pilot GIS system for the LMF. The progress of these activities will be discussed with Mr. Tang and Mr. Hegde in the afternoon at the ZFC. With China joining the WTO, understanding the WTO regulations and its implications are important for the LMF partners.

Prof. Jiang responded that a workshop on the implications of the WTO will be organised for LMF partners, with the support of the RMFP in 2002. He said that in addition to the activities described by Mr. Wang and Prof. Zhou, the CAF is also completing the development of a web-site on the Lin'an MF, with support from the RMFP and the IMFNS. Some LMF partners had attended a C&I workshop in Beijing, and Lin'an has been identified as one of the sites for testing the suitability of the national level C&I at the FMU level (which will facilitate the development of C&I for the LMF).

The Deputy Director, Hangzhou City Forestry Bureau, said the MF has done much work to focus on SFM and rural development, and Lin'an is one of the few cities with a clear forestry development plan. In addition to bamboo and hickory, the LFB has proposed a new NTFP, Chinese torrey, to be developed in Taihu Yuan Township, and this can attract more partners to join the MF project. He was very impressed by Mr. Wang's presentation, especially with the MF's efforts to integrate many sectors, and to use a market approach to promote cooperation among partners.

The bamboo shoot company's representative said that the

initiative to raise awareness of, and find new markets for, Lin'an's NTFPs in the cities of Nanjing and Shanghai in 2001 helped them sell more products and find new markets. He hoped that there would be more activities like this in other cities in future.

The bamboo panel company's representative said that he had been happy to host many participants to various MF workshops in the past two years, and had gained much new information from the visitors. He said that the tax rate for the bamboo sector is too high and urged a review as soon as possible. Mr. Tang Mingrong responded that some changes in the tax structure might result from a policy review that is being undertaken.

The Lin'an Bamboo Association's representative said that Lin'an used to be the main bamboo sector in the country. However, other centres have developed bamboo sectors, and Lin'an now has to respond more aggressively. Mr. Tang Mingrong responded that improvement of quality of bamboo and hickory, and introduction of other products are very important for the continued development of the MF. Professor Shen of ZFC said that the efforts to find new markets for their NTFPs, especially bamboo shoots, should include information on how the products can be used (e.g. cooked). The Zhejiang Provincial Government has allocated to Lin'an two million Yuan for agricultural development and two million Yuan for forestry development.

Mr. Tang, CTA, RMFP, congratulated the LMF Secretariat and its partners for their good progress in the development of the LMF. He said that this is a crucial year for all four MF Project countries as the RMFP is scheduled to end in July 2002. He urged the LMF Secretariat and its partners to continue with their good work, and ensure the documentation of its experiences so that it can be shared with other communities in the country, as well as other countries. He thanked the CAF, LFB, ZFC and LMF Secretariat for agreeing to organize a regional workshop on "best practices" in bamboo and hickory cultivation, use and management, and eco-tourism development for the other three Project countries in May/June 2002.

*By Jiang Chunqian, Deputy NPC, CAF  
Tang Mingrong and Wang Anguo, LFB*



Participants at Lin'an MF Partners' Meeting

# Pilot COHP Workshop in Paukhaung MF

From 21-28 January 2002, a training workshop was conducted on the pilot implementation of the National Code of Forest Harvesting Practices for Myanmar in the Paukhaung MF. The workshop involved 15 officers from the Myanmar Forest Department and the Myanmar Timber Enterprise. Prof. Kyaw Htun (Deputy Director FD) and U Khin Zaw (Deputy General Manager MTE) attended the full workshop and helped the FAO consultant, Mr. Clynt Wells, conduct the workshop. The participants spent 8 days at both Pyay and Paukhaung forest working through the draft Code and field guides, and steps for their implementation.

The workshop covered:

## **Introduction**

This was aimed at setting the Code of Practice in context and considered sustainable harvesting and how a code fits into the overall forest management approach; the importance of competency and the process towards competency based training; and safety and the use of risk assessment to achieve an effective and affordable solution.

## **Planning principles**

Myanmar has a national forest plan, forest management plans and operational plans. The workshop considered and prepared a strategic harvesting plan to schedule areas to be harvested over a 3-5 year period and the development of the road network and silviculture; and operational harvesting plans for both elephant and machine extraction. The differences in approach and detail between elephants and machines were discussed. Elephant extraction has a very light impact but necessitates largely downhill logging and some dragging through watercourse buffers to landings and floating points.

## **Pre-harvest procedures**

This focused on the importance of collecting and using high quality data for the planning process, and using this to assess extraction and silvicultural options. An inventory exercise was conducted and the data used to assess the likely yield under the Myanmar Selection System, the nature and viability of the residual stand, the possible future yield from the residual stand, and the options if yield or residual stand structure are less than desirable.

Silvicultural principles and the use of tree-marking and harvesting to maintain and enhance forest productivity, instead of enrichment planting or plantation options, were discussed.

The format, procedures and process of providing tree location and management zoning maps for use in harvest planning, and marking watercourse buffers were discussed.

## **Operational planning**

The participants worked through the process of preparing an Operational Plan involving both a plan document and a harvesting map. Operational plans were prepared for compartments in the Paukhaung MF area and the approaches of different participants were discussed.

A specific issue was how to handle Code exceptions. In areas

that have been logged, it may be sensible to re-open and use the previous infrastructure, even if this is contrary to the strict letter of the Code. The comparative impact of using what exists and building new infrastructure should be considered.

## **Roading**

Roading, specifically road drainage, was identified as a problem area. The issue was not road construction but the provision of effective drainage upon road re-opening, and decommissioning prior to the wet season. The construction of water bars, roll-over water bars and inverts was demonstrated and discussed.

## **Harvesting practices**

The workshop focused on aspects of operational assessment. Under the pilot Code, MTE has to conduct a Field Check during normal supervision. Basically this is a checklist to ensure that standards are known and being progressively applied. FD officers are required to do a more rigorous assessment, a form of sound practice indicator which considers key elements of the Code and scores the effectiveness of compliance. These were demonstrated and discussed.

## **Implementation plan**

On the final day the group worked through the sequence to implement the pilot Code and identified the actions, procedures, timing, location, etc of these aspects. From this an implementation plan has been prepared.

Since the workshop, the pilot Code and field guides have been revised and will be translated into Myanmar for use in the implementation. A procedures manual is being prepared to guide field staff and a formal implementation plan has been produced.

The pilot implementation will commence in March-April and be assessed in May-June by conduct of a Code Audit. After this, the pilot Code will be revised to address any issues of detail, procedure or practice that have proven impractical or ineffective. The revised Code will be presented to a workshop of senior FD and MTE officers for endorsement of a revised national code. It is hoped that this will be submitted to government with a recommendation for endorsement and wider application.

*By Clynt Wells, FAO Consultant, Prof. Kyaw Htun, FD, and U Khin Zaw, MTE*



**Participants discussing water course buffer situations**



# NWFPs in Paukhaung MF

## Introduction

The forests of Myanmar are rich in a wide range of NWFPs. It is well accepted that NWFPs, if sustainably managed, are important potential sources of revenue. About 75% of the total populace in rural areas depend on forests to meet their social and economic needs. Most of the NWFPs are essential for domestic consumption as well as for cash income. As the population increases, so does the demand for NWFPs. The western parts of the Bago Yoma forests lying in PKMF are abundant in NWFPs, which fall into six categories.

## 1. Fibre products

These include bamboo, grasses and plant fibres. Bamboo is the most abundant and versatile NWF with uses including construction, home furnishings, fences, flooring, roofing, tools, and boats. Rural families earn money from cutting and selling bamboo, particularly during farm breaks. Every aspect of rural life has been influenced by bamboo. Different grasses in PKMF are palatable for livestock. Plant fibres are used locally. There are more than 10 species yielding fibres in PKMF. *Bambwe* (*Careya arborea*) and *Nabe* (*Linea grandis*) are common tree species that yield bark for making rough strong fibre used for elephant gear.

## 2. Food products

These include bamboo shoot, mushroom and *Zizyphus jujuba*. Wild honey is seasonally collected for household use. Edible globular fungi from *In* (*Dipterocarpus tuberculatus*) and fruits of *Terminalia chebula* are eaten with fish sauce; edible fruits of emblic myrobalan (*Emblia officinalis*) and fruits of *Belleric myrobalan* for edible oil are also abundant. Indian trumpet and elephant foot yam tuber are also plentiful.

## 3. Medicinal and cosmetic products

The medicinal plants are scattered. The common ones are *Bomayaza* (*Rauwolfia serpentina*) the root of which is used to reduce hypertension, *Taung-kya Sindon-ma-nwe* (*Stephania venosa*) the root of which is used to cure fever, *Tabin-shwe-hti* (*Jatropha podagrica*) which yields medicinal oil, *Thanatka* (*Limonia acidissima*) the bark of which is used as a cosmetic, usually mixed with sandalwood and ground up wet, and *Tayaw*, a small tree or shrub (*Grewia polygama* and other species), the bark of which is used in preparing shampoo with fruits of *Kinmunthee* (*Acacia concinna*).

## 4. Extractive products

The most common oleo resin found is *thitsi* (*Melanorrhoea usitata*) the product from which is used for caulking boats, as a non-fouling paint, as a coating upon surfaces to be gilded, and predominantly, for Burmese lacquer work. Bark of *Ngu* (*Cassia fistula*), *Ngusat* (*C. renigera*) and *Te* (*Diospyros burmanica*) are promising tanning agents.

## 5. Animal products other than food

Animal products include honey and bees-wax, and *pwenyet* a dammar made by a small stingless bee (*Melipona spp.*) which is collected and used for caulking boats. The trade is of little importance. Natural lac is collected from host trees such as *Pauk*, *Yindaik* and *Ingyin*. Two crops are produced every year.



**Thanatka (*Limonia acidissima*) stems ready for sale, and seeds (in foreground)**

## 6. Miscellaneous products

*Dani* (*Nipa fruticans*), leaves of *Salu* (*Licuala peltata*), and thatch from *Thekke* grass (*Imperata cylindrica*) are used for roofing and walls of buildings. Various kinds of orchids are also found in PKMF.

## Management of NWFPs

Realising the important contribution of NWFPs to the social and economic development of the country, District (FMU-level) Forest Management Plans (DFMP) include a special working circle, "Non-wood Forest Products Working Circle", prepared with the following objectives:

- To increase the production of NWFPs within the district through the exercise of scientific and systematic management and conservation; and
- To develop the regional economy through increased production of NWFPs.

The management mechanisms are prescribed and production patterns for the plan period of 10 years determined. Annual production of NWFPs for each district is fixed according to the annual allowable cut or harvest for NWFPs, which is prescribed in the DFMP.

## Conclusion

The production of NWFPs on a sustainable basis will provide the following benefits to the local and national economy:

- help meet the subsistence needs of rural people and generate cash income and employment, thus alleviating rural poverty;
- provide raw materials for small industries, employment in collection, transport, trade, processing and foreign exchange from the export of both unprocessed and processed products; and
- provide medicinal plants for rural people.

Even with the growth of the economy and improvement in the standard of living of people, the relative importance of NWFPs cannot be ignored as the majority of people in rural areas still depend on NWFPs in one way or other. Most of the NWFPs are collected for household use, although the surplus is sold both in



# Land Use Practices and Changes in PKMF

## Introduction

Over half the land in Myanmar is forested and a quarter of it is used for agriculture. In 1998-99, forest cover was 344,230 km<sup>2</sup> while land under cultivation reached 132,960 km<sup>2</sup>. Annual deforestation rate was estimated at 220,00 ha or 0.3% of the total area over a period of 14 years from 1975 to 1989. Shifting cultivation is one of the major causes of deforestation.

## Land utilisation in PKMF

An assessment of current land and forest use practice was made in 2001. Land cover transformations were observed during the land use assessment using the LANDSAT TM/ETM data. A comparison between the 1996 and 2001 data covering the whole project area shows a distinct variation in the spectral signature and NDVI value of the PKMF.

## Methodology

Steps involved in the assessment were as follows: Step 1. Topographic maps, on a scale of 1:63,360 and published in 1942, were digitized using PC ARC/INFO GIS software. Step 2. 1996 LANDSAT 7/TM digital data was processed using the TNTmips image processing software to produce a 1996 satellite image map. Step 3. Ground verification was conducted to identify land-use patterns. Information on population, education, agriculture, livestock, forestry, hydrology and meteorology was collected. Step 4. Using information from ground verification and existing topographic maps, the 1996 satellite image map was interpreted visually. Step 5. The existing land use patterns were traced over the satellite image maps and digitized. Step 6. The same procedures were applied to a 2001 image. Step 7. The 1996 and 2001 land use data were overlaid and the changes assessed.

**Table 1. Status of land use in PK Township in 1996 and 2001**

Land use Category	Appraisal				Change in area (ha)
	1996		2001		
	Area (ha)	% of total land use	Area (ha)	% of total land use	
Good forest	55,786.74	29.33%	55,267.06	29.05%	-519.68
Degraded forest	73,430.39	38.60%	66,920.93	35.18%	-6,510.46
Agriculture	53,641.79	28.20%	58,903.30	30.96%	+5,261.51
Settlement area	967.28	0.51%	1,368.43	0.72%	+401.15
Water body	6,409.07	3.36%	7,775.55	4.09%	+1,366.48
<b>Total</b>	<b>190,235.27</b>	<b>100%</b>	<b>190,235.27</b>	<b>100%</b>	<b>-</b>

**Table 2. Total land use changes of PK Township between 1996 and 2001**

Land use category	Incoming area (ha)	Outgoing area (ha)	Difference area (ha)
Good forest	-	520.72	-520.72
Degraded forest	32,244.46	38,753.92	-6,509.46
Agriculture	38,240.98	32,978.47	+5,262.51
Settlement area	685.36	285.21	+400.15
Water body	1,964.23	596.71	+1,367.52

## Results

Table 1 indicates that good forest area declined over the period by 0.28%, and degraded forest by 3.42% over the same period, implying that the actual forest had disappeared at the rate of 75.22 ha annually. On the other hand, agriculture, settlement area and water body increased by 2.76%, 0.21% and 0.73% respectively. The changes under good forest, degraded forest,

agriculture, settlement area and water body between 1996 and 2001 are significant for future land use. Table 2 shows the total land use changes.

## Land use issues in PKMF

### (i) Shifting cultivation

Reserved forests (RFs) are being affected by the practice of shifting cultivation; the intensity ranges from about 50% to 80% of the total area. The secondary forests affected by shifting cultivation are characterised by open canopy with invasion of bamboo in mixed deciduous forests and grasses such as *Imperata cylindrica* and scrub in *Dipterocarp* forests.

### (ii) Migration and resettlement

Villages near dam construction sites and water impoundment areas were resettled near upland catchments, bringing shifting cultivation practices closer to RFs. Follow-up adverse impacts of the resettlement programme have occurred in the immediate environment of the dams.

### (iii) Timber extraction

North Nawin, Middle Nawin and South Nawin RFs are productive with a significant contribution of timber teak and other hardwoods and NWFPs. A pilot implementation of COHP/ Low Impact Logging has been initiated in PKMF.

### (iv) Fuelwood collection

Firewood collection is one of the direct causes of deforestation. Firewood is still a major source of energy for cooking and lighting. Farmers living near degraded forests have started experiencing scarcity of firewood.

## Land use change implications

Unless necessary measures are taken in time, the current deforestation and forest degradation could have the effect of reducing timber production in the long run and degrading or destroying biodiversity. Since there is no protected area in PKMF, the existing natural forests are the only safe haven for wildlife. Sustainable supply of NWFPs will also be affected due to forest loss. As a consequence, the villagers living near the forests will have difficulty meeting their basic needs since their livelihoods are very much forest dependent.

This could also have an effect on microclimatic conditions of the surrounding areas, affecting the productivity of farm lands.

PKMF is a major source of teak and other non-teak hardwoods in Bago Division (West). Loss of forests could pose a major ecological risk because the forests can provide diverse ecological benefits. Forests located in the watersheds are critical in terms of soil and water conservation. Some forest reserves in the watershed of the north Nawin dam are being affected by shifting cultivation and charcoal production. These activities are related to social and economic aspects of the local people, and, therefore, need to be addressed socially and politically.

*By Prof. Kyaw Htun & Deputy Director, NPC  
U Myint Swe, U Win Myint and U Mya Win, Staff officers, FD*

# Performance of Community-based Bamboo Plantings in Ulot MF

Community participation to manage and conserve watersheds has gained increased acceptance in support of the government's program for holistic watershed management in consonance with economic development and environmental protection.

A pilot bamboo planting activity was initiated in Ulot Watershed MF, involving six nearby *barangays* as co-managers, and with an emphasis on enhancing livelihood opportunities. A popular multi-use species is bamboo, particularly *Bambusa blumeana*. Local demand for this species is high due to the commercial culture of "Tahung" which requires a regular supply of bamboo poles. Many residents have recognised the importance of planting bamboo, but find it hard to grow. This was a familiar comment from most participants who attended a training workshop on Bamboo Plantation Establishment and Management organised by the Ulot MF Project in 2001. Techniques on seedling production and out-planting of bamboos were imparted to the participants. After the training, participants planted bamboo, locally named *Cabugawan* (*Bambusa blumeana*), and monitored its growth performance.

Observations on the plantings were as follows:

1. Middle-aged bamboo culm was used for cutting.
2. Cutting regime was based on two nodes.
3. Direct planting of cuttings in the field.
4. 8 m x 8 m planting spacing.
5. Area planted was flat and rolling topography.
6. Along the creek.
7. Soil is marginal, rocky, etc.
8. Planting was done in November 2001.
9. During November and December 2001, the first bamboo shoots had grown to a height of 24" from the upper node.
10. Percentage survival 2 months after planting was over 90%.
11. In January-February 2002, percentage survival dropped to 10%, manifested by gradual wilting of shoots, leaves, twigs and branches.
12. Replacement of dead seedlings was undertaken.

13. However, 2 months after re-planting, the same scenario was observed, with survival further reduced to 5%.
14. Increased mortality may be due to:
  - Presence of white and black fungus in bamboo cuttings.
  - Termites attacking the plant.
  - Rats feeding on the young shoots.
  - Rotting of young roots were prevalent in low-lying areas especially during rainy season.

Despite the dismal experiences, the farmers are determined to pursue planting of *Cabugawan* due to its high demand. In order to facilitate this desire, farmers were given tips for achieving a higher survival rate of bamboo seedlings, in both the nursery and plantation. The tips included:

1. Observe the survival of young shoots both in the nursery and plantation for at least 6 months.
2. The color of *Cabugawan* must still be green after 3 to 4 months; a sign there is stored food in the bamboo cutting.
3. First shoots are not a basis to conclude that new roots have been produced. In most cases, these grow rapidly in the first few months and then die. 2<sup>nd</sup> and/or 3<sup>d</sup> shoots are better indicators of a rooted cutting.
4. When pests and diseases are observed, appropriate measures must be taken to minimise cutting mortality.
5. Introduction of other bamboo species in the nursery is encouraged to provide a comparison of different species. Species like *Bambusa* and *Gigantachloa*, whose cuttings can be stored in a proper place for aerial root development before outplanting in the field, can be tested.

Local experts have indicated that local knowledge on bamboo planting is available but there is a need to study the performance of different species on different sites, under different cultural treatments. This was shared during the bamboo training workshop.

*By Leo M. Poculan, Project Manager*

## DENR Deploys Technical Assistance Teams in Samar

Technical Assistance Teams will be deployed this month by the Department of Environment and Natural Resources (DENR) to five Samar Island towns within the Ulot Watershed MF.

Three Teams consisting of 5-6 Foresters and Forest Rangers, will be assigned to the areas of jurisdiction of Catbalogan, Basey and Dolores. The assignment area has been distributed into three clusters, Dolores, covering barangays San Rafael and Binaloan in Taft, Eastern Samar; Catbalogan cluster covering barangays in Paranas, Motiong and San Jose de Buan; and the Basey cluster, covering barangays Cansolabao and San Rafael in Hinabangan, Samar. The Teams will be in their assigned areas for fifteen days each month. The deployment of these teams is a response to the desire of local communities and organizations of the Ulot Watershed MF Project for increased visibility of DENR personnel in their areas to address problems of forest protection.

*Continued on page 5*



TATs discussing in strategies for forest protection



# Training of Trainers in Rattan Processing in Ulot MF

During the Ulot MF Consultative Meeting held on Jan 17-18, 2002, stakeholders agreed to coordinate their activities within the MF area to facilitate the implementation of MF activities, maximize use of resource and provide more time for PO members to work their farms.

A follow-up meeting with the Samar Island Biodiversity Project (SIBP) was conducted on January 31, 2002. The group decided to streamline and jointly conduct activities on forest protection, strengthen Technical Assistance Teams and capability building.

One of the capability building components is training. The Ulot MF Project, SIBP, and POs pooled their resources to conduct a training workshop on rattan processing at KAPPAS Display Center in Brgy. Tenani, Paranas, Samar from 18-21 March, 2002 that was attended by 29 participants from Lokilokon, Tenani, San Isidro, and Cansolabao. Modules included Rattan Weaving and Handicrafts (14 participants), Preservation and Seasoning/Treatment of Rattan (8 participants) and Finishing of Rattan and Handicrafts (7 participants).

The MF Project covered the traveling expenses of 3 resource speakers from the Forest Products Research and Development Institute (FPRDI) and 2 from the Cottage Industry Technology Center. SIBP covered the speakers' fee, food, supplies, materials and local transportation. The PO in KAPPAS covered the food expenses of 9 participants, and provided the raw materials for the training.

Participants learned new product designs in handicraft making, such as trays from the rattan core previously considered as waste. The proper way to treat rattan poles, including precautionary

measures on the use of chemicals, was emphasized. On the job training on sanding and varnishing helped improve product quality and add commercial value.

The tools (sizer, drawback, and shaver) provided by Ulot MF Project to the Federation were very useful in attaining the desired thickness and width of the rattan splits, further improving product quality. The training identified other tools required such as, highboard and manual drill. It was agreed the Federation would prepare a mechanism for the use of the tools so that all POs will have a chance to avail of the same.

Based on the resource persons' assessment, the participants developed some knowledge of weaving, traditional air-drying and brushing/varnishing techniques. Suggested areas for improvement included:

- Practice to master weaving and processing techniques;
- Improve air drying by introducing proper filing system;
- Proper storage of rattan after drying;
- Determination of required moisture content;
- Use of copper nail and screw to avoid rusting;
- Proper use of chemicals to avoid health hazards; and
- Encourage the use of different kinds of finishes and finishing materials (e.g. oil stain, tinting colors, clear gloss lacquer).

Likewise, they identified potential trainers for future re-echo training. The partnership will further broaden networking, and the FPRDI in particular will coordinate with partner-industries to market products, paving the way for more collaborative efforts in the pursuit of sustainable forest management.

*By Lourdes C. Wagan and Remedios S. Evangelista*

*Continued from page 8 - NWFPs in Paukhaung MF*

rural and urban markets. However, both the subsistence and commercial production of NWFPs are ignored in economic statistics and the national accounting system. Hence, the overall contribution of NWFPs to the national economy does not reflect its true value. This may explain why forest policy and development efforts pay only casual attention to the importance of NWFPs. Factors such as the large variety of NWFPs, lack of data on extraction cost, variation of market prices, time spent for collection and subsistence nature of much of the consumption, make it difficult to assess the economic contribution of NWFPs. However, some NWFPs such as wild Yam which were once abundant in the PKMF are now on the verge of extinction due to excessive extraction. Therefore, the importance of the rational utilisation and sustainable management of NWFPs cannot be over emphasised.

**Production of major NWFPs (1996-97 to 2000-01) in PKMF.**

No. NWFPs	Units	1996	1997	1998	1999	2000
		to 1997	to 1998	to 1999	to 2000	to 2001
1. Bamboo	No.(,000)	91	230	214	900	892
2. Cane	"	-	50	-	-	-
3. Bark	"	-	-	-	1,100	880
4. Plant fibre	"	1,000	1,000	-	-	-
5. Thatch	"	-	18	20	11	-
6. Bomayaza	Viss	-	300	-	8	9
7. Bamboo shoots	"	1,390	3,000	5,900	-	-
8. Emblic myrobalan	"	15,000	-	5,000	-	-
9. Thitsi	"	-	-	-	105	12
10. Honey	"	-	-	-	-	11

*Source: Model Forest Office, Paukhaung Township*

*By Prof. Kyaw Htun, NPC and U Htay Aung, FD*

*Continued from page 12*

Some of the impressions of the workshop were:

- "We were able to know how some successful CBT Projects (as presented in the case studies) work.
- We were able to realise the importance of participatory learning with the villagers, the rich cultural and natural resources in the village, organisations, skills and institutions, that are playing a crucial role in CBT activities in the area.
- By sharing the knowledge and experiences of participants, villagers and trainers, we acquired diverse knowledge not only on CBT but also on getting along well and understanding the culture and potentials of each participant's nation".

*Compiled from contributions by Ms. Purificacion S. Dalooos, Ulot MF and Ms. He Yiling, Lin'an MF*

# Project News

## ***Documentation Assistant Joins RMFP***

Ms. Dianne Gee, an Australian Youth Ambassador for Development Volunteer joined RMFP on April 9 2002, as a Documentation Assistant. Her four-month assignment is funded by the Australian Government, with the RMFP covering only her duty travel costs. Ms. Gee, a national of Australia, has a post graduate honours degree in geography and environmental studies. We welcome her to RMFP, and look forward to providing stronger documentation support to the Project countries.

## ***“Measurement of Indicators” Workshop***

The RMFP, in collaboration with the RFD, Thailand and the IMFNS, will organise a regional workshop to develop guidelines for the measurement of indicators common to the four Project countries, and to discuss the processes involved in reviewing the appropriateness and effectiveness of the C&I that have been developed for the four MFs. The workshop will be held in Lampang, Thailand from 22-27 April, 2002. RMFP will sponsor four participants from each Project country. IMFNS and DENR, Philippines will provide one resource person each. For more information, contact the CTA, RMFP at the address below.

## ***Lin’an Best Practices Workshop***

A workshop on best practices for SFM in MFs will be organised by RMFP and the Lin’an MF Secretariat in Lin’an, China, from 31 May to 12 June 2002. The workshop will provide hands-on experience in the development of bamboo, hickory and eco-tourism. The RMFP will sponsor 3 to 4 persons, including non-government and local community stakeholders from Myanmar, Philippines and Thailand. For more information, contact the CTA, RMFP at the address below.

## ***Policy Review Synthesis Workshop***

A review of forest and related policies with special reference to the MF approach is being undertaken in all four Project countries with support from the RMFP. A synthesis workshop will be organised to discuss the findings of the reviews and identify effective ways of feeding back the findings to the policy-making levels. The workshop will be held in May/June in Tacloban, Philippines. For more information, contact the CTA, RMFP at the address below.

## ***Terminal PSC and Regional MF Workshop***

The terminal PSC meeting and RMFP workshop (theme of “*What Next?*”) are provisionally scheduled to be held in June 2002, in Tacloban, Philippines. For more information, contact the CTA, RMFP at the address below.

## **MF Participants Attend Community-Based Tourism Training**

An international training course on *Community-based Tourism (CBT) for Conservation and Development* was held in Thailand from 4 Feb-1 Mar 2002, organized by RECOFTC and the Mountain Institute, Kathmandu, Nepal. The training course aimed to enhance the knowledge and skills of participants to design, implement and manage CBT projects in their respective countries. Due to the interest in CBT in the four MFs, the RMFP sponsored one person from each Project country to the workshop: Ms. He Yiling (Lin’an MF), U Hla Tun (Paukhaung MF), Ms. Purificacion S. Daloos (Ulot MF), and Mr. Supachi Nuchit (Ngao MF).

Participants learned the Appreciative Participatory Planning and Action (APPA) Approach to the development and management of CBT projects. The four steps of APPA - Discovery, Dream, Design and Delivery (4Ds) - were practised by the participants at the Huai Hee Village, which has practised CBT for 4 years. The 4D application was made through the villagers by sharing their knowledge and experiences on CBT with the participants.

As part of the training, participants prepared an action plan for implementation in their respective countries. Ms. He prepared the *CBT Development Plan in Baisha Village for Ecotourism Improvement under Lin’an MF Project*; Ms. Daloos prepared a *5 day CBT Planning Workshop for the Ulot Watershed MF Stakeholders*. Participants felt that since CBT is still a new concept, the learning acquired from the training was very useful in starting CBT in their respective MFs.

*Continued on page 11*

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